In the matter of the *Utilities Commission Act,* RSBC 1996, c.473

and

British Columbia Utilities Commission,
Project No. 3698354, Order G-106-04

British Columbia Hydro and Power Authority Call for Tenders for Capacity on Vancouver Island: A Review of Electricity Purchase Agreement

FINAL WRITTEN ARGUMENT

on behalf of

GSX Concerned Citizens Coalition (GSXCCC),
British Columbia Sustainable Energy Association (BCSEA), and
Society Promoting Environment Conservation (SPEC)

February 4, 2005

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Introduction

This is the final written argument of GSXCCC, *et al,* in the British Columbia Utilities Commission's review of the Electricity Purchase Agreement (EPA) between BC Hydro and Duke Point Power Limited Partnership (DPP). The EPA is filed with the Commission pursuant to s.71 of the *UCA*. This proceeding results from Commission Order G-106-04.

GSXCCC, *et al*, respectfully submit that the Commission Panel should

(a) find that the Electricity Purchase Agreement (EPA) is not in the public interest, pursuant to s.71(2), and

(b) by order declare the whole of the EPA unenforceable, pursuant to s.71(3).

This submission consists of five main parts:

- Summary argument,
- Statutory basis of the review,
- Greenhouse gas liability,
- Peak load forecasting, and
- Commission Authority to Disallow Filed EPA in Favour of a New EPA / EPA not the most cost-effective option.

No attempt is made to respond here to every argument made by BC Hydro and DPP in their respective final arguments.

Summary argument

The Commission Panel should find that the EPA is not in the public interest and should be disallowed by the Commission for the following reasons.

The EPA is an *outrageously expensive* method of meeting a one- or two-winter forecasted capacity gap for planning purposes on Vancouver Island in 2007-08. The EPA would cost $308-million NPV for capacity alone.

The EPA is *not necessary*. There are numerous, reasonably-priced options that in various combinations would provide entirely satisfactory solutions to the potential 'capacity gap for planning purposes' between the date of the zero-rating of the HVDC cables and the in-service date of the proposed 230 kV cables.

The EPA would lock British Columbia into the greenhouse gas consequences of a gas-fired generation plant for at least 25 years. Over the 25-year life of the EPA, substantial financial penalties will be imposed on either GHG emissions or natural gas as a fuel, or (likely) both. These penalties serve a public interest purpose: to slow down the rate of human-caused climate change by discouraging the construction and use of, among other things, gas-fired electrical generation plants such as DPPP. At this level, the public interest lies in discouraging gas-fired electrical generation regardless of any allocation of GHG penalties between BC Hydro and DPP.

Even as between BC Hydro and DPP, the EPA clearly requires BC Hydro to pay for the gas that would be used in the plant and clearly anticipates that BC Hydro would pay for any upstream GHG penalties that are embedded in the price of gas. The likelihood of BC Hydro being able to recover such expenditures from DPP pursuant to the EPA is remote, to say the least.

Moreover, the EPA leaves BC Hydro at risk of taking over DPP's GHG emissions liabilities in the event of a default by DPP. This is not an unrealistic concern. Eighty-eight million dollars NPV worth of GHG financial liability identified in the VIGP Benchmark has become *unspecified* within the EPA, and the EPA is said to be a "savings" in the same range -- $50-million to $100-million compared to the VIGP Benchmark. BC Hydro's contractual and secured remedies against DPP under the EPA would be cold comfort if BC Hydro was forced to attempt to realize on them.

The cost-effectiveness of the EPA compared to other options is bolstered very little by the Call For Tenders (CFT) process. The most that can be said of the CFT in this regard is that it shows that DPP's bid for the use of the VIGP assets was less expensive than an unnamed competitor's bid for the use of the VIGP assets. There is no question but that the CFT incorporated resource bias (in the morally neutral sense) toward gas-fired generation and the use of the VIGP assets. Indeed, BC Hydro itself argues that this is deliberate and desirable; that the CFT was designed for the purchase of a "product" which maximized the return on BC Hydro's purported gas price risk minimization capability. While that argument may or may not justify BC Hydro's decision to take the fuel price risk for gas-fired projects but not for non-gas-fired projects, it nullifies the use of the CFT results for anything except comparison of DPP's gas-fired VIGP proposal with the unnamed competitor's gas-fired VIGP proposal.

Furthermore, the CFT's pricing of the VIGP assets is an explicit subsidy of VIGP projects not applicable to other projects bid into the CFT. The amount of the VIGP assets subsidy is the amount of the difference between the arbitrary $50-million "price" of the assets and the value of the VIGP assets to the bidder. Whether that subsidy is justified or not, clearly the subsidy was *effective*, as shown by the fact that all of the portfolios evaluated in the QEM included the VIGP assets. Again, the upshot is that the CFT shows that DPP proposed a less expensive use of the VIGP assets than did the unnamed competitor; but the CFT does *not* show that the use of the VIGP assets was more cost-effective than other resource options.

