
Revenue Requirement Application
2004/05 and 2005/06



Volume 1

Chapter 10.

Rate of Return on Equity

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None.

1 **1 Introduction**

2 Heritage Special Direction No. HC2 (HSD #2), section 4, requires the Commission to ensure
3 that BC Hydro's rates:

4 "... allow the authority to collect sufficient revenue in each fiscal year to
5 enable the authority to [among other things] ... achieve an annual rate of
6 return on equity equal to the pre-income tax annual rate of return allowed
7 by the commission to the most comparable investor-owned energy utility
8 regulated under the *Utilities Commission Act*."

9 This formulation is substantially identical to analogous provisions of the since-repealed
10 Special Direction #8 to the Commission. Thus, in order to determine BC Hydro's allowed
11 rate of return for the test periods HSD #2 requires the determination of:

- 12 (i) the B.C. investor-owned energy utility most comparable to BC Hydro;
- 13 (ii) the income tax rate of that utility; and
- 14 (iii) the allowed return on equity of that utility.

15 This chapter provides that analysis.

2 Most Comparable Utility

In its 1994 decision regarding BC Hydro’s revenue requirement the Commission considered that Terasen Gas Inc. (“Terasen”, then BC Gas Utility Ltd.) was the most comparable utility to BC Hydro. It did so by considering each of the following factors in a comparative analysis of BC Hydro, Terasen, and Aquila Networks Canada (B.C.) Ltd. (“Aquila”, then West Kootenay Power Ltd.):

- size of operations;
- location of operations;
- nature of business; and
- capital structure and debt/equity ratio.

BC Hydro applies that analysis in the following sections.

2.1 Size of Operations

Table 10-1 provides a comparison of BC Hydro with Terasen and Aquila based on size of operations.

Table 10-1. Comparison of B.C. Energy Utilities – Size of Operations

Size of Operations	BC Hydro	Terasen	Aquila
Revenue (\$ millions)	\$4,407	\$1,200.4	\$148.4
Total assets (\$ millions)	\$11,924	\$3,153.7	\$499.0
Number of employees	6,013	1,271	395
Number of customers	1,629,186	766,929	90,718

Source: Annual Reports of BC Hydro (March 31, 2003) and Terasen (December 31, 2002), and Aquila’s annual filing with the BCUC (December 31, 2002).

It is clear from Table 10-1 that Terasen is more similar to BC Hydro than Aquila, based on the size of operations criteria.

2.2 Location of Operations

BC Hydro serves in a very large area containing over 94% of British Columbia’s population, while Terasen also serves customers in large parts of the province, including the lower

1 mainland, the central interior, the northern interior, the Kootenays, the Okanagan, and in the
2 Fort Nelson area.

3 Aquila serves customers only in the West Kootenays and the Okanagan, a much smaller
4 service area than either of BC Hydro or Terasen.

5 It follows that Terasen is more similar to BC Hydro than Aquila in terms of location of
6 operations.

7 **2.3 Nature of Business**

8 Table 10-2 provides a comparison of BC Hydro with Terasen and Aquila based on the
9 nature of their respective businesses.

10 **Table 10-2. Comparison of B.C. Utilities – Nature of Business**

Nature of Business	BC Hydro	Terasen	Aquila
Main product	Electricity	Gas	Electricity
Acquisition of product (% in GW.h):			
Hydroelectric	55.3 %	n/a	51.8 % (Hydroelectric and Thermal)
Thermal	0.5 %	n/a	
Purchased	<u>44.2 %</u>	<u>100.0 %</u>	<u>48.2 %</u>
	100.0 %	100.0 %	100.0 %
Revenue by customer type (%):			
Residential	20.9 %	60.0 %	41.7%
Light industrial & commercial	20.3 %	36.8 %	21.7%
Large industrial	11.7%	1.6 %	10.9%
Other/misc.	3.2 %	1.5 %	25.8%
Energy trade	<u>43.8 %</u>	<u>n/a</u>	<u>n/a</u>
	100.0 %	100.0 %	100.0%
Energy sales by volume (BC Hydro & Aquila: GW.h %; Terasen: TJ):			
Residential	18.8 %	60%	35.7 %
Light industrial & commercial	21.0 %	39.1%	18.5 %
Large industrial	19.0 %	0%	12.5 %
General/other/Wholesale	2.2%	0.9%	33.3 %
Energy trade	<u>39.0 %</u>	<u>n/a</u>	<u>n/a</u>
	100.0 %	100.0%	100.0 %

11 Source: Annual Reports of BC Hydro (March 31, 2003) and Terasen (December 31, 2002), and
12 Aquila's annual filing with the BCUC (December 31, 2002).

13 Given the foregoing and in particular the fact that Aquila and BC Hydro are electric utilities
14 serving relatively similar customer bases, it is apparent that the nature of Aquila's business
15 is more similar to BC Hydro's business than is Terasen's.

1 **2.4 Capital Structure**

2 Table 10-3 provides a comparison of BC Hydro with Terasen and Aquila based on capital
3 structure.

4 **Table 10-3. Comparison of B.C. Utilities – Capital Structure**

Capital Structure	BC Hydro	Terasen	Aquila
Debt (\$ millions)	\$6,849	\$1669	\$285
Equity (\$ millions)	\$2,700	\$791	\$181
Debt/Equity ratio	72:28	68:32	61:39

5 Source: Annual Reports of BC Hydro (March 31, 2003) and Terasen (December 31, 2002), and
6 Aquila's annual filing with the BCUC (December 31, 2002).

