

APPENDIX F: DETAIL REGARDING FORECAST HERITAGE PAYMENT OBLIGATION

A. Cost of Energy Component of Forecast Heritage Payment Obligation

The cost of energy component of the Heritage Payment Obligation includes all direct energy related costs incurred in the generation of electricity such as water license fees, fuel and transportation costs for thermal generation, and the cost of electricity purchases for BCH Generation's use. The following tables summarize those components for fiscal 2005-07 (Table 4) and fiscal 2008 – 2014 (Table 5).

	Reference	Heritage Contract		
	2004	2005	2006	2007
Water Rental	\$258	\$263	\$263	\$263
Gas Purchases – Fort Nelson	15	14	11	10
Electricity / Gas Purchases	138	132	124	128
Gas Transportation – Burrard	10	10	10	10
Transmission - Skagit	17	17	17	17
Compensation & Mitigation	3	5	5	6
Cost of Energy	\$441	\$441	\$430	\$434

Table 4: Forecast Cost of Energy Fiscal 2005 to 2007 (\$ millions)

	Heritage Contract						
	2008	2009	2010	2011	2012	2013	2014
Water Rental	\$263	\$263	\$263	\$263	\$263	\$263	\$263
Gas Purchases – Fort Nelson	10	10	10	10	9	9	10
Electricity / Gas Purchases	128	128	126	123	127	120	119
Gas Transportation - Burrard	10	10	10	10	10	10	10
Transmission – Skagit	17	17	17	17	17	17	17
Compensation & Mitigation	6	6	6	6	6	6	6
Cost of Energy	\$434	\$434	\$432	\$429	\$432	\$425	\$425

Table 5: Forecast Cost of Energy Fiscal 2008 – 2014 (\$ millions)

The cost of energy forecasts for each year, fiscal 2005 to 2014, are based on delivery of 49,000 GWh of Heritage Energy comprised of 46,635 GWh hydro generation and 2,365 GWh thermal generation or market purchases, as explained in section 3.2.

Water rentals are levied by the Province on hydroelectric generating capacity and use of water based on actual generation output. Water rental rates are currently \$3.453/KW of capacity and \$1.036/MWh for the first 160 GWh and \$4.835/MWh for plant output thereafter, but are indexed to BC Hydro's rate schedules. To arrive at the \$263 million figure, current water rental rates, unadjusted for any future rate increases are applied to 46,635 GWh of average energy hydro generation.

Market purchases of gas or electricity make up the balance of the 2,365 GWh of Heritage Energy. 2005-2007 purchases are costed at BC Hydro's current forecast market cost of electricity. 2008 – 2014 purchases are represented in 2003 dollars.

Gas transportation costs under Bypass Transportation Agreement for Rate Schedule 22, dated the 27th day of November, 1998 between BC Gas Utility Ltd. and BC Hydro, are included as a component of cost of energy. The contract provides firm gas transportation to Burrard for a thirty year period, from November 1999 to November 2028. Costs are based on contracted amounts.

Transmission costs relating to BC Hydro's obligations under the Skagit Valley Treaty are included in the cost of energy. They are comprised of approximately \$13 million per year for wholesale transmission in British Columbia, and about \$4 million per year for wholesale transmission in the United States, based on current wheeling rates.

Compensation and mitigation programs include BC Hydro's commitments to fund three regional fish and wildlife compensation programs. Current costs of \$3 million per year are expected to increase to \$6 million by fiscal 2007, and are assumed to remain constant thereafter.

B. Operating Cost Component of Forecast Heritage Payment Obligation

Operating costs include maintenance, operating, environmental, regulatory and management costs associated with the Heritage Resources. The following tables summarize the major components for fiscal 2005 – 2007 (Table 6) and fiscal 2008 – 2014 (Table 7).