BC Hydro's "cost effectiveness analysis" (CEA) of the EPA, "Tier 2" and "No Award" is useless for present purposes because the CEA methodology is grossly oversensitive to the assumptions. The CEA inflates the "cost" of the "No Award" option by attributing to it an estimated figure supposedly representing the "net value" of the energy that would have been produced by the EPA had the EPA been selected. But far from being a mere *adjustment* to the cost of "No Award" to allow it to be compared on an even basis with the cost of the EPA, this "energy backfill" is based on numbers that are almost an *order of magnitude* larger than the 'actual' cost of the "No Award" option. Thus, the CEA compares the EPA option with the "No Award" option by essentially comparing the cost of the EPA, on the one hand, with the cost of an energy backfill figure derived from the EPA, augmented only slightly by the 'actual cost' of "No Award," on the other hand. Not surprisingly, the directional outcome of the comparison is utterly dependent on the assumptions used in the derivation of the energy backfill figure. For example, merely changing the assumed cost of Mainland energy from 100% to 90% of the EPA cost *reverses* the outcome and causes the "No Award" option to be substantially *less expensive* than the EPA.

As in the VIGP decision, BC Hydro has not shown that gas-fired generation is the most cost-effective method of meeting the capacity shortfall for planning purposes on Vancouver Island beginning with the zero-rating of the HVDC lines. On the contrary, at a price tag of some $308-million NPV for capacity to meet a forecasted capacity gap that will most likely last for only one winter until the new 230 kV lines are in service, the EPA is certainly *not* the most cost-effective option.

Contrary to the suggestions of BC Hydro and DPP, the Commission Panel should not feel that the VIGP Decision compels the Commission to approve the EPA. The VIGP Decision stands for the proposition that it is not in the public interest to proceed with a gas-fired generation project on Vancouver Island where BC Hydro has not shown that the project is the most cost-effective method of meeting a forecasted capacity gap for planning purposes on the Island. The public interest is the same in this proceeding as it was in the VIGP proceeding, despite the legal distinction between an application for a CPCN and a filing under s.71. The VIGP Decision is not, and legally could not have been, a promise by the Commission to approve whatever EPA emerged from a CFT process. That was well known to all bidders and potential bidders into the CFT. Everyone concerned knew full well that the Commission had denied a CPCN to VIGP because VIGP had not been shown to be the most cost-effective option; and everyone knew that any VIGP-type project emerging from the CFT would be subject to the same rigourous scrutiny by the Commission. The acknowledged fact that personnel from BC Hydro, DPP and the other bidders worked very hard and in good faith in implementing and participating in the CFT process is not a valid reason for the Commission to favour approval of the EPA. Many people worked very hard and in good faith in developing the VIGP proposal too, yet the Commission saw fit not to approve it. In addition, many people worked very hard and in good faith on BC Hydro's GSX proposal as well, and yet BC Hydro itself saw fit not to proceed with it. BC Hydro and DPP have asked the Commission Panel to conclude that a decision to disallow the EPA would dissuade potential proponents of capacity and energy products from responding to future calls for tender by BC Hydro. GSXCCC, *et al*, would urge you to reject that approach. Investment decisions are, and should be, made one

decision at a time. No market credibility would be established by 'throwing good money after bad.'

Statutory basis of the review

As BC Hydro acknowledges, s.71 authorizes the Commission to hold a hearing regarding a filed energy supply contract, such as the EPA. In the context of s.71, the purpose of such a hearing is for the Commission to determine whether the contract is not in the public interest, and, if so, whether and how to exercise its authority to declare some or all of the contract unenforceable and/or to make any other order it considers advisable.

Throughout this hearing, BC Hydro has frequently reiterated its position that a hearing under s.71 does not involve an application for approval of the EPA. With respect, that is not entirely correct. First, s.71(1) requires that an energy supply contract be filed "under the rules," and the Electricity Supply Contract General Rules,[1] s.1.1, state:

> 1.1 Each electricity supply contract and any amendments thereto entered into, shall be filed with the Commission pursuant to Section 71, and its approval obtained. [underline added]

Thus, while s.71 does not use the term "approval," the Rules *do* use the term "approval."

Second, once the Commission has decided to hold a hearing regarding an energy supply contract under s.71, as it did when it issued Order G-99-04 regarding the EPA, the proceeding is in the nature of an application for approval of the EPA whether the statute uses the word "approval" or not. *Black's Law Dictionary* defines "approve" as follows:

> **approve**, *vb.* To give formal sanction to; to confirm authoritatively. – **approval**, *n.*[2]

The outcome of this s.71 hearing will be either to disallow the EPA or to "give formal sanction to; to confirm authoritatively" the EPA. Indeed, while both BC Hydro and Duke Point Power Limited Partnership (DPP) emphasize that the EPA is legally binding pending the outcome of this proceeding, neither BC Hydro nor DPP has argued that the parties are required to *implement* the EPA prior to the completion of this proceeding. Moreover, the terms of the EPA itself contemplate that the parties' respective obligations do not crystallize unless and until the EPA receives, in effect, regulatory approval.

Thus, BC Hydro is very much in the role of an *applicant* in this proceeding. And, with the role of applicant comes the *onus* of establishing its case. BC Hydro effectively acknowledges that it bears the burden of proof in this proceeding when it states:

> BC Hydro…accepted the Commission's challenge to demonstrate the cost-effectiveness of the solution proposed in the EPA.[3]

Having dealt with the *burden* of proof, the next issue is the *standard* of proof. GSXCCC, *et al*, submit that the standard of proof which BC Hydro must meet is proof *on the balance of probabilities*, the usual civil standard. In contrast, BC Hydro states:

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[1] http://www.bcuc.com/Documents/MiscDocs/ESCElectricRules.pdf
[2] *Black's Law Dictionary*, Seventh Edition, (West Group: St. Paul, Minn., 1999), p.98.
[3] BC Hydro Final Argument, para.2.

