

## BC Hydro Capital and Operating Costs – Impact on Rates Backgrounder

While BC Hydro's ("BCH") requested 3 year rate increase of 32.1% has caused some of its customers to suffer from rate shock, its underlying causes are years in the making. Capital investment that should have been made in the 1990's, to renew its asset base, was deferred until this decade and is now being made at the same time as the required capital investment for this decade. For example in BCH's 1995 Integrated Electricity Plan it says<sup>1</sup>:

*"Security of supply to Vancouver Island (VI) is becoming critical. The 138 kV submarine cable circuits are about 40 years old and the HVDC submarine cable bi-pole ties is about 15 and 25 years old (total of 1050 MW capacity), and are approaching the end of their useful lives."*

The required new transmission line was not completed until 15 years later.

No replacement generation for the old, very inefficient and unreliable Burrard Thermal Plant was contracted for, or developed. Instead it became a mask for imports<sup>2</sup>. In addition, the B.C. carbon tax would be payable on Burrard generation while this tax would not be payable with respect to imports<sup>3</sup>. Imports can be used as a means of avoiding the payment of B.C. carbon tax.

The Ruskin generating station first came into operation in the 1930's and has never undergone a major overhaul of any kind. Major equipment overhauls are usually conducted every 30-40 years as is the case with BCH's GMS and Mica projects. Only in 2011 has a regulatory process been initiated to examine whether it should be rebuilt.

A senior representative of BCH described his life at BCH as dealing with equipment that's end of life<sup>4</sup>.

There is a lag effect on BCH's rates as investment in capital projects are first capitalized until they come into service and then the costs are amortized and recovered through increased rates. Only after these assets are placed in service will the customers begin to be charged for the costs of financing, amortization, and return on equity payments to the shareholder.

Consequently, capital related charges are by far the largest component contributing to the current request for a 32.1% rate increase, constituting almost half of the increase.

The second largest contributing factor to the increase in rates is the growth in BCH's operating costs, and this too is largely driven by the need to renew and upgrade the capital assets.

### Capital Asset Investments

Since F2008, BC Hydro has spent \$7.0 billion on its capital asset infrastructure and demand side management or Power Smart measures, and it plans to spend a further \$6.5 billion over the next 3 years<sup>5</sup>. That is a huge investment in capital for a company whose total Property,

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<sup>1</sup> Appendix H, Transmission Analysis of the 1995 Integrated Electricity Plan, page 15.

<sup>2</sup> Appendix 1, as attached.

<sup>3</sup> Appendix 2, as attached.

<sup>4</sup> BC Hydro 2008 LTAP, Hearing Transcript, February 24, 2009, Volume 6, page 935.

<sup>5</sup> F12-F14 RRA, Exhibit B-1, Appendix A, Schedule 13.0, line 14.

Plant and Equipment<sup>6</sup> was valued at \$10 billion at the beginning of F2008 – it represents more than doubling the size of the company over a 7-year period. When the projected \$7.9 billion price tag for Site C is included the investment becomes massive. In either case, the Government’s ability to receive a “dividend” from BCH, which it cannot do when BCH’s debt to equity ratio is above 80:20, becomes doubtful.

These asset infrastructure investments lead to a dramatic increase in the capital related costs being passed on to ratepayers in the F2012-F2014 Revenue Requirements Application (“Application”). The cost categories that are directly affected by the increased capital investment are the Finance Charges, the Amortization, and the Return on Equity.

These three costs together amount to \$5.6 billion over the 3-year Application period, and this constitutes 44% of the total Revenue Requirement over the period.

The increases alone in these three cost components are 36%, or \$523 million over the 3-year Application period, which is responsible for 45% of the total requested rate increase. (The total of the requested increases being \$1.15 billion.) This means that a rate increase of 14.5% is required just to cover the cost of the capital renewal investments that are coming into service during the 3-year Application period.

One of the fundamental reasons why this infrastructure spending is leading to such large rate increases is the fact that this enormous asset expenditure is not intended to produce any new energy or to serve any additional customer load – it is an expenditure purely for renewal, not for growth.

The domestic energy sales in F2008 were reported as 53.3 million MWh, while the forecast for F2014 is only 52.2 million MWh<sup>7</sup>. BCH is actually forecasting a decline in its residential and commercial customer sales, purportedly due to the expected impact of its Power Smart expenditures.

