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**BRITISH COLUMBIA
UTILITIES COMMISSION**

**ORDER
NUMBER G-103-04**

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

and

**An Application by the British Columbia Transmission Corporation ("BCTC")
for Approval of
a Transmission System Capital Plan**

BEFORE: R.H. Hobbs, Chair
L.A. Boychuk, Commissioner
M.P. Birch, Commissioner
November 19, 2004

O R D E R

WHEREAS:

- A. On May 31, 2004, the Commission received an application from BCTC (the "Application") under Sections 45(6) and 45(6.1) of the Utilities Commission Act ("UCA") seeking approval of BCTC's Transmission System Capital Plan (the "Capital Plan"); and
- B. In its Application, BCTC requested:
- an Order that the Capital Plan meets the requirements of Section 45(6) of the UCA;
 - an Order approving the Capital Plan under Subsection 45(6.2)(a) of the UCA;
 - specific Orders approving certain capital expenditures associated with identified projects under Subsection 45(6.2)(b) of the UCA; and
- C. On June 30, 2004, the Commission issued Order No. G-63-04, which established the timetable for a written public hearing for the Application. The Commission amended the timetable for the proceeding through Order No. G-73-04 dated August 3, 2004, and again via letter dated August 26, 2004; and
- D. The Commission and several Intervenor submitted information requests to BCTC, which it answered on August 13, 2004; and
- E. Following receipt of BCTC's responses, Sea Breeze Pacific Regional Transmission System, Inc. ("Sea Breeze") wrote to the Commission seeking expanded responses to certain information requests and an extension of the filing date for Intervenor comments and submissions. By letter dated August 30, 2004, the Commission denied the Sea Breeze requests, noting that BCTC is only seeking approval for F2005 expenditures to maintain the earliest-in-service date for the Vancouver Island 230 kV project and that several of the Sea Breeze information requests were for more information than was then available. Sea Breeze wrote

to the Commission again on November 2, 2004, but because the proceeding was closed, its letter was not considered by the Commission Panel; and

- F. By letter to the Commission dated July 19, 2004 (Exhibit C1-2), Norske Skog Canada Limited (“NorskeCanada”) outlined a concept for managing peak demand on Vancouver Island as a complement to the proposed Vancouver Island 230 kV transmission line project NorkseCanada proposed to set up an independent Technical Review Committee to review the technical issues of demand management. Since matters raised in the proposal were being reviewed within the context of the Commission proceeding for the BCTC Capital Plan, the Commission declined NorskeCanada’s invitation to participate in a Technical Review Panel (Exhibit A-3); and
- G. Following receipt of BCTC’s responses to the information requests, written submissions were received from the following parties:
- NorskeCanada, Exhibit C1-4;
 - BC Hydro, Exhibit C4-3;
 - GSX Concerned Citizens Coalition, Exhibit C9-3;
 - St’atl’imx Nation Hydro, Exhibit C10-3;
 - Willis Energy Services on behalf of the City of New Westminster, Exhibit C11-3;
 - Independent Power Producers of BC, Exhibit C15-2;
 - Sea Breeze, Exhibit C18-4;
 - Joint Industry Electricity Steering Committee, Exhibit C19-5; and
- H. BCTC made its Final Response to Intervenor’s Submissions on September 17, 2004 (Exhibit B-6); and
- I. The Commission has considered the Application and the evidence all as set forth in the Reasons for Decision attached to this Order.

NOW THEREFORE the Commission orders as follows:

1. The Commission finds that the Capital Plan as submitted meets the requirements of Section 45(6.1) and Section 45(6) of the UCA.
2. Pursuant to Section 45(6.2)(b), the Commission determines that the expenditures for projects referred to in Section 5.2 of the Capital Plan are in the public interest.
3. BCTC is exempt from the provisions of Directive No. 6 of Order No. G-44-89.
4. BCTC is to comply with other directions as set out in the attached Reasons for Decision, Appendix A.

DATED at the City of Vancouver, in the Province of British Columbia, this 19 day of November 2004.

BY ORDER


Robert H. Hobbs
Chair

APPENDIX “A”

REASONS FOR DECISION

NOVEMBER 19, 2004

BRITISH COLUMBIA TRANSMISSION CORPORATION

TRANSMISSION SYSTEM CAPITAL PLAN

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1.0 INTRODUCTION

1.1 Background

The British Columbia Transmission Corporation (“BCTC”) is a provincial Crown Corporation that began operations August 1, 2003. Under a Master Agreement with the British Columbia Hydro and Power Authority (“BC Hydro”), BCTC is responsible for operating, managing, and maintaining BC Hydro’s transmission system. BCTC is also responsible for planning, obtaining regulatory approvals for, and constructing projects that sustain or enhance the transmission system’s capability to transport electric power, and for entering into commitments and incurring expenditures for such projects. BC Hydro is required to fund capital expenditures for core transmission assets (which BC Hydro continues to own) if such expenditures are approved by the British Columbia Utilities Commission (“BCUC”, “Commission”). Certain other capital assets, such as control centres, are funded and owned by BCTC.

1.2 The Application

On May 31, 2004, the Commission received an application from BCTC under sections 45(6) and 45(6.1) of the *Utilities Commission Act* (“UCA”) (the “Application”) seeking approval of BCTC’s *Transmission System Capital Plan* (the “Capital Plan”). In its Application, BCTC requested:

- an order that the Capital Plan meets the requirements of section 45(6) of the UCA;
- an order approving the Capital Plan under subsection 45(6.2)(a) of the UCA; and
- specific orders approving certain capital expenditures associated with identified projects under subsection 45(6.2)(b) of the UCA

(Exhibit B-1, p. 8).

The Capital Plan described three types of investments: (a) Sustaining Capital, which BCTC submitted is required to sustain the existing capability of BC Hydro’s transmission system; (b) Growth Capital, which BCTC submitted is necessary to allow the transmission system to handle future electric power transport requirements; and (c) BCTC Capital, which BCTC submitted is necessary for its operations, control, and business support systems.

Under the Master Agreement, BCTC is responsible for capital planning related to Substation Distribution Asset (“SDA”) projects. BCTC stated that SDA projects were included in the Capital Plan only for completeness and for consistency with the capital expenditures outlined in Chapter 6 of the fiscal year (“F”) 2005 and F2006 of the

BC Hydro Revenue Requirements Application. BCTC is not seeking Commission orders with respect to such projects.

1.3 The Hearing

On June 30, 2004, the Commission issued Order No. G-63-04 (Exhibit A-1) that established the timetable for a written public hearing for the Application. The Commission amended the timetable for the proceeding through Order No. G-73-04 dated August 3, 2004 (Exhibit A-4), and again by letter dated August 26, 2004 (Exhibit A-5).

In the letter accompanying Order No. G-63-04, the Commission identified the following non-exhaustive list of issues for consideration in the review:

- the criteria that should be used to identify projects that should be the subject of Certificate of Public Convenience and Necessity (“CPCN”) applications;
- the identification of specific projects in the Application that will require a CPCN application; and
- planning criteria and the degree of reliability needed for electricity supply to large urban centres.

The Commission and several Intervenor submitted information requests to BCTC, which it answered on August 13, 2004 (Exhibit B-4). Following receipt of BCTC’s responses, Sea Breeze Pacific Regional Transmission System, Inc. (“Sea Breeze”) wrote to the Commission seeking expanded responses to certain information requests and an extension of the filing date for Intervenor comments and submissions (Exhibit C18-3). By letter dated August 30, 2004 (Exhibit A-6), the Commission denied the Sea Breeze requests, noting that BCTC is only seeking approval for F2005 expenditures to maintain the earliest in-service date for the Vancouver Island 230 kV project and that several of the Sea Breeze information requests were for more information than was then available. Sea Breeze wrote to the Commission again on November 2, 2004 but, because the proceeding was closed, its letter was not considered by the Commission Panel.

By letter to the Commission dated July 19, 2004 (Exhibit C1-2), Norske Skog Canada Limited (“NorskeCanada”) outlined a concept for managing peak demand on Vancouver Island as a complement to the proposed Vancouver Island 230 kV transmission line project. NorskeCanada proposed to set up an independent Technical Review Committee to review the technical issues of demand management. Since matters raised in the proposal were being reviewed within the context of the proceeding for the Capital Plan, the Commission declined NorskeCanada’s invitation to participate in the proposed Technical Review Committee (Exhibit A-3).

Following receipt of BCTC’s responses to the information requests, written submissions were received from the following parties:

- NorskeCanada, Exhibit C1-4;
- BC Hydro, Exhibit C4-3;
- GSX Concerned Citizens Coalition (“GSXCCC”), Exhibit C9-3;
- St’atl’imx Nation Hydro (“St’atl’imx”), Exhibit C10-3;
- Willis Energy Services on behalf of the City of New Westminster (“New Westminster”), Exhibit C11-3;
- Independent Power Producers of BC (“IPPBC”), Exhibit C15-2;
- Sea Breeze, Exhibit C18-4; and
- Joint Industry Electricity Steering Committee (“JIESC”), Exhibit C19-5.

BCTC made its Final Response to Intervenor’s Submissions on September 17, 2004 (Exhibit B-6).

2.0 THE CAPITAL PLAN

2.1 Overview

The Capital Plan contained in the Application is the first such plan submitted to the Commission by BCTC.¹ It contains a list of proposed transmission projects and their capital requirements over a ten-year planning horizon (April 1, 2005 to March 31, 2014). BCTC plans to publish its Capital Plan and to file it with the Commission annually, and to highlight changes from one plan to the next.

BCTC stated that its Capital Plan is driven by three major objectives (Exhibit B-1, p. 14):

- to sustain the current performance capability of the existing transmission system by extending the useful life of assets or replacing assets prior to the end of their useful lives;
- to meet general load growth and specific customer requests through reinforcement and expansion of the existing transmission system; and
- to enable the efficient and effective operation and management of the transmission facilities through the use of appropriate tools, equipment and technology.

BCTC also stated that capital investments, individually and collectively, are designed to meet several other objectives and constraints:

¹ An earlier version of the Capital Plan was entered as an exhibit and was a contextual document in BC Hydro’s 2004/05 and 2005/06 Revenue Requirements Application hearing. Section 4 of the present Application reconciles the current version of the Capital Plan with the plan that was filed as part of BC Hydro’s application.

- customer, employee, and public safety;
- reliability and security of the system from both physical and data threats;
- economic efficiency and cost effectiveness (including consideration of acceptable rate impacts);
- consideration and mitigation of social and environmental impacts;
- management of risk including risks related to project completion, functionality, utilization, and realization of value;
- consistency with government policy and compliance with government regulations; and
- preservation of the financial integrity of BCTC.

BCTC noted its dedication to contributing to the achievement of the four cornerstones of the Government of British Columbia's *Energy for Our Future: A Plan for BC* (the "Energy Plan") of November 2002: low electricity rates and the public ownership of BC Hydro; secure and reliable supply; more private sector opportunities; environmental responsibility; and no nuclear power sources.

The Capital Plan contains the Sustaining, Growth, and BCTC Capital Portfolios, which correspond to each of the three objectives. The Sustaining Capital Portfolio comprises the investments required to sustain the current and future performance capability of the transmission system to meet customer and system requirements and industry reliability standards. These investments extend the useful life of an asset, replace an asset at the end of its useful life, or reduce the risk of asset failures and other operational problems (Exhibit B-1, p. 19).