	Reference	Heritage Contract		
	2004	2005	2006	2007
\$ Millions				
Maintenance	\$67	\$67	\$67	\$67
Other Operating	59	58	59	59
Business Sustaining Costs	36	33	42	40
Total Operating Costs	\$162	\$158	\$168	\$166

**Table 6: Forecast Operating Cost Fiscal 2005 to 2007
(\$ millions)**

	Heritage Contract						
	2008	2009	2010	2011	2012	2013	2014
\$ Millions							
Maintenance	\$67	\$67	\$67	\$67	\$67	\$67	\$67
Other Operating	59	59	59	59	59	59	59
Business Sustaining Costs	40	40	40	40	40	40	40
Total Operating Costs	\$166	\$166	\$166	\$166	\$166	\$166	\$166

**Table 7: Forecast Operating Cost Fiscal 2008-2014
(\$ millions)**

Maintenance costs are shown in 2003 dollars and include labour and materials associated with maintenance and dam safety programs for generating facilities. Generation maintenance is the process of ensuring that equipment is kept in, or returned to, good operating order. It includes all costs to inspect, adjust, or repair or replace parts and run tests to determine that repairs were properly made and that the repaired item is ready for service. It also includes the cost of repairing assets that fail. Due to aging facilities the actual cost of maintenance will likely be higher than reflected in this forecast as costs are expected to increase in real terms.

Other operating costs, also shown in 2003 dollars, include labour associated with planning, operating and managing generation operations. Operations is the process of producing or enabling the production of energy and ancillary services from generating facilities which are otherwise in good operating order. Also included in this category are environmental, regulatory and social costs that comprise all activities associated with managing regulatory, environmental, and community issues as well as those activities that are required to maintain the franchise to use the water. These include fisheries and wildlife issues, recreational facilities and visitor centres.

Business sustaining costs are corporate services and costs collected at the corporate level that are allocated between BC Hydro's lines of business. The allocations, depending on the type of cost, are based on headcount, operations, maintenance and administration expenditures, sustaining capital expenditures and square-foot usage of corporate buildings. Costs are in nominal dollars for the period 2004 – 2007, and are assumed constant thereafter.

C. Asset Related Expenses Component of Forecast Heritage Payment Obligation

Asset related expenses include depreciation and amortization, financing and net of interest during construction costs, taxes and grants. The following tables summarize the major components for fiscal 2005 – 2007 (Table 8) and fiscal 2008 – 2014 (Table 9).

	Reference	Heritage Contract		
	2004	2005	2006	2007
Depreciation & Amortization	\$111	\$110	\$112	\$114
Taxes and Grants	28	29	29	29
Finance Costs less Interest During Construction	241	231	248	249
Total Asset Related Expenses	\$380	\$370	\$389	\$392

**Table 8: Forecast Asset Related Expenses Fiscal 2005 to 2007
(\$ millions)**

	Heritage Contract						
	2008	2009	2010	2011	2012	2013	2014
Depreciation & Amortization	\$117	\$120	\$125	\$129	\$133	\$137	\$142
Taxes and Grants	29	29	29	29	29	29	29
Finance Costs less Interest During Construction	265	271	276	281	286	291	296
Total Asset Related Expenses	\$411	\$420	\$430	\$439	\$448	\$457	\$467

**Table 9 Forecast Asset Related Expenses Fiscal 2008-2014
(\$ millions)**

Depreciation and amortization expenses are based on capital assets in service which are depreciated on an individual or pooled basis over the expected useful lives of the assets (generally using the straight-line method). Depreciation includes provisions for costs of net-of-expected recoveries for future asset removal and site restoration arising from retirement of

capital assets. Capital expenditures are approximately 1% of replacement value, increasing by approximately 2% per year.

Financing costs less interest during construction consist primarily of interest on debt securities, amortization of deferred debt costs and other expenses, less income from sinking funds and interest during construction. These costs have been allocated based on the Heritage Resource proportion of the total of BC Hydro's debt balance. Finance charges are capitalized on construction in progress at rates equivalent to BC Hydro's charge cost of borrowing.

Interest during construction is capitalized on construction in progress at rates equivalent to BC Hydro's average annual cost of borrowing. The rate takes into consideration annual interest costs plus foreign exchange adjustments and amortization of premiums, discounts and issue costs.

Taxes and grants are paid to the Province and municipalities based on the value of all assessable property, and in lieu of general, local improvement and regional district levies, respectively. Costs are assumed constant.

