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December 10, 2018

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
Sixth Floor, 900 Howe Street
Vancouver, BC
V6Z 2N3

Attention: Patrick Wruck, Commission Secretary

Dear Sirs/Mesdames:

Re: British Columbia Hydro and Power Authority Review of the Regulatory Oversight of Capital Expenditures and Projects ~ Project 3698877

We are counsel for the Commercial Energy Consumers Association of British Columbia (the "CEC") in this matter.

Enclosed please find the Information Request Responses in response to the Information Requests of the British Columbia Utilities Commission Staff – Exhibit A-24.

Yours truly,

OWEN BIRD LAW CORPORATION


Christopher P. Weafer
CPW/jj
cc: CEC
cc: BC Hydro
cc: Interveners

**COMMERCIAL ENERGY CONSUMERS
ASSOCIATION OF BRITISH COLUMBIA**

**Responses to the British Columbia Utilities Commission to Information
Requests on Evidence**

Prepared by Mr. David W. Craig

**British Columbia Hydro and Power Authority Review of the Regulatory Oversight
of Capital Expenditures and Projects – Project No. 3698877**

December 10, 2018

Commercial Energy Consumers Association of British Columbia

**British Columbia Hydro and Power Authority Review of the Regulatory Oversight of
Capital Expenditures and Projects – Project No. 3698877**

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**COMMERCIAL ENERGY CONSUMERS ASSOCIATION
OF BRITISH COLUMBIA**

**Responses to the British Columbia Utilities Commission to
Information Requests on Evidence**

**British Columbia Hydro and Power Authority Review of the Regulatory Oversight
of Capital Expenditures and Projects – Project No. 3698877**

December 10, 2018

A. INTRODUCTION

1.0 Reference: SUMMARY

Exhibit C3-10 (CEC evidence), pp. 1, 2, 54

Exhibit C3-11, pp. 6-7

Overview of CEC Cost-effectiveness Information Proposal

On page 1 of the CEC evidence, Commercial Energy Consumers Association of British Columbia (the “CEC”) states:

In this document the CEC provides evidence with respect to appropriate Commission information requirements in order for the Commission to effectively carry out its oversight and regulatory responsibilities with regard to BC Hydro’s capital investments.

Section 9 of the CEC evidence states:

The CEC provides in Part I of the evidence a set of templates for quantitatively representing BC Hydro’s cost-effectiveness in managing and planning capital expenditures and investments. These provide examples of types of calculations that can be made to achieve this purpose.

Section 97 of the CEC evidence states:

The CEC believes that the Commission should establish information requirements and review its information processes to allow the Commission to build an understanding of the long-term cost-effectiveness of BC Hydro’s capital investments.

In the response to Question 11 on pages 6 and 7 of Exhibit C3-11, Mr. Thomson states:

A collaborative approach to considering the various templates between BC Hydro and the Commission with input from the proposer to clarify intent would likely be most constructive in my opinion. Should the Commission wish to pursue the development of this type of information, it might consider looking at staging its implementation or selecting one or more business units to pilot the implementation before rolling it out across the organization.

1.1 *Please describe the form, content and timing that CEC believes would be appropriate for British Columbia Hydro and Power Authority (“BC Hydro”) to file the cost-effectiveness information with the British Columbia Utilities Commission (“BCUC” or “Commission”), including whether this information would be updated and filed annually and how the information filings should be coordinated with the filing of a revenue requirements application (“RRA”).*

ANSWER

The CEC would propose that the form of filing be a compliance filing providing Commission defined oversight information requirements.

The CEC would propose that the content of the filing include:

- (1) Specific reports on the main drivers of capital expenditures, being load forecast information, asset condition, performance and life expectancy information, safety and security risk profile information, and stakeholder interest information.
- (2) Any strategy papers that are relevant to how BC Hydro manages response to the drivers.
- (3) Capital plan information with regard to the portfolio of capital expenditures and investments required for the portfolio of assets being managed, which can progressively develop to include cost-effectiveness information, as developed in stages following discussion of the CEC proposed definitions, along with the cost information.
- (4) Business case information using sampling to identify potential issues efficiently and effectively and then specific case filings where the Commission, through oversight, believes closer examination should be made.
- (5) Project completion reports, and post-implementation reporting for tracking benefit realization accountability in support of Commission decision making in its approval processes.

The CEC would propose that the timing for these filings be annual for ensuring that the Commission is properly informed about the context in which its approval hearings and processes take place.

1.1.1 Please outline the BCUC review process that CEC believes would be appropriate for a cost-effectiveness information filing.

ANSWER

The CEC believes that the BCUC review process for oversight of capital expenditure and capital investment cost-effectiveness would be best carried out on an annual review basis, because the capital process in BC Hydro is an annual rolling forward process.

If the BCUC tracks the BC Hydro process then it will be more cost-efficient for updates and focus on improvements to the oversight information to become a continuous process building a permanent repository of capital oversight information which can be used to inform any of the

BCUC's approval processes without the need for BC Hydro to package subsets of materials, for an RRA filing for instance.

BC Hydro already has annual filing responsibilities for Capital and other items and for DSM so upgrading these processes to serve the BCUC oversight interests in related cost-effectiveness information appears to the CEC to make logical sense.

1.1.2 Please describe the nature of BCUC approval, acceptance or other response that CEC believes would be appropriate after reviewing a cost-effectiveness Information filing.

ANSWER

For the next few years the CEC believes that the BCUC should be focused on working with BC Hydro and interveners to arrive at clear understandings for the description of the Commission's oversight cost-effectiveness information to be filed. The Commission can exercise its authority and jurisdiction under the UCA to require information it believes necessary to inform itself to support its primary approval rate setting, CPCN and Section 44.2 approval roles.

As the Annual Capital Information filing is made by BC Hydro the Commission can focus on approval and acceptance of whether or not the information filed meets the standard for the Commission's oversight requirements. The standard for these filings should be in a continuous improvement mode and change annually until they evolve to meeting the Commission's requirements. This is necessary because the nature of the cost-effectiveness information that will best serve Commission needs is as yet a work in progress.

The CEC believes that the Commission can start with the material the CEC has laid out and progress toward continuous improvement on what the CEC has provided.

1.2 To illustrate how the BCUC could use cost-effectiveness information on a prospective basis, please provide examples of the nature of directives that the BCUC could make and actions that it could take, and confirm that such directives and actions are within its authority under the Utilities Commission Act ("UCA").

ANSWER

The Commission is a statutory body which derives its jurisdiction exclusively from statute. The statutory powers conferred to the Commission are either expressly contained in the administrative body's enabling statute(s), or are implied of necessity.

The Commission's enabling statute is the UCA, and its powers are therefore derived in the text of the Act. Pursuant to the following sections of the UCA, the CEC submits that the Commission has the jurisdiction and authority to tailor its information-gathering processes such that it may effectively inform itself of BC Hydro's business and fulfill its regulatory duties.

The Commission's authority to require and review information is provided in the UCA Sections 24, 82, 43, 86 and 60 and which generally provides:

- (1) The Commission must make examinations and conduct inquiries to keep itself informed about the utility's business, and anything the Commission finds as being within its jurisdiction.
- (2) The Commission may on its own motion inquire into, hear and determine a matter under this Act that it may inquire into hear or determine on application or complaint.
- (3) A public utility must specifically answer all questions of the Commission and provide the Commission the information the Commission requires.
- (4) The Commission can define the circumstances and the process by which written hearings may be conducted and specify the form and content of the materials to be provided.
- (5) The Commission may set rates that encourage the utility to increase efficiency, reduce costs, and enhance performance, and the Commission may use any mechanism, formula, or other method of setting rates that it considers advisable and may order that such rate derived from the methods be adopted for a specific period of time.
- (6) The Commission may not establish processes that are specific and enforce an attempt to direct or dictate BC Hydro's management of the Utility.

24 In its supervision of public utilities, the commission must make examinations and conduct inquiries necessary to keep itself informed about

- (a) the conduct of public utility business,
- (b) compliance by public utilities with this Act, regulations or any other law, and
- (c) any other matter in the commission's jurisdiction.

82 (1) The commission

- (a) may, on its own motion, and
- (b) must, on the request of the Lieutenant Governor in Council,

inquire into, hear and determine a matter that under this Act it may inquire into, hear or determine on application or complaint.

(2) For the purpose of subsection (1), the commission has the same powers as are vested in it by this Act in respect of an application or complaint.

43 (1) A public utility must, for the purposes of this Act,

- (a) answer specifically all questions of the commission, and
- (b) provide to the commission
 - (i) the information the commission requires, and
 - (ii) a report, submitted annually and in the manner the commission requires, regarding the demand-side measures taken by the public utility during the period addressed by the report, and the effectiveness of those measures.

86.2 (1) Despite any other provision of this Act, in any circumstance in which, under this Act, a hearing may or must be held, the commission may conduct a written hearing.

(2) The commission may make rules respecting the circumstances in which and the process by which written hearings may be conducted and specifying the form and content of materials to be provided for written hearings.

60 (1) In setting a rate under this Act

- (a) the commission must consider all matters that it considers proper and relevant affecting the rate,
- (b) the commission must have due regard to the setting of a rate that
 - (i) is not unjust or unreasonable within the meaning of section 59,
 - (ii) provides to the public utility for which the rate is set a fair and reasonable return on any expenditure made by it to reduce energy demands, and
 - (iii) encourages public utilities to increase efficiency, reduce costs and enhance performance,
- (b.1) the commission may use any mechanism, formula or other method of setting the rate that it considers advisable, and may order that the rate derived from such a mechanism, formula or other method is to remain in effect for a specified period, and
- (c) if the public utility provides more than one class of service, the commission must
 - (i) segregate the various kinds of service into distinct classes of service,
 - (ii) in setting a rate to be charged for the particular service provided, consider each distinct class of service as a self-contained unit, and
 - (iii) set a rate for each unit that it considers to be just and reasonable for that unit, without regard to the rates set for any other unit.

The Commission may in any of its approval processes, if it so requires, specify and inquire into information with respect to the capital expenditures and investments of BC Hydro. The Commission may make determinations with respect to the prudence of the same and approval for the same to be included in rate setting for recovery from ratepayers. The Commission's scope for seeking oversight information is broadly empowered in the UCA.

The CEC believes the Commission should and can use its powers to provide such oversight of capital expenditures and capital investments to ensure it understands their cost-effectiveness.

The CEC will provide a number of examples to demonstrate the nature of the directives and actions the Commission may give and take.

A) Load Demand Growth 'Driver' Example

Within the Driver category of information and specifically the load demand growth category, the CEC would suggest that BC Hydro could be filing, for example, its load forecast. These are updated on an annual basis and can be part of the permanent record available for review of capital cost effectiveness. The CEC believes that the Commission can require review of load forecast information, particularly with respect to seeking information which it may choose to factor into its future approval decisions and which it believes may assist in improving the cost-effectiveness of the capital being 'driven' by the load forecast.

To the extent that the Commission finds that the forecasting methodology is over-forecasting and leading to demand growth driven capital expenditures or investments (or for that matter any other type of expenditures) the Commission may find that it would be more cost-effective for such capital expenditures to be better matched to the demand.

Review of the strategies for better matching expenditures to demand and review of the validity of the forecasting driving the expenditures would be cost-effectiveness information the Commission could use in its approval processes to deny early recovery of costs before

the better information would have prudently enabled a more cost-effective matching of demand and supply.

Specifically, the Commission could review information regarding the various leading predictors of recessions knowing that these may lead to demand declines and that capital expenditures may responding to forecast growth may lower probabilities of being cost-effective under those circumstances.

The Commission may make a directive with respect to capital expenditure approvals and or ratemaking that it will require such information as part of its future approval processes and make a ruling that it may in a future approval process consider failure on the part of BC Hydro to act accordingly as an action less cost-effective that it could have been and therefore a less than prudent decision potentially leading to BC Hydro's failure to be able to recover imprudently undertaken costs from its ratepayers.

The Commission in the CEC's view can make orders with respect to methods for setting the BC Hydro rates and specifically consider rates that encourage BC Hydro to be more cost-effective.

The Commission is not restricted in the time periods over which its prospective orders with respect to rates may apply and can make cost-effectiveness part of its methods.

B) Deterioration of Condition 'Driver' Example

Within the Driver category of information and specifically the deterioration of the condition of the BC Hydro electricity generation, transmission, transformation, distribution and delivery assets, the CEC would suggest that BC Hydro could be filing information on the expected lives of its assets and specifically on the criteria and standards used to determine when decommissioning or derating may be necessary, when replacements would be needed, or when strategies for life extension for various categories of these assets may be appropriate.

To the extent that the Commission finds that there may be room for improvement with respect to the life cycle value of the assets, the Commission may find that BC Hydro could obtain more value from its capital expenditures and investments were it to more cost-effectively manage these assets.

Refining of standards, criteria, strategies and practices could present interesting opportunities for improved cost-effectiveness. It may be improper for the Commission to try to set all of the specific standards, criteria, strategies and practices, as well as being impractical, but having sufficient oversight information to encourage BC Hydro to do better is in the Commission's jurisdiction to encourage enhanced cost-effectiveness performance.

Therefore, having before the Commission's oversight specific quantitative information about the cost-effectiveness of BC Hydro's life cycle value management of the assets could be instructive for the Commission's decision making with respect specifically to any rate

setting methods the Commission might find useful and particularly may apply to rate setting to encourage BC Hydro to be more cost-effective.

Having this information improved continuously in BC Hydro's Annual Capital Information filing could enable the Commission to order prospectively set formulas and methods to be applicable, setting rates for a defined period of time into the future until such time as the encouragement of BC Hydro to improve life cycle value cost-effectiveness met Commission-set criteria.

On the other hand, the Commission could find that BC Hydro has managed the cost-effectiveness of capital expenditures and investments to achieve appropriate potential life cycle value of the assets and expenditures it is managing, and find that the ratepayer and public interests are being optimally served. The CEC views that such a scenario may well be a likely outcome of Commission oversight and that the quantitative assessment and demonstration of this would be a useful outcome as well.

C) Replacement, Upgrade, Refurbish, Rehabilitate 'Strategy' Example

In the Properties Group, the Field Buildings & Office expenditures are subject to a set of standards. These strategies may be more appropriately reviewed across the whole set of potential projects, rather than passing through one project at a time.

In the Fleet Group, management of the capital investment in the fleet standards and criteria for investment are subject to standards. These strategies impact a large expenditure over time and are worth periodic Commission oversight review rather than receiving scant coverage as a small component of total costs in a particular year or RRA period.

The T&D Group requirements for making regional system reinforcements, bulk system reinforcements, and station upgrades are subject to key elements of the reinforcement and upgrade strategies. These are applicable to a continuous system assessment and as specific projects significant capital may fall outside the CPCN thresholds. Commission oversight at the level of the strategies with specific examples could provide a more effective approach for the Commission.

The Generation Group has a number of smaller projects which are responses to system condition issues not reviewed by the Commission's oversight, yet the amount of capital expenditure and investment being managed is substantial. A review of the portfolio of projects with identification of the strategy issues, particularly in the context of the whole system investment, could provide a more effective approach for Commission review.

D) Performance 'Capital Plan' Example

Information Technology & Communication systems portfolio

Within the Strategy category of information requirements and specifically the substantial range of projects set out as being below the threshold for CPCNs, there are cases where strategy for dealing with an issue is applicable to numerous projects of a particular type in the future. These strategies may affect a significant potential range of projects having large

consequences, but because the strategies and their specific applications are broken into smaller projects, the Commission's oversight never sees or reviews such important strategic issues or their financial consequences. Commitments to specific strategies can become embedded without the benefit of Commission oversight.

