

REQUESTOR NAME: **BC Sustainable Energy Association and Sierra Club BC**

INFORMATION REQUEST # 1 to INTERVENER EVIDENCE

TO: **Richard Landale**

DATE: **March 27, 2017**

PROJECT NO: **3698869**

APPLICATION NAME: **BC Hydro F2017 to F2019 Revenue Requirements Application**

**BC HYDRO F2017–F2019  
REVENUE REQUIREMENTS EXHIBIT C15-12**

**1.0 Topic: Purpose of evidence**

**Reference: Exhibit C15-11, Landale Evidence, 1.0 Preface, pdf p.1**

“1.1 The following evidence challenges existing legislation and directives as of the original application date July 28th 2016. Specifically, direction 7, Clean Energy Act and the Utilities Commission Act, as they pertain to the “Burrard facility in Port Moody BC” Chapter 8, Section 8.1 Other Revenue Requirements Items, and Table 8-1 Burrard Synchronous Condense Facility Depreciation Rates on pages 8-2 to 8-4 inclusive from within the application.”

- 1.1 Is Mr. Landale’s argument that legislation that refers to Burrard Thermal or the Burrard Thermal Generating Plant has no application to what BC Hydro now refers to as the Burrard Synchronous Condense Facility, because BC Hydro has changed the name of the facility?
- 1.2 Specifically, is Mr. Landale suggesting that the provisions of Direction No. 7 that refer to “Burrard Thermal” do not apply to the “Burrard Synchronous Condense Facility”?
- 1.3 Is Mr. Landale suggesting that it is the intention of the B.C. government that Direction No. 7 does not apply to the “Burrard Synchronous Condense Facility”?

**RESPONSE TO 1.1, 1.2, 1.3**

**YES to IR 1.1 and IR 1.2,** and I do not know what the government’s intention is for IR 1.3

The argument intended to be applied within this “current” BC Hydro Application is that BC Hydro has many titles for the facility in question. Namely: Burrard, Burrard Thermal, Burrard Thermal Plant, Burrard Thermal Generating Plant, Burrard Generating Station, Burrard Thermal Facility, Burrard Generating Units, Burrard Synchronous Condense Facility, lastly in Appendix I; Burrard Convert Facility to Synchronous Condense Only Operation.

BC Hydro can call any facility they own, whatever they choose. The question is actually more closely related to the facilities “function” within the governments meaning of Direction 7. Let me explain:

In Appendix C on page 16 BC Hydro provided a copy of Direction 7. This document delineates the government’s intended policies of some very specific aspects in Direction 7 for the consistent context / meaning, understanding, administration and enforcement of and within the directive.

Section 1 Definitions states:

***“Burrard costs”** means the costs incurred by the authority in F2014 or a later fiscal year arising from the decommissioning of those portions of Burrard Thermal that are not required for transmission support services, including, without limitation, employee retention costs incurred as a result of the decommissioning, costs incurred as penalties or damages that arise in consequence of the decommissioning, and the net increase in amortization expense in F2015 and F2016 arising from a Commission order under section 15 of this direction;  
“Burrard Thermal” has the same meaning as in the Clean Energy Act;*

***Burrard Thermal***

*15 On application by the authority the commission must*

Response to 1.1, 1.2, 1.3 continued:

(a) grant permission to the authority under section 41 of the: Act to cease operating those portions of Burrard Thermal that are not required for transmission support services, and

(b) set depreciation rates for the classes of property, plant and equipment at Burrard Thermal as shown in Appendix B to this direction.

Again from within the application; “Appendix GG Glossary of Terms and Abbreviations”, BC Hydro does not define their own meaning of Burrard, Burrard Thermal, Burrard Thermal Plant, Burrard Thermal Generating Plant, Burrard Generating Station, Burrard Thermal Facility, Burrard Generating Units, Burrard Synchronous Condense Facility. BC Hydro defines Burrard Thermal “function” is not referenced, or linked anywhere else in the application, or to any other regulatory authority, on page vii, quote:

“and Burrard Thermal may be relied on for no energy and no capacity, except as authorized by regulation (B.C. Regulation 319/201; B.C. Regulation 315/2010). Electricity self-sufficiency must be achieved solely from DSM and electricity generating facilities in the province”

**In summation**, Direction 7 is specific, BURRARD THERMAL. Universally in connection with electricity power generation, in the distribution and transmission networks around the world, “thermal generation” refers to steam (heat) powered turbine rotation devices/motors connected to a generator armature. There is no other meaning for thermal in the context of Direction 7.

Direction 7 does not mention synchronous condense / or facility. Section 15 refers specifically to **Burrard Thermal**. Direction 7 exclusively refers to “**at Burrard Thermal**”. Not to assets off the property, or even assets connected to the property. Like offsite substations, pipelines, a large water reservoir tank, interconnection equipment, supporting facilities, buildings, pumping equipment located in another municipality, or cathodic protection systems and grounding systems. This includes all pipeline(s), metering, valving for the supply of natural gas to the property and on the property. Any ongoing costs to maintain the original Esso Oil Tank farm adjoining the property. Almost all these assets can be seen from “Google Earth” of the Burrard area and Right of Way (ROW).

In Direction 7 Appendix B ~ Burrard Depreciation Rates (BC Hydro Table 8-1), the government’s tables defines by title the assets applicable to Burrard, as quote:

“Class of Property, Plant and Equipment at Burrard Thermal”. Now, “**at**” does not refer the class of property connected to Burrard Thermal, or offsite, the table is specific “**AT**” Burrard.

The Government has maintained Direction 7 for quite a number of years, and from time to time updates and amends Direction 7 to their will and or policies. The government goes to great lengths to define their meanings and intentions throughout Direction 7. To the point of many specific directives to BC Hydro and to the Commission. (their respective does and don’ts).

If the government by existence of Direction 7 as amended from time to time:

(includes amendments up to B.C. Reg. 207/2016, July 28, 2016), **Section 4** [am. B.C. Reg. 207/2016.], **Section 9** [am. B.C. Reg. 140/2015.], **Section 12** [am. B.C. Reg. 197/2016.]

Please check the “**Point in Time**” to the Direction 7 amendments at the following link: [http://www.bclaws.ca/civix/document/id/complete/statreg/28\\_2014\\_pit](http://www.bclaws.ca/civix/document/id/complete/statreg/28_2014_pit)

Had meant to include Burrard Synchronous Condense Facility, the Government had ample opportunities to do so ahead of BC Hydro making application and receiving approval from the Commission to cease operating the facility by General Order from the Commission G-198-16

Response to 1.1, 1.2, 1.3 continued:

In the absence of any Government directive update's, the Commission must follow the "current" letter of Direction 7, within the prevailing written definitions of Direction 7, and the respective clauses and tables as amended from time to time.

The Commission detailed exactly in G-198-16 what assets were not required for transmission support services, in concert with Direction 7, the Clean Energy Act and other regulations, in the meaning of Burrard Thermal Generating Station (Burrard Thermal).

Further, the challenge to the intervener - **BC Sustainable Energy Association and Sierra Club BC AND the BCUC Commission is, if you know and have a working knowledge of the assets listed in Table 8-1, then everything discussed in my evidence may be superfluous, as for the directives in Direction 7.**

- 1.4 Is all of Mr. Landale's evidence exclusively related to this legal argument? Please specify, in the hypothetical event that the Commission was to rule that statutes and directions in question do apply to the "Burrard Synchronous Condense Facility," what portions of Mr. Landale's evidence would be relevant and to what decision(s) the Commission may make in this proceeding.

**RESPONSE:**

NO, not exclusively related to this legal argument.

In the hypothetical event that the Commission were to rule that statutes and directions in question do apply to the "Burrard Synchronous Condense Facility," Then the Commission does.

I cannot afford the costs to appeal such a decision, (does BCSEA-SCBC), and take that decision through the Courts. So the Commission wins and BC Hydro adds depreciation costs to the ratepayers of British Columbia. And my notation that legal documents composed of words, definitions, clauses and sub clauses can be manipulated to suite an authority's hidden agenda. That would be corrupt. Which is out of my control.

Going along with the notion of hypothetically tossing out legal argument, what evidence remains?

BC Hydro has provided ample topics to discuss, from accounting, property, asset classes, onsite and offsite. Assets required, assets impaired, assets not required. The operational health of assets, and the planned scheduled maintenance, and or operational replacement necessity. The planned life cycle of the Burrard Synchronous Condense Facility to 2025. Asset depreciation / amortization over revenue. What future assets will be added to Burrard for depreciation, for example, connections to the facility, upgrading assets, see BC Hydro's "**Public**" Appendix J - Capital Expenditures Greater than \$20 million.

I need to thank BCSEA-SCBC for this IR, as I had forgotten BC Hydro filed July 29<sup>th</sup> 2016 Exhibit B-1-1-1 namely: "**CONFIDENTIAL**" Appendix J - Capital Expenditures Greater than \$20 million. After having been granted permission to view this confidential exhibit, happily there is nothing in the confidential exhibit having any direct concern with the Burrard Facility.

**2.0 Topic: Synchronous Condenser Operation**  
**Reference: Exhibit C15-11, Landale Evidence, p.4.**

“3.5 What BC Hydro did not present as background.

On June 8th, 2004 in the BC Hydro Revenue Requirement Hearing 2004/05 and 2005/06 filed their BCTC Undertaking Exhibit B1-157, (transcript ref: Volume 18, Page 3117) to the BCUC Counsel’s; Question: How long has BC Hydro been using the units at Burrard in synchronous condenser operation ?. Response: The Burrard generators were converted to synchronous condenser operation between the year 1986 and 1990.

Question: Does the Commission have all the facts required ahead of their decision ?

Please also refer paragraph 8.7 on page 12 for further concerns.”

- 2.1 Is this paragraph saying that BC Hydro in the current application (F2017-F2019 RRA) did not include as background information that “The Burrard generators were converted to synchronous condenser operation between the year 1986 and 1990”?

**RESPONSE: YES**, see copy of BCTC Undertaking June 7 2004 hearing date, in Attachment A to this IR response. I am also suggesting BC Hydro could have included the undertaking response in Chapter 2, to be transparent.