The Growth Capital Portfolio comprises the investments required to expand and reinforce BC Hydro's transmission system to meet the forecast requirements of BC Hydro and other customers over the ten year planning period. The system expansion reflected in the Capital Plan is driven by service requests made pursuant to BC Hydro's Wholesale Transmission Service ("WTS") tariff, including the Network Integration Transmission Service ("NITS") agreement between BCTC and BC Hydro and BCTC's Point-to-Point Transmission Service ("PTP") contracts with BC Hydro and other customers. The drivers for system expansion include load growth (system wide, regional, and local), the interconnection of new generation, committed PTP contracts, and the replacement of ageing infrastructure with higher capacity assets (Exhibit B-1, p. 96).

The BCTC Capital Portfolio contains investments in BCTC's operations, control, and business support systems. This portfolio is dominated by the System Control Modernization Project ("SCMP"), which is the subject of a CPCN application.

Within each portfolio, BCTC identified projects (or groups of projects) for which approval is sought under subsection 45(6.2)(b) of the UCA and projects for which a subsequent CPCN application is anticipated. A summary of the expenditures anticipated under each portfolio—further subdivided according to whether the

project is in progress, will commence in F2005, or will not have any spending until after F2005—is given in the following table (Exhibit B-1, p. 6).

TRANSMISSION CAPITAL PLAN - PLANNED EXPENDITURES
FOR THE TEN-YEAR PERIOD 1 APRIL 2005 TO 31 MARCH 2014 (\$'000)

	Project Totals	Prior Years	Fiscal Years Ending 31 March										To Complete
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
<u>SECTION I - PROJECTS IN PROGRESS (as at April 01, 2004)</u>													
Sustaining	340,914	209,184	77,955	26,759	14,468	5,859	3,948	2,740					
Growth	596,308	134,025	55,009	115,424	123,860	74,987	92,721	281					
BCTC	159,696	11,670	35,521	50,087	43,951	16,360	2,106						
TOTAL PROJECTS IN PROGRESS	1,096,918	354,880	168,485	192,271	182,279	97,205	98,775	3,022					
<u>SECTION II - F2005 PROJECTS</u>													
Sustaining	98,193		31,105	34,157	16,238	2,616	2,458	2,314	2,321	2,324	2,330	2,329	
Growth	414,501	138	25,575	30,555	47,615	15,513	7,321	10,763	27,614	88,534	100,952	56,952	2,971
BCTC	9,175		9,115	30	20	10							
TOTAL PROJECTS TO BE INITIATED IN F2005	521,869	138	65,794	64,742	63,873	18,139	9,779	13,077	29,935	90,858	103,282	59,281	2,971
<u>SECTION III - FUTURE PROJECTS</u>													
Sustaining	860,990			40,149	79,403	101,432	102,316	105,216	108,534	107,689	108,166	108,084	
Growth	692,262			4,287	28,416	61,896	88,275	163,017	120,911	85,179	71,092	69,190	
BCTC	90,265			6,278	10,040	12,797	14,425	9,125	10,525	9,025	9,025	9,025	
TOTAL PROJECTS TO BE INITIATED BEYOND F2005	1,643,518			50,713	117,860	176,125	205,016	277,359	239,970	201,893	188,283	186,299	
<u>ALL SECTIONS</u>													
Sustaining	1,300,097	209,184	109,060	101,065	110,110	109,907	108,722	110,270	110,855	110,013	110,496	110,413	
Growth	1,703,071	134,164	80,583	150,266	199,891	152,395	188,316	174,062	148,525	173,713	172,044	126,141	2,971
BCTC	259,136	11,670	44,636	56,395	54,011	29,167	16,531	9,125	10,525	9,025	9,025	9,025	
TOTAL CAPITAL PLAN EXPENDITURES	3,262,304	355,018	234,280	307,726	364,012	291,469	313,569	293,457	269,906	292,751	291,564	245,580	2,971
Less: Contribution-in-Aid	-133,319	-17,000	-16,319	-19,000	-11,000	-10,000	-10,000	-10,000	-10,000	-10,000	-10,000	-10,000	
NET CAPITAL PLAN EXPENDITURES	3,128,985	338,018	217,961	288,726	353,012	281,469	303,569	283,457	259,906	282,751	281,564	235,580	2,971
Less: Prior Years Expenditures at April 1, 2004	338,018												
Less: To Complete Expenditures after F2014	2,971												
F2005 - F2014 Net Transmission Capital Plan Expenditures	2,787,996												

2.2 The Planning Process

BCTC briefly described its planning process in Section 2 of the Application. It provided more information on the planning process for Sustaining Capital projects in Section 3.1, Growth Capital projects in Section 3.2, and BCTC Capital projects in Section 3.3.

BCTC stated that the Capital Plan is the result of an ongoing, iterative process. While planning considerations vary by portfolio (Growth, Sustaining, BCTC Capital) because the project drivers are different, at a high level all share the same general process, characteristics, and criteria. Underlying the process is BCTC's responsibility to operate, plan, and maintain BC Hydro's transmission system while balancing the objectives of safety, reliability, and cost effectiveness. The ultimate weighting of each of these criteria is a subjective assessment based on BCTC's knowledge, expertise, and experience (JIESC IR4).

2.2.1 Sustaining Capital Projects

For planning and management purposes, BCTC divides transmission assets into groups containing assets of similar function, characteristics, and risk. Maintenance and replacement plans are developed for each asset group according to criteria that vary by group. A number of factors are considered in making a decision to repair a component under a maintenance program or to replace it under the Sustaining Capital program (Exhibit B-1, p. 22). Where similar equipment is used throughout the transmission system, bulk refurbishment and replacement programs are considered to achieve economies of scale. In response to an information request, BCTC stated that project drivers in the Sustaining Capital portfolio tend to be internal and include such things as asset end-of-life issues, equipment maintainability, asset security and exposure to hazards, and system operability (JIESC IR4). BCTC believes that its approach to asset management incorporates risk-based methodologies to prioritize and reduce retained risk, though unexpected failures can and do occur and can result in significant consequences and costs.

2.2.2 Growth Capital Projects

Based primarily on expected demand (MW) requirements as opposed to energy (MWh) requirements, system reinforcements are planned to provide increased power transfer capacity to serve load growth and to interconnect new generation. The general planning strategy is to use a mix of relatively low-cost options, such as voltage control devices and remedial action schemes, so that the grid can be operated up to its thermal limits under single-contingency conditions. Once thermal limits are exceeded, new lines must be built (Exhibit B-1, p. 100).

The power transfer capability of a potential reinforcement is determined through technical studies that include computer simulations of steady-state and dynamic system performance under anticipated system disturbance conditions. Each simulation, which is a “snapshot” of one specific combination of system conditions, is reviewed to ensure that the proposed system complies with North American Electric Reliability Council (“NERC”) and Western Electricity Coordinating Council (“WECC”) planning standards. These standards require that the transmission system be designed and operated so that it is capable of withstanding the failure of any single major system element (e.g., a 500 kV circuit) during times of peak load or other high-stress conditions.

Factors that may limit the power transfer capability of proposed projects include the thermal capacity of transmission lines and devices, electromechanical stability limits (which ensure that generators remain in synchronism following a disturbance), and voltage stability limits (Exhibit B-1, pp. 98-99).

2.2.3 BCTC Capital Projects

BCTC listed seven major drivers for its own capital investments: operational and efficiency issues relating to the current configuration of five control centres; ageing system operations and business systems technology; ageing computer hardware; the requirement to meet NERC and WECC standards; an increase in the number of Independent Power Producers (“IPPs”); the development of BCTC’s Open Access Transmission Tariff (“OATT”); and the separation of BCTC from BC Hydro (Exhibit B-1, p. 127).

Intervenor Comments and BCTC Response

Several Intervenors commented on BCTC’s capital planning process.

IPPBC cites the responses to several information requests as evidence that the planning process contains no common, analytical framework to justify projects in the Capital Plan or to evaluate and rank projects against each other. It states that, as a result, there is no way of determining whether capital and other resources are being properly allocated. IPPBC also suggests that the common framework should include a provision for assessing standards that have a material effect on the requirement for a particular capital project. IPPBC submits that the Commission should require BCTC to prepare a comprehensive framework for analyzing capital projects and file it for review and approval (Exhibit C15-2, pp. 2 and 6).

GSXCCC states that BCTC’s planning process has resulted in a relatively undifferentiated “shopping list” of desirable capital items, with little or no information on the relative urgency, importance, or strategic implications of the various items. It also states that information on the over-all priorities and strategy of BCTC was missing from the Capital Plan (Exhibit C9-3, p. 3).

The JIESC comments on the planning process indirectly when it submits that the Capital Plan has not yet fully achieved the objective of being useful to BCTC management, the Commission, and other stakeholders in coming to decisions about what capital investments should be made (Exhibit C19-5, p. 1). The JIESC also submits that the Capital Plan must consider a broad range of options, but that BCTC’s plan has fallen short by not providing any options for comparison or consideration (Exhibit C19-5, pp. 2-3).

New Westminster submits that the Capital Plan does not provide enough information and context to build confidence in the planning process among stakeholders and the regulator. It is unable to discern from the Application whether it is growth in domestic demand or increased trading activity involving new independent power generation projects that is driving Growth Capital investments. New Westminster submits that the Commission should provide BCTC with specific directions to provide sufficient information about the process for selecting and scheduling asset projects and allocating capital to them (Exhibit C11-3, Cover Letter).

Several Intervenor comments on the planning process indirectly, in the context of its outputs; these comments are addressed in Section 2.4 of the Reasons for Decision.

In response to Intervenor comments, BCTC states (Exhibit B-6, p. 3) that the planning process does include an identification of options, the evaluation of potential solutions using various frameworks and criteria, a prioritization of expenditures, and public consultation where possible. In support, BCTC points to Sections 3.1.2 and 3.2.2 of its Application, and to the *Fraser Valley (West) Long Range Study Report*. BCTC also acknowledges that Intervenor comments do not yet have a deep understanding of BCTC's capital planning process, and it commits to expanding on earlier stages of the capital planning process in its next Capital Plan.

Commission Findings

The Commission Panel recognizes that, as BCTC notes, Intervenor comments do not yet have a deep understanding of the capital planning process. Yet such an understanding is critical for meaningful stakeholder involvement in the process and for maximizing the benefits that can be achieved through investments in the Sustaining, Growth, and BCTC Capital Portfolios. In addition, a full understanding of, and confidence in, BCTC's capital planning process among stakeholders will make future Capital Plan approvals easier and more efficient. As a new organization, it is important that BCTC build trust among stakeholders in its planning process.

The Capital Plan contains evidence that BCTC has various processes in place to properly evaluate capital projects. However, the evidence is generally in the form of generic descriptions of project planning and evaluation criteria rather than numeric data or descriptions of specific instances of the application of those criteria. For example, the Capital Plan contains descriptions of specific projects, but there is often no description of how these projects were selected from among alternatives, no statement of how the projects relate to other proposed projects (if at all), and no statement of the priority of one project relative to others. (The issue of project priorities is discussed in detail in Section 2.4.1 of the Reasons for Decision.) In addition, it is not always clear which set(s) of criteria have been applied to which projects, and there is often little discussion of how the projects fit into BCTC's overall plan for the transmission system.

To help clarify the relationship between individual capital projects and BCTC's overall plan for the transmission system, the Commission Panel directs BCTC to provide a "state of the transmission system" report in future Capital Plans. The report should provide stakeholders with a "big picture" of the issues that BCTC is attempting to address with the proposed projects, and should include sections on, among other things:

- bulk system issues (e.g., changing usage patterns, import/export capacity limitations);
- regional issues (e.g., regional path capacity limitations, must-run generation issues);

- local issues (e.g., local reliability problems, specific environmental problems, stakeholder concerns);
- problems with specific types of equipment; and
- relationships among projects and between projects and strategic issues (e.g., if Project X is cancelled, should Project Y still go ahead?).