The CEC would suggest that the Commission's oversight would be substantially improved if the portfolio of projects with similar characteristics and subject to the same strategies were brought together in appropriate categories so that the Commission could understand the strategies and their impacts on the potential capital consequences in terms of both the costs and the beneficial outcomes sought.

There are a number of examples within the Technology Group where platform strategies are followed by numerous projects. These strategies can drive significant capital but may not be seen as part of the Commission oversight.

1.3 *When speaking of "an understanding of the long-term cost-effectiveness of BC Hydro's capital investments," is CEC referring to investments in a particular part of the BC Hydro system such as generation, or to all of its capital expenditures?*

ANSWER

The CEC was referring to all capital expenditures and capital investments because of the magnitude of the capital expenditures over the next 10 years. However, these capital expenditures and investments will occur within BC Hydro Group portfolios, covering capital investments in specific assets categories.

The Commission's oversight of the costs and importantly the benefits of these expenditures can lead to improvements of BC Hydro's cost-effectiveness. Over 10 years the total capital expenditures may involve over \$220 billion. If the oversight of the BC Hydro cost-effectiveness results in a 1% improvement on \$10 billion of expenditures this could be worth \$100 million of benefit for each 1% or \$10 billion to which it may be applicable.

The benefit potential for ratepayers of improved Commission oversight could be \$10s of millions. With continuous oversight improvement the benefits can be expected to substantially outweigh the costs.

The alternative assumption that BC Hydro's capital expenditure cost effectiveness is at an ideal peak and cannot be improved should require some evidentiary proof, which does not appear to be on the record.

1.4 *Considering Mr. Thomson's statement about staging implementation, which business unit or area of capital expenditure does CEC believe would be most suitable for trialling its cost-effectiveness information proposal?*

ANSWER

In answering this question, the CEC has considered five strategic approaches to setting staging priorities based on the type of cost-effectiveness improvement focus:

- (1) The potential for improved risk management from oversight
- (2) The potential for gains in financial benefits or performance improvement from oversight
- (3) The potential for improvement of cost-effectiveness to a better standard from oversight
- (4) The potential for emerging issues to need cost-effectiveness evaluation from oversight
- (5) The potential for more easily developing improved cost-effectiveness from oversight

In the CEC's view a risk management focus would likely lead toward working with T&D Group. As electricity increasingly displaces other forms of energy the security risks to critical T&D infrastructure may become even more critically important to BC Hydro's customers.

The CEC's view, is that the most significant gains in financial benefits may come from the Generation Group and cost-effectiveness improvement regarding surplus and increased delivery performance across the existing system.

In the CEC's view, improvement of the cost-effectiveness management to a better standard would likely lead to working with the IT&C Group, where the evidence would indicate need of better metrics for managing their capital expenditures.

In the CEC's view, cost effectiveness related to an emerging issues focus could lead to working with DSM to maximize the demand side benefits of technologies like 5G, autonomous vehicles, electrification of vehicles & heating, building envelopes, and other new technology developments potentially affecting energy use.

In the CEC's view, the ease of development and implementation of new oversight approaches to cost-effectiveness of BC Hydro's capital expenditures could likely lead to dealing with the Support Group, being Fleet, Properties, and IT&C.

The CEC would recommend focusing on an ease of development first (IT&C, Properties, Fleet) followed by selective development of particular cost-effectiveness metric implementation focused on key financial benefit opportunities (Generation) and finally on risk issues (T&D) and stakeholder issues. In each case, the priority of which metrics to work on first in each group should be defined as well so as to take on the development of Commission oversight information in an orderly process that need not be onerous on BC Hydro's continuing management and would be part of a continuous improvement process.

B. PART I - CEC PROPOSED COMMISSION CAPITAL PLANNING OVERSIGHT

- 2.0 *Reference: EVIDENCE ON BC HYDRO'S CAPITAL MANAGEMENT REVIEW*
Exhibit C3-10, Part I, Section A, pp. 4-5
Exhibit C3-10, Part I, Section B, pp. 6-9
Exhibit C3-10, Part I, Section C, pp. 13-19, 22-28, 31-36, 39-44 and 47-52
Proposed BCUC Capital Planning Oversight Regulatory Information

On pages 4 to 5 of the CEC evidence, CEC proposes the framework reproduced below for capital planning information to be made available. In addition, on pages 13–19, 22–28, 31–36, 39–44 and 47–52 of the CEC evidence, CEC provides spreadsheets quantifying capital drivers with respect to capital investment plans (Generation, Transmission and Distribution, Properties, Fleets, and Information Technology).

FRAMEWORK FOR CAPITAL PLANNING

Drivers	Strategies	Plans
Customer Load Growth	Reduce Demand Add Supply Extend Life Enhance Performance Upgrade Capability	(1) Generation
System Sustainment Condition	Replace Rehabilitate Run to Failure Maintain Refine Standard	(2) Transmission and Distribution (3) Properties
External Risk Exposure	Prevention & Protection Mitigate Consequence Compensate Move Insulate Restore	(4) Transportation Fleets (5) Information Technology & Telecommunication
Stakeholder Condition Standards	Inform Meet Refine Stage Progress	

CEC submits the evidence does not negate the BC Hydro work but builds on it to provide a base for BCUC understanding of the cost-effectiveness of BC Hydro’s capital expenditures and investments.

CEC submits this proposed framework is intended to start the conversation about the importance of strategy as a driver of capital, and particularly how it will be a critical part of the BCUC’s oversight information.

2.1 Please provide a detailed explanation on how CEC proposes that the spreadsheets on pages 13–19, 22–28, 31–36, 39–44 and 47–52 would be populated.

ANSWER

The CEC would propose first to stage the development of cost-effectiveness information and in later answers explains how that decision might be made. Second, the CEC would propose that the Commission plan for a working group to discuss with BC Hydro what information BC Hydro has in what forms and how it may be provided as cost-effectiveness metrics for the capital portfolio in question. Third, the Commission would review the agreed upon information metrics and precipitate the specific request for filing on the information as part of its Oversight information requirements. Finally, BC Hydro would prepare the information and file it in the next Annual Report to the Commission.

2.1.1 *Please explain how the cost/benefit values are derived with respect to the capital investment drivers.*

ANSWER

The cost/benefit information for a driver such as **load demand growth** would be compiled from the universe of strategies and specific actions being taken which would contribute to a portfolio of capital expenditures and investments that would contribute to meeting the load demand growth.

The CEC expects that this would be readily available information, such as the expected increase in GWh of supply or MWs of capacity that would become available for the expenditures involved. These are already apparent in BC Hydro filings in regard to such initiatives and plans.

Similar processes for each driver as it may apply to each BC Hydro group would be used to derive the set of cost effectiveness information once the requirements for all had been assembled. CEC has suggested a staged and consultative process with BC Hydro, the Commission, and stakeholders to achieve this.

2.1.2 *Please provide clarification on whether the spreadsheet parameters would be weighted differently to reflect importance when deriving cost/benefit values.*

ANSWER

The deriving of the cost-effectiveness values would be done in the first instance at the same levels for information at which BC Hydro is planning and therefore would be expected to be available at the capital planning portfolio level. Weighting would likely not apply at this level because the objective would be to derive the base information.

Once the base information was available to the Commission's oversight information processes it may become logical to aggregate the information in particular ways to achieve fulfilment of answers to broader based questions. In these cases, it may become useful to weight the data to make sure it more effectively answers a specific question.

The aggregation step is important to enable a summary cost-effectiveness assessment statement.

2.1.2.1 *If yes, please provide suggested values and reasons.*

ANSWER

An example of an aggregation of information that could be useful to the Commission would be to answer the question as to what the risk level for seismic withstand is for BC Hydro's dams.

BC Hydro has information on a dam by dam basis. To aggregate the capabilities of a dam for seismic withstand has to do with knowing the period frequency of the likelihood of a particular peak magnitude earthquake and the physical abilities of the dam to withstand the movement forces that match the particular peak magnitude.

To the extent that the evaluation criteria, say, have a mix of magnitudes and return period frequencies adding the data together by dam without regard to the importance of the facility would appear to distort the aggregate information. In such a case it would make sense to weight the data by say the MW capacities of the dams or by the GWh energy delivery of the dams or the physical mass of the dams.

The aggregate result then would enable the Commission to say that the BC Hydro system has been brought to a standard where the dams can withstand on average an earthquake of magnitude 9 which would be expected to occur once in every 10000 years. If there were a set of dams with lesser withstand capability the Commission could then use the data to say 90% of BC Hydro's dam capacity can withstand earthquakes up to magnitude 9 which may occur every 10000 years and 10% of BC Hydro's dam capacity can withstand only 8.5 magnitude earthquakes which may occur every 5000 years. BC Hydro has plans to upgrade this 10% of dam capacity to the higher standard.

The cost-effectiveness of upgrading BC Hydro's dam capacities to withstand seismic events is expected to \$1,000,000 per % upgrade of BC Hydro's lower seismic withstand capability dam capacity by .5 magnitude of earthquake and reduced frequency from once every 5000 years occurrence to 10000 years occurrence.

Much of the cost-effectiveness information provided to the Commission's oversight information requests could be useful in summary aggregate information particularly as the Commission comes to use it in its approval roles.

A likely outcome of the staged processes for considering and developing the cost effectiveness information for the Commission's oversight would be the ability of the Commission to have a valuable set of metrics for understanding BC Hydro and its capital expenditure and investment requirements. This then would lead the Commission to substantially better decision making in its regulatory approval roles. An incidental effect would be that the Commission's oversight information set would likely become very valuable to the government in its oversight legislative and regulatory roles over BC Hydro and over the Commission.

2.2 *As per CEC's spreadsheets, please provide clarification on how CEC proposes that intangible or unknown metrics could be accurately quantified, such as remaining equipment lifespan, civil integrity, risk impact (people, property, environment...etc.), community concerns, environment concern management, First Nations etc.*

ANSWER

Before answering this question, it is important to note that almost all apparently 'intangible or unknown metrics' have methodologies through which it is possible to have useful information. Each of the questioned items will be dealt with separately below.

Remaining Life Span

Firstly, it is relevant to state that actual remaining life span is indeed an unknown because it will be dependent on a number of future events for which we do not have precise predictable outcomes. Of course, understanding the original asset, its design and performance criteria and manufacturer's data will provide a starting point for expected life.

However, almost all physical facilities and equipment are not completely unique and without any relevant models for comparison and estimation. BC Hydro's systems are almost exclusively based on well-known and proven technology and engineering. Hence the various components have ready reference sources enabling reasonable estimation. In many cases BC Hydro has enough internal data recorded to have its own sources for analysis.

For example, BC Hydro's fleet is largely made up of known vehicles with known duty cycles, failure modes and replacement decision metrics leading to expected lives.

BC Hydro's properties similarly have known duty cycles, failure modes and replacement decision metrics leading to expected lives.

BC Hydro's T&D investments have well-defined components a number of which have useful data maintained in BC Hydro asset management systems, while other component have much less internal information available. The consequence of this information is that duty cycles, failure modes and replacement decision metrics are a regular part of the BC Hydro management.

The Generation investments also have well-known components with considerable understanding of the duty cycles, failure modes and replacement decision metrics.

The one area with considerably less discipline available for understanding expected life is in the IT&C groups information systems, while their equipment is a bit better understood. This group has significant technological obsolescence issues to manage.

Nevertheless, the CEC believes that there is sufficient data to provide credible and consistently valuable information on expected lives, while not knowing the precise actual outcome. The CEC notes that depreciation studies done for utilities regularly arrive at remaining life curves and use such information to recommend depreciation rates. This Commission and others rely on such information about asset lives.

While remaining life is logically unknown in precise time it does not mean that highly useful models for life cycle to not exist for utility asset classes.

The engineering knowledge about assets, their lives, their duty cycles and modes of failure will enable a degree of modeling about expected life for an asset at a particular point in time.

BC Hydro has systems for tracking certain amounts of this type of information particularly for the Generation group and the Transmission and Distribution group.

The CEC submits the Commission should have, as part of its oversight information, the quantitative metric versions of this information to better inform and enable the Commission to be more effective in its decision-making approval roles, particularly with regard to its understanding of the cost-effectiveness of BC Hydro's capital expenditures and investments.

Civil Works Integrity

The integrity of the civil works related to BC Hydro's Generation group, Transmission and Distribution group and its Properties group is not an intangible or an unknown without quantitative understanding of the issues.

The civil works are ultimately physical assets. The physical assets, which BC Hydro owns, operates and constructs for its electric system, are the subject of engineering models which enable a physical understanding of the strengths and withstand capabilities of the assets to physical stresses and deterioration mechanisms.

These assets have relatively known responses and capabilities that can be relied upon within a range or margin of understood engineering error, which provides reasonable certainty. This is why buildings do not fall down, dams do not fail, transmission line towers stand and distribution systems components are stable under significant anticipated stresses.

For instance, in the handling of the WAC Bennett Dam – Rip Rap Upgrade project, the engineering understanding of the integrity of the dam face, the efficacy of the riprap to withstand stresses and the knowledge of the causes of the stresses was determinable in useful quantitative terms.

The predictive capability of the engineering to establish what form of upgrade would be necessary and when it may be needed to be completed was quantitative and well founded on engineering research and experience enabling a determination of what may be cost-effective capital expenditures in effecting the appropriate repairs.

Commission oversight information of this form of quantitative understanding of risks and the cost-effective solutions and alternative evaluations enables a useful understanding for Commission approval roles.

The CEC believes that having appropriate quantitative civil integrity information and cost-effectiveness assessments available for BC Hydro's capital plans for the Commission's oversight would improve the Commission's effectiveness in its approval roles where BC Hydro's capital expenditures, investments, plans and projects are concerned.

Risk Impact

Realization of a risk and assessment of potential impacts is in fact something that BC Hydro has both information about, and processes for evaluating in many important circumstances.

For instance, public and worker electrocution risks have serious impact consequences. There are know injury and death potentials from such risks. Work Safe BC studies and examines these risk issues following the realization of a risk. They look for potential strategies for reducing risk and mitigating impacts to prevent damage to people. BC Hydro, to the extent of its responsibility, is diligent in wanting to prevent such risks and avoid property economic values impacts of such risk.

Quantitative information about the risks, exposure to hazards and realization of risk impacts is knowable, known and tracked. For instance, the number of vehicle accidents that may hit and sever transmission or distribution poles or structures leading to live line exposure of people and property.

The number of work situations which are near to transmission or distribution lines can be known to the level of reasonable estimates and the number of exposures to particular hazards can be estimated. The modeling of this risk and the potential impacts of a realized risk is achievable.

Strategies for prevention and mitigation are known and can be improved on an on-going basis. Where capital expenditures and investments can be made to reduce risks and mitigate impacts they can be evaluated in regard to their cost effectiveness. This does not involve putting financial values on outcomes, which is an important difference between cost-effectiveness assessments and cost-benefit analysis.

Cost-effectiveness can be examined in terms of the costs of capital expenditures related to a particular strategy and the expected reduction in the realization of a risk and or the reduction in the extent of potential impacts.

Commission oversight information with regard to risks and risk impacts can enable the Commission to better understand the utility's cost-effectiveness in managing any capital expenditures and or investments which may be involved in making reductions or delivering prevention.

Community Concerns

Community concerns may appear to be intangible but they are not impossible to define and measure in ways that can be effective in managing the effectiveness of BC Hydro's responses to these concerns and particularly to the cost-effectiveness of addressing those concerns, in this case with capital expenditures.

For instance, the community in some form expressed concerns about the installation of smart meters. One of the concerns was the potential for electromagnetic radiation emissions from radio communications to have a potential health effect on people exposed to the risk.

Importantly, the risk had known quantitative profiles and information about potential impacts. There was uncertainty in all of the information as there is with any information. However, the assessment of the issues by standard setting authorities was known and its basis was known. The standards were challenged and the nature of the exposures were challenged.