- 2.2 Please identify as precisely as possible the decision or decisions that the Commission will or may make in the current application that Mr. Landale says should be informed by the fact that “The Burrard generators were converted to synchronous condenser operation between the year 1986 and 1990.”

**RESPONSE:** My apologies, I cannot speak to the Commission’s possible decisions.

The purpose of the background was to encourage the Commission into looking back through their archives as I did. I was shocked to see the 2004 transcript and the cited reference to Burrard converting units to a dual coupled function. The Commission has the resource to interrogate their own archives, and thereby inform themselves of all relevant aspects of the Burrard Thermal Generating Plant, including dual functionality, asset depreciations, costs to ratepayers, and any specific government directives, ahead of any decision the Commission is inclined to make. The Commission should not rely on Interveners doing all the work, they have a responsibility to exercise due diligence in the administration of regulatory oversight.

- 2.3 Please explain the implications for the Commission’s decision(s) in the current application of the fact that “The Burrard generators were converted to synchronous condenser operation between the year 1986 and 1990.” For example, what does Mr. Landale say should be the outcome of the Commission’s decision(s) due to the Commission being aware that “The Burrard generators were converted to synchronous condenser operation between the year 1986 and 1990”?

**RESPONSE:**

In my Information Request , I specifically asked BC Hydro to provide the install date for each of the assets listed in Table 8-1. BC Hydro could not provide that information due to software tracking difficulties, or words to that effect. The purpose of the IR was to establish the install date with the original costs in (yesterday dollars, not Net Book Value 2016), to identify how much each asset has been depreciated, to ensure no double dipping for want of a better terminology. This also refers to whether the Commission has a working knowledge of the assets given in Table 8-1.

As to the Commission’s possible decision, I contend the entire Table 8-1 cannot be accepted for two reasons;

Response to 2.3 continued:

- 1). Direction 7 does not recognize the synchronous condense operations at Burrard, to which Direction 7 Attachment B was for Burrard thermal generator operations.
- 2). Because BC Hydro has apparently admitted they cannot support their capital cost depreciation claims, without using inflated (today) NBV. Thus inflating the overall depreciation capital valuation of these assets, thereby adding to the ratepayer's final burden.

2.4 Is the reference to "paragraph 8.7 on page 12 for further concerns" correct?

**RESPONSE: YES**

Again there are two reasons for this concern.

- 1). Direction 7 addresses the assets "**AT**" Burrard Thermal" not assets offsite. Referring to Table 8-1, namely: C12203 Bridge, Concrete, C31002 Protection, Cathodic, C49001 Pump, C49002 Motor, C55501 Grounding Systems, C61001 Fencing, C75201 Tanks, Steel, Air/Fuel, C75301 Water Supply system, to name a few without the benefit of looking at the drawings. Associated with some of the noted assets is electrical power distribution (480V or 600V and 13.8kV) Switchgear and Motor Control Centres. I need the Single Line Diagrams to confirm. Also associated with some of these assets is C65001 Panels/Cubical, P&C, 68202 Term Unit, Rem (Slave), C68204 Distributed Ctrl Sys, C70104 Instrumentation Digi. For these assets I need to see the Process Flow Diagrams, and the Pneumatic Instrumentation Diagrams. I also suspect assets C59001 Power Supp Uniterr and C59201 Charger System, Batt have smaller assets located at Bunzten Lake Pumphouse.
- 2). The map given in evidence clearly shows where the water supply starts, offsite in the adjoining Coquitlam Municipality, 5.2km north of the Burrard Facility. This happens to be significant in terms of unknown assets associated with the pipeline operations and safety. Typically some of the operating assets are, the pipeline(s) themselves, valving, instrumentation, cathodic protection with a possible anode bed(s), cabling, power line to Pumphouse with associate equipment, Pumphouse building, Intrusion Protection equipment, Communications, and Process Control communications, Fencing, to name a few asset components.

**ATTACHMENT A to IR 2.1**

- 2.1 Topic: Synchronous Condenser Operation  
Reference: Exhibit C15-11, Landale Evidence, p.4.

**BCTC UNDERTAKING**  
**BC HYDRO REVENUE REQUIREMENT HEARING**  
**2004/05 AND 2005/06**

<b>HEARING DATE</b> June 7, 2004	BRITISH COLUMBIA UTILITIES COMMISSION		
<b>TRANSCRIPT REFERENCE</b> Volume 18, Page 3117	EXHIBIT B1-157		
	DAY 19	ENTERED BY BC Hydro	DATE June 8/04

REQUESTOR: BCUC Counsel

**QUESTION**

How long has BC Hydro been using the units at Burrard in synchronous condenser operation?

**RESPONSE**

The Burrard generators were converted to synchronous condenser operation between the years 1986 and 1990.

**3.0 Topic: Accounting Standards**

**Reference: Exhibit C15-11, Landale Evidence.**

“5.1 In addressing the details discussed by BC Hydro in this chapter, the main focus is not to challenge the various accounting standards prescribed by Government Organization Accounting Standards Regulation 257/2010, effective April 1, or Financial Accounting Standards Board Accounting Standards Codification 980 Regulated Operations 2012, or the Office of the Superintendent of Financial Institutions (OSFI), BC Hydro are committed to follow, namely, International Financial Reporting Standards (IFRS), Uniform System of Accounts (USoA).” [underline added]

- 3.1 Please confirm that “the main focus” refers to Mr. Landale’s main focus, not BC Hydro’s main focus. Is Mr. Landale saying that he does not challenge the accounting standards that BC Hydro says are applicable to depreciation of the Burrard Facility?

**RESPONSE: That is correct.**

My intervener evidence Section 5 is intended to bring attention to the accounting standards to be used for the depreciation of Table 8-1 assets.

In so doing the issue is the enforcement / application of those standards on the components referred to in paragraph 5.2 and paragraph 5.4 in my intervener evidence.

As an example from the application, quote: “Depreciation and amortization (collectively referred to as amortization) is the allocation of the original cost of assets over their estimated service lives” The original cost of assets over the estimated service lives, is the issue and main focus in reference to applied accounting standards.

Further attention to the issues is addressed in my RESPONSE: to 4.1 and 4.2 overleaf.

Incidentally, the “noted” accounting standards appear to have a universal application to almost any industrial, commercial enterprise, they are not unique to the Burrard Facility, as best as I can determine.

**4.0 Topic: Amortization Expense**

**Reference: Exhibit C15-11, Landale Evidence, p.5**

“5.2 The issue in contest by this evidence is born from Chapter 8 Section 8-1 Lines 11,12,13 on page 8-1, namely: quote:

“Amortization Expense

Depreciation and amortization (collectively referred to as amortization) is the allocation of the original cost of assets over their estimated service lives

Line 15 the amortization of property, plant and equipment in service

Lines 18,19,& 20 dismantling costs related to assets which do not have an associated provision required under the Prescribed Standards as defined in section 8.12 (before regulatory transfers and recoveries)”

Further:

Lines 24 to 26 consecutively with Lines 1 to 9 on page 8-2, including Table 8-1 inclusively.” [underline in the original]

4.1 What is it about these statements that Mr. Landale disagrees with?

4.2 Please clarify what is “the issue in contest by this evidence.”

**RESPONSE: to 4.1 and 4.2**

**Preamble:** assuming the Commission upholds the Governments “**definitions**” in Direction 7, then Table 8-1 cannot be approved as is. Conversely, if the Commission upholds BC Hydro’s application for the asset depreciation rates listed in Table 8-1, then the following should be given weight in the Commission’s final decisions.

**Is the asset onsite or offsite?** If onsite, then consideration must be given to the operational life and health index of the asset, bearing in mind the overall service life, whether the asset is impaired or not. The extent of that consideration is whether the Commission uses the “original installed capital cost of the asset”, or at the expense of the ratepayer, accepts BC Hydro’s NBV for depreciation. Further the Commission must in fairness determine before approval whether there are shared asset classes (as BC Hydro has indicated is the case), are required for support transmission service under the new Burrard Synchronous Condense Facility operations. One example of this condition is given in my response to IR 2.4 herein, where I have identified assets purported by BC Hydro to be “**AT**” the Burrard Facility.

**The next consideration** is for depreciation / amortization purposes producing revenue in such a manner as to support the depreciation / amortization. How can a depreciation cost be depreciated if there is no revenue to offset the asset against ? This point is fundamental to understanding how Burrard will now function. Is Burrard a revenue producer, or an operating consumer cost to BC Hydro transmission network/grid? Its nature is a consumer of power.

The General Order G-198-16 established the Burrard Facility is no longer a power generation producer. The very nature of a synchronous condenser facility is that it consumes power from the transmission grid it is connected to by operating a synchronous motor load. This operation does have a benefit to the transmission grid and to all BC Hydro customers. That benefit is unknown from an accounting point of view. This was confirmed by BC Hydro staff at my January 18<sup>th</sup>. 2017 meeting with them at their Edmonton/Burnaby offices.

Up till now Direction 7 has addressed by name Burrard Thermal (not Burrard Synchronous Condense Facility) costs in Section 15, given directives in Sections 1, 7, 11 and Appendix B.

**5.0 Topic: Assets and Depreciation Figures**

**Reference: Exhibit C15-11, Landale Evidence.**

“5.4 BC Hydro’s response to Landale IR 2.3.2 Attachment 1, 12 page asset table is appreciated. As the table focuses on assets installed pre 2016, having NBV at March 31<sup>st</sup>. 2016. The table hi-lights how an Asset Class in Table 8-1, has a huge array of other related assets. Please see paragraph 8.7, page 12 herein for related concerns.”

- 5.1 What are Mr. Landale’s concerns regarding the assets and depreciation figures listed in Exhibit B-15, Landale IR 2.3.2 Attachment 1?

**RESPONSE:**

I really would like to give a fulsome response to this IR, but I cannot. I repeat the refrain, I need to see the drawings to correlate the assets to the drawings. So regrettably from my point of view, I cannot take this point further.