> However, this challenge does not go so far as requiring BC Hydro to prove "beyond a reasonable doubt" or to any other specific evidentiary standard that its proposed solution is "best."[4]

Clearly, the criminal standard of proof, "proof beyond a reasonable doubt,"[5] does not apply in this proceeding. And, strictly speaking, the statutory test is whether the EPA is "in the public interest,"[6] not whether BC Hydro's "proposed solution is 'best.'" However, if BC Hydro intends to imply that it is not required to meet *any* "specific evidentiary standard," GSXCCC, *et al*, would respectfully disagree. BC Hydro bears the onus of attempting to prove that the EPA is in the public interest, and it must do so on the balance of probabilities.

BC Hydro goes on to state:

> All BC Hydro can do is show it has taken reasonable steps to identify and implement a cost-effective solution that can meet its needs on Vancouver Island.[7]

Again, GSXCCC, *et al*, respectfully disagree. BC Hydro must show that the EPA is in the public interest. How is BC Hydro to do that? The Commission Panel has answered by defining "the principal issue" in this proceeding. While GSXCC, *et al*, took the position in support of the JIESC's reconsideration application that the Panel's articulation of "the principal issue" is inappropriately narrow, it is abundantly clear that "the principal issue" is much broader than BC Hydro's statement of the test it must meet. The principal issue is:

> Is Tier 2, Tier 1, or the No Award option <u>the most cost-effective option</u> to meet the capacity deficiency on Vancouver Island commencing in the winter of 2007/'08?[8] [underline added]

BC Hydro's suggested test differs from the Panel's "principal issue" in two important ways. First, BC Hydro's test refers only to "<u>a</u> cost-effective solution" as opposed to "<u>the most</u> cost-effective option." Second, BC Hydro's test broadly references the option's ability "to meet its [BC Hydro's] <u>needs</u> on Vancouver Island," whereas the principal issue is specific to "<u>the capacity deficiency</u> on Vancouver Island commencing in the winter of 2007/'08." GSXCCC, *et al*, respectfully submit that at this stage in the proceedings it is not open to BC Hydro to modify or restate the "principal issue" as defined by the Panel.

Penultimately, regarding the statutory basis of the proceeding, GSXCCC, *et al*, respectfully disagree with BC Hydro's attempt to portray the statutory criteria for approval of the EPA as being less rigourous or well-defined than in a case where "an applicant must meet a prescribed and specific statutory test."[9] As BC Hydro itself acknowledges, s.71(2) sets out the criteria applicable to the Commission's determination of the "public interest" under s.71. Section 71(2) states:

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[4] BC Hydro Final Argument, para.2.
[5] BC Hydro Final Argument, para.2.
[6] UCA, s.71(2).
[7] BC Hydro Final Argument, para.2.
[8] T1: 313-314.
[9] BC Hydro Final Argument, para.3.

> 71 (2) The commission may make an order under subsection (3) if the commission, after a hearing, finds that a contract to which subsection (1) applies is not in the public interest by reason of
>
> (a) the quantity of the energy to be supplied under the contract,
>
> (b) the availability of supplies of the energy referred to in paragraph (a),
>
> (c) the price and availability of any other form of energy, including but not limited to petroleum products, coal or biomass, that could be used instead of the energy referred to in paragraph (a),
>
> (d) in the case only of an energy supply contract that is entered into by a public utility, the price of the energy referred to in paragraph (a), or
>
> (e) any other factor that the commission considers relevant to the public interest.

GSXCCC, *et al*, submit that these are fully developed criteria that are no less rigourous or well-defined than those applicable to applications for a certificate of public convenience and necessity under s.45 of the Act.

In addition, as a matter of public policy it is important that the Commission fully exercise its authority to safeguard the public interest under s.71, given the provincial policy that any new electrical generation facilities in B.C. will be undertaken by independent power producers rather than by BC Hydro. This means that regulatory oversight will focus on the energy supply contracts for new electrical generation facilities under s.71, rather than on applications for certificates of public convenience and necessity by BC Hydro under s.45. Acknowledging the distinctions between the two legal scenarios, it is nevertheless important that the Commission maintain regulatory oversight as authorized by the Act.

Lastly, as "the public interest" is the crux of the statutory test under s.71, it is significant that the Legislature is presumed to have intended that the Act is to be interpreted in a manner consistent with the principles of international law.