As noted above, BCTC has provided such information in the present Capital Plan to some extent. However, the “big picture” is sometimes found in the details of specific projects or groups of projects, and is difficult for interested parties to assimilate. This may be the reason many Intervenors found the Capital Plan to be more like a list of desired projects than a plan *per se*.

In addition to the “state of the transmission system” report, the Commission Panel accepts the suggestion of IPPBC that a common framework for the evaluation of transmission capital projects would be useful. The project evaluation framework should incorporate the criteria noted by BCTC throughout its Application and some of the suggestions made by Intervenors. In addition, the framework should address several other questions. At the “process” level:

- What are the standards and guidelines of standard-setting bodies such as WECC and NERC that have been adopted for use in British Columbia, and how have they been adapted (if at all) to suit local conditions?
- What are some of the trade-offs associated with each criterion? For example, higher reliability is desirable, but there is a trade-off against higher costs.
- How do the criteria align with the interests of stakeholders? For example, do certain criteria benefit exports more than domestic customers?
- What is BCTC’s management approval process for individual projects, groups of projects, and the Capital Plan as a whole?

At the project or project-group level:

- What assumptions (technological, macroeconomic, social, environmental, etc.) have been made?
- What overall or strategic objective is the project intended to address?
- What alternatives were considered, and why were they rejected?
- What are the consequences of *not* proceeding with a proposed project (e.g., immediate versus long-term degradation in performance, reduced efficiency, increase in customer interruptions, risk of long-duration outages, impact on other projects)?

- Given BCTC’s responsibility to operate, plan, and maintain BC Hydro’s transmission system while balancing the objectives of safety, reliability, and cost effectiveness, and that the ultimate weighting of each criterion is a subjective assessment (JIESC IR4), how have the evaluation criteria been weighted?

The Commission Panel expects that the development of the project evaluation framework will be an iterative process, and that refinements will be made through future capital planning and CPCN processes.

The Commission Panel recognizes that the extent to which projects are evaluated using the capital project evaluation framework will vary greatly among projects. It also expects, however, that having even a one-line description of how a particular criterion was applied to a project, or a statement that the criterion was not applicable, can build confidence among stakeholders that the relevant issues have been considered by BCTC in its planning process. This should ultimately result in a more streamlined approval process. The Commission Panel notes that the framework may also prove useful as a “template” for some parts of transmission-related CPCN applications.

2.3 Inputs

2.3.1 Transmission System Usage Forecast

System reinforcements under the Growth Capital Portfolio are required to meet peak MW demand growth, to integrate power supply resources, and to serve WTS requests made by BC Hydro and other customers. Bulk system reinforcements are determined by the coincident peak demand for the BC Hydro service area, including domestic load and firm exports to Fortis, New Westminster, Alberta, and the US. Local and regional demands, which may not peak at the same time as the overall system demand, are used to establish requirements for local or regional system reinforcements (Exhibit B-1, pp. 96-97).

In developing its Capital Plan, BCTC relied on BC Hydro’s current demand forecast. Based on information in BC Hydro’s Integrated Electricity Plan (“IEP”), BCTC expects the growth in peak demand to be about 1200 MW over the next ten years, including BC Hydro’s domestic integrated system load with PowerSmart, firm supply commitments to New Westminster and Fortis, firm Skagit River Treaty exports to the US, and system losses. The BC Hydro forecast also includes regional coincident and non-coincident peak demands and non-coincident peak demands for substations and industrial loads. Industrial and transmission customer load forecasts are developed by BC Hydro based on the customer’s ten-year usage history, the projected health of its industrial sector, and market intelligence from key account managers (New Westminster IR2.1). Customers’ own forecasts are not used (New Westminster IR2.3).

BCTC uses Open Access Same-Time Information System (“OASIS”) requests as the triggers for system expansion for non-BC Hydro customers (New Westminster IR2.4). While information on such customers’ usage of the transmission system is gathered and analyzed, system expansion is undertaken only in response to executed service agreements with those customers (New Westminster IR3.5).

BCTC stated that BC Hydro’s forecast is the most accurate indicator of future transmission usage currently available. BCTC also stated that it would be developing its own transmission usage forecast, the objective being to predict the timing, location, and size of future transmission capacity requirements with sufficient lead-time to have proposed expansion projects completed concurrently with anticipated demand growth (Exhibit B-1, p. 15).

Two Intervenors commented on the forecasting process. GSXCCC suggests that the Commission urge BCTC to provide a comprehensive transmission usage forecast that details, among other things, grid use among PTP, NITS, ancillary service, and export customers. New Westminster submits that it is difficult to discern from the Application whether the transmission investment driver is demand growth by itself, demand growth with accompanying new generation, or new generation that will simply increase trade traffic on the domestic system. It also states that there are risks associated with incorrect forecasts; for example, there may not be any increased demands on the transmission system that would require investment if new generation is not expected and/or hydro reservoir levels are critical for an extended period of time. New Westminster also suggests that BCTC is paying inadequate attention to the generation/load balance that was the traditional focus of transmission planning and operating scenarios (Exhibit C11-3, p. 1).

In response to New Westminster comments, BCTC reiterated that it is in the process of developing its own transmission usage forecast. While acknowledging that a forecast becomes less reliable as it extends into the future, BCTC believes its Growth Capital expenditures reflect near-term, necessary expenditures to serve load growth under BC Hydro’s NITS agreement, which is driving virtually all of the Growth Capital investments. Over the longer term, BCTC believes the Capital Plan is adaptable to a range of planning scenarios. BCTC states that its mandate is to develop optimum solutions to transmission service requests, not to centrally plan the province’s load/resource balance (Exhibit B-6, pp. 6-7).

Commission Findings

The Commission Panel notes GSXCCC’s desire for a more detailed transmission usage forecast. It also acknowledges BCTC’s efforts to develop an independent transmission usage forecast. An independent forecast is appropriate given the existence of BCTC customers other than BC Hydro.

Forecasting was dealt with at some length in the Vancouver Island Generation Project (“VIGP”) Decision (BCUC Order No. G-55-03, *Vancouver Island Generation Project: Application for a Certificate of Public Convenience and Necessity*, September 8, 2003). The fact that the Commission mandated changes to BC Hydro’s forecasts highlights the fact that Intervenors can and do provide meaningful input to forecasts. As the Commission noted, an understanding of the forecasting methodology and knowledge of the quality of input data, as well as the effects of drivers on modelled results, are important in assessing the forecasts. The Commission also commented on the lack of transparency in several areas, including the assumptions that underlie input data.

An understanding of the methodology used by BCTC to arrive at its transmission usage forecasts, as well as a knowledge of the assumptions that underlie those forecasts, are no less important in this proceeding than they were in the VIGP hearing. In addition, stakeholders want access to macro-level assumptions that drive capital investments (e.g., economic growth, employment levels, etc.). These data are not necessarily within the sole expertise of BCTC and stakeholders believe they can provide meaningful input.

In line with direction given to BC Hydro in the VIGP Decision (pp. 12 and 71), the Commission Panel expects BCTC to include the following components of the transmission usage forecast in future Capital Plan applications:

- **a detailed explanation of the appropriateness of the selected forecast methodology compared to other alternative methodologies;**
- **an explicit listing of underlying assumptions and comments on the quality of input data and their sources of information;**
- **intermediate outputs of the modelling process and the verification procedures carried out to validate the models; and**
- **commentary on historical growth trends and implied growth rates and reasons for deviations from trends.**

The Commission Panel also expects BCTC to use forecasting models that can be made public so that the various components and assumptions can be assessed and tested by intervenors.

The Commission Panel notes that providing more detailed forecast information should help both the Commission and Intervenors better understand the drivers of Growth Capital projects and improve the approval process.

2.3.2 Stakeholder Consultations

BCTC states that it is committed to an open and transparent planning process that ensures stakeholders are informed and actively involved in discussions about major transmission initiatives in British Columbia. To that end, BCTC is developing a Public Planning Process to:

- build understanding with stakeholders on the transmission planning process and future system requirements;
- identify and consider stakeholder views and values concerning transmission planning; and
- understand community issues around new transmission investments so that any issues can be identified and addressed early on in the planning process.

As part of the Public Planning Process, BCTC commits to establishing an Advisory Committee, engaging First Nations, and holding public meetings to address local needs and concerns with specific transmission projects (Exhibit B-1, pp. 15-16 and JIESC IR2-9). BCTC suggests that not all projects will trigger public interest issues but, for those that do, it has an incentive to begin public consultation at an early date (BCUC IR4.11). With respect to the Application currently before the Commission, BCTC states that it had provided a number of opportunities for public input into the Capital Plan despite the fact that the public planning process had not yet been implemented (Exhibit B-1, p. 16).

Several stakeholders commented on the consultation process. The JIESC has mixed feelings about entering into lengthy consultations with BCTC regarding the Capital Plan. While promises of better consultation are welcome, it feels that the consultation process stated in the Application is too vague to be supported at this time. The JIESC also expresses concern over the lack of information regarding the independent resources that will be provided to non-BCTC participants to assist them in understanding complex issues (Exhibit C19-5, p. 9). It submits that the Commission should not approve a “vague statement of intent,” but should obtain details and stakeholder feedback before giving approval.

St’at’imc state that the manner in which BCTC intends to conduct consultation with them is not clear. St’at’imc are currently developing a Consultation Protocol with BC Hydro, and they believe that BCTC involvement in the development of those portions of the Protocol that affect how BCTC conducts its business in their territory is critical for the successful implementation of such a protocol. With respect to the proposed Advisory Committee, St’at’imc do not expect to be able to address issues that affect other First Nations, and do not believe that other First Nations will be able to address issues in their territory. With respect to the consultation process used for this Capital Plan, St’at’imc state that it was not acceptable (Exhibit C10-3, pp. 1-2).

In response to stakeholders' comments, BCTC reiterates that it is not seeking Commission approval for its proposed consultation process (Exhibit B-6, pp. 11-12). It will continue to work with stakeholders to refine the process over time, and it expects the Commission to be involved on an exception basis. BCTC states that it will reply to St'at'imc directly.

Commission Findings

The Commission Panel accepts BCTC's view that approval of the consultation process is not required. As BCTC notes, the process will change over time (presumably in response to the needs of both BCTC and its customers). The Commission Panel understands the importance to stakeholders of meaningful, good-faith consultation on transmission matters, and expects BCTC to place a high priority thereon. When stakeholders provide suggestions to BCTC that it chooses not to incorporate into its plans, the Commission Panel expects to see feedback to stakeholders on the reasons for the decision. While meaningful dialogue involves time and effort from all parties, the Commission Panel accepts that such dialogue results in a more effective and efficient project approval process and greater confidence among stakeholders that the proposed Capital Plan is the right one.

The Commission Panel notes that BCTC's consultations with stakeholders will not be deemed unsuccessful simply because they have failed to produce a consensus. On some issues, there are simply too many competing viewpoints to expect that a consensus will emerge, and the best that can be hoped for is that all parties come away from the consultations with a good understanding of the issues. The Commission Panel expects that, after due consideration of stakeholders' input, BCTC will apply its knowledge and expertise to develop a solution it believes is in the public interest and then seek approval from the Commission.

2.3.3 Asset Age, Condition, and Performance

In support of its Sustaining Capital requirements, BCTC provided information on the age distribution of BC Hydro's transmission assets. It stated that an increasing number of components are reaching the end of their useful lives, and that BCTC and other North American utilities have a similar percentage of assets older than 30 years. As assets approach the end of their lives, increased maintenance and capital investment become necessary (Exhibit B-1, pp. 19 and 23). BCTC noted that a critical decision is whether to continue to repair a component under the maintenance program or to replace it under the Sustaining Capital program, and it presented a list of factors that are considered in making this decision (Exhibit B-1, p. 22).

