

# Hunter Litigation Chambers

HUNTER / VOITH / BERARDINO / HARRIS / McEWAN

BC HYDRO – 2008 LTAP

EXHIBIT

C16-6

November 14, 2008

File no: 1531.002

**Via E-Mail - [commission.secretary@bcuc.com](mailto:commission.secretary@bcuc.com)**

Erica M. Hamilton  
Commission Secretary  
British Columbia Utilities Commission  
P.O. Box 250  
6th Floor, 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Ms. Hamilton:

**Re: British Columbia Hydro and Power Authority (“BC Hydro”)  
2008 Long Term Acquisition Plan (“2008 LTAP”)  
Project No. 3698514; BCUC Order No. G-96-08**

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I am assisting Mr. Hunter in connection with this matter.

On behalf of the Intervenor COPE 378 and in accordance with the Regulatory Timetable established by BCUC Order G-126-08, I enclose for filing with the Commission the Direct Evidence of Dr. Marvin Shaffer in connection with the 2008 LTAP together with Dr. Shaffer’s resume.

I would be most grateful if you would add me to the list of counsel receiving notice of filings in this matter at my email address [moulton@litigationchambers.com](mailto:moulton@litigationchambers.com).

Yours truly,

Hunter Litigation Chambers

Per:



Mark S. Oulton

MSO/bb

Encls.

cc BC Hydro  
Attention: Joanna Sofield, Chief Regulatory Officer

Registered Intervenors

Client

## Direct Evidence of Marvin Shaffer

1. *Please state your name and describe your background and experience as it relates to this proceeding.*

My name is Marvin Shaffer. I am a consulting economist, specializing in energy, transportation and natural resource project and policy evaluation. I am an adjunct professor in the public policy program at SFU, where I teach a course in benefit-cost analysis. I was previously head of the BC Crown Corporations Secretariat, an agency that reviewed the plans and performance of the provincial crowns, including BC Hydro. I have testified previously before the BC Utilities Commission in hearings concerning BC Hydro's long term plans and specific acquisitions of electricity supply.

The BC Energy Plan and subsequent legislation are major contextual factors governing BC Hydro's LTAP. It is critically important to understand the implications and limitations of the Energy Plan in order to assess how well BC Hydro has responded to it in its proposed LTAP. Last year I undertook a review of BC Hydro-related provisions in the Energy Plan. The review is presented in a series of papers contained in the report, ***Lost in Transmission***.

2. *What were the principal conclusions in your review?*

***Lost in Transmission*** addressed three key provisions in the Plan:

Self-sufficiency: - the requirement that BC Hydro acquire sufficient new sources of supply that it can meet its annual electricity requirements from domestic resources in all years, including critical low water years;

Pricing Policy: - the extension in perpetuity of a policy of basing electricity rates on historic average costs of supply as opposed to the much higher costs of new supply; and

Promotion of run-of-river and wind: - the direction to BC Hydro to recognize greater firm energy value from intermittent resources like run-of-river and wind, and clear encouragement to acquire more of those resources.

### Self-sufficiency

Self-sufficiency as defined in the Energy Plan and subsequent legislation is not needed to ensure a reliable source of electricity supply.<sup>1</sup> To ensure physical

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<sup>1</sup> As the BCUC noted in its 2006 IEP Decision, self-sufficiency and security of supply, though often confused with one another, are distinct issues. See BCUC, *In the Matter of BC Hydro Integrated Electricity Plan and Long Term Acquisition Plan, Decision*, May 11, 2007, pp. 110-111.

security of supply BC Hydro does not need to acquire, under firm contract, supplies of energy sufficient to meet its load under all water conditions, including critically low water years. It could manage the risk of low water in other ways. It has the ability to purchase and store seasonally surplus and off-peak market supplies of energy if and when required because of low water or for other reasons. Because electrical systems are typically designed to meet peak load, seasonally surplus and off-peak supplies are always available. Even in the unlikely and unprecedented event that seasonally surplus and off-peak market supplies were not available, BC Hydro could acquire from Powerex the large amount of energy that the U.S. returns to British Columbia under the Columbia River Treaty, a potential source of supply that the Energy Plan and subsequent legislation preclude BC Hydro from taking into account.<sup>2</sup>

