BC Hydro
Revenue Requirements
2004/05 and 2005/06

Final Argument
by Alan Wait

July 21, 2004

Introduction

I have intervened in this BC Hydro Rate Hearing because the BC Hydro rates will affect the cost of electricity in the Aquila system, now named Fortis BC, where I am a ratepayer. Also the procedures used by BC Hydro to evaluate potential new projects have a tendency to be used at Fortis BC .

However, after examining the Application material, it became evident that BC Hydro is so messed up in its financial allocations of revenue and costing that it would be impossible for me, in good conscience, to concentrate strictly on minimizing the cost of power to Fortis BC. Therefore, I have attempted to identify the problems that I see with the present BC Hydro operation where costs and revenue requirements are not properly allocated or in the case of the Government Special Directives, where the requirements do not fit properly into Cost Based Regulation. Costs should be charged against the part of the business where they are incurred.

As to the regulation of BC Hydro, I believe that the regulation should be applied to BC Hydro in the same manner as it is to private utilities. The present Provincial Government came to power with one of its campaign promises being the re-regulation of BC Hydro. I don't recall there being any limits on that regulation. The Provincial Government, being the owner of BC Hydro, is in a massive conflict of interest when issuing Special Directives to BC Hydro that are not in line with Cost Based Regulation once the Government has regulated BC Hydro.

The active independence of the Utilities Commission is absolutely essential if BC Hydro ratepayers are to be protected from the whims of the BC Hydro owner issuing Special Directives that are not consistent with cost based regulation.

Policy

The question of how regulation is to be applied to BC Hydro is of paramount importance. From my questioning of Panel 1, T.6, P.792 & 793, it appears that BC Hydro does not yet have a clear definition of just how the corporation is to operate as a monopoly under cost based regulation. I believe BC Hydro should be regulated by the BC Utilities Commission under the same terms as the other Private Utilities in BC. That would require Special Directives from the owner to be approved by the Utilities Commission as being consistent with cost based regulation before being instituted.

I am concerned with the present policy of basing the marginal cost of new generation on combined cycle gas fired plants, T.6, P.794, L.24, and applying combined cycle cost pattern to the IPP contracts. Most IPPs are hydro driven generation, which has a very long life and far lower and more consistent operating and maintenance costs than gas fired plants. The last series of IPP contracts with an escalation of one-half the inflation rate per year with a complete renegotiation at the end of 20 years does not appear to be in the best interests of BC Hydro ratepayers. Combined cycle plants may well have major

maintenance expenses to their driving units after 20 years but the maintenance to hydro projects after 20 years is not in the same ball park. Further, gas fired plants will run into increasing fuel costs through the years, whereas a hydro plant's total operating costs tend to fall in nominal terms for many years after start-up in a regulated system, as is evident in the Site C comparison of Appendix 1. In my questioning of Panel 7, T.19, P.3423 starting at line 8, Ms Farrell and Mr. Morris both confirmed that the cost of Hydro generated power from 1994 through 2004 has remained basically flat in nominal dollars even though considerable maintenance work has been carried out over those years. This is in spite of not starting 1994 with all new plants, debt/equity changes, return on equity changes and interest rate changes.

The result of the present IPP contract is that after 20 years, the price will be renewed at the then prevailing market rate, which reflects the cost of new construction. Whereas, if that power had been supplied through the cost based regulated process, the price in year 21 would likely be less in nominal terms than during the first year of production, as shown in Appendix 1.

The current process of awarding contracts to IPPs, which effectively de-regulates all new incremental electricity production is not in the interests of the ratepayers and should be reviewed and replaced with a regulated contract system, preferably as simple as possible, which would be in the best interests of all BC Hydro ratepayers and indeed the economic interest of the province itself.

Financial

We have with Special Directions HC1 and HC2, a situation where the owner of a public utility is dictating on how a public utility should be managed without regard to whether the order is fair, just and reasonable, apparently without the ability of the Utilities Commission being able to comment. If the Utilities Commission is properly independent, it is the Commission that should have the final word on what is acceptable not the Utility Owner. I will detail below how the directed treatment of monies by the Owner of BC Hydro in the cases of the Columbia River Treaty, the Skagit Agreement, Contributions in Aid of Construction and the FRSR are unfair, unjust and unreasonable to the ratepayers and do not conform to a cost based regulated utility.