The Master Agreement requires BCTC to preserve the value of BC Hydro's investment in transmission assets. To objectively demonstrate compliance, a current measure of asset condition is required. To that end, BCTC has commissioned an independent auditor to carry out a Baseline Study with follow-up audits to be conducted every

three years (Exhibit B-1, p. 24). BCTC anticipates completion of the Baseline Study in January 2005 and expects the document will be made public except for sections removed for security or other reasons (JIESC IR5).

Commission Findings

The Commission Panel notes that there are several questions to be answered concerning asset repair and replacement:

1. Is there a problem?
2. If there is a problem, is it related to equipment?
3. If so, what types, vintages, or specific pieces of equipment are involved?
4. Assuming the problem-causing equipment has been identified, should it be refurbished or replaced?
5. How can BCTC and stakeholders be sure that capital expenditures are directed at the specific pieces of equipment within an asset population that are in the worst condition or that have the greatest negative effect on reliability?

With respect to the first question, the Commission Panel expects that BCTC will provide the appropriate evidence from condition assessments and/or reliability indicators to substantiate the problem. With respect to reliability indicators, **the Commission Panel expects BC Hydro and BCTC to present their reliability indices (SAIFI, SAIDI, CAIDI, ASAI, SARI, MAIFI,² generation forced outages, availability, and the generation outage rates), both combined and disaggregated (where applicable), on an annual basis with comparisons to CEA averages. The Commission Panel directs BCTC to report these indices, as available, in its annual Capital Plan.**

On page 80 of the BC Hydro Revenue Requirements Decision (BCUC Order No. G-96-04, *British Columbia Hydro and Power Authority 2004/05 to 2005/06 Revenue Requirements Application and British Columbia Transmission Corporation Application for Deferral Accounts*, October 29, 2004) it was noted that 15 percent of customer outages result from transmission or generation problems. Of the transmission outages, 57 percent were line-related and 39 percent were substation-related. Only 10 percent of the substation outages were caused by equipment failure. (The percentage of line outages caused by equipment failure was not reported in the Evidence.) Thus, less than 1 percent of distribution-customer outages resulted from substation equipment failures. While the Commission Panel is concerned that high levels of reliability be maintained, the extent and

² SAIFI = System Average Interruption Frequency Index; SAIDI = System Average Interruption Duration Index; CAIDI = Customer Average Interruption Duration Index; ASAI = Average Service Availability Index; SARI = System Average Restoration Index; MAIFI = Momentary Average Interruption Frequency Index.

seriousness of age-related equipment failures is unclear, particularly given the lack of detailed information in BCTC's Application. **The Commission therefore directs BCTC to provide, in future Capital Plans, a classification of transmission failures by equipment type and age, as well as an indication of the impact of transmission failures on reliability indices. Statistics should be included for as many years in the past as are reasonably available in order that trends may be observed. Should the requested statistics not exist, BCTC is to file a plan for collecting the necessary data in the future.**

Assuming that the outage statistics provided by BCTC point to the failure of certain pieces of equipment or types of equipment as contributing to substandard reliability, the decision as to whether to repair or replace it must be made. In some cases the replacement may involve reinforcements to other lines or equipment (Exhibit B-1, p. 22). The Commission Panel accepts the criteria provided by BCTC in this regard.

Finally, BCTC must be able to demonstrate that its maintenance and capital programs are addressing the equipment that is in the worst condition and is most critical for system reliability. As stated in the BC Hydro Revenue Requirements Decision (p. 91), **the Commission Panel expects that reliability-driven expenditures will be tracked so that the effectiveness of such expenditures at reducing outages or otherwise increasing reliability can be assessed.**

The Commission Panel notes BCTC's efforts to establish a measure of transmission asset condition, and expects that the Baseline Study will be helpful in assessing future investment requirements. The Commission Panel also expects that the Baseline Study will address some of the directions provided to BCTC in this section of the Decision. **The Commission Panel therefore finds that the Baseline Study and subsequent follow-up audits should be incorporated into the "state of the transmission system" report that the Commission Panel has directed be included with future Capital Plans. The Commission Panel expects that any recommendations in the Baseline Study will be considered by BCTC in formulating its future Capital Plans. The Commission Panel notes that this direction may delay the filing of the next Capital Plan beyond February 2005, and therefore directs that BCTC propose a revised filing date at the time the Baseline Study is released.**

Monetary benchmarks may be provided by the PA Consulting Group report referred to at page 91 in the Revenue Requirements Decision.

2.3.4 System Utilization and Congestion

BCTC stated that, since the implementation of the first WTS tariff in 1996, system utilization has increased dramatically (Exhibit B-1, p. 24). It later clarified that "increased utilization" was meant to indicate the change in usage patterns from that of a vertically integrated utility (New Westminster IR6.1). BCTC identified the major

areas of congestion on the system as the interties to Vancouver Island and the Interior to Lower Mainland grid (BC Hydro IR2). In support of its statements about system utilization and congestion, BCTC provided the system summer and winter peak loads from 1996 through 2004 and information on the fraction of time during which BC, Alberta, and US transmission systems were responsible for limiting imports and exports (New Westminster IR6.1 and BC Hydro IR3, respectively). BCTC added that it was still developing metrics that would capture information relating to congestion on commercial and physical paths.

New Westminster commented indirectly on system utilization and congestion. It suggests that BCTC is focussed, for the most part, on connecting new generation to the grid, which may indicate the existence of surplus capacity on the grid that BCTC is anxious to fill. New Westminster stated that this cannot be discerned from the Application (Exhibit C11-3, p. 1).

The Commission Panel noted in Section 2.3.3 that certain performance indices can be helpful in giving all parties a clear understanding of the requirements for Sustaining Capital expenditures. Performance indices would also be helpful in establishing the requirements for Growth Capital spending. However, since events that may indicate that the transmission system is nearing local, regional, or bulk capacity limits do not always result in customer outages, the reliability indices described above may be of limited value. **The Commission Panel therefore directs BCTC to submit, with its next Capital Plan, performance indices that are capable of providing an indication of when and where Growth Capital spending may be necessary.** One example of such an index is the fraction of time an intertie is congested (BC Hydro IR3). The following is a non-exhaustive list of other indices that may be useful:

- measures (frequency and duration) of events requiring emergency operating actions including shedding interruptible load, system voltage reductions, or appeals for public load reduction;
- measures of events of bulk system alert or emergency states such as exceeding security limits on transmission interfaces or losing significant transmission lines or substations;
- measures of the costs of remedial actions, including off-economic operation of generation (because of transmission constraints), suspension or curtailment of economic interchanges, or emergency assistance from adjacent control areas; and
- system utilization measures such as load factors on significant transmission paths, regional and system-wide load duration curves, and peak line flows and/or flow duration curves in comparison with path capacities.

2.3.5 BC Hydro's IEP and REAP

The Capital Plan's assumptions regarding future generation and imports are based on BC Hydro's IEP and its Resource Expenditure and Action Plan ("REAP"). The bulk transmission system requirements are dictated in part

by the size, location, and timing of proposed generation additions and changes. The key assumptions for bulk transmission expenditures are: (1) the 500 MW Revelstoke 5 unit has an earliest in-service date of fall 2008; (2) the 500 MW Mica 5 unit has an earliest in-service date of fall 2011; (3) Burrard or a replacement facility is operational; and (4) no allowance was necessary in the Growth Portfolio for transmission requirements for possible Site C generation other than preserving the earliest in-service date of F2014 for an Interior to Lower Mainland transmission reinforcement (Exhibit B-1, pp. 97-98).

BCTC participates in the development of the IEP, and it expects that the IEP and the REAP should lead to an updated NITS agreement between BC Hydro and BCTC. BCTC states that it would like to coordinate the future Growth Capital Plan through that NITS agreement (BCUC IR3.5).

New Westminster expressed concern that the IEP is not submitted to the Commission for public review, and that the REAP has a short-term outlook compared to the lead-time needed for transmission asset development (Exhibit C11-3, p. 2). In its view, there is no regulated process by which long-term utility plans for resource additions and asset expenditures can be reviewed.

Commission Findings

The Commission Panel supports BCTC's efforts to link its Capital Plan to BC Hydro's IEP and REAP; no further direction is required in this regard. With respect to the comments of New Westminster, the Commission Panel notes that Chapter 5 of the Revenue Requirements Decision addressed Section 45 filing requirements.

2.4 Outputs

Several intervenors expressed concerns with the form and content of the Capital Plan. Given that this is the first time BCTC has filed a capital plan under the new sections of the UCA, such commentary is not surprising. BCTC itself acknowledges that the Capital Plan is a work in progress, and it commits to ensuring that the Capital Plan meets the requirements of the UCA and the *British Columbia Utilities Commission Resource Planning Guidelines*, and that it is as understandable and helpful as possible to the Commission, BCTC customers, and other stakeholders (Exhibit B-6, p. 2).

2.4.1 Project Priority Rankings

IPPBC submits that BCTC's responses to several information requests provide evidence that no common framework was used to justify projects in the Capital Plan or to evaluate and rank projects against each other. Consequently, there is no way to determine whether capital and other resources are being properly allocated.

IPPBC submits that the Commission should require BCTC to prepare a comprehensive framework for analyzing capital projects and file it for review and approval (Exhibit C15-2, p. 6).

Several other Intervenor expressed concern over the lack of project priority rankings in the Capital Plan. GSXCCC suggests that the Commission direct BCTC to aggregate projects as much as possible into meaningful groups corresponding to operational plans and strategies, and to provide an analysis and justification for the priority that GSXCCC believes should be associated with each Capital Plan item or group (Exhibit C9-3, p. 1). It is also concerned that the Capital Plan contains no indication of how possible grid extensions would be prioritized in relation to other objectives, such as enhancing the reliability of the existing grid. GSXCCC submits that, in the absence of such information, it would be difficult to determine which projects should or should not be funded if the Commission were to take a restrictive approach to approving rate increases. The JIESC echoes others' concerns over the lack of project rankings, and suggests that a basic categorization of projects (e.g., legally required, required to serve load growth, required to address safety concerns, etc.) would lead to a better understanding of the reason for any particular expenditure (Exhibit C19-5, p. 3).

In response to Intervenor's concerns, BCTC states that its capital planning process does include a prioritization of expenditures (Exhibit B-6, p. 3). Nevertheless, BCTC appreciates that Intervenor do not yet have a deep understanding of its capital planning process, and it is committed to expanding on earlier stages of the capital planning process in its next Capital Plan (Exhibit B-6, p. 4).

Commission Findings

The Commission accepts the view of those Intervenor that believe mechanisms to prioritize capital expenditures are necessary. In Section 2.2 of the Reasons for Decision, the Commission Panel directed BCTC to develop, and to file with its next Capital Plan, a capital project evaluation framework. The Commission Panel expects that the framework will clearly set out, among other things, the criteria by which project priorities are established. In addition, the Commission Panel expects that each project included in the next Capital Plan will have an associated priority ranking.

2.4.2 Cost Recovery and Rate Impacts

GSXCCC submits that BCTC should provide an analysis of the rate impacts associated with the various items in the Capital Plan, with the items aggregated as much as possible into meaningful groups. It is also concerned that the Capital Plan contains no indication of the long-term cost implications of maintaining the grid at the proposed level of performance. Consequently, it wonders how Intervenor or the Commission could make a meaningful assessment of the justification of the capital items (Exhibit C9-3, p. 3). IPPBC states that, in most instances, it is

unclear who is going to pay for a particular capital project. It believes that the description of each project should contain information about the party requesting the project and the amount it is paying (Exhibit C15-2, p. 6). New Westminster submits that the Capital Plan does not provide enough information to determine whether and how all expenditures can be recovered in rates (Exhibit C11-3, Cover Page).

