Robert Hobbs
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July 31, 2018

Mr. Patrick Wruck
Commission Secretary and Manager, Regulatory Support
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC
V6Z 2N3

Dear Mr. Wruck:

Re FortisBC Inc. FBC 2017 Cost of Service Analysis and Rate Design Application Pro ect No. 1598939

Please find enclosed the ICG evidence submission in the above noted proceeding which consists of the following:

1. the prepared testimony of Mr. Will Cleveland on behalf of the ICG; and

2. the prepared testimony of Mr. Elroy Switlishoff on behalf of the ICG.

It may be helpful for future identification purposes if the prepared testimony of Mr. Cleveland and Mr. Switlishoff are filed as separate exhibits.

Yours truly,

(original signed)

Robert Hobbs

BEFORE THE

BRITISH COLUMBIA UTILITIES COMMISSION

IN THE MATTER OF

AN APPLICATION BY FORTISBC INC. FOR
2017 COST OF SERVICE ANALYSIS AND RATE DESIGN

BCUC PROJECT NO. 1598939

PREPARED TESTIMONY OF

WILL CLEVELAND

ON BEHALF OF

INDUSTRIAL CUSTOMERS GROUP

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Introduction

Q Please state your name and business address.

A: My name is Will Cleveland. My business address is 409 Granville Street, Suite 925, Vancouver, British Columbia, V6C 1T2.

Q By whom are you employed and what is your position?

A: I am a principal at Reshape Infrastructure Strategies.

Q On whose behalf are you submitting this testimony?

A: I am submitting this testimony on behalf of the Industrial Customers Group.

Q Please summarize your educational and professional background and qualifications.

A: I graduated from Georgetown University with an undergraduate degree in 2004. I received a Master's Degree from the London School of Economics in 2008. Since 2010 I have worked as a consultant in the utility sector. My work includes financial and business

case analysis, utility regulation, contract negotiation, and strategic planning. The majority of my work has been with regulated energy systems in British Columbia.

I have previously provided expert testimony to the BCUC as part of Creative Energy's Application for a CPCN for a Low Carbon Neighbourhood Energy System for Northeast False Creek and Chinatown Neighbourhoods of Vancouver.

My full CV is attached as Exhibit A.

Q. What is the purpose of your testimony today?

A. In this testimony, I will discuss FortisBC's (FBC's) proposed changes to their transmission access rates, characteristics and benefits of transmission harmonization and the license plate approach, and bypass rates for transmission access.

Q. Are you sponsoring any additional exhibits in connection with this testimony?

A. None apart from Exhibit A.

Impacts on Power Exporters

Q What are the economic consequences of the proposed changes to RS 101 and RS 102 (the "Proposed Changes") for existing exporters of power from FBC's service area, and future exporters of power from FBC's service area?

A: The Proposed Changes do not impact all generators in FBC's service territory that export power. The Proposed Changes only impact those generators that export power to BC

Hydro, e.g. Independent Power Producers selling to BC Hydro (a "BC Hydro IPP Within FBC")[1].

For an existing BC Hydro IPP Within FBC, the Proposed Changes will impose additional costs on their power export, which were not known when they executed their Electricity Purchase Agreement (EPA) with BC Hydro, assuming their EPA was executed after G-12-99. To my knowledge there is at least one BC Hydro IPP Within FBC operating with a BC Hydro EPA that was executed after G-12-99. My expectation is that when originally negotiating their EPA (and in particular the power price in the EPA), a BC Hydro IPP Within FBC would have taken into account all their known and forecasted costs to deliver energy to the point of interconnection (POI) with BC Hydro, including the zero cost RS 101 transmission rate ordered in G-12-99.

Variances over time in some costs are to be expected. For example, any BC Hydro IPP Within FBC would have to manage changes in their direct input costs, and in the rates for Ancillary Services, and would have expected to do so when signing their EPA. However, Order G-12-99 states clearly that transactions with delivery to a BC Hydro POI will benefit from the zero rate for transmission under RS 101, and Order G-12-99 has been applied in that way ever since it was issued. In my view, relative to the inevitable fluctuations in input costs or in rates for Ancillary Services (all of which would have been expected when signing an EPA), the Proposed Changes are a more fundamental change to the cost structure faced by a BC Hydro IPP Within FBC. For a generator within FBC's service area that has an existing BC Hydro EPA, it amounts to changing the rules that apply to a long-term transaction after the transaction has been agreed to, and is not in my view appropriate.

[1] This category includes both true IPPs (facilities built only for power generation) as well as self-generators who export power (i.e. industrial facilities with excess on-site power generation which they export). While there are some differences between these types of generators, there is no meaningful distinction for the purposes of this discussion on exports and transmission pricing. Throughout this document I have referred to IPPs, but the term is meant to encompass other embedded exporters such as self-generators.

