

**Section 5  
BC Transmission Inquiry**

**Comments  
on Scope of the Inquiry**

**by: ESVI, OEIA, ITO and ROMS BC**

**By: Ludo Bertsch, Horizon Technologies Inc.  
(250) 592-1488; ludob@horizontec.com  
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For: ESVI, OEIA, ITO and ROMS BC**

**Summary**

The following documents are comments relating to defining the scope for Section 5 Transmission Inquiry in response to Exhibit A-12.

Yours truly,  
Ludo Bertsch, P. Eng  
Horizon Technologies Inc.  
bcuc@horizontec.com  
(250) 592-1488

Representing:  
Energy Solutions for Vancouver Island Society (ESVI)  
Okanagan Environmental Industry Alliance (OEIA)  
IslandTransformations.Org (ITO)  
Rental Owners and Managers Society of BC (ROMS BC)

## 1.0 Assessment of Generation<sup>1</sup>:

### 1.1 Feed-In Tariffs

Commission staff distributed a discussion paper Exhibit A-12<sup>2</sup>.

The paper stated: “**Developing technologies and their impacts on the economics of generation may be considered, especially as this may affect renewable generation from wind, solar, wood waste or tidal resources.**”<sup>3</sup> [**emphasis added**]

“**Information on all existing electricity resources, including any anticipated changes that may occur, such as Resource Smart projects and end-of-life estimates with or without life extension projects.**”<sup>4</sup> [**emphasis added**]

Distributed renewable generation at the customers location that output excess power to the grid not only reduces the demand of the customers, but also reduces the transmission and distribution requirements for those customers and their nearby neighbours. Jurisdictions such as Germany, Denmark, Spain, Australia and Ontario have incentive rates, called “Feed-In Tariffs”, as a key strategy to encourage renewable generation and increasing its participation. In addition, with many other jurisdictions, including the United States, are in various stages of approving Feed-In Tariffs.

At present BC Hydro has a Net Metering program, and FortisBC is in the regulatory process of adding Net Metering. We believe that Feed-In Tariffs may very well be introduced to BC in the near future.

Therefore, we suggest that the Transmission Inquiry should include Feed-In Tariffs and distributed generation in the scope of its investigation. Although the majority of this work would qualify as “*developing technologies*”, in some ways this could also be considered an extension of the “*existing electricity resources*”, e.g. Net Metering.

We have included this discussion within the “*Assessment of Generation*” section because it was originally presented by Commission staff in the Generation section, although we recognize that it could also be considered within the “*Assessment of Demand*” section.

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<sup>1</sup> Exhibit A-12, Pages 1 to 3

<sup>2</sup> Exhibit A-12

<sup>3</sup> Exhibit A-12, Page 2

<sup>4</sup> Exhibit A-12, Page 2

## 1.2 Wave and Tidal

We note that the Commission staff paper discussed “in scope” issues:

*“Developing technologies and their impacts on the economics of generation may be considered, especially as this may affect renewable generation from wind, solar, wood waste or **tidal resources**.”<sup>5</sup> [emphasis added]*

*“**Ocean (wave and/or tidal current) power** or carbon sequestration from coal generation becomes cost-competitive.”<sup>6</sup> [emphasis added]*

We recognize that the tidal and wave power systems are costly energy sources for BC at this time. However, within the Transmission Inquiry timeframe, the technology gains in turbines combined with the geographical advantages of a large coastline of mainland BC/Vancouver Island and strong currents will mean that both tidal and wave power systems could become viable and we support the Commission’s staff position of including these in scope for the inquiry.

From the wording in the Commission staff paper it is not clear, if systems in which turbines are placed in the middle of a stream and convert the kinetic energy to electricity, are considered in scope.