Columbia River Treaty

The Kennleyside and Duncan Dams were built in the 1960s for storage and flood control benefiting the US and were to be financed by payments from the United States for flood control and additional power generation in the United States. What has happened over the years is that BC Hydro ratepayers are now being charged most of the operating and carrying cost for these two dams ($22.2 million per Wait IR 1.8), while receiving in total $9.2 million per year from the Columbia River Treaty monies towards the costs. Further the Columbia River Treaty money which was meant to cover the costs of the dams, is

treated as equity and receives in 2005 a return of 13.91% or ($193mil X .1391) = $26.85 million.

So the BC Hydro ratepayers are paying ($22.2 + $26.9 - $9.2) = $39.9 mil in 2005 for no net power generation. In fact the downstream power under the treaty goes directly to the BC Government who sells the power on the open market, keeping the proceeds. I can see nothing fair, justifiable or reasonable in this arrangement for the BC Hydro ratepayers.

The public was told at the time the Columbia River Treaty was being negotiated, that the downstream and flood control benefits would more than cover the costs of Kennleyside and Duncan Dams resulting in no cost to British Columbians for these Dams. Part of Mica was also supposed to be covered in the US payment. But to simplify things, and as Mica is producing power, I am considering that at a minimum Kennleyside and Duncan should be completely covered by the US prepayment for downstream flood control and power.

The Columbia Treaty monies should be in a separate fund outside the capital of BC Hydro, and the entire cost of the Kennleyside and Duncan Dams should be covered by the Treaty Fund, or as required, proceeds from the sale of Downstream Benefits going forward.

Skagit Agreement

The Skagit Agreement (between the Government of British Columbia and Seattle City Light), was concluded to prevent further flooding of the Skagit Valley in Manning Park by Seattle City Light raising the height of the Ross Dam. Under the terms, BC Hydro provides 310 GWH of power per year to Seattle for 80 years and Seattle prepays most of the power cost over the first 35 years, ending in 2020. The revenue beyond what is required for each year in the first 35 years should be placed in a fund outside the equity structure of BC Hydro, as it is really a future liability to provide 310 GWH of power annually from 2021 through 2066.

For F2005, at an exchange rate of one $C to .75 $US, the payment from Seattle would approximate $31 mil Canadian dollars, of which part pays for the 310 GWH of power sent to Seattle and part goes into the fund for the future liability to provide power from 2021 to 2066. However, because the Special Directions specify the Skagit fund as equity, BC Hydro ratepayers are required to pay ($276 X .1391) = $38.39 mil return on equity to the Provincial Government of BC in 2005. The government's decision to prevent the flooding of the Skagit Valley and use BC generated power to replace the power Seattle could have generated with the High Ross Dam, is having an unnecessary detrimental effect on ratepayers. BC Hydro ratepayers are paying a net $7 mil. in 2005 for the privilege of providing 310 GWH of power, for which the BC Hydro ratepayers are also paying the costs of generation and transmission, to Seattle and creating a future liability to provide power from 2021 to 2066 with very little payment from Seattle and major payments out to the Provincial Government for return on equity.

Further, the Skagit Fund earns interest each year, yet there is no indication of the Provincial Government paying that interest amount into BC Hydro, in spite of ratepayers already being charged equity rates of return on the Skagit fund.

In T.19, P.3433, L.23, Mr. Morris states "then we calculate the interest that's to be applied, and then essentially that interest is just one of the components of B.C. Hydro's finance charges." There is further discussion of the ratepayers having to pay both equity rate of return and interest rates on the Skagit Fund in T.19, P. 3434 &3435. Finally on P.3435, L.11 to 18, Mr. Morris confirms that the ratepayers are being charged both return on equity and interest on the same money in the Skagit deferred revenue account.

The Skagit Fund should be outside the equity structure of BC Hydro and while the actual money in the fund is being lent in BC Hydro, the interest charged to BC Hydro should be credited to the Skagit Fund. In this manner the Skagit Fund will be able to pay for the future liability through 2066 and the BC Hydro ratepayers are not being unfairly, unjustly and unreasonably heavily penalized because the Provincial Government concluded an agreement to prevent the flooding of the Skagit Valley.