For future exporters of power from FBC's service area (or for existing generators seeking, in future, to export power or renew their power export arrangements), the Proposed Changes will have the following consequences:

- Exporting power to BC Hydro will now require paying FBC's full point-to-point transmission charge. This is in addition to any directly assigned transmission costs – for example, to integrate a new generation resource into the FBC grid. Directly assigned costs would be separately recovered from the generator through a connection charge or similar fee. The point-to-point transmission rate is purely a contribution towards sunk costs. In the absence of any generators seeking to export power (or any other wheeling transactions), all sunk transmission costs would be recovered from FBC's loads.
- BC Hydro – which is the service area where most of the load growth in BC is anticipated to occur – will take these transmission charges into account when comparing energy supply options. If a generator located within FBC's service area seeks to export power to BC Hydro, any export transaction would attract FBC's full point-to-point transmission charge[2], even though the generator would have separately paid (through direct assignment) any costs incurred to incorporate their generation into the grid. This generator will have to compete against generators located within BC Hydro's service area, who can sell to BC Hydro without making a contribution to embedded transmission costs, as these costs are recovered from BC Hydro's loads, not from generators located within BC Hydro's service territory.

The additional charges under the Proposed Changes may be sufficient to distort generation procurement decisions as illustrated by the following example. Assume the following:

- Generator 1 is a potential project that would be located within BC Hydro's service area, immediately adjacent to a point of interconnection (POI) with FBC's service

[2] The transmission cost could be charged to the generator or to BC Hydro, but the effect on the competitiveness of the generator is the same.

area. It would have a generation cost of $100 per MWh for power delivered to that POI.

- Generator 2 is a potential project that would be located within FBC's service area and would have a generation cost of $95 per MWh for power delivered to the same POI (i.e. after losses), but excluding any contribution towards FBC's embedded transmission costs through a point-to-point transmission charge.
- Any transmission upgrade costs directly attributable to either generator are directly assigned to each generator and the cost impact of those direct assignments are already captured within each potential generator's cost.
- The FBC point-to-point transmission charge is equivalent to $10 per MWh.
- The two generators produce equal amounts of power, and either one of them alone is sufficient to meet BC Hydro's energy needs.

From BC Hydro's perspective, energy can be procured from Generator 1 at the POI for $100 per MWh. BC Hydro would be willing to pay up to $100 per MWh at the POI for energy produced by Generator 2, but since the transaction has to support the $10 per MWh transmission charge to FBC (which is a contribution to FBC's embedded transmission costs), there is only revenue of $90 per MWh available to Generator 2. This is less than Generator 2's cost, so Generator 2 would not be built and BC Hydro would procure energy from Generator 1 at $100 per MWh. If not for the transmission charge – which recovers embedded costs of FBC's transmission system, not any incremental costs associated with Generator 2 – BC Hydro would have been able to procure energy from Generator 2 at $95 per MWh. However, due to the Proposed Changes, energy produced by Generator 2 would appear higher cost to BC Hydro even though Generator 2 is actually the lower cost resource – it would just attract a charge representing a share of FBC's embedded transmission costs, which are otherwise recovered from FBC's loads.

For clarity, the above example focuses on recovery of embedded transmission system costs. There are other issues related to transmission costs and generator location decisions, such as congestion and losses. Managing congestion is a distinct issue, and

based on information provided by FBC, the FBC system has no transmission constraints[3]. Exporters from the FBC system pay for losses through RS 109[4]. For an exporter selling to BC Hydro, my expectation is that the pricing they receive from BC Hydro at the POI would reflect the value BC Hydro places on the energy at the POI, including losses incurred in moving the energy to the load centre.

Discriminatory Tariffs

Q Is the proposed change discriminatory?

A: The BCUC's decision regarding FBC's 1998 Transmission Access Application stated: "Non-discriminatory access is a basic tenet of any open access transmission tariff."[5] The establishment of open access transmission tariffs in North America began with the issuance of Federal Energy Regulatory Commission (FERC) Order 888 in 1996[6]. Order 888 has been reaffirmed in subsequent FERC proceedings[7]. Order 888-A, from 1997, provided a definition of non-discriminatory access:

> "Order No. 888 has two central components. The first requires all public utilities that own, operate or control interstate transmission facilities to offer network and point-to-point transmission services (and ancillary services) to all eligible buyers and sellers in wholesale bulk power markets, and to take transmission service for their own uses under the same rates, terms and conditions offered to others. In other words, it requires non-discriminatory (comparable) treatment for all eligible users of the monopolists' transmission facilities.[8]"

[3] 2017 Cost of Service Analysis and Rate Design Application, Exhibit B-8, response to BCUC IR 1.66.4, p 201.
[4] 2017 Cost of Service Analysis and Rate Design Application, Exhibit B-1, p 104 line 32 – p 105 line 29.
[5] BCUC Order G-28-99, Attached Decision, Section 5.1 Non-Discriminatory Access, p 26. This proceeding led to the establishment of FBC's transmission rates, including RS 101 and RS 102. https://www.ordersdecisions.bcuc.com/bcuc/orders/en/item/114403/index.do
[6] FERC Order No. 888. https://www.ferc.gov/legal/maj-ord-reg/land-docs/order888.asp
[7] E.g. FERC Orders No. 888-A (1997), No. 888-B (1997), No. 888-C (1998). https://www.ferc.gov/legal/maj-ord-reg/land-docs/order888.asp
[8] FERC Order No. 888-A, p 11. https://www.ferc.gov/legal/maj-ord-reg/land-docs/rm95-8p1-000.txt