Quantitative understanding of the risk exposures and the likely consequences were available and in evidence. The concerns of the community were accessible in quantitative form in regard to the number of people appearing in public meetings, polling understanding of the community concerns and the issues which were of concern and the information which gave the community confidence.

Eventually, assessment of quantitative information along with judgement about the credibility of the information sources and the purveyors of information was brought before the Commission. The Commission's oversight information around a number of these issues has been an ongoing file with regular review and updating from time to time. BC Hydro keeps ongoing track of this information and any changes of significance.

The cost-effectiveness of options to respond to people with concerns was available and the assessment of people's rights to determine what meters might be placed on their premises was

quantified in terms of the number of people in particular categories that may be offered particular standard solutions. Eventually, options for solutions were standardized and the cost-effectiveness impacts of the options were assessed against the baseline option.

The Community Concerns Raised Have Since Settled

By comparison to other jurisdictions dealing with similar community concerns the ability to deal with rational analysis of quantitative information has had significantly different cost and benefit impacts. Ultimately, the value to BC's public interest and ratepayer interest of the Commission's oversight information and processes for dealing with it are assessable, known and knowable.

In the same case, the community concern with respect to the placement of meters causing fires was another risk and concern. The issues were amenable to determination of the frequency of fires, the consequences of the fires, and the potential causes of the fires with quantitative data.

There would remain as with all information issues of uncertainty. However, the aggregate impact of changing out the entire meter fleet in a short period of time caused a statistical visibility of issues that were not as understandable with a frequency of replacement over a much longer time frame.

BC Hydro as a consequence has had the benefit of better understanding of the issues and the cost-effectiveness of the implementation process and the standards to be met in making future changes of meters to better avoid the risks and the consequences of failures that have led to fires.

Commission oversight information about these risk and the impact and the community concerns that arise and the quantitative analysis information available enable the Commission to have information to better understand the business and enable the Commission to make better decisions in its review role.

Environmental Concerns

Most environmental concerns are in some way physical in nature and as a consequence are amenable to quantitative understanding.

For instance, CO₂e emissions from various sources and processes in the community are with a relatively high degree of certainty, known and knowable. There are numerous strategies for the community to focus on in assessing how their concerns may be addressed.

BC Hydro has capital expenditures and investments which are relevant to assessing CO₂e emissions impacts. The cost-effectiveness of those strategies can be calculated as the CEC has shown be dividing the cost into the CO₂e reductions resulting.

Commission oversight information of these issues of community concern can be managed with an understanding of cost-effectiveness. Commission decisions and approvals can be more effectively made with the availability of such information and a framework for assessing options alternatives and performance progress.

Standards at any given time for CO₂e emissions can be evaluated and put in place. The economic impacts of addressing the CO₂e emissions is also for some a community concern. Eventually, the quantitative information and modeling of the issues will provide a basis for better understanding the cost-effective management of these issues.

First Nations Concerns

First Nations concerns about past impacts of BC Hydro's electric system development have been an issue of concern for First Nations.

BC Hydro has at times considered the expenditure of significant capital and made investments in solutions such as the Columbia Basin Trust. There was also some significant commitment of capital in the Peace Region.

The understanding of the issues of concern to First Nations was in part environmental and in part an issue of First Nations rights. The following is taken from a document on frequently asked questions about the Columbia Basin Trust.

Although the four dams [Duncan, Mica, Arrow (Hugh Keenleyside), Libby] improved flood control and power production, the resulting reservoirs in Canada flooded 60,000 hectares (231 square miles) of valley bottom land. Flooding impacted traditional First Nations' sites, agricultural and forestry areas, displaced a dozen communities, including approximately 2,300 people, and impacted fish and wildlife habitat. The rise and fall of reservoir levels continue to affect the surrounding ecosystems, cultural and recreation interests. In recognition of the long-term impacts in the region as a result of the Columbia River Treaty and the Columbia River Treaty dams, Columbia Basin Trust (a Crown corporation) was created in 1995 to support social, economic and environmental well-being in the Columbia River Basin.

The quantitative information around the concern in this case was available and analysis of the information played a role in determining the eventual settlement of issues.

To the extent that BC Hydro faces public interest issues involving First Nations concerns, they frequently involve consultation and assessment of numerous issues. Quantitative information is often part of the background and some of the issues involve soft information on values.

The historical treatment of such concerns and the quantitative understandings available are valuable to the Commission in its approval roles, where the Commission assesses whether or not BC Hydro has adequately met its obligations and commitments.

Commission oversight information on these issues is essential and information on the quantitative aspect of these matters can provide context for the Commission in its approval roles.

In summary, what may be viewed as intangible issues are possible to assess quantitatively and with a perspective of understanding the cost-effectiveness of approaches to dealing with the concerns and the cost-effectiveness of capital expenditures and investments.

2.3 *Please provide further clarification on how CEC proposes that BCUC would use each capital investment driver's cost/benefit values to assess make determinations with respect to BC Hydro's capital expenditures.*

ANSWER

- (1) Expenditures that may not be cost-effective relative to alternative options or relative to a threshold level of cost-effectiveness for the future would be candidates for affecting Commission approval decisions.
- (2) Expenditures that may be cost-effective but could be more cost-effectively provided again may affect Commission approval decisions and result in Commission encouragement to enhance BC Hydro's performance.
- (3) Expenditures that might be found to not be cost-effective relative to other options could be candidates for affecting Commission approval decisions toward potential denial of the expenditure or plans for expenditures.

2.4 *Please provide a detailed description on how CEC envisions the proposed framework for capital planning would be incorporated into BC Hydro's 2018 Capital Filing Guidelines.*

ANSWER

The CEC has the following areas in which it would recommend the Capital Filing Guidelines filing from BC Hydro could be upgraded to incorporate the CEC's proposed framework.

- (1) A chapter section could be added between chapter sections 2 & 3 which would elaborate on the Nature of the Benefits Related to BC Hydro's Capital Expenditures.
 - a. This section could start out with BC Hydro providing by group its understanding of the benefits of the capital expenditures it makes
 - b. The section could contain a separate discussion for each group's capital expenditures and the nature of the issues the capital expenditures can address
 - c. The section can then also include the metrics available and appropriate for assessing the benefits and relating them to the capital expenditures involved
- (2) A chapter section could be added between chapter sections 6 & 7 which would elaborate on Clarity About What Constitutes Significant Decisions Regarding Capital Investments
 - a. This section could contain information about the significance of the divers for capital expenditures and their validity
 - b. The section could contain a separate discussion about the importance of strategies in regard to capital expenditures as key financial decisions because

of the impact on large amounts of capital expenditures and as importantly large amounts of benefits versus alternatives

- c. The section could also contain a discussion on the nature of performance assessment of BC Hydro's capital planning, the cost-effectiveness of those plans and include the metrics BC Hydro could use to determine the cost effectiveness of its capital plans.

(3) A chapter subsection could be added in chapter section 8, Compliance Reporting which would elaborate on the Continuous Improvement of the Oversight Information Available to the Commission.

- a. This subsection could start with BC Hydro asserting its commitment to continuous improvement of the Commission's oversight information and its willingness to work with the Commission in a staged process to define and make the improvements to the provisioning of information that the Commission expects would be valuable to the Commission in its oversight role.
- b. BC Hydro's acceptance of an invitation to work with a Commission led process or to help the Commission specify the information requirements that would be most helpful
- c. A schedule of stages and work with the Commission on improvements to the available Commission's oversight information
- d. Specific definition of an ongoing compliance filing of information on an annual basis at the same time as the Annual Report to the Commission to improve the repository of information the Commission can use to understand the BC Hydro business to support its oversight responsibilities

(4) A chapter section could be added after chapter 9 which would elaborate on the Review of Capital Expenditures In Process or Completed Which May Identify Potential Prudence Issues

- a. Project completion report filings for major projects to account for the capital expenditure responsibilities and commitments.
- b. Follow up reports on capital plans and projects to evaluate the ongoing capture and realization of the benefits sought for the plans and projects.
- c. Internal group reports assessing lessons from the recent capital expenditures and potential improvements for future capital expenditures.
- d. Internal audit reports on aspects of capital expenditure and investment management that could be improved and a sample analysis of business case existence and quality

The CEC believes that such improvements to the guidelines could result in more effective Commission oversight information being available for the Commission's approval roles under the UCA.

2.5 *Please provide the spreadsheets (in excel format) regarding capital investing planning on pages 13–19, 22–28, 31–36, 39–44 and 47–52.*

ANSWER

Please see the attached spreadsheets to this submission.

On page 6 of the CEC evidence, CEC highlights how the Load Resource Balance contributes to BC Hydro's capital investment planning:

The data for assessing some of the issues with this driver can be found in the Load Resource Balance (“**LRB**”) BC Hydro develops and updates regularly for internal and regulatory purposes. When the LRB is showing that BC Hydro is holding surplus energy and capacity to its customer's needs, and has acquired those capabilities at prices above what they can be sold for in the electricity markets, then the ratepayer is disadvantaged.

On page 7 of the CEC evidence, CEC recognizes BC Hydro's asset health tracking systems determine capital investments for generation, transmission and distribution assets:

BC Hydro has a process and systems for assessing the health of its generation, transmission and distribution assets. This process is used as an input to the planning for capital expenditures and other activities aimed at extending the life and performance of the BC Hydro hydroelectric system...

...The data for assessing the health of the hydroelectric system assets is contained in BC Hydro's asset health tracking system....

...The validity of this assessment as a driver of capital depends upon how well the assessment effectively predicts the remaining life before failure and how well it can be relied upon to signal a dangerous increase in the probability of a failure.

On page 8 of the CEC evidence, CEC highlights BC Hydro's risk assessment processes for capital investment planning:

BC Hydro has processes in place to assess a variety of risks to which its assets may be exposed and for assessing the potential for these risks to be realized into impacts on people, property, the environment, and the performance of its hydroelectric system in delivering power to its customers...

...BC Hydro has models for predicting some of the major risks at each of its dams and for predicting the downstream potential impacts of a failure caused by realization of any of these risks. BC Hydro also tracks a number of the types of risks to which its electric systems are subject and monitors baseline conditions of a number of the issues that may potentially be impacted.

On page 9 of Exhibit C3-10, CEC highlights BC Hydro's stakeholder engagement processes for capital investment planning:

BC Hydro has in place a number of processes for defining and being aware of various stakeholder concerns, and for developing strategies and approaches to satisfactorily addressing these concerns...

...How well BC Hydro understands stakeholder concerns, has processes for engaging and managing its stakeholder relationships, and works to find strategies to appropriately respond to those concerns will define the degree to which it can carry this out cost effectively.

2.6 *Given that CEC highlights BC Hydro's existing capital planning processes that provide information with respect to the drivers, risks, and strategy for capital investments, please provide CEC's position on how CEC's framework for capital planning provides additional value regarding the regulatory oversight of capital investments.*

ANSWER

The CEC believes that the issues it has raised with each of these areas, if addressed, would lead to substantial improvement in the Commission's ability to assess the cost-effectiveness of BC Hydro's management of its capital expenditures and investments and therefore to be able to factor this information into the decisions and approvals the Commission makes in its oversight role.

Some specific areas of additional value would be:

- (1) For drivers of capital expenditures, information ensuring that the Commission's oversight information has assessments of the validity of the information in driving appropriate capital expenditure and investment results;
- (2) For risks, ensuring that the Commission has appropriate oversight information about B.C. Hydro's plans to address appropriate risk issues not currently being addressed;
- (3) For strategies, making sure that the Commission's oversight information has better information on BC Hydro's strategies and strategy papers as well as an understanding of the capital expenditures aim to impact with improvements to cost-effectiveness results;
- (4) Assessment of the value potentials for a range of identified improvements to the Commission's oversight information; and
- (5) The greater inclusion of benefits information in the Commission's oversight information to assist the Commission in better understanding capital expenditure and investment cost-effectiveness.

3.0 **Reference:** ***DRIVER INFORMATION TO IMPROVE COMMISSION OVERSIGHT
Exhibit C3-10, Section B, pp. 6-7
Load Resource Balance***

On pages 6 to 7 of the CEC evidence, CEC states:

The data for assessing some of the issues with this driver can be found in the Load Resource Balance (“LRB”) BC Hydro develops and updates regularly for internal and regulatory purposes. When the LRB is showing that BC Hydro is holding surplus energy and capacity to its customers needs, and has acquired those capabilities at prices above what they can be sold for in the electricity markets, then the ratepayer is disadvantaged. When the LRB is showing a deficit then BC Hydro must access some of its contingency supply capability or decline service to some load which, if accessed at higher costs than permanent supply costs, would disadvantage its ratepayers.

The Commission’s oversight of the BC Hydro load forecasting process and results should focus on the above factors and should, on balance, not result in supply being in excess of customer requirements.

Ultimately, for a hydroelectric system with seasonal supply characteristics and a customer base demand affected significantly by seasonal demands, the customer requirements will be probabilistic as will the supply capability. Optimizing this balance is the critical factor to monitor to ensure cost-effectiveness.

The Commission’s oversight can focus on whether or not the optimization is cost-effectively being achieved and whether or not the utility is improving over time.

The Commission’s oversight can also focus on the appropriate response to over-supply and how best to mitigate the ratepayer disadvantages.

- 3.1 *Please describe the form, content and timing that CEC believes would be appropriate for BC Hydro to file information on the LRB.*

ANSWER

The CEC believes that the LRB filings should be improved such that the load resource balance available to review in any filing for Commission approval has been updated annually at the same time the forecast is updated and all filed as part of the Annual Capital Information updated.

The existing form, format and content could be improved substantially. Using as a base what was provided in the last RRA filing, the CEC’s comments will be described as changes to the energy base but would equally apply to the capacity base.