I will say again, I requested from BC Hydro the asset’s original purchased date and placed into operation. BC Hydro could not provide that information. I pass their excuses on.

From a “common sense” point of view, my concern is BC Hydro has tabled their “2016 Net Book Value” on assets that may or may not be needed, were installed when the facility was originally built, are impaired, and have an accelerated depreciation rate to fit a self styled service life, with no prior accounting of the assets to measure against. Lastly, all of this would never have come to anyone’s attention if BC Hydro had not included in Table 8-1 asset C82504 Loader/Backhoe. Huge mistake which I find offensive and inappropriate to the Burrard Facility. It demonstrated in my view contempt to the BCUC approval process (who do not research minutiae), and are prone to shortcut their approval process by regularly ordering a streamline process), resulting in rate hike abuse to all British Columbian ratepayers.

- 5.2 If the reference to paragraph 8.7 is an error, please provide the correct reference or restate the concerns.

**RESPONSE:** No error, please see my response to 2.4 herein.

**6.0 Topic: Name of Facility**

**Reference: Exhibit C15-11, Landale Evidence, p.6**

In sections 6.1 to 6.6, Mr. Landale discusses the name(s) of the Burrard facility (or Facility).

- 6.1 What conclusion(s) is Mr. Landale saying the Commission should draw from the fact that BC Hydro now refers to the Burrard Facility as the Burrard Synchronous Condense Station? Is Mr. Landale saying that the name of the facility affects the depreciation of assets within the facility? If so, how?

**RESPONSE: YES**

Our modern society is delimited by names. The Government requires all businesses registering for incorporation to include a “functional” word in the title of the company name. Basically it is a housekeeping reason. So that every business can be categorized, slotted into place, and index, located in a directory and so on. Example. “**British Columbia Hydro and Power Authority (BC Hydro)**”. This application is in the name of the legally recognized and registered corporation name. The company also happens to have a logo, “**BC Hydro Power smart**”. This logo is something the company want customers to associate with, it’s easier than their legal name. Take a look at Exhibit B-1-1, the very first page, it says it all. And for good measure this exhibit identifies the Commission by its full legal title name, “**British Columbia Utilities Commission (BCUC or Commission)**.” *Legal names are our mantra.*

Why do we need to refer to “entities” by their legal name in Law, Acts, Government Directives, Regulations and other court documents. Because there can be no identity ambiguity.

The legal system uses names in court documents. These names have a legal meaning in representation. The titled names are not ambiguous, there is no room for open interpretation. My name is on my birth certificate, my driver’s license, my passport. Legally that’s my name, no identity ambiguity there.

Why does a person’s Last Will and Testament spell out exactly that person’s name, to ensure no ambiguity in Probate Court. This document will give precise directives to the court and executors, it specifies the deceased “Directives” for the distribution of his/her assets while in compliance with the law, taxation laws and so on.

That all said, Direction 7 is clear within the meaning of the written definitions and directives, no identity ambiguity.

In my Intervener Evidence Section 6, I provide pictures of BC Hydro’s inconsistency to identifying their facility. I do not care what BC Hydro calls the facility. **I do care** what the Government calls the facility (Burrard Thermal), and what the legal name of the facility is on the property title. (in reference to paragraph 6.2 and the BC Corporate Registrar \$25.00). I care that the Commission exercises its office in this application according to the “written” law, all government directives, and that all accounting procedures are applied correctly to BC Hydro’s application for approval of Table 8-1 “as written”. Without ambiguity or implied facility name labels, which is not consistent or in accordance with the law or the directives of Direction 7. The courts are meant to be blind to intensions, their decisions are based upon the facts as they exist, and applied within the written prevailing laws, as in this case Direction 7.

These are the principles I expect the Commission to base their decisions on. As for their conclusion, I cannot say, only the Commission can say what their conclusions are based on.

**7.0 Topic: Asset Classes**

**Reference: Exhibit C15-11, Landale Evidence, p.8.**

“7.3 It is observed that on the whole BC Hydro follows these overarching principles and definitions prescribed in the USoA. So the issue comes down to asset classes.”  
[underline added]

7.1 What is the issue regarding asset classes (or impaired assets)?

**RESPONSE:**

**CAVEAT:** Section 7 in this IR is quite complex to breakdown in the fashion the BCSEA-SCBC is hoping for. With respect, I believe the BCSEA-SCBC is having the same difficulty I am in understanding the “real” meaning of asset classes and impaired assets, as they may or may not apply to Table 8-1. Quite frankly the BCSEA-SCBC IRs to me, make my case, thank you. BC Hydro has not clearly explained their use of asset classes, or impaired asset for the purposes of depreciation rates and accounting of assets listed in Table 8-1, so as to ensure there is a common understanding of BC Hydro’s meaning across this application hearing. The following attempts to answers the BCSEA-SCBC, while not speaking for BC Hydro.

BC Hydro uses this term six times within the application, and we still do not understand it. Here are two examples, the first instance of “asset classes” appears on page 6-30, quote:

“The end-of- life expenditures are managed to maximize the life cycle value of the transmission and distribution assets. While in most instances end-of-life replacements are done through proactive replacements, in some asset classes ‘run to failure’ is used to minimize the life cycle costs of managing the assets where the associated impacts upon asset failure are low. Examples of asset classes that are ‘run to failure’ include overhead distribution transformers and transmission line insulators”.

Then on page 6-34, another view of asset classes, quote:

“Asset Health and Performance: BC Hydro evaluates the condition of the Transmission and Distribution assets based primarily on the latest available maintenance test and inspection data, and, using a recently developed methodology, assigns an Asset Health Index to each asset. The methodology provides assessments that are objective, repeatable, and consistent across entire asset classes. Asset Health Index assigns ratings of Very Good, Good, Fair, Poor, or Very Poor”.

We must jump ahead for a moment to IR 7.7, where I included in my evidence BC Hydro’s Table S-3 Asset Health Index for Substation Assets, as a means to offer an explanation of asset classes. I will discuss this point in my response to IR 7.7. In a very simplistic fashion:-

Hypothetically: A computer is an asset with a service life, say 10 years. It cost \$3,000 in 2016. Each year for 10 years this asset will be depreciated by 10%. Within the computer there is a tiny lithium battery that provides power to the computers time clock. Batteries are inherently an “impaired asset” by their nature. So at some point the Asset Health Index comes into play, as the asset will not last the 10 year service life of the computer, and will have to be replaced.

Back to the IR question. What is the issue? BC Hydro provided a very extensive series of replies to my Excel Spreadsheet IR. (again thank you). Without my IR the Commission would not have been as well informed as they are now. BC Hydro complicated the issues by introducing their version of whether the asset was required or not, (while) some of the assets, asset classes were impaired. To date, we do not know what these assets are and how to differentiate the assets listed in Table 8-1 into the asset classes, impaired or not.

The Commission must evaluate these assets within the context of Table S-3 Asset Health Index to determine the appropriate depreciation rates over the expected service life of the asset, ahead of any adjustments or approvals. Direction 7 Appendix B adds yet another dimension.

- 7.2 Where does “Table S-3 Asset Health Index for Substation Assets” come from? Was it prepared by BC Hydro or by Mr. Landale?

**RESPONSE:**

“Table S-3 Asset Health Index for Substation Assets” can be found in Appendix S Asset Health – Transmission and Distribution on page 3 of that appendix. The arrow heads were added by me to hi light possible asset classes and possible impaired assets, in relation to service life. In paragraph 7.7 of my evidence I suggested this table is as close as possible I could find in BC Hydro’s application that resembled asset components relevant to “onsite” assets eligible for asset depreciation per Table 8-1. Without the drawings I am unable to be any more specific. I did include on page 41 of my evidence a rendering of a CONCEPT DIAGRAM OF BURRARD SYNCHRONOUS CONDENSE STATION FOR TRANSMISSION MVAR STABILIZATION. This diagram is intended to show the array of asset components interconnected to Burrard. Without BC Hydro’s drawings this concept diagram is as good as it gets.

- 7.3 Does “Table S-3 Asset Health Index for Substation Assets” apply to “Substation Assets” or to the Burrard Facility? The evidence states “The following table appears, or has the closest relevancy to the Burrard Facility:...” What does this mean? How is the table relevant to the Burrard Facility?

“7.7 Not only were I denied access to these drawings, although I had indicated the willingness to sign a confidentiality agreement to view these drawings. The Commission is also denied the benefit of that review opportunity. Which is perhaps even more significant, seeing as the Commission is now being asked to approve asset depreciations rates without grounds.”  
[underline added]

**RESPONSE:**

The assets listed in the “Table S-3 Asset Health Index for Substation Assets” apply to “Substation Assets”. Burrard has an adjoining Substation, see aerial photo on page 40 of my evidence. As discussed hypothetically in my response to 7.1, within the substation health index table, there are asset classes (sub components) of a larger asset. By way of an example, taking the first three assets listed in Table S-3: (also refer to page 5-102, lines 19 to 22). I have also included a few pictures to aid in understanding the asset and asset sub components, or possibly what BC Hydro may refer to as asset classes.

1.Transformers in a substation are very large components, that require regular service and maintenance of sub components, like insulators, oil reservoirs, oil fan coolers, instrumentation, internal control systems, specialized equipment grounding systems, to name a few.