In *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town),* [2001] 2 S.C.R. 241,[10] the Supreme Court of Canada upheld a municipality's authority to pass a bylaw regulating the use of pesticides within the town. In interpreting the statute authorizing the municipality to make bylaws for, *inter alia*, "health and general welfare in the territory of the municipality," Madam Justice L'Heureux-Dubé, speaking for the majority, applied international law to help inform the legislative intention. She states:

> 30 To conclude this section on statutory authority, I note that reading s. 410(1) to permit the Town to regulate pesticide use is consistent with principles of international law and policy. My reasons for the Court in *Baker v. Canada (Minister of Citizenship and Immigration)*, [1999] 2 S.C.R. 817, at para. 70, observed that "the values reflected in international human rights law may help inform the contextual approach to statutory

[10] http://www.lexum.umontreal.ca/csc-scc/en/pub/2001/vol2/html/2001scr2_0241.html

interpretation and judicial review". As stated in *Driedger on the Construction of Statutes*, *supra*, at p. 330:

> [T]he legislature is presumed to respect the values and principles enshrined in international law, both customary and conventional. These constitute a part of the legal context in which legislation is enacted and read. In so far as possible, therefore, interpretations that reflect these values and principles are preferred. [Emphasis added.]

In the *Spraytech* case, the Court concluded that the precautionary principle has become a norm of customary international law, and applied it in support of the town's pesticide bylaw:

> 31 The interpretation of By-law 270 contained in these reasons respects international law's "precautionary principle", which is defined as follows at para. 7 of the *Bergen Ministerial Declaration on Sustainable Development* (1990):
>
> > In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
>
> Canada "advocated inclusion of the precautionary principle" during the Bergen Conference negotiations (D. VanderZwaag, CEPA Issue Elaboration Paper No. 18, *CEPA and the Precautionary Principle/Approach* (1995), at p. 8). The principle is codified in several items of domestic legislation: see for example the *Oceans Act*, S.C. 1996, c. 31, Preamble (para. 6); *Canadian Environmental Protection Act, 1999*, S.C. 1999, c. 33, s. 2(1)(*a*); *Endangered Species Act*, S.N.S. 1998, c. 11, ss. 2(1)(*h*) and 11(1).
>
> 32 Scholars have documented the precautionary principle's inclusion "in virtually every recently adopted treaty and policy document related to the protection and preservation of the environment" (D. Freestone and E. Hey, "Origins and Development of the Precautionary Principle", in D. Freestone and E. Hey, eds., *The Precautionary Principle and International Law* (1996), at p. 41. As a result, there may be "currently sufficient state practice to allow a good argument that the precautionary principle is a principle of customary international law" (J. Cameron and J. Abouchar, "The Status of the Precautionary Principle in International Law", in *ibid.*, at p. 52). See also O. McIntyre and T. Mosedale, "The Precautionary Principle as a Norm of Customary International Law" (1997), 9 *J. Env. L.* 221, at p. 241 ("the precautionary principle has indeed crystallised into a norm of customary international law"). The Supreme Court of India considers the precautionary principle to be "part of the Customary International Law" (*A.P. Pollution*

> *Control Board v. Nayudu*, 1999 S.O.L. Case No. 53, at para. 27). See also *Vellore Citizens Welfare Forum v. Union of India*, [1996] Supp. 5 S.C.R. 241. In the context of the precautionary principle's tenets, the Town's concerns about pesticides fit well under their rubric of preventive action.

In the present case, the precautionary principle applies primarily to the meaning of "the public interest" concerning the financial liability associated with greenhouse gas emissions and the use of natural gas as a fuel. Greenhouse gas liability is discussed in the next section.

Greenhouse Gas Liability

Dr. Jaccard brought relevant, material evidence to the proceeding,[11] including that

(a) the Kyoto Protocol to the International Framework Convention on Climate Change will become binding in February 2005, at which time Canada will become required to reduce its domestic GHG emissions to 6% below their 1990 levels by 2010 or to combine domestic reduction with payment for reductions in other countries through the various flexibility mechanisms in the Protocol,

(b) a realistic appraisal of the likely Canadian policy response implies a financial liability of $18 - $29 / MWh for the VIGP or a similar natural gas combustion plant without cogeneration,[12] and

(c) in the post-Kyoto period, 2010-2020, the likely long-term costs of moving toward a zero emission system for electricity generation corresponds to a tax or permit price with a most likely value for a natural gas combustion plant (not cogeneration) in BC of $22 / MWh.

In para.66, BC Hydro implies that Dr. Jaccard stated that a carbon tax is likely to be applied as greenhouse gas policy in Canada. That is not accurate. Dr. Jaccard's evidence is that regulatory measures under active consideration in Canada include both tradable permit systems and carbon taxes at both the upstream stage and the emissions stage. Further, he states that a tradable permit system at the upstream stage is the most likely regulatory measure.[13]

In response to BC Hydro's para.67, Dr. Jaccard's evidence is that GHG regulatory measures at the upstream stage, whether a tradable permit system or a carbon tax, would become embedded in the price of natural gas. The EPA requires BC Hydro, not DPP, to provide the gas for the plant. While the terms of the EPA are, as DPP has acknowledged, that DPP is responsible for financial liability for GHG *emissions*, there is nothing in the EPA itself that purports to require DPP to reimburse BC Hydro for financial liability for GHG regulatory measures applied *upstream* and embedded in the price of natural gas. Dr. Jaccard did not comment on whether, as a matter of contract law, the EPA requires DPP to reimburse BC Hydro for *upstream* GHG costs incurred by BC Hydro. However, Dr. Jaccard stated a number of times that it would be very difficult for BC Hydro to identify

[11] Contrary to BC Hydro Final Argument, paragraph 65.
[12] Exhibit C-20-20, p.4.
[13] T14:2967/12-21; and T14:2971/9-11.