BCTC provided three responses to stakeholder submissions on rates (Exhibit B-6, p. 5). The first involves an interpretation of section 45(6.2)(c) of the UCA and is dealt with in Section 7 of the Reasons for Decision. BCTC's second comment is that it is very conscious of expanding the discussion of individual projects because of both the time and effort required to prepare the Capital Plan and the possibility that the Capital Plan will become unwieldy for the Commission and stakeholders. BCTC believes that sufficient information exists in the current format of the Capital Plan to identify individual projects, the nature of and rationale for these projects, and the associated expenditures. It also notes that larger or more controversial projects will be examined through the CPCN application process. Consequently, BCTC does not believe that a direction for providing more detail on individual projects for rate impact purposes is justified. BCTC's third response is an acknowledgement that the potential rate impacts of future capital expenditures are an important component of the capital planning process. It states that the issue was already addressed as part of the Revenue Requirements proceeding, and was therefore not addressed in as much detail as BCTC would normally provide. BCTC states that it will provide more detail on rate impacts in future proceedings.

Commission Findings

The Commission determines that rate impact information is an important component of the capital planning process, and it notes BCTC's commitment to provide more rate impact information in future applications. The Commission Panel also accepts that, except as set out elsewhere in the Reasons for Decision, greater detail on individual projects is not required. (Greater detail will be made available in due course for those projects that are the subject of CPCN applications.) **However, the Commission Panel notes that rate impact information by project priority and capital portfolio would be useful, and directs BCTC to provide such information in future applications.**

The Commission Panel suggests that a table in the following form, with "High, Medium, Low" replaced by whatever prioritization scheme BCTC proposes, may be helpful. The table entry shown as x represents the rate impact of high priority Sustaining Capital projects in Year 1.

Year	Sustaining Capital Portfolio			Growth Capital Portfolio			BCTC Capital Portfolio		
	High	Med	Low	High	Med	Low	High	Med	Low
Year 1	x								
...									
Year N									

The Commission Panel accepts IPPBC’s suggestion that the party funding a capital project and the amount it is paying should be identified, and it directs BCTC to provide such information in future Capital Plans, subject to confidentiality requirements. New Westminster’s comment that the Capital Plan does not provide enough information to determine whether and how all expenditures can be recovered in rates is dealt with in Section 7 of the Reasons for Decision.

2.4.3 Separation of Recurring and Non-Recurring Expenditures

The JIESC submits that BCTC has a certain level of Sustaining Capital that must be invested each year on a fairly stable and ongoing basis. It feels that, if this recurring capital could be identified once and reviewed carefully, stakeholders could turn their attention to items that are out of the ordinary or that are part of programs that may go on for a few years but not indefinitely. The JIESC also submits that BCTC has a number of programs or projects that will go on for a period of time that serve similar purposes. It believes that, if these projects were examined as programs rather than individually each year, all stakeholders would better understand the projects’ role, cost, timing requirements, and position in the Capital Plan.

The Commission Panel notes BCTC’s support for the JIESC suggestion to categorize projects as recurring or non-recurring, and directs that such categorization be reported in future Capital Plans.

2.4.4 Grid Access

GSXCCC submits that the Capital Plan should contain a statement concerning grid access priority for the various users and potential users of the network, including (but not limited to) PTP users, NITS users, ancillary service providers, potential users, and exporters. It is concerned that there is no information on the extent to which some capital items will tend to benefit different users of the grid (Exhibit C9-3, p. 1).

Commission Findings

The Commission Panel notes that the directions given to BCTC elsewhere in this Decision (e.g., Sections 2.2.3 and 2.4.2) should mitigate GSXCCC's concerns to some extent, since they will result in more information from BCTC on the drivers, proponents, and funding for Capital Plan projects. The appropriate forum for discussions on the specific grid access rights that transmission users receive is BCTC's OATT application.

2.5 Increases in Sustaining and Growth Capital Expenditures

BCTC provided the following table showing transmission system capital expenditures for the past seven years (JIESC IR1).

Annual Capital Expenditures (\$ Millions)	Fiscal Year						
	1998	1999	2000	2001	2002	2003	2004
Growth	15	15	21	23	43	66	47
Sustaining	27	36	69	68	50	90	130
Sub-Total	42	51	90	91	93	156	177
IT, Land, Bldg, Equipment		5	4	6	6	12	
BCTC							9
Total Capital Expenditures	42	56	94	97	99	168	186

The JIESC expresses concern at the "very rapid rate of increase" in transmission-related capital expenditures, and states that it neither understands nor accepts the need for the increases (Exhibit C19-5, p. 2). In response, BCTC reiterates that the increases in Growth Capital expenditures are directly related to customer requests for NITS service, WTS service, or IPP interconnections, and to system operability concerns. BCTC also reiterates that the increases in the Sustaining Capital expenditures arose from a few large projects, the general increase in Sustaining expenditures necessitated by the ageing of the transmission system, equipment maintainability concerns, and asset security and exposure to hazards. BCTC further states that its Capital Plan identifies and discusses the various Sustaining Capital projects that, in its experience and relying on its expertise, it believes are necessary to sustain the current performance of the transmission system (Exhibit B-6, pp. 5-6).

The Commission Panel notes the JIESC's concern about the expenditure increases and about the lack of data supporting these increases, but also notes that no party has provided evidence that any of the Capital Plan projects are not in the public interest. Elsewhere in the Reasons for Decision (including Section 2.2) the Commission Panel has provided direction to BCTC concerning information, such as reliability and utilization indices, that it

expects to be filed with future Capital Plans. Such information should go some way toward addressing the JIESC's desire for better justification of the increase in Sustaining and Growth Capital expenditures.

3.0 CPCN CRITERIA

Section 45(1) of the UCA states that a person must not begin the construction or operation of a public utility plant or system, or an extension of either, without first obtaining from the Commission a certificate that public convenience and necessity requires or will require the construction or operation. In March 2004, the Commission issued its *CPCN Application Guidelines* to assist public utilities and other parties in their preparation of CPCN applications so that the review of the applications can proceed as efficiently as possible. Following a review of the Guidelines, BCTC developed criteria to reflect "significant" projects in the context of BCTC's operations, the projects' costs and rate impacts, and the burdens placed on all parties of preparing for and participating in the regulatory process usually associated with CPCN applications (Exhibit B-1, p. 11).

BCTC proposed that it would make CPCN applications when one or more of five criteria were met.

1. *Total project cost is expected to exceed \$50 million.*

The proposed \$50 million threshold equates to an increase in transmission revenue requirement of approximately 1 percent (BCUC IR4.4).

2. *The impact on a particular community or constituency likely cannot be mitigated to its satisfaction.*

Public interest in proposed projects could be gauged through the stakeholder consultation process (BCUC IR4.5). Projects requiring a new or expanded right-of-way would not necessarily trigger a CPCN application (BCUC IR4.11).

3. *The risk associated with a project, as established through BCTC's corporate risk management framework, is identified as High or Extreme.*

BCTC projects are subjected to seven main categories of risk: cost, schedule, scope, performance, safety, environment, and regulatory. The risks will be assessed through a subset of BCTC's *Enterprise Risk Management Framework*, a copy of which was provided in the response to BCUC IR4.6. High-risk projects may be undertaken when there are significant potential benefits for ratepayers, though BCTC believes an *ex ante* public review should form part of the decision-making process (BC Hydro IR13.1).

4. *The project establishes a precedent for significant future investment, where "significant" is proposed to mean \$50 million or more over either a ten-year period or the life of an asset.*

Projects in this category might include implementing a new technology, implementing a fundamentally new policy or standard that has a material effect on stakeholders, or selecting a project from among alternatives that

have significantly different public interest impacts. Projects that determine other projects would be considered together for the purposes of applying the size criterion (BCUC IR4.7).

5. *The Commission exercises its discretion to require a CPCN application.*

BCTC recognizes the Commission's discretion to require a CPCN for projects that do not meet the financial threshold or any of the other CPCN criteria (Exhibit B-6, p. 11).

BCTC stated that its CPCN criteria would apply to:

- network upgrades, including requests from third parties for interconnection or transmission services, regardless of who funds the project (BCUC IR4.8);
- both transmission and BCTC capital expenditures (BCUC IR4.10); and
- emergency capital expenditures, though applications would necessarily be made after the fact (BCUC IR5.2).

BCTC seeks approval of the criteria as more than just "guidelines" because an extra level of planning and other activities must take place in relation to CPCN projects, and therefore designation of a CPCN project should take place as early as possible in the planning process (BCUC IRs 4.1 and 4.2).

The JIESC submits that the criteria listed under public interest, risk, and precedent are too ambiguous to be helpful and must be clarified. It also suggests that the \$50 million threshold is too high. Instead of basing the threshold on a 1 percent increase in transmission revenue requirement, the JIESC suggests that it be based on BCTC's willingness and capability to accept the risk of a later disallowance of expenditures, and that \$20 million is a more reasonable threshold (Exhibit C19-5, p. 8). The JIESC also believes that related projects should be grouped into programs, and that if program costs exceed the financial threshold they should be subject to CPCN applications. It suggests that several programs would have benefited from this approach, including the Managed Risk programs, the Transmission Line Protection program, and the Microwave System Replacement Program (Exhibit C19-5, p. 4).

In response to the JIESC's comments, BCTC notes that it intends to apply for a CPCN for any project beyond the definition phase that initiates a precedent for significant future investment, but that a single multi-year program should not be subject to a CPCN application if the project is divisible and can be terminated at any time (Exhibit B-6, p. 4).

Commission Findings

Based on the information before it in this proceeding, the Commission Panel finds that the criteria proposed by BCTC are reasonable. The Commission Panel notes, in particular, that it retains the discretion to require a CPCN application for any project. Therefore, parties who believe a project should be subject to a CPCN application can ask the Commission to require one. In accepting the proposed criteria, the Commission Panel notes that Order No. G-44-89 will no longer apply to BCTC.

The Commission Panel has ruled in Section 4 of the Reasons for Decision that certain projects will require CPCN applications. The Commission Panel believes that changes to the CPCN criteria may arise naturally as these “real world” projects are considered. In that context, the Commission is prepared to consider changes or additions to the criteria set out above. Also, the Commission Panel expects that, as a rule of thumb, approximately 15 percent of transmission projects should be subject to CPCN review, and notes that the CPCN criteria may be adjusted over time to achieve this.

For major projects, BCTC is encouraged (in accordance with the *Resource Planning Guidelines*) to discuss the steps leading up to the final approval process with Commission staff as the project progresses.

4.0 CAPITAL PLAN PROJECTS

4.1 Vancouver Island Supply

Vancouver Island’s capacity and energy requirements are currently met by a number of on-island generation resources and three transmission links that connect the island to the mainland. The transmission facilities are comprised of two 500 kV circuits with a dependable capacity rating of 1300 MW each, two 138 kV circuits rated at zero dependable capacity, and a direct current (“DC”) system consisting of two poles that together were rated at 800 MW of dependable capacity but are now rated at only 168 MW. BC Hydro expects that the replacement of several sections of cable will restore the dependable capacity of the DC system to 240 MW until 2007, at which time the DC lines are expected to be zero rated for dependable capacity. Because of the zero rating, a power deficit has been forecast for 2007 on Vancouver Island. In order to meet that deficit, BC Hydro sought generation options through a call-for-tender (“CFT”) process. BC Hydro also asked that BCTC maintain a F2009 in-service date for replacing the existing 138 kV cables to the island with new 230 kV cables. BCTC included, in its Capital Plan, an amount of \$4.8 million for F2005 to cover preparatory work necessary for the 230 kV project (Exhibit B-1, p. 105).