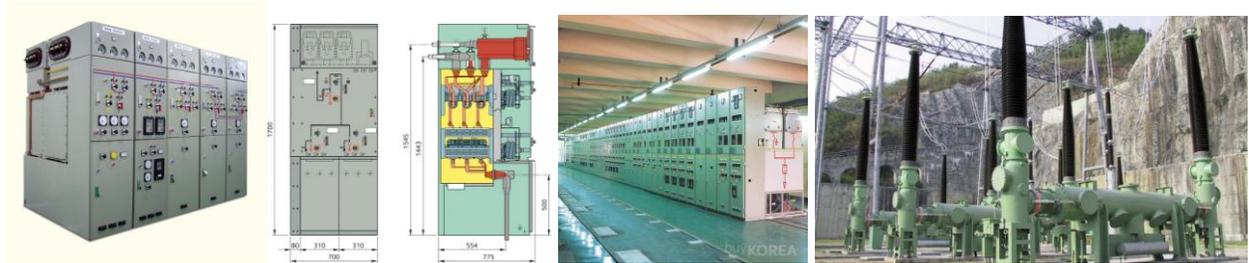
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Response to 7.3 continued:

2. Gas Insulated Switchgear, hi-voltage (could be 13.8kV to 230kV) components like the gas insulators themselves, disconnect switches and breakers, fault relays and instrumentation. In the case of Burrard, this component is times 6. Each component could be 8 to 10 feet long, 3 feet wide and 8 feet tall. Sometimes the GIS equipment is located in HVAC buildings/rooms, or can be fitted with a built-in HVAC system. I have no idea what GIS was installed at Burrard. The point of the GIS example is to demonstrate a large asset having potentially impaired asset classes over the service life of the GIS. And according to BC Hydro that life may end in 2025.



Typical GIS units in Generator Facilities

Typical GIS in field like Eagle Ridge Substation

3. Circuit Breakers, the substation is a 3 phase system, so each phase will have their own circuit breakers. The transmission 3 phase lines leaving the substation are bundled as 4 lines per phase. Therefore for each 3 phase circuit there are 3 circuit breakers, times 6 output transmission lines. These circuit breakers have additional service components and their own insulators, trip setting devices and overload components. All of which is known without the drawings.



Another very simplistic analogy to the Asset Health Index is the complex modern automobile manufactures warranties. Where the manufacturer explicitly detail the asset classes and impaired assets to be maintained according to manufacture specifications, or the car owner automatically compromises the automobile warranty coverage. The Asset Health Index.

7.4 Does Mr. Landale disagree with the depreciation rates assigned by BC Hydro to the various assets within the Burrard Facility? Or is the point more specific, i.e., that BC Hydro has not filed sufficient evidence to support adequately the depreciation rates it has assigned to assets within the Burrard Facility?

“7.8 I am in agreement with the fundamental principles of these tables. In an overview perspective I believe the “**onus**” is now on BC Hydro to correctly classify all 106 assets given in Table 8-1 in the context of these five health index classifications. (*emphasis added*)”

**RESPONSE:**

In an overall principle I agree with the depreciation rates set by BC Hydro in Table 8-1, as they appear to follow existing accounting principles, namely; service life.

The concern is how BC Hydro has over simplified the asset depreciation listing to 106 assets, when in fact there are perhaps four or five / ten times the number of assets, that have asset health index service life impairments, to the point nobody can discern which assets are “whole” or which assets are “impaired”. And whether the health index of each asset supports the proposed depreciation rate over the asset’s service life. There is no “clear, unambiguous” evidence from BC Hydro. To quote from BC Hydro’s note 2: “asset classes Y/N indicate that the class has some assets which are impaired, and some which are useable”.

Does the Commission know / understand what this note 2 means ?

Please take a second look at the photographs given in IR 7.3 response for the complexities of the three assets represented in the photographs.

- 7.5 What are the fundamental principles of the Asset Health tables that Mr. Landale agrees with? Is it the apportionment of an asset class into five categories of asset health (from Very Good to Very Poor)?

**RESPONSE:**

The Asset Health Index tables provide 5 categories to in general describe the condition of any particular asset. Whether I agree or disagree as to the assigned asset health is irrelevant. I agree that BC Hydro has established a 5 level asset categorization in a consistent manner, the principle. For me, that is good enough. Each asset so categorized would have been “hopefully” assessed by a professional engineer appropriate for the asset. If not, then I would have many concerns as to the validity of the health index arrived at for each asset. Perhaps BC Hydro in their rebuttal could confirm how the various asset health indices were determined and by whom ?? Reference page 1 of Appendix S, there’s no mention of a Professional Engineer signing off the asset health index of 106 assets, in spite of the inferred diagram, which is a key concern in connection with the depreciation rates in Table 8-1.

In the event the health of the asset is possibly in question / impaired, and also in the context of the asset’s service life (after the Commission has reviewed each asset), then these two points have a direct bearing on the requested depreciation rates given in Table 8-1. And the Commission must adjust the rate or disallow the asset depreciation altogether.

- 7.6 In Mr. Landale’s view, how should the Burrard Facility depreciation rates by asset classes (shown in Table 8-1) be related to or informed by Asset Health by asset class?

**RESPONSE:**

As noted in the above IR response, if the health of the asset has been determined and signed off by a professional engineer, then we and the Commission must accept that determination. Without a professional engineer given to that technology, any asset health index categorization becomes ambiguous, open to an alternative opinion and categorization - (very good to very poor).

By example an engineer is chemistry is not a suitable authority in hi-voltage electrical technology, and so would not be an appropriate signatory to sign off the asset’s health index. Would an accountant be capable to assess the health of an asset, say the Switchgear, I do not think so. An accountant can inform the Commission on the valuation of that asset, given that once the assets health index and service life has been established and signed off on, the accountant’s valuation would then have merit. But BC Hydro has not submitted any supportive evidence to justify even one asset valuation given in Table 8-1.

7.7 Does Mr. Landale believe that if BC Hydro filed an Asset Health index for the Burrard Facility asset classes then the depreciation rates shown in Table 8-1 would be seen to be inaccurate?

“7.6.3 The following table appears, or has the closest relevancy to the Burrard Facility:

I have added arrow heads to certain asset classes that if I had been granted access to BC Hydro’s “Process Flow Diagrams” and “Pneumatic and Instrumentation Diagrams” as requested in my Information Request No. 2.3.7 in detailing the eligible assets in “Table 8-1 Burrard Synchronous Condense Facility Depreciation Rates” for the Commission’s approval, I may have been more accurate.”

**RESPONSE:** YES, for all the combined reasons already annunciated.

I might add this would be a challenging task, if BC Hydro has not already completed the Burrard Facility Asset Health Index by asset and asset class, and differentiated the impaired assets. If BC Hydro has completed these Asset Health Index’s, then BC Hydro should have correlated that information to Table 8-1 (106 assets), and added this to support their evidence, so as to inform the Commission, and thereby appropriately support BC Hydro’s NBV and depreciate rates.

7.8 Please explain how examination of BC Hydro’s “Process Flow Diagrams” and “Pneumatic and Instrumentation Diagrams” (for the Burrard Facility) inform Mr. Landale’s identification of which substation asset classes are most relevant to the Burrard Facility in terms of asset health classification, otherwise inform the determination of the appropriate depreciation rates for asset classes associated with the Burrard Facility.

**RESPONSE:**

Respectfully, I think this IR misses the point, by the very nature of the IR.

For example; going back to the hypothetical computer analogy. In the computer there is a mother board with the tiny lithium battery mounted on it, micro-processors, cable connectors connecting the mother board to the computer’s hard drive, to the computer memory bank, to the power supply, to the keyboard and the monitor screen. Without a schematic, how could a technician find his/her way around the inner workings of a computer. In fact without drawings, a schematic, process flow diagrams and a huge manual, the computer would be a disorganized assembly of components / assets sitting on the desk, with no organization.

As is the case for Burrard, without drawings the facility could not be built, cannot operate, and cannot be maintained, and cannot be upgraded with new technology, and could not be converted from one operating mode to another. Drawings give names and numbers to components, assets and asset classes, that in this case is the subject of Table 8-1. Drawings bring the sum of all components together into a fully functional organized facility.

**Drawings are the heart of all communications in this matter. They provide a common basis for understanding the asset.** Drawings are like this application’s Table of Contents, the table helps the reader understand the chapters, tables, figures and exhibits, they inform the reader of their titles and organize these elements/components/sections onto sequential pages. The Table of Contents also helps the reader navigate through the application expeditiously by providing the page reference numbers. This is what drawings do, they communicate, they organize the sum of all the components into a comprehensible array of information.

**ADDITIONAL RESPONSE:** to - (otherwise inform the determination of the appropriate depreciation rates for asset classes associated with the Burrard Facility).

The Commission on March 23<sup>rd</sup>. 2017 granted interim rate approvals per G-46-17,

Additional Response to 7.8 continued:

RRA Exhibit A-27. BC Hydro’s application for an interim refundable rate increase for their Open Access Transmission Tariff (OATT) effective April 1, 2017 filed on March 1, 2017, to cover associated costs of transmission and distribution between “Generation / Substation” to distribution to “Substation at Fence”, see figure in Chapter 9 of the RRA, Figure 9-1 Asset Boundary for Transmission Revenue Requirement and OATT Rates. Coupled with Appendix A Schedule 12.0 page 56 of 70, and Schedule 12.2 page 58 of 70, Burrard Substation assets have an accelerated amortization in the amount of \$3.0million dollars in both F2015 and F2016.

Then in Appendix B page 2 of 3, BC Hydro has prepared for the Commission a draft proposal of a Commission Order G-XXX-XX, 2 clauses, quote:

“G. The Application also seeks approval of depreciation rates for certain property, plant and equipment at the Burrard Synchronous Condense facility as set out in Table 8-1 of the Application;”

And in Appendix B page 3 of 3

“4. The requested depreciation rates for property, plant and equipment at the Burrard Synchronous Condense facility as set out in Table 8-1 of the Application are approved”.