Table 3-8 Energy Load Resource Balance after Planned Resources

(OWH)	F2017	F2018	F2019	F2020	F2021	F2022	F2023	F2024	F2025	F2026	F2027	F2028	F2029	F2030	F2031	F2032	F2033	F2034	F2035	F2036
Existing and Committed Heritage Resources																				
Heritage Resources (including Site C)	(a)	48,445	46,895	46,014	48,491	48,491	48,491	48,491	48,857	52,383	53,777	53,777	53,777	53,777	53,777	53,777	53,777	53,777	53,777	53,777
Existing and Committed IPP Resources																				
(b)	13,252	14,681	14,457	14,456	14,188	13,874	13,639	13,302	12,906	12,506	12,399	12,075	11,559	10,811	10,351	10,295	10,255	10,106	9,568	8,201
Future Supply-Side Resources																				
IPP Renewals	61	234	569	647	779	936	1,114	1,349	1,628	1,951	2,032	2,223	2,617	3,328	3,788	3,828	3,863	4,011	4,549	5,515
Standing Offer Program	62	87	173	284	394	505	616	726	837	948	1,058	1,169	1,280	1,390	1,501	1,612	1,722	1,833	1,934	2,045
Revolstoke 6																				
Sub-total	(c)	123	321	742	931	1,173	1,441	1,730	2,075	2,465	2,899	3,117	3,418	3,923	4,745	5,315	5,466	5,612	5,870	6,509
Total Supply (Operational View) **	(d) = a + b + c	61,820	61,897	61,213	63,879	63,853	63,806	63,860	64,235	67,754	69,182	69,293	69,271	69,259	69,334	69,444	69,538	69,644	69,754	69,855
Demand - Integrated System Total Gross Requirements																				
2016 May Mid Load Forecast before DSM*	-58,334	-59,013	-60,413	-61,371	-62,309	-63,675	-64,836	-66,008	-67,109	-68,310	-69,267	-70,256	-71,222	-72,296	-73,374	-74,535	-75,462	-76,393	-77,215	-78,089
Expected LNG Load	-61	-148	-148	-252	-1,265	-2,299	-2,721	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848	-2,848
Sub-total	(e)	-58,395	-59,162	-60,561	-61,624	-63,574	-65,974	-67,557	-68,856	-69,957	-71,158	-72,115	-73,104	-74,070	-75,144	-76,222	-77,383	-78,310	-79,241	-80,937
Existing and Committed Demand Side Management & Others Measures																				
SMI Theft Reduction	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
Voltage and VAR Optimization	67	152	171	188	219	240	254	259	263	268	285	290	295	300	305	310	315	320	325	331
2016 DSM Plan F16 savings	982	970	939	940	935	926	923	917	912	885	863	855	848	844	807	770	760	758	757	736
Planned Demand Side Management Measures																				
2016 DSM Plan F17 to F19 savings	389	988	1,679	1,896	1,931	1,969	1,956	1,935	1,917	1,908	1,896	1,853	1,787	1,694	1,613	1,547	1,462	1,300	1,224	1,190
2016 DSM Plan F20+ savings	0	0	0	292	904	1,454	1,897	2,310	2,637	2,946	3,229	3,500	3,758	4,006	4,248	4,473	4,690	4,908	5,116	4,976
Sub-total	(f)	1,521	2,192	2,873	3,399	4,072	4,672	5,112	5,502	5,811	6,089	6,356	6,581	6,770	6,927	7,055	7,183	7,310	7,368	7,505
Surplus / (Deficit) (Operational View) **	(g) = d - e + f	4,945	4,928	3,524	5,654	4,351	2,505	1,416	881	3,608	4,113	3,534	2,748	1,959	1,117	278	(662)	(1,355)	(2,118)	(2,704)
Surplus / (Deficit) as % of Net Load (Planning View) **		113%	115%	115%	114%	111%	108%	108%	105%	109%	110%	109%	107%	106%	105%	102%	101%	99.97%	99%	97%
Small Gap Surplus/(Deficit) (Operational View) **		7,266	7,487	6,536	9,044	8,219	6,890	6,181	5,920	8,949	9,749	9,380	8,839	8,311	7,735	7,122	6,521	6,085	5,500	4,968
Large Gap Surplus/(Deficit) (Operational View) **		2,559	2,038	(70)	1,250	(661)	(3,248)	(5,224)	(6,122)	(3,768)	(3,650)	(4,392)	(5,505)	(6,676)	(7,987)	(9,100)	(10,334)	(11,294)	(12,339)	(13,341)

* 2016 Integrated System Load Forecast with losses
 ** See section 3.4.2 for description of Operational versus Planning view

The content would make better sense if it was arranged with the load demand coming first with DSM coming second and should show the subtotal net after DSM forecast load expectation. This is important because it shows the potential rate for growth of demand and hence scope of response needed from DSM and supply according to their cost-effectiveness.

Then the Heritage Resource supply existing and planned should come next and be subtotaled to provide the remaining load needing service. The existing supply should show any changes under-construction or planned separately from the existing facilities. Existing, committed and future supply should be shown each separately but together in the Heritage Resource grouping.

Finally, the additional acquisition supply from IPPs, renewals of IPPs and SOP supply should be shown. The existing, committed and planned should be shown separately but together under the IPP grouping.

The variability of load demand should be shown in a separate table along with the range of probabilities of the occurrence. Instead of the range expanding out over the long-term future the range variability should be stopped at the point at which response to additional expectation of load can be met with flexible addition of demand side management reduction of need and or new supply. The strategies for flexible addition of supply and/or new demand side management should be explored in detailed supplementary material.

The variability of load demand should also be accompanied by the variability of supply information and show the probabilities of occurrence of that variability.

The purpose of showing variability separately from planning to meet average conditions is to ensure cost-effectiveness of the management of variability.

The next major improvement to the content would be to show the cost version of the energy information and preferably show these cost additions by vintage of supply addition or demand side management addition. Having the proper cost version of the LRB is critical because the issue for the Commission's oversight is not just an over-or under-supply condition for energy but the cost of the over-or undersupply which is impacting ratepayers.

Then along with the load resource balance GWh, GW, Cost for GWhs, Cost for GWs, and the surplus or deficit information the Commission should be interested in the planning to make sure that BC Hydro is matching load, load reduction, and supply addition as closely as possible to an optimum within the flexibility response capabilities and the contingent resource options within the constraints of IRP decisions.

Following the above information, the Commission's oversight should bring forward information with regard to markets for surplus supply, both external to BC and internal to BC markets, as well as the planning to improve the resultant impacts of cost-effectively managing the surplus costs to optimize impacts on ratepayers.

Bringing the costs and benefits of electricity supply together will enable a metric for the cost effectiveness of meeting demand to be tracked and improved.

3.1.1 Please clarify the review process that CEC believes would be appropriate for the LRB, in the context of the BCUC's existing regulatory jurisdiction.

ANSWER

The BCUC is precluded from doing the integrated resource planning oversight, which resides with the government of BC and is done periodically.

The Commission is responsible for and has jurisdiction to make approvals of EPAs and approvals of the DSM programs as applied for by BC Hydro and approvals of any capital expenditures which may affect supply and or load. Further, the Commission is responsible for rate setting.

In the context of its approvals, the Commission must consider the most recently approved IRP and then take into account any changes that may impact appropriate approvals as it sees the evidence. The appropriate load resource balance to use and the appropriate costs and revenues to consider are determinations for the Commission within the constraints of any government directive, which may set requirements or exempt certain items from review. Hence BC Hydro in its filings will provide updated LRB information.

The improvement of the Commission's oversight information and the metrics for review will enable openness and transparency with regard to better understanding of these major issues. In addition, it may improve the information made available to the government from the BC Hydro systems for providing information.

3.1.2 Please provide the position of the CEC as to whether the "optimization" of the LRB is an achievable objective for BC Hydro. Please explain how this would be measured.

ANSWER

BC Hydro is planning for its hydroelectric system on a continuing basis from an operational point of view and is in constant implementation of planning for supply, demand reduction, flexibility options and contingency options.

Most of this planning is done with an objective of managing to cost-effectiveness concepts of one kind or another and managing within constraints of the system and or legislative and regulatory constraints.

The Commission in seeking oversight information can examine various strategies for improving cost-effective optimization, including ones it may not be able to approve at any particular point in time. It will be in the public interest for the Commission's oversight to develop useful information.

There are number of complexities in optimizing the load and resource balance so it is not a simplistic task nor a single simple answer. However, the Commission's oversight information of this process can be improved and the cost-effectiveness of the results can certainly be defined.

The CEC would begin with defining the most cost-effective load resource balance as one in which the load demand, load reduction, and supply availability match the requirements on average over a reasonable period of time and can match the actual net requirements of its customers, including the variabilities with reasonable degrees of confidence given the probabilities of the variability and the flexibility of the responses to variability.

3.1.3 Please clarify, in general terms, what "response to over-supply" the CEC submits that the BCUC could consider.

ANSWER

The Commission will be asked to consider new Transmission rate responses to surplus oversupply but certainly can on its own motion inquire into information about options for managing the surplus oversupply and can certainly track the cost-effectiveness of the management of the surplus oversupply.

The BC Government is working with BC Hydro at this time to examine a number of issues, one of which includes the management of the surplus. Presumably this will eventually be announced and become in part among the processes over which the Commission has oversight.

The CEC's view is that the Commission's oversight information can and will contribute to enabling this situation to be more cost effectively managed.

4.0 Reference: DRIVER INFORMATION TO IMPROVE COMMISSION OVERSIGHT
Exhibit C3-10, Section B, p. 8
Exhibit B-7, p. 5
Exhibit C3-11, p. 6
Risk and Security Assessment

On page 8 of the CEC evidence, CEC states:

BC Hydro's assessment of the safety risks and the security risks around and pertaining to its capital asset investments is critical to understanding the connection that the potential capital expenditures and investments, which may be required in response to these risks, has to reduce, minimize or eliminate the risk and/or prevent, mitigate, or eliminate the impact of a realized risk. Cost-

effectively managing these risks is important to delivering the main intended value of the assets exposed to these risks.

On page 5 of Exhibit B-7, BC Hydro states:

BC Hydro uses the term risk-based capital expenditures to refer to investments made primarily for the purpose of reducing operational risk. Most of BC Hydro's capital investments are risk based. Risk-based investments are assigned a risk score based on an assessment in one or more of the following risk categories: safety, reliability, financial performance, environmental performance, and reputational. This type of qualitative assessment of risk reduction benefits is reasonable given the difficulty in quantifying such benefits.

On page 6 of Exhibit C3-11, Mr. Scott Thomson states:

When considering reporting such cost/benefit information on an historic basis for example, if the cost actually incurred to meet a risk reduction objective could be captured, that could be compared to the change in the risk score as reported from time to time. But as noted, the assessments themselves are somewhat subjective. On a prospective basis (i.e. the forecast period shown in the templates), management would have to estimate the change that would be expected in the risk assessment based on the planned expenditures. It may or may not occur and again would be subjective, so such forecasts may have less value compared to say a more objective measure; for instance, an investment in the life extension of a generating asset that could be translated into the expected cost/MWh of capacity vs the investment in replacement assets cost/MWh of capacity.

4.1 Please provide CEC's position on whether it is feasible to quantify risk to a level that is sufficiently robust, for the purposes of evaluating "cost-effectiveness."

4.1.1 Please explain any limitations of applying a cost-effectiveness evaluation to risk-based capital expenditures.

ANSWER

The CEC's position is that BC Hydro has shown the ability to define and manage a number of risks that might otherwise be thought of as presenting too much uncertainty in the evaluation of the risk and the potential for a capital expenditure or investment to change the risk and or to change the impact of a realization of the risk.

For example, the ability of a BC Hydro dam to pass a particular amount of peak water flows and or withstand the motions of seismic events are risks with clear uncertainties.

In this case the peak water flow uncertainty is described with a measure using a return period for the peak water flow. The risk is therefore defined by a level of water, a physical measure, and a probability, an uncertain return frequency.

With this definition the physical water volume property enables the physical assessment of what would be required to physically be able to pass such flows over a period of time. Consequently, it

then becomes possible to assess from an engineering perspective what physical properties of a dam and power station would be required to process those volumes.

In the case of seismic events they can be described with a measure of using a return period for a peak seismic event. The seismic events themselves are physically measurable on the Richter scale which defines their magnitude. The return period might once in 10000 years as a frequency, which of course remains an uncertainty but one defined to a particular magnitude.

With this definition the physical movements that the dam's physical infrastructure must be able to withstand can be defined. Consequently, it becomes possible from an engineering perspective to model the performance of the physical infrastructure under the defined conditions. The engineering models are informed by data from many dams and events around the world as well as basic physics and engineering principles.

BC Hydro's engineering assessment of its dams have identified spillways, spillway gates, and other physical capabilities of the dam as vulnerabilities with respect to their ability to pass a peak volume of water without physically threatening the physical structures of the dam and/or to withstand the movement of peak seismic event without physically threatening the physical structures.

This leads to an ability to specifically define capital investments that could rectify the vulnerabilities.

In addition, the risks downstream of impacts from a failure at the dam are defined in flood level plans for communities, business and environments downstream. This then can lead to the implementation of strategies to mitigate impacts of a failure.

The CEC view virtually all risks as being amenable to such definitions, measurements, and quantifications as may be necessary to connect the risk to the physical changes that may be required to either reduce the risk and/or to mitigate the impacts.

This can lead to identification of capital expenditures and investments that could be employed to reduce risks and mitigate impacts. It also leads to the ability to consider compare and contrast different strategies and options for managing the risks. Consequently, it becomes possible to quantitatively measure the cost-effectiveness of managing the risks.

Finally, it leads to the ability to summarize the risk profiles for BC Hydro's whole system and operation, and the cost effectiveness of BC Hydro's actions in managing the security and safety of its generation assets.

The limitations in managing risks and making quantitative evaluations is in the validity of the understanding of the risk and the measures available to represent the risk. A further limitation is understanding the validity of the engineering assessments which determine the vulnerabilities and the appropriate solutions for resolution.

The bigger limitation in managing risks is not to try to measure, model, and assess the risks, vulnerabilities, mitigations, solutions and validity of the cost-effectiveness of the risk management

process. In the CEC's view quantitative communication on these subjects is superior to loose qualitative discussion.

4.2 *Please explain how, in the view of the CEC, underlying uncertainties related to risk assessments can be effectively assessed by the BCUC.*

ANSWER

The CEC expects that the underlying uncertainties related to risk can be treated in the same quantitative manner that the engineering world has applied to many of the risks they manage regularly.

The CEC believes that BC Hydro is sufficiently capable and competent enough to be able to bring risk management into quantitative relief when it becomes appropriate to do so. They do not always do so for a variety of reasons but when necessary they can be of great help.

The CEC believes that as the Commission seeks to improve its oversight information for capital, and in particular the safety and security risk management parts of capital requirements, that BC Hydro will be able to provide considerable helpful contributions and that where there is a need, other expertise will be available to assist.

The CEC believes that the professional management of risk has become a very sophisticated field and, while not without its vulnerabilities and failures, is far superior to vague qualitative statements and guesses at potential solutions.

4.3 *Please explain, in the view of CEC, whether BC Hydro's propensity to invest in risk-based capital investments limits the applicability of a "cost-effectiveness" based approach to BCUC's oversight.*

ANSWER

The CEC's view is that BC Hydro's need to manage a variety of risks with respect to its electricity supply and delivery systems and the use of capital expenditures and investments to accomplish this management of risks does not limit the applicability of cost-effectiveness as an important principle and perspective which can be very useful to the Commission's oversight information.

The usefulness of cost-effectiveness principles in such situations is why cost effectiveness methodologies have been increasingly adopted for management of many of the most difficult risk-oriented expenditures and investments.

The CEC is of the view that the Commission should find that improving its oversight information with cost-effectiveness principles will be highly useful in building its understanding of these risk-based investment over time enabling to better meet its statutory duties.

C. PART II - CEC REVIEW OF THE CURRENT COMMISSION CAPITAL PLANNING OVERSIGHT

- 5.0 **Reference:** **PART II - CEC REVIEW OF THE CURRENT COMMISSION CAPITAL PLANNING OVERSIGHT**
Exhibit C3-10, Section 92, p. 53
Exhibit B-4, Response to BCUC information request (IR) 1.12.2
BCUC Review of Capital Expenditure Plans in RRA Process

On page 53 of the CEC evidence, CEC states:

While the RRA process determines the expenditures that are permitted to be reflected in rates over a future period, it is typically limited to three years and limits the Commission's opportunity to assess the overall long-term capital expenditure plan and the processes which resulted in those plans. The Commission's scope to provide oversight of the cost effectiveness of capital expenditures is constrained since denial of expenditures at the point of an RRA can result in wasted spending by BC Hydro.

BC Hydro's response to BCUC IR 1.12.2 stated:

The Amortization of Capital Additions Regulatory Account is the only regulatory account related to the capital costs of projects. This regulatory account defers the variance between the actual amortization of capital additions and the forecasted amortization of new capital additions planned during the test period.

- 5.1 *Please clarify whether CEC believes that BCUC denial of a capital expenditure in an RRA process means that the expenditure will not be made, or alternatively that the expenditure will not be included in the calculation of rates for the RRA test period, and explain the reasons supporting the response.*

ANSWER

The CEC expects that the exclusion of some components of capital expenditures and investments from revenue requirements could result in non-recovery of the costs from ratepayers.

The CEC expects that if the Commission denies recovery from rate payers of a particular amount of and type of capital expenditures or investments that this would put recovery of those costs in jeopardy and that they may not for a basis for revenue requirements in a particular period.

The Commission does not manage BC Hydro and cannot prevent BC Hydro from making capital expenditures it so chooses to make. The CEC does not expect that BC Hydro would be obligated to not make expenditures it wanted to make regardless of the Commission's oversight and approval decision making. The exception to this is the Commission's power to block a CPCN expenditure on an extension of the system it has not approved.