Several Intervenor demonstrated a significant interest in Vancouver Island supply requirements. NorskeCanada submitted a proposal for demand-side management (“DSM”) that it believes would be of significant benefit in meeting the island’s supply requirements, at least until such time as the 230 kV line (which it supports—see Exhibit C1-4, p. 2) can be placed into service. NorskeCanada’s proposal is discussed in detail in Section 5 of the Reasons for Decision. GSXCCC submitted that BCTC should apply as soon as possible for a CPCN for either the 230 kV line or an equivalent facility (Exhibit C9-3, p. 1).

Sea Breeze has proposed the replacement of the existing Georgia Strait HVDC system with a new 1200 to 1500 MW “HVDC Light” system. Sea Breeze’s original concept involved rebuilding the existing HVDC valve halls. However, because of BCTC’s concerns for safety and reliability in a liquefaction zone, Sea Breeze is now proposing to build four entirely new 350 MW HVDC circuits out of the liquefaction zone (Exhibit C18-4, pp. 11-14). It is also proposing to connect Vancouver Island to the Olympic Peninsula using an HVDC Light system with a capacity of up to 1100 MW (Exhibit C18-4, p. 14).

Sea Breeze believes that, in comparison with BCTC’s 230 kV AC proposal, its HVDC proposal would provide better reliability of supply to the island, have lower environmental and electromagnetic field impacts, improve import/export capacity between British Columbia and the US, and provide better economic value to consumers (Exhibit C18-1, p. 1, and Exhibit C18-4, pp. 6-14). Sea Breeze submits that alternatives to the 230 kV option have not been examined, that system studies to fully identify the risks and benefits of BCTC’s proposals have not been undertaken, and that the 230 kV option has simply been inherited from BC Hydro (Exhibit C18-4, p. 5). In Sea Breeze’s view, BCTC has failed to: consider the economic and reliability benefits available from replacing the existing HVDC line with newer HVDC Light technology; adequately evaluate transmission solutions other than the 230 kV option; consider any parameters other than the initial installed cost and maximum thermal capacity; perform interconnection studies to support its claims of the line’s transfer capacity; propose a submarine cable design that represents the best environmental technology; or comply with Policy Action #15 of the Energy Plan (Exhibit C18-4, p. 9).

In its final comments, IPPBC submits that there is a fundamental disagreement over technology that must be resolved at the earliest possible date to avoid the scenario in which everyone in favour of the 230 kV option will argue that it is too late to order equipment for the DC option (Exhibit C15-2, pp. 7-8). Sea Breeze echoes IPPBC’s concerns about the lead times involved in ordering equipment (Exhibit C18-4, pp. 6 and 14). It argues that the Commission should require an expeditious resolution through a detailed study and that it should consider the merits of private participation in the Vancouver Island supply project. As an alternative, it suggests that the Commission order an expedited tendering process, similar to the Vancouver Island CFT, for alternatives to the 230 kV AC proposal (Exhibit C18-4, p. 15).

BCTC objects to the Sea Breeze proposal on procedural grounds. It also states that it held meetings with Sea Breeze's HVDC consultants, at which time it identified certain issues that did not appear to have been considered by Sea Breeze. The identified issues are beyond traditional economic comparisons and include the flexibility to respond to catastrophic events. Studies over the next several months aim to address those questions in detail. BCTC states that it will provide a full analysis in support of whichever option is put forth when it applies for a CPCN for the 230 kV project, and that Sea Breeze can intervene at that time if they wish (Exhibit B-6, pp. 8-9).

Commission Findings

In accordance with its *Resource Planning Guidelines*, the Commission requires consideration of all known resources for meeting the demand for a utility's product, including those that focus on traditional and alternative supply sources. Resource planning is intended to facilitate the selection of cost-effective resources that yield the best overall outcome of expected impacts and risks for ratepayers over the long run. The Commission Panel is supportive of the efforts of NorskeCanada, Sea Breeze, and other parties to bring potential supply alternatives for Vancouver Island to its attention.

In Section 5 of the Reasons for Decision, the Commission Panel has provided direction to BCTC with respect to an evaluation of NorskeCanada's DSM proposal. **In the interest of further exploring the DC and 230 kV AC supply options for Vancouver Island, the Commission Panel also directs BCTC to answer the following questions.**

1. **What alternatives for Vancouver Island supply were considered?**
2. **What is the basis for the conclusion that the 230 kV line is the best transmission reinforcement option? Please cite any reports that were prepared by either BCTC or BC Hydro.**
3. **What issues were raised with Sea Breeze's HVDC consultants (Exhibit B-6, p. 9), and what are the relative merits of the 230 kV and HVDC options in addressing them?**
4. **Were characteristics other than the alternatives' power transfer capabilities (e.g., voltage support, power flow control) considered in the evaluations? If so, what are the relative merits of the 230 kV and DC options in this regard?**
5. **What would be the impact on the transmission system of: (i) a permanent, 7×24 demand reduction of 140 MW on Vancouver Island, and (ii) the construction of an 1100 MW HVDC facility between the island and the Olympic Peninsula? Would the requirement for the 230 kV line, or for any other major capital project proposed by BCTC, be deferred or eliminated?**
6. **What are the expected peak and average loads on the proposed 230 kV line, and what are the assumptions upon which these values are based?**

7. **What are the expected 230 kV losses under peak and average loading conditions? If study-based values are not available, the Commission Panel will accept reasonable estimates based on BCTC's expectation that the submarine cable will be of the self-contained fluid-filled type with a copper cross section of 1400 mm².**
8. **Have the geotechnical studies that were underway at the time of the Capital Plan Application been completed? If so, what were the main findings and recommendations of the study?**

The Commission Panel understands that BCTC is not yet at the point of filing a CPCN application for the 230 kV project. Consequently, the answers to the above questions are to be based on BCTC's current state of knowledge; specifically, BCTC is not being directed to conduct any new studies. However, the Commission Panel expects that the answers will be sufficiently detailed to support BCTC's conclusion that "The best transmission option to reinforce Vancouver Island is the 230 kV Project" (Sea Breeze IR12), particularly given that "The Vancouver Island supply alternatives including the 230 kV AC option, HVDC Replacement, and others, have been considered and studied for decades" (Sea Breeze IR5a).

BCTC is to provide its response to these questions within 30 days of the release of the Reasons for Decision. Should this period be considered too short by BCTC, it must notify the Commission within 7 days and propose an alternative date for its response. BCTC's responses are not to be considered part of this proceeding, and a regulatory review of BCTC's response is not contemplated at this time. The purpose of this direction to BCTC is to ensure that the information is made available to Sea Breeze for its review and consideration.

While the Commission Panel has directed BCTC to provide additional information on Vancouver Island supply alternatives, it does not find sufficient evidence to reject BCTC's request for project funding for F2005. As BCTC stated in its August 25, 2004 letter to the Commission (Exhibit B-5), it is only seeking approval for F2005 expenditures to maintain the earliest in-service date for the 230 kV project. The Commission Panel accepts the rationale that, while the expenditures are not inconsequential, BCTC has made neither a CPCN application nor an application to approve expenditures associated with the full definition phase of the work. The Commission Panel views the continuation of preparatory work on the Vancouver Island 230 kV project as prudent, and therefore approves the associated F2005 costs.

BC Hydro recently announced that Duke Point Power Limited Partnership has been offered an electricity purchase agreement as the successful proponent under the terms of the [Vancouver Island CFT](#). BC Hydro intends to execute a contract for 252 MW from a gas-fired combined cycle power plant to be located near Nanaimo. The Commission Panel notes that there will be a Section 71 filing for this project and that stakeholder views on Vancouver Island supply may arise in the context of that proceeding.

4.2 5L83—Nicola to Meridian Transmission Line

The main generation sites on British Columbia's transmission system are located in the Peace and Columbia River regions, located in the northern and eastern parts of the province. Approximately 80 percent of the load is located in the Lower Mainland and Vancouver Island areas. The capacity of the Interior to Lower Mainland transmission grid for serving network load growth and future firm exports to the US is constrained (Exhibit B-1, p. 102). Several options have been considered to relieve the constraint, the most significant of which is the proposed second 500 kV Nicola-Meridian transmission line (5L83).

BC Hydro is concerned that BCTC may not be directing sufficient resources toward BC Hydro's request to maintain the earliest in-service date for this project. It submits that there were no expenditures on 5L83 up to March 31, 2004, and that the planned expenditures over the next few years are well below those proposed in the August 31, 2003 facilities study. BC Hydro is concerned that more could be done to bring this circuit into service at the "earliest possible ... in-service date" (emphasis in original) and that BCTC appears to be accepting a F2014 in-service date without pursuing all possible means to shorten the project's lead-time (Exhibit C4-3, pp. 1-2).

IPPBC also commented on the 5L83 project. It does not understand how an indication in BC Hydro's REAP, whether approved by the Commission or not, constitutes a request that triggers expenditures by BCTC. In IPPBC's view, BC Hydro should be treated like IPPs, with formal requests being made and money being paid before BCTC does anything (Exhibit C15-2, p. 7).

In response to BC Hydro, BCTC submits that the October 2013 in-service date is aligned with the request that BCTC preserve the earliest in-service date of F2014 for 5L83 as indicated on page 6 of BC Hydro's March 2004 REAP. BCTC states that the date could be advanced if the design and implementation phases were run in parallel with the regulatory approvals phase, but that since this option has increased risks, it is not being pursued (BC Hydro IR11.1). BCTC also states that it will reconsider whether to accelerate spending on the project in light of any new information, and will reflect its decision in the 2005 Capital Plan (Exhibit B-6, p. 8).

In response to IPPBC, BCTC states that it does not believe a request (and associated funding) for service from an IPP is analogous to preserving the in-service date of long lead-time transmission projects that BCTC forecasts will be necessary in the future. BCTC believes that preserving the F2014 in-service date for 5L83 is in the public interest. It also notes that funding requirements for interconnections under the OATT will be dealt with in the upcoming OATT proceeding.

Commission Findings

The Commission Panel notes that BC Hydro's REAP of March 31, 2004 (page 6) contemplates a F2014 in-service date for 5L83. Since no evidence has been presented that an earlier in-service date is required, **the Commission Panel approves the definition phase expenditures for 5L83 as set out in BCTC's Capital Plan.** Because its estimated cost exceeds the \$50 million CPCN threshold approved in Section 3 of the Reasons for Decision, 5L83 will be the subject of a future CPCN application. Consequently, the Commission Panel expresses no opinion at this time on whether 5L83 is in the public interest.

The Commission Panel accepts BCTC's submission that funding requirements for interconnection under the proposed OATT will be dealt with in its upcoming OATT proceeding. The Commission Panel notes that, because the use of 5L83 will be in accordance with the NITS and/or PTP tariffs under the OATT, request and funding issues for both BC Hydro and IPPs should be dealt with during that proceeding.

4.3 Metro Vancouver 230 kV Supply

There are 140 circuit-km of underground cable circuits in BC Hydro's transmission system, concentrated mostly in the metropolitan Vancouver area. Several of the 230 kV cables have been in service for more than their 35-year design lives, and sheath corrosion and oil leaks are evident. Load in the area is very dense, is growing, and has a significant outage cost. The Sustaining and Growth Capital Portfolios contain a number of projects to address these issues. The projects include the construction of new circuits, cable section replacements, circuit looping, and other remedial measures (Exhibit B-1, p. 37).