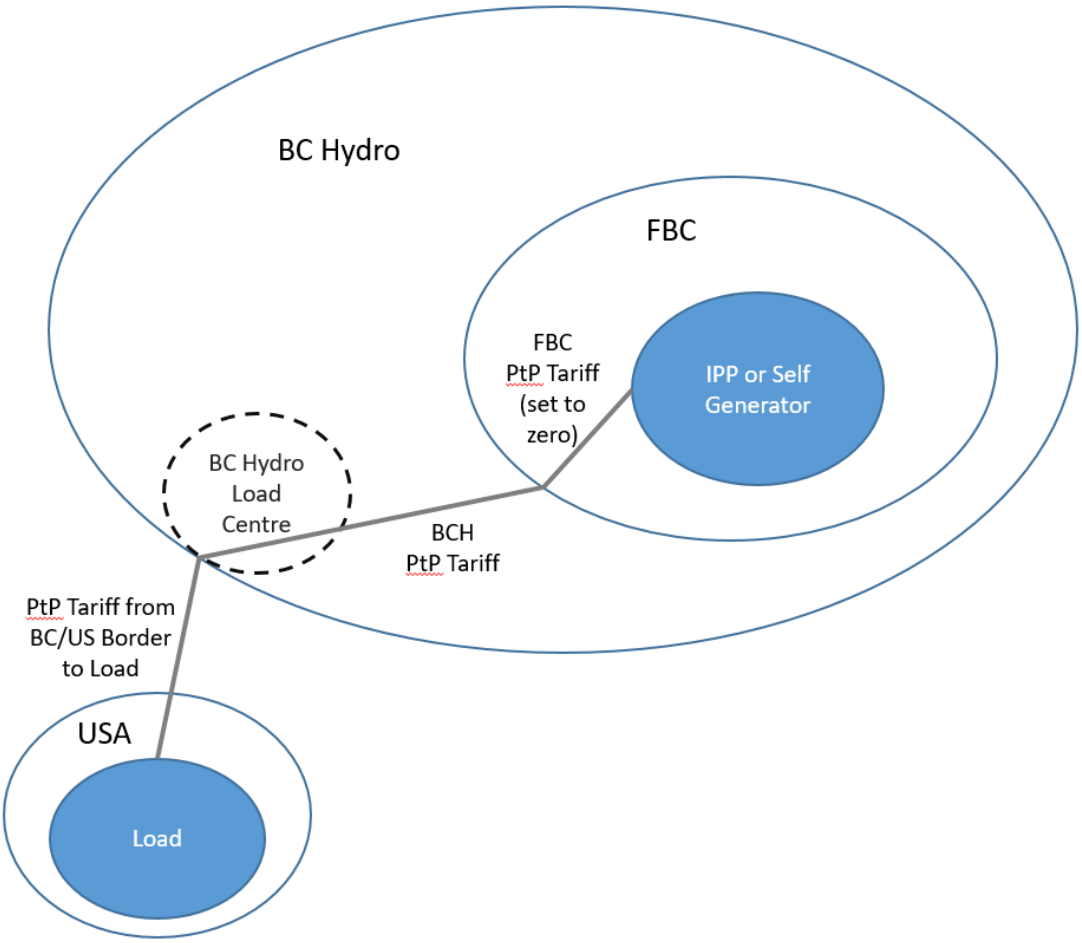
Examples of discrimination could include:

- The owner of a transmission facility refuses to give certain eligible transmission users access to its facilities (for reasons unrelated to constraints on the system); or
- The owner of a transmission facility charges transmission users different rates than it charges itself for its own use.

The principle of providing non-discriminatory access does not prevent utilities from setting different rates. However, setting different rates for different customers or types of customers is generally required to follow principles such as cost causation. In the Proposed Changes, FBC has requested different rate treatment for exporters to the BC Hydro system based on a distinction that is not clearly supported by any principle.

Three diagrams in this section illustrate the distinction FBC seeks to draw. Scenario A depicts the following: a generator within FBC's service territory is exporting power in a way that requires a point-to-point transmission service reservation on the BC Hydro system – for example, it is wheeling power from FBC's service territory, through BC Hydro's service territory to the BC-US border where it will be transmitted to a load in the US. FBC's position is that in Scenario A, the zero Monthly Rate under FBC's RS 101 (as ordered in G-12-99) does apply and would continue to apply. The transaction would also attract "typical" transmission charges from BC Hydro – not the zero rate.