Self-sufficiency is fundamentally a market call: the judgment that it is economically or otherwise preferable to be 'long on energy' – to enter into long term contracts for additional supply at set prices. With the additional supply, BC Hydro will not have to pay whatever market prices prevail when and if it would otherwise need to import electricity, and it will have electricity for sale at market prices when, for example in average or above average water conditions, they may be surplus to BC Hydro's requirements.

The issue addressed in *Lost in Transmission* is whether this market call will be advantageous for BC Hydro and its ratepayers. In particular, will the contractually set prices that BC Hydro has to pay for the domestic long term supply be less than the market prices it would otherwise have to pay for imports or receive from incremental exports?

While there is much uncertainty about what the future will hold, and one can construct scenarios where this market call will be advantageous, most market forecasts and BC Hydro's own analysis indicate it will not be. BC Hydro's system simulations consistently indicate that the acquisition of domestic supplies as required for self-sufficiency will add hundreds of millions of dollars to the present value of its long term system cost.<sup>3</sup> BC Hydro also concluded that it will result in more disturbance of land and aquatic habitat, and more local air emissions because of the increased amount of generation and transmission development that will take place in the province.<sup>4</sup>

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<sup>2</sup> The Canadian Entitlement to the downstream benefits returned to the province under the Columbia River Treaty is owned by the Province. However, the rights and title to that energy have been assigned to Powerex under an agreement with the Province. See BC Hydro Response to COPE IR 1.2.5.

<sup>3</sup> The issue here is not whether BC Hydro should go long or be exposed to the market for all of its supplies. It is finding the right balance. As the BCUC stated "*There will be an optimal range of exposure to markets*", *In the Matter of BC Hydro Integrated Electricity Plan and Long Term Acquisition Plan, Decision*, May 11, 2007, p. 124. BC Hydro's analyses suggest going long for self-sufficiency does not result in the optimal exposure.

<sup>4</sup> See BC Hydro, *2006 Integrated Electricity Plan*, Table 6-4, p. 6-19.

## Pricing Policy

The pricing provision in the Energy Plan that was addressed in *Lost in Transmission* is the extension in perpetuity of the Heritage contract and the historic average-cost based pricing it entails. The issue is the impact historic average-cost based rates have on electricity demand. Because of the low cost hydro resources developed in the past, BC Hydro's average rates under this policy will remain artificially low – far below the cost of new supply. These low average rates will attract new electric intensive loads on the false premise that BC Hydro has inexpensive electricity available for sale. It doesn't. The low cost resources developed in the past are fully committed. New load requires new sources of supply and they are expensive.

A simple example illustrates the problem for BC Hydro and its customers. In the industrial sector, the average rate is currently less than \$40/MWh. The cost of new supply in BC Hydro's last round of purchases averaged close to \$90/MWh. Every additional MWh of new industrial load is effectively subsidized by \$50/MWh. For a new mine with a load of up to one million MWh per year, the effective subsidy – the net revenue loss from the new load that BC Hydro will incur and its existing customers will end up paying for – would be \$50 million per year.

As concluded in *Lost in Transmission*, this 'buy high-sell low' strategy is not desirable or sustainable and will exacerbate the inefficient development of new sources of electricity supply caused by the requirement for self-sufficiency.

## Promotion of run-of-river and wind

While there may be cases where run-of-river and wind resources are beneficial, in large amounts they are problematic within the integrated system. Run-of-river projects provide proportionally more of their energy in the spring when BC Hydro least needs it. And wind energy needs constant back-up which is costly. Neither provides power that BC Hydro can optimally dispatch, and neither, especially wind, provides much dependable peak capacity that BC Hydro can rely on to meet peak winter loads. *Lost in Transmission* argued that good energy policy should set environmental standards and then let BC Hydro, with appropriate oversight from the BCUC, determine what resources it should develop or acquire. It is not at all clear that is what the special reference to these resources in the Energy Plan and the restriction on BC Hydro's own development of energy resources, was intended to do.