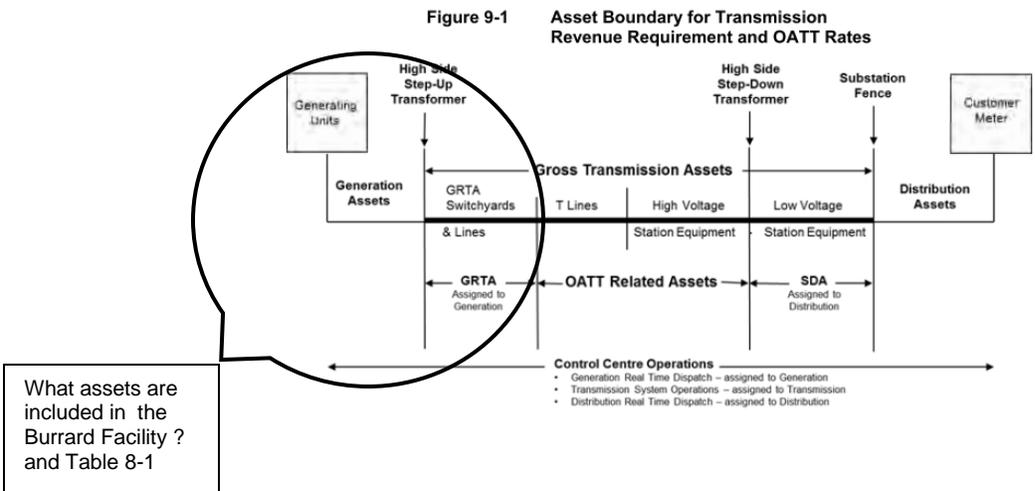
The issue at hand is, first the BCSEA-SCBC needs to re-evaluate their IRs with my IR responses in light of this additional response, with the following second part;

Exactly what are all the assets and asset classes “AT” the Burrard Facility that are seeking depreciation rate approvals given in Table 8-1 from the Commission. And does Table 8-1 also include the employed assets to be amortized per Appendix A Schedules 12 and 12.2 as delineated by Figure 9-1 Asset Boundary for Transmission Revenue Requirement and OATT Rates.

Understanding BC Hydro’s Burrard Facility and substation drawings definitely define asset boundaries, coupled with their respective Asset Health Index. For example: Assets C52105 Transformer, Stn SCR, C52302 Reactor, Dry Type, C52405 Transformer, Curr, Com, C52504 Trans Volt, Encaps, C54101 Breaker, Air/Magnetic, C54201 Use Ind Disconnect, C55401 Buswork & Stn Conduit, C55501 Grounding Systems, C56001 Insulators, to name a few.

**It is also worth remembering the Burrard Synchronous Condense Facility “could, maybe, will be” used to stabilize the “Gross Transmission Assets” by the nature of the Transmission Grid between the two (any) substations. see Figure 9.1**

Does the BCSEA-SCBC and the Commission have the same understanding as BC Hydro, as I do not. The Commission must be clear on this matter to ensure the same substation assets and asset classes are not depreciated / amortized twice within or by their final decision and rate approvals, or otherwise.



**8.0 Topic: Spreadsheet**

**Reference: Exhibit C15-11, Landale Evidence, RTL BSCF Depreciation Rates Ver 2.xls.**

“6. If the Commission approves Table 8-1 as requested in the application, during the test period, BC Hydro will depreciate these assets by \$8.23 million or 33.34% of their combined NBV between 2016 and 2019. (\$8,230,000/\$24,704,700\*100)”

8.1 What does Mr. Landale say is the appropriate accounting treatment for depreciation of these assets instead of BC Hydro’s proposed treatment?

**RESPONSE:**

Regrettably, I do not have the faintest idea what is appropriate. I have presented evidence that challenges the validity of the assets in Table 8-1. Their depreciation disposition is for others to determine. Others meaning BC Hydro’s professional engineers signature, the accountants valuation, and the Commissions “due diligence”. If all of the aforesaid is in place, then I have done my job as an intervener, and will be content on the Commission’s final decision. If I actually had a voice with influence, I would require the drawings to prepare my opinion.

There is no other way in my view.

8.2 In Mr. Landale’s view, are the Commission’s options for determining the appropriate accounting treatment for depreciation of these constrained by Direction No. 7?

**RESPONSE: YES, by virtue of the “prevailing written word” within the directive.**

Direction 7, **Section 7 Regulatory Accounts**, specifically addresses Burrard costs – clause 7.(c).ii, quote: “defer to that account the Burrard costs” This reference is specific again in Appendix B, “**AT**” Burrard Thermal, exclusively, no ambiguity. *The following table header copied for example*

**Appendix B – Burrard Depreciation Rates**

Class of Property, Plant and Equipment <b>at Burrard Thermal</b>	<b>F2015</b> Depreciation Rate (%/year)	<b>F2016</b> Depreciation Rate (%/year)
C12101 Tracks, Railway	100.0%	N/A
C12401 Drainage System Yard	9.1%	10.0%

There is no mention in Direction 7 of F2017 to F2019 Test Period, as per the application for Table 8-1. While the above reference is clear, it only covers the period to F2015 to F2016. Therefore Appendix B table can only be a precedence (guide) for Table 8-1

Direction 7 **Section 1 Definitions** refers to “Burrard Costs”, quote:

“**“Burrard costs”** means the costs incurred by the authority in F2014 or a later fiscal year arising from the decommissioning of those portions of Burrard Thermal that are not required for transmission support services, including, without limitation, employee retention costs incurred as a result of the decommissioning, costs incurred as penalties or damages that arise in consequence of the decommissioning, and the net increase in amortization expense in F2015 and F2016 arising from a commission order under section 15 of this direction;” (underlined for focus)

Direction 7 **Section 11 Commission reviews**, quote:

“**11** When setting rates for the authority under the Act, the commission must not disallow for any reason the recovery in rates of the costs that were incurred by the authority or Powerex Corp. in consequence of decisions of either with respect to

Response to 8.2 continued:

- (a) the construction of extensions to the authority's plant or system that come into service before F2017,
- (f) the Burrard costs, and"

Direction 7. **Section 15 Burrard Thermal**, quote:

" 15 On application by the authority the commission must

- (a) grant permission to the authority under section 41 of the Act to cease operating those portions of Burrard Thermal that are not required for transmission support services, and
- (b) set depreciation rates for the classes of property, plant and equipment at Burrard Thermal as shown in Appendix B to this direction".

I believe Section 15 of Direction 7 addresses three issues,

- 1). derived from the Commission's general order G-198-16, namely: Burrard Thermal to cease operations.
- 2). The Commission is to "set depreciation rates" as shown in Appendix B, no ambiguity here.
- 3). Appendix B has a specified time span ending in F2016. Nothing in Direction 7 covers the extension of Appendix B into and through F2017 to F2019 Test Period, as applied for by virtue of BC Hydro's application and their Table 8-1.

This argument follows the "prevailing written word" as given in this directive.

To repeat and offer a possible option for the Commission, is delineated in Section 15,

On application by the authority the commission must set depreciation rates for the classes of property, plant and equipment

The Commission means the BCUC Commission, the authority means BC Hydro There is nothing in Direction 7 to stop the Commission from varying asset depreciations based on evidence.

"8. This is an "ACCOUNTING ABOMINATION" ! by BC Hydro for a facility that has no legal identity, and, no protection under the existing legislative framework, while operating as a "CONSUMER of GRID POWER - NO REVENUE" versus a "GENERATING FACILITY" which produces income to BC Hydro, where amortizing/depreciating assets contribute to the accounting of BC Hydro's Balance Sheet."

#### **ADDITIONAL RESPONSE:**

At my January 18<sup>th</sup>. 2017 meeting with BC Hydro staff, staff confirmed my verbal question, "will the Burrard Synchronous Condense Facility be operational while the **BC Hydro transmission grid imports power from Washington State**". Well I dropped my pen on the floor in horror, Staff confirmed that would be the case, to stabilized the grid. The horror is Burrard's new operations no longer creates revenue. Burrard consumes power from the grid, including imported power, which is a transmission support grid operational cost. So not only will BC Hydro buy expensive power from Washington State at a premium, Burrard will use their assets to stabilized the grid during this episode. Meaning all British Columbian ratepayers are subsidizing this cost in their rates. Now if that does not horrify you, and cause this to be an accounting abomination, well I do not know what will turn your head....!, it's a double whammy to ratepayers in their costs for US dollars electrical power, making it a triple whammy.....!

- 8.3 What does Mr. Landale mean by saying that the Burrard Facility “has no legal identity”? Should the Burrard Facility have a “legal identity”? BC Hydro has numerous facilities – in Mr. Landale’s view do they all lack a “legal identity” or is the lack of a “legal identity” particular to the Burrard Facility?

**RESPONSE:**

Let us return for a moment to the application Chapter 2 LEGAL FRAMEWORK. It is BC Hydro who introduces all the various legal framework enactments, policies, directives, acts, regulations and recognized legal identity names. It is not for me to say whether any or all identity names are legal or not. My whole argument is Direction 7 clearly defines the meaning of Burrard’s (identity). I’ll go one step further, Direction 7 is clear that the directives contained therein pertain to Thermal Power Generation of electricity. Direction 7 is totally silent in regard to synchronous condense operations at Burrard, and as a consumer of electrical power from the BC Hydro grid. Please reread my responses to IR 1.1, 1.2, 1.3. Finally to repeat my legal identity theme, my identify can be found on my driver’s license and passport. There is no ambiguity in that fact. And if Direction 7 were to refer to my name, then everyone would have the same understanding as to my identity, and apply all conditions consistently. Surely this makes legal sense ....? There can be no legal identity ambiguity in government directives.

- 8.4 In Mr. Landale’s view, what is the connection between the Burrard Facility’s lack of a “legal identity” and the proper accounting treatment for depreciation of Burrard Facility assets?

**RESPONSE:**

Back to “legal identity”, hypothetically: a police officer stops me, writes me a ticket, puts my name down on the ticket as john smith, my address and car information is correct. Do I have a case to answer, no, as my identity is wrong, the police officer is confused, made a legal identity mistake, while accidentally using my address and car information on the ticket.

Back to the application, Direction 7 identifies Burrard, Burrard Thermal, and links the depreciation assets to Burrard Thermal “**AT**” Burrard Thermal (onsite only) exclusively in fact, Direction 7 does not include assets connected to Burrard that are offsite assets, for example the assets associated with Bunzten Lake water supply So the correct “legal identity” is the key issue for the “proper accounting treatment for depreciation of Burrard Facility assets”, as questioned/worded in the IR. The facility is incorrectly identified within the context of Direction 7, as such, ambiguity exists. Thereby establishing inappropriate accounting foundation for the depreciation rates seeking approval in Table 8-1.

- 8.5 Please confirm, or otherwise explain, that “a “CONSUMER of GRID POWER - NO REVENUE” versus a “GENERATING FACILITY” are Mr. Landale’s phrases.