and prove exactly how much of its expenditures on natural gas price could be attributed to the greenhouse gas policy.[14]

BC Hydro's statement in para.67 that Dr. Jaccard is not qualified to, and did not, analyze the allocation of responsibility for greenhouse gas costs as between BC Hydro and DPP is not accurate and is not supported by the transcript. Dr. Jaccard is not a lawyer, was not called as a witness to give a legal opinion, and did not purport to give a legal opinion. However, Dr. Jaccard is highly qualified to comment from the perspective of a regulator and expert in the field on the difficulty that BC Hydro would face in trying to prove that a certain portion of its natural gas costs in supplying DPP are attributable to greenhouse gas policies. Significantly, BC Hydro has not called any evidence, nor has it even specifically argued, that the EPA requires DPP to reimburse BC Hydro for greenhouse gas costs embedded in BC Hydro's fuel gas expenditures.

In response to BC Hydro's para.68, BC Hydro's remedies against DPP and the generation assets in the event of a default by DPP are of little relevance to the cost-effectiveness of the EPA compared to non-VIGP options. In the unfortunate event that BC Hydro would have to realize on its security under the EPA, it would be highly unlikely that greenhouse gas liabilities would be the only area of default. And, it would also be extraordinary if BC Hydro was able to exercise its major remedies under the EPA without suffering any financial loss itself.

In paras.71-73, BC Hydro betrays an apparent strategic mistake. Having structured the EPA to put GHG liability for emissions from the plant in the hands of DPP, BC Hydro apparently assumes that its own GHG liability is eliminated. Not so. As the provider of the natural gas fuel for the plant under the EPA, BC Hydro remains exposed to GHG liability at the *upstream* stage. Dr. Bramley's evidence is that emissions trading systems are the most likely regulatory mechanism for controlling GHG emissions from large industrial facilities. But nowhere does Dr. Bramley state or imply that there will be no GHG regulatory measures applied in the oil and gas sector *upstream* of large electrical generation facilities. Dr. Bramley's evidence and Dr. Jaccard's evidence are entirely consistent.

In para.73, BC Hydro remarks: "how inappropriate it would be to evaluate capacity resources on the basis of potential greenhouse gas liabilities." While that statement neatly sums up BC Hydro's approach to greenhouse gas liability, it is starkly contrary to both the evidence in this proceeding and to the approach taken by the Commission in the VIGP Decision.

DPP's Final Argument makes four main points regarding greenhouse gas liability.

First, DPP states "Both BC Hydro and DPP agreed that, pursuant to the EPA, DPP has assumed responsibility for this potential [GHG] <u>emission</u> liability."[15] This, perhaps inadvertently, confirms that DPP's acknowledgement that it is responsible for GHG

[14] Exhibit C-20-20, p.6; T14:2939/24-26; and T14:2940/1-23.
[15] DPP Final Argument, p.21. [underline added]

liability under the EPA does *not* apply to *upstream* GHG regulatory measures that may become embedded in the price of natural gas which would be paid for by BC Hydro.[16]

Second, DPP argues that it has seriously *examined* its potential liability as a large final emitter.[17] Pointedly, however, DPP has refused to provide evidence regarding how much, if any, GHG liability it incorporated in its bid price. Nor has DPP even been willing to disclose in confidence to the Commission Panel whether the amount which it allocated for GHG liability was larger or smaller than the $3.60/MWh (in 2002 dollars) included in the VIGP Benchmark as directed by the Commission in the VIGP Decision.

Third, DPP criticizes Dr. Jaccard's testimony, particularly regarding the "COP 10" meetings.[18] In response, this is a 'red herring.' There is no evidence that the details of the COP 10 meetings are especially relevant to this proceeding or to Dr. Jaccard's conclusions. DPP's own witnesses made no mention of any details of the COP 10 meetings. In addition, DPP's attempt to dismiss Dr. Jaccard's conclusions as mere "speculation" are without merit. Dr. Jaccard clearly stated that these were his opinions, based on his professional expertise, regardless of what word is used to describe them.

Fourth, DPP questions whether measures that would result in liabilities of $45-billion NPV would be implemented because it would be "political suicide" to do so.[19] With respect, this is another 'red herring.' By definition, measures that would be "political suicide" will not be undertaken. However, Dr. Jaccard's evidence focuses on the *most likely* GHG financial liabilities, not on the extremes.

In its determination of the public interest in this matter, the Commission should give weight to the public's own views of its interest.

At the Town Hall meeting in Nanaimo, January 15, 2005, the Commission received thirty-one presentations from members of the public and two presentations from persons representing political entities. Thirty-one of the presentations opposed the DPP project. Of these, twenty-two presentations explicitly discussed global climate change as an issue of concern associated with DPP, and a further five presentations cited related issues such as the costs of compliance with the Kyoto Protocol; "green credits" associated with non-greenhouse gas emitting fuels; and fossil fuel use.

The presenters typically spoke to the great hazard and the central importance of the greenhouse gas/global warming and climate change issue to the interests of the public. For example, Kees Groot states:

> The future of everything we have accomplished since our intelligence evolved will depend on our wisdom and of [sic] our actions over the next few years. Next few years, I think that's important to stress. We have made our way in the world so far by trial and error, but unlike other creatures, our presence in this world is so colossal that error is a luxury we can no longer

[16] In Exhibit C-17-17, DPP expressly declines to answer whether the EPA would assign liability to DPP to pay for the cost of a per-unit tax on the price of fuel used in the plant.
[17] DPP Final Argument, p.21.
[18] DPP Final Argument, p.21.
[19] DPP Final Argument, pp.21-22.