3. *How do these findings and conclusions about the Energy Plan relate to the issues that the BCUC must consider with respect to BC Hydro's LTAP?*

This hearing is not about the merits of the BC Energy Plan. This hearing is concerned with the merits of the resource acquisition and other strategies BC

Hydro is putting forward in the context of the Energy Plan. However, as previously stated, it is critically important to understand the limitations and potential costs arising from the policies in the Energy Plan to determine whether BC Hydro is responding in a manner that best protects the interests of ratepayers – that minimizes the costs of the self-sufficiency and other policies it is being forced to adhere to.

4. *In your view, does BC Hydro's proposed LTAP recognize the problem with self-sufficiency and take steps to minimize its costs.*

The fundamental problem with self-sufficiency is that it arbitrarily eliminates the option of prudently relying on spot or short term wholesale markets when that is expected to be less costly and/or less risky than the acquisition of additional domestic long term firm supply.<sup>5</sup> As a result of self-sufficiency, BC Hydro has eliminated in its LTAP any reliance on non-firm or out-of-province supplies for planning purposes, regardless how advantageous or cost-effective some reliance on such supplies may be.<sup>6</sup>

One way to mitigate the cost of that is to retain the full energy capability of the Burrard Thermal plant. Among the many advantages of the Burrard plant is that it enables BC Hydro to take advantage of non-firm and spot market energy supplies without being reliant upon them. That advantage is diminished in BC Hydro's LTAP because of the downgrading of the firm energy capability of Burrard that it proposes.

BC Hydro's studies indicate that with sustaining capital expenditures the firm energy capability of the Burrard thermal plant could be retained at 6000 GWh.<sup>7</sup> The studies indicate attempting to operate the Burrard thermal plant at that level as a base load plant on a continuous basis would involve some risk, but there is no intention or need to do so. The Burrard energy capability is a resource that is available to BC Hydro if needed or otherwise advantageous to use. However, under average and above average water conditions it would largely be displaced by non-firm hydroelectric supply. And whatever was not displaced by non-firm supply would in all likelihood be cost-effectively displaced by market purchases.<sup>8</sup>

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<sup>5</sup> It is often suggested that entering into long term firm contracts at set prices reduces market risk. In fact it just changes the nature of the risk. As the BCUC stated, "*Market price risk must be weighed against the cost of securing firm long term electricity and/or natural gas*", *In the Matter of BC Hydro Integrated Electricity Plan and Long Term Acquisition Plan, Decision*, May 11, 2007, p. 121. With long term firm contracts there is the risk of paying too much. Given the financial hedges against high market prices that BC Hydro and the Province currently have, arguably the greater risk we face is that the market price of energy will be relatively low. Entering into long term fixed price purchase contracts exacerbates that risk. See *Lost in Transmission*, p.12.

<sup>6</sup> Self-sufficiency also arbitrarily eliminates competition from out-of-province suppliers of long term firm energy which in principle is unnecessary and potentially costly, but which likely is not as significant to BC Hydro as the restriction on how the risk of low water is managed.

<sup>7</sup> See BC Hydro, *2008 Long Term Acquisition Plan*, p. 5-29.

<sup>8</sup> BC Hydro's system simulations indicate that the economic dispatch of Burrard would be 0 even when its firm energy capability for planning purposes is retained at 6000 GWh. In all Burrard scenarios it is

BC Hydro questions whether it could retain its environmental permits and ‘social licence’ for Burrard if it were to retain its firm energy capability at 6000 GWh. Clearly this might be a problem if BC Hydro intended to change the operation of the plant to a 6000 GWh base load facility. But retaining the firm energy capability of Burrard at 6000 GWh for planning purposes is not to suggest or propose that it be operated as a base load facility. It would be operated no differently than it is at present. Nor would it be operated substantially differently than under BC Hydro’s proposed downgrade to 3000 GWh.<sup>9</sup>

There is no evidence indicating that BC Hydro could not retain its permits and ‘social licence’ to continue to do what it is doing. Nor is there evidence that it could retain its permits and ‘social licence’ for Burrard with a firm energy capability of 3000 GWh for planning purposes, but not 6000 GWh, even though the operations, emissions and impacts would be substantially the same in most years.