The BC Ministry of Energy, Mines, and Petroleum Resources has defined Clean or Renewable Electricity in a document (see attached<sup>7</sup>). To ensure a common understanding of the terms, we suggest that reference be made to this document. We also suggest that “hydro” be added to the list, which is defined as “*electricity generated from a system or technology that converts either the potential or kinetic energy of water*”. To differentiate from older “hydro” technologies (using dams), we suggest “in-stream” be added. Therefore, we suggest the new sentence on page two would read:

*“Developing technologies and their impacts on the economics of generation may be considered, especially as this may affect renewable generation from wind, solar, wood waste, **tidal or in-stream hydro resources (as defined by BC Ministry of Energy, Mines, and Petroleum Resources in the attached definition of Clean or Renewable Electricity)**.” [emphasis on additions]*

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<sup>5</sup> Exhibit A-12, Page 2

<sup>6</sup> Exhibit A-12, Page 2

<sup>7</sup> “British Columbia’s Clean or Renewable Electricity Definitions”;  
<http://www.empr.gov.bc.ca/EAED/AEPB/Documents/CleanEnergyJune.pdf>

### 1.3 Solar and wind

We note that in the Commission staff paper discussed “in scope” issues:

*“Developing technologies and their impacts on the economics of generation may be considered, especially as this may affect renewable generation from **wind, solar, wood waste or tidal resources.**”<sup>8</sup> [**emphasis added**]*

*“**Wind** emphasis – regional generation favouring **wind** advantage”<sup>9</sup>*

We support the Commission staff’s inclusion of wind and solar in scope, and suggest that the regional aspect of wind be expanded to include the regional considerations for solar. There may be regions such as the Okanagan that can benefit more from solar resources than other regions.

In addition, we suggest that clarification be added that the wind and solar resources not only cover farms, but also individual customer generation as discussed in the “Feed-In Tariffs” section.

### 1.4 Regional generation

We note that in the Commission staff paper discussed “regional generation”:

*“Staff further propose that **regional generation** estimates be used as the basis to develop a range of cost forecasts for generation by region, and to assist in determining the most cost-effective and probable sequence(s) of development, and therefore the need for transmission development.”<sup>10</sup> [**emphasis added**]*

We believe that this inquiry should be developed as an integrated process, one in which generation, demand and transmission are considered in an integrated approach – this is further discussed in the “Integrated Approach” section (section 4 of this document).

One of the outcomes of analyzing with an Integrated Approach results in following situation . . .

Staff suggests developing a range of cost forecasts for generation by region. We suggest that one of those cost forecasts within the “range” to be considered should be “*no more Transmission Lines to Vancouver Island*”. We suggest this is one of the reasonable cost forecasts that should be

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<sup>8</sup> Exhibit A-12, Page 2

<sup>9</sup> Exhibit A-12, Page 2

<sup>10</sup> Exhibit A-12, Page 3

explored, especially given the high cost and challenges of new transmission lines to Vancouver Island and the potential self-sufficient nature of the region.

Consequently, the cost of generation without more transmission lines to Vancouver Island would be explored and could be compared to adding more transmission lines to Vancouver Island.

To further explore the Integrated Approach, another question we suggest be explored within the Inquiry – what generation and **demand side management** levels would need to be implemented such that “*no more Transmission Lines would be needed to Vancouver Island*”?

We suggest that this discussion of Vancouver Island be added to the “Integrated Approach” section of this document (section 4).

## **2.0 Assessment of Demand**<sup>11</sup>:

### **2.1 Smart Grid Scenario:**

We note the Commission paper discusses:

*“Agreement or Commission direction on a manageable number of demand **scenarios**, which are meaningfully different from each other, is vital to the Commission delivering useful determinations.”*<sup>12</sup> [**emphasis added**]

*“In addition, forecast scenarios may need to be developed to reflect future outcomes that were **not adequately** addressed in the LTAP.”*<sup>13</sup> [**emphasis added**]

*“The Terms of Reference recognize the need for **scenarios** and staff think it is important that a limited number of scenarios be used to group factors that may drive demand higher or lower to produce a viable number of options”*<sup>14</sup> [**emphasis added**]