**RESPONSE:**

This IR compels me to become quite technical, but very accurate. Please see Attachments A and B overleaf to this IR 8.5

With respect to my phrasing, the BCSEA-SCBC and the Commission really needs to understand the over simplification of synchronous condenser motors as given in Attachments A and B. As “Apparent Power” and “Restive Power” are very technical, and too complicated to explain here. Please review this link: [https://en.wikipedia.org/wiki/AC\\_power#Apparent\\_power](https://en.wikipedia.org/wiki/AC_power#Apparent_power).

Without this basic understanding I must request the BCSEA-SCBC accept my simple phrasing. I will add, the regular household account at the smart meter can measure a cell phone battery charger. And when the BC Hydro grid falls below 100% **pf**, that smart meter records the increase, thereby increasing the service charge by that percentage difference on a kilowatt hour basis. Conversely if the grid **pf** is above 100%, that smart meter is giving the household customer discounted electricity. The same scenario applies to BC Hydro’s Burrard Facility.

Response to 8.5 continued:

There must be acceptance or an understanding of this fact, a motor of any kind is a “CONSUMER”, as is a light bulb. As an electricity power consumer it must connect to something that creates an output in the form of, inductive/rotation force (pump), magnetic field, heat (resistive element), light and so on.

For example: A Pump turns and water is ejected into a pipe, which in turn is connected to power a turbine connected to a generator. That generator outputs electricity owned by the Independent Power Producer (IPP), who sells the power to BC Hydro under a power supply agreement. The motor on the pump is the “Revenue Producer”, while also consuming power from some kind of external supplied energy source, be it oil, or coal fired steam, from river flow, Dam (hydro-electric), solar cell power and so on.

Now in terms of BC Hydro and the Burrard Facility, there are 4 units now configured to being “ONLY” a motor. When they are turned on, those synchronous condense motors consumes power. That simple, the question is can those motors also indirectly create revenue.

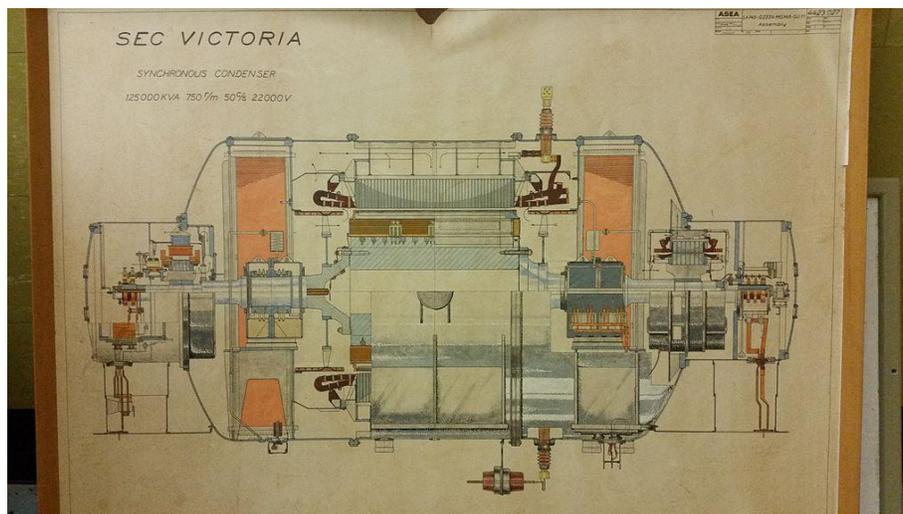
The problem that BC Hydro has created, they do not track that power consumption in terms of “VARs” saved or spent (see remarks in response 8.2 January 18<sup>th</sup> 2017 meeting). BC Hydro does not know whether these synchronous condense motors will be consuming power – adding to the cost of operations, or saving power - reducing the cost of operations, which in this case would be considered an income, a revenue producer.

BC Hydro have created their own dilemma in this case by not even going to the trouble to estimate over the F2017 to F2019 Test Period (yes: Test Period), the potential cost savings and revenue producing dollars to offset the depreciation asset rates sort in Table 8-1.

BC Hydro from their Control Room using their Distributed Control System “can” track these “VARs” (Special instruments called *varmeters* to measure the reactive power in a circuit) to provide a basis for estimating in the Test Period. (*check the system's archive files*).

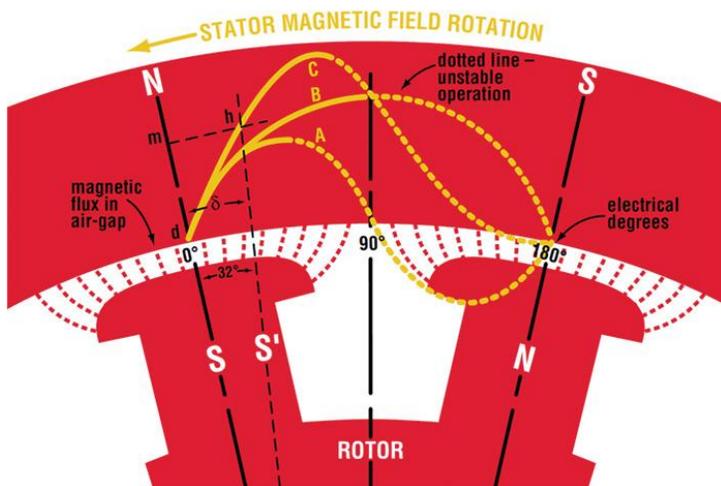
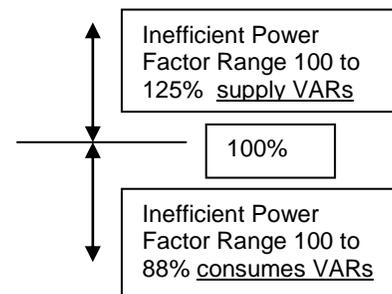
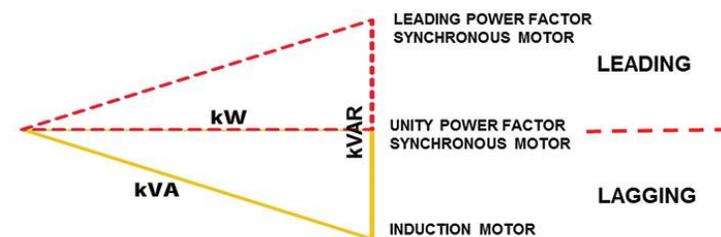
Their evidentiary absence to support the depreciation rates in Table 8-1 alone is surely enough reason **not** to approve the rates. Direction 7 provides the clear legal identity reasons for not approving the depreciation rates.

This is an example of a Synchronous Condenser Motor, that is very comparable to the 4 units at the Burrard Facility. Look at all the parts in one asset, where some of the parts are impaired assets, for example: Asset C42004 Major Maint.-Rewedge, C42102 Exciter, Static



## ATTACHMENT A to IR 8.5

8.5 Please confirm, or otherwise explain, that “a “CONSUMER of GRID POWER - NO REVENUE” versus a “GENERATING FACILITY”



In an ideal world, the Power Factor (pf) range below 100 costs ratepayers at the meter. When the pf is above 100, it costs BC Hydro, and all BC ratepayers in the rates charged.

The inefficient or unstable operation range of 88-125% is considered the total operational capability for most hi-voltage synchronous condense motor operations. (the dotted lines) 100% is the optimum stat.

Please consider this diagram as a small segment of a synchronous motor’s 360° armature. BC Hydro is completely correct in utilizing the Burrard Facilities in this manner for the transmission grid stabilization for the Lower Mainland area. As the **pf** drifts up or down from the optimum 100%, BC Hydro can switch on or off one of the four synchronous condense motors. Switching on/off the motors take hours to complete, *(they are not a light switch operation)*. There will always be a drift of ± 3-5%. This range is very important as almost all industrial facilities design/size their electrical systems to within this tolerance range, while in compliance with the Canadian Electrical Code. Also many electric devices rely on even tighter “cycle” tolerance for electronic clocks and timing devices, like your computer, television, (modern) home appliances and alarm clock. Why would the **pf** drift in such a manner. It is all about the connected industrial customers operating in the Lower Mainland. We have all heard of “Brown Outs”. In this modern day and age, they are not acceptable, hence the Government has directed BC Hydro to supply stable power. BC Hydro operates the grid’s stability using Capacitor Stations and Synchronous motors since 1986. We just did not know about it. For example, industrial hi voltage power users, but not limited to these customers, Fortis BC Gas, BC Hydro itself, every Vancouver dock yard crane, Cement producers, Saw Mills, Hi Rise elevators, Translink, Syktrain. Their motors turn on and off at a moment’s notice, impacting the supply grid by the sudden motor starting inrush currents. Some industries have installed local inverters and electrical/electronic variable speed drives, capacitor banks to help stabilize their impact and reduce their meter costs. All this over and above smaller industrial customers and homeowners turning things on and off to a much lesser extent. It is the turning on and off that causes all the grief. Back at BC Hydro’s Lower Mainland Control Centre, they can monitor every single service (smart meters). So they know exactly what transmission line and service needs balancing by the use of synchronous condense motors. What BC Hydro does not do, is track the cost. **BIG BIG Question?** remember the varmeter.

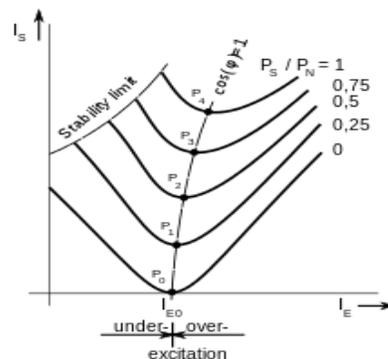
## ATTACHMENT B to IR 8.5

8.5 Please confirm, or otherwise explain, that “a "CONSUMER of GRID POWER - NO REVENUE" versus a "GENERATING FACILITY”

Please refer to this link for a great deal more information:

[https://en.wikipedia.org/wiki/Synchronous\\_condenser](https://en.wikipedia.org/wiki/Synchronous_condenser)

### 8.6 Theory[[edit](#)]



V curves for a synchronous machine. A synchronous condenser operates at nearly zero real power. As the machine passes from under excited to overexcited, its stator current passes through a minimum.