- 5.2 *Considering the function of the Capital Additions Regulatory Account, please clarify whether the "wasted spending" that would result from BCUC denial in an RRA process of*

a capital expenditure would eventually be recovered from utility ratepayers or would be absorbed by BC Hydro's shareholder.

ANSWER

The CEC expects that the Capital Additions Regulatory Account can be overseen by the Commission and can be ordered to operate differently with regard to recover of capital expenditures and recovery from rate payers.

The CEC expects that the Commission's jurisdictions and powers to determine the revenue requirements behind rate setting decisions would be sufficient to make recovery of expenditures assessed as less than prudent a permanent impact on the net income of BC Hydro. The shareholder's retained earnings and capital in BC Hydro are determined by the government at this time and managed to a formula articulated by the government. To the extent BC Hydro's net income is impacted by a Commission decision, the government's formulas for determining its requirements of BC Hydro may be changed or may act through formula to replace a denial of recovery of costs with a requirement for additional capital up to a predefined requirement.

Nevertheless, the CEC expects that the process of Commission oversight, definition of information requirements, inclusion in those information requirements of cost-effectiveness principles and use of that information to condition its rate making and capital approval decisions would have sufficient import to result in significant beneficial outcomes.

The CEC views BC Hydro as a Crown Corporation, as ultimately interested in the public interest, in performing its utility management of capital in a cost-effective way, and in being open and transparent with regard to accountability for its cost-effective management. The CEC expects that BC Hydro would, in the process of the Commission improving its oversight information, become a helpful participant in making it a productive and cost-effective process.

**6.0 Reference: PART II - CEC REVIEW OF THE CURRENT COMMISSION
CAPITAL PLANNING OVERSIGHT
Exhibit C3-10, pp. 53-54
Exhibit C3-11, p. 3
Prospective Information Component of Annual Reports to BCUC**

On page 53 of the CEC evidence, CEC states:

The Annual Report to the Commission largely focuses on documenting historical spending activity.

On page 54 of the CEC evidence, CEC states:

In the CEC's view, the RRA and Annual Report to the Commission appear in the capital review process at a stage where the Commission has limited opportunities to add oversight value. Both the RRA and the Annual Report to the Commission provide an historical view of spending with only a limited review of future spending, such that neither process provides an opportunity to assess planned future spending.

The response to Question 5 on page 3 of Mr. Thomson's evidence in Exhibit C3-11 states:

The right strategy poorly executed doesn't ensure cost effectiveness. The wrong strategy flawlessly executed similarly doesn't ensure cost effectiveness. That said, for the commission to effectively perform its oversight role, I think it is imperative that they understand the drivers and, on an evolving basis, the strategies and evaluations that BC Hydro makes to address those drivers. In other words, it would be most effective if that understanding is developed prospectively rather than reactively after the money is spent.

Section 45(6) of the Utilities Commission Act states:

A public utility must file with the Commission at least once each year a statement in a form prescribed by the Commission of the extensions to its system that it plans to construct.

6.1 *Please confirm that BC Hydro's current Annual Reports to the BCUC contain a statement of planned extensions, in compliance with section 45(6) of the UCA.*

ANSWER

Confirmed.

6.2 *Please confirm that the BCUC can use the statement of planned extensions in the Annual Report to identify any planned extensions that the BCUC considers it should, pursuant to s.45(5) of the UCA, require BC Hydro to file a Certificate of Public Convenience and Necessity (CPCN) application for, or explain otherwise.*

ANSWER

Confirmed.

6.3 *Please discuss whether, in the view of the CEC, the BCUC could use the annual statement of planned extensions and the requirement for a CPCN for specified projects as an oversight process for a tier of extension projects with capital expenditures that are significant, but less than the CPCN application thresholds in the BC Hydro 2018 Capital Filing Guidelines (2018 Guidelines).*

ANSWER

The CEC is of the view that the BCUC could use its jurisdiction and authority to require CPCN treatment for specified projects as part of its oversight process for any tier of extension projects it chooses to define as appropriate.

6.4 *What changes (if any) does CEC believe should be made to the content of the annual statement of planned extensions, the timing when it is filed, or the process to review it, in order to facilitate the use of the statement in the prospective review by the BCUC of a significant portion of BC Hydro's capital expenditure plans?*

ANSWER

The CEC would recommend adding to the content of the Annual Report of Commission such additional information as to enable a review of the important drivers of capital and the strategy papers BC Hydro has developed that are a basis for capital expenditures and the capital plan information with respect to the prospective portfolio of capital expenditure and investment requirements and BC Hydro's capital assets. With this content and related cost-effectiveness information, the Commission's oversight information would move toward providing important context for Commission review of various applications in which the Commission would be making approval decisions.

The CEC believes that the best timing for the Annual Statement would be in the fall of each year around September, roughly when it has been filed with the Commission. The CEC believes that it should be after the load forecasts have been updated and capital plans can have been updated but well before BC Hydro's year end.

6.5 *Does CEC believe that it would be useful and appropriate for the annual statement to include the information set out in Appendix J of BC Hydro's Revised Proposal filed as Exhibit B-7 (Revised Proposal) for each planned extension with forecast expenditure above a reasonable threshold?*

ANSWER

The CEC has reviewed numerous projects with information following a similar approach to that used in Appendix J of BC Hydro's revised proposal Exhibit B-7. The CEC concludes that this level of information is not particularly helpful in understanding whether or not BC Hydro is cost-effectively managing capital expenditures and investments.

The CEC would recommend that the Commission not include such information unless it can define clearly what to do with it. The CEC does not see a useful purpose to such information and in part this has led to the CEC wanting to see quantitative defined cost-effectiveness information for BC Hydro's capital plan portfolios developed over time to provide much more actionable Commission oversight information.

6.6 *Does CEC believe that the annual statement should include the results of a cost/benefit analysis as a measure of cost-effectiveness for each planned extension, with a forecast expenditure above a reasonable threshold? Please explain the reasons supporting the response.*

ANSWER

The CEC believes that costs and benefits should be developed as quantitative cost-effectiveness measures for BC Hydro's capital expenditure and investment portfolios and not limited to planned extensions. The CEC would support a process of introducing such oversight information in stages by lowering the threshold to which it would apply over time to allow an orderly development of processes and the information.

The CEC's support for this is dependent upon the Commission being able to upgrade its oversight information with cost-effectiveness information and principles and would also be dependent upon the Commission not just using a cost threshold for a project as currently being defined but also examining capital drivers and strategies as important categories for grouping capital analysis.

**7.0 Reference: PART II - CEC REVIEW OF THE CURRENT COMMISSION
CAPITAL PLANNING OVERSIGHT
Exhibit C3-10, Part II Sections A, B, J pp. 64, 67, 69, 76, 135
BC Hydro Inquiry of Expenditures related to the adoption of the SAP
Platform Final Report, p. 109
CEC Proposal for BCUC Reviews of BC Hydro 10 Year Long-Term
Capital Plans**

On page 64 of the CEC evidence, CEC states:

The CEC submits that it would be useful for the Commission to have the opportunity to review the 10 Year Long-Term Capital Plans portfolios in conjunction with the strategies and drivers in order to adequately assess the short-term RRA expenditure recovery requests and provide a suitable context to understand those revenue requirement decisions.

On page 67 of the CEC evidence, CEC states:

The CEC submits that the RRA does not provide a sufficient opportunity for the review of the capital planning process because the Commission has limited opportunity at that stage to evaluate the adequacy of the long-term plans. The CEC submits that an understanding and assessment of the validity of BC Hydro's capital planning and planning processes is of such significance as to warrant a substantial and independent review, at a period which precedes the RRA.

On page 69 of the CEC evidence, CEC states:

Forecast data to understand the generation capital requirements, if they were to be met by BC Hydro assets, would be provided in an Integrated Resource Plan ("IRP") load resource balance planning.

On page 76 of the CEC evidence, CEC states:

The CEC proposes that the Commission request that BC Hydro incorporate into its oversight process an annual overview of BC Hydro's capital driver assessment processes, with analytical metrics which may be used for assessment of each for its validity and integrity in driving capital expenditures.

On page 135 of the CEC evidence, CEC states:

The CEC's view is that requiring annual Capital Reports which address the various CMS processes and documents will provide the Commission with important information in its assessment of Revenue Requirements, and can also stimulate improvements in the CMS themselves, thereby generating significant benefits in the larger streams of capital planning.

Page 109 of the BCUC's Report on the Inquiry of Expenditures related to the adoption of the SAP Platform dated September 7, 2018 states:

The Panel notes the CEC's recommendation that the BCUC exercise "staged oversight on all BC Hydro IT&T expenditures, if not all BC Hydro capital expenditures in a Capital Plan Requirement Application (CPRA) review process separated from the usual RRA process."

Recommendation: BC Hydro should consider the CEC's suggested Capital Plan Requirement Application review process as part of the BC Hydro Review of the Regulatory Oversight of Capital Expenditures and Projects proceeding currently underway with the BCUC.

7.1 Please outline the essential components that CEC believes should be included in the 10 Year Long-Term Capital Plans, which CEC recommends BC Hydro file and the BCUC review on an annual basis.

ANSWER

The CEC believes that the essential components that should be included with 10 year capital plans would include:

- (1) identification of needs or demands driving capital requirements and supporting materials to validate the drivers;
- (2) identification of strategy papers supporting the approaches BC Hydro will take to meeting the needs where these have been developed to validate strategies shaping the plans;
- (3) identification of the benefits in quantitative terms that BC Hydro is seeking to achieve in meeting the needs;
- (4) quantified calculation of the costs of achieving the particular benefits; and
- (5) inclusion of the portfolio of expected capital expenditures and investments with the appropriate cost and benefit metrics.

Some of these would elements would come from developed projects and others would of necessity be planning proxies for yet to be defined projects but know potential requirements and likely possible solutions

7.1.1 Please include a discussion of the proposed form and content of information pertaining to "strategies and drivers" that CEC submits should be reviewed in conjunction with 10 Year Long-Term Capital Plans.

ANSWER

It would be useful for each major driver to have a regularly updated set of information supporting the forecast needs, such as the documentation provided for the load forecast.

Similar documents for the other drivers, such as the asset condition assessments could be assembled starting from the existing base of information and could then be augmented and improved as the process unfolded.

The CEC expects that increased organization of the understanding of stakeholder issues would be very helpful to the Commission's oversight particularly given that BC Hydro may be facing significant asks from a number of stakeholders.

7.2 *Please confirm that the recommended 10 Year Long-Term Capital Plans are similar to what CEC referred to a "Capital Plan Requirement Application" in the Inquiry of Expenditures related to the adoption of the SAP Platform, or explain any substantial differences.*

ANSWER

Confirmed. The necessity for longer term plans as part of the Commission's oversight information is to ensure an understanding of planning impacts connected to platform strategies. This would enable Commission oversight focus on major undertakings which may start with small beginning projects but presume the development of a collection of strategy related projects.

It is also critical to have a good quality ten year plan focus because BC Hydro and the government may be engaged in developing long term rate plan decisions and if not the Commission may find it useful to have multi-year rate planning capabilities to provide proper context to current RRA rate application approval.

This is critical to preventing major financial decisions and commitments from being broken in to small enough component projects to cause a lack of oversight internally in BC Hydro and for the Commission's oversight.

7.3 *Please confirm whether the recommended 10 Year Long-Term Capital Plans are generally similar to BC Hydro's 10 Year Capital Forecasts, such as the document that BC Hydro filed in Appendix G of its F2017-F2019 Revenue Requirements Application as referred to on page 61 of CEC's evidence.*

ANSWER

Confirmed. The starting point would be the existing 10 years capital planning base of information with augmentation for better understanding of the quantitative benefits sought, the strategies and the quantitative drivers propelling the plans.

7.3.1 *Please identify any significant differences.*

ANSWER

For the Commission's oversight information purposes, it would be more useful to have this base information upgraded to bring in the CEC's proposed cost-effectiveness principle into the information and a better understanding of what is driving the capital and the strategies being used effect solutions for the needs and demands represented by the drivers and finally the approaches BC Hydro uses to organize and deploy the capital.

7.4 *Please explain the extent to which CEC recommends that an annual 10 Year Long-Term Capital Plan include and be supported by an assessment of cost-effectiveness such as CEC describes in Part I of its evidence.*

ANSWER

The CEC suggests that it would be useful to start bringing the cost-effectiveness information into the 10 years planning in stages as the information can be organized and developed into useful Commission oversight context for informing the Commission's regulatory approval processes.

7.5 *Please explain the extent to which a 10 Year Long-Term Capital Plan should be coordinated with an Integrated Resource Plan (IRP) load forecast; the extent to which it would be dependent on a reasonably current IRP and how the lack of a current IRP load forecast may be accommodated.*

ANSWER

The CEC believes that the IRP planning process should be seen more as a strategic long term (20 to 30 years) planning document and process for setting a course and direction for BC Hydro and related government policy. The CEC does not expect that it would be useful to have IRP processes more frequently because of the need for a degree of stability in the strategic direction.

However, it should not be viewed as setting a course cut in stone and should remain flexible for updating annually as may be necessary to keep it relevant. This process of updating should take place within BC Hydro, and with Commission oversight should pick up emerging issues as they may change for IRP assumptions.

The Commission is required to consider the IRP in the context of its approval processes but is not lock step bound to use assumptions that do not make sense. So, the Commission should oversee the changes as required for its processes. Additionally, the government will likely be evolving policy over time between IRP document renditions.

In the CEC's view the 10 years planning on a rolling basis should be consider as the relevant scope for considering the context for Commission approval processes. The 10 years planning process would likely contain key elements from the IRP and to this extent would be coordinated with the policies and directions set out in the IRP.

7.6 *Please outline the filing schedule and the BCUC review process that CEC believes would be appropriate for an annual 10 Year Long-Term Capital Plan.*

ANSWER

The CEC believes that a filing schedule in or around about September each year would provide a useful timing and the CEC believes that this can mesh with BC Hydro's current planning scheduling.

7.7 *Please describe the nature of BCUC approval, acceptance or other response that CEC believes would be appropriate after reviewing a 10 Year Long-Term Capital Plan, in the context of BCUC's regulatory jurisdiction.*

ANSWER

The CEC would expect that the Commission might find use of the Annual Report to the Commission augmented with 10 years planning information augmented over time as a useful repository of context for its ongoing approval processes.

The CEC therefore expects that it would be useful for the Commission to hold technical workshop processes, information requests, and written submissions from parties with respect to the development of the Commission's oversight information so that this context information would not need to be reviewed in the relevant approval processes but could be used to support argument with respect to the approvals.

The CEC expects that after due process once a year, the Commission could approve the BC Hydro report filing for use in later approval processes as base context information for the specifics of the other applications by BC Hydro.

**8.0 Reference: PART II - CEC REVIEW OF THE CURRENT BCUC CAPITAL PLANNING OVERSIGHT
Exhibit C3-10, Part II Section D, p. 99
BCUC Oversight of Generation Capital Planning**

On page 99 of the CEC evidence, CEC states:

The CEC expects that the Commission's oversight of generation capital planning and its cost effectiveness would be well-served by increased understanding of generation planning at the objective measurement level, and subsequently at a level assessing strategies and improvements in the overall lifecycle value contributions of BC Hydro's generation assets and the cost effectiveness of capital expenditure investments in delivering linking improved lifecycle value contributions.

