

William E Ireland, QC
Douglas R Johnson*
Alison R Kuchta*
James L Carpick*
Michael P Vaughan
Gary M Yaffe
Paul A Brackstone*
Zachary J Ansley

Carl J Pines, Associate Counsel*
R Keith Thompson, Associate Counsel*

Hon Walter S Owen, OC, QC, LL.D (1981)
John I Bird, QC (2005)

D Barry Kirkham, QC*
James D Burns*
Susan E Lloyd*
Christopher P Weaver*
Gregory J Tucker*
Jonathan L Williams*
Elizabeth A Reid
Susan C Gilchrist

Robin C Macfarlane*
Duncan J Manson*
Daniel W Burnett*
Paul J Brown*
Heather E Macdonachie
Michael F Robson*
Scott H Stephens

J David Dunn*
Alan A Frydenlund* *
Harvey S Delaney*
Patrick J Haberl*
Harley J Harris*
James H McBeath*
Ramneek S Padda

OWEN BIRD

LAW CORPORATION

PO Box 49130
Three Bentall Centre
2900-595 Burrard Street
Vancouver, BC
Canada V7X 1J5

Telephone 604 688-0401
Fax 604 688-2827
Website www.owenbird.com

Direct Line: 604 691-7557
Direct Fax: 604 632-4482
E-mail: cweaver@owenbird.com
Our File: 23841/0035

April 27, 2009

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
6th Floor, 800 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Erica M. Hamilton, Commission Secretary

Dear Sirs/Mesdames:

**Re: British Columbia Hydro and Power Authority ("BC Hydro")
Project No. 3698514 – 2008 LTAP Application**

We are counsel for the Commercial Energy Consumers Association of British Columbia ("CEC"). Attached please find the Final Submissions of the CEC pertaining to the above-noted matter.

A copy of this letter and attached Information Requests has also been forwarded to BC Hydro and the intervenors by e-mail.

Should you have any questions regarding the foregoing, please do not hesitate to contact the writer.

Yours truly,

OWEN BIRD LAW CORPORATION

Christopher P. Weaver

CPW/jlb
Enclosure
cc: CEC
cc: BC Hydro
cc: Registered Intervenors

**COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF
BRITISH COLUMBIA'S ("CEC")**

**RESPONSE TO
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY'S
("BC HYDRO")
FINAL ARGUMENT**

PROJECT NO. 3698514 / BCUC ORDER NO. G-96-08

LONG TERM ACQUISITION PLAN ("LTAP")

APRIL 27, 2009

TABLE OF CONTENTS

PART 1 – SUMMARY OF KEY ISSUES	3
1. Opening Comments.....	3
2. Load Forecasts.....	4
3. DSM	5
4. Burrard	6
5. Clean Call.....	7
6. Energy Contingency.....	7
PART 2 – CEC RESPONSE TO BC HYDRO’S FINAL ARGUMENT	8
1. Introduction and Overview of Argument	8
2. Statutory and Policy Regime.....	9
3. Future Regulatory Review Process	17
4. Load/Resource Balance for Integrated System	19
5. Market Context and Analysis.....	22
6. LTAP Action Items	26
7. Fort Nelson	43
PART 3 – LOAD FORECAST	46
1. Load Forecast Summary.....	46
2. Introduction	47
3. Load Forecast	49
4. Past Record.....	50
5. BC Hydro Methodologies	53
6. Economic Outlook.....	56
8. Residential Sector.....	61
9. Industrial Sector	66
10. Commercial Sector.....	78
PART 4 - DSM.....	83
1. Cost Effectiveness of DSM	83
4. DSM Options - Option A and Option B.....	93
5. DSM Options - Option C	100
6. Evaluating DSM Options - Option A and Option B	112
7. Assessing Risks	114
8. Setting the DSM Plan	118
9. Assessing DSM	122
PART 5 - BURRARD	125
1. BC Hydro Limit to 3000 GWh/year.....	125
2. Burrard and SD 10	128
3. Analysis of Burrard’s Role in Any Delay of 5L83	132
4. Planning for Burrard at 4000 GWh/year	133
PART 6 – SUPPLY SIDE.....	136
1. Standing Offer Program	136
2. Bio-Energy Call.....	137
3. Clean Power Call.....	138
4. Short Term Resource Options	146
5. Clean Power Call Options	147
PART 7 – CEC RESPONSE TO BCUC QUESTIONS	149

PART 1 – SUMMARY OF KEY ISSUES

1 Opening Comments

The Commercial Energy Consumers Association of British Columbia (the “CEC”) submits that fundamentally the LTAP of BC Hydro is about uncertainty and flexibility and BC Hydro’s choices in the face of that uncertainty. If the Application is found by the Commission to be the best way to deal with the uncertainty that is being faced by BC Hydro then the Application should be approved. If the Commission determines that there is a better way for BC Hydro to pursue flexibility which will enable it to deal with the uncertainties it faces then the Application or parts of it should not be approved.

The CEC recognizes that BC Hydro has been faced with decisions in relation to the LTAP which have become increasingly uncertain in the face of an emerging economic recession, aggressive energy policy objectives of the Provincial Government as well as evolving energy policy of other jurisdictions which impact BC Hydro, and structural shifts in the British Columbia economy. The CEC submissions will focus solely on our interpretation of the evidence filed in this proceeding with a view to providing the Commission with a customer perspective which recognizes that while all of these uncertainties create risks, ultimately it is the customer/ratepayer who bears the costs associated with mitigating the risks. Our submissions consist of seven parts:

- 1) A Summary of Key Issues
- 2) A Summary Response to the BC Hydro Final Argument
- 3) A Review of BC Hydro’s Load Forecast
- 4) A Review of BC Hydro’s DSM Plans
- 5) A Review of BC Hydro’s Burrard Plans
- 6) A Review of BC Hydro’s Supply Side Plans
- 7) Response to the Commission’s Questions

In 2007, BC Hydro prepared its Conservation Potential Review. In the cover note of that document¹, the Chief Executive Officer of BC Hydro, Mr. Bob Elton, indicated that it was an objective of BC Hydro that consumption of electricity in British Columbia would be brought back to levels of 2007 over the long term to 2027 stating: “That if economic growth continued, BC Hydro would at the same time, find enough ways to conserve and to use energy efficiently, that eventually we would go back to down to today’s levels.”²

¹ Exhibit C10-5

² Transcript, Volume 4, Page 509

The CEC submits that this LTAP filing should aggressively pursue implementation of the aspirations of BC Hydro and aggressively pursue this conservation culture. The CEC submits that the evidence in this proceeding as summarized in response to BCUC IR 1.5.1 is that BC Hydro will have ratepayers committed to payments of \$10 to \$14 billion, later the CEC estimates this would be reduced to \$6 to \$8 billion through the Evidentiary Update, in supply side EPA commitments contrasted with \$1.8 billion in DSM.³ The CEC submits that it is not consistent with the conservation objectives that BC Hydro is not pursuing all cost effective conservation and the CEC submits that BC Hydro's definition of cost effective DSM is insufficient for resource planning purposes.

Further, the CEC submits that this approach is inconsistent with BC Hydro's stated commitment to conservation; the provincial governments' commitment to become a global leader, in encouraging conservation through the Energy Policy, and the *Utilities Commission Act* requirement that utilities pursue all cost effective conservation. The CEC submits that there is a more prudent approach for the Commission to endorse.

The CEC submits that the urgency for the Commission to endorse a different approach is doubled because of the deterioration of the load and the highly likely result that the load forecast used by BC Hydro is inappropriate as a basis for committing to \$6 to \$8 billion of future expenditures.

2. Load Forecasts

Dealing firstly with the primary area of importance to the LTAP, load forecasts, the CEC submits that there is a great deal of certainty to the \$6 to \$8 billion of future costs which may not have to be spent given the uncertainty in the load forecast filed by BC Hydro. A resolution of the uncertainty around the load forecast will, in all probability, be available within one or two years. That period of time will enable all those impacted to determine whether it is appropriate to commit to in excess of \$6 billion in supply side resources as proposed by BC Hydro. It is the CEC's submission that both BC Hydro and the Independent Power Producers are pursuing the supply side argument on uncertain, shifting grounds. The uncertainty is such that the Commission should be wary of accepting the load forecast and the resulting commitment to these significant expenditures.

The CEC recommends that the Commission reject the load forecast of BC Hydro as being inadequate for the purpose of justifying material and costly supply side options which will be paid for by ratepayers. BC Hydro should be directed to provide an updated load forecast to the Commission as soon as possible to reflect the material changes in the British Columbia economy which have not been reflected in the BC Hydro forecast and to repair methodological problems with the load forecast.

The CEC submits that the economic recession has evolved in ways BC Hydro did not expect and that this has affected the appropriateness of the load forecast. With a 1% decline in GDP from the Evidentiary Update, the load forecast for 2016 is expected to drop by about 500 GWh/year.⁴

³ Exhibit B-3, BCUC IR 1.5.1

⁴ Exhibit B-12, BCUC IR 3.250.1

As the drop experienced since the Evidentiary Update is more like 2%, the CEC submits that the load forecast is overstated by at least 1,000 GWh/year by 2016.

3. DSM

It is the CEC's submission that the evidence provides that DSM has tremendous flexibility and 100% of a newly assessed load resource gap requirement could be met by conservation. BC Hydro has indicated that they will revisit this after two or three years. If BC Hydro can achieve this without incurring the supply side commitments, there is a significant benefit to ratepayers.

The CEC submits that the plans of BC Hydro have not included many items which will increase the conservation potential. Option B is less than it could be and the evidence demonstrates that there is flexibility for BC Hydro to pursue additional conservation opportunities. A 20 year commitment to DSM is \$1.8 billion. If more was added to that BC Hydro arguably can displace \$6 to \$8 billion in supply resources. The public interest and the *Utilities Commission Act*, as well as provincial government policy require that the Commission should provide every opportunity for DSM to work to gain efficiencies to avoid supply options and their more expensive costs. If the supply is acquired, DSM is not required and the expense will be incurred. The ratepayers' interest is to avoid commitment to unnecessary costs and generate flexibility to resolve the uncertainties.

Beyond the public interest, it is the duty and direct responsibility under the *Utilities Commission Act* that BC Hydro pursue all cost effective DSM before pursuit of supply side. BC Hydro says that adjusted Option A is equal to all cost effective DSM and anything above this is not cost effective. Their judgement is made the test. If their judgement of "cost effectiveness" is correct then the Commission has no role. The CEC submits that that is not accurate. The Commission has an obligation to make an independent assessment. The CEC submits that the evidence shows that BC Hydro does not have all cost effective DSM being pursued in its application. The CEC submits that by 2016 BC Hydro can be successful in increasing its cost effective DSM by about 10% or 1,000 GWh/year.

The CEC supports the endorsement of the \$418 million in fiscal 2009, fiscal 2010 and fiscal 2011 for the implementation of the DSM plan and the \$600,000 in fiscal 2009 and fiscal 2010 to undertake and complete the Definition phase work for capacity related DSM. The CEC submits that the Commission should direct that BC Hydro look to increase its investment in DSM initiatives beyond adjusted Option A in order to aggressively pursue all cost effective DSM in the interest of ratepayers, as an alternative to higher price supply options, consistent with the provincial energy policy and the *Utilities Commission Act* requirement to pursue all cost effective DSM.

The CEC recommends that the Commission:

- 1) Approve BC Hydro's adjusted Option A DSM plan for the three year period and the budget of \$418 million that accompanies the plan.

- 2) Approve \$46 million of additional expenditure over and above the BC Hydro DSM adjusted Option A plan to enable BC Hydro to advance planning, preparation and where possible launch for additional DSM initiatives, including advancing the success of the adjusted Option A DSM plan and incorporating at least BC Hydro's Option B and perhaps a more robust Option B. Such resource planning should incorporate Options C, D, E, F, and G such that BC Hydro is demonstrating that it is pursuing additional DSM continuously but is documenting this in its LTAP plans approximately every two to three years.
- 3) Require that BC Hydro demonstrate that in its additional planning efforts it has done everything reasonably possible to capture sufficient DSM savings to completely close the load resource gap relative to decisions about supply that may be required before the 2016 self-sufficiency timeframe.
- 4) Deny the DSM component of BC Hydro's LTAP beyond the three year period and direct BC Hydro to incorporate the development of future DSM initiatives which BC Hydro anticipates with reasonable probability may be cost-effective when developed in the future, such that BC Hydro is seen to be pursuing all the cost-effective DSM possible.
- 5) Clarify for BC Hydro that cost-effective DSM in the future means conservation and efficiency savings which can be achieved at a cost below the cost of new supply and may reasonably be expected to be achieved through the diligent effort of BC Hydro working cooperatively with governments and other partners who should be presumed to be contributing initiatives, legislation and regulation aimed at capturing the conservation and efficiency benefits possible and working in a regulatory climate mandated to ensure that all cost-effective is captured before new supply is acquired.
- 6) Require BC Hydro to develop a DSM contingency plan which would enable BC Hydro to make an appeal to its customers for extra effort toward conservation and efficiency for a period of a few years in order to bridge any short term emergent requirement to manage risks and uncertainties.

4. Burrard

BC Hydro has chosen to use Burrard Thermal for one half of what it previously could be used, to 3,000 GWh/year and no more. The CEC understands from the evidence that BC Hydro accepts that the reliance on Burrard can provide more flexibility which may be used for critical incidents, ILM delays and system issues. The CEC submits that if this flexibility is available for these reasons, it would be appropriate to use it as a contingency behind a more aggressive pursuit of DSM to avoid having ratepayers' need to commit to \$6 to \$8 billion in supply side resources as proposed by BC Hydro.

The CEC recommends that Burrard's role in the BC Hydro electric system should be to plan to provide VAR support for the system, 900 MW of capacity, 3,000 GWh/year of energy normally, 4,000 GWh / year of energy in circumstances requiring up to 1,000 GWh/year of critical

additional flexibility, and 3,000 GWh/year of insurance capability if and when needed in urgent circumstances.

5. Clean Call

The fundamental issue of the LTAP proceeding is the Clean Power Call as amended by the Evidentiary Update. If BC Hydro executes energy purchase agreements (“EPAs”) as proposed, there will be no flexibility to avoid the higher costs of new supply.

The CEC recommends that the Commission should direct BC Hydro to introduce negotiation of options to get flexibility from IPP commitments and include those options into the current call process and essentially get a supply side process that has flexibility. This development will be positive for BC Hydro’s ratepayers and IPPs. BC Hydro indicated that they would look at it but not for this call and that they were essentially between a rock and a hard place as to what policy view to follow. The Commission should direct that BC Hydro pursue flexibility to do both.

6. Energy Contingency

Site C has already seen \$40 million committed for expenditures for discussions with stakeholders. The next stage will be hundreds of millions of dollars more. The IPP process has three or four times the supply side resources as a Site C project.

The CEC recommends that the Commission find that it is in the ratepayers’ interest that BC Hydro investigate IPP opportunities which create flexibility for BC Hydro in the pursuit of supply side options through contracting with IPPs for “shelf ready opportunities” as opposed to entering into EPAs, the in service date needs for which are doubtful and expensive. This pursuit of “shelf ready opportunities” may prove more efficient and cost effective than investment in Site C in the short to medium term. That said, the CEC also supports the continued evaluation of the Site C opportunity for the longer term, as a contingency option and as an alternative to IPP supply.

PART 2 – CEC RESPONSE TO BC HYDRO'S FINAL ARGUMENT

1. Introduction and Overview of Argument⁵

The CEC will briefly respond specifically to the specific headings in the Final Argument of BC Hydro in the order of BC Hydro's argument but will substantively set out its position on the issues in Parts 2, 3, 4, 5 and 6 of this Argument.

1.2.2 LTAP Order Sought⁶

A. Primary Relief #1⁷

The CEC does not believe that the 2008 LTAP meets the requirements of section 44.1 of the *UCA* for reasons set out in Parts 2, 3, 4, 5 and 6 of this Argument.

B. Primary Relief #2⁸

The CEC submits that the Primary Relief #2 dealing with section 44.2(3)(a) of the *UCA* with respect to the seven expenditures set out at page 6 of BC Hydro's Argument should be granted.

C. Primary Relief #3⁹

The CEC supports Primary Relief #3.

D. Endorsements¹⁰

With respect to the proposed Clean Power Call, pre-attrition target of 3,000 GWh a year or post-attrition target of 2,100 GWh per year, the CEC will comment on its proposed approach to the Clean Power Call in Part 6 of this Argument and does not support the BC Hydro position.

The CEC does not believe that the Commission should be endorsing the DSM amortization period at ten years as no evidence has been adduced to justify the ten year amortization period and the CEC submits that a more detailed assessment of the amortization period of DSM programs should be directed. The CEC notes that the average life of DSM programs is 11 years with many have a value well beyond 10 years.

The CEC does not support BC Hydro's plan to rely on Burrard for 900 megawatts of dependable capacity at 3,000 GWh a year of firm energy and as well be submitted later in this Argument, the CEC submits for planning purposes that BC Hydro should plan to rely on Burrard for 4,000 GWh a year firm energy.

⁵ BC Hydro Final Argument, Page 1

⁶ BC Hydro Final Argument, Page 5

⁷ BC Hydro Final Argument, Page 6

⁸ BC Hydro Final Argument, Page 6

⁹ BC Hydro Final Argument, Page 7

¹⁰ BC Hydro Final Argument, Page 7

E. Fort Nelson Resource Plan¹¹

The CEC supports BC Hydro's proposals with respect to the Fort Nelson Plan.

2. Statutory and Policy Regime¹²

2.1 Legislative Framework¹³

2.1.1 *Utilities Commission Act*¹⁴

2.1.1.1 Section 44.1¹⁵

A. Form and Timing¹⁶

The CEC takes issue with BC Hydro's proposal to file a LTAP every two years with the two year period commencing following the receipt of the Commission decision on a prior LTAP. The CEC does not support this approach at this time. Clearly, the economic uncertainties that have been a topic of concern to all participants in this proceeding indicate that the existing LTAP may be problematic particularly with respect to load forecasts in this unique economic time. The idea that no further load forecast would come before the Commission for LTAP purposes until two years after a decision on this LTAP would mean a lag of three to five years before a new LTAP was approved by the Commission. Given these unique circumstances, the CEC would urge the Commission to direct that a new LTAP be filed within one year of the date of a decision being issued from this proceeding.

The CEC accepts that in the future this time line proposed by BC Hydro may be appropriate but given the risks associated with the present LTAP, we do not believe that now is the time to extend the period of time where these issues are reviewed.

The CEC submits that the BC Hydro plan has not met a significant Government Energy Objective as the plan does not pursue all the cost-effective DSM, which will be possible and available over the 20 year planning period. The CEC submits BC Hydro's interpretation of cost-effective is deficient for the purposes of 20 year planning and must include anticipation of successful development and evolution of DSM opportunities.

B. Commission Jurisdiction¹⁷

The CEC does not take issue with BC Hydro's submissions. The CEC completely concurs with BC Hydro's submissions at page 19 of its Argument that the "customer interest" is the paramount interest in this proceeding. As will be set out in Parts 2, 3, 4, 5 and 6 of this Argument, the CEC does not believe that the customer interest has been appropriately protected by BC Hydro in its LTAP Application.

¹¹ BC Hydro Final Argument, Page 9

¹² BC Hydro Final Argument, Page 11

¹³ BC Hydro Final Argument, Page 11

¹⁴ BC Hydro Final Argument, Page 11

¹⁵ BC Hydro Final Argument, Page 11

¹⁶ BC Hydro Final Argument, Page 11

¹⁷ BC Hydro Final Argument, Page 13

While BC Hydro has, through evidentiary updates, recognized the shifting economic times we are in, it has not adjusted its long range plan to mitigate rate impact on customers and rather, has adopted a supply side approach which will cause significant cost increases to customers unnecessary to meet the load requirements of customers.

C. Rejection of 2008 LTAP or Part of 2008 LTAP¹⁸

The CEC accepts the description of BC Hydro that the Commission has the jurisdiction to approve all or part of the LTAP. Further, the CEC agrees with the submission at page 22 that in the event that the Commission does not approve a portion of the 2008 LTAP and BC Hydro elects to proceed with its initiatives, the shareholder may be at risk for those expenditures.

D. Limits of Commission Jurisdiction¹⁹

While the CEC submits there is validity to BC Hydro's submissions on the limits of the Commission jurisdiction, the practical reality of the matter is that should the Commission give BC Hydro directions, BC Hydro may elect to follow those directions or not. In the event it does not choose to follow those directions and proceeds with initiatives not approved by the Commission, again, the shareholder will be at risk.

As an example, if the Commission did determine it appropriate to defer the Clean Power Call for at least two years, it may make that recommendation to BC Hydro. If BC Hydro does not accept the recommendation and proceeds with the Clean Power Call and incurs expenditures not approved by the Commission, the shareholder will be at risk for those expenditures.

While the Commission may not have the jurisdiction to direct BC Hydro to modify its application, it can certainly provide strong signals to what it submits are appropriate steps in the public interest.

2.1.1.2 Section 44.2²⁰

The CEC supports BC Hydro's submissions on section 44.2

2.1.2 SD 10²¹

The CEC has no comments on this section.

2.1.2.4 Burrard²²

The CEC's submission on Burrard is set out at Part 5 of this Argument.

2.1.2.5 Insurance²³

¹⁸ BC Hydro Final Argument, Page 21

¹⁹ BC Hydro Final Argument, Page 23

²⁰ BC Hydro Final Argument, Page 25

²¹ BC Hydro Final Argument, Page 27

²² BC Hydro Final Argument, Page 32

²³ BC Hydro Final Argument, Page 32

The CEC's submission on insurance is set out at Part 5 of this Argument

2.1.3 Heritage Special Direction No. HC2²⁴

The CEC has no comments on these submissions of BC Hydro.

2.1.3.1 COPE 378 and "New, Electric Intensive Loads"²⁵

The CEC submits that new electric intensive loads are to be served by BC Hydro under the provisions of the Heritage Contract at the electric tariff prices for the class of customers into which they are categorized.

The CEC submits that BC Hydro may choose to and should choose to develop aggressive DSM provisions to ensure that those new loads are efficient with respect to the use of electricity.

A. Heritage Contract²⁶

The CEC supports BC Hydro's understanding of the Heritage contract and its applicability to new customers.

B. Electric Tariff²⁷

The CEC acknowledges the existing tariffs as a context for conducting the resource planning for the 2008 LTAP.

C. UCA Section 28(3)²⁸

The CEC makes no submission with respect to the use of UCA section 28 (3).

2.1.3.2 Trade Income \$200 Million Cap²⁹

The CEC accepts the argument of BC Hydro at page 38, line 20 that the trade income \$200 million cap issue has been addressed to the extent that it can be addressed by the Commission in the F09/F10 RRA Decision where the Commission Panel requested that BC Hydro initiate discussions with the Province with a view to increasing the cap on the trade income beyond the current \$200 million limit and to report to the Commission of the progress and outcome of these discussions on a regular basis.³⁰

The CEC would highlight that the LTAP process requires ratepayers to make significant investments in capacity, which will be of value to BC Hydro in terms of trade opportunities. That capacity is created either by investment in DSM initiatives which free up capacity or supply investments which increase capacity. In either alternative, ratepayers are investing to increase availability of system capacity for use for trade with a resulting increase in the trade income.

²⁴ BC Hydro Final Argument, Page 33

²⁵ BC Hydro Final Argument, Page 34

²⁶ BC Hydro Final Argument, Page 35

²⁷ BC Hydro Final Argument, Page 36

²⁸ BC Hydro Final Argument, Page 38

²⁹ BC Hydro Final Argument, Page 38

³⁰ F09/F10 RRA Decision, Note 55, Page 68

The CEC appreciates the Commission addressing this matter in the RRA.

2.1.4 GHG Legislation³¹

The CEC's general comment on the GHG Legislation is that while informative, they do nothing but highlight the uncertainty around GHG Legislation in the short term. This is significant example of uncertainty which supports the CEC's submission that flexibility is imperative and short term decision making should not govern long term financial commitments where uncertainty around legislation and economic conditions is rampant.

2.1.4.1 Greenhouse Gas Reduction Targets Act (GGRTA)³²

The CEC agrees with the BC Hydro submissions in regard to the GHG reduction targets and their relevance to the LTAP hearing.

2.1.4.2 Greenhouse Gas Reduction (Cap and Trade) Act (GHG Cap and Trade Act)³³

The CEC agrees with BC Hydro's submissions with respect to the GHG cap and trade regulation expected.

2.1.4.3 Greenhouse Gas Reduction (Emission Standards) Statutes Amendment Act, 2008 (Emission Standards Act)³⁴

The CEC agrees with BC Hydro's submissions with respect to GHG emission standards and their relevance to the LTAP hearing issues.

2.1.4.4 Carbon Tax Act³⁵

The CEC accepts BC Hydro's views with respect to the carbon tax, its application and requirements to plan for this in the future.

The CEC supports electrification in the oil and gas sector and in the transportation sector as elements that will need to be accommodated in the BC Hydro resource planning processes.

2.1.4.5 Federal GHG Legislation³⁶

The CEC accepts BC Hydro's characterization of the Federal GHG legislation.

2.2 Provincial Government Policy Generally³⁷

The CEC concurs with BC Hydro's submissions.

³¹ BC Hydro Final Argument, Page 39

³² BC Hydro Final Argument, Page 39

³³ BC Hydro Final Argument, Page 40

³⁴ BC Hydro Final Argument, Page 43

³⁵ BC Hydro Final Argument, Page 43

³⁶ BC Hydro Final Argument, Page 45

³⁷ BC Hydro Final Argument, Page 46

2.2.1 2007 Energy Plan³⁸

The CEC accepts that BC Hydro has provided one approach to aligning its operations with the 2007 Energy Plan. As a subjective document, it has not provided the only way of complying with the 2007 Energy Plan but BC Hydro's judgment as to how to comply with the Energy Plan. It is clearly open to the Commission to give its interpretation as to whether BC Hydro's approach is the approach which is in the public interest and consistent with the 2007 Energy Plan.

2.2.1.1 Shareholder's Letter of Expectations³⁹

The CEC agrees with BC Hydro regarding the importance of the Shareholder's Letter of expectations in communicating government policy objectives to BC Hydro. In particular the CEC notes the following.

- Aggressively pursue all actions necessary to implement the objectives of British Columbia's Energy Plan; continue to provide Government with a monthly progress report on key initiatives and as well as a summary of annual progress on environmental leadership, innovation, energy conservation and efficiency, and energy security and self-sufficiency in BC Hydro's annual report to the Shareholder;

⁴⁰

The CEC submits that BC Hydro's choice not to ask for funding to be developing the DSM Option B potential and other DSM potential beyond that is insufficiently aggressive to meet the this requirement. Option A was the least aggressive of the two options BC Hydro considered.

2.2.1.2 Relevant Policy Action Items⁴¹

The CEC accepts BC Hydro's analysis of the 2007 Energy Plan items with respect to whether they are implemented in law or are to be regarded as policy direction.

2.2.1.3 Status of 90 Per Cent Clean, Renewable Target⁴²

The CEC accepts BC Hydro's position with respect to meeting the 90% clean and renewable target.

.2.2. Government Policy and Electricity/Natural Gas Fuel Selection⁴³

The CEC agrees with BC Hydro at page 57 of their Argument which indicates that the next LTAP will address the issue of space and water heating, and fuel switching from electricity to natural gas or from natural gas to electricity. Again, the uncertainty which surrounds this area justifies patience and prudence on behalf of the Commission in terms of approving long term, high cost commitments, which may be impacted by these material policy matters which are actively under determination.

³⁸ BC Hydro Final Argument, Page 47

³⁹ BC Hydro Final Argument, Page 47

⁴⁰ Exhibit B-17, Page 3

⁴¹ BC Hydro Final Argument, Page 48

⁴² BC Hydro Final Argument, Page 51

⁴³ BC Hydro Final Argument, Page 51

BC Hydro has suggested the participation of the CEC in examining the fuel switching issues prior to BC Hydro's next LTAP filing. The CEC has been an active participant in many consultations with BC Hydro and would be pleased to be a part of the proposed consideration of the fuel switching issues.

2.2.2.1 Electrification Scenarios⁴⁴

The CEC agrees with BC Hydro that there remains a high level of uncertainty around approaches to electrification scenarios and this uncertainty again supports the CEC's submission that a LTAP needs to be refiled and reheard on short order after release of this decision given the evolving circumstances including the recent BC Hydro lead program in respect of electric vehicles.

The moving target on the electrification side validates ongoing review of BC Hydro's long term planning given the risk of inaccuracy in the BC Hydro forecast. The CEC supports the electrification of vehicle transportation both from the energy efficiency and GHG emissions management perspective.

The CEC submits that BC Hydro's LTAP planning needs to develop from a single load forecast and DSM plan to one with scenarios which may incorporate a range of futures and multiple option responses. The CEC recommends that both BC Hydro and the Commission direct the development of future LTAPs in this direction including the recent BC Hydro lead program in respect of electric vehicles.

2.2.2.2 Fuel Switching from Electricity to Natural Gas for Residential Space and Water Heating⁴⁵

The CEC submits that BC Hydro has accurately summarized the evidence on fuel switching. Unless and until the Province clearly directs the approach to fuel switching in British Columbia, there will remain to be a high level of uncertainty for ratepayers as to where long term planning at BC Hydro and at Terasen should be directed.

One thing is certain is that it is the ratepayer who will pay for the policy as it unfolds and certainty is better than uncertainty with respect to which direction the Province's energy utility should be going. The CEC does not entirely agree with BC Hydro's submission that the evidence is clear that fuel switching from electricity to natural gas will increase GHG emissions within BC and therefore, make it more difficult for the BC Government to meet its legislated GHG emission reduction targets. However, that is a reasonable conclusion to draw at this time and the evidence does support that conclusion. The CEC respectfully submits that the uncertainty in this area is material and further justifies a cautious approach by the Commission in terms of providing any long term commitments by BC Hydro based on assumptions around fuel switching where such high level of uncertainty exists.

2.2.2.3 Government Policy and Fuel Switching from Electricity to Natural Gas⁴⁶

⁴⁴ BC Hydro Final Argument, Page 59

⁴⁵ BC Hydro Final Argument, Page 61

The CEC submits that BC Hydro has properly characterized the Government fuel neutral policy for heating within the context of the Government's Energy Plan and its Climate Action Plan. There is no basis at this time for BC Hydro's DSM plans to contain a fuel switching component from electricity to natural gas. There may well be some appropriate policy directions to be pursued, which may involve both lower GHG emissions and more efficient use of energy and fuels. However, these options have not been developed sufficiently to enable policy formation or inclusion in BC Hydro's DSM initiatives covering the initial 3 years of DSM expenditures. Future plans may well consider appropriate scenarios.

2.2.2.4 Planning and Implementing Fuel Switching DSM Program⁴⁷

The CEC submits that indeed BC Hydro would have to plan for a fuel switching program. However, it is more important to know whether or not there is a potential benefit from fuel switching as opposed to having the details of the program. Assumptions when planning over a 20 year horizon are quite adequate if properly constructed.

BC Hydro poses a response to the BCSEA suggesting that if load growth were to flatten out completely BC Hydro would have no load resource gap and would not be acquiring either new supply or DSM. The CEC submits that where the cost of additional DSM is below the market value of the energy made surplus then it would benefit customers to have DSM initiatives continue. The CEC also submits that where energy efficiency is embedded in the new building stock for instance and there is a prospect for additional energy requirements over a very long term there may be a justification for continuing DSM to avoid those future requirements.

2.2.2.5 Lock Customers into Natural Gas Space and Water Heating⁴⁸

The CEC is in agreement with BC Hydro that formulating a policy for directing customers to a particular fuel choice is complicated by the long term sustainability of the choice and should not be made without considerable thought. On the other hand the CEC supports changing the incentives in the market place to improve the response to the values of conservation and efficiency for energy. So the CEC does not support in action or implicit confirmation of the status quo without serious consideration of the issues. The CEC submits that such consideration has yet to take place.

2.2.2.6 Increase GHG Emissions within B.C.⁴⁹

BC Hydro suggests that the effect of fuel switching would be to reduce its requirements for a mix of renewable energy acquisitions and DSM. The CEC submits that because the DSM resource is generally so much more cost-effective than new supply it would primarily reduce the acquisition of new supply. BC Hydro's assertion that increased use of natural gas would increase GHG emissions over the entire life of the appliances involved would be correct if the supply of natural gas is from fossil fuel sources and or the burning of the gas does not in some way involve removal of or offset of the GHG emissions and or the efficiency of the process does not displace

⁴⁶ BC Hydro Final Argument, Page 62

⁴⁷ BC Hydro Final Argument, Page 64

⁴⁸ BC Hydro Final Argument, Page 66

⁴⁹ BC Hydro Final Argument, Page 66

a less efficient process. So the flat assertion that GHG emissions increase is not necessarily correct.

2.2.2.7 Short-Term Effects of Fuel Switching are not Materials⁵⁰

The CEC agrees with BC Hydro's submissions with respect to short-term effects.

2.2.2.8 No Effect on GHG Emissions in Neighbouring Jurisdictions⁵¹

The CEC submits that the BC Hydro analysis of the situation with respect to neighbouring jurisdictions is generally correct. The CEC is generally of the view that because BC Hydro plans to a load resource balance in BC there are no neighbouring jurisdiction effects because there are no net export consequences. However, the CEC submits there is one exception to this which can occur when BC Hydro initiatives including DSM initiatives may generate surpluses which are then exported. If the surpluses are not quickly absorbed within BC and the exporting becomes a longer term phenomena then there could be material effects in neighbouring jurisdictions. This has happened in BC's past and could happen again in its future. The CEC submits that such export scenarios are not generally cost-effective for customers and are at this time remote as opposed to BC Hydro's assertion that they are not possible. The Manitoba example demonstrates the point and BC Hydro is quite correct that there are differences between the two jurisdictions. In BC the potential for such exports has been increasing with self-sufficiency and insurance policies and could be increased further.

2.2.2.9 Send Conflicting Messages to the General Public⁵²

The issue is not just about sending conflicting messages to the general public but rather sending confusing and inappropriate price signals to the public by proceeding with expenditures based on assumptions which are incorrect around the Province's view on fuel switching. A properly refined perspective can be communicated to the public but this is not possible with a simplistic fuel switching from electricity to natural gas. The CEC agrees with BC Hydro and other referenced sources that this DSM plan, with the evidence available, would not be the appropriate place for this sort of policy to be promulgated.

2.3 Impact of Carrier Sekani/Kwikwetlem Decisions⁵³

The CEC agrees with the statements of BC Hydro on the impact of carrier Sekani/Kwikwetlem decision on the 2008 LTAP.

2.3.1 Impact of Carrier Sekani Decision on 2008 LTAP⁵⁴

The CEC agrees with BC Hydro's submission.

2.3.2 Impact of Carrier Kwikwetlem Decision on 2008 LTAP⁵⁵

⁵⁰ BC Hydro Final Argument, Page 67

⁵¹ BC Hydro Final Argument, Page 68

⁵² BC Hydro Final Argument, Page 71

⁵³ BC Hydro Final Argument, Page 72

⁵⁴ BC Hydro Final Argument, Page 72

⁵⁵ BC Hydro Final Argument, Page 73

The CEC agrees with BC Hydro's submission.

A. 5L83 ISD⁵⁶

The CEC accepts BC Hydro's assertion that the ISD for 5L83 being 2014 is appropriate and that the First Nations consultation issues can be accommodated and that in the event of delay for 5L83 there are sufficient alternatives to be able to accommodate such delay.

B. FNU3⁵⁷

The CEC accepts BC Hydro's perspective on the First Nations' consultations it has undertaken and the view that there have not been any material issues raised to date.

3. Future Regulatory Review Process⁵⁸

3.1 LTAP Filings⁵⁹

The CEC does not see BC Hydro's proposal as a "minor" adjustment to the two year LTAP filing cycle. This proceeding has been highlighted by the economic uncertainty we are facing which is materially impacting the BC Hydro load forecast, a base and fundamental aspect of the LTAP filing. Based on present circumstances, the CEC submits that a LTAP filing should be made no later than June, 2010. The reasons for this are discussed at length throughout the balance of the CEC's submission. It is precisely for the reason that there are a number of significant moving targets in energy policy, the economy and the Province's views on climate change that BC Hydro needs to be consistently monitoring and improving its information with respect to what the impact of these changes are on its long term planning.

The CEC recognizes that LTAP proceedings take significant resources on the part of all stakeholders. That said, the investment in regulatory process which mitigates against high cost initiatives which are locked in for the long haul justify this higher level of regulatory scrutiny at this time.

With respect to BC Hydro's desire to properly engage with intervenors, the CEC submits that the LTAP proceeding that just completed provided a very effective and efficient manner of engaging with intervenors, Commission staff and the Commission. The hearing room provides opportunity for clear engagement with BC Hydro and intervenors on material matters of policy. BC Hydro and its panels are to be commended for their forthright response to questions and the evidentiary record in this proceeding, we submit, provides a sound basis for the Commission to undertake its regulatory oversight of BC Hydro.

The CEC is not convinced that extensive engagement outside the hearing room has the same value as short and intense engagement in the hearing room.

⁵⁶ BC Hydro Final Argument, Page 74

⁵⁷ BC Hydro Final Argument, Page 74

⁵⁸ BC Hydro Final Argument, Page 75

⁵⁹ BC Hydro Final Argument, Page 75

In the CEC's submissions, a realistic time frame for filing of the next LTAP will be two years from the date of last filing which was June, 2008. If BC Hydro is unable to meet that timing, as it has not been in the commercial rate design process, it will be open to BC Hydro to apply for a delay which can be considered by all participants at that time.

3.1.1 Alignment with RRA Filings⁶⁰

The CEC looks forward to consultation with BC Hydro on the appropriate manner to deal with the Commission's concern. Under section 44.2(2) of the *UCA* it is an impediment to finalizing rates. The CEC does not have a view on the best approach at this time. The most practical solution of the three proposed by BC Hydro would be the third which is to seek DSM expenditures in the LTAP but for a sufficiently long period of time so that the LTAP approved DSM expenditures cover the subsequent RRA test period. This would be supplemented by continued annual reports on DSM which will enable a more constant review notwithstanding the longer period of time for approval of DSM expenditures.

3.2 Proposed Capital Plan Review Process⁶¹

The CEC does not take issue with the BC Hydro approach to Capital Plan review.