Contributions in Aid of Construction

The whole concept of contributions in aid of construction required from certain customers by public utilities is to prevent excessive costs required to service one customer, from being passed on to other customers. This is a reasonable approach as handled by private regulated utilities where the contributions are acknowledged on the balance sheet with a zero value.

In the case of BC Hydro, these contributions are added full value to the owner's equity, which requires all other customers to pay the highest amount possible for a cost that should not be charged to the ratepayers at all.

Because BC Hydro customers have paid contributions in aid of construction over the previous years that have been amortized down to $609mil at the end of F2004, BC Hydro ratepayers are being required to pay an additional ($609 X .1391) = $84.7mil. in F2005. For a system that is supposed to prevent excessive costs from one customer being charged to others, the requirements of the Special Directions are unfair, unjust and unreasonable.

The existing amount in the Contributions in Aid of Construction should be removed from the owner's equity calculation and dealt with as the private utilities in British Columbia do, thereby reducing the Revenue Requirements for F2005 by $85 mil. and F2006 by $87 mil.

Future Removal and Site Restoration (FRSR)

The FRSR is a fund to cover future reclamation costs at the end of the service life of BC Hydro's assets, so that present ratepayers also cover the end of asset costs on those assets which are being employed to provide their power needs today. The Asset Retirement Obligation (ARO) is the same thing, only with a different approach.

The Commission must pay very close attention to the method in which the FRSR is dismantled so that BC Hydro ratepayers are not being double billed for reclamation costs. Page 2-16 of the Application shows an $18 mil charge in F2005 and a $19 mil charge for F2006 for asset dismantling which used to come from the FRSR charge for which there is not an ARO obligation in F2005 and beyond (T.9, P.1294, L.16 to P.1295, L.1). The FRSR could be wound down by covering those ongoing reclamation costs from the FRSR Fund until the Fund runs out.

Further, Mr. Wallace also made some very good points about ratepayers having to pay twice in T.8, P.1142 to 1149.

If an approach to amortize the FRSR similar to those explored in Exhibit B1-79 were to be deemed appropriate by the Commission, then I would like to propose the following method for consideration:

> The FRSR be amortized over a 5 year period with the amortization rate varying as follows: year 1 - 30%, year 2 - 25%, year 3 - 20%, year 4 - 15%, and year 5 - 10%. Such a method would reduce the rate shock in year one and gradually reduce the advantage through to year 5 when the amount would be equal to the10 year amortization in Exhibit B1-79.

There is however one major problem with the BC Hydro approach in Exhibit B1-79, and that is, the amortized amounts are not taken into income but are shown as reduced depreciation expense, thereby allowing BC Hydro to retain the entire value of the FRSR, only this time as assets which will attract an interest expense.

The amortized amounts should be treated as income in the current year, as the money was originally revenue to BC Hydro.

I can envision no circumstance under which BC Hydro should be allowed to retain the FRSR asset in any form on the BC Hydro Balance Sheet as it would result in ratepayers paying for the same service twice plus the on going cost to ratepayers because of the additional rate base of BC Hydro.

Definition of Equity

The existing debt/equity ratio of BC Hydro has the owner's returns on a completely separate path from capital invested, with the debt/equity ratio decreasing steadily from its artificially reduced level as a result of Special Direction #8 in 1992. This is not the

manner in which private utilities are regulated, nor should it be for a Publicly owned Utility.

In addition to removing The Skagit Fund, the Columbia River Treaty monies and Contributions in Aid of Construction amounts from the equity, the Commission should require BC Hydro to fix a Debt/Equity ratio under which BC Hydro will operate in the future. BC Hydro should be rewarded when net new investments are made, as opposed to the present system where the equity amount is increasing every year on auto-pilot regardless of any BC Hydro capital investments or dis-investments.

Energy Supply Costs

There was great reluctance on the part of Panel 4 to clarify on the record what exact financial analysis methods are used in choosing between different new energy supply options. BC Hydro even failed to provide my information request T.13, P.2090, so I have provided in attached Appendix 1, the type of information that I was expecting from BC Hydro to the best of my ability with the material provided in this Revenue Application.