A rotating coil <sup>[3]</sup> in a magnetic field tends to produce a sine-wave voltage. When connected to a circuit some current will flow depending on how the voltage on the system is different from this open-circuit voltage. Note that mechanical torque (produced by a motor, required by a generator) corresponds only to the real power. Reactive power does not result in any torque.

As the mechanical load on a synchronous motor increases, the stator current  $I_a$  increases regardless of the field excitation. For both under and over excited motors, the [power factor](#) (p.f.) tends to approach unity with increase in mechanical load. This change in power factor is larger than the change in  $I_a$  with increase in load.

The [phase](#) of armature current varies with field excitation. The [current](#) has larger values for lower and higher values of excitation. In between, the current has minimum value corresponding to a particular excitation (see graph above). The variations of  $I$  with excitation are known as **V curves** because of their shape.

For the same mechanical load, the armature current varies with field excitation over a wide range and so causes the power factor also to vary accordingly. When over-excited, the motor runs with leading power factor (and supplies vars to the grid) and when under-excited with lagging power factor (and absorbs vars from the grid). In between, the power factor is unity. The minimum armature current corresponds to the point of unity power factor (voltage and current in phase).

“**VAR**” **Volt-ampere reactive** (see link: [https://en.wikipedia.org/wiki/Volt-ampere\\_reactive](https://en.wikipedia.org/wiki/Volt-ampere_reactive))

In electric power [transmission](#) and [distribution](#), **volt-ampere reactive (var)** is a unit by which reactive power is expressed in an AC electric power system. Reactive power exists in an AC circuit when the current and voltage are not in phase (*see Attachment A diagram*). The correct symbol is var and not Var, VAR, or VAR, <sup>[4]</sup> but all three terms are widely used, and VAR is widely used throughout the power industry infrastructure. The term *var* was proposed by the Romanian electrical engineer [Constantin Budeanu](#) and introduced in 1930 by the [IEC](#) in [Stockholm](#), which has adopted it as the unit for [reactive power](#).

8.7 In Mr. Landale's view, how does the Burrard Facility becoming a synchronous condense facility after having been a generating facility affect the proper accounting treatment of Burrard Facility assets?

"9. BC Hydro's Attachment 1 Table to the information request highlights another accounting "trick" of "ACCELERATED" depreciation rates to coincide with BC Hydro's indicated planning to decommission the BSCS by 2025. On top of this planned depreciation of assets, BC Hydro has further indicated their intention to spend \$20 million plus more on various capital equipment for a facility that is going to be decommissioned. Ridiculous...!"

**RESPONSE: IT does Not:** quote: from page 6-79, lines 10-23:

"Burrard Generating Station: With BC Hydro's Interior to Lower Mainland transmission line, Mica Generating Station Units 5 and 6 and a third transformer at Meridian Substation in-service, BC Hydro is able to serve load in the Lower Mainland and better respond to unplanned events without the need for Burrard's generating capability. BC Hydro has stopped generating electricity at Burrard; however Burrard will continue to provide voltage support to the transmission system by operating up to four units as synchronous condensers. This will provide savings for BC Hydro customers. As a result, there is limited capital investment at Burrard in fiscal 2017 to fiscal 2019, while plans are developed for the investment required to convert Burrard from a generating station to a synchronous condenser station. Additional investments will be to implement sustainable synchronous condenser operations, address issues with asbestos at the facility and the building roof. Total capital investment planned at Burrard during the three-year test period is \$13.6 million."

This IR presupposes there is an "existing" accounting relationship between the Burrard Thermal and the Burrard Synchronous Condense Facility. In all of my responses to the BCSEA-SCBC herein, I clearly have shown there is no relationship, and I still maintain that view. Direction 7 does not refer or address the Burrard Synchronous Condense Facility or Table 8-1.

8.8 In Mr. Landale's view, does BC Hydro's proposed accounting treatment of depreciation of Burrard Facility assets go beyond what is required by Direction 7 or other legislation? If so, in what way?

**RESPONSE: YES;** as for other legislation, I am not aware of any.

8.9 Is the comment that BC Hydro has indicated an "intention to spend \$20 million plus more on various capital equipment for a facility that is going to be decommissioned" an aside, or is it relevant to the proper depreciation rates for the Burrard Facility within the context of Direction 7? If the latter, please explain the point more fully.

**RESPONSE:**

There are quite a few issues I believe that are relevant to respond to in this IR. But primarily the issues have very little to do with the actual "depreciation rates" given in Table 8-1, with further consideration to asset service life and asset health index.

1). Again hypothetically, investing in a doomed (decommissioned) facility having a 10 year life cycle is a poor investment in any large corporation. Shareholders would not be happy. So why should British Columbian shareholders (ratepayers) be happy at this planned expenditure ?

2). Although the facility has a valued operational function through to 2025, and must be maintained to high technical standards to ensure reliable transmission support service to the Lower Mainland grid. There is no apparent value to maintain a "Rolls Royce" version with unjustifiable capital based on no known returns. There is no sound business case provided.

3). The accounting standards provide for assets to be depreciated over their service life, and in some instances, accelerated depreciation rates are also permitted. This implies two expenses to all British Columbian ratepayers. (1). The capital and interest costs for the \$20 million plus projects, (2). The accelerated depreciation rates added in rates payable by the ratepayers. A double whammy again, for a facility with a planned limited life cycle.

Response to 8.9 continued:

4). Because BC Hydro has not demonstrated the cost effectiveness, or any cost efficiencies associated with operating one or four synchronous condenser units in support of the Lower Mainland transmission grid, the Commission is being asked to approve an “idea”, based on some very briefly outlined project descriptions during the scoping phase of the project, see Appendix J Capital Expenditures Greater than \$20 million. Again, this is not good business practice, or good management processes to approve an “idea” on ratepayers shoulders.

5). As an “unknown”, how much and to what extent are these planned capital projects going to be used to support BC Hydro’s import of Washington State power, to stabilize the grid. Whammy number 3 on the BC ratepayer’s shoulders ?

8.10 Is the main thrust of Mr. Landale’s evidence that Burrard Facility assets that are, or will become, not useful due to the government’s closure of the Burrard Thermal Generating Plant should be ‘written off’ to the account of the shareholder rather than being depreciated to the account of ratepayers? If so, how does Direction 7 fit in?

**RESPONSE:**

At the end of the day, the shareholder and the ratepayer are “one of the same”. BC Hydro is a publicly owned corporation, directed by the government, who is elected to manage public affairs, publicly owned corporations like BC Hydro and ICBC in trust to the ratepayers. From time to time the BC ratepayer gets to elect the government on trust that they will manage the affairs of British Columbia, which includes BC Hydro. In May, that process will come to fruition.

Direction 7 is the government’s instrument (in part) to managing BC Hydro, naming the Burrard Thermal in terms of costs;

See: Section 1 Definitions, Section 7 Regulatory Accounts, Section 11 Commission Reviews, Section 15 Burrard Thermal, Appendix B - Burrard Depreciation Rates.

As much as I would like, my opinion of whether asset depreciation should be written off (preferred), or depreciated to the Regulatory Account (not preferred), is a mute point. Direction 7 says it all, and I know the Commission will not deviate from Direction 7, through past experiences in addressing the Commission. Not only that point, but BC Hydro did not dedicate Chapter 2 to Legal Framework for nothing. BC Hydro by presenting Chapter 2 is making a statement to the Commission, and will hold the Commission to the “existing” legal framework. So again my opinion is mute, regrettably.

BC Hydro went even further to reiterate their legal framework position to highlight “the actual wording of the statutes” to the Commission, by their 2.4 Summation of Regulatory Framework, Chapter 2 page 2-20; quote:

“2.4 Summary of Regulatory Framework 1

Table 2-6 below provides a summary of the key statutes that have an impact on the regulatory oversight of BC Hydro by the British Columbia Utilities Commission. The table provides a synopsis of the regulatory framework the British Columbia Utilities Commission is guided by on key policy areas addressed in this application. The specific sources identified should be consulted for the actual wording of the statutes. (underlined for emphasis).

The Commission’s job in respect to this IR is, interpretation and application of Direction 7. My job as an intervener is to hold the Commission to account within the meaning “AS WRITTEN” in Direction 7, and to submit IRs and evidence that does just that job.

**9.0 Topic: Table 8-1**

**Reference: Exhibit C15-11, Landale Evidence, 8.0 STEAM BOILER PROCESS FLOW DIAGRAM (PFD) EXAMPLE, p.12**

“8.3 The objective of this exhibit [Mr. Landale’s Exhibit 2] is to demonstrate how one boiler has many assets and asset classes....

“8.5 What makes Exhibit 2 (albeit different systems to the Burrard) so relevant is also the similarities. My request to see the Burrard PFDs along with the P&IDs, so important to verifying the appropriate Table 8-1 Assets, rather than the Depreciation Rates.”

9.1 To clarify, is it Mr. Landale’s view that Table 8-1 is incomplete, i.e., that it does not list all the assets and asset classes that should be listed for the Burrard Facility?

9.2 Is Mr. Landale suggesting that an examination of schematic diagrams for the Burrard Facility would disclose the existence of certain assets or asset classes that are inappropriately absent from Table 8-1?

**RESPONSE to 9.1 and 9.2: YES**

From “Public” Appendix J” page 44:

“A thermal overload constraint also exists on 2L50, a 230 kV transmission circuit that connects Burrard Thermal Substation in Port Moody to Murrin Substation in Vancouver. If 2L51 is forced out of service during peak load periods, an overload will occur on 2L50.”