3.2.1 General Description⁶²

The CEC agrees with BC Hydro's description of the purpose of the capital plan review process and submits that BC Hydro and the Commission may want to add to the purpose (5) to provide a transparent justification of the benefits of BC Hydro's proposed capital expenditures. This may be for greater clarity as it is implied in the first purpose of satisfying the *UCA* requirements, which for Section 44.2 (3) enables the Commission to accept an expenditure schedule if it finds that making the expenditure would be in the public interest.

3.2.2 Threshold for Major Threshold Project Applications⁶³

The CEC agrees with BC Hydro's proposed major threshold definition and the major threshold limit of \$50 million.

A. Project versus Program⁶⁴

The CEC submits that inclusion in the review process of major capital programs is sensible and appropriate. The CEC notes that where programs may involve projects at many different sites over considerable periods of time that BC Hydro is proposing not to include or justify them if they do not individually meet the threshold.

The CEC recommends to the Commission that when a program in aggregate meets the threshold it should be included.

⁶⁰ BC Hydro Final Argument, Page 76

⁶¹ BC Hydro Final Argument, Page 77

⁶² BC Hydro Final Argument, Page 77

⁶³ BC Hydro Final Argument, Page 78

⁶⁴ BC Hydro Final Argument, Page 79

B. Regulatory Oversight⁶⁵

The CEC acknowledges and agrees with BC Hydro's view that it is making clear its own filing requirements and not trying to limit regulatory oversight down to the \$2 million level of itemization.

3.2.3 Expenditure Determinations vs. CPCNs⁶⁶

The CEC agrees with BC Hydro's views that the implications of an expenditure determination and a CPCN approval would be the same.

A. CPCN Provisions⁶⁷

The CEC agrees with BC Hydro's understanding of the CPCN provisions of the *Utilities Commission Act*.

B. Fettering Discretion⁶⁸

The CEC is inclined to agree with BC Hydro's view with respect to constraining applicants to specific provisions of the act where other provisions may be applicable and the risks, of fettering the Commission, associated with establishing an inflexible rule where the act provides for more flexibility.

4. Load/Resource Balance for Integrated System⁶⁹

The CEC submissions on BC Hydro's load forecast are set out in Part 3 of this Argument.

BC Hydro, in dealing with the reliability criteria, seems to indicate that because they responded to an information request (BCUC IR 1.3.2), the issue should now be not appropriately reviewed as part of the 2008 LTAP proceeding. That is simply wrong. The purpose of responses to information requests is to put a position on the table at a proceeding and allow parties to argue in response to those replies. That a matter was reviewed as part of the 2006 IEP/LTAP proceeding does not mean that it is not a matter in issue in this proceeding.

4.1 Reliability Criteria⁷⁰

The CEC's view is that issues of relevance in a hearing, such as reliability criteria, are not to be precluded as issues should an intervenor so choose to provide an argument with respect to evidence on the record in the hearing. Having made this CEC view clear, the CEC does not have any issue with respect to the choice of the two reliability criteria of (1) energy and (2) capacity for planning for the reliability of the BC Hydro integrated electric system nor with the concept that these criteria objectives operate as minimum constraint objectives.

⁶⁵ BC Hydro Final Argument, Page 80

⁶⁶ BC Hydro Final Argument, Page 80

⁶⁷ BC Hydro Final Argument, Page 81

⁶⁸ BC Hydro Final Argument, Page 83

⁶⁹ BC Hydro Final Argument, Page 84

⁷⁰ BC Hydro Final Argument, Page 84

4.2 2008 Load Forecast and Evidentiary Update⁷¹

The CEC submits that the Load Forecast and its weakness is a fundamental issue in this proceeding. That the Load Forecast was reviewed and a methodology was reviewed in the prior proceeding does not mean it is proven appropriate or accurate in a subsequent proceeding. Clearly, the economy in British Columbia, North America and globally is facing challenges it has not faced in our lifetime. That challenge is not BC Hydro's fault or responsibility. What is BC Hydro's responsibility is to ensure that its Load Forecast is robust and sustainable such that existing and future customers are not impacted in the material way. The changing circumstances in regard to BC Hydro's Load Forecast as evidenced in this proceeding demonstrate that present and future customers will be burdened with supply costs which are excessive of their needs.

4.2.1 2008 Load Forecast Update and Evidentiary Cut-off Date⁷²

The CEC accepts the need for an evidentiary cut off date. Where there is significant moving targets to forecast, while there may be a cut off date, the CEC submits that there should also be a re-opening date. It is for this reason that the CEC is endorsing a LTAP process be recommenced in June of 2010.

4.2.2 Short Term vs. Long Term⁷³

The CEC submits that there are significant structural changes occurring in the newsprint industry and the lumber industry as well as other key sectors in the global economy such that it has very little confidence in the accuracy of the load forecast or the load forecast update as a basis for making multi-billion dollar commitments for future expenditures. This matter is discussed at length later in our submissions.

Mr. Elton agreed that matters would get worse before they got better at page 514 of the Transcript.⁷⁴

This is perhaps one of the most important pieces of evidence in this hearing. There is plenty of evidence on the record that the load forecasts are critically related to and tied to the state of the economy and the base for the 2008 Load Forecast was being made obsolete as the economy got worse and a lengthy protracted recession got underway. The effects on the load forecast were not adequately foreseen or included in the forecasts upon which BC Hydro is relying.

The CEC submits that the Commission should take the clear evidence that things would get worse and ensure that it exercises sufficient caution not to enable commitment to expenditures which are not based on very solid ground. The CEC submits that the 2008 Load Forecast is not sufficiently solid ground.

The CEC differs with BC Hydro's characterization of the decisions in the LTAP being based on long-term requirements as opposed to short term requirements. The critical decisions in the LTAP are being driven by the SD 10 changes and the self-sufficient requirement for 2016. The

⁷¹ BC Hydro Final Argument, Page 85

⁷² BC Hydro Final Argument, Page 85

⁷³ BC Hydro Final Argument, Page 86

⁷⁴ Transcript, Volume 4, Page 514, Lines 14 - 19

CEC submits that this is not long term decision making but quite clearly short term decision making which is dramatically affected by the economic circumstances of 2009 and 2010.

4.2.3 2008 Load Forecast Update as Appropriate Load Forecast⁷⁵

The CEC appreciates the attempts to improve the 2008 Load Forecast Updates undertaking by BC Hydro. What is clear is that those updates did not capture the economic changes which are impacting all areas of the British Columbia economy. The CEC does not agree that the 2008 Load Forecast Updates are reasonable for the planning horizon of the 2008 LTAP. The CEC does not agree that the 2008 Load Forecast Updates are more reasonable for the longer term planning horizon from 2019 to 2029 and more so because the expenditure commitments being driven by those forecasts are and or should be minimal. However, the CEC does not agree that the 2008 Load Forecast Updates are suitable for the 2009 to 2019 time frame where the impact of the recession will have some significant and lasting effects raising serious concerns about the decisions proposed by BC Hydro.

4.3 Existing and Committed Resources⁷⁶

4.3.1 Heritage Hydro⁷⁷

The CEC agrees with BC Hydro's views with respect to the existing heritage Hydro contribution of 42,600 GWh/year.

4.3.2 Burrard⁷⁸

The CEC agrees with BC Hydro that the Burrard plant can be relied on for 3000 GWh/year of firm energy and appreciates the approach BC Hydro has taken to linking the planning criteria and the operating criteria for displacing the use of natural gas with the most economic alternatives available.

The CEC however submits that Burrard has more very useful and critical flexibility to offer and that it should not be limited to 3000 GWh/year and should be enabled up to its historic levels of usefulness to 4000 GWh/year. The CEC does not agree with limiting, for planning purposes, the firm energy capability of Burrard to 3,000 GWh a year and submits that it is prudent and in the best interest of ratepayers and the public interest that that capability be set at 4,000 GWh a year. This is addressed in Part 5 of our Argument.

4.3.3. Non-Firm IPP Energy⁷⁹

The CEC agrees with BC Hydro's assessment of SD 10 and that the non-firm energy may not be relied on for planning purposes. The CEC agrees with BC Hydro's assessment of IPP non-firm energy.

4.3.4 Existing IPP Resources and Attrition⁸⁰

⁷⁵ BC Hydro Final Argument, Page 88

⁷⁶ BC Hydro Final Argument, Page 90

⁷⁷ BC Hydro Final Argument, Page 90

⁷⁸ BC Hydro Final Argument, Page 90

⁷⁹ BC Hydro Final Argument, Page 90

The CEC would simply highlight that the level of attrition from the fiscal 2006 call highlights the uncertainty and risk of reliance on supply side for IPPs in planning. This will be discussed further in our Arguments in Part 6..

4.3.5 Conclusion⁸¹

The CEC agrees with the BC Hydro conclusion that with the exception of Burrard there is little evidence disputing the existing and committed levels of supply proposed by BC Hydro.

4.4 Load/Resource Gap⁸²

As discussed in Part 3 of our Argument, the CEC disagrees strongly with both the definition and accuracy of the Load/Resource Gap as set out by BC Hydro.

The Load/Resource Gap carries with it uncertainties which are not balanced in the current circumstances and therefore will warrant additional processes on the part of the Commission.

5. Market Context and Analysis⁸³

5.1 Natural Gas Price Forecast⁸⁴

The CEC agrees that the evidence demonstrates that BC Hydro's long term forecast of natural gas and by inference market prices for electricity are reasonable for long term acquisition planning purposes. The CEC agrees that predicting the specific volatility in the market prices is not a key factor in long term acquisition planning, except that the volatility exists.

While the forecasts of BC Hydro were not designed to and do not predict or encompass the volatility that may occur in short term market prices, we remain concerned that there has been structural change in economic circumstances which may lead pricing to be uncertain beyond a short term. That contingency is not well dealt with by BC Hydro posing a material concern that long term decisions are being made based on high levels of uncertainty.

5.2 Greenhouse Gas Offset Price Forecast⁸⁵

The CEC agrees that GHG offset mechanisms and value forecasts are much more uncertain than energy prices and that BC Hydro's policy scenario approach is the most appropriate methodology for dealing with the issues. The CEC agrees that the evolution of GHG policy is on-going and that both presumed increasing values, uncertainty and some volatility are affecting long term acquisition planning. However, the specific forecasts are somewhat less critical to the long term acquisition planning. So the CEC agrees that the BC Hydro evidence with respect to GHG offset prices is sufficient for long term acquisition planning purposes.

5.3 Electricity Price Forecast⁸⁶

⁸⁰ BC Hydro Final Argument, Page 91

⁸¹ BC Hydro Final Argument, Page 92

⁸² BC Hydro Final Argument, Page 92

⁸³ BC Hydro Final Argument, Page 92

⁸⁴ BC Hydro Final Argument, Page 93

⁸⁵ BC Hydro Final Argument, Page 97

The CEC agrees that the BC Hydro electricity price forecasts evidence is sufficient for long term acquisition planning purposes. The specific market prices are not critical to the key long term acquisition decision and given the SD 10 changes precluding planning reliance on market purchases the electricity price forecasts have lesser significance than they have had in the past.

5.4 Market Assessment for Clean or Renewable Electricity⁸⁷

The CEC agrees with BC Hydro's submission that the size and nature of the future market for renewables in the WECC is uncertain. Time to consider that market will be of benefit to all stakeholders including BC Hydro.

Long term decisions in the face of this uncertainty could pose a material risk to ratepayers. As an example, at page 106 of BC Hydro's Argument they state another scenario that is potentially affected by uncertainty is potential displacement of fossil fuel generation in external markets through exports of renewables. Until there is more certainty as to what individual jurisdictions will permit in terms of the proportion of RPS that will have to be met through intra-jurisdictional clean generation construction, it would be unnecessarily speculative to make any specific assumptions as to potential markets for BC renewable energy.

5.4.1 Market for RECs and Clean, Renewable Electricity⁸⁸

The CEC agrees with BC Hydro that the market for clean and renewable electricity is evolving and uncertain.

A. Eligibility⁸⁹

The CEC agrees that certain of the eligibility terms in some of the markets are being resolved and others remain uncertain.

B. Link to GHG Cap and Trade System⁹⁰

The CEC agrees with BC Hydro's evidence that the Cap and Trade systems that will evolve are not yet defined with certainty. The CEC agrees that REC trading has both some links to the cap and trade systems and some independence from the cap and trade systems.

The CEC submits there will be a market at some point and that it will remain for the Provincial Government to establish policy and for the IPP community to determine if it is a profitable market for them.

The CEC submits BC Hydro needs to be cautious with respect to potential impacts on domestic customers.

5.4.2 REC Forecast Prices and Portfolio Analysis⁹¹

⁸⁶ BC Hydro Final Argument, Page 99

⁸⁷ BC Hydro Final Argument, Page 101

⁸⁸ BC Hydro Final Argument, Page 101

⁸⁹ BC Hydro Final Argument, Page 102

⁹⁰ BC Hydro Final Argument, Page 103

⁹¹ BC Hydro Final Argument, Page 107

The CEC agrees with BC Hydro that RECs will have the potential to add value to any sale of renewable energy, however a great deal of uncertainty remains.

5.5 Long Portfolio⁹²

BC Hydro's description of the impact of being long is inadequate. They state that the impact of being "long" results in an exposure to export markets as any energy that is operationally surplus to BC Hydro's requirements and would have to be sold into the export market.

The CEC agrees with BC Hydro's description of the impact of being long as something that results in an exposure to export markets.

The CEC agrees with BC Hydro's analysis that after 2016 and SD 10 BC Hydro will have surplus non-firm energy, which in any given year may be a substantial quantity of energy. The CEC agrees with BC Hydro's analysis that it will have the transmission capacity under normal circumstances to export the energy.

The CEC notes that the expected price BC Hydro will get for the energy declines as the volumes of electricity to be sold into the market increase.

The CEC notes that one of the key elements of this LTAP hearing is whether or not some portion of the additional non-firm energy that may be available for export will have been purchased at Clean Power Call prices or at DSM prices for additional DSM beyond Option A. The price differences and the risk exposures to export markets will be very different between these scenarios and the CEC submits the Commission should pay particular attention to these risks.

The CEC notes that BC Hydro's analysis shows a positive contribution from this energy. The CEC submits that the non-firm energy will make a contribution but cautions that the proper analysis of this issue requires an incremental comparison with a number of constraints reflecting the nature and timing of the non-firm energy availability. BC Hydro's portfolio analysis methodology does not allow for all of the critically important incremental analysis.

The CEC notes that the implied BC Hydro test is a positive contribution, whereas the CEC submits that the more important test is the greatest positive contribution from among the alternatives for generating the surplus.

The CEC agrees that surplus non-firm power sold into the market does not raise issues with respect to the \$200 million trade income cap, except in terms of a potential second order effect of increased non-firm sales affecting the trade income potential. The CEC has not analyzed this nor has BC Hydro presented any evidence with respect to this possibility.

5.6 Elasticity⁹³

It was clear for the cross-examination of Dr. Oran by Commission counsel that he had not reviewed a number of historic arguably relevant BC Hydro elasticity studies done on the BC Hydro system.⁹⁴

⁹² BC Hydro Final Argument, Page 107

⁹³ BC Hydro Final Argument, Page 109

The CEC agrees with the evidence put forward by BC Hydro that elasticity effects from price induced conservation and efficiency have been evaluated assuming -.1 and that this has been disaggregated into -.05 for rate structure changes and -.05 for rate level changes.

The CEC submits that BC Hydro expects these elasticity estimates to be conservative and that effects may well exceed these estimates.

The CEC notes that the precision of these estimates is limited and that the analytical process for understanding the effects is limited. Therefore there will be significant bands of uncertainty around these assumptions. The sensitivity of the conservation and efficiency savings estimates to changes in these assumptions can be significant. The CEC submits that the uncertainty around the selected elasticity estimate is not a symmetrical normal distribution and more likely is a skewed distribution.

The CEC submits that the elasticity response to prices and price structures will be real and significant. The CEC does not have any better evidence than Dr. Oran's evidence and submits that the Commission should rely on this evidence with the understanding that there are uncertainties related to using these estimates.

The CEC notes the evidence with respect to long term elasticity estimates being potentially greater than the short run elasticity estimates Dr. Oran recommends. The CEC notes the elimination of any long term effect in favour of the specific estimates with respect to codes and standards and DSM programs. The CEC submits this is a very conservative approach to avoid double counting and clearly eliminates any potential for double counting.

The CEC's primary concern with respect to this elasticity issue is that BC Hydro's codes and standards activities stop with its existing efforts and planned ones to 2012 and that the acknowledged continuation of codes and standards efforts throughout the 20 year term will undoubtedly lead to greater conservation and efficiency than BC Hydro is showing in its plans. The CEC is concerned that BC Hydro has shaped its DSM Option A activities to limit them to a comfort level defined in the time period from 2009 to 2012 and that acknowledged continuation of DSM development will undoubtedly lead to greater conservation and efficiency than BC Hydro is showing in its plans.

The CEC is concerned that in BC Hydro's efforts to be conservative and not push the boundaries of conservation and efficiency it will expose its customers to the risks of significantly higher costs of supply and will likely do so at the expense of cost-effective DSM.

The CEC submits that one way to compensate for this effect would be to incorporate long term elasticity estimates, however the CEC tends to agree with BC Hydro that being specific to the codes and standards and DSM programs is a better solution provided it is done for the entire 20 year planning horizon.

The CEC submits that the Commission is obligated by the *UCA* to ensure that the exposure to significantly higher costs of supply at the expense of cost-effective DSM does not happen. The CEC recommends that the best way to ensure that this does not happen is to avoid giving an

⁹⁴ Transcript, Volume 10, Pages 1849 - 1856

unqualified endorsement of the DSM part of the plan and instead have BC Hydro return to the Commission in June 2010 with estimates of the ongoing development of DSM for each year from 2010 to 2030.

6. LTAP Action Items⁹⁵

6.1 DSM Plan⁹⁶

The CEC supports the DSM Plan except that further investments should be made in DSM to fill the load resource gap through conservation and efficiency as oppose to supply. The DSM Plan is discussed in detail in Part 4 of our submissions.

The CEC submits that BC Hydro has understated the effectiveness of its DSM initiatives and has indeed understated other conservation opportunities which will likely be realized in both the short, medium and long term through the course of the planning horizon. In summary, the CEC supports all of the DSM initiatives of BC Hydro and submits that further investment will result in further savings for customers in furtherance of the public interest. The CEC does not believe that BC Hydro and its adjusted Option A represent all cost effective DSM at the present time.

The CEC agrees with BC Hydro that there is ample evidence to support the Adjusted Option A and the BC Hydro proposed budget of \$418 million over the F2009, F2010, F2011 timeframe and the CEC supports BC Hydro's recommendation that the Commission find this in the public interest.

The CEC submits that BC Hydro's assertion that this is all of the cost-effective DSM over the 20 year timeframe of the plan is not supported by the evidence. The CEC submits that there is ample evidence that there will be more cost-effective DSM available and which can be developed to avoid the higher costs of new supply. Therefore the CEC submits that the Commission should endorse the BC Hydro DSM plan as far as it goes but make it clear that it is not adequate because more cost-effective DSM can be done in the future and the plan will not be sufficient until such time as BC Hydro submits estimates as to the potential of these future developments over the 20 year time frame.

BC Hydro's argument is that relying on additional energy savings from initiatives such as those shown in Option B would be taking too much risk.

The CEC submits that BC Hydro's view of this risk is flawed and is demonstrated to be flawed by BC Hydro's own evidence.

The CEC notes that more spending toward Option B actually reduces the risk of delivering the Option A conservation and efficiency.

The CEC notes that BC Hydro has over performed and under spent with regard to its past performance and has achieved an average of more than 16% in excess of what it planned for.

⁹⁵ BC Hydro Final Argument, Page 113

⁹⁶ BC Hydro Final Argument, Page 113

Only 20% over performance is required to close the load resource gap in the 2016 time frame without changing the load forecast and only 10% is required if the load forecast is improved.

The CEC notes that on several fronts BC Hydro is expecting to develop DSM options beyond those contained in its Option A plan.

The CEC submits that by June 2010 the load 2016 resource gap can be demonstrated to be closed with cost-effective DSM and that this can be forecast now to be a realistic plan.

6.1.1 Components of DSM Plan⁹⁷

The CEC agrees with BC Hydro's description of the components of the DSM plan and submits that the components of a 20 year DSM plan could include the following.

	Individual	Market	Societal
Existing BCH Tools	Incentive programs	Rate Structures	Codes and Standards
Additional Tools	Investment programs	Tax Policy	Land Use and Zoning
		Tenant/Owner Policy	

BC Hydro's PowerSmart programs and the BC Government's LiveSmart programs involve providing financial incentives and support of a variety of kinds to help overcome the various barriers for individuals and businesses to invest in conservation and efficiency.

The affordability barriers remain significant and tailored investment programs can form a potent strategy for increasing DSM savings.

The BC Government has already adjusted PST policy to acknowledge the importance of conservation and efficiency but there are a number of other taxation policy shifts that can shape the market for conservation and efficiency and BC Hydro can work on these with the provincial government to achieve additional conservation and efficiency savings.

The problem in the market place with Tenant/Owner disincentives for conservation and efficiency has been evident for a long time. BC Hydro can work with the provincial government to obtain additional conservation and efficiency by breaking through these barriers.

The opportunities for conservation and efficiency at the local government community level is just beginning to be explored but clearly there will be additional conservation and efficiency savings to come from working with local governments on land use planning and zoning opportunities to increase conservation and efficiency.

The CEC submits that a 20 year DSM plan should include the use of such tools and undoubtedly anticipate the use of other tools. The CEC does not believe that BC Hydro must have all of these

⁹⁷ BC Hydro Final Argument, Page 115

options developed and detailed. However, the CEC submits that just as BC Hydro did for EE3, EE4, and EE5 in the 2006 IEP LTAP including place markers for the anticipated development of DSM savings is an essential component of an adequate DSM plan.

6.1.2 Cost Effectiveness and Adjusted Option A⁹⁸

The CEC does not believe that BC Hydro and its adjusted Option A represent all cost effective DSM at the present time.

The CEC submits that there is more cost effective DSM to be developed and that truncating this development for planning purposes because of qualitative uncertainties in the short term is tantamount to frustrating the spirit and intent of *UCA* Section 44.1 requiring an explanation as to why the demand cannot be met from demand side measures.

6.1.2.1 Analysis of DSM Options: Original Option A vs. Option B⁹⁹

The CEC submits that BC Hydro's construction of Option A and Option B for its DSM planning was and is insufficient for a 20 year plan.

BC Hydro acknowledges that it submits there will be demand side savings up to Option B and beyond, but deems them too uncertain for this resource planning effort and as a consequence did not fully develop such a plan. (BC Hydro Final Argument, Page 118, Lines 24 to 26)

The CEC submits that planning for load and supply options for 20 years is just as uncertain if not more uncertain than planning for DSM options. The CEC submits that 20 year long term acquisition planning is about addressing these uncertainties and that dealing with the uncertainties by not developing a perspective on these options is not sufficient.

The CEC notes the extensive detail BC Hydro has gathered to define supply side option potential despite the fact that there is no certainty whatsoever that any of the options could be developed or could be developed at the prices included in BC Hydro's portfolio analysis.

The CEC does not believe that the spirit and intent of the *UCA* Section 41 will be adequately addressed until such time as BC Hydro has done as extensive a job on the demand side as it has done on the supply side.

The CEC recommends that the Commission approve of BC Hydro's Adjusted Option A plan as part of an adequate DSM plan, approve additional expenditures to pursue Option B DSM savings where cost-effective and require BC Hydro to come back to the Commission by June 2010 with plans which anticipate the development of additional DSM savings from additional DSM Options.

A. Portfolio Analysis¹⁰⁰

⁹⁸ BC Hydro Final Argument, Page 118

⁹⁹ BC Hydro Final Argument, Page 118

¹⁰⁰ BC Hydro Final Argument, Page 119

The CEC agrees that BC Hydro's portfolio analysis shows pursuing Option B DSM savings would be lower cost than supply side options. For this reason the CEC submits it is incumbent upon the Commission to approve additional expenditures over and above those required for Adjusted Option A in order to allow BC Hydro to begin defining and planning in detail for achieving the additional savings.

B. Risk Assessment¹⁰¹

The CEC agrees with BC Hydro that planning to rely on DSM savings for more than 50% of the load resource gap requirement is justified.

BC Hydro acknowledges that in a few years it submits it may have sufficient experience to pursue more aggressive DSM targets, however BC Hydro does not believe the time to do so is now. (BC Hydro Final Argument, Page 120, Lines 4 to 8) This evidence is a primary justification for requiring BC Hydro to come back June 2010 with an improved plan and further experience to enable decisions to be made about DSM savings potential before EPA commitments are made.

The CEC is of the view that the time to plan aggressively for DSM is the time at which the alternative is locking into long term expensive EPA's. The time is now. The CEC submits that BC Hydro needs to be pursuing more flexibility so that it can deal with the imminent risk of acquiring supply side resources, at substantially higher costs than the cost of DSM savings, and which could otherwise be avoided.

C. Loss of Flexibility¹⁰²

BC Hydro argues that Option B represents a loss of flexibility because it captures a greater percentage of the available potential. The CEC submits that the logic of this argument is built on a narrow perception of flexibility.

The concept of flexibility goes beyond what may be done to extend a given program against the potential of that program. The concept of flexibility includes opening up new strategies for accessing DSM savings, devising and adopting new tools for accessing DSM savings, applying existing techniques to new areas to access DSM savings and expanding the DSM savings potential by finding new ways to break through known barriers.

The CEC is struck by the fact that DSM has this argument of loss of flexibility raised by taking on additional initiatives, whereas the supply side options have no such loss raised as an issue when BC Hydro signs EPA's with proponents and they are unable to complete or just signs EPA's with proponents removing those projects from the available supply stack.

D. BCSEA et al's Option B Evidence¹⁰³

The CEC agrees with BCSEA that BC Hydro has inappropriately concluded that expenditures to try to obtain Option B conservation and efficiency savings would be risky.

¹⁰¹ BC Hydro Final Argument, Page 119

¹⁰² BC Hydro Final Argument, Page 120

¹⁰³ BC Hydro Final Argument, Page 121

The CEC agrees with BCSEA's analysis that 75% of the additional Option B savings come from programs and 70% of the program savings are from industrial programs.¹⁰⁴ The CEC submits the efficiency savings implied for these industrial businesses would be very valuable to the BC economy as well as to meeting the requirements of the UCA Section 44.1.¹⁰⁵ The CEC agrees with BCSEA that BC Hydro's perceptions of risk and particularly those purporting to show a loss of flexibility do not give adequate weight and importance to the covariance correlation of conservation and efficiency with load requirement.¹⁰⁶

The CEC notes that BC Hydro is proposing expenditures of over \$40 million just for consultation on Site C as supply side project with risks which will daunt anything related to accomplishing DSM Option B. For the same funds over the next three years BC Hydro could obtain additional DSM savings and potentially savings of such significant size as to compete with Site C energy delivered at a fraction of the cost.

The CEC submits that Option B represents cost-effective DSM, which BC Hydro will find cost-effective and or modify to make it cost-effective once BC Hydro has gained further experience with beginning the implementation of Adjusted Option A.

The CEC submits that it is in the public interest to find the flexibility to take up additional DSM opportunities beyond those in Adjusted Option A.

E. Conclusion¹⁰⁷

The CEC agrees with BC Hydro that Adjusted Option A is cost-effective DSM and should be approved and endorsed by the Commission.

The CEC does not agree that BC Hydro has pursued all cost-effective DSM.

The evidence is clear that BC Hydro has not adequately assessed the risk/reward merits of pursuing DSM Option B and additional savings beyond DSM Option B.

The funds which might be put at risk to begin pursuing DSM Option B are small by comparison the benefits which may be obtained.

6.1.2.2 Evidentiary Update Changes to DSM¹⁰⁸

A. Reduction in Expected Savings¹⁰⁹

The CEC acknowledges that there is a relationship between conservation potential and the load forecast. The CEC acknowledges that there is a relationship between the conservation potential and the expected DSM savings from a given set of DSM programs, rate structures and codes and standards changes.

¹⁰⁴ Exhibit C21-4, Page 9, Lines 5 to 7

¹⁰⁵ Exhibit C21-4, Page 10, Lines 11 to 15

¹⁰⁶ BCSEA Exhibit C21-4, Page 17, Lines 8 to 26 and Page 18 Lines 1 to 16

¹⁰⁷ BC Hydro Final Argument, Page 122

¹⁰⁸ BC Hydro Final Argument, Page 123

¹⁰⁹ BC Hydro Final Argument, Page 123

The CEC accepts BC Hydro's adjustment to Option A's expected savings as a consequence of a decline in the load forecast. This was a high level estimate and was a reasonable adjustment in light of the circumstances. However, the deliverability risk has declined not stayed the same as BC Hydro has claimed, because BC Hydro has maintained the same level of expenditure as for the Original Option A. Some expenditures, such as incentive payments, will clearly decline with the reductions in the assumed load base, on which expected savings are determined and will result in greater DSM savings than the proportional drop BC Hydro has proposed, because BC Hydro also proposes to maintain the budget level for the Original Option A.

B. Unit Costs of Adjusted Option A¹¹⁰

The CEC agrees with BC Hydro that the unit costs for Adjusted Option A will increase, given the decision to maintain the Option A budget but reduce expected savings to the Adjusted Option A level. The CEC agrees that even at these levels the DSM initiatives remain robustly cost-effective, in comparison to new supply.

C. No Reduction in Expenditure Determination Request¹¹¹

BC Hydro made no changes to its DSM expenditures as a result of the evidentiary update. The CEC submits that BC Hydro's position on this issue is supportive of increasing the expenditures on DSM to achieve filling the resource gap. The response of Mr. Hobson at Transcript Volume 13, Page 2380 and cited in BC Hydro's Argument at page 124, is consistent with spending additional amounts on DSM against the load in order to increase the probability of filling the resource gap with conservation.

If BC Hydro is saying that the evidentiary update which saw their load decrease did not require a reduction in DSM expenditures to achieve targets but rather the increased amount spent against the reduced load increases the probability of beating their targets then the same result should occur in the face of spending more money on DSM against that load.

When BC Hydro opted to maintain the budget expenditure levels it placed into evidence a refutation that it had pursued all cost-effective DSM. BC Hydro provided proof that it believed there was more cost-effective DSM. The CEC agrees with BC Hydro's actions and firmly submits that there is more cost-effective DSM available to be pursued.

The CEC supports BC Hydro's decision to maintain the budget for Option A as the budget for its DSM plan and the CEC recommends that the Commission determine that the BC Hydro DSM plan is not adequate because it does not begin the process of developing savings from Option B and beyond (Option C). Further the CEC recommends that the Commission approve an additional amount of \$46 million to enable BC Hydro to engage in pursuing additional DSM savings.

6.1.3 Tracking Performance¹¹²

¹¹⁰ BC Hydro Final Argument, Page 123

¹¹¹ BC Hydro Final Argument, Page 124

¹¹² BC Hydro Final Argument, Page 124

BC Hydro seems to believe that in the event there is a requirement to adjust DSM programs resulting from overachieving or underachieving that will not have an impact on ratepayers. Clearly if ratepayers are burdened with the cost of acquiring supply which at a later date would be replaced by conservation efforts, the customer will be stuck paying twice. Once for supply which more or may not be sold at economic prices into the market plus the cost of DSM. Clearly every cost effective opportunity to defer supply investment should be pursued by BC Hydro. The cost effectiveness of DSM should be measured against the avoided cost of supply until such time as it is no longer displacing supply and instead becomes a source of surplus for sale into the export markets at which time it should be measured against the market prices obtained.

6.1.4 Other DSM Issues¹¹³

A. Impact of DSM Regulation¹¹⁴

The CEC agrees with BC Hydro's assessment of the impact of DSM regulation with respect to the use of the RIM test.

B. Equity Impacts are Important to BC Hydro¹¹⁵

The CEC agrees with BC Hydro's analysis of the relative nature of equity impacts and that a simple RIM test does not sufficiently capture all of the issues with respect to equity.

6.1.4.2 DSM Program are not Rates¹¹⁶

The CEC agrees with BC Hydro that DSM programs are not rates.

6.1.4.3 DSM Reporting¹¹⁷

The CEC agrees with moving the DSM reporting to an annual cycle.

6.1.4.4 Amortization Period¹¹⁸

The CEC submits that the new elements of the BC Hydro DSM initiatives have changed the useful life of the DSM expenditures and that this warrants a change of the DSM amortization period to reflect the changed useful life.

The CEC notes BC Hydro's evidence that the useful life of programs is approximately 11 years now.

The CEC submits that the Commission should require a review of the amortization period for DSM programs to be undertaken and submitted by BC Hydro as part of its next RRA filing.

6.1.4.5 Capacity-Focused DSM Definition Phase Expenditure Request¹¹⁹

¹¹³ BC Hydro Final Argument, Page 125

¹¹⁴ BC Hydro Final Argument, Page 127

¹¹⁵ BC Hydro Final Argument, Page 127

¹¹⁶ BC Hydro Final Argument, Page 128

¹¹⁷ BC Hydro Final Argument, Page 129

¹¹⁸ BC Hydro Final Argument, Page 130

The CEC notes that BC Hydro is likely to be long on generation capacity throughout much of the planning period. So capacity savings do not have anywhere near the economic value to customers that energy savings do.

Nevertheless for the longer term generation capacity additions may be expected to be considered and evaluated. Such evaluations would be inadequate if there were not DSM capacity alternatives to be evaluated against the capacity additions.

Additionally DSM options for making capacity savings are useful for delaying transmission and distribution system capacity additions. The BCTC and BC Hydro capital plans have substantial capital investments contemplated for the purpose of providing transmission and distribution capacity.

The CEC also notes that the BC Government has mandated the use of smart meters for BC Hydro's customers and that these will enable capacity focused rate structures and DSM initiatives.

So the CEC supports BC Hydro's request for funding to work on a DSM definition phase for capacity focused DSM.

6.1.4.6 BCSEA et al's Estimation of BC Hydro's Unit Costs¹²⁰

The CEC does not believe that BC Hydro's unit costs of DSM savings versus those in other jurisdictions is particularly relevant unless they are properly benchmarked reflecting normalization of different circumstances to determine the real underlying efficiency and effectiveness differences, such that potential improved practices could be deduced. There is no such evidence before the Commission.

The CEC accepts the efficiency and effectiveness of BC Hydro's DSM initiatives at this time.

6.1.4.7 Coordination with Terasen Utilities¹²¹

The CEC agrees with BC Hydro's assessment of LiveSmart BC and the provincial government's role in coordinating conservation and efficiency initiatives to ensure integrated, efficient and effective delivery of DSM.

The CEC acknowledges that BC Hydro works with and coordinates with Terasen Gas on a number of issues. Naturally there are some areas where the interests of the two entities diverge and it will prove useful for further coordination initiatives to be undertaken. The CEC notes that BC Hydro in its argument has proposed such further coordination with regard to fuel switching policy.

Ultimately the provincial government policy to encourage GHG reductions has long term strategic consequences for Terasen Gas in particular and increased coordination on many issues will likely be on-going for many years.

¹¹⁹ BC Hydro Final Argument, Page 131

¹²⁰ BC Hydro Final Argument, Page 132

¹²¹ BC Hydro Final Argument, Page 132

The CEC submits that the Commission should continue to monitor the coordination between the utilities on specific issues as they arising in the respective utilities various filings with the Commission.

6.2 Burrard¹²²

The CEC's detailed submissions are set out at Part 5 of our Argument.

6.2.1 Capacity Reliance on Burrard for the Base Resource Plan¹²³

The CEC agrees with BC Hydro with respect to the importance of the Burrard Generating Station to the BC Hydro electric system.

6.2.2 Appropriate Firm Energy Reliance on Burrard¹²⁴

The CEC agrees with BC Hydro's Base Scenario 1 requirement for Burrard being for 900 MW of capacity and 600 GWh/year of energy. The CEC agrees with BC Hydro's Scenario 2 value of relying on Burrard for at least 3000 GWh/year of energy. The CEC submits that beyond the 3000 GWh/year of energy reliance the remaining 3000 GWh/year of capability may adequately perform the role of providing insurance capability and that up to 4000 GWh/year should be approved as a level which can be relied on for energy where the probability of actually requiring it would be low.

6.2.2.1 Technical Assessment¹²⁵

The CEC agrees with the AMEC technical assessment which expressed the most concern about providing 6000 GWh/year but was clear that 3000 GWh/year up to about 4000 GWh/year was technically feasible with appropriate investments.

6.2.2.2 Social License¹²⁶

The CEC finds that BC Hydro's discussion of social license is really all about understanding the facts and the trade offs in making planning decisions.

The facts are that planning for Burrard at 4000 GWh/year to be displaced subsequently to 3000 GWh/year by evolving DSM savings would enable BC Hydro to save the difference between acquiring that energy at the cost of new supply at about \$120/GWh/year and the cost of acquiring the energy through DSM initiatives at about \$50/GWh/year. The savings will be on the order of \$70 million per year.

The trade off would be the impact of using the Burrard plant times the joint probability of the probability of needing the Burrard plant capability and the probability that the plant would actually be need to be run and the probability that the impacts will not be flushed through the airshed by air movement. We estimate that the probability of needing the Burrard plant would be

¹²² BC Hydro Final Argument, Page 133

¹²³ BC Hydro Final Argument, Page 135

¹²⁴ BC Hydro Final Argument, Page 139

¹²⁵ BC Hydro Final Argument, Page 140

¹²⁶ BC Hydro Final Argument, Page 140

the probability of DSM exceeding the Adjusted Option A target levels plus 1000 GWh/year, which would be about 80% as planned but would decrease to 25% if BC Hydro pursues Option B DSM. We know that the probability, when we need the Burrard plant, that it will actually run for 4000 GWh/year is less than 50% because of displacement by non-firm energy and less again because of economic displacement so that this probability would decrease into the 25% range. This means that the probability of actually requiring Burrard to run can be brought to less than 10%. So the seriousness of any potential impacts can be reduced to the point where the savings tradeoff would be so much more valuable to society and in direct equivalence terms could be used to improve air quality in the lower Mainland by orders of magnitude in excess of the impact.

The CEC submits that the concept of ‘social license’ is relative for Burrard emissions of NO_x, VOCs, SO₂, and PM just as it is for CO₂ and other GHGs. The CEC notes the extensive evidence on the record in this proceeding about the GHG offsets and prices. This is an example of a social license where the trade off is being made explicit and worked into the economy. The BC Hydro analysis of social license concerns itself primarily with the evidence of public concern and what can happen if a balance is not found. The CEC submits it is more important for BC Hydro to develop more explicit understandings of the tradeoffs and communicate how much more valuable the use of the flexibility of Burrard is than the alternative costs of achieving improvement in the air quality in the Lower Mainland.