BC Hydro suggests that retaining the firm energy capability of Burrard at 6000 GWh for planning purposes would be contrary to the **intent** of the self-sufficiency provision it must adhere to. However, that provision only requires BC Hydro to have sufficient domestic firm energy capability to meet its requirements. It doesn’t state BC Hydro must use that capability when it is not economic to do so. Again, there is no evidence indicating that a firm capability of 6000 GWh (or anything over 3000 GWh) for planning purposes would not be consistent with self-sufficiency but 3000 GWh would.

The proposed downgrading of the Burrard Thermal plant exacerbates the adverse impact of the Province’s requirement for self-sufficiency because it further limits BC Hydro’s opportunistic use or purchases of non-firm and spot market supplies of energy. BC Hydro’s system simulations suggest that this will increase its present value system costs by some \$650 million.<sup>10</sup>

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expected that Burrard would only be operated as required for reliability and system support – approximately 600 GWh per year. It would be displaced largely by non-firm hydro and IPP supply in average water years, the balance by external market sources. See BC Hydro Response to BCUC IR 1.102.1.

<sup>9</sup> It is possible that with its firm energy capability retained at 6000 GWh, Burrard would be operated in some years at a higher level than if it were downgraded to 3000 GWh. However, if the past ten years is any guide, the difference would not likely be great. Only once over the past ten years did Burrard’s actual output exceed 3000 GWh, and that was due to the favourable spark spread (relative electricity to gas price) created by the California energy crisis. In other words, downgrading the capability of the plant to 3000 GWh would not likely have resulted in an operational difference in most years. Moreover, if Burrard retained its existing operational permits, there might be no difference at all. Despite the firm energy capability of Burrard for planning purposes being downgraded, actual operations could presumably exceed the level assumed for planning if advantageous to do so for market reasons.

<sup>10</sup> See BC Hydro Response to BCUC IR 1.102.1. The incremental cost of downgrading the firm energy capability will depend on many factors, including price forecasts, the potential for renewable energy credit sales, actual load growth. However, in most of the scenarios presented by BC Hydro, there is a significant incremental cost of the downgrading proposed in its LTAP.

The downgrading of the firm energy capability of Burrard presents a greater sense of urgency to acquiring additional supply than is really required. If the firm energy capability of Burrard were retained at 6000 GWh for planning purposes, BC Hydro would not need new sources of supply until 2017 under its mid load forecast.<sup>11</sup>

To minimize the cost of the self-sufficiency provision that it must adhere to, BC Hydro should make two major changes to its LTAP.

First, it should retain the firm energy capability of Burrard at 6000 GWh, incurring the sustaining capital expenditures required to ensure it is in fact capable of operating at that level. That in itself will avoid an incremental cost of some \$650 million, potentially more, due to downgrading.

Second, BC Hydro should defer the 5000 GWh Clean Call or limit purchases under that Call to those which have a sound business case relative to forecast market prices – for example to purchases that a commercial entity like Powerex would be willing to make based on the expected market value of the purchased supply over its contract life. It should not buy additional sources of power any sooner than necessary when they are not in fact required for self-sufficiency and will only add to the total system cost.