7 It is apparent that Terasen is more similar to BC Hydro than is Aquila, on the basis of capital
8 structure, particularly given their relatively similar debt/equity ratios.

9 **2.5 Conclusion**

10 Since Terasen is more comparable to BC Hydro than is Aquila under three of the four
11 comparison factors, BC Hydro concludes that for F2005 and F2006 Terasen remains the
12 British Columbia energy utility whose allowed rate of return on equity is to be used to
13 determine BC Hydro's rate of return on equity.

1 **3 Income Tax Rate of Most Comparable Utility**

2 The annual allowed rate of return approved by the Commission for Terasen is calculated on
3 an after-tax basis. Therefore, Terasen's allowed (after-tax) return on equity must be
4 "grossed-up" to a pre-income tax return on equity pursuant to HSD #2. This requires the
5 determination of Terasen's tax rate.

6 **3.1 Determination of Tax Rate Method**

7 There are two principal methods available to determine a tax rate for Terasen:

- 8 • the statutory tax rate method; and
- 9 • the effective tax rate method.

10 3.1.1 Statutory Tax Rate Method

11 This method uses the combined federal and provincial corporate income tax rates. For
12 example, a 12% after-tax rate of return would be grossed up to a pre-tax rate of 22% if the
13 combined applicable rate of federal and BC corporate income taxes was 45%
14 $[12\% / (1-45\%) = 22\%]$.

15 The statutory tax rate method's primary advantages include ease of use, and year-to-year
16 consistency. The major disadvantage is that it does not account for any actual tax deferrals
17 that may be realized by the entity.

18 3.1.2 Effective Tax Rate Method

19 This method uses actual tax payable, after adjustment for differences between accounting
20 and taxable income¹. The main advantage of using the effective tax rate method is that it
21 reflects the real tax rate payable by the investor-owned utility. The major disadvantage is an
22 increased likelihood of fluctuations in the utility's pre-income tax rate of return from year to
23 year as the tax rate fluctuates.

¹ Differences between accounting and taxable income reflect timing differences in accounting line items that may not be tax-deductible for the tax year. These accounting line items include depreciation, debt issue expenses (amortized) and costs, CCA, and other company specific items. Examples are shown in Terasen Gas Inc.'s Multi-Year PBR Plan for 2004-2008, section H, Tab 13, page 4.

1 Terasen (and Aquila) use the effective tax method in connection with the Commission's
2 review of its allowed after-tax return. Moreover, this method was used by the Commission in
3 its 1994 decision regarding BC Hydro's revenue requirement. It follows that BC Hydro
4 believes that the effective tax rate method is the appropriate method to use to determine
5 Terasen's tax rate.

6 **3.2 Accounting for Future Income Taxes**

7 The Canadian Institute of Chartered Accountants has issued a new (since 1994) income tax
8 accounting standard for the accounting of income taxes effective for fiscal years beginning
9 on or after January 1, 2000. This standard recognizes future income taxes arising from the
10 temporary differences between the tax basis of an asset or liability, and its carrying values
11 for accounting purposes. Rate regulated entities such as Terasen may continue to choose
12 to apply the old standard, and not record future income taxes to the extent that such taxes
13 are expected to be recovered in rates. Terasen continues to apply the old "deferral"
14 standard and accordingly BC Hydro calculates Terasen's effective income tax rate on that
15 basis.

16 **3.3 Large Corporation Tax**

17 The Large Corporation Tax (LCT) is a federal tax levied on capital in excess of a designated
18 amount. Effective January 2004, the LCT will be applicable on capital in excess of \$50
19 million. Although LCT is accounted for as a tax expense it is not related to income *per se*.
20 Accordingly, and consistent with the Commission's 1994 decision, BC Hydro excludes LCT
21 from Terasen's income tax expense in the following calculation.

22 **3.4 Calculation of Terasen's Tax Rate**

23 For the purposes of this application and F2005 and F2006, BC Hydro calculates Terasen's
24 effective income tax rate for 2004 as follows:

$$25 \text{ (income tax expense - LCT) / (accounting income after tax + income tax expense - LCT)} \\ 26 = (41,437 - 3,402) / (73,175 + 41,437 - 3,402) = 34.20\%$$

27 Source: Terasen Gas Inc. (BC Gas Utility Ltd.) Year 2004 Financial Schedules, revised with terms in
28 BCUC Decision (G-7-03) on Terasen Gas Inc. 2003 Revenue Requirement Application and BCUC
29 Approval (G-51-03) of the Terasen Gas Inc. Multi-Year Performance-Based Rate Plan to set rates for
30 2004-2008.

1 **4 Pre-Income Tax Rate of Return of Most Comparable Utility**

2 On November 20, 2003 the Commission determined that an appropriate (after tax) rate of
3 return on common equity for a low risk benchmark utility for 2004 would be 9.15%
4 (Commission letter number L-57-03). As Terasen is the benchmark low risk utility, that rate
5 will be its allowed return on equity for 2004, and consequently that rate is used by BC Hydro
6 to determine its allowed return on equity.

1 **5 Calculation of BC Hydro's Allowed Rate of Return on Equity**

2 BC Hydro calculates its allowed rate of return on equity using Terasen's allowed rate of
3 return of 9.15% and Terasen's effective tax rate of 34.20% as follows:

4 Terasen Allowed After Tax Rate of Return / (1- Terasen Effective Tax Rate)

5 = BC Hydro's allowed rate of return on a pre-income tax basis

6 = 9.15 % / (1 – 34.20 %)

7 = 13.91 %