The CEC submits that combined with the government’s objective to encourage utilities to contribute to the reduction of GHGs that a move by BC Hydro to make the tradeoff explicit in support of electrification of transportation would improve both the economics and the environment.

The CEC recommends that the Commission direct BC Hydro to take such an approach to improving its social license.

A. B.C. Government¹²⁷

In the referenced quote, the CEC was questioning Mr. Elton on the move from 3,000 to 4,000 GWh a year.¹²⁸ The CEC is not proposing that BC Hydro rely on Burrard for 6,000 GWh a year. There is nothing in the BC Government’s policy which indicates that 4,000 is inappropriate versus 3,000 GWh a year.

The general discussion on the risk for planning purposes of going from 3,000 to 4,000 GWh gets confused with the actual usage of the plant which is rarely used at either 3,000 or 4,000 GHh/year. The social license that is at risk would, one would assume, be less at risk if BC Hydro was clearly explaining the actual usage of the plant. The prudent course may be for a direction from the Commission for BC Hydro to maintain a continuous education of those who are responsible for air quality regulation of the benefit to BC Hydro ratepayers of utilizing the 4,000 GWh for planning purposes.

¹²⁷ BC Hydro Final Argument, Page 143

¹²⁸ Transcript, Volume 4, Pages 521 and 522

Failing the ability to renew that social license at that level, BC Hydro could report back to the Commission of its efforts. Clearly, this could be achieved in time for a LTAP filing next year. The CEC accepts BC Hydro's concern regarding the risk of loss of use of the plant but does not accept that BC Hydro does not have the ability to properly inform those who grant the social license of the benefits and ultimate small usage of Burrard notwithstanding the 4,000 gigawatt hour planning limit.

The CEC accepts BC Hydro's concern that the risk of loss of use of the plant but does not accept that BC Hydro does not have the ability to properly inform those who grant the social license of the benefits and ultimate small usage of Burrard notwithstanding the 4,000 gigawatt hour planning level limit.

B. Metro Vancouver and Public Concerns¹²⁹

The CEC accepts BC Hydro's analysis of the Metro Vancouver regulation and permitting context.

The CEC accepts that defining a suitable role for Burrard below relying on Burrard for planned energy at 6000 GWh/year can be an important element in preserving its ability to provide capacity and flexibility to the integrated electric system.

C. Conclusion¹³⁰

The CEC submits that retaining somewhat more flexibility from Burrard with an ability to move to planning level of 4000 GWh/year in order to improve the air quality and the economics is an option which will outperform BC Hydro's proposed approach.

6.2.2.3 Operational Feasibility¹³¹

The CEC submits that the evidence shows that it is operationally feasible to plan for 4000 GWh/year and that the benefits of operating at this level are significant and that BC Hydro has the capability to make the case that these benefits can be applied to improving the air quality in the lower mainland.

6.2.3 5L83 Scheduling Risk, Including Impact of Court of Appeal Decision¹³²

The CEC agrees with BC Hydro's approach to using Burrard's flexibility as a basis for ensuring that it has adequate capacity in the Lower Mainland and Vancouver Island in the event that 5L83 is not in service as currently planned.

The BC Hydro flexible approach to the utilization of Burrard in relation to the 5L83 scheduling risk is a good example of the practical ability of BC Hydro to utilize its resources where necessary. That same flexibility should be applied to the benefit of ratepayers in attempting to negotiate a 4,000 gigawatt hour planning resource for Burrard. Clearly, as the reduction is going

¹²⁹ BC Hydro Final Argument, Page 147

¹³⁰ BC Hydro Final Argument, Page 151

¹³¹ BC Hydro Final Argument, Page 151

¹³² BC Hydro Final Argument, Page 154

to be from 6,000 GWh to 4,000 GWh, those responsible for air quality management will be satisfied that BC Hydro is taking steps to meeting the concerns.

6.2.4 Use of Burrard for Operational Reliability and RMR¹³³

The CEC agrees with BC Hydro that designating Burrard for RMR operation would reduce the key flexibility values of Burrard and is unnecessary for the purpose or retaining the reliability value of Burrard.

6.2.5 Appropriate Burrard Capacity Reliance in the CRPs¹³⁴

The CEC agrees with BC Hydro's approach to Burrard capacity for the purposes of contingency resource planning.

6.2.6 Cost of Refurbishing Burrard¹³⁵

The CEC agrees with BC Hydro that the analysis of costs for continuing to refurbish the Burrard plant in line with its planned roles is sufficient and those approvals as part of ongoing regulatory processes will be sufficient.

6.3 IPP Bucket¹³⁶

The CEC submits that the level of IPP resources for which BC Hydro is seeking endorsement is inappropriate given the deterioration of the load requirement and methodological problems in the forecast resulting in a shrinking of the load resource gap combined with the opportunity for cost-effective DSM initiatives to fill the load resource gap and potential for Burrard capability up to 4000 GWh/year to backup the opportunity to close a revised load resource gap with DSM savings.

In this way the CEC submits that the load resource gap can be filled adequately and the self-sufficiency provisions can be met by 2016.

BC Hydro says it has included the SOP volumes 579 GWh/year (pre-attrition) and the Bio-energy call volumes 500 GWh/year Phase I contracted and 700 GWh/year Phase II anticipated (post attrition) as resources filling the gap. In the Table 6 presentation the SOP volumes do not show up.

The CEC accepts the volumes which are already contracted for SOP and Phase I Bio-energy Call as well as the anticipated additions of SOP volumes.

The CEC submits the remainder of the volumes for the Bio-Energy Call Phase II and the Clean Power Call may not be needed either because the load forecast has deteriorated or is anticipated to deteriorate or was based on methodology which is not supported by the historical data. Further

¹³³ BC Hydro Final Argument, Page 155

¹³⁴ BC Hydro Final Argument, Page 157

¹³⁵ BC Hydro Final Argument, Page 158

¹³⁶ BC Hydro Final Argument, Page 159

the CEC submits that the availability of additional cost-effective DSM over time will preempt the need for additional energy supply.

The CEC submits that BC Hydro needs to negotiate options with the Clean Power Call bidders to ensure that it has the flexibility to bring forward projects should they prove to be required in the future. The CEC submits that up to 5000 GWh/year or even up to 10000 GWh/year in options on IPP projects may provide useful flexibility in the event that scenarios such as the electrification of transportation move more rapidly than BC Hydro is anticipating.

6.3.1 BC Hydro's Request with respect to the Clean Power Call Volume¹³⁷

The CEC does not believe that the Commission should endorse the Clean Power Call pre-attrition target of 3000 GWh/year or the post-attrition target of 2100 GWh/year.

The CEC supports the endorsement of the criteria for eligibility that any power BC Hydro acquires or acquires a right to buy must qualify as clean and renewable under the Province of BC's Clean or Renewable Electricity Guidelines.

The CEC supports the Commission determining that pursuant to section 44.2 (3) (a) of the *UCA* that expenditure of \$2 million in F2009 and F2010 required to complete the definition phase work and to implement the Clean Power Call be in the public interest, provided that BC Hydro amend its process to acquire options for power projects and not sign EPA's until the Commission confirms the need for the power.

6.3.2 Context and Government Policy¹³⁸

The CEC accepts BC Hydro's view with respect to government policy in regard to IPP supply and the IPP industry. The BC Hydro views, however, do not deal with the priority provided in the *UCA* that the Commission must give priority to demand side options over supply side options and to the determination of need by virtue of determining a load resource gap.

The CEC submits that the Commission is obligated to give priority to these *UCA* requirements.

The CEC is also concerned with the chilling effect on the IPP industry that an outright cancellation of the Clean Power Call might have. This is why the CEC is advocating a higher level of uptake from the Clean Power Call than BC Hydro is proposing but with the caveat that BC Hydro negotiates and retains the flexibility with regard to if and when to schedule actual acquisition of the power. In the meantime a significant pool of projects and power may be brought forward on an option basis to ensure flexibility of response if as and when the contingent need may develop.

The economic circumstances facing the economy were not forecast or predicted when BC Hydro embarked upon the Clean Power Call. Circumstances have changed dramatically since that time and have been impacting the IPP industry as well as many other industries.

¹³⁷ BC Hydro Final Argument, Page 162

¹³⁸ BC Hydro Final Argument, Page 163

The CEC submits that the best way to respond is to turn the uncertainties into an opportunity and that the best opportunity is to pursue developing options with the IPP industry.

6.3.3 Size of the Clean Power Call¹³⁹

The size of the Clean Power Call has been reduced from 5000 GWh/year at the beginning of the application to 3000 GWh/year (pre-attrition) part way through the process.

The CEC submits circumstances have continued to unfold in a way that does not make the signing of EPA's necessarily the optimal outcome.

The CEC does not agree with BC Hydro that it needs to keep a certain size to attract certain types of IPP projects. The bids are in.

The CEC does believe that the circumstances have changed and that the Commission should make it clear to BC Hydro that it recognizes that the circumstances have changed and that there needs to be an alternative outcome to just endorsing the call volume requested.

The CEC submits that if the Commission requests that BC Hydro negotiate with IPP project proponents and determines how much in the way of flexible power options it can obtain and then report back to the Commission this will provide an appropriate outcome for all parties albeit not the one many may have wanted.

6.3.4 Possibility to defer Clean Power Call or delay EPAs¹⁴⁰

The CEC submits that the Clean Power Call does not need to be deferred or delayed and can proceed, provided that the negotiations are focused on obtaining flexibility options rather than toward signing EPA's.

The CEC does not believe that it is particularly feasible to defer or delay the Clean Power Call other than for time required for such negotiations. The CEC submits that once BC Hydro has negotiated options out of this Clean Call process it would be in a position to proceed to EPA's and a Section 71 review whenever BC Hydro had established the need.

In the event the Commission finds it is inappropriate to proceed with EPA's signing then future EPA requirements, if any, will likely require additional acquisition process and should be endorsed by the Commission.

6.3.5 Requirement to be B.C. Clean or Renewable¹⁴¹

The CEC agrees with BC Hydro that calling for clean and or renewable power fits in the context of the BC Government's Energy Plan objectives

6.3.6 Acquisition Optionality, Flexibility¹⁴²

¹³⁹ BC Hydro Final Argument, Page 164

¹⁴⁰ BC Hydro Final Argument, Page 165

¹⁴¹ BC Hydro Final Argument, Page 167

¹⁴² BC Hydro Final Argument, Page 168

The CEC expands on our position at Part 6 of this Argument.

The CEC agrees with BC Hydro that where a definite and defined need exists acquisition options and the associated flexibility are not needed for a BRP. They become useful where the uncertainty about need has become too great for signing EPA's to be prudent. The CEC submits the concept of acquisition options is also very useful for providing CPR options with approximately 3 year response timeframes. This sort of flexibility could be useful.

The CEC submits that BC Hydro's arguments with respect to the ownership of a project changing the value are not logical. Once an IPP project developer has provided an option to BC Hydro the terms of the option determine the value transfer to BC Hydro. The values are different than advancing a Site C or a Mica Unit but they are directly comparable in securing value for BC Hydro's customers. The CEC submits that securing options with IPPs may well be more valuable than advancing a Site C.

Securing options with IPP's could enable BC Hydro to have more flexibility by having a shorter timeframe with respect to supply side options.

Additional flexibility allowing demand side options to be developed has significant value to customers and it would be prudent and cost-effective to have this happen.

6.4 Resource Smart: Mica Units 5/6¹⁴³

The CEC agrees with BC Hydro that the Mica Units 5 and 6 are important and valuable assets should the need for such capacity develop. The CEC submits that there may well be scenarios, which might develop, and for which the Mica 5 and 6 Units would likely be the least cost option for meeting the requirements. The CEC agrees with BC Hydro's bullet points supporting its argument, except the last one which implies that the Mica Units are clean and renewable electricity. The CEC submits that the source of the energy which enables the storage behind the Mica Units would provide the electricity and it may be clean and renewable or not. The CEC agrees that the Mica Units would provide clean capacity. The CEC acknowledges that the Mica Units would also bring with them some additional clean and renewable energy but submits that will not be the main benefit supporting their development.

The CEC supports a Commission determination that expenditure of \$30 million on the definition phase for Mica 5 and 6 is in the public interest.

6.5 Site C¹⁴⁴

The CEC supports the expenditure of \$41 million for the project definition consultation with respect to the potential Site C project as being in the public interest.

The CEC submits that BC Hydro in considering the criteria will use to determine if it will recommend continued development of the project should carefully examine the alternative of

¹⁴³ BC Hydro Final Argument, Page 168

¹⁴⁴ BC Hydro Final Argument, Page 169

obtaining IPP project options instead as they could provide BC Hydro with very cost-effective flexibility.

The CEC submits that the potential for wind power projects under option to BC Hydro to deliver additional incremental energy very competitively will be worth a careful analysis, particularly when analyzed in the context of future electrification scenarios.

6.5.1 Site C in the 2008 LTAP Portfolio Analysis¹⁴⁵

The CEC agrees with BC Hydro's assessment of its portfolio analysis for the Site C project.

The CEC cautions that these conclusions are driven by the input estimates for Site C and the CEC submits that BC Hydro would not be able to deliver a Site C project in line with the economic values implied in the estimates.

6.5.2 Expenditure Request Reasonable for State in Development¹⁴⁶

The CEC accepts BC Hydro's views that for a project such as Site C the expenditures requested are appropriate given the magnitude and potential impact of the project.

6.6 Summary of Base Resource Plan¹⁴⁷

The CEC does not believe that the BRP BC Hydro is proposing is appropriate because it does not adequately address the considerable uncertainties with respect to the forecast load and does not allow adequately for the development of DSM as the most cost-effective resource to fill a suitably determined load resource gap.

The CEC agrees with BC Hydro that resource acquisition commitment decisions beyond those contemplated in this LTAP are not required with the exception of committing to additional spending on the demand side options to ensure that additional DSM is being developed and brought forward.

6.6.1 Near Term Deficit/Reliability¹⁴⁸

The CEC submits that the load deterioration since the LTAP update and the evolving protracted recession will eliminate the BC Hydro presumed near term deficits.

The CEC is also supportive of BC Hydro's view that it has the flexibility from a number of options within its standard operating practices to handle requirements of the order of 500 GWh/year.

6.6.2 Capable of Meeting Self Sufficiency¹⁴⁹

¹⁴⁵ BC Hydro Final Argument, Page 170

¹⁴⁶ BC Hydro Final Argument, Page 171

¹⁴⁷ BC Hydro Final Argument, Page 173

¹⁴⁸ BC Hydro Final Argument, Page 174

¹⁴⁹ BC Hydro Final Argument, Page 175

The CEC submits that BC Hydro has the capability of meeting the SD 10 self sufficiency targets of the Provincial Government.

The CEC submits that BC Hydro's acknowledgement of the "decline in the load forecast and the potential for more reductions;"¹⁵⁰ will contribute substantially to meeting the SD 10 self-sufficiency targets. The CEC submits that the further decline in load estimates since the Evidentiary Update is so substantial as to need a different approach to power acquisitions and that meeting SD 10 self sufficiency targets is a less central issue for this LTAP.

The CEC submits that BC Hydro has decreased its deliverability risk for Adjusted Option A by maintaining the same level of spending as for its original Option A while reducing the expected savings.

The CEC submits that BC Hydro's description of additional flexibility to address meeting SD 10 self sufficiency in its next LTAP update is very encouraging.¹⁵¹ The CEC submits this provides additional reason to avoid inappropriate commitment to long term supply at this time.

Further the CEC submits that the next LTAP update should be determined to coincide with the next RRA filing around June 2010 increasing the flexibility to access cost-effective demand side resource options.

6.7. Contingency Resource Plans¹⁵²

The CEC agrees with BC Hydro's description of its CRP's and their utility in the planning process.

6.7.1 CRP Plans and Approvals¹⁵³

The CEC notes particularly for the Commission the following acknowledgement of the importance of advancing early development stages to shorten lead times in order to gain the values of obtaining these options as opposed to incurring the full cost of developing them.

BC Hydro does this in the context of supply options. However, the CEC submits that the same logic applies to demand side options and to IPPs. The CEC submits the Commission should assess an acceptable long term resource plan as one which has expenditures to be developing DSM contingency options and which has options on IPP projects as contingencies to be implemented if the need occurs.

¹⁵⁰ BC Hydro Final Argument, Page 175, Lines 16 and 17

¹⁵¹ BC Hydro Final Argument, Page 176, Lines 3 to 11

¹⁵² BC Hydro Final Argument, Page 176

¹⁵³ BC Hydro Final Argument, Page 176

4 BC Hydro generally expects that the CRP options can be advanced through the early
5 phases of development at relatively low costs as compared to the full cost of developing
6 such options. However, if the conditions arise that any one such CRP resource option
7 must be implemented, then such option would have to be developed and placed in
8 service.⁵²³ In the event that a resource option in the CRP that has been advanced
9 through the Investigation and Definition phases and the lead time is reduced to the point
10 that, given sufficiently high likelihood the resource would be required, or there was a
11 high consequence of a supply shortage, BC Hydro would be bringing forward such a
12 project if it is a BC Hydro project, through an LTAP or other application process, for the
13 required approvals to implement the project.⁵²⁴ If a project were a BCTC project, then
14 since BCTC would be the responsible party (as between BC Hydro and BCTC) it would
15 be up to BCTC to develop any application to the BCUC for project approval.⁵²⁵

154

6.7.2 Uncertainties Underlying the CRPs¹⁵⁵

The CEC accepts BC Hydro's assessment of uncertainties for which it should plan contingencies.

The CEC accepts that it is critical to plan for capacity uncertainties and also very useful to plan for energy uncertainties.

6.7.3 Resource Options in BC Hydro's CRPs¹⁵⁶

The CEC accepts the resource options BC Hydro is including in its CRPs. However, the CEC submits that it would also be appropriate to include DSM options and IPP options.

6.7.4 BC Hydro's Transmission Contingency Plan¹⁵⁷

The CEC accepts BC Hydro's transmission contingency plans.

7. Fort Nelson¹⁵⁸

7.1 Regulatory Framework¹⁵⁹

The CEC accepts BC Hydro's characterization of the regulatory framework for the supply of electricity to the Fort Nelson region.

7.2 Reliability¹⁶⁰

The CEC accepts BC Hydro's characterization of the reliability of service challenges it faces in the Fort Nelson region.

¹⁵⁴ BC Hydro Final Argument, Page 178

¹⁵⁵ BC Hydro Final Argument, Page 178

¹⁵⁶ BC Hydro Final Argument, Page 179

¹⁵⁷ BC Hydro Final Argument, Page 180

¹⁵⁸ BC Hydro Final Argument, Page 180

¹⁵⁹ BC Hydro Final Argument, Page 180

¹⁶⁰ BC Hydro Final Argument, Page 181

7.3 Load Forecast for Fort Nelson Region¹⁶¹

The CEC accepts the BC Hydro assessment of the load in the Fort Nelson region and the considerable uncertainties with respect to the certainty that they will materialize.

7.4 Load/Resource Gap¹⁶²

The CEC accepts BC Hydro's assessment of the load resource gap and BC Hydro's judgment with respect to caution in regard to stranded assets. The CEC accepts BC Hydro's assessment of the reliability requirements and the need for both AESO resources and local resources.

7.5 FNU2 and FNU3 Description and costs¹⁶³

The CEC accepts BC Hydro's assessment of its local supply options being FNU2 or FNU3.

The CEC accepts BC Hydro's assessment of the appropriate local supply option and the appropriate AESO transmission complement.

The CEC accepts BC Hydro's assessment of the environmental benefits associated with their selected option.

7.6 First Nations Engagement and Consultation¹⁶⁴

The CEC accepts BC Hydro's description of its engagement and consultation with First Nations as appearing to be appropriate and notes that the consultation will be on going.

7.7 The Requested Order for FNGU¹⁶⁵

The CEC supports BC Hydro's requested order with respect to the Fort Nelson Generating Unit, determining that \$140 million in F2009 to F2011 expenditures are required to complete the definition phase work for and implementation of the FNU3 in the public interest.

A. Request for Early Determination¹⁶⁶

The CEC supports BC Hydro's request for an early determination decision with respect to the FNU2/FNU3 decision in regard to the Fort Nelson region.

B. No Need for CPCN¹⁶⁷

The CEC supports BC Hydro's view that a CPCN for this project need not be required.

7.8 Planning Beyond FNU3 and AESO A1¹⁶⁸

¹⁶¹ BC Hydro Final Argument, Page 182

¹⁶² BC Hydro Final Argument, Page 183

¹⁶³ BC Hydro Final Argument, Page 185

¹⁶⁴ BC Hydro Final Argument, Page 178 187

¹⁶⁵ BC Hydro Final Argument, Page 190

¹⁶⁶ BC Hydro Final Argument, Page 191

¹⁶⁷ BC Hydro Final Argument, Page 192

¹⁶⁸ BC Hydro Final Argument, Page 193

The CEC accepts that BC Hydro is not seeking any determination with respect to planning for electrification of loads in the Horn River Basin and Fort Nelson region.

PART 3 – LOAD FORECAST

1. Load Forecast Summary

- a) The CEC submits that the BC Hydro load forecast has been lagging behind the evolving economic circumstances and is, as a consequence, over estimating the load requirement of customers.
- b) The CEC has identified several key elements of the evidence before the Commission that cast severe doubt on the merit of using this 2008 BC Hydro load forecast as a basis for making \$6 to \$8 billion commitment to Energy Purchase Agreements.
 - i) BC Hydro's load forecasting methodology is flawed in such a way as to systemically produce over and under load forecasts in synchrony with the ups and downs of the prior economic cycles. BC Hydro's load forecasting history demonstrates that it's over forecasting occurs at least 3 to 4 times before it crosses over and that it's under forecasting occurs less frequently than it's over forecasting.¹⁶⁹ The CEC submits that this is a logical outcome or function of the curve fitting techniques used in generating the forecast projections.
 - ii) BC Hydro's load forecasting methodology does not anticipate economic cycles in the future, instead adopting relatively straight line forward projections of past experience.¹⁷⁰
 - iii) During economic downturn cycles BC Hydro consistently has to reestablish the anchor point to existing load by dropping estimates from its previous over forecasts.¹⁷¹
 - iv) BC Hydro uses third party forecasters input for the economic variables on which it then bases its own forecast of load. Unfortunately these third party forecasters have a demonstrated record of being inadequate at anticipating or being unable to anticipate economic cycles and particularly those accompanied by severe stresses in the financial systems. The third party forecasters, relied on by BC Hydro, have consistently underestimated the current economic recession.
 - v) The residential load forecast uses far more optimistic future projection variables for account growth and average use per account than we have experienced in our most recent economic boom period and there is no basis for justifying these higher levels. Also, the residential load forecast does not anticipate future economic cycles.

¹⁶⁹ Exhibit B1-1, Appendix D, Page 25

¹⁷⁰ Transcript, Volume 7, Page 1103, Lines 12 to 26, and Page 1104, Lines 1 to 10

¹⁷¹ Transcript, Volume 4, Page 505, Line 8 to Page 506, Line 17

- vi) The commercial load forecast uses future projection variable for growth far in excess of what has been experienced in the most recent economic boom. The commercial load forecast is tied to projections of economic activity which are unrealistic for the current circumstances. Also, the commercial load forecast does not anticipate future economic cycles.
- vii) The industrial load forecast is based on recognizing shut downs announced and planned but is not based on recognizing the consequences of the full extent of the collapse of the US housing market and its evolving impacts on the forest sector businesses. There have been further shutdowns which were not included in the BC Hydro 2008 load forecast as evidenced by the Catalyst shutdowns.¹⁷² The industrial load forecast also anticipates significant new mine loads and does not recognize the extent of the commodity price uncertainty and financial crisis financing problems caused by the global economic contraction including a dramatic drop in world trade volumes.
- c) The CEC submits that the BC Hydro 2008 Load Forecast will prove to be an over forecast of customer load requirements. The CEC estimates the extent of the over forecast by aggregating all of the issues it has analyzed out of the evidence on the record as being at least 1,000 GWh/year in the critical self sufficiency time frame. This has to be set into the context of the BC Hydro forecasts and BC Hydro's own evidence of what a 1% decline in GDP for the first three years of the forecast, from the forecast used by BC Hydro, would mean in terms of the forecast load.

This assessment of the BC Hydro Load forecast correlates with the sensitivity forecast requested in Exhibit B-12, BCUC 3.250.2 for a 1% lower GDP forecast in the first three years of the forecast period as an adjustment to Exhibit B-1, Appendix A, Table A 3.6 updated as the 2008 Load Forecast.

The CEC notes that the decline in the GDP forecasts from the Evidentiary Update in October 08 to February 09 during the LTAP hearing is closer to 3% for 2009 and 1% for 2010.¹⁷³ The CEC submits Mr Elton was correct that the impact of the recession would have things getting worse before they got better.

The remainder of this section explains the CEC analysis of the evidence to support this conclusion.

2. Introduction

a) Load Forecast – What is it?

The BC Hydro load forecast is an estimate of the cumulative energy demand of BC Hydro's customers, measured in GWh/year, for each year into the future for the next

¹⁷² Exhibit B-42

¹⁷³ Exhibit B-18

20 years, assuming there are no further demand side management (DSM) initiatives undertaken in the 20 year period but allowing for ‘natural’ conservation to take place.

In addition to the energy demand estimates BC Hydro forecasts its peak system capacity demand for power, measured in MWh, for each year into the future for the next 20 years, also assuming there are no further demand side management (DSM) initiatives undertaken in the 20 year period but allowing for ‘natural’ conservation.

b) Importance of Load Forecast

The energy demand forecast is critically important to BC Hydro’s resource plans and to its long term plans for acquisition of new electrical power supply. The critical nature of the issues is made clear in BC Hydro’s requested orders that it is seeking from the BCUC. In these we see that the cost to BC Hydro’s customers in nominal terms of the energy acquisitions it is planning to make from IPPs would mean commitments to between \$10 and \$14 billion out into the future.

This commitment will enable BC Hydro to meet about 22% of the forecast energy demand in the year 2020, while DSM will meet about 78% of the forecast energy demand in the year 2020.

The DSM commitment requested is for \$538¹⁷⁴ million over three years and \$1.8¹⁷⁵ billion over the 20 year period.

The load forecast is the first step in defining how much of which resources BC Hydro will plan to use to meet the demand from its customers. The “public interest” turns a great deal on the judgments about which forecast to use and why.

c) CEC Interests

The CEC submits that the Commission should be assessing whether or not the 2008 Load Forecast used by BC Hydro is suitable for the purpose of making resourcing plans and decisions about such very significant commitments.

The CEC submits that the evidence demonstrates that BC Hydro has periodically made systematic over forecasts of energy demand. The evidence shows that there is likely a systemic reason for the periodic forecasting. The CEC submits that the unfolding economic recession will be increasingly impacting British Columbia. The CEC submits that the third party forecasters upon which BC Hydro relies, are not good leading indicators of the economic situation. The CEC submits that some of the sector forecasts have greater risks of being over forecast. Finally the CEC is cognizant of the electrification issues BC Hydro has begun to assess but submits that more work needs to be done in regard to these issues before they will represent a

¹⁷⁴ Exhibit B-3, BCUC IR 1.5.1

¹⁷⁵ Exhibit B-3, BCUC IR 1.5.1

source of exceptional growth such that they will warrant an adjustment of the base line forecasts. This will be best assessed in the next LTAP proceeding.

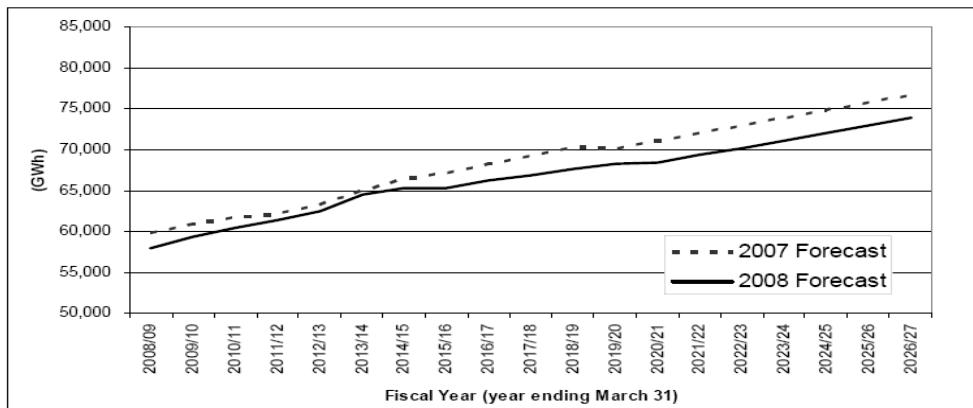
3. Load Forecast

a) 2008

i) Actual Load Forecast 2008 versus 2007

The 2008 load forecast has been shown in contrast to the 2007 load forecast made using the same methodologies. The forecast shows a reduction of about 2500 GWh/year from the 2007 forecast in the year 2026/2027.

**Figure 2-1 Total Integrated Energy Requirements
LTAP Application and Forecast Update**



176

ii) Not Documented

The 2008 Load forecast has not yet been documented despite the fact that the work has been done and the results and consequences of the work have been available for examination. The CEC commends BC Hydro for making sure that an update was filed in time for this hearing. The consequences in damage to the public interest could have been very significant had BC Hydro not filed the update.

iii) Evidentiary Update

The filing of an evidentiary update and such significant changes over the course of a year underscore the importance of looking to see if there is a systematic reason for these dramatic changes or whether the changes represent normal unpredictable patterns of variability.

b) 2007

¹⁷⁶ Exhibit B-10, Evidentiary Update, Page 9

i) Documented

The 2007 load forecast was the basis of the original LTAP filing made by BC Hydro and shows that the 2007 forecast was approximately 2000 GWh/year less than the 2006 load forecast.¹⁷⁷

c) 2006

i) Documented

The 2006 load forecast was used for the last 2006 IEP/LTAP hearing and was the basis for the 2006 Call for energy supply.

d) 2009

i) To Be Done

The 2009 load forecast is not done and will only be completed toward the end of 2009 and documented, following the end of the 2009 year. The information in this forecast is now approximately 9 months away from being available as an update.

Critical to the judgments to be made about this 2008 LTAP request for BCUC orders is whether or not that forecast will show some further weakening from the 2008 load forecast.

The CEC submits that BC Hydro has implicitly made a judgment about this future forecast and submits that the Commission should make an explicit judgment about this pending forecast because the rate of change of the last two forecasts if carried forward would dramatically alter the requirements for new supply and the commitments to which BC Hydro's customers could then be bound. We do know that 2008 is tracking below forecast.¹⁷⁸

4. Past Record

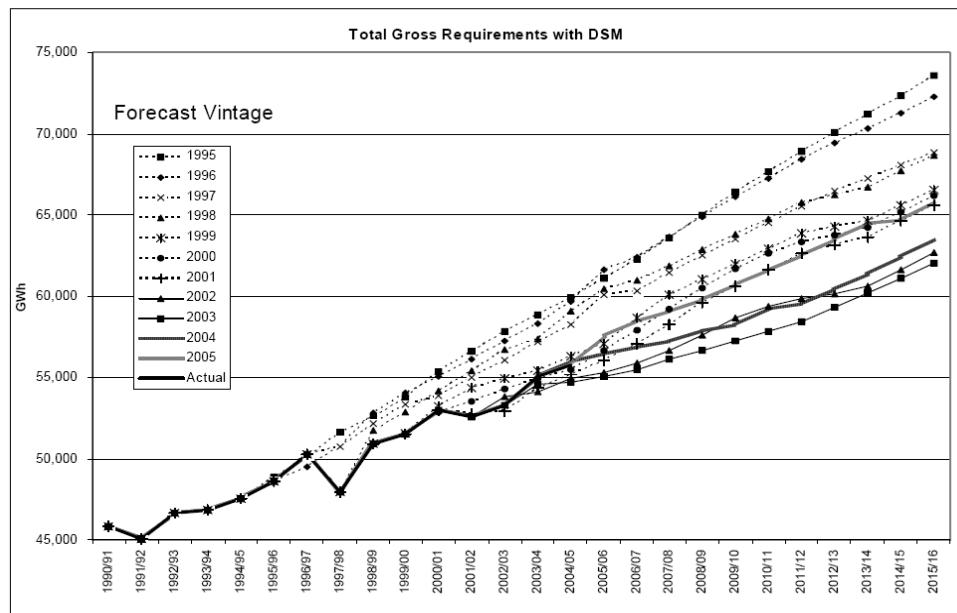
a) Historical Over and Under

BC Hydro's past history of load forecasting has been provided by BC Hydro in its application.

¹⁷⁷ Exhibit B1-1, Appendix D, Table 4.1, Page 22

¹⁷⁸ Transcript, Volume 7, Page 1096, Lines 2 to 21

Figure 5.2 Historical Actual and Forecasts of Total Gross Requirements



179

b) Interpretation of degree out

The interpretation of this evidence is critically important. The 20 year prior forecasts were out by up to 8000 GWh/year. Also most importantly BC Hydro's forecasts were systematically high coming out of the economic expansion in the 90s and systematically low coming out of the recession in the 00s.

The forecasts were out away from the eventual actual for 4 years in a row 1995 to 1998 then 3 years in a row from 2002 to 2004 the forecasts were low.

The CEC submits that this systematic pattern of over forecasting indicates there is something in the BC Hydro forecasting methodology causing the pattern.

c) Overs never realized

The evidence is that the over forecasting appears to be more severe than the under forecasting. The forecasts leading to 73,000 to 75,000 GWh/year of load by 2015/2016 are simply never going to be close.

d) Unders more realistic over time

The under forecasts appear to be a bit more tempered than the over forecasts. The forecasts leading to 62,000 to 63,000 GWh/years of load by 2015/2016 appear to be much closer to a potential reality.

¹⁷⁹ Exhibit B1-1 Appendix D, Page 25

e) BC Hydro view of recent accuracy 5 years

BC Hydro is of the view that its recent forecasts have been much better and more accurate than the past forecasts. However, we now have the evidence unfolding that the same past pattern is likely repeating.¹⁸⁰

The BC economy has just come off a fairly long expansion. The 2006 and 2007 forecasts now appear to BC Hydro to be significantly over forecast.

If the pattern holds the 2008 and 2009 forecasts will be closer but still somewhat over forecast and then the later forecasts into 2010 will start to under forecast as the recession gets factored into the forecasting.

f) Past economic cycle patterns

In past economic cycles BC Hydro load growth during the economic expansion phase of the cycle grows at about 2000 GWh/year and lasts usually about 3 to 5 years.

In past economic cycles BC Hydro load growth during the economic contraction phase of the cycle is flat or declines by about -500 GWh/year and lasts usually 1 to 3 years.

BC Hydro expansion of load growth is always followed by a significant contraction.¹⁸¹

BC Hydro's most recent expansion of load growth has been characterized by being the lowest rate of growth per year in its history at about 1000 GWh/year.

BC Hydro has, in 2007, 2008, and into 2009 been through the slow down part of the contraction and if past history is any indicator BC Hydro will experience flat to negative load growth for 1 year.

g) Internal management views of duster

Internally the senior management view of the forecasts has been characterized as the “duster”, of course that moment of insight closed quickly to the more serious BC Hydro position of backing their forecasting experts.¹⁸²

However, the momentary insight is the more important evidence because it is the instinctual perception that there is something amiss, something to this pattern.

¹⁸⁰ Transcript, Volume 7, Pages 1086 – 1087 and Page 1095, Lines 19 to 24

¹⁸¹ Exhibit B1-1, Appendix D, Page 25

¹⁸² Transcript, Volume 4, Page 505

The CEC submits that there is something to this pattern and submits the Commission should see this as well. Furthermore the CEC submits the source of the pattern lies in the BC Hydro methodologies and that these can be corrected.

5. BC Hydro Methodologies

a) Regression models based on history

The CEC submits the fundamental source of the systematic patterns is in the methodologies used by BC Hydro for forecasting.

BC Hydro uses regression model techniques to relate electric load to other forecast variables such as forecast GDP for the BC economy.

These techniques have the characteristic of fitting the past data to a straight line. This is the reason most of the forecasts have the pattern of continuing out into the future in a straight line.¹⁸³

Logically, this means that if the BC GDP and electric demand are down related to a recession in the past and there have been a number of years of growth and expansion and the weighting of the data will begin to reflect an expanding economy and project that into the future.

Equally, logically once there is a significant element of contraction reflected in the past data then the weighting of the data will reflect a contracting economy and project that into the future.

Because contractions are almost always shorter and sharper than expansion the consequent under forecasting, logically should be less severe than the over forecasting.

Because the methodologies have no means of factoring in the reality of the BC economy and all other economies on which we depend, they go through constant cycles of expansion followed by contraction.

b) 5 years history line fitting

BC Hydro uses 5 years of past history to run its regression models and make its forecasts.¹⁸⁴

This then means that the regression techniques or line fitting through the data will not generally average out the economic cycling in the economy rather they will reflect it in over forecasting and under forecasting, logically in bunches of 5 or less alternating with each other.

¹⁸³ Transcript, Volume 7, Page 1115, Lines 2 - 16

¹⁸⁴ Transcript, Volume 7, Page 1115, Lines 2 - 16

This logical outcome from using these techniques is consistent with the past experience perfectly.¹⁸⁵

c) Links of GDP and Load Growth

There is little doubt that if one examines data for the BC economy or any economy the electrical load and the GDP growth are very significantly correlated.

In fact it is the assumption that this firm linkage exists that underlies the logic that if there is a pattern of expansion and contraction or economic cycling occurring over top of this fundamental relationship then 5 year line fitting techniques are bound to show patterns of consistent over forecasting and under forecasting as demonstrated by BC Hydro's "cluster" graph.¹⁸⁶

d) Effects of recent slower and lower load growth

Logically, with the techniques used by BC Hydro as the slower and then lower growth begins to occur it will start to pull future forecasts down below preceding ones.

This has happened with the 2008 and 2007 forecasts beginning to reflect the slower growth and then the beginning of contraction in the economy.¹⁸⁷

The key question for this hearing is: has the pattern completed or is there a bit more to go in the 2009 forecast?

The evidence confirms the slowing of actual sales versus forecasts for all categories.