Scenario A: Export from Embedded Generator to USA (No Change Proposed)

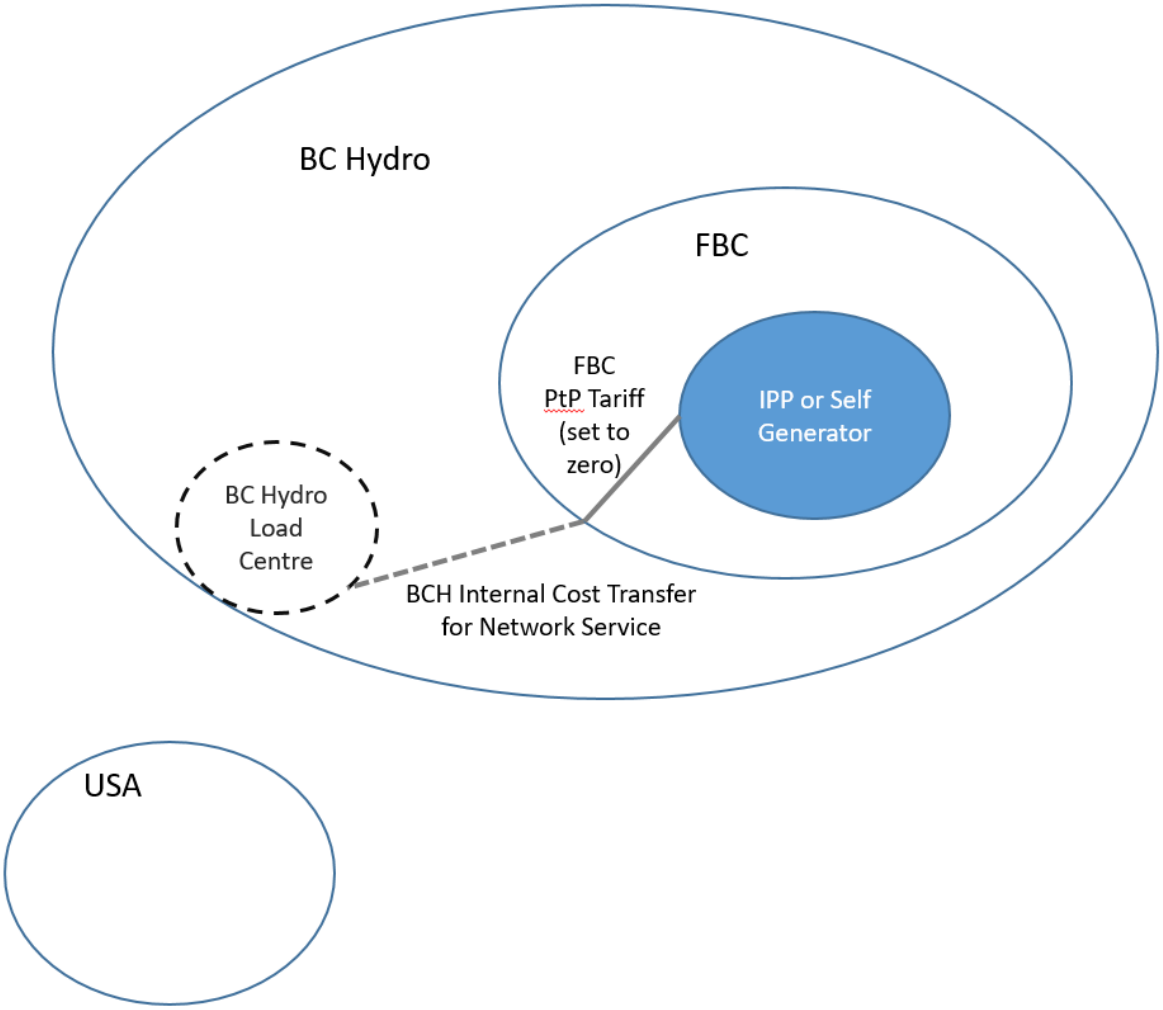


Scenario A is provided for reference, as FBC is not seeking a change to how this transaction would be treated. It is FBC's position that under G-12-99, the zero rate for use of the FBC transmission system would also apply to transmission arrangements to serve a wholesale or retail customer within the BC Hydro service area[9]. Retail access within BC Hydro's service area is currently prohibited[10], but an entity like New

[9] 2017 Cost of Service Analysis and Rate Design Application, Exhibit B-1, p 95, lines 25-31.
[10] BC Hydro's Retail Access program was suspended in 2012, then fully cancelled in 2014 via order G-36-14. https://www.ordersdecisions.bcuc.com/bcuc/orders/en/119255/1/document.do

Westminster's electric utility is an Eligible Customer under BC Hydro's OATT[11], and could procure energy from IPPs located within FBC's service area.