> afford. The world has grown too small to forgive us any big mistakes.[20] [emphasis added]

The presentation by Sheila Malcolmson, representing the Islands Trust Council, explicitly cites greenhouse gas emissions as an issue and makes a point of the extent of public involvement and information that went into developing the position:

> The policy statement was developed over a period of two years through a comprehensive public consultation process. Information was provided to us from individuals, groups and other government agencies through presentations and more than 400 written submissions. The high level of public participation and interest shown in the policy statement is reflected in the goals and policies of the statement.[21] [emphasis added]

The Commission has also received several hundred letters from individuals and some corporate entities. A large number of these cite greenhouse gas emissions and global warming and climate change as issues of concern that are relevant to and count against the DPP project.

Peak Load Forecasting

The peak load forecast plays a central role in BC Hydro's justification of the EPA. This role includes the anticipation of a supply gap for planning purposes on Vancouver Island for particular years, and extends to dispatch considerations and to the cost effectiveness analysis of the Duke Point Power project.

GSXCCC, *et al*, submit that the costs of *overestimating* peak load are significant, and should not be preferred over the costs of *underestimating* load. In the face of forecast uncertainty, it is more rational to prepare contingency plans than to deliberately overbuild costly fixed capacity. Such contingency plans include load shifting provisions, such as are available from Norske Canada, smaller generation projects which can be brought on line with short lead times, and enhanced transmission.

The Steve Miller and Associates (SMA) report[22] and subsequent filings fundamentally address the lack of transparency regarding key portions of BC Hydro's load forecasting procedures. SMA notes that BC Hydro "controls almost all electricity related data" regarding Vancouver Island and therefore "it is not possible for an independent practitioner to perform a true parallel or alternative re-estimation of the Vancouver Island load forecast."[23] Instead, SMA "provides a 'reality check' on the BC Hydro figures," using three distinct methods: discussion of flaws in BC Hydro's load forecasting methodology, examination of the performance of BC Hydro forecasts against subsequent actual figures, and presentation of illustrative load forecasts based on population and employment forecasts.[24]

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[20] T5:951-2.
[21] T5:867-8.
[22] Exhibit C-20-21.
[23] Exhibit C-20-21, p.5.
[24] Exhibit C-20-21, p.5.

SMA identifies five areas of weakness in the BC Hydro load forecasting methodology for Vancouver Island.

1. Absence of specified margins of error. BC Hydro treats the load forecast figures as if they were mathematically precise, giving the incorrect impression that the figures are *accurate* to within one MW. Any statistical forecast is subject to error, the size of the error depending on the model and the data. When BC Hydro reports *province-wide* forecasts, it specifies a margin of error (or confidence interval). However, as Mr. Tiedemann testified, BC Hydro's *Vancouver Island* load forecast is not presented with a confidence interval.[25]

2. Reliance on undisclosed discretion. Despite some appearance of objective methodology through the presentation of stock/intensity equations and weather normalization equations, in fact the BC Hydro regional peak load forecast is driven by an employment forecast, a housing starts forecast, and a substation peaks forecast. The employment forecast and the housing starts forecast are prepared for BC Hydro by a private consultant, and have not been disclosed in this proceeding (or elsewhere). In addition, the method by which BC Hydro relates the employment forecast to energy consumption by rate class is both complicated and not disclosed. Mr. Tiedemann testified that this procedure is being revamped. He candidly acknowledged the current "lack of transparency, which we intend to improve."[26]

For each of these driver forecasts, the methodology and justification is supported only by vague references to "trends."[27] Ms. Hemmingsen, for example, could give no specific rationale for the 2004-2015 employment forecast figures, relying instead on a reference to "stronger economic prospects on all fronts."[28] And, counsel for BC Hydro vigorously resisted producing any methodology or any substantiation of the figures.[29] By using an external consultant, BC Hydro shelters the driver forecasts from public availability and scrutiny by practitioners in the field.

This is an important issue, as the employment forecast used by BC Hydro produces results inconsistent with the results obtained by SMA using the BC Stats population forecast, which is a product that is publicly available, distributed, and accepted. SMA states:

> SMA estimates that the Hydro employment forecast, in light of the population forecast, requires that the number of unemployed be cut roughly in half. This in turn implies that the unemployment rate (UNEMP/(UNEMP+EMP)) must fall by more than half - a result that even the most optimistic are unlikely to support.[30]

3. Undisclosed or unmeasured variability. BC Hydro's evidence is that the intensity coefficients are obtained through a sample survey. BC Hydro was unable to specify the

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[25] T9:2069/1-4.
[26] T9:2060/4-6.
[27] For example, Exhibit B-67 (ELF December 2004) p. 53 Section 3: "The forecasts reflect trends…"
[28] T9:2064/4-5.
[29] T9:2066/15-20.
[30] C-20-36.

size and distribution of this sample for Vancouver Island segments, and it was unable to determine the accuracy of the resulting coefficient estimates. It states:

> There is no research available for the relative precision of the residential peak coefficients disaggregated for Vancouver Island residential customers.[31]

Similar sources of variability exist in the various weather normalization equations, where the coefficients suffer from low degrees of freedom and from a lack of sufficient observations close to the design day temperature.