Table: Comparison of Forecast and Sales for first nine months in F2009

GWh in first nine months of F2009	Actual Sales (GWh)	Actual Weather Adjusted Sales (GWh)	2008 Load Forecast Update with DSM (GWh)	2007 Load Forecast with DSM (GWh)	2006 Load Forecast with DSM (GWh)
Residential	11,739	11,377	11,628	11,505	11,782
Commercial	11,391	11,391	11,597	11,732	11,639
Industrial	13,294	13,294	13,501	14,360	14,832
Total Domestic	37,236	36,873	37,582	38,496	39,202

188

It is important to note that actual sales are tracking at significantly less than the 2008 load forecast. For the first 9 months they are tracking at almost 700 GWh/year less. As the full extent of the recession is beginning to show its impact in BC for the most recent 3 months of F2009 and is expected to continue well into F2010, the evidence is showing that the forecast is very likely to be overstated.¹⁸⁹

¹⁸⁵ Exhibit B1-1, Appendix D, Page 25

¹⁸⁶ Exhibit B1-1, Appendix D, Page 25

¹⁸⁷ Transcript, Volume 7, Page 1088, Lines 1 - 7

¹⁸⁸ Exhibit B-12, CEC 3.2.1

¹⁸⁹ Transcript, Volume 7, Page 1096, Lines 3 - 26

e) Effects of economic cycles

Throughout the long term 20 year forecasts BC Hydro does not forecast that economic cycles will occur. Importantly it does not forecast economic cycles compounded by multiple financial system stresses as reflected in the following IR response.

- 3.6.1 Are there any cyclical economic downturns forecast over the next 20 years, beyond the one occurring now, which are incorporated into BC Hydro's forecasts as it unfolds?

RESPONSE:

As described in the response to BCUC IR 3.238.1, BC Hydro uses third party forecasters such as the CBoC to inform its expectations of future economic growth and thus load forecasts. The long term GDP forecast and forecasts of other economic drivers of the load are provided in the responses to BCUC IRs 3.238.2 and 3.240.1. The GDP forecasts are relatively smooth projections indicating that there are no significant cyclical downturns reflected in the forecasts of GDP and the other economic variables.

190

With each economic cycle as it occurs we see a pattern of the load forecasts shifting to the right, essentially because the forecasts each year have to be tied back to the actual base of electric load experienced.

f) Effects of periods of low real rate increases

The past electrical load data will reflect a prolonged period where the electric rates in real terms were declining relative to other prices in the economy.

If BC Hydro's revenue requirements and costs continue to expand at a rate greater than inflation and growth, then when relating the future to the past we should see the effects of positive elasticity of the past switching over to the negative elasticity of the future.

g) Uncertainty for the 2008 and 2009 forecasts

The CEC submits that there is convincing evidence on the record of uncertainty as to the appropriateness of using the 2008 load forecast as the basis for making multi-billion dollar commitments that the Commission should look for ways in which flexibility can be utilized to obtain a greater degree of certainty.

¹⁹⁰ Exhibit B-12, CEC 3.6.1

The CEC submits that the 2009 load forecast will further reflect the economic contraction now underway and will require adjustment of key load estimates in 2016 and in 2028.

6. Economic Outlook

a) Forecasters

i) Reliance on third parties

BC Hydro relies on third parties forecasts to make its own forecast. These third party forecasts have not provided a leading indicator of economic cycles or down turns. As evidenced by the Evidentiary Updates, BC Hydro has had to continue to revise their forecasts to keep up with reality and the pattern continues after BC Hydro's Evidentiary Update.¹⁹¹

ii) Economic shocks are not forecast

The primary reason that most of the third party forecasters are not leading indicators is that they do not adequately take into account economic shocks and financial stress. They do not predict these situations.¹⁹² The evidence in this proceeding is that we are in a significant local, national, North American and global economic recession with only a protracted end in sight.

b) Economic Picture – World

(i) Importance of World to BC

The BC economy is very connected to the rest of the world because of the significance of export industries. BC's largest trading arrangements are with the US, Japan and increasingly China and other Asian countries. BC's trade is primarily related to commodities from the forestry, mining, and energy sectors. BC Hydro's electrical load demand for energy is very significantly tied into these industrial sector customers as evidenced by the Tenamex Reports.¹⁹³

c) Economic Picture – US

i) Importance of the US to BC

The US market is critically important to BC because of BC's export oriented economy. The US is BC's largest trading partner.

ii) Financial crisis – liquidity, credit, debt loads, bankruptcies

¹⁹¹ Exhibit B-18

¹⁹² Transcript, Volume 7, Pages 1103 - 1104

¹⁹³ Exhibit B-12, BCUC IR 3.238.2

The US financial crisis is one of massive proportions. The whole investment banking sector has been decimated. The US banking system is very shaky with its largest banks in crisis with either financial bail out's taking place or now discussions of potential nationalization, both on a massive scale. The US credit markets are in severe constriction making financing of business activity particularly problematic. The US national debt load is expanding rapidly. Bankruptcies are rising rapidly and business contraction is moving swiftly.

iii) US GDP contraction –now a recession

The US economy is now recognized to be in a recession and the recession is expected to be fairly severe.

iv) US Housing market

The US problems began as a very substantial bubble in the housing markets burst and prices started to decline.

This uncovered poor lending practices with the US sub-prime mortgage offerings which put a huge number of home owners at risk of foreclosure because they would be unable to make their payments.

Then the practice of the investment banking community, which had securitized mortgages into asset-backed paper and insured them with the very large insurance businesses, came undone as it became clear that loan to market values would result in substantial losses.

The US over supply of unsold homes in the market became huge and housing prices continued to drop and housing starts dropped dramatically.

As the US housing market is one of the major drivers of the BC forestry sector economy the fall out in BC has been substantial and is continuing.

The expectation is for a recessionary period before the overhang of unsold homes on the market is absorbed and before there is any significant growth to propel the BC economy.¹⁹⁴

v) Corporate business – restraint

As the US economy began to falter people's confidence began to drop and their willingness to commit to major expenditures dried up.

This exasperated the automotive sector of the economy, which had just been under enormous stress as a consequence of extremely high oil prices and fuel

¹⁹⁴ Transcript, Volume 7, Pages 1112 - 1114

inefficient fleets competing with the more efficient fleets of other car manufacturers.

The pending failure of the US automotive sector created further uncertainty and economic stress.

As the corporate business community began to see the unfolding economic scenario they began to contract their payrolls shedding jobs at a very significant rate and for a long and protracted period. This restraint is continuing a pace with the unfolding recession.

vi) Government response – massive

The US Government and governments around the world began to respond to the unfolding financial crisis with unprecedented and massive stimulus packages. These are expected to work into the economy over the next year or two.

d) Economic Picture – Canada

i) Importance of Canada to BC

Canada is among the world's top economies and is recognized as having perhaps the soundest financial system among the developed countries of the world.

BC has very significant tax and institutional relationships with the Federal Government of Canada and certainly some trading relationship with other Canadian provinces, although the east west trade is less significant for Canada than the cross border trade with the US.

However, as the financial stress works through the US economy the Canadian government is being called on to provide stimulus to American companies

ii) Financial crisis

The Canadian financial crisis has been less severe than the US crisis and the Canadian banking system has held up well by comparison to the US and world banks. The Canadian banks have avoided too much over exposure to the kinds of risks the US banking and investment communities took on.

However, the Canadian banking and credit systems have been stressed and there have been significant difficulties for businesses trying to obtain financing or refinancing.

iii) Canadian GDP contraction

The Canadian economy has slipped into a period of negative growth and the contraction looks as if it will develop into a full recession.

The BC economy was among the last of the Canadian provincial economies to begin to feel the pinch of the evolving recession.

The BC Hydro forecast is relying on third party forecasters whose forecasts were prepared before the full extent of the contraction has evolved. Consequently their forecasts are rosier than the reality unfolding resulting in the Evidentiary Updates required in this proceeding.

iv) Commodity price declines

BC's export economy is closely tied to commodities, volumes and prices. The commodities prices for most commodities have come down dramatically from their peak during the economic expansion.

The effects on BC's export businesses has been very significant and many plant shut downs and closures are being precipitated.¹⁹⁵

v) Impact rolling into BC

One of the certain signs that there are economic impacts from the evolving recession rolling into BC is that the British Columbia Government has set out its own budgets with a 3 year anticipation of economic impacts on its budgets and considerable restraint initiatives.¹⁹⁶

The impacts of the economic downturn are rolling into BC and are certain to affect the BC Hydro electrical energy demand.

vi) Assumptions used in 2008 Load Forecast

BC Hydro advises that its 2008 Load Forecast has been adjusted to reflect the economic slowdown.¹⁹⁷ BC Hydro has adjusted the 2008 Load forecast down from the 2007 Load Forecast but the key question is has it been adjusted sufficiently? The assumptions used in the 2008 Load forecast were provided by BC Hydro.¹⁹⁸ There is a reflection of a modest downturn in 2009 and 2010 but nothing like what has actually occurred. Notable in this forecast of assumptions is the fact that real GDP growth, employment, and retail sales are steady and continuous growth series without a trace of a recession in a twenty year period.

¹⁹⁵ Exhibit B-12, BCUC IR 3.238.2, Attachment 8

¹⁹⁶ Transcript, Volume 4, Page 514, Lines 20 - 26

¹⁹⁷ Exhibit B-10, Page 5, Lower Economic Drivers

¹⁹⁸ Exhibit B-12, BCUC 3.240.1

The CEC submits that this is not credible given what we know from past experience that recessions occur periodically and are reasonably consistent in having significant impact on BC Hydro's loads.

e) Economic Direction

- i) Getting worse before it gets better – CFO

BC Hydro's CFO has been acknowledged as being right when he opined that things were going to get worse before they get better.

The evidence was heard in the 2008 BC Hydro RRA hearing. The CEC has no doubt that Mr. Reid was right. Mr. Elton agreed with Mr. Reid's assessment in this hearing.¹⁹⁹

- ii) Other forecasts changing to recognize it is getting worse

BC Hydro's 2008 load forecast is based on economic assumptions of continued growth which is not occurring and the various economic forecasters BC Hydro has relied on are changing their forecasts to reflect the recession as it unfolds.

Real GDP Growth Rate Projections

	% Real GDP Growth Used in 2007 Load Forecast (%)	% Real GDP Growth Used in 2008 Load Forecast Update	December 5, 2008 Economic Forecast Council Average Real GDP Growth	February 2, 2008 Economic Forecast Council Average Real GDP Growth
2008	3.0	1.2	1.3	1.3
2009	3.1	1.8	0.6	0.0
2010	3.3	3.3	2.7	2.8
2011-2013	2.6	2.6	2.6	2.6

200

The CEC understands the table intended to show that the February 2 column was for February 2, 2009.

The consequences of not factoring in the recession for 2009 will likely have similar impacts to the reductions required between the 2007 load forecast and the 2008 load forecast. Certainly into the 1000 GWh/year order of magnitude.

¹⁹⁹ Transcript, Volume 4, Page 514, Lines 14 - 19

²⁰⁰ Exhibit B-12, BCUC 3.238.2, Page 2 of 4

We now know that the BC economy is into a period of economic contraction and we may yet see further changes in the Economic Forecast Council's assessment of what will happen or perhaps more correctly what is happening.

8. Residential Sector

a) Load forecast

- i) Lower in future than past why

The average rate of growth of electric load for BC Hydro has been steadily decreasing for decades and all load forecasts should be expected to reflect this.²⁰¹

This is showing in the residential load forecast and is appropriate. The only serious question that remains is whether or not the rate of decline is the appropriate 'natural' load before DSM impacts.

b) Average Use Rate

- i) Excess growth in some and decline in others

²⁰¹ Exhibit B-3, CEC IR 1.1.2 and Transcript, Volume 7, Pages 1115 - 1117

Year	Actual Annual Billed Use Rate (kWh/account)	Weather Normalised Annual Billed Use Rate (kWh/account)	Ending Number of Accounts
F1990	10,023	10,150	1,105,593
F1991	10,468	10,325	1,137,611
F1992	10,077	10,465	1,164,649
F1993	10,436	10,355	1,197,076
F1994	10,228	10,556	1,235,705
F1995	10,294	10,602	1,273,658
F1996	10,313	10,472	1,304,148
F1997	10,609	10,210	1,331,094
F1998	10,257	10,647	1,359,359
F1999	10,199	10,585	1,379,310
F2000	10,495	10,427	1,397,926
F2001	10,375	10,255	1,411,330
F2002	10,644	10,543	1,424,503
F2003	10,666	10,784	1,442,597
F2004	10,945	10,965	1,461,897
F2005	10,610	10,841	1,484,339
F2006	10,842	11,041	1,511,435
F2007	11,049	10,950	1,540,176
F2008	10,998	10,998	1,567,176
F2009	11,067	11,067	1,594,302
F2010	11,122	11,122	1,621,172

Year	Actual Annual Billed Use Rate (kWh/account)	Weather Normalised Annual Billed Use Rate (kWh/account)	Ending Number of Accounts
F2011	11,201	11,201	1,647,689
F2012	11,267	11,267	1,674,016
F2013	11,350	11,350	1,700,449
F2014	11,393	11,393	1,727,165
F2015	11,453	11,453	1,754,096
F2016	11,518	11,518	1,781,213
F2017	11,587	11,587	1,808,453
F2018	11,624	11,624	1,835,723
F2019	11,670	11,670	1,862,993
F2020	11,713	11,713	1,890,190
F2021	11,778	11,778	1,917,235
F2022	11,795	11,795	1,944,128
F2023	11,843	11,843	1,970,808
F2024	11,889	11,889	1,997,218
F2025	11,945	11,945	2,023,283
F2026	11,967	11,967	2,048,951
F2027	12,009	12,009	2,074,123
F2028	12,042	12,042	2,098,756

202

When we analyze the annual use rates of the past and those of the future the evidence shows some notable patterns.

The first pattern demonstrates the sensitivity of the growth rate projections in the forecast to the regression curve fitting technique being used. The growth rates in the above data for weather normalized average use rate are a perfect fit for a regression using all of the data shown from 1990 to 2008. If the regression technique is moved to incorporate fewer years, dropping off years from 1990 forward the technique will swing the growth rate projections significantly above the ones shown here and below as the line fitting picks up a different weighting of growth in different periods of time.

The second pattern is that the average rate of growth is about .5% per year for the preceding 18 years. As smaller numbers of data points are used to compute an average the average for those subsets of years swings around the average for the whole data set.

²⁰² Exhibit B-3, BCUC 1.16.1

The third pattern is that the forecast growth rate for the next 20 years is .5% and is therefore consistent with the historical data.

The fourth pattern is that the first 10 years of the forecast show growth rates of .6% or 25% greater than the historical average, while the latter 10 years of the forecast show growth rates of .4% or 25% lower than the historical average.

However, the most recent 10 years of residential use per account have shown a growth of only about .3% and this includes the most recent economic boom times. This may mean that forecast growth could be over stated by 100%

The CEC submits that the regression model technique is inadequate for this data and that recent average growth rate is a potentially more reliable predictor of average use.

The CEC submits that the residential load forecast is therefore likely overstated in the early years of the forecast.

The CEC submits that the amount of the over statement is likely .1% in the growth rate or about 140 GWh/year in the critical 2016 timeframe.

There are a number of patterns to note with respect to the number of accounts growth.

The first pattern is that the growth in number of accounts averaged about 2.4% per year for the first 10 years of the actual data. The growth in number of accounts for the last ten years of the actual data was about 1.4% per year. While the average growth for all of the data was about 2% per year.

The second pattern is that very noticeable is the dip in the growth of the number of accounts in 2002 to .9% per year and the slower growth in the couple of preceding years and the couple of following years. This period coincides with a significant recessionary period in BC and a slowdown in the new home construction business.

The third pattern is that the rate of growth in the number of accounts in the first 10 years of the forecast period is 1.6% and the rate of growth in number of accounts in the second 10 years period is 1.3%.

The fourth pattern is the average growth in number of accounts for the forecast 20 year period is 26579 accounts per year. The growth in number of accounts for the first 10 year period is 26854 accounts per year. The growth for the last 10 years of the forecast period is 26303 accounts per year.

The CEC submits that the growth in number of accounts in the future is in fact going to be reflective of fairly steady anticipated net population growth and will also reflect housing slump recessions which occur in cycles.

The CEC submits that the evidence demonstrates that BC is currently experiencing a recession and something of a housing slump. The CEC submits that the more aggressive 2009 and 2010 account projections of BC Hydro will not be realized and that the evidence supports that a pattern more like the 2001 pattern will develop for new accounts, which will then return toward the new account growth average or a bit above the average as it did following 2001.

By taking the BC Hydro data and introducing a housing slump every 8 to 10 years we can see that the number of accounts added will be less than the BC Hydro forecast and will create small but significant decreases in the anticipated load as a consequence. These economic downturns need to be built into the forecasts.

By not forecasting the current housing slump and at least one more BC Hydro is likely over forecasting the near term number of accounts. The effect is not huge but can result in overstatement of the load forecasts by about an average of 190 GWh/year in the critical 2016 timeframe.

The result of examining the evidence is that the over statement of the load because of over statement of the accounts growth is a greater likelihood than not.

c) BC Housing Starts

i) Housing cycle

In BC as elsewhere there is a housing cycle, which clearly reflects the economy and is a key element in driving residential load. BC Hydro supplied the data for BC for 10 years of history and for the forecast period by region.²⁰³

From this we can see that the recession at the end of the 90's and beginning of the 2000's was reflected in a deep impact on housing starts. The period of time that the housing slow down was reflected was protracted over a number of years. The depth of the retraction in housing starts was approximately 50% below prior and subsequent peaks.

When looking at the forecast period including the current recession period we see no evidence of recognition of housing cycles. This can only lead to over forecasting of the BC Hydro residential load.

²⁰³ Exhibit B-3, CEC 1.1.1

The CEC forecast above does not adjust adequately to reflect the reality of the depth of these housing cycles. The CEC forecast was done to show that generating the same or more accounts over the period with economic cycles reflected still results in over forecasting.

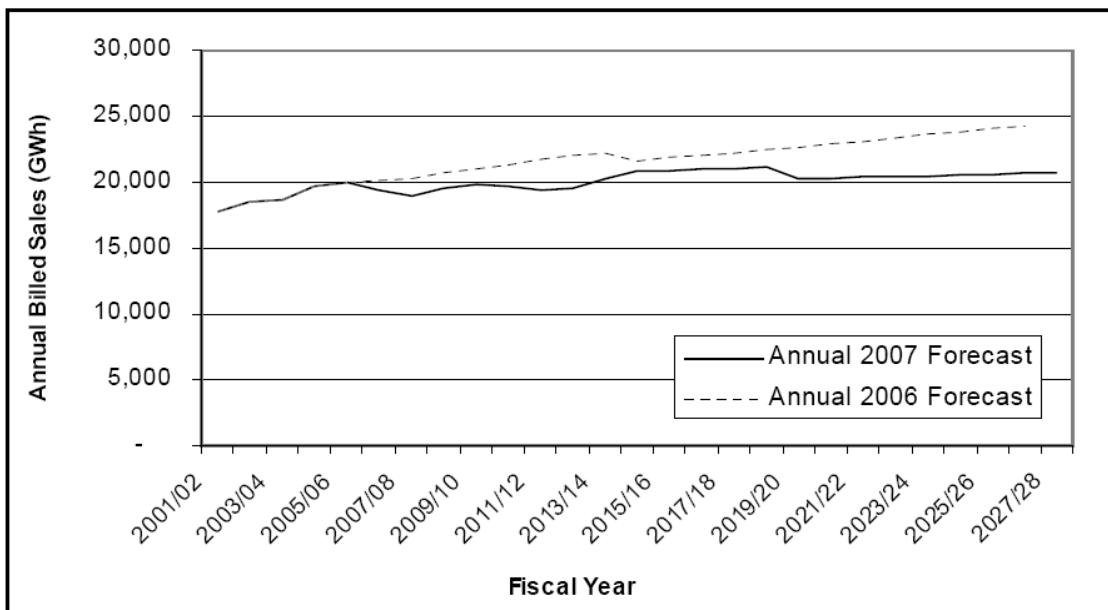
9. Industrial Sector

a) Load Forecast

- i) Decline in Industrial Load

The 2007 Load forecast began to recognize the significant change in the industrial load, virtually flattening out the load.

Figure 8.1. Comparison of Forecasts for Industrial Billed Sales before DSM and Rate Impacts



204

The Evidentiary Update shows the same optimistic load recovery from close to 19,000 GWh/year to close to 21,000 GWh/year.²⁰⁵

²⁰⁴ Exhibit B1-1 Appendix D, Page 41

²⁰⁵ Exhibit B-10, Table 2-2, Page 7

The table below shows the total 2008 transmission sales forecast update by sector including rate impacts before DSM savings.

2008 TRANSMISSION FORECAST UPDATE BEFORE DSM

	Industrial				Commercial		Total	
	Metal Mines GWh	Coal Mines GWh	Wood GWh	Paper and Allied GWh	Chemical & Chem Products GWh	Rmaining Trans'n Rate GWh	Trans-mission Sales GWh	Total Sales GWh
Forecast								
2008/09	2,290	501	990	7,621	1,599	1,131	817	14,950
2009/10	2,260	501	1,075	7,947	1,617	1,186	962	15,549
2010/11	2,197	546	1,289	7,701	1,721	1,283	1,022	15,758
2011/12	2,102	590	1,370	7,575	1,718	1,382	1,092	15,829
2012/13	2,340	596	1,202	7,662	1,715	1,562	1,160	16,236
2013/14	3,376	602	1,224	7,743	1,713	1,674	1,229	17,561
2014/15	3,424	608	1,250	7,792	1,717	1,796	1,267	17,855
2015/16	3,264	561	1,237	7,326	1,713	1,881	1,305	17,287
2016/17	3,261	566	1,217	7,513	1,710	1,931	1,317	17,515
2017/18	3,253	572	1,134	7,752	1,706	1,976	1,323	17,717
2018/19	3,254	579	1,133	7,676	1,706	2,012	1,339	17,700
2019/20	3,061	546	1,132	7,676	1,717	2,081	1,347	17,560
2020/21	2,507	549	1,131	7,676	1,728	2,134	1,355	17,081
2021/22	2,538	552	1,131	7,676	1,740	2,138	1,363	17,137
2022/23	2,568	556	1,129	7,606	1,751	2,139	1,367	17,116
2023/24	2,599	559	1,130	7,606	1,762	2,134	1,372	17,151
2024/25	2,630	563	1,132	7,606	1,772	2,122	1,376	17,201
2025/26	2,662	566	1,133	7,606	1,783	2,109	1,381	17,239
2026/27	2,693	569	1,135	7,606	1,793	2,094	1,386	17,277
2027/28	2,726	573	1,136	7,606	1,804	2,082	1,391	17,318
2028/29	2,758	576	1,136	7,606	1,814	2,073	1,397	17,360

206

The Evidentiary Update does reflect some significant reduction from the 2007 load forecast in the near term but reflects a return to the same levels as the 2007 load forecast by 2017 but getting there sooner (2014) than forecast in 2007.²⁰⁷

The bottom for the economic cycle affecting the industrial sector is shown to be occurring in 2008 in the 2007 forecast and rebounding up to 2015. The bottom of the economic cycle in the 2008 forecast is now shown to be in 2009 with an even more rapid rebound.

The CEC submits that this expectation for a rebound is now more hopeful than realistic.

The forestry sector is over half of the industrial load. The mine sector is a little over a fifth of the industrial load.

Examination of these two sectors is critical to understanding the appropriateness of the load forecast.

b) US Housing Starts

i) Lower levels

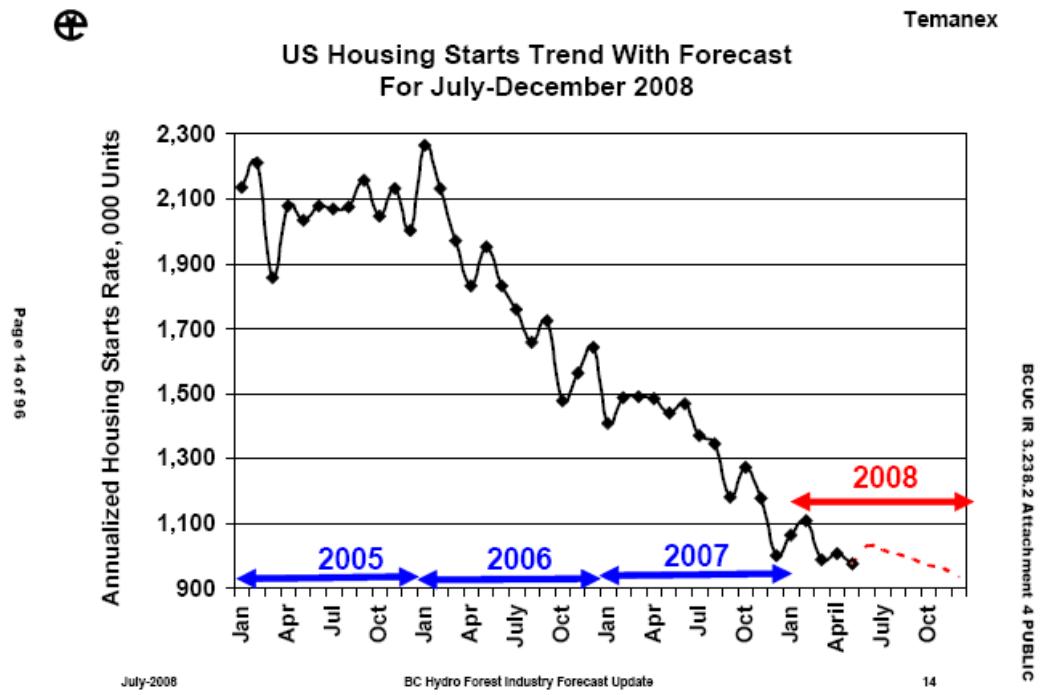
BC Hydro identifies that the industrial sector load forecast reflects reduced wood sector sales related to a declining US housing market, declining newsprint sales and lower pulp demand.²⁰⁸ BC Hydro provided the main drivers of the load forecast for the wood sector as continued reductions in newsprint demand, US housing starts continuing to stagnate.²⁰⁹

206 Exhibit B-12, BCUC 3.239.1.3

207 Exhibit B-12, BCUC 3.239.1.3

208 Exhibit B-10, Page 6

209 Exhibit B-12, CEC 3.4.2



In July 2008 the evidence showed a dramatic downturn in the US housing starts. However, these reports have shown the bottom in the economic cycle occurring in 2008 and rebounding in 2009. The same graphic updated for October 2008 shows the housing starts dropping below 900,000 units annualized and continuing into 2009.²¹¹ The Tenamax forecasts into 2009 were too optimistic and reality has continued to unfold with further reductions in US housing starts.

The BCUC was supplied confidential data, which may or may not have covered updating these numbers, but should have. We know that the economic downturn has become a significant recession in the US and that the housing sector has continued down significantly from the levels shown by Tenamax by another 50%.

Like everyone else Tenamax uses third party forecasters and in its reporting is basically catching up with reality.

ii) Unsold inventory overhang

The US unsold homes inventory has piled up and represents a significant oversupply. The likely scenario is a protracted pressure on the US housing market and continued protracted pressure on the BC wood sector.

²¹⁰ Exhibit B-12, BCUC 3.238.2, Attachment 4, Temanex Report, Page 14

²¹¹ Exhibit B-12, BCUC 3.238.2, Attachment 7, Temanex Report, Page 12

c) BC Forest Sector Outlook

i) Temanex Reports

The first thing of note in the Temanex Reports is that in July of 2008 they were forecasting North American real GDP growth for 2008 of 1.4% and 2009 of 1.7% and 2010 of 3.1%.²¹² By October 2008 Temanex was using a BMO forecast showing real GDP growth for the US of about -.5% for fourth quarter 2008 and growing from 1% in the first quarter of 2009 to 2% in the last quarter of 2009.²¹³

These reports continue to be lagging indicators of the reality.

The CEC submits the evidence is that the unfolding recession is going to be deeper and longer than these forecasters thought and that this will have consequent impacts on the BC Hydro industrial loads, which will likely be more significant declines than BC Hydro has forecast on the basis of these reports.

ii) Pulp Prices

Temanex provides the pulp market prices and Days of Global supply through to September 2008 in its October 1, 2008 Report.²¹⁴ This shows that the price for pulp broke in July 2008 and began a downturn.

The price has continued its downturn into 2009. The consequence is significant financial pressure on the BC Pulp sector. The result is further announcements of shut downs, curtailments and potential closures.²¹⁵ The result is a continuing appeal from the industry for relief from cost pressures.

iii) Lumber Prices

Lumber prices are not specifically covered in the Temanex Reports. However, BC Hydro's load forecast for 2007 covers the situation.

BC Hydro states that the double hit of a 15% tax coupled with current low lumber prices below \$250/mbf US has caused widespread lumber production curtailment across Canada.²¹⁶

The lumber prices are reflective of the collapse of the US housing starts and the overhang of unsold homes in the US and the fact that producers have significant lumber inventories which some must liquidate in response to the credit crisis in order to obtain cash.

²¹² Exhibit B-12, BCUC 3.238.2, Attachment 4, Page 12

²¹³ Exhibit B-12, BCUC 3.238.2, Attachment 7, Page 9

²¹⁴ Exhibit B-12, BCUC 3.238.2, Attachment 7, Page 11

²¹⁵ Exhibit B-18

²¹⁶ Exhibit B1-1, Appendix D, Page 44

BC Hydro's forecast in 2007 was for prices to remain depressed into 2010.²¹⁷ Given how far down from the BC Hydro 2007 forecast the contributing factors have fallen it seems reasonable to interpolate that the depressed prices and curtailed production will certainly continue through 2010 and will likely continue further.

iv) Pulp Mill Review

BC Hydro through Temanex conducted a mill by mill review of the pulp production in BC.²¹⁸ This shows all mills having little likelihood of expansion and is worth summarizing here:

- The Crofton Mill – candidate for shut down in 2 to 4 years.
- The Elk Falls Mill – candidate for permanent shut down in very near future.
- The Port Alberni Mill – PM4 candidate for shut down in the longer term.
- The Powell River Mill – PM9 candidate for shut down.
- Coquitlam Deinking Mill – likely to continue running at capacity.
- Intercontinental Pulp Mill – efficient likely to continue for many years.
- Prince George Pulp Mill – (no assessment as to shut downs).
- Northwood Pulp Mill – relatively efficient (no assessment as to shut downs).
- Howe Sound Pulp and Paper – most modern (rumored potential for Catalyst to take over and consolidate other production from shut down mills).
- Quesnel River – (competition from low cost South American operations).
- Cariboo Pulp – efficient small capacity.
- Eurocan Pulp – candidate for shut down in the longer term.
- Chetwynd – (competition from low cost South American operations).
- Cranbrook – efficient and cost-competitive.
- Harmac Mill – taken over from Pope and Talbot, running now, strong chance will not operate in long term.
- MacKenzie Mill – fibre shortage, now shut down, strong chance will not operate in long term.
- AbitibiBowater Mill – efficient but, fibre supply issues, so shut down now, continuing drop in newsprint market makes viability doubtful.
- Domtar Mill – fibre supply issues, could be down for significant period of time.
- Kruger Mill – no assessment on shut down potential.
- Norampac – no assessment on shut down potential.

²¹⁷ Exhibit B1-1, Appendix D, Page 44

²¹⁸ Exhibit B-12, BCUC 3.238.2, Attachment 4, Page 29 to 60

- Neucel Port Alice – shut down twice before, one of highest cost producers, surviving because of shut down of other sulfite mills, outlook continued operation.

This review indicates the extent of structural issues for the industry and the need for consolidation and rationalization. A 20 year planning scenario that does not anticipate this potential is virtually certain to be an overly optimistic forecast.

v) Mill Efficiencies

The Temanex Report identifies that a number of the BC pulp mills are very old and have not had significant investments made to improve efficiency. The merit of making such investments seems limited because of falling market demand for product.

vi) Pulp Mill Capacity and Production

Temanex provides a forecast of capacity and production for the pulp industry.²¹⁹

These show small rebounds in the 2015 to 2016 period for BC Mechanical Pulp and BC Newsprint and Mechanical Printing Specialties. However, overall production and capacity appears to decline through to 2016 and then hold.

This appears to reflect a view of significant structural change for the industry.

vii) Likelihood of rebound for load forecast

The load forecast rebound in the wood sector is forecast to rebound and peak in the same year (2012) as the 2007 forecast where a much lesser contraction was forecast.

Given that the downturn in the US housing market by BC Hydro's own evidence is likely to be long and protracted this optimistic rebound seems highly unlikely.

The rebound in the pulp sector is forecast to rebound to the 2008 levels and stay fairly flat. The rebound forecast is rather limited in both the 2007 and 2008 forecasts, reflecting the permanent shut downs of capacity. However, there is a distinct possibility of continuing contraction throughout the forecast period, which does not appear to be accounted for.

viii) Likelihood of expansion

The BC Hydro Temanex evidence appears to confirm little likelihood of expansion in the pulp sector.

²¹⁹ Exhibit B-12, BCUC 3.238.2, Attachment 4, Pages 70 to 73

ix) Likelihood of steady state for 20 years

The most significant part of the forecast is the discontinuity between the Temanex forecast of production and capacity declines and the BC Hydro load forecast of essentially flat loads for 20 years.

Given the variety of structural issues facing the forestry sector in BC the CEC submits it is improbable that the load in 20 years will be virtually the same as the load today.

d) BC Forest Sector Structural

i) Temanex Reports

Temanex not only reviewed the individual mills and their production they also reviewed the key factors driving the industry. It would appear that the result of the review is to confirm that the industry is facing structural challenges.

ii) Declining Markets – Kraft Pulp, Newsprint

Temanex provides information on the relative state of the North American demand for pulp versus the rest of the world. It shows North America as the only region of the world where demand for pulp declined from 2007 to 2008.²²⁰

The decline continues and is reflecting structural trends for pulp.

Temanex provides the historical picture with respect to newsprint showing declining capacity, shipments and demand for newsprint in North America.²²¹

This shows a trend that is independent of the booming North American economy from 2001 to 2008. Instead it shows a steady structural change.

iii) Pulp Cost Structures

Temanex provides the evidence for cost increases for the BC coastal industries, seen from 2000 to 2007.²²²

These cost pressures appear to cycle with more volatility than the general economic cycles and it would appear that some of the cost pressures may be reducing, while others are increasing. Nevertheless the evidence is that producers in BC, which represent the industry, are not profitable as market sales prices decrease and costs remain high or show underlying trends to increase.

²²⁰ Exhibit B-12, BCUC 3.238.2, Attachment 4, Page 22

²²¹ Exhibit B-12, BCUC 3.238.2, Attachment 4, Page 57

²²² Exhibit B-12, BCUC 3.238.2, Attachment 4, Page 20

The result is a structural pressure on the industrial sector, which cannot but lead to a need for further rationalization of the BC industry.

iv) Availability of Fiber and Bio-mass Energy Value of Fiber

In British Columbia for wood supply there is a significant issue with regard to factors constraining the supply. The allowable cut is constrained and the mountain pine beetle continues to destroy large swaths of pine forest in the interior.

The pulp mills are dependent upon supply of fiber as a by-product from sawmills. This supply is severely constrained when the US housing market requirement for lumber is below the US production capability.

The supply of fiber is further constrained because the by-product fiber from sawmills increasingly has a bio-mass energy value, which may raise the cost of the fiber supply weakening the pulp and paper sector.

v) World Competition

There is significant competition for pulp production for other markets around the world and significant completion for pulp production from other markets into the North American markets.

Notably, South American competition is substantial. South America gets more sunshine energy for growing, fiber supply grows more quickly, labour is cheaper and highly efficient new mills have entered production or are scheduled to enter production. South American competition is a real factor for Canadian and BC mills.²²³

There is significant competition for wood product supply for other markets around the world.

The Japanese market has been contracting away from Canadian supply in favour of European supply. The Russian forests are vast and whenever the Russians decide to compete using them to supply the Chinese market for instance this will represent a significant alternative to Canadian supply.

e) BC Mine Sector Outlook

i) PriceWaterhouseCoopers LLP Reports

²²³ Exhibit B-12, BCUC 3.238.2, Attachment 4, Page 46 and 51

The PriceWaterhouseCoopers LLP Report²²⁴ on mining was prepared in July 2008 and obviously has data from prior to that period. A follow up report was prepared in October 2008 and has data from before that time.²²⁵

The restrictions and limitations of the report are critical and instructive. PWC intends to ensure that it has limited any liability for the data or its interpretations of the data, as it should.²²⁶ The CEC submits that the Commission should be cautious in allowing BC Hydro reliance on this report given what is known about the world today.

The report contains a forecast of world growth clearly showing a prediction of the decline in growth expected following a run up in activity such as was being experience toward the end of the 2000's.²²⁷ A slowdown was expected but a recession was not and a financial crisis of the sort that has occurred was nowhere in the forecasts. At the time of this report the economic crisis was about high oil prices, slumping US housing markets and a declining dollar.²²⁸ What has come to be the economic crisis looks very different than the one PWC was looking at. The outlook for Canada was predicting a slowdown for 2008 and a recovery for 2009.²²⁹ Of course we now know it is much more severe. The outlook for BC was positive in the PWC report based on the Conference Board of Canada showing virtually no recession but continued growth. We now know that BC too has slipped into recession and will be further affected by the emerging world events.

PWC's October Report has the same warning about the potential impact of world economic events and interpretation of the potential impacts in BC that "of primary concern to BC is that a moderation in commodity prices could translate to less incentive to expand production or to develop new deposits."²³⁰

In the October report PWC introduced some unemployment data from the US and its correlation to recessions, which is very instructive.