We suggest the following demand scenario be included in the inquiry:

This scenario involves a full rollout of the Smart Grid implementation. Smart meters would be installed throughout BC, with appropriate rate structures such as time of use rates. A large number of utilities are

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<sup>11</sup> Exhibit A-12, Page 3 to 6

<sup>12</sup> Exhibit A-12, Page 4

<sup>13</sup> Exhibit A-12, Page 4

<sup>14</sup> Exhibit A-12, Page 5

progressing toward the Smart Grid. The Canadian and US governments are providing significant stimulus packages to ensure that the next generation of the Electric infrastructure is smarter and more efficient than the last hundred years.

Well-designed demand/response mechanisms would be implemented with the understanding and sensitivity that customers are in control of their own homes. In other words, customers would have the choice on (and benefit of incentives) of whether or not to participate in utility management programs at critical peak times.

Products would include setback thermostats, smart water heating, and other smart appliances, in addition to being able to use a range of user-friendly display and control units.

Although Smart Meters are mentioned in the BC Hydro LTAP, the scenario described above is meaningfully different and has a reasonable opportunity of occurring.

## 2.2 Electric Vehicles:

The Commission staff paper states:

*“The scenarios identified in the Terms of Reference considered heightened requirements arising from **fuel switching** to electricity as a greenhouse gas reduction strategy, and regional long-term economic expansion.”<sup>15</sup> [**emphasis added**]*

*“New technologies such as **electric vehicles** and home electronics may increase demand, while conservation technologies may reduce demand.”<sup>16</sup> [**emphasis added**]*

*“High demand – high exports, high economic growth, **plug-in electric vehicles**”<sup>17</sup> [**emphasis added**]*

The discussion of electric vehicles as presented by Commission staff are only discussed within the “Assessment of Demand” section and in the “High Demand scenario”.

We note that electric vehicles can also serve as distributed storage, and their introduction at a large scale is significantly tied to time-of-use rates and the Smart Grid. Electric vehicles also provide significant shifts in greenhouse gases and is a major fuel switching strategy, while at the same bridging both

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<sup>15</sup> Exhibit A-12, Page 4

<sup>16</sup> Exhibit A-12, Page 5

<sup>17</sup> Exhibit A-12, Page 5

transportation and energy sectors.

Therefore, we suggest that discussions relating to electric vehicles should not be tied only to demand, but should be a separate topic area dedicated only to “Electric Vehicles” and analyzed on an integrated approach which encompasses all areas relating to electric vehicles, including generation and transmission (we suggest this topic be added to the “Integrated Approach” section as discussed in section 4 of this document).

### 2.3 Demand Side Measures and 2007 BC Energy Plan:

With the emphasis from the province in the 2007 BC Energy Plan and the DSM Regulation M271 for placing ambitious conservation and energy efficiency targets to handle the incremental resources needs in BC, and pursue all cost-effective demand side measure. Since this will have a major effect on demand, and consequently the transmission requirements, we believe it is essential that a focus be clearly directed at demand-side measures in the Transmission Inquiry as well.

The Commission staff paper states:

*“Reasonable forecasts of the province’s domestic long-term energy and capacity requirements, based on estimates of net domestic demand, after provincial self-sufficiency requirements and **demand-side measures** are taken into account, are in scope.”<sup>18</sup>*

The above statement clearly identifies the energy and capacity forecasts to be in scope, but it is not clear if the demand-side measure forecasts themselves would be in scope. To clarify, we suggest that it clearly be stated that the demand-side measure forecasts themselves be considered in scope.

The Commission staff paper also states:

*“In addition, forecast scenarios may need to be developed to reflect future outcomes that were not adequately addressed in the LTAP.”<sup>19</sup>*

Similarly, we suggest that these forecast scenarios specifically include demand-side measure forecasts.

