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**Resource Expenditure**

**And**

**Acquisition Plan**

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# 1 Introduction

The BC Hydro Resource Expenditure and Acquisition Plan (REAP) was written to satisfy the requirements of section 45(6.1) of the *Utilities Commission Act*. The REAP will be filed annually and will replace BC Hydro's current annual filings in connection with capital expenditures.

The REAP contains the following elements:

- Capital Expenditure Forecast for F2005 and F2006;
- Action Plan for F2005 to F2008;
- Contracted Energy Purchase Expenditures for F2005 to F2008; and
- Demand Side Management (DSM) Expenditure Forecast for F2005 and F2006.

The capital expenditure forecast includes all of BC Hydro's forecasted capital expenditures required to serve its' customers.

The Action Plan is composed of 4 main categories as follows:

- Continuance of the Current Programs;
- New Projects and Initiatives;
- Future Resource Additions Requiring Near-term Evaluations; and
- Planning and Portfolio Management.

The Action Plan also contains a Contingency Plan which presents the steps BC Hydro will take to manage risks and uncertainties.

The contracted energy purchase expenditures for F2005 to F2008 show the expected expenditures and the corresponding energy for the committed energy supply contracts.

The DSM expenditure forecast includes the revenue requirement associated with BC Hydro's Power Smart programs and the associated energy savings from those expenditures.

The supporting information for the capital and DSM expenditures and contracted energy purchase expenditures form part of the material filed with the Revenue Requirement Application. The actions and capital expenditures required to implement the first two years of the Action Plan also form part of the material filed with the Revenue Requirement Application. The planned actions and capital expenditures required for the last two years of the Action Plan are included in BC Hydro's Service Plan.

## 2 Capital Expenditure Forecast

Table 1 shows BC Hydro's capital expenditure forecast for F2005 and F2006. The table is extracted from Table 11-2 of the Revenue Requirement Application. The following capital expenditures have been removed from Table 11-2 to create Table 1 because they will be reviewed as part of another process:

- VIGP/GSX forecasted capital expenditures of \$58 million and \$193 million in F2005 and F2006, respectively (removed from Generation Thermal); and
- BCTC capital expenditures for BCTC-owned assets of \$47 million for F2005 (for Business Support Systems, Control Centres, Lands, Buildings, Tools, and Equipment).

The supporting documentation for the capital expenditures in Table 1 can be found in Chapters 3 through 9 of the Revenue Requirement Application.

**Table 1. Capital Expenditure Forecast, F2005 and F2006**

Expenditure Category ( <i>note 1</i> ) (\$ millions)	F2005			F2006		
	S	G	Total	S	G	Total
<b>Generation Hydro</b>	\$96	\$13	\$109	\$123	\$12	\$135
<b>Generation Thermal</b>	3	0	3	3	0	3
<b>Transmission - Lines (<i>note 2</i>)</b>	41	9	50	44	12	56
<b>Substations (<i>note 2</i>)</b>	45	80	125	53	150	203
<b>Distribution</b>	84	123	207	86	130	216
<b>Computers</b>	60	4	64	50	4	54
<b>Land &amp; Buildings</b>	8	0	8	6	0	6
<b>Surveys &amp; Investigations (incl Aboriginal Negotiations)</b>	10	0	10	5	0	5
<b>Vehicles</b>	17	0	17	19	0	19
<b>Power Smart</b>	0	105	105	0	94	94
<b>Other</b>	18	0	18	5	0	5
<b>Gross Expenditures</b>	<b>\$382</b>	<b>\$334</b>	<b>\$716</b>	<b>\$394</b>	<b>\$402</b>	<b>\$796</b>
<b>Contributions In Aid - Specific</b>	0	-8	-8	0	-9	-9
<b>Contributions In Aid - Recurring</b>	-4	-38	-42	-4	-41	-45
<b>Net Expenditures</b>	<b>\$378</b>	<b>\$288</b>	<b>\$666</b>	<b>\$390</b>	<b>\$352</b>	<b>\$742</b>

Notes: 1. S = Sustaining Capital Expenditures; G = Growth Capital Expenditures

2. BCTC has responsibility for planning and obtaining approval for transmission and substation expenditures required to allow BC Hydro to serve its' customers.