²²⁴ Exhibit B-12, BCUC 3.238.2, Attachment 8

²²⁵ Exhibit B-12, BCUC 3.238.2, Attachment 9

²²⁶ Exhibit B-12, BCUC 2.238.2, Attachment 8, Page 5

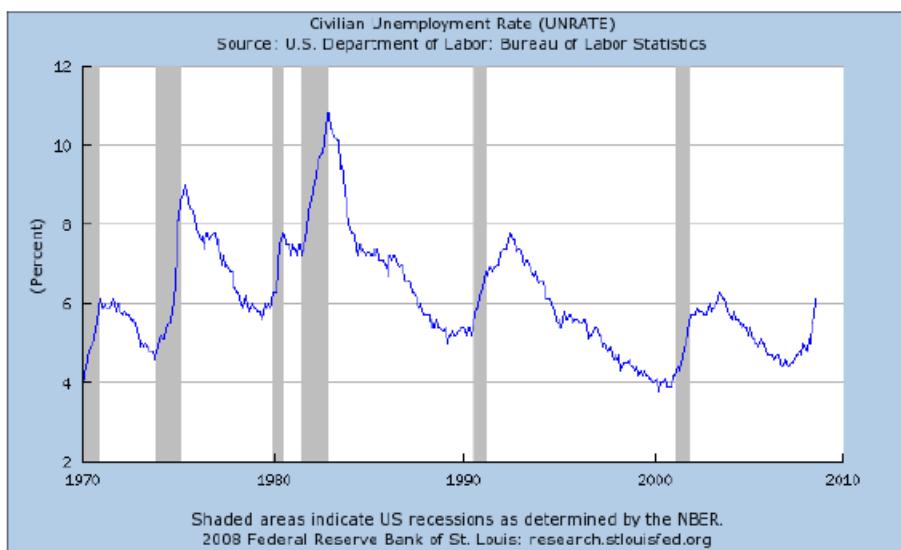
²²⁷ Exhibit B-12, BCUC 2.238.2, Attachment 8, Page 7

²²⁸ Exhibit B-12, BCUC 2.238.2, Attachment 8, Page 8

²²⁹ Exhibit B-12, BCUC 2.238.2, Attachment 8, Page 9

²³⁰ Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 4 of 24

Figure 2.3. Unemployment Rate indicates recession



Source: BLS

231

We now know that the US unemployment picture is continuing a sharp increase from these numbers which show just the start of the impact. We are experiencing and are going to experience a recession beyond that anticipated in the PWC report.

The PWC October report still has Canada and BC at the optimistic levels of the July report.

The report contains the warning that slowing economies around the world may impacts on BC production. “Therefore, slowing growth projected for key coal export markets in Japan, Germany and the United States may lead to decreased coal demand in the short-run, thereby creating a further drag on current BC coal production.”²³²

Interestingly this October report contains the same reference to the economies of China and India as continuing to grow and drive increased demand and a counter point to the warning above suggesting that prices will stay above historical levels. “This demand should in turn keep commodity prices above historical averages and provide an incentive for exploration and mine development.”²³³

ii) Metal Prices

²³¹ Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 5 of 24

²³² Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 12 of 4

²³³ Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 14 of 24

The PWC Report starts out with the IMF index of commodity prices showing world metal prices, fuel prices and raw material and agricultural prices.²³⁴ It shows the prices of all commodities rising rapidly into 2008. What it does not show and could not have is the equally precipitous drop for all of these commodities since this report. They have collapsed back to the levels in the early 2000's.

The data on metal prices has not changed significantly in the October report in the section on Mining Minerals and is used to show that the high prices of the late 2000's has resulted in an exploration boom and that this will be followed by significant production increases.²³⁵

iii) Coal

The PWC Report covers coal production in BC beginning with data on the world market for coal showing Chinese steel production as a driving force, followed by identification of existing coal producers, potential expansion plans for coal production reflecting new mines and restarts of some closed operations and then showing historical constraints on expansion of production and a sensitivity to Western Economic GDP of .33% for every 1% of GDP.²³⁶

Knowing what we know now about the world economy and likelihood of Western Economic GDP contraction in the near term and likelihood of lasting economic impacts from this recession there is every reason to believe that the BC Hydro forecasts related to coal should reflect the reality not the reports they relied on for their base forecasts.

iv) Mineral Mines

BC's mineral production has been shown in something of a decline for a long time but the high metals prices are shown as driving exploration spending.²³⁷ The PWC October report shows the same increased production for BC metals mines as the July report did.²³⁸

The October Report notably adds a section dealing with risks for financing new projects.²³⁹ This is the beginnings of PWC reflecting that the economic situation in the world is having an impact. Particularly the falling commodity prices, financial markets stress resulting in unavailability of capital.

The Long Run Outlook is based on a model projection from MEMPR exploration and mineral data which confidently projects an additional 20 new mines over and

²³⁴ Exhibit B-12, BCUC 2.238.2, Attachment 8, Page 3

²³⁵ Exhibit B12, BCUC 3.238.2, Attachment 9, Page 15 of 24

²³⁶ Exhibit B-12, BCUC 2.238.2, Attachment 8, Page 13 to 18

²³⁷ Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 15 and 16 of 24

²³⁸ Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 17 of 24

²³⁹ Exhibit B-12, BCUC 3.238.3, Attachment 9, Page 17 to 21

above planned mines or nearly twice or a 100% increase in the number of mines in the Province.²⁴⁰

Interestingly the conclusions are made in contrast to coal:

Metal mine production will likely outpace BC's projected long-run real GDP growth of 2.1%. Conversely, coal production may decline in the future as current mines are depleted. Therefore, coal production may underperform real GDP growth in the long run.²⁴¹

This runs very much counter to BC Hydro's coal production and electricity demand forecast showing a 20% increase by 2014/15 in just a few years time.

The BC Hydro metal production and electricity demand forecast shows an almost 100% increase by 2013/14 again in just a few years time followed by a significant drop back in 2020/21. This hardly seems to reconcile with the unfolding economic situation of near term contraction for the next few years and long term growth.

v) Announced Mines forecast

The PWC Report identifies several projects, which it says may move to production Red Chris, Schaft Creek, Galore Creek, Prosperity, and Mt. Milligan. The detail project sections are presumably confidential to the Commission.

What PWC does say is "much of this production carries a fair amount of uncertainty."²⁴²

The real question for the Commission is whether or not this uncertainty and risk should drive firm commitments now or whether an alternative approach to the future planning of BC Hydro's long term acquisitions may be needed.

The CEC contends that the development of mines in BC is now much more uncertain than it was before the recession.

Over all the PWC Report correctly identifies significant uncertainties and they are right. The economic conditions have progressed to much worse circumstances than anticipated when PWC did their report. The CEC submits that is it imprudent and not reasonable to commit ratepayers to power purchases under these circumstances. This is a very serious question for the Commission.

It would seem unreasonable for BC Hydro or effectively its customers to commit to power purchases before the financial interests backing the mine developments

²⁴⁰ Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 23

²⁴¹ Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 23

²⁴² Exhibit B-12, BCUC 3.238.2, Attachment 9, Page 17 of 24

have committed to their financing. The risk of stranded assets or losses on acquired energy can become significant.

The CEC submits that the Commission should give consideration to whether or not integrated planning is possible and whether or not these investments can be tied together rather than occur in independent processes with different beneficiaries and different risk takers.

These issues were much less of a problem in the past when load growth was such that it would absorb over supply of energy. The circumstances have changed and the need for and the ability of the system to absorb additional supply is limited.

vi) Mines demand variability forecast

The BC Hydro electrical demand forecast for new load is also expected to last for only 7 or 8 years before the overall load decreases by 1000 GWh/year back to base levels.

This raises further questions particularly with respect to very long term commitments to power acquisition while the uses may be very short term. This is further exacerbated when one considers that the DSM plans are intended to evolve and could be supplying the loads at much lower electricity prices. The CEC submits that the Commission needs to consider whether or not there is a means of closing the bubble gap.

vii) Conclusion

In aggregate the CEC submits that the industrial load is very likely to be 250 GWh/year to 500 GWh/year lower than BC Hydro's 2008 load forecast.

10. Commercial Sector

a) BC GDP forecast

i) BC Hydro Forecast Load

BC Hydro has forecast the commercial load in 2007 in detail and has made very minor adjustments to the load forecast in its 2008 forecast included in the Evidentiary Update.

Table 7.1. Commercial Sales Before DSM and Rate Impacts (GWh)

Fiscal Year	Lower Mainland Sales	Vancouver Island Sales	South Interior Sales	Northern Region Sales	BC Hydro Total Sales
Actual					
2001/02	8,828	2,277	1,298	1,180	13,583
2002/03	8,938	2,290	1,323	1,178	13,729
2003/04	9,280	2,317	1,361	1,194	14,151
2004/05	9,381	2,341	1,382	1,258	14,362
2005/06	9,626	2,410	1,425	1,260	14,721
2006/07	9,857	2,477	1,482	1,290	15,105
Forecast					
2007/08	10,246	2,512	1,539	1,325	15,621
2008/09	10,561	2,560	1,615	1,447	16,182
2009/10	10,872	2,609	1,677	1,466	16,622
2010/11	11,139	2,665	1,729	1,515	17,049
2011/12	11,421	2,721	1,778	1,524	17,443
2012/13	11,697	2,772	1,825	1,531	17,828
2013/14	11,979	2,821	1,872	1,554	18,226
2014/15	12,263	2,868	1,919	1,596	18,645
2015/16	12,565	2,916	1,963	1,606	19,051
2016/17	12,869	2,962	2,007	1,615	19,448
2017/18	13,176	3,009	2,050	1,623	19,858
2018/19	13,477	3,055	2,083	1,627	20,242
2019/20	13,784	3,103	2,105	1,632	20,627
2020/21	14,095	3,150	2,129	1,638	21,013
2021/22	14,404	3,197	2,164	1,645	21,405
2022/23	14,718	3,242	2,200	1,649	21,808
2023/24	15,032	3,285	2,237	1,654	22,209
2024/25	15,352	3,331	2,271	1,659	22,615
2025/26	15,678	3,377	2,306	1,666	23,026
2026/27	15,998	3,421	2,343	1,672	23,430
2027/28	16,361	3,472	2,378	1,676	23,888

Most notable in this forecast is the absence of any recognition of the evolving recession.

Equally notable is the disparity between the past history and the future forecast. The average increase in load for the actual period was 304.6 GWh/year, which included the recent economic boom. The average forecast load for each of the next 5 year periods is 467.6, 401.8, 391.4, 404.8 GWh/year. This is an average of 100 GWh/year more than the prior actual period, which was an exceptionally high period of growth in the Province.

There is no logic presented by BC Hydro for an accelerated level of growth. In fact all of the logic suggests a much decreased level of growth for the F2009 period at a minimum and probably a slower growth in F2010.

ii) Link Commercial Load to Economy and GDP

The Commercial Load forecast is driven by the general economic activity in the Province:

Drivers – at an aggregate level, consumption in the commercial sector is tied closely with economic activity in the province. The stronger the economy, the more services needed, the greater the electricity consumption of the commercial sector.²⁴³

As such the forecast of the electric load for the commercial sector is highly correlated with GDP and other economic variables.

Interesting when BC Hydro is discussing risk factors that might increase or decrease the forecast they deal with exchange rates, interest rates, the 2010 Olympics and the aging population. They do not deal with implications of economic cycles and financial distresses in the economic system.

iii) CEC view of the Commercial Load Forecast

The CEC notes that the analysis of a 1% drop in GDP forecast, for the first three years, requested as a sensitivity analysis shows a drop of commercial load in F2016 of about 150 GWh/year and by 2028 about 250 GWh/year. Given that the actual GDP forecast for F2009 is expected to come out at least 1.8% below the forecast used for the BC Hydro 2008 load forecast we can expect that this sort of lower forecast is more likely to occur than the base 2008 Load Forecast used by BC Hydro.

If one factors in at least one other economic cycle in the next 20 years the commercial load forecast starts to show growth levels approximately equivalent to past commercial electrical load average 5 year experience.

The CEC has analyzed the BC Hydro load forecast as follows:

²⁴³ Exhibit B1-1, Appendix D, Page 37

Commercial Load Forecast 2007

Year	BC Hydro Forecast Demand in GWh/year					Annual Growth	Avg Growth in 5 years
	Total	LM	VI	SI	NI		
2002	13583	8828	2277	1298	1180	13583	
2003	13729	8938	2290	1323	1178	13729	146
2004	14151	9280	2317	1361	1194	14152	423
2005	14362	9381	2341	1382	1258	14362	210
2006	14721	9626	2410	1425	1260	14721	359
2007	15105	9857	2477	1482	1290	15106	385
2008	15621	10246	2512	1539	1325	15622	516
2009	16182	10561	2560	1615	1447	16183	561
2010	16622	10872	2609	1677	1466	16624	441
2011	17049	11139	2665	1729	1515	17048	424
2012	17443	11421	2721	1778	1524	17444	396
2013	17828	11697	2772	1825	1531	17825	381
2014	18226	11979	2821	1872	1554	18226	401
2015	18645	12263	2868	1919	1596	18646	420
2016	19051	12565	2916	1963	1606	19050	404
2017	19448	12869	2962	2007	1615	19453	403
2018	19858	13176	3009	2050	1623	19858	405
2019	20242	13477	3055	2083	1627	20242	384
2020	20627	13784	3103	2105	1632	20624	382
2021	21013	14095	3150	2129	1638	21012	388
2022	21405	14404	3197	2164	1645	21410	398
2023	21808	14718	3242	2200	1649	21809	399
2024	22209	15032	3285	2237	1654	22208	399
2025	22615	15352	3331	2271	1659	22613	405
2026	23026	15678	3377	2306	1666	23027	414
2027	23430	15998	3421	2343	1672	23434	407
2028	23888	16361	3472	2378	1676	23887	453

The BC Hydro load forecast is likely overestimated because of assumed growth rates out of line with past experience and because of the impacts of the economic recession.

The impact of these overestimates in 2016 is likely on the order of 1000 GWh/year.

BC Hydro has amended the forecast in its Evidentiary Update to repair some of this problem.²⁴⁴ However, toward the last 10 years of the forecast the average rate of growth begins to approach 25% and then 50% in excess of the experienced growth during the last economic boom time.

The absence of any prediction of an economic downturn in the future further raises questions about relying on these forecasts for major commitments of expenditure for ratepayers.

²⁴⁴ Exhibit B-12, BCUC 3.250.1

PART 4 - DSM

1. Cost Effectiveness of DSM

a) BC Hydro Determination of Cost Effectiveness

BC Hydro has answered the question of whether or not it is pursuing all cost-effective DSM by suggesting that its DSM adjusted Option A represents all of the cost effective DSM. It rationalizes this by suggesting that cost-effectiveness includes the concept of risks and that BC Hydro perceives the risks such that Option B and any other potential DSM would not be cost-effective.²⁴⁵ BC Hydro's views on cost-effectiveness are reviewed in response to a number of questions.²⁴⁶

The CEC submits this view of cost-effectiveness is insufficient for the purposes of producing 20 year long term resource plans.

b) DSM Past Performance

BC Hydro has supplied the past performance results for its DSM initiatives.

Table 12. Electricity Savings from Energy Efficiency Programs: F2003 – F2007

	Cumulative Electricity Savings (GWh/year)		
	Plan	Actual	Variance
F2003	353 ¹⁴	358	1%
F2004	610 ¹	739	21%
F2005	890 ²	1,147	29%
F2006	1,177 ¹⁵	1,391	18%
F2007	1,743 ¹⁶	1,879	8%

247

BC Hydro's past performance has been to outperform its planned targets for achieving DSM savings.

²⁴⁵ Exhibit B-3, BCUC 1.46.1

²⁴⁶ Exhibit B-3, CEC 1.6.1; Exhibit B-4, BCSEA 2.32.8; Transcript, Volume 9, Page 1666

²⁴⁷ Exhibit B1-1, Appendix K, Page 13

The CEC notes that the average over performance is about 16%. This is evidence that the delivery risk for DSM is significantly and dramatically lower than for supply side initiatives. It should be noted that the 2008 performance shows as 71% in excess of plan, continuing the performance record.²⁴⁸ The 2008 performance on programs is shown as 7.7% in excess of plan, which seems the more reasonable performance.²⁴⁹

BC Hydro supplies the expenditures on DSM initiatives in its annual reports on DSM to the Commission. The last two years semi-annual reports were filed on the record.²⁵⁰

The data in those reports shows the DSM savings up to date as follows:

	Savings	
	Actual GWh/year	Cumulative GWh
2003	358	358
2004	381	739
2005	542	1281
2006	640	1921
2007	580	2501
2008	302	2803

²⁵¹

This data shows even better performance than BC Hydro reported in the DSM plan, presumably because in the DSM plan BC Hydro was not including Load Displacement programs.

The DSM Reports also show the expenditures on DSM which are being deferred.

DSM Capital Expenditures			
Actual	Plan	Variance	% Variance
47313	56815	9502	20.1%
64833	73087	8254	12.7%

²⁵²

²⁴⁸ Exhibit B-4, ESVIS 2.10.1, Attachment 4, Page 6 of 17

²⁴⁹ Exhibit B-60

²⁵⁰ Exhibit B-4, ESVIS 2.10.1

²⁵¹ Exhibit B-4, ESVIS 2.10.1 Attachment 4, October 2008 DSM Report for period ended March 31 2008, Page 10 of 17

²⁵² Exhibit B-4, ESVIS 2.10.1, Attachments 2, Page 5 of 17, and Attachment 4, Page 6 of 17

The history of under expenditure against plan for DSM program initiatives was further reviewed and shows the consistent pattern of under spending since F2003, with the exception of Load Displacement projects.²⁵³

The evidence is that there is significant under expenditure from plan which shows that the cost estimate numbers in plans are likely to underestimate the cost-effectiveness of the DSM initiatives.

The CEC submits it is arguable that had BC Hydro pursued all cost-effective DSM it may well have been in a position for this LTAP that it need not be considering supply side resources and acquisition of power in a Clean Power Call.

The CEC submits that it is an inappropriate exercise of caution to cause long term commitments to high cost supply side expenditures when the demand side alternatives are likely to fill the gap. This is particularly true as the gap narrows with the unfolding recession and when there is a temporary forecast bump in industrial demand which then is dissipated.²⁵⁴

c) Avoided Cost of Supply

The cost effectiveness of the DSM strategies is found in the fact that they cost substantially less to implement for the energy obtained than the cost of providing new supply. BC Hydro has provided an estimate of the avoided cost of new supply for Option A of \$120/ MWh²⁵⁵ and for Option B of \$117/MWh²⁵⁶. These estimates are averages of the portfolio calculations under different scenarios and so they are more properly reflected as a range of estimates.

The only real challenge of this was raised by the IPPBC.²⁵⁷ The CEC submits that the BC Hydro explanation is factually and logically correct.

However, it is relevant to note that the cost estimates used in BC Hydro's model are just that, BC Hydro's estimates of what supply side projects will cost for different volumes of requirements. These costs do not necessarily contain all of the costs which will be incurred to provide service using the supply side. For instance the transmission and distribution costs for delivering power are not a key feature of the BC Hydro models and so the costs are not sensitive to the changes created by supply side approaches or the savings created by demand side approaches.

Most interestingly the BC Hydro analysis shows that the marginal cost of increasing DSM savings is far smaller than the entire range of supply side costs. Also the DSM cost is fairly level across all requirement scenarios whereas the supply side shows an expectation of a steep cost curve for the larger requirement scenarios.

²⁵³ Exhibit B-85

²⁵⁴ Exhibit B-12, 3.250.1

²⁵⁵ Exhibit B-3, BCUC 1.120.1, Table 5-15A

²⁵⁶ Exhibit B-3, BCUC 1.120.1, Table 5-15B

²⁵⁷ Exhibit, B-12, IPPBC 3.14.3

d) The Limits of Cost-Effectiveness

BC Hydro when dealing with maintaining the level of expenditure on DSM at the same level that was planned for DSM Option A originally, while reducing the savings expectations, suggests that this helps them achieve the savings and potentially more savings.²⁵⁸

The CEC notes that this is an acknowledgement that higher levels of expenditure toward DSM may be expected to produce greater savings. The CEC notes this greater level of savings, though unknown in quantum, does reduce the deliverability risk for the DSM plan.

BC Hydro is asked what level of expenditure would be required to produce the same level of savings as were produced by DSM Option A before the changes in the load forecast. BC Hydro responds that it did not do an estimate for this scenario because this would cause an over-reliance on DSM because of its deliverability risk.²⁵⁹ BC Hydro does, however, upon question estimate that the level of expenditure in Option B would achieve approximately what was originally planned for Option A with the higher load forecast.²⁶⁰

The CEC notes that the level of expenditure increase between the alternatives is about 10% in the first 3 years. The CEC is very doubtful that the level of sensitivity for deliverability risk is distinct, sharp and definitive at a resolution of 10% change in either expenditure or reliance.

BC Hydro offers that it does not want to increase its level of expenditure on DSM because the level proposed represents a significant increase in expenditure and that it will need to gain experience working at this level before committing to agree that higher levels of expenditure would be cost-effective.²⁶¹

The CEC submits that this means that BC Hydro is proposing that the absolute level of DSM expenditure in the next three years is a limit to cost effectiveness. This thereby limits the DSM plan to a 3 year plan which the CEC submits does not meet the *UCA* requirement for which the Commission is responsible.

BC Hydro says that it would not be responsible to pursue higher levels of expenditure until such time as BC Hydro has gained experience at this level.²⁶² BC Hydro, however, does say that it has the flexibility to increase DSM expenditures in the future should it (BC Hydro) determine that that was cost-effective.²⁶³

²⁵⁸ Exhibit B-10, Page 24

²⁵⁹ Exhibit B-12, BCSEA 3.34.1

²⁶⁰ Exhibit B-12, BCSEA 3.34.1

²⁶¹ Exhibit B-10, Page 24

²⁶² Exhibit B-12, BCSEA 3.34.3

²⁶³ Exhibit B-12, BCSEA 3.34.3

The CEC submits that the implication of this is that BC Hydro has posed that experience with DSM activity levels is a criteria limit for cost effectiveness.

The CEC also submits that BC Hydro has positioned itself as the arbiter of when some level of DSM activity above the planned level would be cost-effective.

The CEC submits that the limits to cost-effectiveness proposed by BC Hydro are not real limits to cost effectiveness but rather are limits which allow BC Hydro to keep the Clean Call process moving forward toward supply side EPA purchases notwithstanding cost effective DSM opportunities that could be pursued in the future.

The CEC submits that the Commission is the appropriate final arbiter of when a level of DSM expenditure in an LTAP is cost-effective or not and the CEC submits that by BC Hydro's own evidence it is feasible to have greater levels of DSM expenditure in the future and greater levels of DSM savings. The CEC submits that the 3 year limitation on experience and learning as a constraint on assuming that more cost-effective DSM may be possible in the future is so cautious as to crimp the cost-effectiveness of the LTAP plan.²⁶⁴ The CEC submits that ratepayers will be burdened by commitments to long term supply that then cannot be an avoided cost by the time BC Hydro decides it has confidence in 10% more DSM activity.

The CEC submits that the appropriate test of cost-effectiveness is 'can the DSM initiatives be planned, undertaken and savings delivered at less than the avoided cost of supply with a reasonable degree of certainty.' The CEC submits that BC Hydro has not reached the limits of cost-effectiveness.

The CEC submits it is unreasonable to assume that the DSM adjusted Option A plan is the last word on developing DSM savings over the next 20 years. The CEC submits that it is unreasonable to not assume success in further development of DSM initiatives over the next 20 years after BC Hydro's initial couple of years experience with its broader DSM initiatives. The CEC submits it is only reasonable to expect further developments of DSM and that there will be more cost-effective DSM available than is planned for in BC Hydro's adjusted Option A. The CEC submits the evidence in this hearing overwhelmingly supports the proposition that there will be more DSM savings than have been planned in adjusted Option A.

e) The Levelized Cost of DSM is \$45 MWh/Year

BC Hydro determined that after revising the DSM savings to the same proportion of a reduced conservation potential in line with a reduced load forecast that the total resource leveled cost of DSM Options A and B were \$43/MWh and \$45/MWh.²⁶⁵

²⁶⁴ Transcript, Volume 4, Page 529, Lines 22 - 24

²⁶⁵ Exhibit B-12, BCSEA 3.34.6

The gap between these costs and the avoided cost of supply at \$120/MWh is an overwhelming piece of evidence that BC Hydro has not yet exhausted the potential to achieve DSM savings in its future.

f) Cost Effectiveness and Timing Sensitivity

BC Hydro has posed that if its DSM expenditures were reduced it would run a risk of not delivering on its planned DSM savings and increase the risk of not meeting its self-sufficiency targets in 2016. If the DSM savings come in under target BC Hydro poses that there would be insufficient time to respond and make up a shortfall. BC Hydro submits that the DSM initiatives are flexible but that they are more difficult to ramp up in the short term than for the mid or long term.²⁶⁶

The CEC notes that this timing issue implicitly creates a test for cost-effectiveness that it must reliably deliver sufficient energy by 2016 to meet self-sufficiency targets.

BC Hydro's reaction to this requirement is to dial back its efforts and expectations for savings from DSM, calling such reliance on DSM a diversity risk, and instead to rely on a portion of the requirement being met from the supply side Clean Call.²⁶⁷

The CEC submits that a logical alternative would be to ramp up for more extensive DSM initiatives to reduce the uncertainty of delivering DSM savings and thereby mitigate the so called "diversity risk."

g) Cost Effectiveness and Uncertainty

BC Hydro describes the risks and uncertainties it submits it faces with respect to DSM planning as (1) cost risk (2) deliverability risk (3) degree of reliance risk. BC Hydro described that the incorporation of risk into the LTAP required some quantitative analysis and some professional judgment.²⁶⁸

In the 2008 LTAP BC Hydro has decided to adopt DSM adjusted Option A and preclude using the DSM Option B because it represents a level of risk higher than BC Hydro is prepared to accept. However, in the 2006 IEP/LTAP BC Hydro incorporated in its DSM Plans E3, E4 and E5, which BC Hydro considered as low risk, medium risk and high risk.²⁶⁹ BC Hydro did not mind including DSM Plans for which it had limited to no detail in previous applications and the BCUC found it appropriate to accept such plans.

The CEC does not believe that the risk and uncertainty with respect to BC Hydro's DSM Options A or B is such that there is a bright line for inclusion or exclusion. The CEC does not believe that the items included in Option B are somehow not cost-effective because there is some degree of additional risk. The CEC does believe that as risk increases it is

²⁶⁶ Exhibit B-12, CEC 3.16.1

²⁶⁷ Transcript, Volume 4, Page 545, Lines 13 - 22

²⁶⁸ Exhibit B-3, CEC 1.5.7

²⁶⁹ Exhibit B-3, CEC 1.5.8

appropriate to incorporate more contingency options and more flexibility, but not to exclude what may prove to be potentially enormously beneficial to customer's interest.

The public interest is not well served by excluding options which have some higher degree of risk.

h) Cost Effectiveness and Deliverability Versus Diversity

BC Hydro's primary thesis is that it needs to limit its DSM level of activity because of uncertainty about delivery of savings and because of uncertainty about diversity of supply.

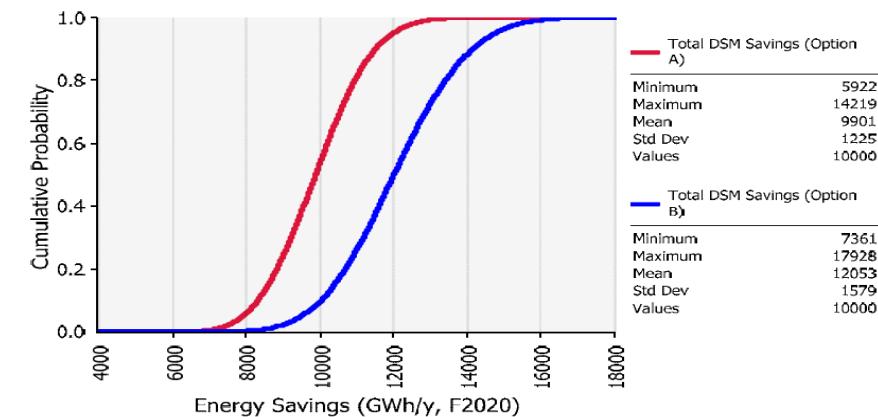
The argument for diversity as a means of dealing with uncertainty of delivery for DSM initiatives is presumed by BC Hydro to be cost-effective. However, diversity it is not an end in itself so it must meet the test of actually reducing risk.

For instance in BC Hydro's system the preponderance of Hydro electric facilities has not made it more advantageous to seek diversity, except in the instance of the non-firm power component of the supply which posses fewer risks when combined with a thermal power plant. This is true for all the electric systems with access to Hydro electric power. It would be imprudent to introduce diversity where it does not add value.

The issue boils down to examining the risk of DSM delivery at higher levels of expenditure versus the risk of over commitment to purchases because of uncertainty about IPP delivery and uncertainty about DSM delivery.

BC Hydro examines the DSM delivery risks with a probabilistic method and representation.

Figure F14-7 – Total DSM Savings



270

From this we can see that the probability of not delivering 90% of 10,000 GWh/year in savings by 2020 with expenditure level Option A is about 25%, while under expenditure

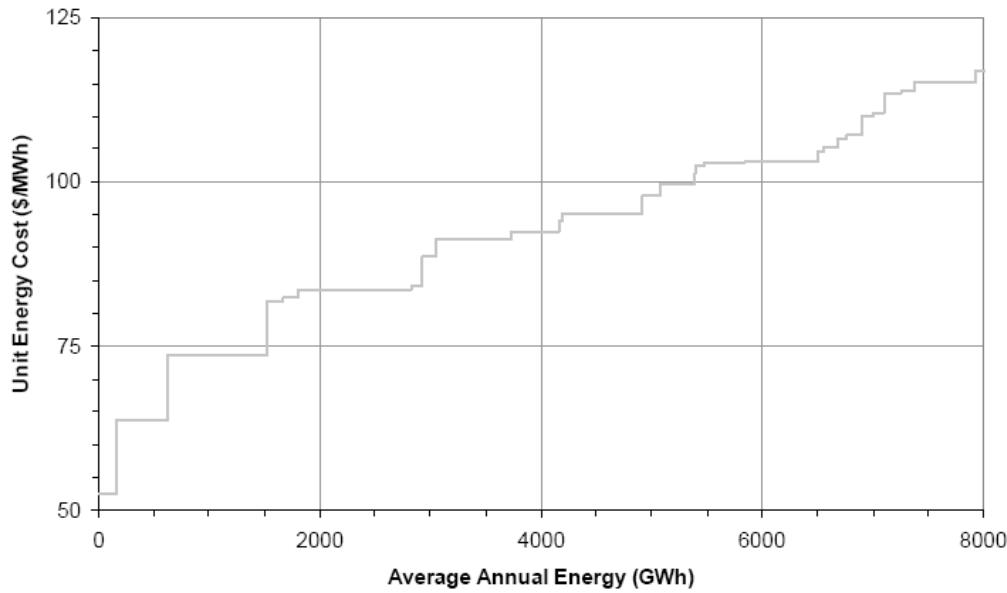
²⁷⁰ Exhibit B1-1, Appendix F14, Page 23 of 29

level Option B the probability of not delivering 90% of 10,000 GWh/year in savings by 2020 is about 2.5%.

For limited increments in expenditure the deliverability risk is reduced dramatically.

For IPP supply side risks unfortunately we do not have the same probabilistic assessment available. However, we know that the risk profiles are very different. First, increased levels of expenditure commitments for IPP supply side contracts can move the cost of the supply up the marginal cost curve much faster than for DSM initiatives. Second we know that IPP supply side contract commitments for energy must be taken and paid for and if not required for domestic supply must be sold into the electricity markets, where prices are likely to be lower than the purchase price of the energy, resulting in losses.

**Figure 3-5 2008 LTAP ROU Supply Curves
Small Hydro UEC (Adjusted^a)**

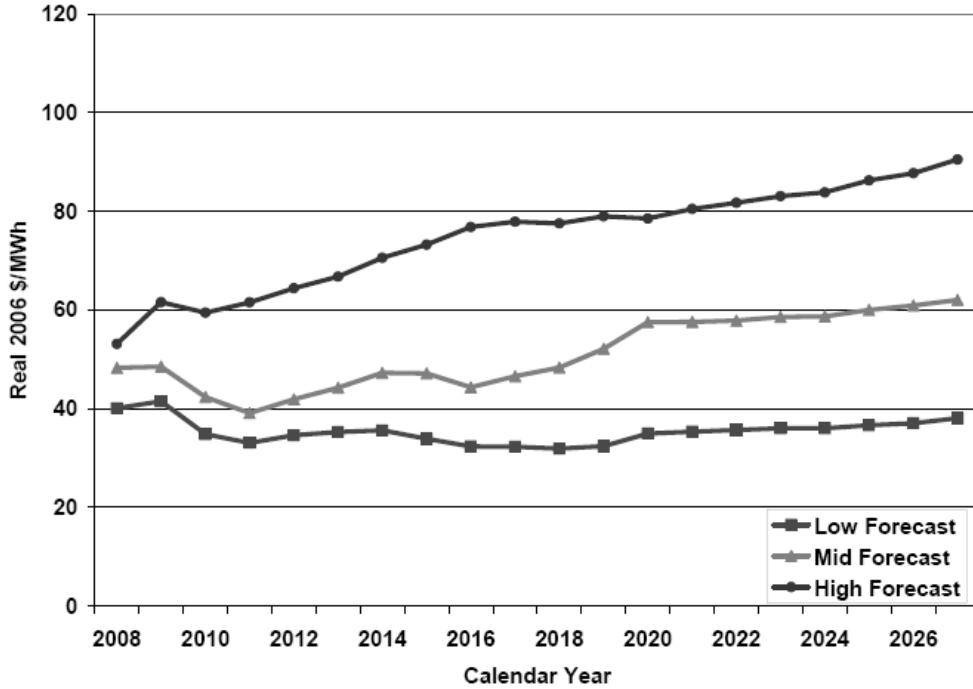


271

From this evidence regarding hydroelectric facilities and other evidence involving other supply options we can see that the cost of an additional 2000 GWh/year of energy increases the expected supply cost by \$10 to \$15/Gwh/year.

²⁷¹ Exhibit B-1, Page 3-14

Figure 4-6 Electricity Price Scenarios at Mid-C by Calendar Year



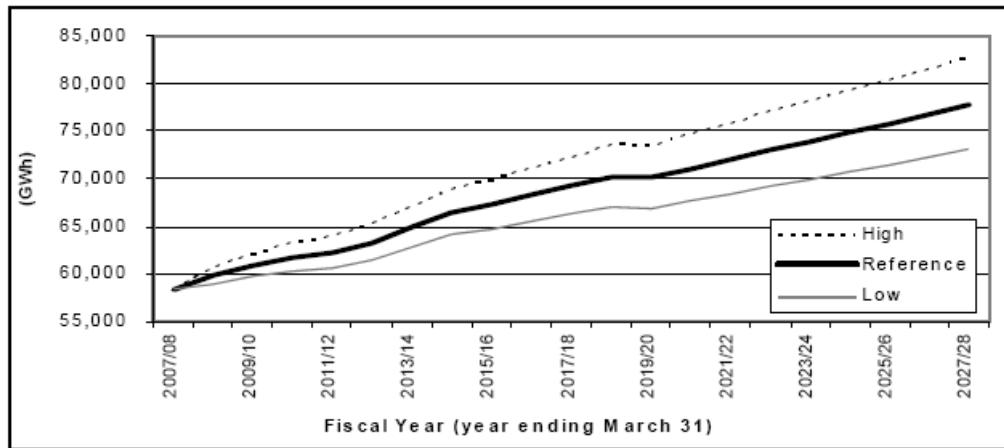
272

From this we can see that virtually all of the time or for a very high probability the evidence suggests that the purchased power if not needed for domestic supply will need to be sold into the market and that such sales will be at a loss borne by BC Hydro's customers. The prices projected for the market electricity are well below the expected purchase costs from the Clean Power Call.

The uncertainty band for the load forecast are shown graphically in the application and are described as defining where the load forecast may have a probability of 10% of being below the low band and 10% of being above the high band.

²⁷² Exhibit B-1, Page 4-21

Figure 2-3 2007 Total Integrated Energy Requirements

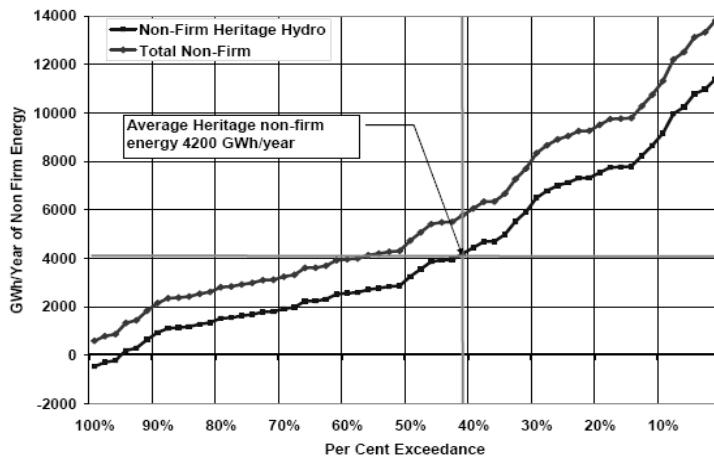


273

We can see from this that the low band by 2016 is about 2,500 GWh/year varied from the expected forecast and by 2028 is about 5,000 GWh/year varied from the forecast. BC Hydro's own evidence supports a probability of at least 10% that the Clean Call power, being 2,100 GWh/year, will not be required and will have to be sold at a loss.

We also know that because BC Hydro is required to plan for critical water inflows and is not permitted to plan for any non-firm power that there is a significant probability that any power purchase at the margin may have to be sold into the electricity markets.

Figure 5-17 Profile of Non-firm Heritage Hydro Energy and Non-firm IPP Energy



274

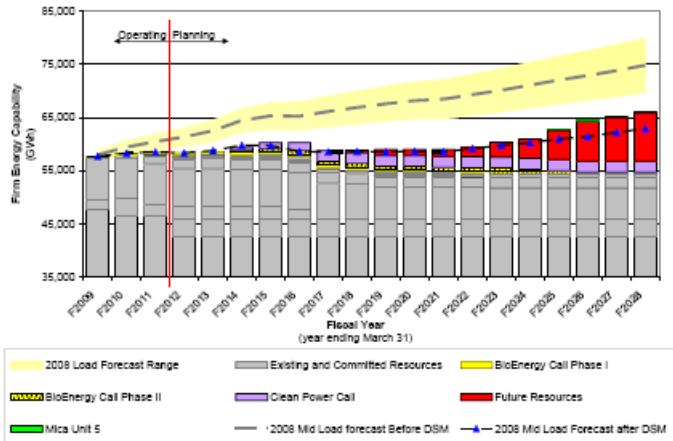
From this we can see that there is around a 30% to 50% chance that the IPP supply side energy will be displaced by non-firm energy requiring it to be sold in the electricity

²⁷³ Exhibit B-1, Page 2-10

²⁷⁴ Exhibit B-1, Page 5-88

markets. This only holds true where the load forecasts after DSM have become so tight that growth over the future period is not reasonably certain to absorb surplus supply, as in the past.