From all my examination of Panel 4 in T.13, P.2067 through 2090, there is nothing which indicated that the actual affect on the ratepayer was a major factor in which energy supply option to choose. Hydro panel members talked in terms of the 20 year IEP period, levelized cost of capital, reliability, net present value, and environmental impact. While reliability and environment are important enough to stop a project on their own, I believe that the total cost to the ratepayers is the proper financial criterion to be used. As can be seen from Appendix 1 running all calculations in a parallel computer spread sheet is not difficult.

There was no mention of evaluating the continuation of supply cost in year 21 and beyond.This is a major omission in evaluating the future affect on ratepayers, as is evident from the KWH rates under all scenarios in year 30 (the 20^{th} year of power production) on the Appendix 1 spreadsheet.

I would urge the Utilities Commission to set standards for a full evaluation of energy projects, which puts a very highest priority of the financial analysis on the actual cost to ratepayers as opposed to the present system that is more concerned with the cost of capital to BC Hydro, and consequently may not be in the best interests of BC Hydro's 1.5 million residential customers.

Transmission

Under close scrutiny, there appears to be a systemic effort made to overload costs onto the Transmission arm the of BC Hydro. The most obvious item is the tax bill. All BC Hydro assets pay school taxes, with the exception of some generation facilities as stated in Exhibit B1-1 P.2-19. If you look at the assets of Distribution and Transmission less the

DSM component, the asset values are almost equal, yet Transmission is billed an average of $90 mil. for F2005 and F2006 while Distribution is billed an average of $19 mil. each of those years. My questions regarding this were not able to be answered by the Transmission panel in T.17, P.3005 to 3007.

In T.17 from the bottom of P.3012 to the top of page 3015, I questioned, but got no firm answers on the reason for the very high effective rate of depreciation on the Transmission assets at approximately 6% per annum. In Wait IRs 1.25 and 1.26, the transmission lines have a average depreciation rate of 2.1% and the substations 3.2%, not adjusted for the size of each category. This 6% actual depreciation is almost twice the actual rate of Distribution, which I would have expected to a have slightly higher depreciation rate than Transmission. Are some items being improperly charged to depreciation in the transmission division that should be charged to one of the other divisions?

Page 2-69 in Exhibit B1-1 shows the rate base split for calculating the interest charges and return on equity charges for each line of business (LOB). In this calculation, large sums which require return on equity (ROE) rates, (Contributions in Aid, Skagit, and Columbia River Treaty monies) are removed from Generation and Distribution to determine their rate bases, while Transmission has only a small amount of Contributions in Aid removed. Table 1 below shows an alternate calculation if all of those above ROE amounts above are included in the rate bases. Table amounts are in millions of dollars.

Table 1

Allocation of Finance Charges

Line of Business with DSM	F2004 Book Value	F2005 Book Value	Skagit & Columbia	Average F2005 BV	% of Total	Scheblule B-7 %s
Transmission	2559	2631		2595.0	26.49%	28.44%
Generation	3981	4044	469	4481.5	45.75%	45.13%
Distribution	2617	2822		2719.5	27.76%	26.43%
				9796.0		

Table 1 indicates that the finance and return on equity charge is about 2% higher in BC Hydro's present format than they should be if all ROE amounts are included. The amount attributable to Transmission would be even lower if the ROE on the items presently excluded, was recovered separately for the LOBs before distribution of the remaining debt and equity costs were calculated.

While we are looking at the distribution of the debt and equity revenue requirements, there is also a good case that can be made for the trading profits of Powerex to be divided as revenue to only Generation and Transmission as those LOBs assets are utilized in the trading function.

Generation

Revelstoke and Mica

The proposal to install generators 5 & 6 in both Revelstoke and Mica will require some expenditures in 2005 and 2006 for infrastructure in the transmission system. Before decisions are made to proceed with any expenditure towards these additional generators a thorough cost analysis should be done.

-At present, Revelstoke and Mica operate at an average of 50% of existing capacity. How much water is available to be moved from low load hours to high load hours and what is the monetary advantage?