When the company’s asset investment more than doubles, to serve the same or lower customer demand, rate increases are inevitable.

### **New infrastructure spending brings no new energy generation.**

Some of the significant infrastructure expenditures that BCH has recently made or is intending to make in the near future include:

- **GM Shrum** – 5 new turbines for the Bennett Dam generating station are planned for \$250 million. The old ones are becoming unreliable but the new ones will provide only marginally more energy;
- **Revelstoke** – A 5<sup>th</sup> unit was commissioned in 2010, a \$300 million project, but it provides negligible new energy; a 6th unit is planned, and will cost probably another \$400 million, but will provide negligible new energy;
- **Mica** – New switchgear is planned for \$200 million, but no new energy; 2 new units are planned in the near future for approximately \$800 million, but negligible new energy;
- **Ruskin** – BC Hydro is currently seeking approval to spend \$850 million to rebuild its 80 year old Ruskin dam and powerhouse on the Alouette-Stave River system;

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<sup>6</sup> Generally, the capitalized terms in this Backgrounder have the same meaning as in the Application.

<sup>7</sup> Ibid. Schedule 14.0, line 9.

- **John Hart** – BC Hydro will soon be asking for another \$1 billion to rebuild its 60 year old John Hart dam and powerhouse on the Campbell River.

These last 2 projects play no part in the 32% rate increase, but they will result in additional rate increases in the near future, once these new assets are put into service. Neither one of these rebuilt generating stations will provide any significant additional energy for the system, so all of the increased cost will have to be spread over the existing MWs, and carried by the existing customer loads – over and above the 32% increase.

The list of upgrades to the generating plants goes on and on, but none of these expensive refurbishments will provide any significant new energy for the system (with the single exception of Site C, if it is ever built, but that will be at least 10 years in the future). If all of these investments are to be covered by the existing energy sales, then the rates must go up.

And then there are the dam safety projects, the seismic upgrades and the spillway gate replacements, and the new transmission lines, and the rebuilt distribution systems. None of these provide any new energy but they all come at a significant new investment cost. Rates must go up if BCH's customers want to continue to have a reliable publicly-owned electricity system.

The math is not difficult. Even without any new generation and if BCH's electricity demands can be kept constant (in spite of a rising population) by adding \$13 billion or more to the infrastructure investment – that's more than doubling the financial size of BC Hydro for the same amount of service – rates will have to go up.

Clearly this is a period of major refurbishment to the public infrastructure. By updating its infrastructure, BCH is simply restating those cheap old historic costs, to which BCH's customer have all become accustomed, into the modern world of current costs. The result may be shocking to some, but it's really only bringing BCH's electricity prices into the 21<sup>st</sup> Century.

### **Demand Side Management Expenditures must also be paid from the same load base.**

Another very significant part of the investment spending at BCH is directed at “Demand Side Management” measures (DSM or Power Smart). These are a whole host of measures intended to coax wasteful consumers into using less electricity. But these measures also provide no new energy. In fact, they are principally intended to prevent any new energy from being needed.

If these DSM programs are as successful as BCH claims, then all of these costs will have to be borne by the existing MWs. If they are less than perfectly successful, as numerous statistical studies have shown is the case for most other jurisdictions, and as an understanding of human behaviour would intuitively suggest, then BCH's customers will have to bear all of the expense for these programs, plus also subsequently pay for the cost of the new energy that will be needed if these programs turn out to be unsuccessful.

In the past 10 years, BCH has spent over \$1.1 billion and participating customers have spent another \$1.4 billion, all in the name of reducing electricity consumption. Yet, in spite of all this effort, residential and commercial consumption per capita remains unabated, and the overall load continues to grow with the population.

In the 3-year application period BCH is forecasting another \$677 million to be spent<sup>8</sup> – and that’s not including the \$930 million it plans to spend to put “Smart Meters” in every home – all in the name of changing consumer behaviour. Very little of either of these amounts will be charged to electricity rates during the 3-year period, but by the end of F2014 there will be another \$1.6 billion accumulated, to be charged in subsequent rate increases.

No one is opposed, in principle, to using energy more efficiently. However, there is a flip-side to these DSM expenditures in terms of paying for them. The costs of these programs have to be paid now, with real rate increases, but the benefits of these programs are always stated in terms of hypothetical future energy savings.