Figure 2-5 Base Resource Plan - Energy Graph



275

From this we can see that for at least the next 10 years there is a significantly flat load and so the risk of oversupply has magnified the basic uncertainty in the forecasts.

The consequence is that BC Hydro now faces a strategic situation where risk from supply side purchase commitments is magnified and risk of increased expenditure on DSM actually reduces the risk of meeting the load requirement. The DSM options in fact are extremely flexible such that expenditures can be ramped down if the savings are costing more than they are worth when sold in the electricity markets.

Strategically, BC Hydro is becoming a conservation company and the cost effectiveness of this for customers is an economic boost of significant proportions.

Diversity to more expensive and more uncertain supply side options does not truly reduce risk, it increases the risks significantly. On the other hand diversity of DSM strategies to incorporate even more cost effective options is likely to dramatically reduce risks.

4. DSM Options - Option A and Option B

a) DSM Programs Option A and Option B

The detail on DSM Programs Option A and Option B is provided by BC Hydro in Exhibit B-3, BCUC 1.50.3.

²⁷⁵ Exhibit B-10, Page 31

The CEC has examined these options and made the following analysis of the Residential Program:

Programs	Option A		Option B		Option A to Option B		Option A	Option B
	Expenditures		Expenditures		Increase	% Increase	Levelized Cost \$/MWh	
Refrigerators	40	40	60	60	20	50%	24	25
Voltage Optimization	143	103	163	103	0	0%	29	28
Lighting	199	56	278	115	59	105%	31	31
Behaviour	365	166	444	166	0	0%	36	46
Renovation	383	18	504	60	42	233%	50	50
Appliances	399	16	520	16	0	0%	56	55
New Homes	415	16	535	15	-1	-6%	101	101
Sustainable Communities	720	305	915	380	75	25%	104	104
Load Displacement	943	223	1221	306	83	37%	108	109
Low Income	1021	78	1300	79	1	1%	130	129
	Cumulative Savings in 2020		Cumulative Savings in 2020		Option A to Option B			
Refrigerators	91	91	156	156	65	71%		
Voltage Optimization	332	241	397	241	0	0%		
Lighting	480	148	670	273	125	84%		
Behaviour	789	309	902	232	-77	-25%		
Renovation	1010	221	1181	279	58	26%		
Appliances	1036	26	1207	26	0	0%		
New Homes	1071	35	1242	35	0	0%		
Sustainable Communities	1185	114	1381	139	25	22%		
Load Displacement	1196	11	1401	20	9	82%		
Low Income	1230	34	1435	34	0	0%		

In making this analysis the CEC submits that by shifting about \$121 million in expenditure levels from Option B to Option A (\$20 million on refrigerators, \$59 million on lighting and \$42 million on renovation) and dropping \$121 million in expenditure from Option A (\$100 million for sustainable communities and \$20 million for load displacement) for the same budget BC Hydro would have a substantially increased probability of meeting or exceeding its Option A target and potentially exceeding it by 132 GWh/year if the savings are proportional to the expenditures.

BC Hydro already has quite extensive experience with refrigerator buy-back, lighting and renovation DSM and the Option B activity appears to be an extension of these programs.

The risk would appear to be much less for extending and expanding these programs than for the relatively new sustainable communities DSM activity.

Programs	Option A		Option B		Increase	% Increase	Option A	Option B
	Expenditures		Expenditures				Levelized Cost \$/MWh	
Voltage Optimization	35	35	35	35	0	0%	29	28
Product Incentive	239	204	231	196	-8	-4%	37	31
Power Smart Partners	977	738	1030	799	61	8%	44	42
Load Displacement	1054	77	1107	77	0	0%	55	53
High Performance Buildings	1531	477	1687	580	103	22%	74	71
Sustainable Communities	1584	53	1759	72	19	36%	104	104
	Cumulative		Cumulative		Increase	% Increase		
	Savings in 2020		Savings in 2020					
Voltage Optimization	80	80	80	80	0	0%		
Product Incentive	366	286	422	342	56	20%		
Power Smart Partners	1166	800	1368	946	146	18%		
Load Displacement	1223	57	1425	57	0	0%		
High Performance Buildings	1461	238	1732	307	69	29%		
Sustainable Communities	1489	28	1767	35	7	25%		

In making this analysis the CEC submits that by shifting \$53 million from Option B to Option A (\$61 million Power Smart Partners and \$-8 million Product Incentive) and reducing Option A by \$58 million (\$58 High Performance Buildings) BC Hydro could for the same budget increase its probability of meeting its Option A requirement and possibly exceed that by 176 GWh/year, if the savings are proportional to the expenditures.

BC Hydro already has extensive experience with Product Incentives and the risk associated with expanding and extending the program would be much less than with the relatively newer Sustainable Communities Initiative.

Programs	Option A		Option B		Increase	% Increase	Option A	Option B
	Expenditures		Expenditures				Levelized Cost \$/MWh	
Power Smart Partners - Dist	365	365	424	424	59	16%	31	29
Load Displacement	426	61	483	59	-2	-3%	32	30
Mechanical Pulping	674	248	813	330	82	33%	40	41
New Plant Design	832	158	1168	355	197	125%	49	46

Power Smart Partners - Trans	1839	1007	2742	1574	567	56%	59	57
------------------------------	------	------	------	------	-----	-----	----	----

	Cumulative Savings in 2020	Cumulative Savings in 2020	Increase	% Increase
Power Smart Partners - Dist	697	697	822	18%
Load Displacement	814	117	939	0%
Mechanical Pulping	1755	941	2125	26%
New Plant Design	1892	137	2440	130%
Power Smart Partners - Trans	2839	947	3960	61%

In making this analysis the CEC submits that by shifting \$139 million in expenditure from Option B to Option A (\$59 million Power Smart Partners-Distribution, \$2 million Load Displacement and \$82 million Mechanical Pulping) and reducing by \$139 million the Option A expenditures (\$139 Power Smart Partners-Transmission) that for the same budget BC Hydro could increase its probability of achieving its Option A requirements and possibly exceeding them by 240 GWh/year if the savings are proportional to the expenditure.

The CEC submits this analysis of the evidence only to demonstrate that the relative cost-effectiveness of initiatives could enable greater performance from the same budget. The CEC is not advocating any changes to BC Hydro's proposed Adjusted Option A for DSM, but is instead advocating for preparing to develop additional cost-effective DSM. The CEC however would support any effort by BC hydro to more aggressively pursue its most cost effective programs. The CEC advocates as prudent and responsible a more "aggressive" approach to these DSM programs.²⁷⁶

b) DSM Rates Option A and Option B

BC Hydro shows its plans for savings from rate structures as follows:

²⁷⁶ Transcript, Volume 9, Page 1677, Line 25 to Page 1678, Line 11

Table 5. Planned Energy Savings from Rate Structures

Sector	Rate Class	Estimated Energy Savings in F2020 (GWh/yr)
Residential	Residential	980
Commercial	Small general service	140
Commercial	Large general service	250
Industrial	Large general service	270
Industrial	Transmission	460
Total²⁶		2,090

277

The premise behind the BC Hydro plans for achieving conservation and efficiency through rate structures is the assumption of a generic inclined block structure for those classes of customers which do not already have restructured rate designs.

The residential customers have the RIB rate structure approved by the Commission and the industrial customers have the TSR rate structure approved by the Commission.

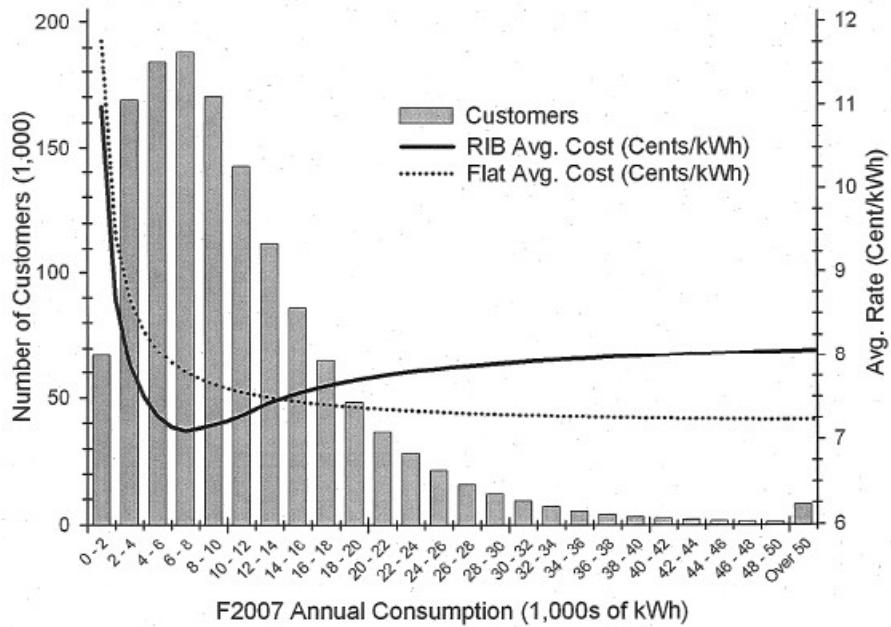
The inherent problem with the inclined block design is the fact that customers whose consumption is mostly in the lower end of the block do not see the same average price signal as those whose consumption is mostly in the upper end of the block.

BC Hydro shows the RIB rate for residential customers as exposing 74% of the customers to the second tier price.²⁷⁸

However by examining the following chart showing the average rate paid by customers we can see that a substantial portion of the customer base and load sees a lower average rate.

²⁷⁷ Exhibit B1-1, Appendix K, Page 135 of 213

²⁷⁸ Exhibit B-3, BCUC 1.149.1; Exhibit B-4, CEC 2.2.7



279

This means that rate structure design opportunities to provide price signals to the bulk of the customer base will be available to capture additional saving through further rate design work.

The CEC submits that the inclining block approach being used to estimate savings for other rate classes will leave substantial opportunities for further savings from additional rate design work.

The TSR rate only provides a price signal for the last 10% of CBL energy consumption. Given that many industrial customers are already below their CBL levels we can expect that the incentives for conservation are limited and that substantially more conservation and efficiency may be obtained from future rate design work on the TSR rate.

c) DSM Codes and Standards Option A and Option B

BC Hydro provides an analysis of the codes and standards it expects to see put in place with its assistance and the projected savings to come from the implementation of these codes and standards.

²⁷⁹ Exhibit B-4, CEC 2.2.7

Table 2. Status of Changes to Codes and Standards

Subject	Energy Savings in F2020 (GWh/yr)	Level of Gov't	Expected Effective Date		
			Enacted	Announced	Planned
Incandescent lighting	845	Federal		2016	
Standby power	559	Federal			2012
Set-top boxes	436	Federal			2010
Building code	353	B.C.		2010	
External power supplies	274	Federal			2010
Large motors	125	B.C.			2010
Windows	124	B.C.	2009		
Ceiling fans	123	Federal		2008	
Clothes washers (regulation)	120	B.C.			2010
Furnace blower motors	115	B.C.			2012
Torchieres	58	Federal		2010	
Hot tubs	55	Federal			2012
Small motors	53	B.C.			2012
Battery chargers	42	Federal			2012
Refrigerators and freezers (PST exemption)	31	B.C.	2008		
HID lamps and ballasts	25	Federal			2012
Room air-conditioners	9	B.C.			2012
Packaged terminal air-conditioners	6	Federal			2012
Clothes washers (PST exemption)	4	B.C.	2008		
Ice-cube makers	4	Federal		2008	
Dishwashers (regulation)	3	Federal		2010	
Large air-conditioners	2	Federal			2012
Commercial clothes washers	1	Federal		2008	
Total	3,367		159 (5%)	1,387 (41%)	1,821 (54%)

280

The CEC notes that the implementation dates for these codes and standards are all within the very early part of the DSM plan.

The CEC does not believe that the next 3 years should see an absence of planning for changes to codes and standards nor does the CEC believe that there will be no further savings from additional codes and standards initiatives in the following 3 years and for the remainder of the planning period.

²⁸⁰ Exhibit B1-1, Appendix K, Page 129 of 213

The CEC submits that the BC Hydro codes and standards DSM initiatives will and should continue to evolve additional incremental savings throughout the planning period. It can only be prudent and sensible to plan for success within the parameters of what has become a record of government willingness to affect energy conservation and efficiency.

The CEC does not believe that BC Hydro's plan, showing that the work on codes and standards halts in about 2012, is consistent with the legislative requirement to pursue all cost-effective DSM before pursuing supply side resource acquisitions.

5. **DSM Options - Option C**

a) **BCH DSM Versus Other Utilities**

BC Hydro provides a comparison of its DSM activities and expenditures relative to other utilities.²⁸¹ The comparison shows BC Hydro to be a fairly moderate contributor to DSM in terms of DSM spending as a % of revenue at 1.3% for F2007 expenditures.

This would indicate that opportunities for capturing more DSM likely exist and that it is likely that utilities through DSM initiatives will be able to capture them and that capturing these additional DSM opportunities is cost-effective.

BC Hydro compared its proposed Option A and Option B initiatives to other utilities in its application.²⁸²

This analysis would indicate that BC Hydro's DSM plans are extending into strategy areas other utilities have not used and or use to a much lesser degree. BC Hydro's program components are relatively modest compared to others, indicating that there is likely considerable room for more cost-effective initiatives. BC Hydro's rates initiatives are unique and leading edge in North America. BC Hydro's efforts to encourage governments both federal and provincial to enact codes and standards cannot really be assessed because the data breaks out so few utilities with regard to their work on codes and standards.

b) **Conservation Potential Review (CPR)**

BC Hydro's DSM Plans were developed and measured back against the results of its 2007 CPR. However, the DSM Plans were not a derivative of the CPR, rather they were independently constructed based on different strategies consistent with the CPR.²⁸³ As a result, there are a number of approaches to developing savings that were not part of the 2007 CPR estimates.²⁸⁴

²⁸¹ Exhibit B-3, BCUC 1.48.1

²⁸² Exhibit B-1, Table 5-19, Page 5-58

²⁸³ Exhibit B-3, BCUC 1.161.1

²⁸⁴ Exhibit B-3, ESVIS 1.2.4

BC Hydro has determined that the DSM Options A and B are a fraction of the DSM potential identified in the 2007 CPR.

Options A and B (consisting of rate structures, codes and standards and programs) achieve 57 per cent and 69 per cent of the economic potential identified in the 2007 Conservation Potential Review (CPR), respectively. BC Hydro's best information on the possible extent of DSM initiatives is 100 per cent of the economic potential identified in the 2007 CPR. This assumes that they are able to overcome all barriers to cost-effective energy efficiency and conservation opportunities which is highly uncertain.

²⁸⁵

This identifies clearly that there is more identified potential to be captured.

BC Hydro also acknowledges that changes in the calculation of the 2007 CPR economic potential do not necessarily translate into reduced achievable potential or reduced DSM savings.²⁸⁶

Given that the CPR does not identify all of the potential to be captured and that the DSM plans are capturing some of the potential not identified in the CPR, there is likely a significant pool of additional conservation potential (unidentified) yet to be captured. Such items as emerging technologies not included in the 2007 CPR would be examples.²⁸⁷ Also step changes in technology which are expected to occur in the next 20 years would be examples.²⁸⁸

This is relevant because BC Hydro's adjusted Option A plan does not allow for the continuous evolution of (1) conservation potential identification and (2) strategies for cost-effectively capturing DSM savings.

Consequently the CEC submits that the only conclusion that can be reached is that the DSM adjusted Option A materially underestimates the cost-effective DSM that can be achieved over the next 20 years.

c) BC Hydro's 3 Year Expenditure Level Limit

BC Hydro's own evidence is that it submits it should limit its expenditure growth on DSM for the next three years in order to gain experience. However, following that BC Hydro is open to and is expecting additional cost-effective DSM.

d) 2008 LTAP DSM Plan Versus 2006 IEP/LTAP

BC Hydro has provided a comparison of the 2008 LTAP DSM Option A and Option B energy savings versus the 2006 IEP/LTAP.

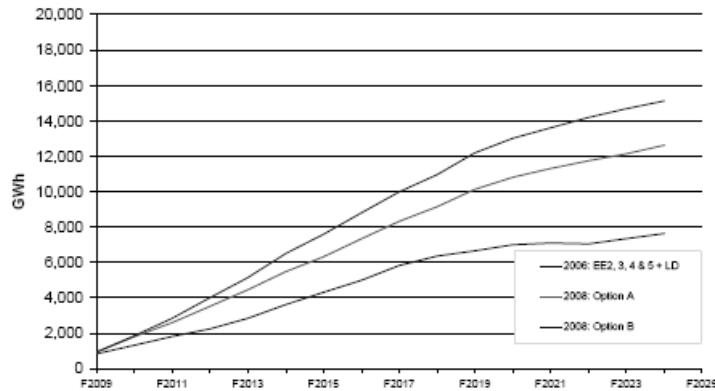
²⁸⁵ Exhibit B-3, CEC 1.5.1

²⁸⁶ Exhibit B-4, BCUC 2.173.1.1

²⁸⁷ Exhibit B-3, ESVIS 1.2.2;

²⁸⁸ Exhibit B-3, ESVIS 1.2.3;

Figure 3-3 DSM Energy Savings in the 2006 LTAP and 2008 LTAP Option A and B



289

This comparison shows that over the short term planning period there has been enough development of DSM plans to establish a more robust plan than the previous filing. It is interesting to note that the additional energy savings available from the 2006 IEP/LTAP to the 2008 LTAP represent a similar increment between Option A and Option B.

Given the order of magnitude of change in the DSM plans that can and has taken place the CEC submits it is only reasonable over the 20 year planning period to expect that more change will take place. The CEC also submits that it becomes something of an unreasonable stretch to rule out Option B for the entire 20 year period.

Also given how close the Option A and Option B scenarios appear to be to one another it seems non-sensical to pose that Option A is cost-effective and anything slightly above Option A is not cost effective. The CEC submits that BC Hydro has underestimated the cost-effective DSM available and achievable.

e) Potential for Additional DSM

i) Investigation of DSM additional opportunities beyond Option B

BC Hydro when doing its DSM planning discarded the idea of investigating whether or not there were additional savings available beyond those identified in Option B.²⁸⁹

By assuming that Option B was already an aggressive resource option and that it would be unreasonable to investigate any other potential BC Hydro effectively

²⁸⁹ Exhibit B-1, Page 3-9

²⁹⁰ Exhibit B-3, BCUC 1.119.1

prejudged the Commission decision and therefore limited the information available to the Commission about what other DSM might be possible and cost effective.

This is of more concern because the BC Hydro concern about the aggressiveness of the Option B is temporal and confined to the first three years until BC Hydro has further experience.

ii) Codes and Standards conservative estimates

BC Hydro has not identified opportunities for codes and standards beyond those identified in its Option A and Option B DSM plans and the ones BC Hydro rejected.²⁹¹

BC Hydro has not examined the levels to which codes and standards could go beyond the levels incorporated in Options A and Option B. BC Hydro acknowledges that there are additional levels possible up to the theoretically limits of efficiency but BC Hydro has no information on the potential scope for developments of codes and standards beyond the ones included.²⁹²

This is a problem because BC Hydro's inclusion of codes and standards developments only goes up to up to 2012 as evidenced in BC Hydro's description of the status of the codes and standards included.²⁹³

Consequently the long term plan does not contain any development of codes and standards after the ones included. BC Hydro has confirmed that it does not plan to stop the process of development of codes and standards with the Federal and Provincial governments.²⁹⁴ BC Hydro acknowledges that the BC Government is planning to make changes to the building code that will be at least equal to or better than those in BC Hydro's Option A by 2010.²⁹⁵ BC Hydro acknowledges that to the best of its knowledge the Provincial and Federal Governments intend to continue to develop codes and standards.²⁹⁶ BC Hydro has confirmed that it intends to continue to expend effort and funds toward developing codes and standards throughout the 20 year term of the LTAP and that these expenditures are shown to be rising.²⁹⁷ BC Hydro confirms that the codes and standards work it has listed does not represent the limit of codes and standards development work BC Hydro will be looking to undertake over the next 20 years.²⁹⁸ BC Hydro has confirmed that the reason it did not include estimates for future codes and

²⁹¹ Exhibit B-3, CEC 1.5.1

²⁹² Exhibit B-3, CEC 1.5.2

²⁹³ B1-1, Appendix K, Page 129, Table 2

²⁹⁴ Exhibit B-4, CEC 2.1.3; Exhibit B-3, ESVIS 1.1.4

²⁹⁵ Exhibit B-4, BCUC 2.193.1

²⁹⁶ Exhibit B-4, CEC 2.1.4

²⁹⁷ Exhibit B-4, CEC 2.1.5

²⁹⁸ Exhibit B-4, CEC 2.1.6

standards work was because it did not have the details upon which to make estimates.²⁹⁹ BC Hydro has confirmed that there should be additional opportunity to benefit from further work on codes and standards.³⁰⁰

The CEC submits that the LTAP DSM adjusted Option A will therefore represent less than all of the cost-effective DSM which is likely to be available over the 20 year term of the LTAP.

Even the Government of BC when putting its Climate Action plans together has made assumptions with respect to continuous development of codes and standards.³⁰¹

iii) Rate designs conservative estimates

BC Hydro has not identified opportunities for rate designs beyond the ones included in Option A and Option B.³⁰²

BC Hydro has confirmed that Option A and Option B incorporate only the rate designs and place holders for rate designs for RIB, TSR, LGS and SGS.³⁰³ BC Hydro has confirmed that it intends to apply similar rate design concepts to other classes of customers not currently covered by the rate designs included in Option A and Option B.³⁰⁴ BC Hydro has confirmed that the rate designs incorporated into Option A and Option B did not include any TOU or Critical Peak Pricing rate designs.³⁰⁵ BC Hydro has suggested that even though it has expressly said it will continue to develop the RIB rate design the benefits of further development “may” be incorporated into the Option A and Option B savings.³⁰⁶ The CEC notes that “may not” can also be inferred from the answer. BC Hydro confirms that it intends to continue development of rate design structures over the future planning period.³⁰⁷ BC Hydro has confirmed that the Option A and Option B plans do not contain any savings, which may be provided from the government mandated SMI project’s ability to support control and communications features.³⁰⁸ The bulk of residential customers will see lower average rates on the RIB rate than if they had remained on the previous flat rate. A minority of customers will see higher average rates than they would have under the previous flat rate.³⁰⁹ This leaves a significant opportunity to provide greater conservation price signals to the bulk of the residential class of customers.

²⁹⁹ Exhibit B-4, CEC 2.1.7

³⁰⁰ Exhibit B-4, CEC 2.1.8

³⁰¹ Exhibit B-3, BCUC 1.67.1, Attachment 2, Page 113 of 132 or Page 109 of Climate Action Plan

³⁰² Exhibit B-3, CEC 1.5.3

³⁰³ Exhibit B-4, CEC 2.2.1

³⁰⁴ Exhibit B-4, CEC 2.2.2

³⁰⁵ Exhibit B-4, CEC 2.2.3

³⁰⁶ Exhibit B-4, CEC 2.2.4

³⁰⁷ Exhibit B-4, CEC 2.2.5(a)

³⁰⁸ Exhibit B-4, CEC 2.2.5(b)

³⁰⁹ Exhibit B-4, CEC 2.2.7

The CEC submits that BC Hydro has only begun to examine what may be possible using rate designs and rate structures to provide additional incentives for conservation and efficiency.

iv) DSM Programs conservative estimates

Beyond the DSM programs incorporated into Option A and Option B and those rejected, BC Hydro has not developed the possible DSM programs which may target energy savings and may be developed in the future.³¹⁰

BC Hydro has not defined its programs in terms of the extent to which they are succeeding in the market and has not defined how far along adjusted Option A and Option B are intended to take these programs. Nor has BC Hydro defined the extent to which it may be feasible to develop the programs. Instead BC Hydro offers a loose relationship to the conservation potential review estimates.³¹¹

BC Hydro has provided the leveled total resource cost of its programs included in DSM Option A. Interestingly approximately 60% of the programs deliver 90% of the benefit and approximately 40% of the programs deliver only 10% of the benefit.

	100% of Original Program Savings		78% of Original Program Savings	
	Energy Savings at F2020 (GWh/year)	Total Resource Cost Levelized Cost (\$/MWh)	Energy Savings at F2020 (GWh/year)	Total Resource Cost Levelized Cost (\$/MWh)
Residential Refrigerator Buy-back	91	\$24	71	\$31
Residential Voltage Optimization	231	\$33	180	\$42
Commercial Voltage Optimization	77	\$33	60	\$42
Industrial Power Smart Partner - Distribution	698	\$34	545	\$43
Residential Lighting	148	\$34	116	\$44
Commercial Product Incentive	448	\$38	349	\$49
Residential Behaviour	309	\$40	241	\$52
Industrial Mechanical Pulping	941	\$41	734	\$53
Commercial Power Smart Partner	666	\$46	520	\$59
Industrial Load Displacement	93	\$51	73	\$66
Industrial New Plant Design	118	\$53	92	\$68
Industrial Power Smart Partner - Transmission	742	\$59	579	\$76
Residential Appliances and Electronics	35	\$64	27	\$81
Commercial High Performance Building	238	\$66	185	\$85
Commercial Load Displacement	25	\$81	19	\$104
Residential Renovation Rebate	23	\$92	18	\$117
Residential New Home	35	\$103	27	\$131
Residential Sustainable Community	114	\$109	89	\$140
Commercial Sustainable Community	28	\$110	22	\$141
Residential Low Income	73	\$112	57	\$144
Residential Load Displacement	11	\$115	9	\$147

312

³¹⁰ Exhibit B-3, CEC 1.5.4

³¹¹ Exhibit B-3, CEC 1.5.5

³¹² Exhibit B-12, IPPBC 3.14.2

One of BC Hydro's concerns was the size of the budget for DSM and that BC Hydro would like to gain experience at the new level of expenditure before considering further expansion of DSM to be cost-effective.

The above information appears to suggest that a more targeted approach to the least cost programs combined with a less aggressive approach to higher cost programs could bring the entire DSM plan cost down below the level BC Hydro is planning and thereby leave BC Hydro room to increase its DSM activity without exceeding the budget levels BC Hydro is concerned about.

The CEC is arguing for additional DSM initiatives not more narrow targeting of the existing one, however the information on the record makes it clear that there is considerable flexibility.

f) Opportunities for Added DSM

i) Additional DSM Options as Future Resources

BC Hydro has, in response to questions regarding what it will do to meet short term deficits, provided a list of a number of options it will be pursuing.³¹³

The CEC notes that BC Hydro starts out acknowledging that economic conditions may deteriorate and customer load may not be what BC Hydro has forecast.

The CEC notes that BC Hydro acknowledges that it may be able to assess its DSM plans and determine if cost-effective adjustments could be made to meet some or all of any deficit.

When asked why BC Hydro would not pursue DSM options in order to meet future resource requirements, BC Hydro states that it must pursue all cost-effective DSM under the *UCA* legislation³¹⁴ and that pursuing additional DSM will depend on cost-effectiveness, need and risk.³¹⁵

BC Hydro acknowledges that expanding the DSM effort to that reflected in DSM Option B would be one of the options for obtaining future resources.³¹⁶

BC Hydro goes further and acknowledges that there would be options beyond DSM Option B that may be possible in the future.³¹⁷

³¹³ Exhibit B-12, BCUC 3.270.1 and CEC 3.25.1

³¹⁴ Exhibit B-12, CEC 3.17.2

³¹⁵ Exhibit B-12, CEC 3.25.2

³¹⁶ Exhibit B-12, CEC 3.25.3

³¹⁷ Exhibit B-12, CEC 3.25.4

The CEC notes that BC Hydro is making significant expenditures on preparation for a Site C supply side project now even though this would not be available as a resource until well out into the tail end of the planning period. The CEC submits that BC Hydro cannot properly assess the prospects for DSM opportunities to supply future resource needs if it has not identified them, planned them and proven that they can be cost-effective or not. The CEC notes that BC Hydro's concerns about cost-effectiveness are very short-term (2 to 3 years) to gain some experience. The CEC submits it would be imprudent to make commitments to extremely long term supply side expenditures simply because BC Hydro had short term uncertainty. The CEC submits that to resolve this properly BC Hydro must start now so that these options can be factored into its advice to government regarding the merits of pursuing Site C. If BC Hydro does not start now to make this assessment it will have short changed the 'public interest' and delivered deficient advice to government.

The CEC submits the prudent choice is for the Commission to endorse immediate examination of at least DSM Option B and preferably more as cost-effective. The CEC notes that a one year delay on supply side capital projects of \$10 billion could be worth in the order of hundreds of millions to the ratepayers. For an advance of additional \$50 million in DSM planning now, that BC Hydro is acknowledging will likely be spent later anyway, the benefits would be staggeringly large. The imperative for identifying and proving additional DSM as cost-effective and planning that this will occur is clearly "cost-effective." The integrated planning imperative is to do this now in the same time frame as the decisions that are being made about supply side projects.

ii) Opportunities for additional DSM in relation to retro fit activity

BC Hydro has significant experience that in a hot housing market they are more likely to have problems getting the developers and constructors of new housing to implement DSM investments, whereas in an economic downturn they are more likely to pay attention to these factors to distinguish themselves in the marketplace.³¹⁸

As we have clearly transitioned into an economic downturn this would increase the probability of success for additional DSM.

iii) Additional technological developments

BC Hydro acknowledges that it has continued to monitor technological developments beyond those included in the 2007 CPR.³¹⁹ BC Hydro also acknowledges that the 2007 CPR economic potential could have changed as a result of both technological developments and changes in costs.³²⁰

³¹⁸ Exhibit B-12, BCUC 2.257.2

³¹⁹ Exhibit B-12, CEC 3.7.1 and CEC 3.12.7

³²⁰ Exhibit B-12, CEC 3.12.5

The CEC submits that the 2007 CPR is a point in time estimate based on a limited scope of options. The CEC submits that over the course of time, and in particular the 20 year planning horizon the changes likely to be seen in technology and cost will continue to open up new DSM opportunities not assessed by BC Hydro in its 2007 CPR or in its DSM adjusted Option A plan.

The CEC submits that without incorporating something in the planning for these developments the DSM plan for the 20 year planning period, will likely be underestimated.

iv) Behavioral change opportunities more than the 2007 CPR

BC Hydro has been promoting very low cost behavioral changes as a consumer response to its inclined block rates and promotes a set of changes that are well in excess of the changes BC Hydro has included in the 2007 CPR, which estimated behavioral changes at 3200 GWh/year by 2026.³²¹ BC Hydro has been promoting more changes than were evaluated in the 2007 CPR, but has not evaluated the savings potential from the additional options.³²² There are 89 options being promoted by BC Hydro, 66 additional options listed and not evaluated and 23 that were part of the 2007 CPR. About 25% of the options have been evaluated and about 75% have not.

Residential rate structures in DSM Option A are expected to deliver 1,249 GWh/year by 2029 and behavioral programs in DSM Option A are expected to deliver 401 GWh/year by 2029.³²³ These numbers will be less as a consequence of the Evidentiary Update.

The CEC notes that the expected savings from these initiatives are a fraction of the identified potential and that the identified potential is a fraction of what BC Hydro is already promoting. The CEC submits there will be many initiatives and options possible over the 20 year planning horizon to increase both the conservation potential and the achieved savings beyond BC Hydro's DSM Option A. Given that this is some of the lowest cost DSM we can expect BC Hydro to continue to promote the culture of conservation and efficiency with commensurately greater results.

v) DSM from rental program initiative

BC Hydro is planning implementation of additional DSM programs for low income and rental customers, which it has not yet developed or included in its DSM plan but intends to incorporate into its DSM plans to be filed in 2011.³²⁴

³²¹ Exhibit B-12, CEC 3.11.3, CEC 3.11.4

³²² Exhibit B-12, CEC 3.11.5, CEC 3.11.6

³²³ Exhibit B1-1, Appendix K, Page 101 and 102 of 223

³²⁴ Exhibit B-12, ESVI 3.6.4

The CEC submits that this and may other initiatives will be developed and therefore the current DSM Option A plan underestimates DSM for a 20 year LTAP.

g) Local Government Programs

- i) Municipal DSM measures included under section 44.1(4)(c) of the *UCA*

BC Hydro acknowledges that all levels of government and in particular municipal governments are to be included, in so far as they initiate and enable DSM in their communities, in its development of its resource plan.³²⁵

- ii) LEEDS buildings savings incorporated in BCH DSM if supported

BC Hydro acknowledges that with regard to LEEDS buildings the savings from such building projects as they participate in DSM programs are included in BC Hydro's DSM planning.³²⁶ BC Hydro amended its answer to these questions to say that at the time that DSM options A and B were being developed it did not have sufficient information on the government's policies to incorporate these projects into its DSM plans³²⁷, BC Hydro goes on to identify specifically that it does not have enough information on the government policy with respect to LEEDS buildings to include any estimates in its DSM plans.³²⁸

These savings when included are to be incorporated into the savings for high performance buildings in the BC Hydro DSM plans.³²⁹

- iii) Climate Action measures and DSM effects not included

When it comes to government actions under the Climate Action initiatives, which can also be expected to have electrical energy consumption impacts, BC Hydro has explicitly not incorporated these into its plans.³³⁰

BC Hydro did not do this because it did not have sufficient information on specific grants and projects to make an estimate and to include the potential effects of these programs.

The BC Government Climate Action initiatives include programs to encourage local governments to participate in changing the norms and standards with respect to home size, and resource consumption.

³²⁵ Exhibit B-4, BCUC 2.192.1

³²⁶ Exhibit B-3, BCUC 1.43.2

³²⁷ Exhibit B-3-4 Revised, BCUC 1.43.2

³²⁸ Exhibit B-4, BCUC 2.192.3.1

³²⁹ Exhibit B-4, BCUC 2.192.2

³³⁰ Exhibit B-4, BCUC 2.192.1.1

48.	Local governments will be encouraged to exempt small-unit, supportive housing projects from development cost charges and levies.	Green Communities legislation spring 2008.
49.	A new assessment class and new tax exemptions for small-unit, supportive housing will be developed for consideration by legislature.	Legislation passed spring 2008
50.	Government will work with UBCM and the private sector to develop new incentives to encourage smaller lot sizes and smaller, more energy efficient homes that use less land, less energy, less water, and are less expensive to own.	Government and UBCM signatories of the B.C. Climate Action Charter are investigating new incentives.

331

BC Hydro equally does not have any estimates of the scope, extent and level that may be achieved by these initiatives.

iv) Planned additional changes to the building code not in Option A DSM

BC Hydro acknowledges that the BC building codes is being amended by the Provincial Government to reflect its green buildings initiatives and that the government intends to implement changes to the code which would go beyond the levels incorporated into the BC Hydro Option A DSM plans.³³²

v) Photo voltaic measures cost effective in 2021

Interestingly BC Hydro when questioned about its investments in supporting the evolution of the solar PV market has acknowledged that the work is not currently cost-effective but supports the work on the basis that it is projected to become cost-effective. BC Hydro points to the 2007 CPR where the projection of cost-effectiveness by 2021 is made.³³³

The CEC submits that this is evidence that even BC Hydro view anticipation of successful cost-effectiveness in the future as a reason for proceeding with some initiatives. The CEC submits this anticipation of future success needs to be evidenced on many more DSM initiatives before the DSM plan will meet the *UCA* requirements.

vi) Solar thermal measures not cost effective due to high capital costs

BC Hydro makes the claim that solar thermal technologies as well as solar PV have high capital costs and are not cost-effective for customers.³³⁴ BC Hydro clarifies that it is not involved in the solar thermal programs.³³⁵

vii) Government solar thermal programs may not be included in Option A

The BC Government in its Climate Action document points to its initiative to implement 100,000 solar roofs by 2020.³³⁶

³³¹ Exhibit B-3, BCUC 1.67.2 Attachment 2, Page 81 of 132, Page 77 of Climate Action Plan

³³² Exhibit B-4, BCUC 2.192.4

³³³ Exhibit B-4, BCUC 2.193.1

³³⁴ Exhibit B-3, BCUC 1.49.3

³³⁵ Exhibit B-4, BCUC 2.193.1

The BC Government has a number of incentives developed and implemented as part of its LiveSmart programs.³³⁷

h) Other DSM Initiatives

i) Proposed Net metering Applications

BC Hydro is expecting that its DSM plans will include its net metering of customer site generation of power at the home size scale.³³⁸

ii) Load Displacement programs not expanding much

BC Hydro includes customer based load displacement in its DSM plans.³³⁹ However the total included in the DSM plans for commercial and industrial is 118 GWh/year.³⁴⁰ The total load displacement for residential, commercial and industrial is shown at 190/GWh/year for F2020 and do not show any difference between Option A and Option B.

BC Hydro has provided the relative cost and benefit information demonstrating that the residential Load Displacement program would be cost-effective compared to new supply.³⁴¹

iii) Small SMI impact in DSM plans

BC Hydro has identified small modest savings related to the SMI project mandated by the BC government and has identified potential additional sources of savings which may be leveraged from the technology.³⁴² BC Hydro has identified that SMI may support rate structure initiatives.³⁴³ BC Hydro makes it clear that the rate structure savings included in its DSM plans do not include any savings which might be obtained from using the communication and control capabilities of SMI technology.³⁴⁴

iv) No TOU included in DSM Plan and no energy savings expected

BC Hydro does not expect to achieve any energy savings through implementation of time of use rates.³⁴⁵

³³⁶ Exhibit B-3, BCUC 1.67.2, Page 42 of 132, Page 38 of Climate Action document

³³⁷ Exhibit B-3, ESVI 1.8.3

³³⁸ Exhibit B-3, BCUC 1.49.2

³³⁹ Exhibit B-3, BCUC 1.49.3

³⁴⁰ Exhibit B-3, BCUC 1.49.4

³⁴¹ Exhibit B-3, BCUC 1.50.1; Exhibit B-3, BCUC 2.195.2

³⁴² Exhibit B-4, JIESC 2.23.3

³⁴³ Exhibit B-4, CEC 2.2.6

³⁴⁴ Exhibit B-4, CEC 2.2.5(b)

³⁴⁵ Exhibit B-12, CEC 3.24.3

The CEC understands that when BC Hydro conducted its Conservation Research Initiative that it documented both energy savings, capacity savings and time of use shifting, when rates were varied with time of use.