### 3 Action Plan

The Action Plan identifies specific actions that BC Hydro will take in fiscal years 2005 to 2008 to realize the objectives of the 2004 Integrated Electricity Plan (IEP). The objectives are to provide reliable, least cost electricity supply in an environmentally responsible manner. Actions are divided into four categories:

1. **Continuation of Current Programs** - recognizes the current supply-side and demand-side programs and lays out plans for their continuation in the future.
2. **New Projects and Initiatives** - presents specific actions pertaining to new resource acquisitions.
3. **Future Resource Additions Requiring Near-Term Evaluation** - considers issues that need further research and evaluation.
4. **Electricity Planning and Portfolio Management** - outlines improvements that BC Hydro will make to its electricity planning and portfolio management processes.

Section 3.5, Contingency Plan, presents the steps BC Hydro will take to manage risks and uncertainties.

The supporting documentation for the actions and capital expenditures that follow from the Action Plan for F2005 and F2006 can be found in Chapters 3 through 9 of the Revenue Requirement Application. The planned activities and capital expenditures required for the last two years of the Action Plan are included in BC Hydro's Service Plan.

### 3.1 Continuation of Current Programs

#### ***First Nations Consultation***

<b>Plan Item</b>	<b>Completion Date<sup>1</sup></b>
BC Hydro will consult First Nations on transmission and generation projects. BC Hydro's Aboriginal Relations Department will consult with First Nations with respect to the transmission system in accordance with agreements between BC Hydro and British Columbia Transmission Corporation.	Ongoing

#### ***First Nations and Stakeholder Engagement***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will continue to engage First Nations and stakeholders in electricity planning. BC Hydro plans to update the IEP every two years and the Action Plan annually and to seek further comments and input from First Nations and stakeholders.	Ongoing
BC Hydro will work with British Columbia Transmission Corporation on stakeholder engagement for transmission plans and projects. BC Hydro's Aboriginal Relations Department will provide First Nations engagement with respect to the transmission system in accordance with agreements between BC Hydro and British Columbia Transmission Corporation.	Ongoing

#### ***Power Smart: Demand Side Management***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will continue the current Power Smart 10 Year-Plan (Power Smart 2) and will continue to monitor its performance to aid future decisions for Power Smart 3 and 4.	Ongoing

#### ***Private Sector Power Acquisitions***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will work with electricity suppliers (IPPs <sup>2</sup> and customers with generation) by providing them with information on permitting and approval processes, conducting workshops and creating web-based resources.	Ongoing
BC Hydro will improve the process for IPPs to interconnect to BC Hydro's distribution system.	Q1 F2005

<sup>1</sup> "F" refers to BC Hydro's fiscal year, ending March 31. "Q" refers to quarters in the fiscal year.

## ***BC Hydro Generation: Heritage Contract Resources***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will implement the Heritage Contract Accountability Framework between BC Hydro Distribution and BC Hydro Generation.	Q1 F2005
BC Hydro will continue to evaluate and implement current planned Resource Smart projects (See Part 3 of the IEP) identified in the BC Hydro's Generation Capital Plan.	Ongoing
BC Hydro will update the Resource Smart inventory.	Q4 F2006
BC Hydro will undertake studies to assess options for Burrard, including shutdown of Burrard, maintaining existing units on standby, and maintaining exiting units on recall. For the shutdown option, BC Hydro will assess costs of site remediation, as well as the costs and timing for replacing system voltage support provided by the existing Burrard units (with input from British Columbia Transmission Corporation). BC Hydro will update cost estimates for repowering.	Q4 F2005
BC Hydro will continue major refurbishment projects to preserve the capabilities of existing facilities.	Ongoing

## ***Vancouver Island-Specific Purchases***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will complete the Vancouver Island Call for Tenders process.	Q3 F2005
BC Hydro will maintain a shelf-ready contingency plan that can be put in place depending on the outcome of the Vancouver Island Call for Tenders. The Vancouver Island supply contingency plan is summarized in Section 3.5.	Q2 F2005

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<sup>2</sup> Independent power producers.