Scenario B (Current Treatment): Export from Embedded Generator to BC Hydro



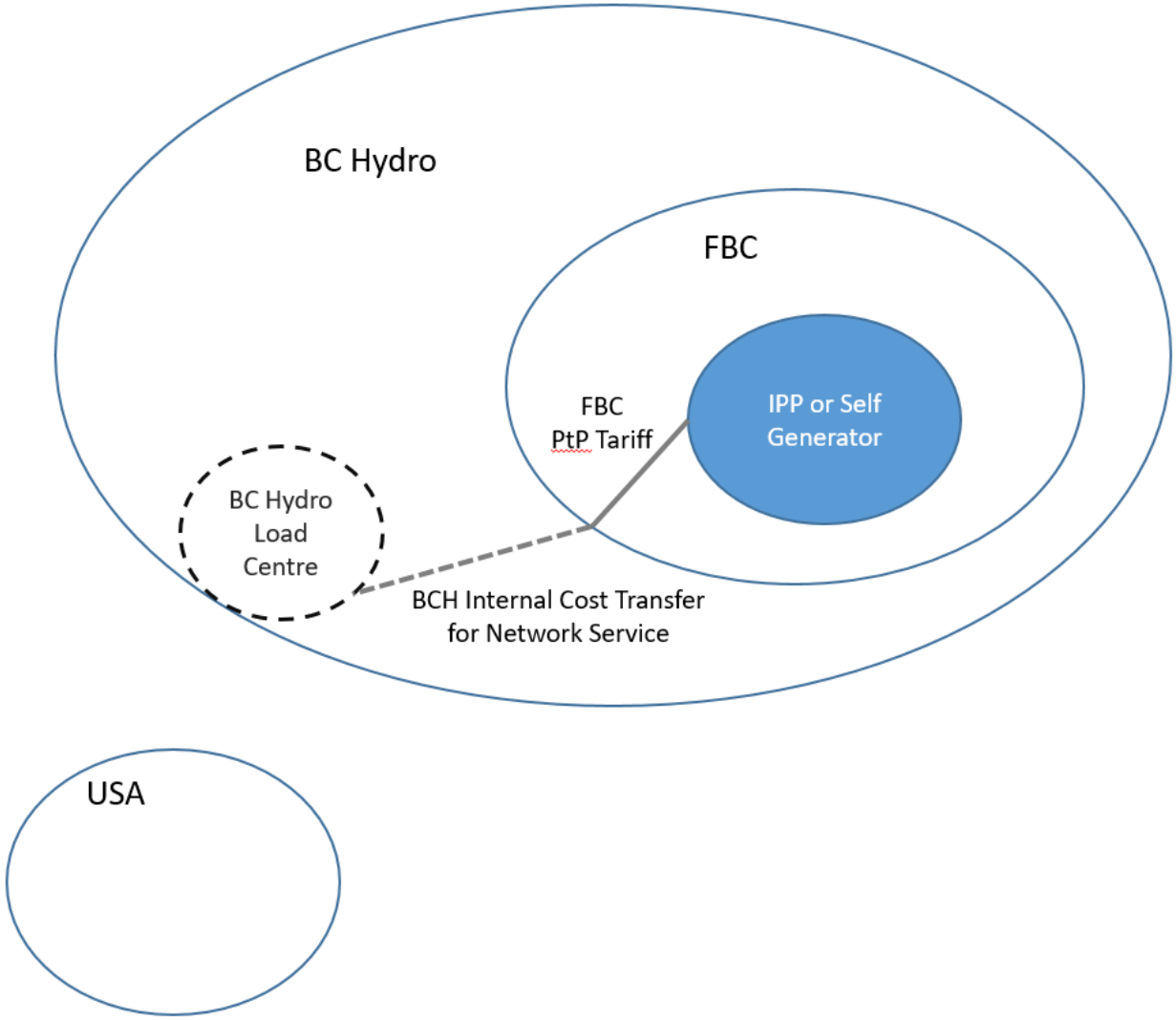
Scenario B (Current Treatment) depicts the status-quo treatment of a slightly different transaction. A generator within FBC's service territory is exporting power in a way that does not require an explicit point-to-point transmission service reservation on the BC Hydro system. It is selling power to BC Hydro for BC Hydro's use to serve load. The

[11] BC Hydro and Power Authority Open Access Transmission Tariff, S. 1.12, definition of Eligible Customer. https://www.bchydro.com/about/planning_regulatory/tariff_filings/oatt.html

current treatment of this transaction is that it receives the zero rate under RS 101 for point-to-point transmission access within the FBC system to reach its POI with BC Hydro ("Current Treatment").

FBC's position is that Order G-12-99 does not or should not apply to generators exporting power to BC Hydro, and the appropriate treatment is for FBC's full point-to-point tariff to apply, not the zero rate. FBC's proposed treatment of Scenario B is illustrated in Scenario B (FBC Proposed Changes).

Scenario B (FBC Proposed Changes): Export from Embedded Generator to BC Hydro



The distinction FBC seeks to draw is that exporters to BC Hydro do not have an "equivalent point-to-point transmission reservation on the BC Hydro system,[12]" and therefore should be required to pay FBC's full point-to-point rate.

Both Scenario A and Scenario B involve export by a generator located in FBC's service area exporting energy to serve load located elsewhere. Scenario B does not require the generator to make a distinct reservation for the use of BC Hydro's transmission system, but this is only because of the characteristics of a Network Integration Transmission Service reservation such as BC Hydro has for the use of its own transmission system.