The savings identified in the CRI were between 5% and 8% and BC Hydro cautions that because of the self selection bias in entry to the program the results need to be viewed carefully.³⁴⁶

The CEC notes that this is only one more piece of evidence in an overwhelming sea of evidence that cost-effective DSM is available beyond that included in BC Hydro's Adjusted Option A plan.

i) Relative Cost Effectiveness of DSM Strategies

As part of BC Hydro's CPR its consultants examined a housing scenario where by further conservation and efficiency was achieved and they noted that such savings lagged behind the European context.³⁴⁷

BC Hydro provided the relative electrical energy efficiency of certain of the European cities that are used as an example of sustainable communities showing electrical consumption 4,600 Kwh/year per residence and as low as 3,500 Kwh/year per residence.³⁴⁸

6. Evaluating DSM Options - Option A and Option B

a) Initial Evaluation of DSM

Initially when BC Hydro evaluated the DSM plans with a higher load forecast it concluded that both Option A and Option B would show an energy deficit, Option A by 2014 and Option B by 2017.³⁴⁹

BC Hydro concluded in this situation that with Option B BC Hydro would have to be exporting power in both high load and low load hours.³⁵⁰

In conducting its economic analysis BC Hydro modeled 3 scenarios, No-DSM, Option A and Option B.

The no DSM scenario provided the baseline portfolio supplied by supply side resources and showed the weighted present value as \$19.682 billion.³⁵¹

³⁴⁶ Exhibit B-59

³⁴⁷ Exhibit B1-4, Appendix K, Page 48

³⁴⁸ Exhibit B-3, JIESC 1.16.1

³⁴⁹ Exhibit B-1, Page 5-48, Table 5-10

³⁵⁰ Exhibit B-1, Page 5-49, Figure 5-12

³⁵¹ Exhibit B-1, Page 5-50, Table 5-13

The Option A scenario shows that the demand side initiatives have a weighted present value of \$11.867 billion, yielding a \$7.8 billion improvement over not having any DSM³⁵². The unit energy costs show the cost-effectiveness of DSM versus the supply costs.³⁵³

The Option B scenario shows that the additional demand side initiatives add to the benefits of Option A, adding a further \$.709 billion of weighted present value benefits.³⁵⁴ Option B demonstrated the unit energy costs which were cost effective in most circumstances versus the supply costs.³⁵⁵

These figures above were amended by BC Hydro but continued to provide essentially the same result.³⁵⁶

Despite this BC Hydro's assessment of deliverability risk and degree of reliance on DSM precluded them from taking all the demonstrably beneficial DSM and instead BC Hydro choose Option A as its DSM plan.

BC Hydro identified the degree of reliance as the % of the load resource gap met by the DSM Option, with Option A providing 78% and Option B providing 92% in F2020.³⁵⁷ BC Hydro explains that it was a matter of its judgment to select Option A over Option B in part because Option B provided too much of the load resource gap.³⁵⁸ In responding to underperformance of DSM, BC Hydro viewed Option A as more flexible than Option B and by jurisdictional comparison more in the middle of the pack therefore qualitatively of less concern.³⁵⁹

The consequence of this choice was for BC Hydro to opt for much more expensive supply side options and limit its definition of cost-effectiveness to something below the load resource gap. The *UCA* legislation does not support any such limitation.

b) Evaluating DSM Options after the Evidentiary Update

BC Hydro confirms that the cost of DSM Option B after the evidentiary update would be about \$45/MWh and for Option A would be \$43/MWh demonstrating that the DSM remains very cost beneficial.³⁶⁰

Option B after the evidentiary update adjustments to the conservation potential would represent 63% of the economic conservation potential.³⁶¹

³⁵² Exhibit B-1, Page 5-51, Table 5-14

³⁵³ Exhibit B-1, Page 5-52, Figure 5-13

³⁵⁴ Exhibit B-1, Page 5-53, Table 5-16

³⁵⁵ Exhibit B-1, Page 5-54, Figure 5-14

³⁵⁶ Exhibit B-3, BCUC 1.120.1

³⁵⁷ Exhibit B-1, Page 5-55

³⁵⁸ Exhibit B-3, CEC 1.6.1

³⁵⁹ Exhibit B-4, BCSEA 2.32.3

³⁶⁰ Exhibit B-12, BCSEA 2.34.2 and BCSEA 2.34.6

³⁶¹ Exhibit B-12, BCSEA 3.33.2

BC Hydro did not change its evaluation of Option A and Option B after the evidentiary update.

c) BC Hydro Not Constrained from Taking Something from Option B

BC Hydro confirms that the recent RIB decision by the Commission incorporated the rate structure with a threshold of 800 KWh/month as the point at which to incline the rates. BC Hydro confirmed that this was effectively the rate structure in Option B not the one in Option A.³⁶²

So we can see that despite the fact that in BC Hydro's judgment Option B would not be cost-effective, the Commission did not agree and approved a rate structure more in line with Option B.

7. Assessing Risks

a) DSM Uncertainties

i) Types of uncertainties lead to selection of Option A

BC Hydro has posed that it faces three types of uncertainty with respect to its DSM plans, Cost, Deliverability and Degree of Reliance.³⁶³

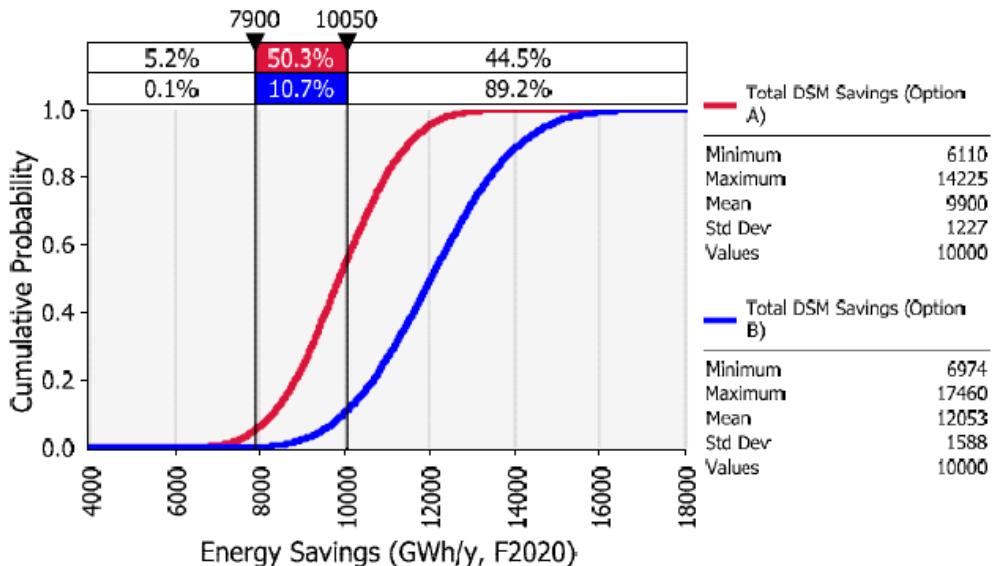
The Cost uncertainty is described as not being able to deliver the savings at the cost planned. BC Hydro suggests that the cost risk or uncertainty is low because the cost of the DSM measures is so low relative to the cost of new supply. The implied alternative is that if one effort to provide the savings at a particular cost is not successful then another low cost effort could be added thereby keeping the costs for delivering the savings at a reasonable level.

The deliverability risk is described as not being able to deliver the savings in the time period specified. The implication here is that the budget or cost is fixed and the risk or uncertainty is whether or not the savings expected will be delivered. The CEC submits that it is apparent that BC Hydro does not recognize that this is just the flipside of the cost risk and is in reality equally low. The implicit alternative is that for an additional expenditure the level of savings can be achieved at a reasonable cost. So the risk is in reality equally low. This is demonstrated in BC Hydro's own referenced evidence.

³⁶² Exhibit B-3, BCUC 1.45.1

³⁶³ Exhibit B-1, CEC 1.5.7

Figure F14-8 - Delivery Risk and DSM Savings



364

The graph demonstrates that the risks associated with achieving the 10,000 GWh/year of savings is reduced from a 55.5% probability of being less than 10,000 under Option A levels of expenditure to 10.8% under Option B levels of expenditure.

The evidence supports the conclusion that the best way to ensure the reliability of achieving the savings related to Option A is to increase the level of expenditure to pursue more savings.

The last risk identified is the degree of reliance risk which is described as how much of the load resource gap is provided by DSM. This is not analyzed by BC Hydro the way they have analyzed the deliverability risk in Appendix F14. It is left strictly as judgment. At best, this risk, as described, is more of a comfort judgment than a serious risk. At worst it is a misconception of risk reduction through diversity. Failure to provide even some level of analysis of the risk concept has seriously compromised its usefulness for the Commission.

- ii) EE3, EE4, EE5 uncertainties low medium and high

The previous IEP/LTAP plan submitted by BC Hydro had DSM components of EE3, EE4, and EE5, which were lacking in detail much more so than the DSM

³⁶⁴ Exhibit B1-1, Appendix F14, Page 24 of 29

Option B plan is. They were defined by BC Hydro as low medium and high risk.³⁶⁵

The CEC submits that what was seen as high risk by BC Hydro a few short years ago is now seen as low risk because the EE3, EE4, and EE5 estimates for savings have been surpassed by BC Hydro's lowest risk Option A.

b) Deliverability Risk and Diversity Risk

- i) Deliverability risk given reduced savings in the Evidentiary Update

BC Hydro asserts that the Evidentiary Update results in a reduced economic potential and that if the uncertainty spread is kept the same the probability of achieving the savings is lower.³⁶⁶

BC Hydro does provide an analysis of the result of spending more and pursuing more DSM savings, which shows that the risk is reduced significantly.³⁶⁷

Given this evidence and the proposal by BC Hydro to spend the same amount to obtain lesser savings the likelihood is that the probability of achieving the new lower savings has actually increased above the original probability of achieving the higher level of savings in the original Option A plan.

The CEC submits that the deliverability risk can be further reduced by increasing the level of expenditure.

- ii) Deliverability risk a judgment informed by % of economic potential

BC Hydro in the Evidentiary Update has managed deliverability risk in the circumstances of a lower load forecast by reducing the expected savings from its DSM activity to maintain a proportion of the economic potential at 54%.³⁶⁸

BC Hydro acknowledges that the economic potential is expanding but does not take that into account at all in making adjustments.

The CEC submits that the view BC Hydro proposes is too conservative resulting in an underestimation of the amount of cost-effective DSM available.

- iii) Diversity Risk therefore needs experience from new level of DSM expenditure

³⁶⁵ Exhibit B-3, CEC 1.5.8

³⁶⁶ Exhibit B-12, BCUC 3.258.1

³⁶⁷ Exhibit B1-1, Appendix F14, Page 24 of 29

³⁶⁸ Exhibit B-12, CEC 3.12.1 and Exhibit B-10, Page 22

BC Hydro has described its interest in maintaining the level of expenditure in order to gain experience, because the level of expenditures is a significant departure from historic levels.³⁶⁹ BC Hydro goes on to explain what it is planning to learn before committing to higher levels of expenditure.

The “higher level of effort” referenced in the preamble to this IR reflects new and expanded DSM initiatives. The experience BC Hydro is looking to gain is how best to implement these new and expanded initiatives to achieve the targeted customer response in a cost-effective manner. For example, BC Hydro wants to understand the effectiveness of a \$2 incentive before considering increasing it to \$4. This experience could support the successful design and implementation of other new initiatives or the further expansion of existing initiatives by informing BC Hydro about the incremental benefits it could expect from incremental increases to its offers.

In addition, BC Hydro is looking to gain experience in the measurement of the impacts of a multi-pronged DSM strategy and the integration of this higher level of DSM impact in its load forecast. This experience could inform changes in the risk assessment of DSM and resource planning decisions on DSM.

370

This evidence is significant. It anticipates both learning which could be used to implement new initiatives or expand existing initiatives. However, BC Hydro’s LTAP does not anticipate success in learning but rather takes the view of incorporating only the base plan, Option A.

The CEC submits it is appropriate to anticipate success and to plan for a steady capability to grow the DSM effort and achievement. Failure to do so will result in a significant understatement of the DSM ability to save consumers from the significantly higher supply side costs.

c) DSM Flexibility

i) DSM flexibility ramp up and ramp down and response time asymmetric

BC Hydro describes its flexibility with respect to DSM as being able to turn down its expenditures on DSM if it finds the additional savings are not needed. BC Hydro also describes its asymmetric flexibility as being easier to ramp down DSM activity than to ramp up the DSM activity.³⁷¹

The CEC submits that this critical piece of evidence demonstrates that it would be prudent for BC Hydro to be fully engaged now in going after higher levels of DSM savings as part of its planning in order to increase the probability of delivery of its interim DSM savings expectations and more importantly to ensure that it has the opportunity to close the load/resource gap with DSM savings, thereby saving the consumers from substantial rate increases that will otherwise be required if new supply is contracted now.

³⁶⁹ Exhibit B-10, Page 24

³⁷⁰ Exhibit B-12, CEC 3.14.3

³⁷¹ Exhibit B-10, Page 24 and CEC 3.17.3)

BC Hydro has identified that if it pursue the Option B level of expenditures at \$533 million over three years or \$46 million more than it is asking for then it estimated that the adjusted expected savings level in 2020 would be about 10,500 GWh/year, or close to the original DSM Option A plan. When asked why BC Hydro would not undertake DSM activity at a higher level BC Hydro has responded that it submits the deliverability risk for Option B levels of expenditure would be too high and create an over reliance risk.³⁷²

BC Hydro continues to rely on a BCUC decision in regard to the BCTC and the Vancouver Island Transmission Reinforcement Project, distinguishing low cost from cost effective by incorporating such issues as risk, reliability, schedule, timing, location and environmental impacts. BC Hydro clarifies that it has the flexibility to increase expenditures in the future should it determine such expenditures to be cost-effective.³⁷³

When asked to what level of expenditure BC Hydro would have to go to achieve the level of savings for the original DSM Option B, BC Hydro identifies that given the new load forecast this would represent 128% of the load/resource gap and BC Hydro does not believe this would be cost-effective.³⁷⁴

BC Hydro has identified that the ramp up time for Option B could be 1 to 3 years and for other initiatives could be potentially longer.³⁷⁵ BC Hydro has identified that the development time for new DSM initiatives would depend on how similar the initiatives were to existing DSM initiatives.³⁷⁶

The CEC submits the importance of the discussion on the asymmetric nature of flexibility is to demonstrate the need to assess the expansion of the DSM Options now in this LTAP and not as BC Hydro is suggesting after 3 years.

The CEC submits that DSM Options delayed will become DSM Options denied and that the Commission should not find this cost-effective.

8. Setting the DSM Plan

a) Alternatives - Maintain or Increase DSM Budgets and Targeted Savings

- i) BC Hydro's decision to choose Option A as the DSM plan

BC Hydro's decision has been to adopt DSM Option A as its plan for the 2008 LTAP. BC Hydro has adopted this plan on the basis that anything greater would represent more delivery risk than BC Hydro submits should be accepted. Also BC

³⁷² Exhibit B-12, CEC 3.18.1 and BCSEA 3.34.1

³⁷³ Exhibit B-1, Page 1-4 and 1-5 and BCSEA 3.34.3

³⁷⁴ Exhibit B-12, BCSEA 3.34.4

³⁷⁵ Exhibit B-12, CEC 3.18.2

³⁷⁶ Exhibit B-12, CEC 3.18.3

Hydro submits that anything more would require higher DSM budgets and BC Hydro submits that this would represent a degree of reliance or diversity risk, until such time as BC Hydro has more learning and experience at this level of expenditure.

BC Hydro concludes that any more risk than the plan it has proposed would not be cost-effective and therefore would not be required to be included under the requirements of the *Utilities Commission Act*.

ii) Flaws with BC Hydro's decision to choose Option A

The CEC submits that the BC Hydro decision to choose Option A has the following flaws.

1. It assumes delivery risk is a one-time assessment applicable to the entire 20 year planning period based on the initial conditions for the beginning of the planning period.
2. It assumes degree of reliance or diversity risk is a one-time assessment applicable to the entire 20 year planning period based on the initial conditions for the beginning of the planning period.
3. It assumes that a 20 year plan does not anticipate developments that have a high probability of occurring during the 20 year time frame other than the ones announced or planned as of the start of the 20 year period.
4. It assumes that anticipated learning and development of DSM will take place and be reflected in subsequent DSM plans making the 20 year DSM plan really just successive 3 year plans.
5. It assumes that cost-effectiveness for a 20 year plan is like cost-effectiveness for a project, which is fixed at a point in time as opposed to a judgment which is made with respect to what may be reasonably anticipated to develop over the course of the 20 year planning horizon.

If the Commission approves of BC Hydro's decision to select adjusted Option A for its DSM plan it will increasingly lock in all of these flaws to the detriment of ratepayers, customers and the public interest.

The CEC submits that the Commission should consider the risks of approving BC Hydro's decision, which are clearly demonstrated in the evidence on the record before the Commission.

iii) Consequences of approving flawed planning decision criteria assumptions

If the project proponents with whom BC Hydro had signed EPA contracts as a consequence of the 2006 Call, based on the 2006 IEP/LTAP plans for DSM the evidence on the record demonstrates that BC Hydro would now have a surplus of

electrical supply and would be in a position of potentially incurring significant losses upon selling that surplus into the electricity markets.

iv) Alternative decision supported by evidence

An alternative approach to making a decision with respect to a DSM plan is to anticipate success in the future with respect to being able to expand and extend DSM initiatives.

For instance there is every reason to anticipate that in the next round of DSM planning BC Hydro will be able to move from the level of Option A to the level of Option B, just as it has moved from the 2006 IEP/LTAP DSM plan to Option A. The past evidence supports that this sort of transition can be made and has been made.

The evidence on the record in this hearing supports the fact that BC Hydro:

1. has identified in the CPR added opportunities not in the economic potential
2. has already planned for DSM savings in areas that were not in the CPR
3. has not exhausted the conservation potential identified in the CPR
4. anticipates that the conservation potential will increase from the CPR
5. has not exhausted the level and extent to which it takes existing initiatives
6. has not exhausted the initiatives it takes with respect to existing strategies
7. anticipates taking new initiatives in the future with new strategy approaches

b) Recommendation

i) CEC Recommendation for the Commission

The CEC submits the Commission needs to establish with BC Hydro that in doing a 20 year plan, it is totally insufficient to only incorporate plans which have been developed to the point they are actionable and implementable. The CEC submits the Commission needs to establish that it is justifiable (cost-effective) and appropriate to incorporate plans which will be developed, can be developed and are likely to be developable.

ii) Consequences of the CEC recommendations

The consequences of the CEC recommendations are:

1. Saving BC Hydro's customers from long term commitments to expensive supply that is likely not needed and could reasonably be

expected to be avoided through commitment to achieving much lower cost DSM savings.

2. Enabling of BC Hydro to pursue the DSM options that are available and achievable in order to meet the Province's self sufficiency goals and to ensure that the letter and spirit of the *UCA* legislation with regard to DSM is adequately complied with.
3. Additional time to see the consequences of the deterioration of the load requirements, particularly (1) the long protracted housing slump in the US, its consequences on the BC forestry sector and resultant load requirements, and (2) the decline in newsprint and kraft pulp markets and the effect this will have on the pulp and paper sector load requirements.
4. Additional time to contract options for supply side projects which may be used as contingency resources as part of BC Hydro's management plans for risks and uncertainties.

c) Estimates of the DSM Evolving During the Planning Period

- i) The CEC has examined the evidence in BC Hydro's Option B, the CPR emerging technology not included in the conservation potential, the scope and extent of the current DSM plan, the rate of evolution of new conservation and efficiency options, the mainstream acceptability of conservation and efficiency, the commitment to conservation and efficiency of various levels of government and BC Hydro's vision to achieve a leveling of the load demand over 20 years.
- ii) The CEC has examined the evidence for electrification of the vehicle fleets over the 20 year planning period and concluded that significant credence needs to be given to the potential for conversion of transportation to electric vehicles. In this scenario the load requirements for BC Hydro increase significantly and therefore so does the conservation and efficiency potential.
- iii) The CEC submits that this combined evidence warrants a case for evolving cost-effective DSM over the 20 year planning period.

d) Importance of Acknowledging the Continuing Evolution of Cost-Effective DSM

The CEC submits that the acknowledgement of the continuing evolution of DSM initiatives and that they will prove to be cost-effective is one of the most important strategic issues in this LTAP regulatory process.

The CEC submits that BC Hydro has acknowledged that there will be a continuing evolution of supply side options and does not discount the probability of obtaining more

supply side resource in the future, despite the fact that the attrition rates for signed EPA's is rather substantial.

The CEC submits the Commission must ensure that DSM is granted the equivalent acknowledgement that there will be a continuing evolution of demand side options and that the probability of obtaining more demand side resource in the future should not be discounted effectively to zero by not including the expectation of this evolution.

9. Assessing DSM

a) Elasticity Analysis

- i) Impacts of conservation drivers is derived from load data

BC Hydro has some difficulty sorting out from its own data what the drivers are for electrical consumption.³⁷⁷

BC Hydro is confident that it has factored in to its DSM planning the effects of rising incomes.³⁷⁸

BC Hydro has provided the data on prior year DSM savings and indicated that it is unable to determine the degree to which DSM is embedded in the forecast period.³⁷⁹

- ii) Potential for greater elasticity impacts and greater real impacts in later years

BC Hydro has provided a forecast of what would happen if there were real rate increases in the last 10 years of the planning period as opposed to BC Hydro's assumption of no real rate increases. The results indicate a significant potential for reductions in the load forecast. At -.05 elasticity and at 3% real rate increases the drop in load forecast is over 1000 GWh/year by the 2028 year.³⁸⁰

Given that BC Hydro's DSM plan does not include evolving DSM savings over time then it is only logical that the future resources required to meet load in BC Hydro's plans would come from the supply side causing significant cost of energy increases and thus rate increases. This becomes increasingly the case if one assumes electrification of transportation becomes a significant portion of the vehicle market.

BC Hydro suggests that it would be unreasonable to forecast real rate increases in the last ten years of the LTAP because of uncertainty about what rates might be

³⁷⁷ Exhibit B-4, BCUC 2.229.1

³⁷⁸ Exhibit B-4, BCUC 2.229.2

³⁷⁹ Exhibit B-4, BCUC 2.229.3

³⁸⁰ Exhibit B-4, BCUC 2.230.1

and because where the load flattens out in the 2018 and 2019 period BC Hydro expects there will be lesser requirements for capital expenditures.³⁸¹

The period 2018 to 2019 would not drive the requirements nor the rate increases for the last ten years. If the response has an error and was meant to cover the 2019 to 2028 period the facts in BC Hydro's forecast do not demonstrate a leveling of load forecast. In fact they show a marked increase in load forecast and BC Hydro shows increased acquisition of power to meet the Provincial requirement for insurance levels of supply. Furthermore BC Hydro's assertion that it capital expenditures would not be similar to the first 10 years ignores the fact that both the BCTC capital plans and the BC Hydro capital plans explicitly under forecast for the later 10 years because of the planning period.

BC Hydro in response to a request for a forecast of rates in the later 10 year period objects to providing the information because of uncertainty about what may be included in costs.³⁸²

BC Hydro has completely ignored one of the most pressing drivers of rate increases for BC Hydro in the last number of years, that being government fees, charges, taxes and dividends. The Provincial Government over the next 20 years will be facing the aging baby boom generation placing increased requirements on the health care services provided by the province. To imagine that this will not result in increased requirements for revenue and that BC Hydro will not be a source of such revenue is unrealistic. The CEC however, acknowledges that BC Hydro is not in a position to make any such statements or forecasts

BC Hydro outlines in general terms what would happen with real rate increases in the last ten years of the planning period.³⁸³

The CEC submits the only way in which it may be possible to avoid some of the coming rate increases is to continue to successfully evolve the DSM initiatives and efforts of BC Hydro and all levels of government.

iii) Changes in Use per Account matched to rate changes and CPI

BC Hydro provided the residential use per account, the electricity rates, CPI index and real electricity prices for the period 1980 to 2005.³⁸⁴ BC Hydro's analysis shows real price decreases for the period of over 20%. BC Hydro's analysis also shows marked declines in the average rate of growth of the residential use per account, showing an approximate 17% growth over the entire period versus a .7% growth in the last 5 years.³⁸⁵

³⁸¹ Exhibit B-4, BCUC 2.174.1

³⁸² Exhibit B-4, JIESC 2.18.2

³⁸³ Exhibit B-4, BCUC 2.230.2

³⁸⁴ Exhibit B-4, BCUC 2.232.1

³⁸⁵ Exhibit B-4, BCUC 2.232.2

In examining the data we see that following the in-service date for the Revelstoke Dam and the inclusion in rates of the costs of that plant, resulting in real rate increases we see a marked suppression in the residential use per account. The CEC submits that this data is a demonstration of the elasticity impact of electricity prices on electrical consumption. Following that period when rates were reflecting real rate decreases we find the residential use per account growing. However in the most recent period the rate of growth has tempered significantly, despite a growing economy the residential use per account shows limited growth. The CEC submits that this is reflecting in part the increased emphasis on conservation and efficiency.

The CEC submits that much of the flattening in the residential use per account is attributable to natural effects and that BC Hydro in its forecast period is overstating the residential use per account.

- iv) Long run elasticity appears to be more related to DSM and Government programs

BC Hydro submits that when rates are low the majority of the energy savings will likely come from government actions and DSM programs.³⁸⁶

The CEC submits that these should be anticipated in the DSM plan for it to be an adequate plan.

³⁸⁶ Exhibit B-3, BCUC 1.145.2

PART 5 - BURRARD

1. BC Hydro Limit to 3000 GWh/year

a) BC Hydro's plan for Burrard

BC Hydro is, for planning purposes throughout the 20 year period, intending to rely on the Burrard Generating Station (BGS) for 900 MW of capacity and 3000 GWh/year of energy.³⁸⁷

b) Rationale for reliance on BGS

BC Hydro makes it clear that the capacity from BGS is required at least until additional capacity can be brought into the Lower Mainland and this would come from Revelstoke and or Mica via transmission line addition 5L83.³⁸⁸

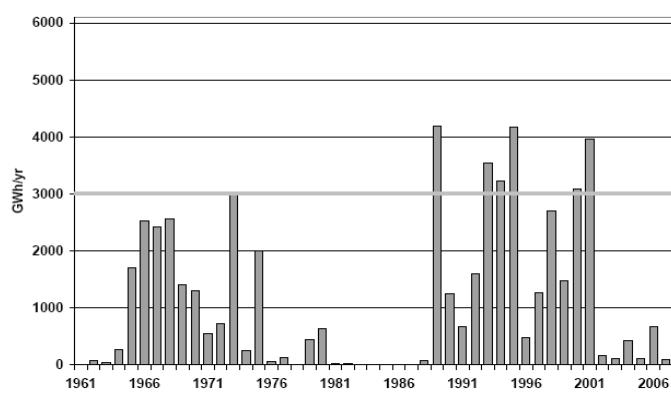
BC Hydro's analysis of cost shows that BGS is the lowest cost when compared to the next lowest cost possible options.³⁸⁹

BC Hydro concludes that BGS is the most cost-effective resource to meet BC Hydro's needs until 5L83 is in place and that BGS will continue to have value to the electrical system after 5L83 is in service.³⁹⁰

c) Historical operation of BGS

BC Hydro has provided the historical energy contribution from the operation of BGS.

Figure 5-7 Burrard Actual Annual Generation



391

³⁸⁷ Exhibit B-1, Page 2-12, Lines 1 to 3

³⁸⁸ Exhibit B-1, Page 6-13, lines 9 to 13

³⁸⁹ Exhibit B-1, Page 6-13, Lines 17 to 19

³⁹⁰ Exhibit B-1, Page 6-14, Lines 8-11

³⁹¹ Exhibit B-1, Page 5-25

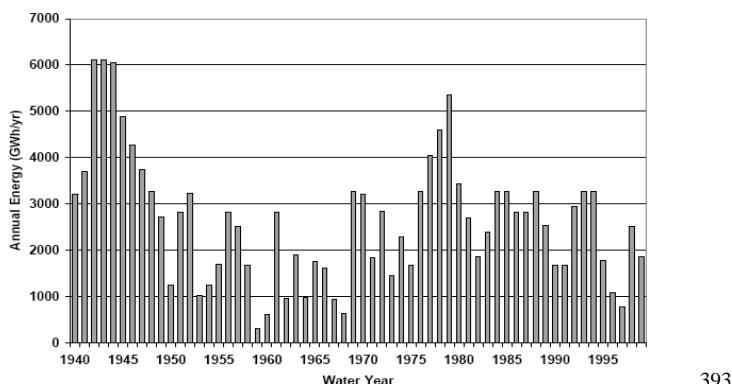
This shows that there has been an average requirement for Burrard of about 1100 GWh/year, with periodic requirements for operation of Burrard at up to 4200 GWh/year. The requirement for use of Burrard up to 4200 GWh/yr has occurred in 5 of over 60 years or about 8% of the time. It should be noted however that this minimal additional use represents additional flexibility, which is a critical role the Burrard plant plays for BC Hydro's customers.

BC Hydro has upgraded the plant with SCR technology to substantially reduce NOx emission and upgraded the plant to enable commercial unit availability of 85%.³⁹²

d) Analysis of need for BGS

BC Hydro's analysis of the requirement for operation of Burrard was done based on historical secondary energy availability from BC Hydro's electrical system and from IPPs.

Figure 5-8 Burrard Capability Study Annual Generation over 60-year period of record



393

This analysis shows that the requirement for Burrard to operate at; (1) over 2000 GWh/year would be in 36 out of 60 years or 60% of the time (2) over 3000 GWh/year would be in 22 out of 60 years or 36.7% of the time; (3) at over 4000 GWh/year would be in 7 out of 60 years or 11.7% of the time.

The AMEC studies have shown that it is technically feasible to run Burrard for up to 6000 GWh/year of energy for the entire 20 year planning period.³⁹⁴

The likely expenditure requirements in terms of capital and operating costs are provided by BC Hydro for different operating scenarios. This analysis shows that the costs for incrementally increased operating levels at BGS show a relatively modest increase in costs. Therefore the selection of the operating level on which BC Hydro depends on BGS would not likely be a matter of cost.

³⁹² Exhibit B-1, Page 5-26, lines 1 to 12

³⁹³ Exhibit B-1, Page 5-28

³⁹⁴ Exhibit B-1, Page 5-29, Lines 17 to 19

Table 5-6 Annual OMA and Capital Funding for Alternative Burrard Operating Scenarios (\$M/yr)

Period	Scenario 1 (900 MW/600 GWh)		Scenario 2 (900 MW/3000 GWh)		Scenario 3 (900 MW/6000 GWh)	
	Capital	OMA	Capital	OMA	Capital	OMA
Average 2009-2015	26	15	31	18	35	20
Average 2016-2028	6	13	7	15	7	16
Average 20 yrs	13	14	16	16	17	18
Levelized 20 yrs	16	14	19	17	22	18

(Adapted from: AMEC report attached to the 2008 LTAP as Appendix J1, and in particular Appendices 2, 3 and 4 of that report).

395

From an environmental and ‘social license’ to operate perspective BC Hydro has had an third party (RWDI) review the issues and they concluded that operating at Scenario 2 (3000 GWh/year or an annual average output of 3250 with a maximum of 3963 GWh/year would likely be acceptable but that operating above these levels would likely increase the risk of losing the ability to operate.³⁹⁶

The CEC views this evidence as basically confirming that planning for Burrard to be capable of going to 4000 GWh/year would not be unreasonable in terms of BC Hydro’s social license to operate the plant.

BC Hydro concludes by stating that:

1. Demolishing Burrard would be infeasible;
2. Maintaining BSG for 900 MW and 600 GWh/yr would be feasible and low risk;
3. Maintaining BSG for 900 MW and 3000 GWh/yr would be feasible and low to moderate risk;
4. Maintaining BSG for 900 MW and 6000 GWh/yr would be feasible and high risk;
5. Rebuilding BSG as SCGT would be feasible and moderate to high risk; and
6. Rebuilding BSG as CCGT would be feasible and very high risk.³⁹⁷

e) Potential for a temporary operation at 4000 GWh/year

The CEC notes that BC Hydro did not look at or analyze a scenario of 4000 GWh/year.

³⁹⁵ Exhibit B-1, Page 5-30

³⁹⁶ Exhibit B-1, Page 5-34, Lines 7 to 15

³⁹⁷ Exhibit B-1, Page 5-43, Line 16 to Page 5-45, Line 24

The CEC submits that the maximum practical flexibility of Burrard should be preserved in this 2008 LTAP. The CEC submits that the evidence points to that level of practical flexibility being 4000 GWh/year.

The CEC submits that the temporary planning for use of this flexibility as part of providing contingency backup to plans which would enable DSM to evolve into the resource necessary to close the load resource gap particularly to meet the self-sufficiency targets by 2016 would be an incredibly valuable use of the Burrard plant resource. Avoiding commitments of \$6 to \$8 billion for purchasing up to 3000 GWh/year of power and instead using DSM resources to meet the load resource gap would clearly be cost-effective and in the public interest.

2. Burrard and SD 10

a) SD 10 Requirement

BC Hydro in analyzing some scenarios for meeting load requirements made a more detailed analysis of what it submits is required to meet the provisions of SD-10.

Section 3 of SD 10 provides that the BCUC, in regulating BC Hydro, must use the criterion that BC Hydro is to achieve energy and capacity self-sufficiency by "becoming capable of" meeting by 2016, and each year thereafter, its electricity supply obligations solely from electricity generating facilities within B.C. The phrase "capable of" is not defined in SD 10. As set out at page 5-17, lines 4-7, and page 5-20, lines 21 to 28, of Exhibit B-1, BC Hydro submits that for B.C.-based electricity generating facilities to be "capable of" meeting BC Hydro's electricity supply obligations, such facilities must:

- Have the technical ability to meet BC Hydro's electricity supply obligations. If a particular facility cannot run due to age, etc., it is not capable of meeting BC Hydro's electricity supply obligations.
- Have the ability to be permitted, or the ability to maintain existing permits, whether at the Federal Government level pursuant to CEAA if triggered and other applicable statutes or at the B.C. Government level pursuant to BCEAA if triggered or other applicable statutes such as the air emission and other permitting provisions set out in section 14 of the B.C. *Environmental Management Act*. In the case of the LM, permitting

considerations also include at the Local Government level pursuant to Metro Vancouver's Air Quality Management Bylaw No. 937 (a copy of which is attached as Appendix C to the RWDI report attached as Appendix J3 to the 2008 LTAP, Exhibit B-1-1). Again, if for example a natural gas-fired electricity generating facility cannot be permitted due to local air emission concerns, GHG emission concerns whether import-related or related to the running of the facility, or other siting reasons, the facility will not be capable of meeting BC Hydro's electricity supply obligations.

- Be economically capable of meeting BC Hydro's electricity supply obligations. As stated above, if no minimum dispatch constraints were placed on natural gas-fired generation, the computer simulations select B.C.-based SCGTs which are never run, with the result of BC Hydro relying upon the import markets to supply domestic load. This is a legally absurd result because the purpose of SD 10 is defeated.

The Supreme Court of Canada (SCC) has held that interpretations of statutes and regulations that defeat the purpose of the statute or regulation are to be rejected, and that whenever possible an interpretation that leads to absurd consequences is to be rejected in favour of one that avoids absurdity. In *Rizzo and Rizzo Shoes Ltd.*, the SCC stated that "It is a well established principle of statutory interpretation that the legislature does not intend to produce absurd consequences" ([1998] 1 S.C.R. 27 at 43). In *Berardinelli v. Ontario Housing Corporation*, the SCC held that "when one interpretation can be placed upon a statutory interpretation which would bring a workable and practical result, such an interpretation should be preferred if the words invoked by the legislature can reasonably bear it ..." ([1979] 1 S.C.R. 275 at 284).

398

In this case BC Hydro was rejecting alternatives as not compliant with SD 10 because they would be built and not run and therefore not economically capable of meeting BC Hydro requirements from resources in BC. It demonstrates the importance to be placed on the SD 10 wording.

BC Hydro has defined the wording 'capable of' as including the following criteria:

1. Technically capable of;
2. Legally capable of (including environmental and other permits); and
3. Economically capable of.

BC Hydro is clear that it does not believe that SD 10 precludes BC Hydro from acquiring market supply when economical to do so.

BC Hydro does not explain what it means by 'economically capable of' and in this case presumes that a facility which was not going to be used could not be considered an economical alternative.

The CEC does not believe and there is evidence that SD 10 was intended to imply any economical criteria.

³⁹⁸ Exhibit B-3, BCUC 1.96.1

The CEC submits that the intent of SD 10 should be determined by technical and legal capability and that the running of Burrard should be economical for the BC Hydro electric system.

BC Hydro has a number of safety, security and protection assets in its system which are constructed, built and added to the system with the express intent and hope that they are not used.

If economical capability is to be inferred it raises a whole series of other questions, such as how is economical to be determined, by what measure and over what time frame. Further economical is not an absolute concept it is a relative concept so then economical must be determined relative to what comparison. BC Hydro has not defined any of this in regard to its attempt to use this concept.

The CEC submits that if economical is to be used it needs to encompass the role of providing standby insurance capability. The CEC submits that Burrard is capable of providing such service and the CEC submits it would be imprudent to constrain the planning use of Burrard below its long term practical and pragmatic use.

b) Burrard and displacement by non-firm and market resources

BC Hydro was asked to analyze scenarios using different gas prices, GHG offset prices, Burrard capability reliance and portfolio compositions to determine what the proportion of displacement of Burrard's operation was from Heritage Hydro, IPP and Market resources. The results showed that the proportions for displacement were independent of all of the variables for which the analysis was requested. The analysis was done for average water inflow conditions and the results were as follows.

Non-firm Source	Percent Contribution	
	Average	Range
Non-firm energy from Heritage hydro generation	48%	44-53%
Non-firm energy from IPP generation	23%	19-27%
Imports from external markets	29%	25-34%

399

This demonstrates that Burrard can run, is allowed to run and does run as a BC electric generating facility and will do so using either BC based fuel (natural gas) or economic displacement resources from non-firm energy or external markets.

³⁹⁹ Exhibit B-3, BCUC 1.102.1

The analysis shows that the determination of the use of Burrard at either 3000 GWh/year or 4000 GWh/year or in fact other levels is independent of the economics of the fuel source and or the economic displacement resources. The analysis appears clearly to the CEC to further support that the use of Burrard as a BC electric generating facility capable of meeting loads up to at least 4000 GWh/year is appropriate.

The reality is that the Burrard plant is a key component of BC's energy self-sufficiency.

The reality is that the Burrard plant is a key component of BC's energy flexibility.