### 3.2 New Projects and Initiatives

***BC Hydro Generation – Revelstoke 5 and Mica 5***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will determine the optimum sequence for the Revelstoke 5 and Mica 5 capacity additions and will preserve the option of a F2009 in-service date for one of these units.	Q3 F2005

***Transmission Additions and Upgrades***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro has requested that British Columbia Transmission Corporation (BCTC) preserve the earliest in-service date for the 230 kV AC submarine transmission (ARN-VIT) cables. This will help to mitigate the uncertainty about the outcome of the Vancouver Island call for tenders and preserve the option of meeting the Island’s capacity requirements from the Mainland. BCTC confirmed that, as part of its mandate to ensure adequate transmission is available in British Columbia, it is proceeding with this project to the extent necessary to preserve the earliest possible in-service date.	Q3 F2009
BC Hydro has requested that BCTC preserve the earliest in-service date of F2014 for Interior to Lower Mainland Transmission (5L83, from Merritt to Coquitlam). This will help to mitigate various supply uncertainties, including the future of Burrard Thermal Generating Station and the outcome of the Vancouver Island call for tender process. BCTC confirmed that, as part of its mandate to ensure adequate transmission is available in British Columbia, it is proceeding with this project to the extent necessary to preserve the earliest possible in-service date.	F2014
BC Hydro will submit a Network Integration Transmission Services (NITS) application to BCTC to meet its domestic load requirements. BCTC will determine the detailed transmission requirements based on this application.	Q2 F2005

***Energy Calls***

<b>Plan Item</b>	<b>Completion Date</b>
The IPP community has indicated that, while the rigour associated with contracts and commercial terms in BC Hydro's recent calls for energy and capacity is appropriate for large projects, it can be onerous for smaller IPP projects. In response, BC Hydro will develop a separate contracting process for smaller IPP projects.	Q3 F2005
A number of uncertainties are considered in the IEP, including IPP attrition, shortfall in Power Smart savings, load forecast uncertainty, outcome of the Vancouver Island Call for Tenders, and the potential phase-out of Burrard. BC Hydro therefore plans to acquire cost-effective replacement energy and capacity on a regular basis over the next few years. The first step in this acquisition plan is to make a call to the private sector in F2005 to acquire up to 400 GWh for delivery starting in F2009.	Q3 F2005

### 3.3 Future Resource Additions Requiring Near-Term Evaluation

***New Transmission & Distribution Infrastructure***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will complete the re-examination of the policies with respect to network upgrades for IPPs connecting to the distribution system.	Q3 F2005
BC Hydro will work with BCTC as its largest customer to determine the best way to address infrastructure upgrades to facilitate IPP development.	Q3 F2005

***Demand-Side Management & Rate Options***

<b>Plan Item</b>	<b>Completion Date</b>
BC Hydro will investigate the feasibility of a capacity-based Power Smart program.	Q4 F2005
BC Hydro will design stepped rates, time-of-use rates and other rate options.	Q4 F2005

***New Supply Options***

<b>Plan Item</b>	<b>Completion Date</b>
To take into account the uncertainties around supply and demand, and to preserve the option of realizing the potential benefits of cost-effective large hydroelectric projects, BC Hydro will maintain the Peace River Site C project as an option for F2015 by, e.g., consulting First Nations, engaging stakeholders, and pursuing licensing and environmental assessment processes.	Q2 F2006
BC Hydro will continue to monitor existing supply resources and domestic load growth to decide upon the timing of the future energy and capacity calls. The rationale for future calls will be reflected in future Action Plans, which BC Hydro plans to produce every year.	Ongoing

### 3.4 Electricity Planning and Portfolio Management

Plan Item	Completion Date
Given the existence of regional constraints outside British Columbia, BC Hydro will investigate the impact of these constraints on the levels of dependable capacity and firm energy currently assumed, for planning purposes, to be available from neighbouring control areas.	Q4 F2005
BC Hydro will re-examine the minimum temperature weather adjustment methodology in order to refine the estimate of peak demand sensitivity to variations in temperature throughout the year.	Q2 F2005
BC Hydro will implement a management and reporting framework for the existing portfolio of energy and capacity resources and transmission contracts.	Q1 F2005
BC Hydro will improve its gas and electricity price forecasting process to better reflect the risk and uncertainties in these commodity prices.	Q3 F2005
BC Hydro will continue to update the Resource Database (Part 3) to reflect new information.	Ongoing
BC Hydro will continue to improve its planning and econometric models and make them more transparent.	Ongoing
BC Hydro will continue to work with BCTC to identify and mitigate transmission project risks.	Ongoing

### 3.5 Contingency Plan

The contingency plan is needed to respond to uncertainties, such as:

- changes in forecast customer demand
- uncertainty regarding the future of existing supply (e.g., Burrard)
- gas and electricity market conditions,
- technology innovation, and
- new information regarding resource options.