Among the projects in BCTC's Sustaining Capital Portfolio is the Metro Vancouver 230 kV Reinforcement Development project (Exhibit B-1, p. 39). The objective of the project is to investigate and develop alternative solutions to improve the metro Vancouver 230 kV supply within the next 10 years and to acquire the necessary regulatory approvals. The investigation includes geotechnical studies of potential line routes, an external planning review, and preliminary engineering work. The study is in progress and is scheduled for completion in F2006. Metro Vancouver Sustaining Capital projects to start in F2005 include cable upgrading on 2L55/2L56 from Ingledow to Camosun (Exhibit B-1, p. 40) and the relocation of 2L31/2L32 line terminations at Cathedral Square (Exhibit B-1, p. 41). Possible future Sustaining Capital projects include cable upgrading on 2L45 from Camosun to Sperling (Exhibit B-1, p. 41).

The Growth Capital Portfolio also contains several projects related to the metro Vancouver 230 kV supply. The area south of False Creek (Mount Pleasant) is the site of the proposed Olympic Village for the 2010 Olympic Winter Games, and area demand is increasing. The area is currently being served via long distribution feeder

circuits from Murrin substation, which is loaded close to its capacity and requires load transfer to nearby Cathedral Square substation. BCTC has proposed a new 230/12 kV substation in the Mount Pleasant area to serve the load directly (Exhibit B-1, p. 116), and is seeking approval for the F2005 expenditures associated with the definition phase of this project.

To address the issue of the ageing 230 kV cable circuits that supply the Burnaby and Vancouver areas, BC Hydro embarked on a series of cable installation projects. As a follow-up to the completion of a new 230 kV cable circuit (2L33) connecting Horne Payne and Cathedral Square substations in April 2004, BCTC is proposing a new 230 kV circuit between the Cathedral Square and Sperling substations, with cable cuts and ties at Murrin substation (Exhibit B-1, p. 118). BCTC is seeking approval of the F2005 expenditures associated with the definition phase of this project. This project is closely linked to the Mount Pleasant project because the latter will be affected by the routing and timing of the 230 kV cable circuit.

Commission Findings

The Commission Panel accepts BCTC's view that the in-progress and F2005 Sustaining and Growth Capital projects related to the metro Vancouver 230 kV supply are necessary to ensure the area's present and future reliability. The Commission Panel also accepts that the definition-phase work on future metro 230 kV supply projects should continue. Given that the Commission Panel has approved the Capital Plan as submitted (see Section 7 of this Decision), no separate approval of these projects is necessary. However, the metro Vancouver 230 kV supply involves a significant number of related projects, a large capital expenditure in aggregate, a substantial number of consumers, and several significant issues (such as routing and asset replacement versus life extension). **The Commission Panel therefore directs BCTC to file CPCN applications for the following projects:**

- **Mount Pleasant 230/12 kV Substation;**
- **Cathedral Square to Sperling 230 kV cable;**
- **230 kV and related projects that may arise from the Metro Vancouver 230 kV Reinforcement Development Project; and**
- **2L45, Camosun to Sperling (if BCTC ultimately proposes this project).**

The Commission Panel expects that it may be efficient to file a single CPCN application for these projects as a group, but acknowledges that the projects' timing requirements may dictate otherwise.

5.0 DEMAND SIDE MANAGEMENT (“DSM”)

In a letter to the Commission dated July 19, 2004 (Exhibit C1-2), NorskeCanada outlined a Demand Management Concept. The company provided additional information on its proposal in a letter to the Commission dated September 2, 2004 (Exhibit C1-4). Under the concept, following the de-rating of the HVDC facilities, NorskeCanada would make 140 MW of capacity available for interruption when there is an expected capacity shortfall on the island arising from a single contingency (such as the loss of one of the 500 kV mainland-to-island circuits) on a cold winter day. NorskeCanada submitted that its proposal—which takes the form of load shifting with the possibility of a very modest curtailment in energy usage—is a highly cost-efficient, 100 percent reliable, and conservation-driven solution to potential capacity shortfalls that is more flexible than generation options. NorskeCanada also stated that its DSM proposal could be used alone or coupled with new transmission lines and/or on-island generation. Under the proposal, the company would receive a fixed payment (\$/MW/year) based on the contracted capacity, plus a usage payment (\$/MWh) for actual load curtailment. NorskeCanada requested that the Commission direct BCTC and BC Hydro to engage in discussions to review the proposal and to report to the Commission with an endorsement or rejection thereof.

Intervenor and BCTC Comments

In addition to NorskeCanada, comments on demand side management were submitted by New Westminster and the JIESC. New Westminster states that the Capital Plan has summarily dismissed DSM and has not clearly shown why DSM options should not be considered for managing growing system peak demand. New Westminster also submits that DSM could help to avoid spending in advance of need, improve the life of existing assets, mitigate weather risk, and manage the risk and uncertainty associated with the load forecast (Exhibit C11-3, Cover Letter and p. 2).

The JIESC believes that the Capital Plan dismisses load curtailment out of hand despite the fact that it is a 100 percent reliable, low cost method for avoiding peak capacity problems. It also expresses concern that BC Hydro and BCTC have invested a great deal of capital to meet short-term capacity requirements, resulting in facilities that are under-utilized much of the time. The JIESC submits that, in many cases, solutions preferable to the construction of new generation or new transmission could be found if BC Hydro and BCTC worked with their customers to implement mutually beneficial capacity DSM solutions including load shifting and load curtailment (Exhibit C19-5, pp. 3 and 5). The JIESC also expresses concern that BCTC’s approach to generation credits (as proposed in its recent OATT filing), and presumably peak load reduction credits, focuses only on short-term benefits, whereas a longer-term view may be more appropriate. The JIESC urges the Commission to direct BCTC to give a high priority to exploring load management options, perhaps in cooperation with BC Hydro (Exhibit C19-5, p. 7).

BCTC stated that it evaluates generation options and demand growth in terms of their impact on transmission system expansion requirements, and that it does so in response to service requests from BC Hydro and other parties. BCTC also noted its involvement in BC Hydro's IEP studies, for which it provides estimates of the transmission facility costs and losses impacts of the generation and demand side resources needed to meet BC Hydro's load. BCTC stated that, in the end, BC Hydro must make the decisions about its resource requirements, though if cases arise in which BCTC and BC Hydro favour competing alternatives, the issues may have to be resolved through a regulatory process (BCUC IR3.1).

In response to a Commission question about the NorskeCanada DSM proposal, BCTC replied that BC Hydro judges the reliability and evaluates the requirements and cost effectiveness of the DSM proposal against other available options. BCTC further noted that, during the VIGP hearing, a load shifting option was judged by it to be not reliable enough for consideration as a firm long term planning option, though it could be useful in extreme emergency conditions. It felt that load shifting is far less effective than a new transmission line as a dependable supply resource because the system must meet not only a one-hour peak load during a single-contingency outage, but may be called upon to meet single and multiple transmission contingencies and/or island generation capacity limitations throughout the year. Therefore, BCTC does not expect to acquire long-term peak shaving DSM resources to offset or delay firm transmission resources; the NorskeCanada proposal could be considered at best a "bridging" measure to cover the period until new resources, such as the Vancouver Island 230 kV project, can be constructed (BCUC IR3.2). In summary, BCTC believes that, as an independent transmission service provider, it does not consider that it should get into the business of evaluating and contracting for long-term DSM measures and it will not present non-transmission options to BC Hydro (Exhibit B-6, p. 7; BCUC IR3.4; New Westminster IRs 4.1 through 4.4).

Commission Findings

The Commission previously commented on a NorskeCanada demand management proposal in the VIGP Decision. At page 22 it states, "The Commission Panel agrees with the analysis of CBT, the JIESC and NorskeCanada that BC Hydro should explore load management with its customers to reduce the peaks or negate the need for new facilities." As noted in the *Resource Planning Guidelines*, the Commission requires consideration of all known resources for meeting the demand for a utility's product, including those that focus on conservation of energy and DSM (where the latter is defined as a deliberate effort to decrease, shift or increase energy demand). The Commission Panel notes that NorskeCanada anticipates only a very modest curtailment requirement over the course of a normal winter (Exhibit C1-4, p. 11).

As noted above, at the VIGP hearings BCTC stated that a load shifting DSM option was not reliable enough for consideration as a firm long term planning option. However, during the same proceeding, the Commission heard

that BC Hydro considers it possible to design a load curtailment contract that could be used to meet its planning and operating criteria. Such a contract would require the customer to reduce load during periods when the system is exposed to a violation of single-contingency criteria (VIGP Decision, p. 6).

The Commission Panel finds that it does not have sufficient information to make a determination with respect to the NorskeCanada Demand Management Proposal (Exhibit C1-4). **Therefore, the Commission Panel directs BCTC, in conjunction with BC Hydro if necessary, to fully evaluate the proposal and to submit a report to the Commission within 30 days of the release of the Reasons for Decision. If BCTC finds the NorskeCanada proposal unacceptable, the report must specify the rationale for its rejection and state which planning criteria would be violated by the proposal's implementation. If the 30-day response period is determined by BCTC to be inadequate, then it should notify the Commission and propose an alternative schedule within 7 days of the release of the Reasons for Decision. BCTC's responses are not to be considered part of this proceeding, and a regulatory review of BCTC's response is not contemplated at this time. The purpose of this direction to BCTC is to ensure that the information is made available to NorskeCanada for its review and consideration.**

If BCTC finds the NorskeCanada proposal unacceptable, then by the time of its next Capital Plan application, it must provide a statement of the minimum demand management proposal (minimum volume, minimum number of hours of availability, etc.) that it would find acceptable, along with a statement by NorskeCanada that it cannot or chooses not to meet the minimum requirements.

The Commission Panel views the above DSM directions as appropriate under the present circumstances. DSM solutions to transmission issues may be in the public interest and the role of BC Hydro and BCTC regarding the DSM solutions to transmission issues remains an outstanding issue.

6.0 OTHER ISSUES

6.1 Heritage Transmission Assets

New Westminster submits that BCTC's Capital Plan should address the rights associated with the Heritage transmission assets and what impact (if any) they may have on the operation and planning for the electric system (Exhibit C11-3, Cover Letter). In response, BCTC states that the Heritage resources are defined in the Terms of Reference on the Heritage Contract Inquiry to include primarily generation assets and some other non-transmission assets. It therefore does not understand there to be "Heritage transmission assets" and does not address them in the Capital Plan (Exhibit B-6, p. 4).

The Commission Panel accepts BCTC's submission on this issue, and therefore no direction to BCTC is necessary.

6.2 Substation Distribution Assets

In its Application, BCTC stated that it is responsible for capital planning related to SDAs pursuant to Article 12 of the Master Agreement. It indicated that SDA expenditures were included in the Capital Plan for completeness and for consistency with the capital expenditures outlined in the BC Hydro Revenue Requirements Application, but that it is not seeking approval for such expenditures (Exhibit B-1, p. 3). The projects are approved by BC Hydro, which would then include the SDA charges in its revenue requirement, though BCTC could not comment on the process by which that would take place (New Westminster IR1.1 and BCUC IR4.16). BCTC and BC Hydro are currently finalizing a Service Level Agreement that will, among other things, establish responsibility for gaining regulatory approvals, including CPCNs, for SDA projects (BCUC IR4.15).

GSXCCC was the only Intervenor to comment on SDA projects, submitting that they should not be excluded from consideration for approval by the Commission (Exhibit C9-3, p. 2).

Commission Findings

The Commission Panel accepts BCTC's explanation that the Service Level Agreement with BC Hydro will establish responsibility for obtaining regulatory approvals for SDA projects. The Commission Panel also notes that the proposed SDA projects were approved as part of BC Hydro's REAP. Therefore, no direction is required in this regard.