-Will there ever be a partial diversion of the Kootenay River into Columbia Lake which is the main reason that spaces were left for additional generators at Mica and Revelstoke?

-Existing peaking capacity at present according to Mr. Spafford, T.19 P. 3406 to 3409, is 11,200 MW for BC Hydro's own generation. There is also contracted generation which in 2004 which amounted to one-fifth of BC Hydro's power requirements total and new contracted generation capacity coming on stream. Is this new Mica and Revelstoke peaking capacity required?

-Exhibit B1-190 requested the unit cost of energy for units #5 in Revelstoke and Mica, but what was provided does not include on going debt or equity costs, depreciation or sustaining capital cost carrying charges.

The case for units #5 in Revelstoke or Mica should by clearly made before any money is spent on making allowances to bring that generation on stream.

Site C

In attached Appendix 1, I have attempted to provide as complete a costing of Site C compared to present IPP contracts as I was able with the information in the Hearing documents. Clearly, by each measure which I used Site C comes in as the lower cost alternative. Site C also has the advantage of being a large facility and is dispatchable in tandem with BC Hydro's Peace Canyon and Bennett Dams making its power more valuable than any of the run of the river or wind power IPPs presently being contracted by BC Hydro.

Site C would also be timed to come on stream about the time that Burrard is expected to be finally written off, which is a firm block of capacity that will have to be replaced.

Work on investigating and firming up the cost and schedule for Site C should definitely proceed.

Summary of Conclusions

1. Regulation should be applied to BC Hydro in exactly the same fashion as it is with private utilities where possible.

2. Following up on conclusion #1, the Columbia River Treaty monies, the Skagit Fund and the Contributions in Aid of Construction should be removed from the Owner's Equity for purposes of calculating the total return to the owner on investment.

3. Costs to operate the Duncan and Kennleyside Dams above the amounts from the Columbia River Treaty amortization each year, should be collected from the BC Government's downstream revenues. BC Hydro ratepayers should not be paying costs of power where none is received.

4. The FRSR Fund should be amortized in a fashion that the annual amounts are treated as income to BC Hydro and not by a stroke of the pen slipped into hard assets.

5. A fixed Debt/Equity ratio should be set for BC Hydro.

6. Energy supplies should be evaluated on a cost basis where the primary cost criteria is the ratepayers actual out of pocket expense, not the BC Hydro perceived cost of capital. BC Hydro will earn its proscribed rate of return on funds invested by virtue of being a regulated utility.

7. Costs allocated to the new BCTC (interest, taxes, depreciation, maintenance, return on equity, etc), need to be thoroughly scrutinized so that BCTC is not subsidizing other parts of BC Hydro.

8. New power supply contracts should be written so that the IPPs operate in a regulated structure similar to other private utilities.

9. The units #5 in Mica and Revelstoke require further study and justification before proceeding, but Site C should be proceeding in an orderly fashion towards construction if the project continues to be the lowest cost option.

Respectfully Submitted by Alan Wait

APPENDIX 1

Hypothetical IPP versus Site C

The attached chart attempts to ballpark the cost of power produced by an IPP and Site C under the following assumptions:

- Inflation is at 2% per year
- Cost in columns from the 'Site C book value' to 'annual cost' are in millions of dollars
- Both projects come on stream in year 10
- IPP contract price starts at $54 in year 1, inflates at 2% until year 10 and increases at half the rate of inflation once producing power
- Total water rental rates start at $5.50 per MWH and increase at the rate of inflation from year 1
- The incremental cost of debt and equity is all at a debt interest rate of 6.5% as the additional cost of Site C will not violate the 1.3 interest coverage ratio or the 80/20 debt/equity ratio under the present Special Directions to BC Hydro.
- The total 2003 cost of Site C is $2.65 Billion in year 1 (includes financing) then inflated at 2% until year 10
- The OMA costs inflate at 2% from year 1
- Taxes are $482,000 in year one and inflated at 2% per year to $588,000 in year 10 and remain constant for the first 20 years of production
- Depreciation is averaged for the whole project at 2.5% per year on a flat line basis. Also sustaining capital is added each year at the rate of 0.5% per year of the original capital cost and increased by 2% a year for inflation.