The CEC submits that Burrard should be used for both, meeting BC's energy self sufficiency and providing BC energy flexibility.

c) Burrard and SD 10

BC Hydro clarifies that the difference between SD 10 providing for a discontinuance of allowance for or reliance on market purchases for 2500 GWh/year and the uses of Burrard is that Burrard is a BC electric generating resource with firm energy delivery capability.⁴⁰⁰

BC Hydro adds to its clarification a perspective on the long-term viability of displacing Burrard with non-firm resources, suggesting that investment in the Burrard plant must be such that it is capable of operating at the levels upon which it is being relied and that if the level of reliance chosen caused BC Hydro to need imports beyond the level that would otherwise have been generated in the province then BC Hydro submits it may be violating the intent of the BC Climate Action Plan.⁴⁰¹

The CEC submits that the evidence reference in Exhibit B-3, BCUC 1.102.1 clearly demonstrates that this does not occur.

d) Burrard cost of operation

BC Hydro provides estimates of the Burrard cost of operation based on a \$9/GJ cost of natural gas and BC Hydro's estimated operating costs, which shows a \$95/MWh cost of fuel and a \$3/MWh cost of operating.⁴⁰² BC Hydro provides the cost of GHG compliance using \$21/tonne of GHG as \$11/MWh.⁴⁰³ The investment costs for sustaining all 6 units at Burrard is shown by BC Hydro to be \$33 million/year to provide the 900 MW of capacity and 600 GWh/year of

⁴⁰⁰ Exhibit B-3, IPPBC 1.7.1

⁴⁰¹ Exhibit B-3, IPPBC 1.7.1

⁴⁰² Exhibit B-3, IPPBC 1.7.2

⁴⁰³ Exhibit B-3, IPPBC 1.7.3

energy.⁴⁰⁴ BC Hydro provides the cost of maintaining the firm gas transportation agreement with Terasen Gas as \$10 million per year.⁴⁰⁵ Potentially additional capital may be required to operate at higher levels.⁴⁰⁶

BC Hydro further provides evidence as to the costs of Burrard being \$85 to \$119 million per year after Revelstoke 5 and the ILM 5L83 line are brought into service. For Burrard's average output of 1000 GWh/year the Burrard costs are reasonable.⁴⁰⁷ Given all of the values Burrard adds to the BC Hydro electric system the investments in Burrard will be well justified provided that the use of Burrard's flexibility is not unduly constrained. These values compare to fewer values offered by IPP suppliers at \$99/MWh.⁴⁰⁸

The costs for Burrard considering that it is maintained as capable of operating at levels for which it is planned but then allowing for displacement of the use of natural gas by use of market purchases is provided by BC Hydro.⁴⁰⁹ This demonstrates that it is cost-effective to maintain Burrard as being capable of providing the supply but then allowing market forces to determine what is the most economical way to operate the system.

The CEC submits that Burrard can be maintained for planning purposes to provide a level of up to 4000 GWh/year and remain a cost-effective option.

e) Burrard redevelopment to SCGT or CCGT

BC Hydro is clear that it has not precluded redevelopment of BGS to enable continuation of the flexibility and economic advantage offered by Burrard in firming non-firm energy and providing access to the economic benefits of imported market power where it displaces higher cost operation of BC facilities capable of meeting BC's energy requirements.

f) Burrard and air quality

BC Hydro has identified the air quality issues with respect to Burrard and the time periods in which they are likely to be prevalent. The impacts are varied depending upon the requirements for Burrard operation and the prevailing air quality conditions. The specific air quality standard exceedance issues are identified with specific parts of the Burrard plant such as the auxiliary boiler.⁴¹⁰

3. Analysis of Burrard's Role in Any Delay of 5L83

a) Requirement for Burrard with 5L83 delay

⁴⁰⁴ Exhibit B-3, IPPBC 1.7.4

⁴⁰⁵ Exhibit B-3, IPPBC 1.7.5

⁴⁰⁶ Exhibit B-3, IPPBC 1.7.6

⁴⁰⁷ Exhibit B-12, IPPBC 1.18.10

⁴⁰⁸ Exhibit B-12, 3.27.7

⁴⁰⁹ Exhibit B-4, BCUC 2.188.1

⁴¹⁰ Exhibit B-3, JIESC 1.8.8

BC Hydro has provided a detailed analysis of the options for using Burrard to provide reliable capacity in the Lower Mainland/Vancouver Island Region versus relying on 5L83 to provide the reliable capacity. This shows a requirement for 5L83 by 2014 or if Burrard is relied on for 900 MW the 5L83 in service date may shift to 2024 or 2027.⁴¹¹

The CEC submits this is an example of the prudent usefulness of the flexibility, which Burrard provides to BC Hydro and the electric system.

The CEC further submits that Burrard should not be used proactively to delay 5L83 but should be retained as an option to ensure reliability in the event that the 5L83 in service date is delayed past the point at which it is actually needed.

b) RMR Reliability Must Run

BC Hydro has submitted that the potential use of Burrard as a reliability must run plant to provide reliability for the transmission system is not required or appropriate. BC Hydro explains what the other contingencies are, which would enable BC Hydro to maintain reliability in the event that 5L83 is delayed past the point at which it is needed.⁴¹²

BC Hydro provides the load duration curve information for the BC Hydro system and asserts that it cannot be used to define how an RMR operation would work.⁴¹³

BC Hydro defines an RMR operation and why it has concluded this mode of supplying reliability is out of scope.⁴¹⁴

The CEC submits that BC Hydro is correct and that it would be inappropriate to use Burrard as an RMR option except in a situation where other options were not available. The CEC submits that Burrard's flexibility is more valuable than having it committed to compensating for lack of transmission capacity and providing the reliability.

4. Planning for Burrard at 4000 GWh/year

a) Operational Feasibility of 4000 GWh/year

BC Hydro has addressed the operational feasibility of planning for Burrard being capable of providing 4000 GWh/year. BC Hydro concludes that at 4000 GWh/year the plan would involve incurring only 'marginally more risk' than BC

⁴¹¹ Exhibit B-3, BCUC 1.28.1

⁴¹² Exhibit B-4, BCUC 2.213.1

⁴¹³ Exhibit B-4, BCUC 2.213.2.2

⁴¹⁴ Exhibit B-4, BCUC 2.213.4

Hydro's proposed 3000 GWh/year plan.⁴¹⁵ BC Hydro concludes that it would be 'technically feasible' to plan for 4000 GWh/year.⁴¹⁶ BC Hydro concludes that it would have a 'social license' for scenario 2, which included consideration of Burrard up to 4000 GWh/year.⁴¹⁷

BC Hydro has the following to say with respect to a proposed strategy which relied on Burrard by assuming non-firm power and market power displacement of Burrard.

Any strategy that would only be practical or economic based on an underlying assumption that the actual operation of Burrard would be much lower than the specified level of firm reliance on Burrard because it would be displaced by external market purchases or non-firm Heritage hydro is, in fact, tantamount to reliance on external markets and non-firm Heritage hydro.

⁴¹⁸

BC Hydro does not comment on the level of 4000 GWh/year in this context but is focused on rejecting the 6000 GWh/year proposal and forwarding its own 3000 GWh/year proposal.

The CEC however submits the strategy involves the use and timing of DSM displacing the need for Burrard at the 4000 GWh/year level there is no such problem and that it is a legitimate strategy and a viable use enabling planning Burrard at the 4000 GWh/year.

b) Effectiveness of Burrard as load forecast and load resource gap change

BC Hydro has confirmed that changes to the load forecast and to the load resource gap do not change its view that Burrard should be planned on for 3000 GWh/year.⁴¹⁹

The importance of this evidence is to demonstrate the independence of the planning level decision and the actual consequences, which may result in different levels of operation of Burrard.

If all of the load resource gap were filled with DSM resource for instance the planned level for Burrard would be excess and would then either be used for export or trade if economic and not be required for domestic purposes. Both export and trade are valuable to BC Hydro's customers to a point. The economics of using Burrard for these purposes likely would then result in a lower actual use of Burrard.

⁴¹⁵ Exhibit B-4, BCUC 2.215.2

⁴¹⁶ Exhibit B-4, BCUC 2.215.2

⁴¹⁷ Exhibit B-4, BCUC 2.215.2

⁴¹⁸ Exhibit B-4, BCUC 2.215.2

⁴¹⁹ Exhibit B-12, Commission Panel 1.22.1

The CEC submits that planning for Burrard at 4000 GWh/year and planning to displace this use with DSM resource will result in the same sort of actual use patterns seen for Burrard in the past. The CEC submits these are useful values and should be retained by ensuring that the potential use of Burrard does not become constrained by the decision with respect to the planning level of use.

c) Planning for Burrard

The CEC submits that Burrard's role in the BC Hydro electric system should be planned to provide VAR support for the system, 900 MW of capacity, 3000 GWh/year of energy normally, 4000 GWh/year of energy in circumstances requiring 1000 GWh/year of additional flexibility and 3000 GWh/year of insurance capability if and when needed in rare circumstances.

The CEC submits this will be the most cost-effective use of Burrard.

This will enable BC Hydro to put together DSM plans which will allow avoiding substantial alternative costs of supply side options.

This will enable BC Hydro to capture the full practical flexibility values of Burrard.

This will enable BC Hydro to meet all the SD 10 requirements satisfactorily.

This will enable BC Hydro to meet its own self imposed sense of 'social license'.

PART 6 – SUPPLY SIDE

1. Standing Offer Program

BC Hydro has included in its LTAP an SOP program which for the first 2 years is expected to provide 330 GWh/year of energy and 30 MW of capacity.⁴²⁰

The plan includes 50 MW of capacity starting in 2012 and 400 GWh/year of energy as of 2013.⁴²¹

The CEC notes that this appears to be the end of the SOP program. Given that BC Hydro submits the program will be a success is seems incongruous that the Provincial Government policy would change to support a stop to the program.

The CEC submits that it may be more reasonable to project a continuation of the program.

a) Amount of energy contracted and applied for from the SOP

BC Hydro has reported that 4 projects have contracted to provide supply under the SOP. They total 18.8 MW.⁴²²

BC Hydro has later reported that they have received 9 applications totaling about 200 GWh/year and about 46 MW of name plate capacity and expects to receive an additional 7 projects with an additional 40 MW of name plate capacity. BC Hydro expects very little attrition.⁴²³

The CEC submits that this sort of response is likely to represent a significant degree of success and leads the CEC to believe that there may well be additional SOP volumes to be included in the future.

b) Timeframe to develop

BC Hydro reports that the time from receipt of an application to commercial operation is approximately 2 years.⁴²⁴

These types of projects would appear to be quite flexible and quite useful to meeting load requirements.

c) Value of SOP Program

⁴²⁰ Exhibit B-1, Page 2-14

⁴²¹ Exhibit B-10, Table 2-10 and Table 2-11, Page 29 and 30

⁴²² Exhibit B-4, 2.183.1; Exhibit B-12, IPPBC 3.17.1

⁴²³ Exhibit B-12, BCUC 3.236.1

⁴²⁴ Exhibit B-12, BCUC 3.236.3

As the SOP energy is being acquired at a price below where the Clean Power Call Energy is expected to be acquired the CEC is of the view that it would be prudent to keep this sort of program available with one change being that BC Hydro would have the ability to determine COD date based on need before proponents started to prepare a project for application.

2. Bio-Energy Call

a) BC Hydro Bio-Energy Call

The BC Hydro Bio-Energy Call was been targeting to provide 1,400 GWh/year of firm energy post attrition of 30%.⁴²⁵

b) The Bio-Energy Call Phase I

BC Hydro has selected 4 projects from the first phase of the Bio-Energy call providing 579 GWh/year of power and 65 MW of capacity.⁴²⁶ BC Hydro revised the capacity expected down to 60 MW.⁴²⁷ BC Hydro has confirmed that all of the Phase I contracts have been executed.⁴²⁸

c) The Bio-Energy Call Attrition

BC Hydro expects that the Bio-Energy Call projects have no financing risk, no permitting risk and no siting risk but will still have construction risk so a 10% attrition number has been used reducing the energy estimate for the first phase Bio-Energy Call to 500 GWh/year.⁴²⁹

d) The Bio-Energy Call is still on track for Phase II

BC Hydro expects that the Bio-Energy Call Phase II is still on track.⁴³⁰ BC Hydro has confirmed that it is not aware of any impediment to these calls because of fiber supply.⁴³¹ The Bio-Energy Call Phase II has been included in BC Hydro's plans at 700 GWh/year and 100 MW of capacity.⁴³²

e) Bio-Energy commitment

The CEC notes that the Bio-Energy commitment is for a reasonably short period, around about 8 years. This will represent less risk to customers than being locked in to purchases for 20 to 40 years.

⁴²⁵ Exhibit B-1, Page 6-46

⁴²⁶ Exhibit B-10, Page 25

⁴²⁷ Exhibit B12, BCUC 3.261.1

⁴²⁸ Exhibit B-12, IPPBC 3.16.1

⁴²⁹ Exhibit B-10, Page 25 and Page 29

⁴³⁰ Exhibit B-12, BCUC 3.263.1

⁴³¹ Exhibit B-12, IPPBC 3.16.2

⁴³² Exhibit B-10, Page 29 and 30, Tables 2-10 and 2-11

The CEC submits there is considerable doubt about the need for any energy acquisition at this time. However, the CEC submits the Bio-Energy Call acquisition will likely prove to be a lesser problem for BC Hydro customers than other call for power processes.

The CEC supports the Bio-energy call process through to completion.

3 Clean Power Call

a) 2008 Clean Power Call

BC Hydro has started its planning with a target of 5000 GWh/year of pre attrition energy from the 2008 Clean Power Call.⁴³³ BC Hydro started the planning using a 30 % attrition factor and therefore was expecting to obtain 3500 GWh/year of energy.⁴³⁴

BC Hydro has implemented new provisions in its call process to enable it to negotiate certain terms with proponents after the bid process.

- 5 The Clean Power Call will utilize a structured RFP process, as opposed to a Call for Tenders
- 6 (**CFT**). The structured RFP will allow modifications to the preferred terms by the proponents
- 7 and BC Hydro. Proponents may submit modifications to the specimen EPA in their initial
- 8 proposals, while BC Hydro can initiate, at its sole discretion, discussions and negotiations
- 9 with selected proponents after proposal submission. This will allow BC Hydro and project
- 10 proponents greater flexibility to explore variations and alternatives that offer additional value
- 11 to BC Hydro and its ratepayers. The structured RFP process will also list certain provisions
- 12 of the contract where BC Hydro does not intend to consider variations to the specimen EPA.

435

Given the considerable uncertainty about the need to acquire any additional power at this time the CEC submits that BC Hydro should be looking to negotiate provisions which would allow it to choose not to proceed with the project. Exit provisions with a suitable option arrangements to acquire the power from the projects at a later date would enable BC Hydro to avoid the risk of acquiring energy that it did not need and then having to export the energy at a loss.

BC Hydro's expected commitment to the Clean Power Call was estimated assuming a 25 year period.

⁴³³ Exhibit B-1, Page 1-3, Lines 5 and6

⁴³⁴ Exhibit B-1, Page 6-28, Lines 25 to 28, Page 6-29, Lines 1and2

⁴³⁵ Exhibit B-1, Page 6-36

1 With regard to BC Hydro's commitment for the Clean Power Call, the expenditure levels will
2 vary depending on the weighted average cost of the EPA awards. At the low end, based on
3 a weighted average bid price of \$80/MWh in nominal dollars over an assumed contract life
4 of 25 years, BC Hydro's total commitment would be \$10 billion. If the nominal average bid
5 price is \$110/MWh, BC Hydro's total commitment for the Clean Power Call could be as high
6 as \$14 billion.

436

Given the considerable uncertainty about whether any of this power will be needed the CEC submits that the size and magnitude of the commitments contemplated represent considerable risks to BC Hydro's customers, particularly in comparison to the development of more flexible and more cost-effective DSM options.

b) Evidentiary Update for 2008 Clean Power Call

BC Hydro in response to declining load forecasts BC Hydro revised its Clean Power Call down from 5000 GWh/year to 3000 GWh/year and using the same attrition estimate is looking for 2100 GWh/year of energy.⁴³⁷ BC Hydro has received 68 proposals from 43 participants for projects totaling 17,000 GWh/year.⁴³⁸

	No. of Proposals	Firm Energy (GWh/yr)	Plant Capacity (MW)	Dependable Capacity (MW)
Hydro Projects	45	8,660	3,870	n/a
Wind Projects	19	8,050	2,790	n/a
Other	4	630	130	n/a
Total	68	17,340	6,790	n/a

439

BC Hydro continues to use a 30% attrition factor and base this on the California Energy Commission study should 20% to 30% as appropriate.⁴⁴⁰

The CEC notes that using the same methodology as BC Hydro used before this could result in EPA commitments of \$6 to \$8 billion, down from the \$10 to \$14 billion BC Hydro previously estimated.

Given the considerable uncertainty with respect to the need and the availability of lower cost DSM options which may be expected to be much more cost-effective than supply options, the CEC remains concerned that the magnitude of the

⁴³⁶ Exhibit B-1, Page 6-46

⁴³⁷ Exhibit B-10, Page 26

⁴³⁸ Exhibit B-10, Page 27

⁴³⁹ Exhibit B-12, Commission Panel 1.27.1

⁴⁴⁰ Exhibit B-10, Exhibit B-10, Page 27 and Page 28

commitments will put BC Hydro at considerable risk for unnecessary rate increases.

BC Hydro has been unequivocally right to reduce the Clean Power Call volumes and the CEC commends them for doing so.

The more challenging decisions are now left to the Commission to find a way to adopt more flexibility in the face of the considerable uncertainties and avoid unnecessary costs to customers.

c) 2008 Clean Power Call Unknowns

i) Prices unknown and rate design effects unknown

BC Hydro has indicated that the Call Prices are not yet known, despite the fact that the bids have been received, because BC Hydro has not completed evaluation and or negotiations with proponents.⁴⁴¹

This means that conservation and efficiency effects of price changes on the rate structures both in place and being proposed have not been determined. Thus the CEC submits that the DSM effects of rate structures will likely be underestimated.

ii) Changed Economic Conditions

BC Hydro has observed that the economic conditions under which the Clean Power Call bids were made have been changing. As a consequence BC Hydro anticipates trying to negotiate back savings versus the bid values as part of its process.⁴⁴²

The CEC submits the economic conditions have changed so significantly from the time frame relevant to the Evidentiary Update that if some version of the Clean Power Call is to continue to be relevant BC Hydro will need to negotiate considerably more flexibility and value than BC Hydro has anticipated to date.

iii) Call for Power Timelines

BC Hydro has provided the kind of timelines, which it submits are critically important to obtaining IPP power from the Clean Power Call if that power is needed.

⁴⁴¹ Exhibit B-12, Commission Panel 1.24.5

⁴⁴² Exhibit B-12, Commission Panel 1.28.1

A hypothetical example of a development timeline for a larger project is as follows:

- June 2009 - Contract award from BC Hydro;
- Fall 2009 - Regulatory approval of EPAs;
- Summer 2011 - Permitting completed (Four years in total; assuming two years from date of EPA award to completion of key permitting);
- Spring 2012 - Financial Close;
- Summer 2013 - 2016 – Construction period (assuming three construction years plus one year contingency); and
- Fall 2016 - Commissioning complete and project on-line.

443

The CEC submits that this evidence is key and critical to providing the timeframes for introducing additional flexibility into the Clean Power Call process and thereby reducing risk for customers and for IPPs.

Provided BC Hydro can negotiate additional flexibility with some IPPs it will be possible for the Commission to provide for sufficient process to accept the Call volumes that may be necessary, is any, and to maintain a substantial contingency from the call to enable BC Hydro to be responsive to need if as and when it may develop.

Done this way BC Hydro could completely compensate for the problems it presents as a consequence of delaying the Clean Power Call.⁴⁴⁴

iv) Certainty and SD 10 self sufficiency

BC Hydro has made it clear that meeting the SD 10 self sufficiency target does not have to be done with 100% certainty.⁴⁴⁵

Further BC Hydro makes it clear that it will have the opportunity in its next LTAP filing or review to adjust its plans.

⁴⁴³ Exhibit B-12, Commission Panel 1.28.1

⁴⁴⁴ Exhibit B-12, BCOAPO 3.2.1

⁴⁴⁵ Exhibit B-12, BCUC 3.262.1

Further, BC Hydro will have additional opportunities to those identified in Exhibit B-10 to make resource supply plans and acquisitions prior to the self-sufficiency requirement in F2017. There will be at least one more LTAP filing before the 2016 self-sufficiency date. BC Hydro has requested that the BCUC accept a next LTAP filing date of 2011. BC Hydro will have a better understanding of the risks and requirements associated with delivering the required DSM and supply side options at that time. BC Hydro also anticipates that it will have the ability, as may be warranted or necessary, to adjust the DSM Plan, acquisition plans and processes, and Contingency Resource Plan (CRP) projects (e.g. Mica Units 5 and 6) prior to the 2016 self-sufficiency date.

⁴⁴⁶

This piece of evidence is critical because it means quite clearly that the BCUC does not need to lock in firmly for the 2008 LTAP. The Commission has some flexibility.

The CEC submits that the Commission should use all of this flexibility to begin the process now for that 2011 timeframe, such that BC Hydro adopts more flexible approaches to acquisition and develops more clarity about the ability for DSM to continue to evolve into providing the solution to self sufficiency without the requirement for acquisition of power.

The CEC submits that the savings for customers are sufficient to warrant this substantial effort on the part of the Commission.

d) Call for Power Attrition

i) Clean Power Call attrition

BC Hydro has provided information with respect to its past experience with IPP power supply showing substantial attrition factors of 67% in total and 36% for Hydro projects.⁴⁴⁷

BC Hydro has made some changes to the call process to try to reduce the attrition problems.⁴⁴⁸

ii) Past attrition levels

BC Hydro has provided definitions of attrition.⁴⁴⁹ BC Hydro has provided analysis of levels of change in regard to its past calls.

⁴⁴⁶ Exhibit B-12, BCUC 3.262.1

⁴⁴⁷ Exhibit B-12, BCUC 3.266.1; Exhibit B-12, CEC 3.21.1

⁴⁴⁸ Exhibit B-12, CEC 3.23.1 and CEC 3.23.2

⁴⁴⁹ Exhibit B-12, IPPBC 3.2.1

Updated Table 2-5 Recent Call Attrition Rate

(GWh/year)	Awarded	Terminated	Forecast Attrition	Terminated + Forecast Attrition	Combined Attrition Factor (%)
Pre-2000 EPAs	6,722	0	0	0	0
2000 Green Request for Expressions of Interest	153	0	0	0	0
2001 Green Energy Call	891	176	0	176	20
2002 Customer Based Generation Call	278	83	0	83	30
2002/03 Green Power Generation Call	1,764	1,041	176	1,216	69
F2006 Call	7,093	1,919	2,848	4,767	67
Total*	16,900	3,219	3,024	6,243	37

* Excludes Vancouver Island CFT volumes.

450

The CEC notes that the most striking aspect of this information is to determine what would have happened to customer and rates had the F2006 call awards for 7093 GWh/year all continued on to deliver power. This is of course the risk that BC Hydro is taking when it signs an EPA.

One of the differences between DSM and IPP supply is that with DSM BC Hydro has more flexibility to ramp down more quickly as ongoing expenditures are at BC Hydro's discretion. With IPPs, generally speaking once an EPA is executed and accepted for filing with the BCUC as an energy supply contract pursuant to section 71 of the *Utilities Commission Act (UCA)*, BC Hydro has committed to the cost over the term of the EPA, subject of course to whatever termination rights both parties possess.

451

The F2006 Call average cost of \$88 MWh compared to the \$45 MWh DSM cost would have resulted in the 4767 GWh/year costing customers approximately \$5 billion over 25 years or about \$205 million/year or close to 8% additional cost in their rates.

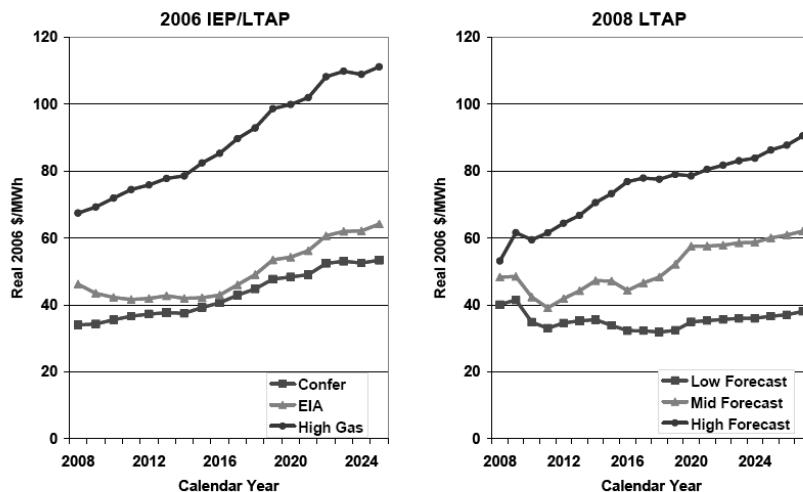
Of course the comparison to DSM only provides the acquisition alternative. If the power is acquired and not needed for domestic purposes then it will have to be sold into the electricity markets.

BC Hydro has provided its forecast of the electricity market prices.

⁴⁵⁰ Exhibit B-12, IPPBC 3.2.2

⁴⁵¹ Exhibit B-12, NaiKun Wind Energy Group Inc. 3.4.0 (a)

Figure 1-4 Comparison of Electricity Market Price Forecasts for Mid-C from the 2006 IEP/LTAP to the 2008 LTAP



452

From these forecasts we can see that there would be a very high likelihood that BC Hydro's customers would lose money for many years. The higher prices available in the market place are already the prices at which Powerex will be developing and earning trade income and exporting surplus non-firm power from BC Hydro wherever and whenever possible. The market is not infinitely liquid so significant surplus supply in the electric system will tend to suppress prices. Consequently acquisitions of power by BC Hydro which become surplus are more likely to be exported at the middle to low prices in any forecast of prices. As such the \$88 acquisition price versus say a \$60 sale price would result in losses of about \$133 million per year or 4% to 5% in rate increases for customers.

The Commission needs to be cognizant of the way that this risk has been developing since the IEP LTAP of 2006 and the direction in which it is currently sliding. The CEC submits this is the biggest risk for BC Hydro and its customers.

The CEC submits that the risks of having too much power are asymmetrical to the risks of not having enough power, because of the extensive contingencies available for dealing with insufficient power.

e) Clean Call versus DSM

i) Additional DSM

If BC Hydro were to pursue additional DSM to move from Option A's 9600 GWh/year in 2020 to 10500 GWh/year in 2020 BC Hydro would have to spend an additional \$46 million dollars over three years.⁴⁵³

⁴⁵² Exhibit B-1, Page 1-19, Figure 1-4

This additional spending would likely produce additional DSM at a cost of about \$45 MWh.⁴⁵⁴

ii) Reduction of Clean Power Call

BC Hydro has made it clear that if the Clean Power Call were to be reduced it would not want to reduce the call volumes on a one for one basis.⁴⁵⁵

The CEC submits that there is a certain level of Clean Power Call volume necessary, prior to the call to make a call process worthwhile and sensible, in terms of the cost-effectiveness of the outcomes from the process, if power is to be acquired through the call process and then through EPA's.

The CEC submits that there are much more efficient and effective ways to manage BC Hydro's call process, which will enable BC Hydro to obtain power in a more timely fashion more closely matched to need than the current process provides for.

iii) Cost of a Clean Power Call

BC Hydro has confirmed that if the Clean Power Call were to contract for 3500 GWh/year versus 2100 GWh/year and all of that additional 1400 GWh/year power were to be delivered the added cost would be \$173 million per year in 2017 versus \$60 million per year for additional DSM, resulting in a net \$113 per year cost.⁴⁵⁶

The CEC notes that this would result in rate increases to customers of about 4% in the year such costs were brought into the BC Hydro revenue requirements.

The CEC submits the Commission needs to do everything within its powers to avoid allowing BC Hydro to get into a position where it is acquiring power when there are such substantial losses at stake.

e) Future Resources

i) All Future Resources are Supply Side

⁴⁵³ Exhibit B-12, BCSEA 3.34.1

⁴⁵⁴ Exhibit B-12, BCSEA 3.34.2; Exhibit B-12, BCSEA 3.34.2

⁴⁵⁵ Exhibit B-12, BCSEA 3.37.1

⁴⁵⁶ Exhibit B-12, JIESC 3.29.1 and JIESC 3.29.2

BC Hydro has provided a view as to where the future resources in its LTAP would come from. The specific table provided shows all of the resources coming from the supply side.⁴⁵⁷

ROU Bundle	The Calculation of Future Resources: Energy Contribution from ROU Bundles										
	F2018	F2019	F2020	F2021	F2022	F2023	F2024	F2025	F2026	F2027	F2028
KLY Small Hydro Bundle1	25	100	100	100	100	100	100	100	100	100	100
KLY Small Hydro Bundle2	23	93	93	93	93	93	93	93	93	93	93
LM Small Hydro Bundle4	179	716	716	716	716	716	716	716	716	716	716
NC Small Hydro Bundle1	0	0	0	0	68	272	272	272	272	272	272
NC Small Hydro Bundle2	0	0	0	0	68	271	271	271	271	271	271
NIC Small Hydro Bundle1	0	0	0	0	61	244	244	244	244	244	244
NIC Small Hydro Bundle2	0	0	0	0	38	153	153	153	153	153	153
VI Small Hydro Bundle1	0	0	0	0	7	28	28	28	28	28	28
VI Small Hydro Bundle2	0	0	0	0	26	103	103	103	103	103	103
Peace Wind Bundle 2	0	0	0	0	237	947	947	947	947	947	947
Peace Wind Bundle 3	0	0	0	0	0	0	342	1,366	1,366	1,366	1,366
VI Wind Bundle 1	0	0	0	0	0	0	104	416	416	416	416
VI Wind Bundle 2	0	0	0	0	0	0	78	312	312	312	312
EK Small Hydro Bundle1	0	0	0	0	0	0	0	18	71	71	71
EK Small Hydro Bundle2	0	0	0	0	0	0	0	74	297	297	297
LM Small Hydro Bundle5	0	0	0	0	0	0	0	132	526	526	526
Peace Wind Bundle 4	0	0	0	0	0	0	0	369	1,476	1,476	1,476
CI Small Hydro Bundle2	0	0	0	0	0	0	0	0	17	66	66
CI Small Hydro Bundle3	0	0	0	0	0	0	0	0	28	112	112
NIC Small Hydro Bundle3	0	0	0	0	0	0	0	0	18	72	72
PR Small Hydro Bundle1	0	0	0	0	0	0	0	0	13	53	53
PR Small Hydro Bundle2	0	0	0	0	0	0	0	0	10	39	39
PR Small Hydro Bundle3	0	0	0	0	0	0	0	0	22	89	89
SE Small Hydro Bundle1	0	0	0	0	0	0	0	0	29	116	116
Peace Wind Bundle 5	0	0	0	0	0	0	0	0	0	299	1,195
Future Resource Total	227	909	909	909	1,414	2,927	3,450	5,613	7,527	8,237	9,133
Total (Rounded)	200	900	900	900	1,400	2,900	3,500	5,600	7,500	8,200	9,100

458

The concern here is that BC Hydro has done so much supply side planning and has chosen to answer the question with a supply side answer. The spirit and intent of the UCA requiring BC Hydro to demonstrate that it has used all cost-effective DSM is made mute by the absence of an equivalent anticipation of the evolution of cost-effective DSM opportunities.

The CEC submits that the Commission needs to make it clear that BC Hydro has not met the test.

The CEC submits that the Commission needs to require BC Hydro to come back to the Commission at the next RRA filing with a DSM plan which has sufficient options and scenarios to assess how DSM may play a role in meeting these future resource requirements.

Of course if BC Hydro were to do so, it would become quite plain that the assertion that the Clean Power Call is the only way to meet self sufficiency in 2016 is simply beyond the pale of reasonable.

4. Short Term Resource Options

a) Options for Short Term Deficits

⁴⁵⁷ Exhibit B-12, BCUC 3.269.2

⁴⁵⁸ Exhibit B-12, BCUC 3.269.2

BC Hydro has a number of short term options which may consider for meeting energy deficits in 2013 and 2014.⁴⁵⁹

The CEC submits that if BC Hydro were to make adjustments to add up to 500 GWh/year of energy either from the supply side or the demand side in the 2013 and 2014 timeframe this could be more permanent supply and could therefore reduce the need for power in 2016.

b) Cost of supply

BC Hydro has shown that the incremental cost of energy to meet new supply requirements, which may include the 2013 and 2014 energy deficit would be \$99/MWh.⁴⁶⁰

5. Clean Power Call Options

a) Acquiring Options from IPPs

The CEC has suggested through the hearing and in prior consultation with BC Hydro that BC Hydro examine the potential for acquiring options from IPPs enabling BC Hydro to maintain a pool of proposed power supply projects from which it could obtain supply side power at COD dates of BC Hydro's determination.

The likely cost of this would be for BC Hydro and therefore BC Hydro's customers to cover some of the costs of making the project development ready and the carry costs of keeping the project on hold. These costs would be minuscule by comparison to signing EPAs and becoming committed to payments for the power for many years into the future.

Such options once negotiated would provide a valuable contingency option for BC Hydro and if the project were taken through the permitting stage would be ready to construct in relatively short responsive timeframes.

The benefit to the IPP community at this time where there is so much uncertainty about the need for power at all, would be that a much greater proportion of the IPP project proponents would have a potential to recover some of their development costs and keep their prospects for eventually fulfilling a needed power supply role in play at a much lower cost than they might otherwise face.

The benefit for BC Hydro customers could well be significantly reduced costs for keeping other supply options under development. The savings could be in the

⁴⁵⁹ Exhibit B-12, BCUC 3.270.1

⁴⁶⁰ Exhibit B-12, JIESC 3.27.7

\$100's of millions providing a clear business case for having the IPP's provide the contingency option. To this business case would be added the benefits of avoiding over committing to supply EPA's and or the risk of signing EPS's well in excess of need as it develops.

BC Hydro is already engaged in just such an option process, for contingency purposes, with very substantial expenditures on the Site C project.

The CEC submits that it may well be very appropriate to examine closely how well the IPP community could fill this role.

The CEC recommends that the Commission direct BC Hydro to undertake development of a process for cost-effectively acquiring options on IPP projects.

The CEC recommends that the Commission direct BC Hydro in negotiation with IPP's which have bid into the Clean Call to determine if any of them would consider providing BC Hydro such options and for BC Hydro to determine what these would be worth in the circumstances.

The CEC would be prepared to consult with BC Hydro toward the development of a cost-effective process for obtaining options from IPP project proponents.

PART 7 – CEC RESPONSE TO BCUC QUESTIONS

1. Section 44.1(7) of the Act states that the Commission's may accept or reject a "part" of a public utility's plan. In light of the fact that "part" is not a defined term under the Act, the Commission Panel seeks clarification of the views of the Parties as to what constitute a "part" of the 2008 LTAP. In their submissions, the Parties should address the ability of the Commission to reject a part of a public utility's plan while still accepting it as a plan.

The CEC agrees with the submissions of BC Hydro set out on pages 21 and 22 of their Final Argument⁴⁶¹ that the Commission has a broad discretion to define what can be accepted or rejected as "part" of the public utility's plan.

2. In light of the parameters for assessing "cost effectiveness" as spelled out at Section 4 of DSM Regulation Order M271, to what degree, if any, is the Commission's discretion fettered in its review of the utility's DSM proposals?

The CEC submits that the Commission retain a broad discretion to define "cost effectiveness" while having more clear but not exhaustive criteria set out in section 4 of DSM regulation Order M271.

3. Section 44.1(8) of the Act states that "in determining under subsection (6) whether to accept a long-term resource plan, the commission must consider (a) "the government's energy objectives", which are defined as including "to encourage public utilities to reduce greenhouse gas emissions". In light of this would the approval by the Commission of FNU3 contravene such an instruction?

The CEC submits that it would be contravening instruction if the Commission approves FNU3, and the evidence otherwise indicated approval of FNU3 was contrary to the objective and there is a reasonable alternative which is more consistent with the Government's energy objectives.

4. Does BC Hydro's Fort Nelson Resource Plan comply with the requirements of section 44.1(2) of the Act? In making its determination in respect of that Plan, on what basis, if any, should the Commission Panel grant the exemption set out in section 44.1(9)(a)?

The CEC agrees with BC Hydro's submission set out on pages 9 and 10 of its Final Argument on this issue.⁴⁶²

5. The subject of BC Hydro's contemplation of the potential demand arising from electric vehicles was canvassed at some length in the review to date (T4:470-74), with BC Hydro's position stated as essentially being one of "monitoring developments". Shortly thereafter BC Hydro announced its participation in a BC Government leg program in respect of electric vehicles, and BC Hydro's engagement of consultants, pursuant to a call for proposals, to detail the necessary actions for deploying electric vehicle charging infrastructure, with a report to be filed by the end of April 2009.

⁴⁶¹ BC Hydro Final Argument, Pages 21 and 22

⁴⁶² BC hydro Final Argument, pages 9 and 10

Given these developments, should the evidentiary record be re-opened to admit this evidence, and, if so, should Parties be given the opportunity to examine it and make submissions as appropriate, and if so, by what process?

The CEC submits that this is a matter which can be dealt with in a future LTAP process and proposes that this be scheduled for June, 2010 and integrated with BC Hydro's next RRA.

6. In order to determine if BC Hydro can rely on Burrard for planning purposes for 900 MW of capacity and either of 600 GWh, 3,000 GWh or 6,000 GWh of energy would the Commission have to find that the capital expenditures in excess of \$300 million for each scenario that AMEC stated would be required⁴⁶³ were cost effective?

No. The order of magnitude of expenditures is yet to be considered and should be the subject of a separate CPCN process, although the CEC conceptually supports the expenditures.

7. In Section 4.3 of Exhibit B-10, BC Hydro proposes a threshold for major project applications. Parties are requested to make submission on BC Hydro's definition of a threshold be addressing situations where a number of projects might constitute a program which in total would exceed the threshold but the elements of which would not individual exceed the threshold.

The CEC generally supports the submissions of BC Hydro as reviewed in pages 18 and 19 of our submissions.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.



Christopher P. Weafer,
Counsel to the Commercial Energy Consumers
Association of British Columbia

⁴⁶³ Exhibit B-1-1, Appendix J1, p. 94