6.3 Interties

In its final comments, BC Hydro states that its ratepayers have historically enjoyed substantial benefits from its ability to import energy in (typically) low-priced light load hours and to export energy during (typically) high-priced heavy load hours. BC Hydro therefore looks for projects in BCTC's Capital Plan that will increase the maximum path ratings for energy exchange with Alberta and the US, and that sustain or increase the number of hours during which transmission interties are operated at or near their rated transfer capabilities. Based on its analysis of import/export data, which purportedly shows that average total transmission capacity ratings on the BC-to-US path are low, BC Hydro believes the BC-to-US path needs particular attention (Exhibit C4-3, p. 2).

BC Hydro believes that BCTC should develop a system to track congestion and to identify its causes on an hour-by-hour basis. BC Hydro also submits that BCTC should look for opportunities to work closely with neighbouring control areas to increase path ratings and make use of the availability of transmission capacity that results from the fact that British Columbia's summer load is only about 70 percent of peak winter load. BC Hydro suggests that policy issues arising from expansion of the interties should be part of BCTC's ongoing consultation with stakeholders (Exhibit C4-3, pp. 2-5).

IPPBC believes that nothing in the Capital Plan will improve access to the transmission system and enable IPP participation in the US wholesale markets. It submits that, if BCTC is not going to spend any money on capital improvements to meet the requirements of Policy Action #15, then it should explain how it is going to meet those requirements (Exhibit C15-2, p.7).

New Westminster states that there would be no long-term economic benefit if the people of British Columbia must pay to expand the electric system for export purposes and, as a result, miss out on more economic resource choices for domestic consumers. It believes that, if generators are running harder because of trade, then ratepayers need assurance that the cost of increasing the pace of sustainable capital spending is beneficial in the long run (Exhibit C11-3, pp. 1-2).

In response to BC Hydro, BCTC states that BC Hydro's analysis is not correct because it wrongly interprets periods when total transmission capacity is less than the path rating as being periods of congestion. In BCTC's view, even if BC Hydro's interpretation were correct, BC Hydro could cause the desired expansions by requesting service under the WTS/OATT tariff. While BCTC could propose capital expenditures on the interties if it felt such expenditures were in the public interest, it believes the lack of service requests and the lack of PTP customers willing to fund system enhancements indicates that economic expansion opportunities do not exist at this time (Exhibit B-6, p. 9).

With respect to IPPBC's comments about Policy Action #15, BCTC does not believe that it is compelled to seek approval for capital expenditures to increase export capacity in advance of need. BCTC cites a number of proposals in its OATT that, along with responding to requests for export service, constitute the appropriate response to Policy Action #15 (Exhibit B-6, p. 10).

In response to BC Hydro's suggestion that BCTC track congestion and identify its causes, BCTC stated that the suggestion is a useful one and that the data gathering procedures will be enhanced as opportunities are identified (Exhibit B-6, p. 9).

Commission Findings

The Commission Panel accepts that British Columbia has benefited from interties with neighbouring control areas. The Commission Panel also accepts BCTC's statement that the lack of parties willing to pay for an expansion of export capacity suggests that there are no viable new long-term firm export opportunities available at this time. **However, the Commission Panel does accept that the ability to track and identify the causes of congestion is important, and directs that the required data be provided as part of future Capital Plans. The Commission Panel provided related directions in Section 2.3.4 of the Reasons for Decision.**

With respect to New Westminster's comments about the potential for missing domestic opportunities, the Commission Panel notes that projects to significantly expand export opportunities will require CPCN applications, and that New Westminster is free to propose projects that it feels would be of greater value to British Columbia ratepayers in that context. The Commission Panel also notes that Special Direction #9 provides that, in the exercise of its jurisdiction over capital plans filed by BCTC, the Commission may consider benefits related to enhanced access to, and expansion of, electricity markets.

6.4 Thirty Percent Cap Guarantee

When generators fund a transmission interconnection, they are provided an estimate of their interconnection costs. While they are charged actual costs, the generators receive a "cap guarantee" that the actual charge will be no more than 130 percent of the estimate (BC Hydro IR16.2).

BC Hydro submits that it is imperative that BCTC establish mechanisms to ensure that interconnection project costs are within the 30 percent cap guarantee (Exhibit C4-3, p.5). The JIESC suggests that the Commission review all significant capital expenditures even if a third party is committed to paying these costs (Exhibit C19-5, p. 7).

In response, BCTC briefly describes the mechanisms that it has in place to manage project spending. It notes that significant portions of the expenditures on interconnection projects may be associated with BC Hydro Engineering, and that these cost management mechanisms will be included in a Service Level Agreement with BC Hydro. In BCTC's view, however, it neither can nor should guarantee that an interconnection project will not exceed the 30 percent cap. BCTC further states that, contrary to the JIESC's understanding, the fact that BCTC is seeking an Order under section 45(6.2)(b) of the UCA does not absolve it of the risk that the Commission may later find certain expenditures to be imprudent (Exhibit B-6, pp. 10-11). BCTC submits that there is no evidence that supports measures beyond those it has established.

Commission Findings

The Commission Panel accepts that BCTC's project management mechanisms are appropriate at this time. The Commission Panel notes that BCTC is seeking approval for a Standard Generator Interconnection Agreement ("SGIA") in the BCTC OATT proceeding. Pursuant to the SGIA, an Interconnection Customer can assume responsibility for the design, procurement and construction of Interconnection Facilities and Stand Alone Network Upgrades. Further review of terms and conditions of interconnection are more appropriately dealt with in the review of the OATT application.

6.5 Excluded Projects

GSXCCC expresses concern that BCTC has excluded certain projects from consideration by the Commission. In addition to the SDA projects, which are dealt with elsewhere in the Reasons for Decision, GSXCCC highlights the Vancouver Island 230 kV supply, the Nicola to Meridian transmission line (5L83), and the Nicola Station Reconfiguration (Exhibit C9-3, p. 3).

Commission Findings

The Commission Panel notes that, as discussed elsewhere in the Reasons for Decision, the Vancouver Island 230 kV project and the Nicola to Meridian transmission line project will be subject to review during CPCN applications. Indeed, GSXCCC itself supports BCTC making a definite, date-specific commitment to building the 230 kV project and submitting at the earliest possible time an application for the Commission to approve the project (Exhibit C9-3, p. 4). With respect to the Nicola Station Reconfiguration, the Commission Panel notes that BCTC is currently seeking approval for only the development work necessary to preserve the option to build the Revelstoke 5 or Mica 5 generating units for the earliest in-service date of fall 2008 (Exhibit B-1, p. 104). There is no evidence in this proceeding that the development work is not in the public interest.

6.6 Commission Oversight of Growth Capital Expenditures

The JIESC states that there are several reasons why parties requesting Growth Capital investments through the BCTC tariff would not necessarily be motivated to closely monitor project costs and ensure that the work is completed at the lowest possible cost. The JIESC submits that, coupled with BCTC's inability to bear the risk of capital expenditure disallowance, these reasons make it essential that the Commission carefully review all significant expenditures carefully to ensure they are in fact prudent prior to giving the advance approval sought (Exhibit C19-5, p. 7).

Commission Findings

As acknowledged by BCTC (Exhibit B-6, pp. 10-11), approval of a project included in the Capital Plan does not imply that the Commission has deemed project expenditures prudent. Parties who are concerned about the actual costs of a particular project will continue to have recourse to the Commission and the Commission normally tracks the actual expenditures on a CPCN project. Consequently, the Commission Panel concludes that no directions to BCTC are required in this regard.

6.7 Oversight of BCTC Information Technology Expenditures

The JIESC submits that, of all the expenditures by utilities, experience has shown that information technology expenditures run the greatest risk of heavy cost overruns and disappointing results. Accordingly, and given BCTC's stated inability to assume risk, the JIESC suggests that the Commission take an active role in controlling expenditures in this area. To that end, it suggests that the Commission hire consultants to monitor BCTC's information technology projects on an ongoing basis (Exhibit C19-5, p. 8).

In response, BCTC states that it has developed a number of related plans and procedures to guide the use of technology in support of its business. It adds that BCTC bears the risk of imprudent IT expenditures. Further, in BCTC's opinion, there is no need to add an additional layer of oversight and its attendant costs.

Commission Findings

The Commission Panel accepts the JIESC's comments that IT projects are often susceptible to cost overruns and disappointing results. To mitigate the JIESC's concerns about cost overruns and lengthy future debates as to prudence (Exhibit C19-5, p. 8), **the Commission Panel directs BCTC to provide a status report on each IT project for which the expected duration of the combined development and implementation phases (with any necessary schedule updates included) is greater than one year. These status reports, which shall include budgeted and actual expenditures to date, estimated cost to completion, and an analysis of any variance between budgeted and actual costs, are to be submitted with BCTC's annual Capital Plan.**

7.0 ORDERS

BCTC requests the following from the Commission:

1. an order that the Capital Plan meets the requirements of section 45(6) of the UCA;
2. an order approving the Capital Plan under subsection 45(6.2)(a) of the UCA; and

3. specific orders under subsection 45(6.2)(b) of the UCA that capital expenditures relating to the projects set out under Section 5.2 of the Application are in the public interest.

Several Intervenors, including GSXCCC, New Westminster, and the JIESC submit that the Application should be denied. GSXCCC states specifically that the Commission should find that the Capital Plan does not meet the requirements of section 45(6) of the UCA, that the Commission should not approve the Capital Plan under subsection 45(6.2)(a) of the UCA, and that the Commission should not find under subsection 45(6.2)(b) that the capital expenditures in Section 5.2 of the Application are in the public interest. Further, while GSXCCC understands that there may be future reviews by the Commission to address the rate impacts of capital items in the Application, it wonders, in the absence of any rate impact information or information on the over-all priorities and strategy of BCTC, how the Commission can make a meaningful assessment of the justification of the capital items and how Intervenors can make a meaningful assessment of their interests (Exhibit C9-3, p. 3).

New Westminster also submits that the Capital Plan does not meet the requirements of Section 45(6). It believes that the information provided by BCTC is not sufficient to determine whether and how all expenditures can be recovered in rates, as required by section 45(6.2)(c) of the UCA (Exhibit C11-3, Cover Letter). The JIESC submits that, because this application follows BC Hydro's Revenue Requirements hearing in which the BCTC F2005 expenditures have already been approved, and because the Capital Plan will be followed shortly by a new BCTC filing, there should be no expenditures that need to be approved as part of this Application (Exhibit C19-5, p. 1).

In response to Intervenor comments that the Capital Plan does not meet the requirements of section 45(6.2)(c) of the UCA, BCTC submits that the section is permissive, not mandatory; it gives the Commission the power to determine the manner in which any expenditures referred to in the plan can be recovered in rates, but does not compel it to do so. BCTC further states that the recovery of capital investments would normally be considered in the context of a revenue requirements proceeding, and it has not sought an Order under this section (Exhibit B-6, pp. 4-5).

Commission Findings

The Commission Panel acknowledges the concerns of Intervenors that the Capital Plan as submitted by BCTC has not provided all of the information needed to fully assess each component of the plan. Because this is the first Capital Plan submitted by BCTC, it is not surprising to the Commission Panel that Intervenors would find shortcomings. The Commission Panel has provided numerous directions to BCTC that should address those shortcomings in future applications. The Commission Panel also notes that another Capital Plan will be submitted

by BCTC in 2005, and that approval by the Commission of a project under this Capital Plan does not imply that the Commission has deemed project expenditures prudent.

In the Commission Panel's view, no party has submitted adequate evidence that would indicate that any of the projects in the Capital Plan are not in the public interest. **Therefore, the Commission Panel grants BCTC's request for an order under section 45(6.2)(b) of the UCA that the specific projects set out in Section 5.2 of the Application are in the public interest. The Commission Panel also grants BCTC's requests for orders that the Capital Plan as submitted meets the requirements of section 45(6) and 45(6.1) of the UCA, and approves the Capital Plan under section 45(6.2)(b) thereof.**