During the period covered by the Action Plan, most uncertainties can be accommodated through adjustments in project in-service dates.

The major exception is supply to Vancouver Island where BC Hydro faces uncertainty from the amount and type of new energy supply that will be derived from the Vancouver Island Call for Tender process currently underway. To preserve the ability to meet the expected capacity shortfall on Vancouver Island, BC Hydro has maintained the following backup options:

- BC Hydro has requested BCTC to preserve the earliest in-service date of F2009 for the 230 kV AC submarine transmission link to Vancouver Island, and BCTC has agreed to BC Hydro's request; and
- BC Hydro continues to review the alternatives or supplements to the 230 kV transmission option, including BCTC review of the HVDC life extension and conversion of the on-Island transmission between Qualicum and Duncan from 230 kV to 500 kV.

## 4 Contracted Energy Purchase Expenditures

Table 2 lists the expected expenditures and Table 3 lists the corresponding energy for the committed energy purchase agreements. These expenses will be incurred in the next four fiscal years. Please note that the costs presented in the following tables are based on the Revenue Requirement Application.

**Table 2. Contracted Expenditures for F2005 to F2008**

(\$ millions)	F2005	F2006	F2007	F2008
Energy Purchases Agreements contracted before F2001	\$325	\$337	\$331	\$330
2000 Expressions of Interest for Green Energy	10	10	9	9
2001 Green Energy Call	26	31	32	33
2002 Customer Based Generation Call	16	16	18	20
2002 Green Power Generation Call	1	3	32	60
<b>Total Energy Purchase Agreement Costs</b>	<b>\$378</b>	<b>\$397</b>	<b>\$422</b>	<b>\$452</b>

**Note: The energy purchase agreements presented above are discussed in Chapter 4, Section 3, page 4-9 to 4-15 of the Revenue Requirement Application.**

**Table 3. Contracted Energy for F2005 to F2008**

(GWh)	F2005	F2006	F2007	F2008
Energy Purchases Agreements contracted before F2001	5,655	5,938	5,945	5,936
2000 Expressions of Interest for Green Energy	149	149	149	149
2001 Green Energy Call	515	597	609	615
2002 Customer Based Generation Call	264	266	303	329
2002 Green Power Generation Call	14	53	581	1096
<b>Total Contracted Energy</b>	<b>6,597</b>	<b>7,003</b>	<b>7,587</b>	<b>8,125</b>

## 5 DSM Expenditure Forecast

Table 4 shows the revenue requirement for F2005 and F2006 that flows from the Power Smart expenses and the capital expenditures to F2006. The capital expenditures for Power Smart are shown in Table 1 of section 2 of the REAP as \$105 million and \$94 million for F2005 and F2006, respectively. The supporting documentation for these expenditures can be found in Chapter 4, section 2 and Chapter 8, section 1 of the Revenue Requirement Application.

**Table 4. Power Smart Revenue Requirement Forecast for F2005 and F2006**

(\$ millions)	F2005	F2006
<b>OMA</b>	<b>\$22.6</b>	<b>\$22.4</b>
Amortization of Power Smart before F2002	\$13.3	8.4
Amortization of Power Smart from F2002	17.7	28.1
<b>Amortization subtotal</b>	<b>\$31.0</b>	<b>\$36.5</b>
<b>Finance charges</b>	<b>4.6</b>	<b>6.0</b>
<b>Allowed ROE</b>	<b>4.3</b>	<b>4.7</b>
<b>Total</b>	<b>\$62.5</b>	<b>\$69.6</b>

Table 5 shows the Power Smart energy saving forecast for the Power Smart program. The Power Smart Program savings before F2002 or the Power Smart Legacy Programs are supported by Appendix M of the Revenue Requirement Application. The Power Smart Program savings from F2002 or the current Power Smart 10-Year Plan are supported by Appendix I of the Revenue Requirement Application.

**Table 5. Power Smart Energy Saving Forecast for F2005 and F2006**

(GWh)	F2005	F2006
From Program Activities before F2002	2,253	2,070
From Program Activities from F2002	1,104	1,509
<b>Total Energy Savings from Power Smart</b>	<b>3,357</b>	<b>3,579</b>