4. Upward bias. Despite BC Hydro's declared objective of a neutral forecast,[32] almost all BC Hydro forecasts (of driver variables and of peak load) move strongly 'upward and to the right.' The record of actual peak loads (whether weather adjusted or not) shows both upward and downward variation from year to year. Thus, a neutral load forecast would be expected be above the actual figure in some years and below the actual figure in other years. Instead, retrospective examination of BC Hydro's load forecast figures shows a disproportionate number of forecast peaks erring on the high side.[33]

5. Undue weight given to most recent peak. Mr. Tiedemann confirms that BC Hydro's practice is to not adopt its stock/intensity and substation peak based forecast values, but only to calculate the *growth rates* from these values.[34] The growth rates are then applied to the most recent peak, which is deemed the "anchor point." This practice is applied whether or not the most recent peak is an anomaly or "spike." When the most recent peak value differs from the modeled peak, the difference must be considered "random." By accepting this random one year error into each of the twenty-one years of the forecast, undue weight is given to the current year.

BC Hydro makes much of the fact that the January 15, 2005 peak exceeded its forecast.[35] However, the BC Hydro Load Forecast attempts to capture the "fundamentals" of the economy, with reference to housing stock, electric use intensities, employment, etc. BC Hydro does not attempt in Exhibit B-68 to claim that any of these underlying factors have changed. Consequently, the variation of the 2005 actual from the 2005 forecast is what in forecasting terms is a "random" event. BC Hydro's attempt to draw conclusions from this with respect to load in F2008 is therefore without basis.

SMA have also provided forecast figures based on economic "fundamentals," specifically growth in employment and population and changes in the peak intensities with respect to these two variables. The SMA evidence shows that the underlying economic forces do not support anticipated loads at the levels suggested by BC Hydro.

In response to BC Hydro's Final Argument, paragraph 54, BC Hydro misconstrues the SMA load forecast provided in Exhibit C20-37. This forecast demonstrates that even when a relatively short span of historical time is considered, and even when the January 15,

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[31] Exhibit B-76.
[32] Exhibit C-20-31, page 3
[33] Exhibit C-20-32, page 15: "Five out of six Load Forecast documents delivered overestimated five year forecasts, based on measured actuals."
[34] T9:2072/14-17.
[35] Exhibit B-68 – "Implications".

2005, peak is included, the BC Hydro forecast for F2008 is unreasonably high. Using Hydro's own practice of relying on short term events (such as the January 2005 peak), but not including short term error into the longer term forecast, produces an 88MW lower figure for F2008. BC Hydro's assertion in para. 54 that BC Hydro uses a 30 year period for forecasting is incorrect. BC Hydro uses 30 years only to calculate the design day temperature. In fact, as explained above, the true basis for BC Hydro's driver forecasts has been withheld and is not in evidence.

In para. 52 of its Final Argument, BC Hydro states:

> The gap between the peak demand experienced in the Vancouver Island Region and the supply resources available to meet that demand has grown considerably since the VIGP decision.[36]

This statement is fundamentally incorrect. There *is no* "gap between the peak demand experienced in the Vancouver Island Region and the supply resources available to meet that demand…." And, there was no such gap at the time of the VIGP decision. The capacity gap that is the subject of this proceeding is a *forecast*, *future* capacity gap *for planning purposes* (beginning winter 2007-08).

Commission Authority to Disallow Filed EPA in Favour of a New EPA / EPA not the most cost-effective option

During the Commission Panel's *ex parte, in camera* session with BC Hydro and its Panel 2 witnesses, Ms. Hemmingsen openly and readily agreed with the Panel Chair's inquiries suggesting that (confidential) numbers within the QEM spreadsheets disclose that the EPA is not the most cost-effective outcome.

BC Hydro addresses this topic under the heading "Commission Authority to Disallow Filed EPA in Favour of a New EPA." That heading is not inappropriate, given the Panel Chair's invitation of submissions on whether the Commission Panel could and should use its authority under s.71(3) of the *UCA* to somehow require DPP to provide an extra 28 MW of capacity to BC Hydro, capacity that is not conveyed in the EPA. On that specific issue, the position of GSXCCC, *et al*, is very simple: The EPA is not in the public interest, with or without the extra 28 MW being conveyed to BC Hydro. Accordingly, the Commission should disallow the whole of the EPA and should *not* attempt to exercise its authority in relation to the extra 28 MW of capacity.

Despite the limited wording of its heading, BC Hydro fully addresses the significance of Ms. Hemmingsen's statements in relation to BC Hydro's basic position in this proceeding – and quite appropriately so. To reiterate, Ms. Hemmingsen's testimony during the Commission Panel's *ex parte, in camera* session with BC Hydro that the EPA is not the most cost effective option. This is fundamentally contradictory to the very core of BC Hydro's argument and evidence, until that stage in the proceedings, that the EPA *is* the *most* cost-effective option.