D. GRTA Cost Component of Forecast Heritage Payment Obligation

BC Hydro proposes to include in the Heritage Payment Obligation an amount in respect of BC Hydro's Generation Related Transmission Assets (GRTA) that was determined in a manner consistent with the Commission's April 23, 1998 Wholesale Transmission Services decision. That amount is \$43.3 million. It is the difference between the total "transmission revenue requirement" and the smaller portion of the "transmission revenue requirement" reflected in current wholesale transmission rates. The amount may be thought of as a "GRTA revenue requirement".

BC Hydro proposes that the GRTA amount be fixed at the proposed amount for the duration of the Heritage Contract, and that it not be associated with any specific set of assets, regardless of what BC Hydro assets eventually come under the operational control of the BC Transmission Corporation. This approach preserves the rate impact of the 1998 decision, while eliminating any operating complications due to having to differentiate between GRTA transmission line

facilities and other transmission line facilities. That is, this approach will permit the wholesale transmission tariff to be applied consistently to all transmission line facilities.

E. Skagit Ancillary Services and Miscellaneous Revenues Component of Forecast Heritage Payment Obligation

Under the Skagit Valley Treaty, BC Hydro is required to deliver approximately 310 GWh of electricity to Seattle City Light each year for an 80-year period ending in fiscal 2066. Including losses, the annual generation requirement is approximately 340 GWh. In return, BC Hydro receives approximately US \$22 million each year for a 35-year period ending in fiscal 2020 and US \$1 million (adjusted for inflation) each year for an 80-year period ending in fiscal 2066. The revenue recognized annually is approximately CDN \$25 million. Funds received in excess of deliveries are shown as deferred revenue in the equity section of BC Hydro's balance sheet.

BC Hydro anticipates earning about \$3 million per year from the sale of ancillary services to BC Transmission Corp arising from third-party use of the transmission system, based on historical sales and adjusted for future growth in sales.

Under average water conditions BC Hydro does not forecast any revenue from sales of surplus hydro energy.

Other miscellaneous revenues include revenues owned from water sold to the Greater Vancouver Regional District from Coquitlam reservoir, and the sale of steam from Burrard Thermal. These revenues are estimated to range between \$1 to \$3 million per year.

F. Return on Equity Component of Forecast Heritage Payment Obligation

In BC Hydro's most recent revenue requirement decision (1994/95), BC Gas Utility Ltd. (BC Gas) was found to be the most comparable utility to BC Hydro. Consequently, the allowed rate of return on a pre-income tax basis for BC Gas is used in the determination of BC Hydro's rate of return. No change to this determination is proposed in this proposal. Any proposed change would be made in the next revenue requirement application.

In this proposal the same rate of return has been used, as BC Hydro continues to be regulated as consolidated BC Hydro. No differentiation in either the debt-to-equity ratio or return on equity

between consolidated BC Hydro and the BCH Generation assets used for the Heritage Contract is being proposed at this time.

In its November 21, 2002 decision the BCUC allowed BC Gas an after-income tax return on equity of 9.42% for 2003. That rate has been used in this proposal. This after-income tax return is then "grossed-up" to a "pre-income tax basis" by applying the effective income tax rate of BC Gas. The effective income tax rate approved for BC Gas in its 2003 Revenue Requirement decision was 34.24%. Thus the pre-income tax return is:

$$9.42\% / (1 - 34.24\%) = 14.33\%$$

BC Hydro's equity has been allocated to its various businesses on a pro-rata basis based on the capital assets assigned to each business. The amount of equity allocated to the Heritage Resources for fiscal 2004 was \$1,073 million.

The \$1,073 million is the sum of deferred revenue from the Skagit Valley Treaty of \$279 million, \$202 million of deferred charges from the Columbia River Treaty and an allocation of BC Hydro retained earnings of \$592 million, calculated in conformity with Special Direction No. 8. Thus the required return on equity for F2004 is:

$$\text{\$1,073 million} \times 14.33\% = \text{\$154 million}$$

For subsequent fiscal years the return on equity is calculated on the same basis, revised for changes in the amount of Heritage Contract equity and the pre-income tax rate of return of BC Gas.