We note that various plans are specifically identified through the Commission

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<sup>18</sup> Exhibit A-12, Page 4

<sup>19</sup> Exhibit A-12, Page 4

staff paper, and in spite of the importance of the 2007 BC Energy Plan that it was not specifically noted in the Commission staff paper. We suggest that one of the “in scope” issues be:

- a complete analysis of the 2007 BC Energy Plan and M271 to determine the appropriate sections that would be relevant to the Transmission Inquiry.

### **3.0 Assessment of Transmission<sup>20</sup>:**

#### **3.1 Vancouver Island**

As discussed in section 1.4, we suggest that one Transmission scenario that should be analyzed: “*no more Transmission Lines to Vancouver Island*”.

Vancouver Island is a distinct region geographically, and involves significantly higher and more complex transmission connections. We suggest this be added to the “Integrated Approach” section as discussed in section 4 of this document.

#### **3.2 Ties to Alberta and the U.S.**

The Commission staff paper states:

*“The review will include issues with respect to the capacity of the interties with Alberta and the U.S.”<sup>21</sup>*

We suggest that the discussion of the interties also include a discussion of the Smart Grid because of the high concentration of Smart Grid developments in the US and technical benefits of extending the grid. In addition, collaboration between US and Canada is suggested by the Canadian government in their stimulus package.

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<sup>20</sup> Exhibit A-12, Pages 6 to 7

<sup>21</sup> Exhibit A-12, Page 7

#### **4.0 Integrated Approach:**

We believe that this Transmission Inquiry should be developed as an integrated process, one in which Generation, Demand and Transmission are considered in an integrated approach. We understand that the issues need to be split up into the separate areas in order to divide the issues into more manageable portions: “Assessment of Generation”, “Assessment of Demand” and “Assessment of Transmission”. However, in order to adequately address issues in all three areas in an integrated fashion, we suggest a new section of the scope be added and called “Integrated Approach”.

A few examples have already been presented in this comment document, which would be appropriate to add to this new section. For example, we suggest that “Electric Vehicles” and “Vancouver Island” be added to this new section.

## BRITISH COLUMBIA'S CLEAN OR RENEWABLE ELECTRICITY DEFINITIONS

Electricity generated in British Columbia may be reported as Clean or Renewable Electricity if:

1. The facility is in compliance with all applicable Federal and Provincial environmental regulations;

AND

2. The facility satisfies one of the following requirements:
  - a. The electricity is generated in a facility that uses a Clean or Renewable Electricity Resource or Technology as defined in this document.
  - b. The electricity is generated in a facility that fulfills one of the following requirements:
    - It can be demonstrated that the facility meets the certification criteria for “electricity -- renewable low-impact” as defined by Environment Canada’s Environmental Choice™ Program; or
    - The facility maintains Environmental Choice™ Program certification.
  - c. Electricity is generated using a process, resource, or technology that is not recognized as Clean or Renewable in this document, but receives recognition from the Minister of Energy, Mines and Petroleum Resources as Clean or Renewable Electricity.

## BRITISH COLUMBIA'S CLEAN OR RENEWABLE ELECTRICITY RESOURCES

Resources and technological applications that may qualify as a source for Clean or Renewable Electricity production are listed below:

**BIOGAS ENERGY** - means electricity generated from a system that captures biogas for combustion or conversion to electricity. Biogas means the gaseous products (primarily methane and carbon dioxide) produced from organic waste material. Facilities producing biogas include landfill sites, sewage treatment plants, and anaerobic digestion organic waste processing facilities.

**BIOMASS ENERGY** - means electricity generated from the combustion or gasification of organic materials. Biomass includes, but is not limited to:

- Clean wood biomass, meaning
  - wood residue within the meaning of the *Forest Act*,
  - wood debris from logging, construction, or demolition operations,
  - organic residues from pulp and paper production processes, and
  - timber, within the meaning of the *Forest Act* infested by the mountain pine beetle;
- Liquid fuels derived from biomass including bio-oil, ethanol, methanol, and bio-diesel;
- Dedicated energy crops; and
- Clean organically sourced material separated from municipal solid waste (MSW) and processed to serve as a combustion fuel.