On page 45:

Meridian Substation to Mount Pleasant Substation via a Burrard Inlet Crossing: Construct a new 21.5 km (consisting of 10.5 km of overhead and 11 km underground) 230 kV transmission circuit from Meridian Substation to Home Payne Substation using existing rights-of-way and road corridors, and extend circuit 2L51 with a new 9 km 230 kV underground transmission circuit from Home Payne Substation to Mount Pleasant Substation using road corridors;

Without the drawings or being an engineer, does the BCSEA-SCBC, and or the Commission know what BC Hydro is asking for, and how these components, how many components, which components “are/were” for generating, and which are needed for “synchronous condense” and “facility” operations within the substation as an asset class are going to be depreciated. Where is this substation, on or off the property. Are any of the (existing) components dedicated to this new “Burrard Inlet Crossing” being accounted for in BC Hydro’s Table 8-1 Depreciation Rates as an unidentified asset class. I do not know. Hence the request to examine the drawings.

“8.6 I believe the Commission must evaluate independently all the assets listed in Table 8-1 for themselves...”

9.3 Please explain why Mr. Landale believes each of the assets listed in Table 8-1 should be evaluated.

“8.6 ...The denial to access these drawings was imperative to assessing the validity of the asset in the Table 8-1. The actual depreciat[ion] rates, while horrific in my opinion appear consistent with accepted accounting practices, (*regrettably*).

The question remains are the assets themselves appropriate ?.”

**RESPONSE:**

In my excel spreadsheet IR exhibit, BC Hydro in their reply updated the spreadsheet adding a column titled “BC Hydro changes”. Therein BC Hydro defined the assets as to whether they were YES, NO or YES/NO required for Synchronous Condense operations. By doing this, the NO designated assets are not so significant, as the vast majority have a zero value in 2016. The YES and the YES/NO by this designation take on prominence, as such do require scrutiny.

The NO assets show an array of purchased or placed in operation dates, with BC Hydro indicating their respective first year depreciation rate. Some dates are “Prior 2004” and a few as recently as “2014” Those assets prior 2004 have depreciation rates as low as 1.3% and as high as 10%. Couple this knowledge with Service Life and Asset Health Index, theoretically some assets have a service life of 76.9 years (100/1.3). One example, asset C22005 Building, Comp Pool, having a remaining Asset Value of \$11,049,806.01 after 2019, while some other assets as short as 10 year depreciation life cycle. All of which could be further reduced by the Asset Health Index categorization of the particular asset. BC Hydro has assessed these assets in F2017 NBV at \$16,836,300 (*go to RTL BSCF Depreciation Rates Ver 2 xls filter for N in column E “BC Hydro Changes”, and sum column H “2017 Net Book Value \$”*)

There are some YES assets as low as 1.3% with purchase or placed in operations “Prior 2004” The same argument exists as the “NO” assets described above. In the application, BC Hydro has assessed these assets in F2017 NBV at \$15,281,540

There is one YES/NO assets as low as 2.0% with purchase or placed in operations “Prior 2004” The same argument exists as the “NO” assets described above. This asset C22001 Plant Concrete Steel has a NBV of \$33,300. How much of this asset is original (pre 1964), with a first in place depreciation rate of 2.0%, suggesting a service life of 50 years. In the application, BC Hydro has assessed the NBV at \$373,300 with accelerated depreciation rates from 15.8% to as low as 11.1% through to the end of the F2019 Test Period. Also indicating an estimated NBV of \$248,856.29 remaining asset value. There are 34 more YES/NO assets having a combined NVB in F2017 of \$11,549,400

Given the acceptance of the accounting standards, it is “ABHORRENT” to me that over \$43 million in asset depreciation should not undergo some close scrutiny. As once the Commission approves Table 8-1 without scrutiny, BC Hydro gets a green light on the future capital projects by virtue of this precedence. I do not have a problem (well I do) with the accounting standards, so long as “DUE DILIGENCE” is performed by the Commission. (Just wait for Site “C” for shock).

I have over 30 years experience at creating drawings, checking drawing and construction with drawings. I can soon enough determine what assets are NO, YES or YES/NO. Assets designated impaired must be determined by a professional engineer given to that component or technology. Asset service life and health index must follow the same professional engineering standard.

9.4 If the depreciation rates in Table 8-1 are consistent with accepted accounting practices, please explain why Mr. Landale considers them horrific and regrettable.

**RESPONSE:** Please refer to response to IR 9.3 above.

- 9.5 Is Mr. Landale suggesting that the Commission should not accept the depreciation rates in Table 8-1 even if they are consistent with accepted accounting practices?

**RESPONSE: YES.**

Given BC Hydro has openly declared the Burrard Synchronous Condense Facility's planned operational life will not go beyond 2025, the assets in Table 8-1 are in many cases being accelerated against zero revenue at ratepayers expense.

- 9.6 Is the essence of Mr. Landale's concern that ratepayers will have to pay through their rates for the cost of assets that the government has decided will no longer be used but that he believes should continue to be used by BC Hydro for their original purpose?

**RESPONSE:**

I do not think it is that easy to separate assets in a facility, plant, station or even a home in such a simplistic manner. Many assets are foundational, while some are so specialized that they are not readily interchangeable, and some assets are exhausted within their natural operating life cycle. So "NO."

I would like to know what purpose the BCSEA-SCBC had in asking this IR.

One asset C82504 Loader/Backhoe should not be assigned to Burrard in the first place, but rather to BC Hydro's Maintenance Facility/Fleet Services Yard in Surrey. I have no problem with the Loader/Backhoe being stationed at Burrard, but the asset depreciation of \$92,900 does not belong there.

By this example, the Loader/Backhoe should be the signal to the Commission to question other assets and asset classes. Where there is one, there is surely others .... (the Rolls Royce facility syndrome).

The BCUC Commission is supposed to be a "Neutral" independent regulator, not advocating for the Government, BC Hydro or any other special corporation or interest group. They are expected to perform their duties independently and with "DUE DILIGENCE".

- 9.7 Is Mr. Landale suggesting that some of the assets listed in Table 8-1 may have value for a use other than by BC Hydro for their original purpose? Is that what he means by "The question remains are the assets themselves appropriate"?

"8.6... DOES THE COMMISSION HAVE "FIRST HAND" KNOWLEDGE OF WHAT THEY MIGHT BE APPROVING ? Take a long look at the pictures on pages 40 and 41. They are not just assets in a table. There is so much more to Table 8-1. Take a second look at BC Hydro's application to cease operations, which includes their 6 pictures in Appendix G."

**RESPONSE: This IR has a YES and a NO answer:**

YES; as examples, but not limited to asset and asset classes associated with C30701 Equip, Water Treat could have resale value. There are many assets not required that could be removed and sold for scrap value. Relocate asset C82513 Manliff, or sell it.

NO; see responses to IR 9.3 and 9.6

9.8 Should the reference be to Appendix H of Mr. Landale's evidence?

**RESPONSE:**

Apparently I caused some confusion by my reference to Appendix H. To me my references in my evidence on page 1, page 2 Index and page 40, to Appendix H are correct. Although on page one I did refer to, "PFD's, P& IDs, System wide diagrams", which are on pages 20 and 21 and 41. Respectfully, I hope this response satisfies the BCSEA-SCBC.

9.9 What does Mr. Landale say should be noted from looking at the map of the water supply right of way on pdf page 13 and at the photos in Appendix H? Is the point that these are valuable assets; more valuable than is recognized by the depreciation rates in Table 8-1?

**RESPONSE:**

As I have said, I have been working with drawings for 30 plus years, pictures say a thousand words, well at least to me.

The map and pictures are to inform the Commission and others that Table 8-1 is a very very narrow listing of the assets and asset classes being depreciated. As to the value I cannot say. The point is, DOES THE COMMISSION HAVE A WORKING KNOWLEDGE OF THESE ASSETS, AND CAN THE COMMISSION DISEMINATE WHAT ARE LEGITIMATE ASSETS, AND WHAT ARE NOT. Without a working knowledge of these assets, how can "DUE DILIGENCE" be independently applied without UNDUE external influence and pressure from Direction 7 and BC Hydro.

My entire intervener Information Requests and my Evidence is all about informing the Commission, and seeking fair legal application of the written law, and as written in Direction 7 (Chapter 2, within the legal framework), as this applies to Table 8-1.

The map titled: BC Hydro Water Supply Starts on Buntzen Lake in Coquitlam (offsite), the map is intended to inform the Commission and others, where BC Hydro gets 2,000,000 gallons of water from to supply the now 6 decommissioned boilers that generated hi-pressure steam to power the steam turbine blades that rotated the generators to produce electricity. Water passed through a local Pumphouse into a 5.2 kilometer pipeline(s). There are many assets and asset classes located on the shores and land around Buntzen Lake. All of which are offsite to the Burrard Facility in an adjoining municipality. From a visual (map) point of view.

Appendix H is composed of 7 pictures, all of which represent assets and asset classes. For example, from the aerial view of the Burrard Facility; assets C30903 Delivery Sys, Ammonia, C30701 Equip, Water Treat, C30801 Transfer Sys Ammonia, C30803 Vapourser, Ammonia, C30804 Comp Vapour, Ammonia, and so on. From 4 pictures related to the DCS asset C68204 Distributed Ctrl Sys. One picture related to asset C65001 Panels/Cubicles, P&C, and C68202 Term Unit, Rem(Slave), and one picture of a Capacitor Bank in a Switchyard, (not at Burrard).

**10.0 Topic: Recommendations**

**Reference: Exhibit C15-11, Landale Evidence, 10.0 Summary Recommendation, p.15**

- 10.1 Is the intended outcome of Mr. Landale's recommendations that BC Hydro ratepayers would not have to pay for the assets at and associated with the Burrard Facility that have been or will be rendered useless to BC Hydro because of B.C. government directions?

**RESPONSE: YES**

Fundamentally why should British Columbian ratepayers pay twice for an asset that is "JUNK" Through our rates over time, British Columbian ratepayers have invested capital infrastructure into Burrard. Burrard used to be a revenue producer, so while operating as a revenue producer, the depreciation of capital assets was a reasonable cost adder to rates for every consumer at their BC Hydro smart meter. Pretty standard accounting business model.

Now that Burrard is a consumer of power, an "OPERATIONAL burden" that does not produce revenue, why should BC Hydro still benefit from depreciation write downs that do nothing to benefit the ratepayer. Whatever BC Ratepayers have already spent is now lost in 2016.