Under FBC's Proposed Changes, even if the Scenario A generator and the Scenario B generator had identical capacity and output, and both generators imposed no incremental costs on the transmission system (i.e. required no transmission upgrades to manage their generation), the two generators would face different rates for the use of FBC's transmission system. The Scenario A exporter would receive the zero rate, while the Scenario B exporter would be required to pay FBC's full point-to-point transmission rate.

As noted above, setting different rates for different customers or types of customers is generally required to follow principles such as cost causation. Given that FBC's proposal makes a distinction between the Scenario A and Scenario B exporters based only on the party the exporter is selling energy to, and in both cases the transaction flows from FBC's service area to BC Hydro's service area (the precise situation addressed by G-12-99), it is difficult to see what principle could justify FBC charging different transmission rates to these two exporters.

While the above discussion uses the specific examples of generators within FBC's service territory exporting power out of FBC's service territory, the same discussion could equally be stated for the reverse scenario, where generators within BC Hydro's service territory export power to FBC's territory (whether for use by FBC or third parties). The original harmonization application was based on making equivalent

[12] 2017 Cost of Service Analysis and Rate Design Application, Exhibit B-1, p 95, lines 29-31.

amendments to the two utilities' relevant tariffs[13]. Under BC Hydro's OATT, electric utilities and generators have access to the transmission system[14], and under FBC's transmission access rules, wholesale customers (such as the municipal utilities which purchase energy from FBC) have transmission access, as do large industrial customers[15].

Harmonization and the License Plate Approach

Q What are the benefits of harmonization? How might the proposed change reduce those benefits and be contrary to the public interest and the *Clean Energy Act*?

A: The benefit of harmonization is that it can foster greater use of the transmission system. It can do this by enabling energy transactions that are fundamentally economical, but which might not otherwise proceed due to distortions in transmission pricing which seek to recover embedded costs. This is illustrated in the Generator 1 / Generator 2 example provided in the response to question #1.

In the absence of harmonization, generators seeking to provide low-cost energy could attract charges to cover embedded transmission system costs – costs which are already sunk and previously being recovered from loads. These charges are not incurred for generators providing energy within a single transmission system, but can be incurred for generators providing energy across transmission systems. This may prevent economical transactions from being completed. By fostering economical transactions, harmonization can help meet British Columbia's Energy Objectives under the *Clean Energy Act*, which include:

[13] 2017 Cost of Service Analysis and Rate Design Application, Exhibit B-1, Attachment I-1, p 1.
[14] BC Hydro and Power Authority Open Access Transmission Tariff, S. 1.12, definition of Eligible Customer.
[15] Order G-28-99 and attached Decision, pp 3, 9.
https://www.ordersdecisions.bcuc.com/bcuc/orders/en/item/114403/index.do

> "to maximize the value … of British Columbia's generation and transmission assets for the benefit of British Columbia[16]"

In the absence of harmonization, transactions involving generators that export power from within one utility's service area to the other utility are likely to incur multiple layers of transmission costs – costs which were previously recovered from loads, and are not imposed or affected by the construction of new generation. This may hinder certain generation projects from being built, even if they have the lowest true incremental costs, and may saddle British Columbia with higher-cost generation than is otherwise necessary.

Q Are there other urisdictions where the license plate approach has been used to enable utilities to access energy from IPPs located within other utilities' service areas?

A: The license plate approach to harmonization is one way to enable regional access to a transmission system. One issue in the current proceeding would seem to be whether it was intended to be applied or should be applied to a scenario where one utility procures IPP energy from within the other utility's service area. Leaving aside the issue of what FBC and BC Hydro intended at the time of the 1998 harmonization application[17], the license plate approach has certainly been applied elsewhere to give utilities lower-cost access to energy produced within other transmission owners' service areas. For example, the license plate approach is used in PJM, a Regional Transmission Organization (RTO) in the eastern United States[18], to give utilities within PJM the ability to access energy from generators located within the service areas of other PJM transmission owners,

[16] *Clean Energy Act*, Part 1 – British Columbia's Energy Objectives, S. 2(m). http://www.bclaws.ca/civix/document/id/consol24/consol24/00_10022_01
[17] This application ultimately led to Order G-12-99.
[18] PJM was originally establishes as an Independent System Operator (ISO) but is now considered an RTO. One of the main differences is that RTOs have a greater role in the transmission system.

without paying additional transmission charges. Below is a summary from a FERC opinion regarding transmission cost allocations within PJM:

> "When the PJM power pool was restructured as an ISO in 1997, the Commission approved a rate proposal for non-pancaked charges for firm transmission in PJM, with a rate which varied based on the zone in which the subject load was located. Under this zonal or license plate rate design, the PJM's footprint is segregated into separate transmission pricing zones, typically based on the boundaries of individual transmission owners or groups of transmission owners. A customer's rate is based on the embedded costs of transmission facilities that are located within its zone. Under this rate design, customers thus are charged based on the facilities they have traditionally used, although all transmission facilities are ultimately shared so that any customer can source energy from anywhere within PJM. This zonal or license plate rate design helped to reduce the multiple transmission charges that had previously applied when a utility purchased electric energy from remote resources. By thus leveling the playing field between remote and local suppliers, a zonal rate design helped PJM move to a regional electricity market.[19]"

Existing transmission assets had been constructed to serve loads within the boundaries of each transmission owner's network, and each transmission owner's sunk costs would continue to be recovered from loads within their boundaries. All customers would have access to the integrated transmission system without having to make additional payments for transmission service. This would help them source generation from anywhere within PJM without paying additional transmission tariffs, "leveling the playing field between remote and local suppliers."