BC Hydro's forecasts indicate that a deferral of the Clean Call would reduce its present value system costs by some \$100 million.<sup>12</sup> It would also provide what economists term 'quasi-option' value – the ability to take advantage of new information that may arise over the deferral period (for example, information on load, market prices, carbon policy, plans with respect to Site C) that could materially affect optimal resource acquisition strategies. Given the great uncertainty over all of these critically important factors, that 'quasi-option' value could be very significant.<sup>13</sup>

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<sup>11</sup> BC Hydro's mid load / resource gap after taking its proposed DSM into account is estimated at 3258 GWh in 2017, the first full year where it has eliminated any reliance on non-firm or market sources due to the Province's requirement for self-sufficiency. That is almost exactly equal to the effect of the downgrading of Burrard that BC Hydro is proposing. See BC Hydro, *2008 Long Term Acquisition Plan*, Table 5-20, p. 5-60 and Table 6-15, p. 6-64.

<sup>12</sup> See BC Hydro Response to COPE IR 2.5.2.

<sup>13</sup> Quasi-option value is the expected value of new information. It depends on the likelihood that significant new information will be learned, the ability to respond to that new information and the impact the response has on system costs. For example, a deferral of the Clean Call by two years would enable BC Hydro to better determine the medium and long term impacts of the current downturn on its load. There is some significant probability it will determine that the current downturn will have significant continuing effects on its forestry and other industrial load and that it could cost-effectively extend the deferral in the Clean Call. That could enable BC Hydro to save hundreds of millions of dollars by avoiding or further delaying new IPP purchases that are not required. In this example the quasi-option value of deferral would be the probability that BC Hydro will learn there will likely be a continuing reduction in its load times the hundreds of millions of dollars it would save by avoiding or delaying purchases it no longer requires.

5. *In your view, does BC Hydro's proposed LTAP recognize the problem with average-cost based rates and take steps to minimize its costs.*

BC Hydro's DSM strategy explicitly includes plans for rate structure improvements aimed at encouraging conservation and more efficient use of electricity. These are important measures to complement its other DSM efforts. However, more efficient rate structures do not address the problem of low average rates attracting new electric intensive load. It is the average rate that will govern the economics of a new load being established in British Columbia.

BC Hydro's two-tiered rate structure in the industrial sector sets a high price on the last 10% of a customer's energy use, but a very low rate on the first 90%. The new mines and other electric intensive loads that are deciding whether to locate in B.C. are not deterred by the high second tier rate – they are attracted by the very low rate on the first 90% of their energy consumption.

This is a major problem for BC Hydro and its existing customers – a problem that is exacerbated by plans to extend the grid into Northwestern B.C. to serve more electric intensive loads. BC Hydro needs to recognize in its LTAP the need to develop strategies to address this problem. Attracting new electric intensive loads as a result of artificially low average rates will offset much of BC Hydro's conservation efforts and impose significant costs on existing customers.

6. *In your view, does BC Hydro's proposed LTAP recognize the problem with run-of-river and wind resources and take steps to minimize its costs.*

BC Hydro has taken some steps to address the seasonality of run-of-river supply and the back-up and other integration costs of wind. It has established limits to the proportion of energy it will buy in the freshet period on a firm basis; it has price adjustment factors to reflect the expected difference in value for deliveries in peak and off-peak periods and in different months. And it recognizes an expected integration cost of wind of \$10/MWh.

However, the unit energy cost calculations it undertook for its resource valuations and the adjustments it is planning in bid evaluations still do not fully recognize the very significant difference in value between a dispatchable resource under BC Hydro control and intermittent resources like run-of-river and wind.<sup>14</sup> Nor do its calculations and planned evaluation procedures take impacts on trade net revenues into account, beyond what the aforementioned steps will do. They will not, for example, take into account impacts on unique import or sale opportunities that regularly arise but aren't reflected in average price adjustment factors.

The unique strength of the BC Hydro system lies in its ability to dispatch and

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Quasi-option value is a strategic consideration that adds to the one hundred million dollar saving that BC Hydro already expect deferral offers.

<sup>14</sup> See BC Hydro IR Response to JIESC 1.11.2.

store energy. Resources that add to that capability will greatly add to the value BC Hydro and its customers can realize. On the other hand resources that simply rely on that capability diminish the opportunities that BC Hydro or Powerex can pursue to the benefit of its customers and the province as whole.