BC Hydro's Final Argument acknowledges the contradiction but attempts to minimize it by retreating from BC Hydro's prior position that the EPA is the *most* cost-effective option

[36] BC Hydro Final Argument, para.52.

and substituting the assertion that the EPA is *a* cost-effective option. BC Hydro states that Ms. Hemmingsen's *ex parte, in camera* testimony raises two issues, and continues:

> The first is to reconcile Ms. Hemmingsen's remarks with her testimony elsewhere and with BC Hydro's position that the EPA is *a* cost-effective solution to Vancouver Island's capacity problems.[37]

This crucial change in BC Hydro position is echoed later, where BC Hydro states:

> As to the first issue, while Ms. Hemmingsen expressed her concern that the structure of the CFT prevented BC Hydro from acquiring this additional power (at least in that process),[footnote omitted] that does not mean that the proposed EPA is not *a* cost-effective option or not in the public interest.[38]

While BC Hydro is, of course, free to modify its position as the evidence unfolds, the important point for the Commission to note is that BC Hydro's new position that the EPA is merely "a" cost-effective solution does not meet the test in the "principal issue," being "Is Tier 2, Tier 1, or the No Award option the most cost-effective option…?"[39]

This issue is no mere 'slip of the tongue' by a Hydro witness. BC Hydro does not respond by explaining that the witness made a mistake. BC Hydro responds by changing its primary position in the proceeding. This issue goes to the heart of the credibility of BC Hydro's *original* evidence that the EPA is the most cost-effective option.

Furthermore, this issue completely eliminates any credibility associated with BC Hydro's "cost effectiveness analysis" following the outcome of the CFT. The stated purpose of BC Hydro's senior management in ordering the cost-effectiveness analysis was to determine if the successful bid in the CFT is indeed the most cost-effective option. It is difficult to imagine a fact more pertinent to a responsive answer to that question than the observation that according to numbers in the QEM itself the successful bid is not the most cost-effective option.

Yet, the evidence is that BC Hydro's staff at Ms. Hemmingsen's level told BC Hydro's senior management that the result of the cost effectiveness analysis was that the EPA is "the most cost-effective option" – not "a" cost-effective option. Ms. Van Ruyven, representing BC Hydro's senior management, gave evidence as follows:

> Before accepting that outcome and authorizing BC Hydro to enter the EPA that is before you now, we inquired of the project team as to whether they were satisfied that this result was more cost-effective than proceeding with VIGP would have been, and also more cost-effective than any alternative which they believed could meet the reliability requirements we face on the Island. At our request, the team performed some further analysis that responded to these questions, and we concluded that the outcome of the

[37] BC Hydro Final Argument, para.13. [underline and italics added]
[38] BC Hydro Final Argument, para.16. [underline and italics added]
[39] T1: 313-314. [underline added]

> CFT process was the most cost-effective solution available to replace the HVDC cable.[40]

BC Hydro has not argued that its staff were not aware that the EPA is not the most cost-effective option at the time they conducted and presented their cost effectiveness analysis to senior management. Indeed, the evidence suggests that the staff had been aware since prior to the conclusion of the CFT that the QEM was susceptible to this problem. Hence, it can only be concluded that BC Hydro's senior management approved the EPA on the basis of an incorrect assurance from staff that the EPA is the most cost-effective outcome.

In addition, BC Hydro failed to disclose this apparently embarrassing information to the Commission Panel and to the intervenors until its witnesses were specifically asked about it by the Commission Panel during the January 19, 2005, *ex parte, in camera* session. It is evident from the transcript that had the Commission Panel not raised the matter BC Hydro would not have voluntarily disclosed the issue at all.

This issue undermines the credibility of the CFT itself. BC Hydro now argues that "it is not surprising that the CFT process failed to secure the additional cost-effective resource available through duct firing."[41] With respect, this is 'too little; too late.' BC Hydro's witnesses maintained that Hydro staff conducted extensive trial runs and testing during the development of the QEM model to ensure that it functioned as intended and was not vulnerable to gaming. If it was "not surprising that the CFT process failed to secure the additional cost-effective resource available through duct firing ," then why was the CFT not modified to correct the problem. Obviously, something went very wrong. Furthermore, if the QEM model produces a 'winning' project that is not the most cost-effective project even according to the numbers in the QEM itself, then *what else* may have been faulty about the QEM model?

This issue also undermines the credibility of the reports and testimony of the Independent Reviewer. How is it that the Independent Reviewer did not comment on this glaring flaw in the logic and outcome of the QEM?

In conclusion on this point, the CFT was seriously flawed in that it did not select the most cost-effective project; BC Hydro's staff knew that the EPA was not the most cost-effective project; senior management asked for a cost-effectiveness analysis; staff presented a cost-effectiveness analysis that incorrectly claimed that the EPA was the most cost-effective option; senior management approved the EPA believing it to be the most cost-effective option when it was not; BC Hydro chose not to disclose to the Commission that the EPA is not the most cost-effective option until questioned by the Panel Chair on January 19, 2005; BC Hydro has responded to the disclosure of this information by changing its fundamental position so that now it says the EPA is merely "a" cost-effective option rather than "the most" cost-effective option.

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[40] Exhibit B-35, Opening Statement of Bev Van Ruyven, p.2. [underline added]
[41] BC Hydro Final Argument, para.16.

ALL THE ABOVE IS RESPECTFULLY SUBMITTED

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William J. Andrews
counsel for GSXCCC, *et al*