Those future energy savings are highly conjectural and may, or may not, possibly be realized some day in the future. At any rate, those future energy savings are inevitably difficult to determine. However, the costs are very real and very present, and will have to be paid by current customers with real money. Whether the benefits eventually materialize or not, the rates in the very near future must go up to pay for the \$677 million and the \$930 million in DSM and Smart Meter expenditures.

Even if the programs are successful, the customers will never actually see rates go down because of those hypothetical savings. They will simply be told that the savings have indeed occurred, and that they should be thankful because rates would surely have been a lot higher in the absence of those savings – small consolation, when the rates have already gone up, in real dollars, in order to pay for the programs.

Over the 3-year application period, BCH is assuming that its DSM efforts will result in a net reduction in both residential and commercial per capita energy demand, even though this assumption flies in the face of the experience gained over the 30-year history of DSM efforts in British Columbia. And, what is even more problematic, this assumption merely accentuates the rate increase problem.

## **Operating Costs**

The second most significant cause of the required rate increase is BCH’s own Operating Costs, but much of this increase is due to changes in accounting policies which require BCH to charge items to Operating Costs that were previously being capitalized or expensed elsewhere.

The net result is that Operating Costs rise by \$214 million over the period and are responsible for 5.9% of the 32.1% rate increase<sup>9</sup>.

There is one very important component of BCH’s cost structure that is not a big factor in the current rate increase because it is being hidden in the capitalized costs, to be recovered in subsequent rate increases – namely, staff costs. Over the past 4 years, BCH has had significant increases in both staffing levels and also salary levels, but most of the additional compensation costs appear to have been capitalized, and so they are not a big factor in the current rate increase, but are being deferred into future rate increases, once the new capital assets are put into service.

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<sup>8</sup> F12-F14 RRA, Exhibit B-1, Appendix A, Schedule 2.2, line 3.

<sup>9</sup> F12-F14 RRA, Exhibit B-1, Figure 1-3, page 1-15.

BCH's Full Time Equivalent staffing level at March 31, 2007 was reported as 4,670<sup>10</sup>. The Application reports that the number of FTE's is expected to reach 6,895 as of March 31, 2011<sup>11</sup>. That represents a 48% increase in staffing levels over a 4-year period.

During the F2011 Revenue Requirements proceeding before the B.C. Utilities Commission ("BCUC"), the Association ("CEBC") extracted the following table from BCH's application<sup>12</sup>. It shows the extent of the forecast staffing increases by department, over the 4-year period. (Note that the actual increase by March 31, 2011 was higher by another 471 FTEs, as reported in the Application.)

Full-Time Equivalents (FTEs)					
	Reference	F2007	F2011	F2011 vs. F2007	
	Column	Actual	Plan		
		1	9		
<b>Corporate</b>					
Executive		11	8	-2.6	-24.2%
Sustainability		5	0	-4.9	-100.0%
Corporate Affairs		96	154	58.0	60.6%
Corporate Human Resources		49	64	14.5	29.4%
Finance & Corporate Resources		244	429	184.9	75.8%
Safety, Health & Environment		37	59	22.3	60.9%
Smart Metering & Infrastructure		0	64	63.5	
<b>Total</b>		<b>441</b>	<b>777</b>	<b>335.7</b>	<b>76.1%</b>
<b>EARG</b>					
Aboriginal Relations		17	37	20.7	124.9%
Generation Project Delivery		40	117	77.7	195.5%
Generation Operations		615	688	72.3	11.8%
Safety & Technical Training		14	65	51.0	371.7%
Engineering		600	887	287.0	47.8%
EARG Business Unit Support		170	191	21.4	12.6%
<b>Total</b>		<b>1,455</b>	<b>1,985</b>	<b>530.1</b>	<b>36.4%</b>
<b>CC&amp;C</b>					
Customer Care		92	146	54.2	58.9%
Power Smart		108	216	107.5	99.5%
Energy Planning Group		27	28	1.5	5.6%
Power Acquisition Group		17	28	10.5	61.9%
Chief Technology Office		2	11	8.6	366.2%
CC&C Business Unit Support		30	41	10.5	34.5%
<b>Total</b>		<b>277</b>	<b>470</b>	<b>192.9</b>	<b>69.7%</b>
<b>Field Operations</b>					
Distribution Operations		1,142	1,331	189.0	16.5%
Trans & Construction Services		795	1,105	309.6	38.9%
Operational Support Services		215	275	59.2	27.5%
FO Business Unit Support		344	481	137.5	40.0%
<b>Total</b>		<b>2,497</b>	<b>3,192</b>	<b>695.3</b>	<b>27.8%</b>
<b>Total</b>		<b>4,670</b>	<b>6,424</b>	<b>1,753.9</b>	<b>37.6%</b>

While some increase in staff costs is required because of the spending on capital infrastructure, there is no indication that BCH weighed the total long term cost of hiring new

<sup>10</sup> F2011 RRA, Exhibit B-1, Appendix A, Schedule 16.0.