A major strategic issue BC Hydro should have addressed in its LTAP is how it can best retain, augment and benefit from the flexibility of its system operations. That flexibility will be of ever increasing value with the development of wind and other intermittent resources in other jurisdictions. There will likely be an increasing need for and profit that can be realized from back-up and storage services.

BC Hydro's LTAP does not explicitly address this issue. Its planned acquisition and development strategy does not appear to take into account impacts on the flexibility and value of its operations. It is an omission that should be addressed.

7. *Finally, could you please summarize your recommendations with regard to the LTAP.*

For reasons outlined above, I would recommend that the BCUC not endorse the LTAP BC Hydro has presented and instead direct BC Hydro to:

1. Retain the firm energy capability of Burrard at 6000 GWh for planning purposes;
2. Defer the Clean Call for at least two years or limit purchases under that Call to those sources for which there is a business case based on the market value of the energy that will be received over the life of the contract:
3. Develop strategies that address the impact of low average rates attracting new industrial load, for example by proposing to seek BCUC approval of major new loads above some threshold amount based on an assessment and justification of the impacts on existing customers and/or to pursue ways in which the customer base load in the two tier industrial rate structure could effectively be set at zero for major new electric intensive loads;
4. Undertake a strategic analysis of how BCH can best retain, augment and profit from the back-up and storage its system can offer, and how its should refine its acquisition and development strategy accordingly.

## MARVIN SHAFFER, Ph.D.

### RÉSUMÉ

**DATE OF BIRTH:** May 1, 1949

**PLACE OF BIRTH:** Winnipeg, Manitoba

**CITIZENSHIP:** Canadian

**EDUCATION:** McGill University, Montreal, Quebec  
B.A. (Honours) Economics, 1970.

University of British Columbia, Vancouver, B.C.  
Ph.D. Economics, 1974.  
Ph.D. Dissertation Topic: The Role of Competition in Macro Models  
Areas of Specialization: Industrial Organization - Labour Economics

**AWARDS:** Woodrow Wilson Fellowship, 1970  
U.B.C. Fellowships, 1970-1972  
Canada Council Fellowships, 1972-1974

#### MAJOR ACCOMPLISHMENTS:

- ***Greater Vancouver Transportation Authority:***
  - Negotiated agreement and co-chaired transition team transferring responsibility for BC Transit from the Province to Greater Vancouver within a newly created multi-modal, integrated transportation authority.
- ***Columbia River Treaty:***
  - Negotiated agreements for the return of the power benefits owed to British Columbia under the *Columbia River Treaty* in a manner which minimizes transmission costs and maximizes market opportunities for the province.
- ***Multiple Account Evaluation Guidelines:***
  - Developed framework now widely used within British Columbia for the evaluation of major policies and projects, recognizing financial, customer service, environmental and economic development objectives of government.

## EMPLOYMENT:

- 1976-1992, 1995-Present      *Consulting Economist* - President and senior consultant for Marvin Shaffer & Associates Ltd., a consulting firm specializing in energy, transportation and environmental economics.
- 2004-Present                      *Adjunct Professor, Public Policy Program, Simon Fraser University* – lecture on benefit-cost analysis.
- 1987, 1989, 1997-2003        *Sessional Lecturer in Economics, University of British Columbia* - macroeconomics and benefit-cost analysis.
- 1985, 1988, 1992, 2000, 2003   *Visiting Senior Lecturer in Economics, University of Tasmania and University of Queensland* -Lectured in benefit-cost analysis, natural resource economics, macroeconomics, econometrics and other subjects.
- June 1994-June 1995            *Chief Executive Officer, British Columbia Transportation Authority*, a Crown corporation responsible for integrated transportation planning and the financing of provincial highway and other transportation infrastructure investments.
- Aug. 1993-June 1995            *Secretary Responsible for the British Columbia Crown Corporations Secretariat*, a central agency responsible for reviewing strategic and business plans, and monitoring the performance of British Columbia's Crown corporations.
- June 1992-Aug. 1993            *Assistant Secretary, Capital Evaluation and Economic Analysis, British Columbia Crown Corporations Secretariat* -- Developed Multiple Account Guidelines for British Columbia's Crown corporations to ensure systematic evaluation of major investments; served as British Columbia's Chief Negotiator for the return of the Downstream Benefits owed to British Columbia under the Columbia River Treaty.
- 1976-present                      *Freelance Writer* - Freelance writer on economics and energy issues for major newspapers in Western Canada
- 1974-1976                          *Senior Economist, B.C. Energy Commission* - Researched and prepared reports on a wide range of energy topics, including future energy demand, utility rate structure, energy supply, field pricing and resource taxation.