[19] FERC Opinion No. 494. https://www.ferc.gov/whats-new/comm-meet/2007/041907/E-8.pdf. The quoted extract focuses specifically on the allocation of embedded transmission system costs. Cost allocations for new transmission assets – which often benefit multiple existing utilities and transmission owners within an ISO or RTO, in ways that can be difficult to quantify – have received much attention in recent years, but are a separate issue. For a sample discussion of this issue see "A Survey of Transmission Cost Allocation Methodologies for Regional Transmission Organizations," Fink, S. et al, Exeter Associates, February 2011 (Subcontract report for National Renewable Energy Laboratory) https://www.nrel.gov/docs/fy11osti/49880.pdf

While transmission owners would not be able to seek incremental revenues from new generators which choose to locate within their systems and export to other zones within PJM[20], under the license plate approach there would be no reduction in revenues received by each transmission owner, as they would continue to recover all sunk transmission costs from their loads.

This is a basic feature of the license plate approach to harmonization. Here in British Columbia, the 1998 harmonization application proceeding specifically anticipated impacts on FBC and BC Hydro which are similar to those described within PJM: that transmission costs would continue to be recovered from loads in each transmission operator's service area. As part of the 1998 harmonization application proceeding, FBC and BC Hydro stated:

> "… an energy flow from [FBC] to B.C. Hydro would not reduce [FBC's] transmission revenues. Presently [FBC's] transmission revenue requirement is allocated to [FBC's] loads and this would continue even if an outflow of energy from [FBC] occurred. For example, a generator locating in [FBC's] service area and exporting its energy thereby creating net outflow from [FBC] would not reduce the revenues collected from loads within [FBC's] service area or affect [FBC's] WTS rates.[21]"

This principle of having load pay for embedded transmission costs within each sub-area can also be applied to IPP procurement by BC Hydro. When BC Hydro procures IPP energy from a generator located within FBC's service area, BC Hydro sells that energy to native load at a rate that includes the recovery of BC Hydro's embedded transmission system costs. It also extends to other types of transactions. For example, if an Eligible Customer (from the standpoint of the OATT) within BC Hydro's service area procured IPP energy from within FBC's service area, under the status quo application of G-12-99

[20] Leaving aside the issue of any incremental transmission system costs imposed by the generator, as these would be directly assigned.
[21] 2017 Cost of Service Analysis and Rate Design Application, Exhibit B-26, Attachment 15.2, letter dated January 6, 1999, p 4.

the transaction would attract the zero transmission rate from FBC plus the typical transmission rate from BC Hydro. In this way, the entity would be making a contribution to BC Hydro's embedded transmission system costs, just as if it were being served as a BC Hydro customer.

It becomes more complex if we consider the case of an IPP within FBC's service area wheeling through both FBC and BC Hydro to serve a load in the US, as illustrated above in Scenario A. In this case, the transaction would still attract BC Hydro's full transmission rate, even though the load is actually located outside both utilities' service areas (and outside the area covered by the license plate arrangement). The ultimate customer has to pay for embedded transmission costs within its own service area in the US, and also make a contribution to BC Hydro's embedded transmission system costs. This is referred to as a "seams issue", referring to the seams between adjacent ISOs, RTOs and balancing authorities, and is a common issue in policies to promote harmonization, eliminate pancaking, and remove barriers to electricity transactions[22]. Harmonization approaches such as the license plate approach can reduce barriers and promote a more efficient electricity market within the geographic area under consideration. Challenges remain for promoting harmonization across major electricity system boundaries. My expectation is that international borders will have particularly persistent seams issues. But the fact that seams issues remain between geographic areas does not mean there aren't benefits to harmonization within geographic areas. Harmonization within B.C. is in the public interest, and fully within the purview of the provincial government and the BCUC.

There are alternatives to the license plate approach. For example, one way to achieve harmonization is to simply amalgamate transmission costs across the area in question and collect all costs from load (excluding those costs which can be directly assigned to generators or others) – i.e. socializing costs across a larger area than is currently done. Some ISOs and RTOs work this way by pooling the costs of multiple transmission

[22] For a discussion of seams issues, see e.g. "Electric Market Seams: Barriers to Competitive Trade Between Northeastern Regional Electric Markets," Long Island Power Authority, March 29, 2007. Accessed at https://www.ferc.gov/CalendarFiles/20070328154023-LIPA%20Overview%20o%20f%20Northeast%20Seams.pdf

operators and charging a single postage stamp rate to all transmission users. The approach is simple to understand and administer, but (like any postage stamp approach) it will tend to cross subsidize higher-cost transmission service areas at the expense of lower-cost areas. This approach could be taken within BC Hydro's transmission control area, which includes FBC's transmission network. An area-wide postage stamp approach involving transmission assets owned by multiple utilities is used by the California Independent System Operator to recover some transmission system costs.[23] A similar approach is also used by the Alberta Electric System Operator[24].