8.1 *When CEC refers to "increased understanding of generation planning at the objective measurement level," please clarify whether CEC proposes that the assessment should be developed on a standardized basis using the four expenditure drivers of Customer Load Growth, System Sustainment Condition, External Risk Exposure, and Stakeholder Condition Standards referred to in section 18 on page 4 of CEC's evidence, or discuss otherwise.*

ANSWER

The CEC finds that the evidence with respect to BC Hydro's capital management is only partially organized with regard to appropriate nomenclature and structure of relevant concepts. Consequently, it can be difficult to build understanding of what BC Hydro is doing and to then apply logical parameters for information requirements for the Commission's oversight.

The CEC's proposed structure has been initially matched to those parts of BC Hydro's structure which the CEC found to be well organized and structured. Largely the Generation Group and T&D Group with larger capital commitments were the basis the CEC worked from because they were better and more consistently developed. The CEC then tried to extend the principals and logic to cover the full range of cost-effectiveness issues, which were generally not present in BC Hydro metrics but were present in qualitative text.

The CEC would recommend that the Commission's oversight information requirements should be structured, use logical nomenclature, apply relevant concepts to organize the data, and incorporate the cost-effectiveness principle.

The CEC expects that the Commission could use the CEC's proposals as a starting point and through working arrangements with BC Hydro reach agreement on the complete outline for the information requirements, which then could be implemented in a staged manner to ease the process into the Commission's overall regulatory processes and hearing project management.

8.2 *Please confirm, or otherwise explain, whether CEC believes that developing this increased understanding would require a cost/benefits determination of cost-effectiveness for each objective or driver for each significant generation unit?*

ANSWER

The CEC does not believe that the Commission would need to make determinations on each and every piece of data regarding cost-effectiveness and certainly not with regard to each generating unit or each component.

The CEC expects that the information the Commission asks for as metrics can be aggregated and weighted to present a relevant summary level view of BC Hydro's cost-effective management of capital expenditures and capital investments. The CEC does not expect that it has defined a final solution but that if the Commission commits to making cost-effectiveness a principle for the information it requires for its oversight, the CEC expects that a rational and useful set of information can be brought forward to the Commission, can improve steadily over time, and will have significant and deep impact in encouraging enhanced performance from BC Hydro regarding its management of capital.

8.3 *Considering that cost/benefits for the four "drivers" are expressed in different units, please discuss how CEC proposes that an overall measure of cost-effectiveness would be determined for each significant generation unit, and for generation capital expenditures in total.*

ANSWER

The CEC understands the cost-effectiveness principles to be different from cost benefit analysis where the analysis may seek to have the benefits represented in dollar form for final aggregation.

The CEC understand the cost-effectiveness principles to be related to identification of important metrics, some of which will not be financial, and making the relationship of those metrics to the costs involved in changing those metrics.

When done in this fashion the metrics can be aggregated along the common metrics lines but will eventually result in aggregation of cost-effectiveness performance to result in a few different summaries.

9.0 Reference: HOW WELL THE PROJECT/PROGRAM SPECIFICATION FOR CAPITAL INVESTMENTS PERFORM WITH RESPECT TO EACH CAPITAL PLAN
Exhibit C3-10, Part II Section E, pp. 114–117; Exhibit B-7-1, Appendix D, pp. 1-2;
BC Hydro's Capital Expenditure and Projects Guidelines

On pages 116 to 117 of the CEC evidence, CEC states:

[T]he CEC is not focused on proposing changes to the BC Hydro Guidelines, but rather is focused on the need for additional guidelines to supply context to Commission oversight of BC Hydro capital expenditures and investments. The CEC is focused on having before the Commission information that may lead to an understanding of the benefits of capital deployment and the matching of those benefits to costs to provide the cost-effectiveness of BC Hydro's capital expenditures and investments.

9.1 Please discuss how the relative cost-effectiveness of a project would be assessed by the BCUC (for example, benchmarked against a similar project, cost-effective thresholds, on a project by project basis, etc.).

ANSWER

This cost-effectiveness information would be more useful to the Commission if the Commission also had an appropriate set of comparators for evaluation. The CEC believes that the following comparators would be the most effective for the Commission's oversight role;

- 1) The first type of useful comparator would be prior period results which could provide the Commission perspective on improvement or decline of cost-effectiveness over time.
- 2) The second type of useful comparators would come from competing strategies, alternatives and scenarios which would provide the Commission perspective on potential improvement of approaches.
- 3) The third type of useful comparator would be the external like function cost-effectiveness which could provide the Commission perspective on alternatives not within the scope of existing BC Hydro standards and policies.
- 4) The fourth type of useful comparator would be from an analytical analysis of a theoretically more cost-effective option which could provide the Commission with thought provoking context regarding BC Hydro's potential for greater cost-effectiveness without regard for constraints.

These are the critically important components of introducing requirements for more cost-effectiveness information for the Commission's oversight information. The essential is developing an information capability to test the cost-effectiveness and make determinations that it would be prudent for BC Hydro to make improvements and for this to influence Commission approval processes with encouragement for BC Hydro to improve and enhance its performance.

9.2 *Please explain specifically how the BCUC could use cost-effectiveness in the review of:*

- i. Revenue requirements proceeding;*
- ii. CPCN application;*
- iii. Capital expenditure schedule under section 44.2 of the UCA; and*
- iv. Compliance filings.*

ANSWER

Cost-effectiveness information would be useful in the RRA processes because it would also be useful in determining whether or not the Commission should apply a decrement to the BC Hydro revenue requirements if persuasive evidence of an absence of cost-effectiveness management is demonstrated.

CPCNs often have some significant cost-effectiveness information contained in the applications. However, if Commission's oversight information contains relevant comparator information it would be useful to the Commission to have this as part of the approval process for CPCNs.

Capital Expenditure 44.2 expenditure schedules in some cases such as those for DSM have considerable cost-effectiveness information available. In other cases, accompanying cost-effectiveness information would be of considerable interest in testing the justifications for the capital expenditures.

Compliance filings that are related to particular elements of finalizing a Commission decision may not require cost-effectiveness information. However in an instance where the compliance item is directly related to the cost effectiveness information itself the Commission may be require updating of the information to the finalized calculations in compliance with Commission orders.

9.3 *Please explain whether there are any instances where the cost-effectiveness of a capital project or investment would not be an essential metric for the review of capital expenditures and investments (e.g. capital projects undertaken to ensure compliance with codes or standards).*

ANSWER

The CEC does not expect there to be any circumstances where it would be inappropriate to provide a cost-effectiveness metric. For instance, where implementation of policy or regulatory codes and standards may be applicable there will still remain the question of how cost-effective is the particular code or standard or policy. There may always be an opportunity to shape, refine or alter

such key stakeholder requirements to something more effective. Also, there may be opportunities to determine more cost-effective ways to comply with such directions.

9.3.1 *If so, please provide examples of such instances.*

ANSWER

See answer above.

9.3.2 *If not, please discuss whether the significance of cost-effectiveness should be weighted according to the type of capital expenditure. In your response, please provide examples of any weighting that would be applied.*

On page 117 of the CEC evidence, CEC states:

Specifically, the additional guidelines could focus on the following:

- a) *Review of BC Hydro's driver documentation as it relates to driving capital spending and specifically how cost-effectively they drive capital.*
- b) *Review of BC Hydro's strategy papers as they relate to driving capital spending and specifically how cost-effectively they drive capital.*
- c) *Review of BC Hydro's full capital plan portfolios and specifically how cost-effectively they arrange for and drive capital.*
- d) *Review of BC Hydro's business cases for any of its capital expenditure plans or investments and specifically the evidence that the decision for approval is based on cost-effective plans.*
- e) *Review of BC Hydro's post-implementation reports on capital expenditures additions and specifically how cost-effective the resulting capital investments will be.*
- f) *Review of BC Hydro's overall CMS and specifically the degree to which it is improving over time in delivery of cost-effective capital expenditures and investments.*

CEC CONCLUSIONS WITH RESPECT TO BC HYDRO'S CAPITAL EXPENDITURE AND PROJECTS GUIDELINES

In the CEC's view the BC Hydro Guidelines are necessary but not sufficient. The contextual elements outlined above regarding capital expenditures and investments could be added to the Commission oversight process and would likely best be handled as permanent annual documentation of the capital planning process.

ANSWER

Yes, the cost-effectiveness metrics when aggregated together to provide a perspective across a significant grouping of capital expenditures or investments should be weighted using a metric which best defines the aggregation.

For instance, if cost-effectiveness of capital expenditures on generating units is being measured it could be appropriate to weight the information based on the size of the generating units, which could use the MW measure for weighting. This would be applicable when the purpose of an aggregate metric is to show the overall situation with BC Hydro so that the cost effectiveness of smaller units does not out-weigh the cost-effectiveness of the larger units and therefore the whole is properly represented in the appropriate proportions.

It may not be appropriate to weight the cost-effectiveness information if the relevant facility is common to all generating stations and is a similar requirement for each.

In some cases, it may be appropriate to produce and aggregate metric based on the range of cost-effectiveness for a given component across all of the instances of implementation regardless of size.

The desired presentation would likely depend on what one wanted to demonstrate with the metric and how that might be used to represent a cost effectiveness issue important to Commission decision making.

9.4 *Please confirm, or otherwise explain, whether CEC is proposing that BC Hydro's Annual Report to the BCUC includes the following documents:*

- a) Driver documentation;*
- b) Strategy papers;*
- c) Capital plan portfolios;*
- d) Business cases;*
- e) Post-implementation reports; and*
- f) BC Hydro's CMS (as defined by the CEC).*

ANSWER

The CEC confirms that it would be useful for the BC Hydro Annual Report to the Commission to contain the documentation particularly in (a), (b) and (c) in stages and at the times the information can be developed. The objective over a reasonable period of time should be to upgrade the Commission's oversight information. The purpose should be so that the Commission in its approval processes can be more focused on areas in which BC Hydro's cost effectiveness can be enhanced to the benefit of BC Hydro's ratepayers and the public interest.

At some point the business case and post-implementation processes in (d) and (e) would be useful for Commission processes engaged with questions of prudence and putting BC Hydro on notice with respect to risks related to recovery of costs which may be less than prudently incurred.

9.4.1 *If not confirmed, please explain the process by which the documents identified in items a) to f) would be filed with the BCUC.*

ANSWER

There is a perspective that the Commission has a chance to review the prudence of capital expenditures in the RRA process but experience in the RRA process does not provide much confidence that there is a process for testing which expenditure processes in BC Hydro may be less than prudent and in need of improvement or perhaps consequences particularly related to recovery of costs from ratepayers.

The CEC believes that the Commission's oversight information and processes could be significantly strengthened over time by adopting inclusion of this information in stages into the Annual Report to the Commission.

10.0 Reference: *HOW WELL THE AUTHORIZATION DECISION MAKING FOR CAPITAL INVESTMENTS IS WORKING FOR CAPITAL PROJECTS/PROGRAMS*
Exhibit C3-10, Part II Section F, pp. 118–121; Exhibit B-7-1 (Revised BC Hydro Business Cases and Importance of Oversight

On page 118 of the CEC evidence, CEC states that it considers there to be considerable value in the BCUC having awareness and information on BC Hydro's business cases. CEC explains:

Commission understanding of the effectiveness of the business cases BC Hydro uses to support its internal decision making in regard to its capital expenditures and investments will be very important for the Commission's ability to add value through its approval and ratemaking decisions. As such, business cases warrant significant regulatory attention.

CEC further states:

Business cases for capital expenditure projects should be a requirement for decision making regarding proceeding with projects.

In understanding the effectiveness of the business cases prepared by BC Hydro for justification of various levels of capital expenditure, there is not an ability to access an analysis of BC Hydro's business case process.

Such an analysis would rely on a sampling basis and a set of criteria for evaluating specific business case issues.

On page 121 CEC states:

The CEC's view is that the strong business cases developed would have the opportunity of documenting cost-effective capital expenditures and investments to be made by BC Hydro. Improving the business cases would have the potential to

improve the decision making with regard to improving BC Hydro's cost-effectiveness in deploying capital.

10.1 Please discuss CEC's interpretation of the BCUC's jurisdiction with respect to reviewing BC Hydro's business cases.

ANSWER

The Commission will eventually be approving the financial impacts of all of BC Hydro's capital expenditures and capital investment in BC Hydro's rate setting as well as the impacts on the benefit or effectiveness of that capital as it relates to broad utility, ratepayer and public interests.

The Commission has the mandate and requirement to inform itself with regard to BC Hydro's conduct and functioning. (UCA Section 24). The Commission has the jurisdiction to define its processes with respect to any hearing it may be required to hold and may specify the rules and processes for the hearing and the form and content of materials it requires to be presented. (UCA Section 86.2). The Commission may on its own motion inquire into anything upon which it may be empowered to conduct a hearing or inquiry based on application or complaint. (UCA Section 82.1). The Commission has an explicit mandate and requirement to review all information that it considers proper and relevant and may use any formula it finds appropriate as part of setting BC Hydro's rates and encouraging BC Hydro's enhanced performance. (UCA Section 60.1)

The CEC acknowledges there are constraints on the Commission's jurisdiction from directives issued by the LGIC or the courts.

The Commission may inquire into what it finds relevant and can require information it believes it need and can use formulas based on cost-effectiveness metrics to incent BC Hydro improve and enhance its performance increasing benefits per dollar and reducing costs per level of benefit.

The CEC believes that the Commission's oversight of BC Hydro's capital can be improved and that its improvement will bring demonstrable benefits for BC Hydro, BC Hydro's ratepayers and the broad public interest.

10.2 Please provide examples of the proposed sampling and the criteria used for evaluating business cases.

On pages 9 to 16 of the Revised Proposal, BC Hydro provides an overview of the types of capital work it implements according to its two Business Units: Power System Investments and Other Capital Investments. BC Hydro submits that Power System Investments comprises the following capital work: Generation, Dam Safety, Transmission and Distribution, Properties, Information Technology and Vehicle Fleet and Equipment. Other Capital Investments is stated to include Other Capital Investments includes "capital expenditures related to Materials, Management upgrades, Field Operations tools and equipment, Control Centre systems upgrades, and workforce training equipment."

ANSWER

The CEC would suggest that to produce reliable statistical information the Commission would need to have BC Hydro identify each of the projects in its portfolio of capital expenditures and investment and identify whether or not they have prepared a business case for supporting the expenditure or investment.

This will enable a quantitative statistic of the degree to which BC Hydro has engaged in documenting the case for its capital spending and investment. This is oversight information the Commission should require at the top level for this topic and the Commission should plan to use it as part of its evaluation of the prudence of BC Hydro's capital management, which it can factor into its approvals for expenditures and rates.

Business cases may have different levels of documentation depending on the magnitude of the proposed project or strategy, where magnitude is defined not just as the cost of the project or strategy but also the size of the costs and benefits of future projects which may be affected by the project or strategy.

Statistical sampling rules can then be used to determine how many cases should be examined to develop a reasonable confidence with respect to the whole state of BC Hydro's development and documentation of business cases. Random sampling from the universe of cases is essential to ensure statistical confidence.

A series of case reviews each Annual Capital Information filing would build to a rolling sample that could be relied upon to statistically represent the quality and prudence of BC Hydro's business case justifications.

A sample of approximately 10% of the business cases produced for the year would build over a few years to an appropriate sample quantity to properly provide a reasonably high level of confidence in the resulting assessment.