Clean biomass does not include organic material that has been treated with inorganic substances such as paints, coal-tar creosote, pentachlorophenol or chromated copper arsenate, to change, protect, or supplement the physical properties of the materials.

If a facility co-fires fuels, or uses a mix of fuels that includes fossil fuels, only the proportion of the total electric output that can be attributed to the use of a clean or renewable fuel source qualifies as clean or renewable electricity. The proportion of the total electric output that qualifies as clean or renewable electricity must be calculated based on the proportion that clean or renewable energy constitutes of the total energy input used by the renewable energy system to generate electricity, or if practicable, separate metering.

**ENERGY RECOVERY GENERATION (ERG)** - means electricity produced from the recovery of waste energy from an industrial process that would otherwise have been vented or emitted into the atmosphere. ERG represents a net environmental improvement relative to existing energy production because it uses the waste of other processes to generate electricity. Therefore, all output from an ERG facility is considered Clean or Renewable Electricity.

**GEOTHERMAL ENERGY** - means electricity produced using the natural heat of the earth and all substances that derive an added value from it, including steam, water and water vapour heated by the natural heat of the earth and all substances dissolved in the steam, water or water vapour obtained from a well. This does not include hydrocarbons or water that has a temperature less than 80°C at the point where it reaches the surface.

**HYDROCARBON ENERGY** - means electricity produced from a facility combusting or converting fossil fuel using a closed-loop process whereby all greenhouse gas emissions from the operation of the facility are either deemed to be zero, negligible, or subject to long-term sequestration from the immediate receiving environment. Such a system requires approval of the Minister of Energy, Mines and Petroleum Resources for classification as Clean or Renewable Electricity.

**HYDRO ENERGY** - means electricity generated from a system or technology that converts either the potential or kinetic energy of water.

**HYDROGEN** - usually recognized as an energy carrier, hydrogen can also be used as a primary fuel source for internal combustion engines. Hydrogen produced from either a clean or renewable resource, or captured as a waste by-product of an industrial process, and then converted into electricity, is considered Clean or Renewable.

**MUNICIPAL SOLID WASTE (MSW)** - incineration of MSW to produce energy has both positive and negative environmental impacts. The release of carbon dioxide and other emissions is a negative impact, but reducing the amount of materials in landfills has benefits. Therefore, the combustion of MSW for electricity generation may be considered Clean or Renewable Electricity. A MSW incineration system requires approval of the Minister of Energy, Mines and Petroleum Resources for classification as Clean or Renewable Electricity.

MSW can also be converted to synthetic gas, which in turn is used to generate electricity. The electricity produced using such a process may be considered Clean or Renewable Electricity. A MSW-synthetic gas-generation system requires the approval of the Minister of Energy, Mines and Petroleum Resources for classification as Clean or Renewable Electricity.

**SOLAR ENERGY** - means electricity generated by converting the radiant light or heat energy of the sun through the use of photovoltaic and concentrating solar thermal technologies.

**TIDAL ENERGY** - means electricity produced by harnessing the natural rise and fall of the tides in the ocean.

**WAVE ENERGY** - means electricity produced by harnessing the natural rise and fall of waves in the ocean.

**WIND ENERGY** - means electricity produced from a system of airfoils or blades that spin a drive shaft to capture the kinetic energy of the wind.

**OTHER POTENTIAL CLEAN OR RENEWABLE ELECTRICITY SOURCES** - can include a project where the proponent or electricity distributor can demonstrate to the satisfaction of the Minister of Energy, Mines and Petroleum Resources that a project or application of technology otherwise excluded by this guideline, or not qualifying for certification under the Environmental Choice™ Program, should be recognized as producing Clean or Renewable Electricity.