<sup>11</sup> F12-F14 RRA, Exhibit B-1, Appendix A, Schedule 16.0.

<sup>12</sup> F2011 RRA, Exhibit B-1, Appendix A, Schedule 16.0.

staff and contracting work out. One of the advantages of contracting out is the development of expertise that can be sold on the world market. BCH's past efforts to sell its expertise on the world market have not been highly successful.

A portion of BCH's increased staff costs have been capitalized for future recovery when the renewed capital assets are put into service. With the information available so far in the BCUC's review of the Application, it is not yet possible to determine the exact amount of staff compensation that has been capitalized vs. expensed but, one way or another, these costs will eventually come to rest on the ratepayers.

When asked why Transmission and Construction FTEs had increased by 39% (310 FTEs) since F2007, BCH responded<sup>13</sup>:

*"The main driver for the increase in staffing levels in Transmission and Construction Services is the increase in generation, distribution, and transmission capital work."*

When asked about Finance and Corporate Resources FTEs increasing by 76% (185 FTEs), BCH responded:<sup>14</sup>

*"The growth in Finance and Corporate Resources is largely driven by centralization and enterprise-wide growth in capital programs..."*

And the growth of Engineering FTEs by 48% (287 FTEs) was explained as:<sup>15</sup>

*"New activities include capital programs for generation and transmission (BCTC) which have grown significantly in the last few years, more than doubling between F2007 and F2010."*

In addition to staffing levels, the salary levels have also been escalating at a significant rate. Between yearend 2006 and yearend 2009, the number of employees making more than \$100,000 per year increased 95.5%, and the number making more than \$200,000 per year increased by a similar 95.1%<sup>16</sup>. The following tables summarize these matters<sup>17</sup>:

**7.0 Reference: Exhibit B-8, Page 48**

2.7.4 Please confirm that the following account of employees with earnings at or above the specific levels of remuneration is correct and the growth in these levels is correct.

	YE March 31, 2009	YE March 31, 2006	Growth
Employees making >\$75,000	3448	2177	58.40%
Employees making >\$100,000	2166	1108	95.50%
Employees making >\$125,000	1155	489	136.20%
Employees making >\$150,000	514	211	143.60%
Employees making >\$200,000	119	61	95.10%

**RESPONSE:**

**Confirmed.**

<sup>13</sup> F2011 RRA, Exhibit B-6-2, BCH response to IPPBC IR 1.4.1.

<sup>14</sup> Ibid. IR 1.4.2

<sup>15</sup> Ibid. IR 1.4.3

<sup>16</sup> F2011 RRA, Exhibit B-11, response to CECBC IR 2.7.4

<sup>17</sup> F2011 RRA, Exhibit B-11, response to CECBC IR 2.7.1 and 2.7.4.

7.0 Reference: Exhibit B-8, Page 48

2.7.1 Please confirm that as of year ended March 31 2009 remuneration as reported to Public Accounts for BC Hydro and its subsidiaries has increased from \$336.5 million at year ended March 31 2006 to \$558.3 million or a 52% growth.

**RESPONSE:**

As of March 31, 2006, annual remuneration was \$366.5 million. As of March 31, 2009, annual remuneration was \$558.3 million. This confirms a 52 per cent increase in that time period. This information is published in BC Hydro's *Financial Information Act* returns.

## **Conclusion**

The two greatest contributors to BCH's current request for a 32.1% rate increase over the next 3 years, are clearly the rapidly increasing capital charges and operating costs, as BCH hastens to invest the billions of dollars it needs to renew its generation, transmission, and distribution infrastructure.

Infrastructure renewal is required if BCH's customers are to receive the high level of service and reliability they have become accustomed to. However, the question for BCH, and its shareholder, is how to prioritize and ration the needed capital expenditures so as to not exhaust the customers' ability to tolerate the rate increases.