The CEC would have a starting set of criteria for the business cases which could address what should be found in a business case and an assessment of the quality of the business case such as the following:

- 1) The business objectives and strategies to be served and why they are important;
- 2) A written description of the actions, alternatives and scenarios to be analyzed;
- 3) Who the decision makers are and what they should require to make a decision;
- 4) How current threats and constraints may impact the potential action choices;
- 5) The scope and boundaries of the case, the costs and benefits applicable and the relevant period;
- 6) The logic for the definition of benefits as legitimate outcomes of the case;
- 7) All relevant costs and benefit categories for the case, estimating and quantification methods;
- 8) The projected quantitative costs and benefits for case actions, alternatives and scenarios;

- 9) The projected non-financial quantitative metrics providing related benefits or negative impacts;
- 10) Provide the tail period analysis of values outside the scope to ensure perspective;
- 11) Define the proposed decision-making approach, methods and metrics;
- 12) Compare case actions across alternatives and scenarios on the basis of the decision metrics;
- 13) Show the sensitivity of the decision to various underlying assumptions;
- 14) Identify risks to the case, alternatives and scenarios and quantify likely outcomes;
- 15) Recommend one alternative and/or scenario for action;
- 16) Set critical success factors and measurements for demonstrating the impact of the action;
- 17) Provide tactics for mitigation of risks, control of costs, and enhancement of benefits;
- 18) Provide plan steps for implementation and analysis for delivery of decision results; and
- 19) Provide plan for continuous verification of assumptions optimization of results.

What criteria should be used to evaluate the quality of the case:

- 1) Credibility of inputs and analysis;
- 2) Accuracy and validity of estimating and projections; and
- 3) Usefulness for decision making, business planning, management control and accountability.

10.3 Please confirm, or otherwise explain, whether the proposed sampling would include business cases for all types of capital work implemented by BC Hydro.

ANSWER

The CEC would suggest that business cases for all types of capital work would not be included in the sampling. The CEC would exclude those business cases for which the Commission conducts a 100% review, being the CPCN business cases and those for any other approval process where a business case is presented in the application.

The CEC would suggest Commission oversight assessment of these two different categories of business cases separately and the Commission could vary the assessment criteria as appropriate to the importance of the business cases in question.

10.3.1 If not confirmed, please explain the types of capital work that would not require a business case.

On pages 20 to 21 of the Revised Proposal, BC Hydro provides a summary of its governance and oversight structure. BC Hydro states:

The governance over BC Hydro's capital investment involves the Board of Directors, the Executive Team, business unit leadership teams, and portfolio managers.

- The Board of Directors issues two types of approvals for capital projects whose costs are expected to be greater than \$50 million (\$20 million for Information Technology projects). The first approval is of the Preferred Alternative and is sought before the project can proceed to Definition Phase. The second approval is of the project itself, including forecast cost, and is sought before the project can proceed to Implementation Phase.*
- The Capital Projects Committee is a sub-committee of the Board of Directors. It provides strategic and policy level advice and direction on the long-term capital plans and capital projects. This sub-committee reviews and recommends for the full Board of Directors approval any changes in total authorized cost (a cost estimate that includes the expected cost and the management 1 reserves) for Board-approved projects.*
- The Capital Delivery Management Committee includes members of the executive team and senior managers across the organization. It provides advice and direction: on the planning and delivery of BC Hydro's capital investments; BC Hydro's adherence to its regulatory requirements, standards, and long-term strategies; and the capital planning processes and re-alignment of priorities as needed.*
- The Capital Delivery Management Committee Working Team is composed of managers and directors responsible for managing assets, managing resources, and implementing capital projects. It provides feedback and recommendations to the Capital Delivery Management Committee to enable them to make informed decisions as part of the portfolio management process.*

10.4 In consideration of BC Hydro's governance and oversight structure, please explain in what capacity CEC proposes that the BCUC would review the business cases (for example, BCUC internal review, as part of an application, etc.).

ANSWER

The CEC believes that BC Hydro is in control of managing the company and the Commission does not have jurisdiction to direct the specific management of the company. If BC Hydro chooses not to have a business case for some capital expenditures and investments there may not be business cases to review.

However, the Commission can ask for and BC Hydro must deliver the information the Commission finds proper and relevant so all business cases the Commission asks for can be provided. The Commission's review can go toward setting the context for the degree of prudence the Commission reasonably expects in relation to the capital expenditure and investment decisions are being made.

The CEC expects that having this review as part of the Commissions Annual Capital Information reporting and review process can result in continuous improvement of BC Hydro practices.

The CEC proposes that the Commissions oversight structure be contained in an Annual Capital Information (“ACI”) review process intended to enable the Commission to inform itself about BC Hydro’s management of capital expenditures and investments.

As such this ACI process should enable the Commission to ask for information about business cases and also about BC Hydro’s internal oversight and governance processes as they relate to the capital management interests of the Commission for context to its legislated regulatory roles and oversight processes.

In this way the ACI process can evolve into an efficient, and more importantly, effective process.

10.5 Please explain further how the review of BC Hydro’s business cases would “improve the decision making with regard to improving BC Hydro’s cost-effectiveness in deploying capital.”

ANSWER

As the Commission uses the oversight information it gathers prior to its approval processes it can effect changes to what it sees as prudent and appropriate capital expenditures and investments and factor this into its decisions about the methods for setting rates and approving revenue requirements as well as its approvals of capital expenditures and investments.

When the Commission chooses to focus on cost-effectiveness metrics as part of its information requirements and approval decision making the subsequent effects are likely to be improvement in BC Hydro’s cost-effectiveness in deploying capital. The Commission’s role in establishing accountability in regard to capital expenditures and investments is an important and powerful role. What gets measured gets managed.

11.0 Reference: HOW WELL THE ACCOUNTING PROCESS FOR ADDITIONS & RETIREMENTS AND PERFORMANCE FOR CAPITAL INVESTMENT IS WORKING FOR THE APPROPRIATE RECOVERY OF CAPITAL INVESTMENT COSTS Exhibit C3-10, Part II Section G, p. 124; Exhibit B-7-1, Section 2.3.1, pp. 9– 16; BCUC Processes for Oversight for BC Hydro Capital

On page 124 of the CEC evidence, CEC states:

The CEC finds that the CPCN and 44.2 application are characterized by the principle of cost-effectiveness, which is consistent with the CEC’s view that this principle should apply throughout all of BC Hydro’s capital planning.

The CEC finds that key drivers and strategies for replacement of component of generating facilities and therefore life extension for the remaining components is an important aspect of BC Hydro’s capital planning.

The CEC concludes that Commission oversight of BC Hydro's capital plans with metrics based on the cost-effectiveness principles would produce significant benefits for ratepayers.

On pages 9 to 16 of the Revised Proposal, BC Hydro provides an overview of the types of capital work it implements according to its two Business Units: Power System Investments and Other Capital Investments.

11.1 Please provide examples of metrics based on the principles of cost-effectiveness.

ANSWER

The CEC would see the principles of cost-effectiveness applied to the portfolio of Properties capital expenditures and investments by bringing the costs for the space being provided and the investment facilitated utility of the space being brought together with the benefits of supporting BC Hydro's employees and contractors.

By establishing Commission oversight information with the \$/sqft per person metrics for the space and the \$/sqft-per utility function across the whole portfolio of space BC Hydro uses, then the Commission essentially has a context within which to review a capital plan portfolio. By having the Commission oversight information examine the BC Hydro strategies, which may determine the standards for such space, the Commission has a better context for reviewing the cost-effectiveness of BC Hydro's capital plans for properties.

In addition, the Commission oversight information can include as metrics the expected economic life of the capital investments and address life extension strategies. The Commission oversight information can also address as metrics the safety and security risks to people, property, information and investment and address strategies for reducing risk and lowering the consequences of realized risks.

This can be expected to result in Commission oversight questioning with respect to whether these plans can be improved and hence have the Properties Group improve the cost effectiveness for its use of capital. Also, it would be expected that the cost-effectiveness metrics could be compared to other benchmark cost-effectiveness for similar capital.

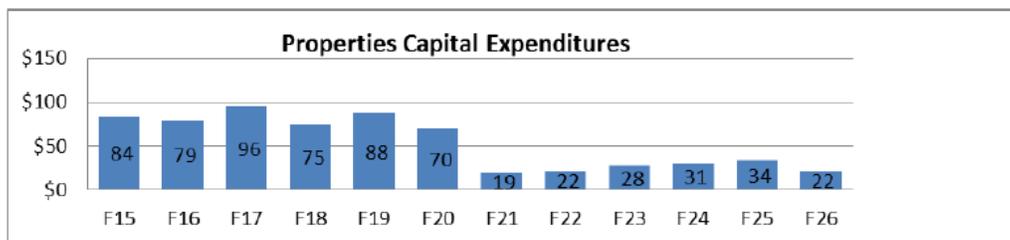
The CEC has started the discussion of appropriate quantitative metrics with an initial set covering all of BC Hydro capital expenditures and investments. This will not and should not be viewed as a final solution.

Clearly if the Commission take on the task of improving its oversight information in the direction of cost-effectiveness metrics BC Hydro can and would be expected to respond with more refined proposals which would lead to agreement on what could be implemented for the start of the improvement of the Commission's oversight information.

11.2 Please provide examples of the significant benefits that would arise as a result of the BCUC's oversight of BC Hydro's capital plans with metrics based on the cost-effectiveness principles.

ANSWER

The properties example above has the following capital expenditure profile for the future.



While BC Hydro has most of the appropriate objectives and strategies at a qualitative level in the Properties Group it does not present its cost-effectiveness metrics and explain its plans in terms of quantitative cost-effectiveness improvement. The CEC expects that the information being suggested as a requirement for Commission oversight would be available.

To the extent that BC Hydro can better refine the standards by which it provides space and space related facilities with utility to those occupying the space there can be consequent benefits such as:

- 1) extending the economic life of the capital investments for greater cost-effectiveness;
- 2) densifying the use of space and facilities for greater cost-effectiveness; and
- 3) addressing safety risks to the public, employees and contractors increasing cost-effectiveness.

Properties that are leased and owned by BC Hydro represent substantial capital investments and have substantial capital requirements to sustain and improve their performance in supporting the human and other resources BC Hydro uses on an ongoing basis.

The CEC expects that the benefit for each 1% improvement in cost-effectiveness can be in the order of millions of dollars per year and that under Commission oversight options for considerable improvement can be brought under discussion for consideration how this information may appropriately be used in the Commission's approval processes.

The CEC expects that the benefits of an improved Commission's oversight process would lead to demonstrable realization of benefits over time that would lead to real and important benefits for BC Hydro's ratepayers.

12.0 Reference: HOW WELL THE POST-IMPLEMENTATION PROCESS FOR CAPITAL INVESTMENTS IS WORKING FOR THE FEEDBACK TO IMPROVE CAPITAL MANAGEMENT
Exhibit C3-10, Part II Section H, pp. 128; Exhibit B-7-1, Section 3.1.3, pp. 19–20
BC Hydro Business Case Post-Implementation Follow up

On page 128 of the CEC evidence, CEC states:

The CEC's view is that good quality post-implementation reports would have the opportunity of documenting cost-effective capital expenditures and investments made by BC Hydro. Improving the post-implementation reports would have the potential to improve the decision-making with regard to improving BC Hydro's cost-effectiveness in deploying capital.

The CEC's view is that post-implementation reporting will need continuing follow-up in order to track the follow through on capturing the benefits from given capital expenditures and investments, and therefore ensuring the cost-effectiveness of the capital expenditures and investments is maximized.

The CEC expects that improving the Commission's oversight information with respect to the BC Hydro post-implementation reports would lead increased cost-effectiveness of BC Hydro's capital expenditures and capital investments.

On page 19 of the Revised Proposal, BC Hydro states:

BC Hydro undertakes compliance reporting and files information on a regular basis to assist in the review of BC Hydro's capital expenditures and projects. Reporting includes BC Hydro's Annual Report and project-specific compliance reports filed on a schedule determined by the applicable Commission order.

BC Hydro further states:

BC Hydro also files with the Commission project-specific compliance reports during the project's Implementation Phase and at the conclusion of the project.

- Periodic project-specific progress reports for all projects that have been granted a CPCN from the Commission or where the Commission has accepted the project's capital expenditure schedule. The project-specific compliance reports are submitted on a schedule as directed by the Commission in the applicable order. The progress reports keep the Commission informed on the progress of project activities and any impact to costs and schedule. The Commission is also notified of any potential or outstanding issues, and when and how those issues are resolved; and*
- At a specified period after the project's close, at substantial completion of the project, or a milestone specified by the Commission's Order, BC Hydro is normally directed to file with the Commission a final project report. The final project report provides the final update on the project, a reconciliation of final costs and schedule changes, and the realized project impacts and benefits.*

12.1 Please explain whether CEC considers that post-implementation reports would be required for all of BC Hydro's capital projects and capital investments.

ANSWER

The CEC considers that the Commission, to improve its oversight, would want to receive all post-implementation reports as part of a prudence review for CPCNs or Section 44.2 expenditure schedules, where confirmation of an issue asserted as potentially imprudent prior to or joint with approval of the CPCN may be confirmed as prudent and or imprudent and the Commission may choose to make the decision on prudence applicable to cost recovery by BC Hydro in its next RRA application.

In the interim the Commission would allow temporary recovery of costs in rates subject to completion of a post-implementation review process. The Commission could adopt the post-implementation review as a necessary but not sufficient step in prudency review for all CPCN and Section 44.2 expenditure schedule application projects upon completion and before they would be allowed in the full dollar amount to be included in rate base for full recovery of costs.

If the Commission had identified potential cost of implementation for a project during a CPCN or Section 44.2 application as less than a fully prudent decision then BC Hydro would be at risk for non - recovery of costs if the end state evidence confirmed the Commission's opinion of imprudence.

The post-implementation reports for capital projects at levels below the CPCN approval thresholds and or below the Section 44.2 expenditure thresholds would not all be required by the Commission, because they would potentially be too voluminous to track, follow, and review in a regulatory context. However, the Commission's oversight information should contain post-implementation reports for a sample of randomly selected projects below the threshold for CPCN's and for Section 44.2 applications.

In this way the Commission could statistically assess the quality of BC Hydro's post-implementation analysis of its capital expenditure activity and determine whether or not the BC Hydro process is working to deliver cost-effective results or whether it is failing to deliver in some way. Deeper analysis could follow if BC Hydro was found to be less than adequately cost-effective.

The Commission's oversight information should also contain whether or not post-implementation completion reports have been completed on previous capital expenditures and investments or whether they are absent.

The Commission's oversight information and process should enable potential prudency review and should also enable learning lessons with respect to how to improve the cost-effectiveness of BC Hydro's project capital expenditures.

12.1.1 Please identify any circumstances where a post-implementation report would not be required.

ANSWER

The CEC's view is that post-implementation reports should not be required wherever they can not provide value to go forward to future projects or confirm a lack of prudency basis for denying cost recovery of the expenditure.

If a Capital Management System does not have feedback loops for learning and improving it will eventually become inadequate to future capital deployment justification and approval.

12.2 Please explain whether post-implementation reports would be required in addition to the project-specific compliance reports currently filed with the BCUC.

ANSWER

The CEC believes the Commission should have project-specific compliance reports for all conditions set for a project, which may need monitoring throughout the project life cycle to ensure prudent implementation. If prudent implementation is not carried out when the Commission has highlighted a prudency risk then BC Hydro would be at risk for failure to recover some portion of the costs of the project.

The Commission should focus on post-implementation reports for the purpose of confirming and certifying that the required benefits have been achieved or will be. The Commission may well want to follow up on post project completion report to ensure that cost-effective capture of anticipated benefits is made. If BC Hydro does not capture benefits and the Commission finds that BC Hydro could have captured the benefits and would have captured the benefits if BC Hydro had taken the necessary steps to do so.

If the Commission finds that the post-implementation report recommends specific lessons to be learned and implemented in future projects then the Commission can through its oversight information better determine criteria for future projects and can encourage to take up more cost-effective approaches and practices.

12.2.1 If not, please discuss any revisions that could be made to the content or form of project-specific compliance reports.

ANSWER

Because the CEC believes that both forms of reports on projects approved by the Commission are distinctly different in purpose and content then the CEC concludes that both are required as suitable feedback steps in the capital expenditure management processes at BC Hydro.