# MARVIN SHAFFER & ASSOCIATES LTD.

## REPRESENTATIVE CLIENTS

### Governments

#### *Federal*

Auditor General  
Employment and Immigration Canada  
Energy, Mines & Resources Canada  
External Affairs  
Finance  
Fisheries & Oceans Canada  
Health & Welfare Canada  
Indian and Northern Affairs  
Public Works Canada  
Science Council of Canada  
Transport Canada

#### *Provincial*

Province of British Columbia  
Crown Corporations Secretariat  
Environment & Land Use Secretariat  
Marine Resources Branch  
Ministry of Agriculture  
Ministry of Economic Development  
Ministry of Employment and Investment  
Ministry of Energy, Mines & Petroleum Resources  
Ministry of Environment  
Ministry of Forests  
Ministry of Lands, Parks & Housing  
Ministry of Social Services & Housing  
Government of the Northwest Territories  
Manitoba Energy Authority  
Yukon Territorial Government

#### *Other*

City of Surrey  
Greater Vancouver Regional District  
GVTA (Translink)

### Public Sector / Crown Corporations

B.C. Ferries  
B.C. Hydro  
B.C. Resources Investment Corp.  
B.C. Transportation Financing Authority  
Columbia Power Corporation  
Manitoba Hydro  
New Brunswick Electric Power Commission  
Ontario Waste Management Corporation  
Partnerships B.C.  
Powerex  
Saskatchewan Crown Investments Corporation  
Saskatchewan Power Corporation

### Indian Organizations

Ft. Nelson Indian Band  
Gitksan Tribal Council  
Lake Babine Band  
Lax Kw'alaams Indian Band  
Musqueam Indian Band  
Nisga'a Tribal Council  
Katzie First Nation  
Tahltan Tribal Council

### Public Task Forces and Inquiries

B.C.-Environment Assessment Office  
Salmon Aquaculture Review  
B.C.- Gasoline Pricing Inquiry  
B.C.-Port Hardy Ferrochromium Review Panel  
B.C.-States Oil Spills Task Force  
B.C. Utilities Commission  
Ontario Energy Board  
West Coast Oil Ports Inquiry  
Western Grid Study Agreement

### Private Sector Firms and Associations

Aican Ltd.  
Amoco Canada Ltd.  
Arlon Tussing & Associates  
Berger & Nelson, Barristers & Solicitors  
BC Gas  
Cassels, Brock & Blackwell, Barristers & Solicitors  
Golder & Associates  
Gulf Canada Ltd.  
Industrial Gas Users Association  
Inland Pacific Energy Services (B.C. Gas)  
Mobil Oil Inc.  
Monenco Consultants Ltd.  
Montenay Inc.  
Natural Gas Pipeline Company of America  
Niagara Mohawk Power Corporation  
Petro-Canada Inc.  
Progas Limited  
RBC Dominion Securities  
Reid Crowther & Partners Inc.  
Sandwell, Swan Wooster  
Shell Canada Ltd.  
SNC Lavalin  
Westcoast Transmission Ltd.  
Western Gas Marketing Limited

### Non-Profit Organizations

BC Public Interest Advocacy Centre  
Canada West Foundation  
Canadian Wildlife Service  
Canadian Energy Research Institute  
YWCA