12.3 Please outline the key information that a post-implementation report would be required to include.

ANSWER

The CEC believes that the Commission should require for its oversight information from the post-implementation reports, the project completion costs, the consequent operating cost impacts, the performance with regard to meeting the schedule and delivering the benefits sought by the project. These completion assessments should be done in detail at the level where benefits are specifically and measurably being captured.

The Commission's information on delivering of the benefits would enable calculation of the cost-effectiveness of the strategy behind the project and the specific capital expenditure benefit realization.

The post-implementation report will not be particularly useful unless it quantifies the capture of the anticipated benefits and or identified benefits not captured but potentially available with some level of additional effort. In this case the post-implementation report should lay out the future requirements for capturing benefits not yet captured and provide for follow up information and processes for the Commission.

Lastly the post-implementation report should capture potential lessons to be learned in approaching similar projects in the future and in fact follows those recommendations through an evaluation and vetting process to determine which concepts should be included in future strategy implementation and which in fact does get included.

12.4 Please discuss further how the information provided in a post-implementation report would be used to improve the decision-making with regard to improving BC Hydro's cost-effectiveness in deploying capital.

ANSWER

BC Hydro's capital expenditure cost-effectiveness in all cases would be delivery of the changes anticipated in the justification for the project or more for the capital investment anticipated or less. Provided a project meets and/or exceeds the delivery of specific benefits for the expenditure of certain costs then the project would be found to be a success.

Firstly, the Commission's oversight and knowledge of the accountability requirements would be expected to deliver cost-effectiveness behaviour in BC Hydro. Secondly, identification in post-implementation reports of additional benefit opportunities and or opportunities to yet capture benefits already identified would lead directly to improvement in decision making about the project and to greater capture of cost-effectiveness than might have been without the accountability of follow up reporting.

13.0 Reference: HOW WELL THE ACCOUNTABILITY PROCESS FOR CAPITAL INVESTMENTS IS WORKING FOR THE FEEDBACK TO IMPROVE CAPITAL MANAGEMENT
Exhibit C3-10, Part II Section I, pp. 129–134; Exhibit B-7-1, Section 4.3.1, p. 28; Appendix B, p. 2
Example of Demand Side Management (DSM) Capital Expenditure Oversight

On page 129 of the CEC evidence, CEC states:

The Commission's opportunity to enhance its value in the capital expenditure and investment processes could be engaged by separating its main oversight from the RRA process, ensuring that the oversight is carried out in advance of, but integrated into, the RRA decision-making.

The CEC's view is that reforming the Annual Report on Capital and making it a

focus of regulatory process would enable the proposed emphasis on Drivers, Strategies, Plans, Business Cases, and Feedback to become effective for informing the Commission's approvals of expenditures and ratemaking processes.

On page 28 of the Revised Proposal, BC Hydro states:

BC Hydro normally includes in revenue requirement applications information on all such projects exceeding the materiality limit with forecast expenditures or additions in the test period.

BC Hydro explains on page 2 of Appendix B to the Revised Proposal that “[h]istorically, the materiality limits have been determined through dialogue between BC Hydro and the [BCUC].”

13.1 With respect to CEC's position on “reforming the Annual Report on Capital and making it a focus of regulatory process”, please clearly explain what is meant by “regulatory process.” Please comment on how such regulatory process would align with the BCUC's regulatory jurisdiction.

ANSWER

Regulatory process for an Annual Report on Capital includes the current regulatory process of requiring annual information filings with respect to capital. To the extent that the CEC has referred to a focus of regulatory process this was meant to include additional process of review of the capital expenditure and investment information to ensure that the information with respect to the cost-effectiveness of the capital was included and provided to the Commission. The CEC expects that this would then enable review with respect to how the Commission can best encourage BC Hydro to improve its cost-effectiveness and enhance its performance. Such encouragement of the utility to improve is a defined Commission responsibility and appropriate jurisdiction is provided to enable such review.

The Commission is required to properly inform itself and is empowered to define its own processes for carrying out its regulatory responsibilities, which include rate setting and approval of capital expenditures. The Commission has ample jurisdiction to require information to assist it in its regulatory roles.

13.1.1 Please provide CEC's position on the regulatory efficiency of its proposed approach, with respect to the RRA review process.

ANSWER

Regulatory efficiency as a concept has often been looked at as a cost per regulatory process and appears to focus on potential cost reduction types of efficiency.

As an objective for a regulator, the concept of regulatory efficiency has the same problem as viewing BC Hydro's main capital expenditure responsibility as being to come in on time and on budget. The primary problem is that costs should not be divorced from the benefits.

If a regulator spends time on a regulatory process and achieves implementation of significant improvements adding value as a consequence of the oversight then the regulator may well have been more cost-effective but may have appeared less cost efficient.

The CEC believes that it is time for the regulator to consider the values the regulation oversight brings forth as benefits. The Commission, in the CEC's view, could focus on its own cost-effectiveness and replace the discussion of regulatory efficiency with cost-effective performance and in doing so could improve understanding of the importance of its regulatory review of utilities.

In the CEC's experience, the Commission has delivered cost-effective oversight of the utilities it regulates and can improve the cost-effectiveness of its regulatory oversight of BC Hydro by engaging in instituting an improved process for review of BC Hydro's cost-effectiveness in its use of capital expenditures and investments.

13.2 Please explain whether the existing method of establishing materiality limits would be applied to the proposed regulatory process for the Annual Report on Capital.

ANSWER

The existing method of establishing and applying materiality limits has the benefit of requiring that major expenditures above a threshold receive CPCN oversight and are examined in considerable detail including some significant degree of cost-effectiveness examination and testing.

The existing method of applying materiality limits has the detriment of enabling cursory oversight and little to no quantitative cost-effectiveness examination and or testing. Consequently, there is a substantial portfolio of projects for which the Commission receives inadequate oversight information and therefore cannot adequately review this proposed capital allocation in whole.

As with DSM capital it would represent better oversight if the whole portfolio of capital below the threshold were presented to the Commission analytically providing both the costs and the benefits such that the cost effectiveness of this capital may receive oversight and so that the Commission's regulatory role can focus attention on improving the cost-effectiveness of these capital expenditures and investments.

13.2.1 If not, please explain the thresholds, materiality limits or other process by which BC Hydro would report on its capital expenditures and investments.

On page 134 of the CEC evidence, CEC states:

If this level of and approach to information requirements for Commission oversight is justified and working for [Demand-Side Management] DSM then it would seem to follow logically that this level and approach to information requirements regarding other areas of BC Hydro capital investments may well be warranted and justified for the same reasons.

The CEC would not suggest that the DSM level of and approach to capital investment planning is a final ideal and, on the contrary, would expect that significant improvements can be sought over time.

However, the CEC submits that the approach to DSM expenditure reporting is a substantial validation of the information requirement concepts proposed by the CEC for effective Commission oversight of BC Hydro's capital expenditures and investments.

Section 4 of the Demand-Side Measures Regulation¹ prescribes the cost-effectiveness testing of demand-side measures included in expenditure schedule applications, pursuant to section 44.2(5)(d) of the UCA.

ANSWER

The CEC would recommend that Commission retain the thresholds for CPCN review, where a full cost-effectiveness review can be conducted particularly if the background context for cost-effectiveness review is properly developed in the BC Hydro Annual Capital Information reporting.

Then the CEC recommends that the cost-effectiveness metrics be applied to the remaining portfolio of capital expenditure and capital investment estimates so that the cost-effectiveness focus permeates the Commission's oversight information review process.

13.3 Given the specific regulatory framework that applies to DSM, please discuss to what extent the capital expenditure oversight that applies to DSM is a representative example of the oversight that applies to BC Hydro's capital work.

ANSWER

The oversight that applies to DSM is in part prescribed through legislation but its emphasis on demonstrating cost-effectiveness is not exclusive to legislative prescription so the Commission in its oversight of BC Hydro capital expenditures can and does rely on the same principle of cost effectiveness.

The oversight that currently applies to BC Hydro's capital works and any differences with the approach taken to oversight of DSM does not need to have one representative of the other or not. The primary issue is whether or not DSM oversight with its emphasis on cost-effectiveness may provide a model form which oversight of other capital expenditures and investments may learn.

For instance, the entire DSM portfolio is provided in evidence to the Commission along with its cost-effectiveness evaluations. Its prior period performances are reported annually and its capital plans are reviewed regularly. The Commission is engaged in approving expenditure proposals for DSM and has cost-effectiveness information available to conduct its oversight and approval responsibilities.

Nothing prevents the Commission from defining a requirement for similar information with respect to other capital expenditures and investments and using this information to inform and guide its approval decision making.

¹ http://www.bclaws.ca/civix/document/id/complete/statreg/326_2008

Given that this DSM information assists the Commission in ensuring DSM is cost-effective there is ample reason to examine this oversight information as having value when looking to improve the Commission's oversight information with respect to other capital.

14.0 Reference: HOW WELL THE ANTICIPATED PROCESS FOR REGULATORY OVERSIGHT IS WORKING FOR IMPROVING THE COST-EFFECTIVENESS OF THE COMMISSION'S OVERSIGHT
Exhibit C3-10, Part II Section J, p. 135; Exhibit B-7-1, Section 8.1, p. 56
Capital Report

On page 135 of the CEC evidence, CEC states:

The CEC's view is that requiring annual Capital Reports which address the various [Capital Management System] processes and documents will provide the Commission with important information in its assessment of Revenue Requirements, and can also stimulate improvements in the CMS themselves, thereby generating significant benefits in the larger streams of capital planning.

On page 56 of the Revised Proposal, BC Hydro states:

The Annual Report has historically included the following information on capital expenditures and projects:

- a) a summary of capital expenditures by capital category;*
- b) a listing of the planned expenditures in the current fiscal year for projects over the materiality limit (\$2 million for Information Technology projects, \$5 million for all other capital projects), and Demand Side Management;*
- c) an indication of which projects are considered extensions, pursuant to section 45(6) of the UCA for all projects over the materiality limit; and*
- d) a listing of projects over the major project threshold and the anticipated type of regulatory filings.*

Starting in fiscal 2017, changes to the Annual Report have increased the transparency, improved efficiency, reduced redundancy, and provided more relevant information on capital expenditures and projects.

14.1 Please confirm, or otherwise explain, whether "Capital Reports" referenced on page 135 of the CEC evidence is the same as the "Annual Report" referenced on page 56 of BC Hydro's Revised Proposal.

ANSWER

Confirmed. This was an error in getting the name of the reporting correct.

14.1.1 If not confirmed, please explain how Capital Reports would vary from Annual Reports.

ANSWER

The CEC is proposing additional annual reporting to address development of the Commission's oversight information to improve its effectiveness and was thinking of it as a Capital Reporting process but had also thought that it need not be a separate process and might be cost-effectively combined with the existing Annual Report to the Commission.

14.1.2 If not confirmed, please explain the process by which the Capital Reports would be filed and reviewed by the BCUC.

ANSWER

The Commission could receive the information for the Annual Report and the included improvements for the Commission's oversight information in regard to capital expenditures and investments at the same time and determine at that time if it would simply receive it as information or whether it would prefer to have stakeholders engaged in a review process.

It may be appropriate that the Commission conduct a streamline review process with written submissions as a cost-effective process for ensuring the continuous improvement of the Commission's oversight information.

14.2 Please detail the CMS processes and documents which would be required as part of the Capital Reports.

ANSWER

The CEC believes that the Commission's oversight information could be improved substantially with the inclusion of the following in Annual Capital Reporting as part of the BC Hydro Annual Report to the Commission.

Capital Drivers

The filing of information documents detailing the drivers for the capital expenditure and investment needs such as the forecasting for, Load & Capacity, Condition & Performance, Safety & Security Risk, and Stakeholder Concerns

Strategies to Meet Drivers

The filing of information documents or papers detailing the Selected Strategies, Alternative Options, Metrics for Costs & Benefits, Decision Methods for Selection and Risks & Opportunities, Identification of Strategy Driven Capital Aggregates

Capital Plans to Implement Strategies

The filing of documents detailing the portfolio of projects plans, Organizing & Resourcing for Implementation, Prioritizing & Scheduling, Setting Precedent Conditions & Coordination, Cost-effectiveness of Plans, Approvals of Plans

The reason for focusing on the earlier stage planning is to identify the opportunities for Commission oversight information to add value to regulatory processes by providing key context

to later Commission approval processes and roles. The CEC expects a high regulatory value from Commission oversight of this level of information.

The CEC believes that the following information could be potentially more detailed than the Commission oversight Annual Report information filing might find appropriate. Instead it may be more useful to have sample analysis and summary analysis of the following to assess the quality and cost-effectiveness of capital management. From this level of analysis, the Commission's oversight information could be used to determine where it may be appropriate to focus additional regulatory attention. This level of filing may require further analysis of the costs and benefits.

Specification Project

The filing of information documents detailing project, Identification & Definition, Need and Justification, Scope & Boundaries, Timeframe & Schedule, Aggregation into Programs and Benefits & Costs, Risk Assessments

Approval of Plans & Projects

The filing of documents detailing the Business Cases, Evaluation of Costs & Benefits, Approvals of Plan Portfolio Projects, and Approval of Projects for Implementation

Approval of Plans & Projects

The filing of documents detailing the, In Service Timing, Capital Additions, Revenue Requirements, Integrations with Operations & Other Costs and Rate Consequences

Accountability

The filing of documents detailing accountability for results, Completion Reports, Post-Completion Evaluation, Benefits Realization & Capture, Lessons and Learning Feedback

D. EVIDENCE OF MR. SCOTT THOMSON

15.0 Reference: EVIDENCE OF MR. SCOTT THOMSON Exhibit C3-11, cover letter, Appendix A

On the cover letter of Exhibit C3-11, CEC states:

The CEC retained Mr. Scott Thomson to provide an expert opinion on Part I of the CEC Evidence prepared by Mr. David Craig.

Mr. Thomson's Curriculum Vitae is attached as Appendix A.

15.0 Please provide further explanation on how the experience of Mr. Thomson should be viewed as verifying the applicability of CEC's evidence to the specific situation of BC Hydro's capital.

ANSWER

The CEC was interested in gaining Mr. Scott Thomson's perspective as someone with recent experience running both a large vertically integrated crown hydro and gas utility that deals with virtually all of the same issues and constraints that BC Hydro does, i.e. major generation and transmission infrastructure expansions, aging infrastructure driving large capital refurbishment programs with multi-billion dollar annual capital expenditure, rate pressures and constraints, complex first nations relationships and multi-dimensional stakeholder management issues, etc.

Mr. Thomson was involved in all the major regulatory proceedings dealing with MB Hydro's major capital programs (generation and transmission expansions) and dealings with the government ministers responsible for Hydro and directly with the Premier.

Mr. Thomson had direct oversight of and involvement with the regulatory processes and proceedings at the Fortis/Terasen group of companies in BC and indepth understanding of the regulatory processes and proceedings in front of the BCUC.

Mr. Thomson had the investor owned utility perspective under both full and light regulation and the "shareholder discipline" perspective on capital allocation.

Mr. Thomson had first-hand knowledge and understanding of the time effort and cost of producing compliance reporting for regulatory purposes and the level of effort required to produce information in a complex environment like regulated utilities.

Mr. Thomson had first-hand understanding of the factors affecting Investor owned and Crown utilities and some of the unique incremental factors that Crown utilities must manage given the expanded stakeholder and interest groups.

Mr. Thomson's experience may be more current in understanding the type of information that ERP systems like SAP can potentially generate to augment the evidentiary record or enhance regulatory reporting.

Mr. Thomson provided a practical perspective from the lens of a utility executive to respond to and assess the proposals put forth by Mr. David Craig and the CEC, including providing insights to ensure the initial proposals would lead to both effective and cost-efficient capital expenditures and the regulatory process underlying same.