Transmission Service Discounts

Q Are FBC's proposed principles for allowing transmission service discounts appropriate and is there a better alternative?

A: In the Application, FortisBC states the following regarding offering discounts on transmission service under RS 101 (Firm Point-to-Point) and RS 102 (Non-Firm Point-to-Point):

> "The Special Provisions for each rate contain language allowing discounts to be provided under certain conditions. Generally, discounting of the posted maximum rates may occur when all of the following conditions apply:
>
> - the increased usage will not add to system costs over the term requested;
> - the customer can demonstrate that an alternative transmission path is available at lower cost with another Transmission Provider; and
> - the lack of a discount would result in curtailment of transmission use for economic reasons.

[23] California ISO. "How Transmission Cost Recovery Through the Transmission Access Charge Works Today: Background White Paper". April 12, 2017. https://www.caiso.com/Documents/BackgroundWhitePaper-ReviewTransmissionAccessChargeStructure.pdf p 5.
[24] "Transmission rates", Alberta Utilities Commission. http://www.auc.ab.ca/pages/transmission-rates.aspx

> For example, if a new IPP could connect to BC Hydro or FBC, and sell to two different third parties along two different underutilized paths, located in the distinct service areas, then FBC may offer a discount."[25]

These principles determine whether FBC considers a customer to be eligible for a discounted transmission rate. FBC has not defined the methodology it would use to calculate the discount.

Transmission discounting if the customer has an economical alternative is a form of bypass rate. There are a range of eligibility standards that can be applied. FBC's second principle – that "the customer can demonstrate that an alternative transmission path with another Transmission Provider is available at a lower cost …" is a high bar to clear. A more appropriate principle would be that "the customer can demonstrate that it has a viable and economical alternative to using the transmission path." The alternative may include constructing new transmission infrastructure to bypass the existing infrastructure. One purpose of offering bypass rates when customers have a feasible but unbuilt alternative is to avoid unnecessary investment in redundant infrastructure when a bypass rate is a more economical solution for all parties.

This approach – offering a bypass rate if a customer has a credible alternative, even if that alternative is unbuilt – was used by FBC when it negotiated and sought approval for a bypass rate for a sawmill located in Grand Forks. The sawmill sought to build a substation so it could move to the transmission rate. Based on the estimated cost of bypass, the customer and FBC agreed to move the customer to the transmission rate and charge the customer a monthly Bypass Rate Rider based on the customer's estimated cost of bypass[26]. While this approach was for a different scenario – a customer with a credible option to invest capital to enable the switch to transmission service rather than a customer with a credible option to invest capital to create an alternative transmission path – in my

[25] 2017 Cost of Service Analysis and Rate Design Application, Exhibit B-1, p 91, lines 1-12.
[26] Order G-52-04 (https://www.ordersdecisions.bcuc.com/bcuc/orders/en/115460/1/document.do) and Letter No. L-10-03 (https://www.ordersdecisions.bcuc.com/bcuc/orders/en/115285/1/document.do)

view, the underlying issue is similar: working with customers to offer discounts so as to avoid investments in redundant infrastructure.

Developing a full pricing methodology for offering discounts to FortisBC customers seeking to bypass embedded transmission assets may be excessive until such time as a customer meets FBC's principles and has requested a transmission discount. But setting FBC's eligibility standard for offering transmission discounts as "a credible option to construct an alternative" rather than "the existence of an alternative" is more in line with the eligibility standard used for other types of bypass, including an existing bypass arrangement agreed to by FBC.

Exhibit A

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E. wcleveland@reshapestrategies.com
reshapestrategies.com

Will Cleveland, MSc, Principal

Summary

- Experience with pricing and contract negotiation for complex projects
- High level of analytical skills including business case financial modeling, statistical analysis and risk analysis.
- Broad sector experience including thermal energy systems, water utilities, electricity generation, and land use and development.
- Project management experience involving diverse, interdisciplinary teams.
- Experience with regulatory principles and practice for regulated utilities.

Education

2008	Masters of Real Estate Economics and Finance London School of Economics, London UK
2004	Bachelor of Science in Foreign Service Georgetown University, Washington DC

Summary of Professional Experience

2013 – Present	Principal	Reshape Infrastructure Strategies Ltd
2010 – 2013	Associate	Compass Resource Management Ltd
2009	Analyst	Cloudworks Energy Inc.
2004 – 2006	Analyst	The Fordham Company, Chicago, IL

Select Assignments

- Part of advisory team to Creative Energy on applying for a Certificate of Public Convenience and Necessity (CPCN) from the BC Utilities Commission for the redevelopment of the Beatty Plant site.
- Economic and contract negotiation advisor to Metro Vancouver on effluent heat recovery project in North Vancouver
- Economic and contract negotiation advisor to Vancouver-based developer to negotiate district energy service contracts for new projects in Calgary and Toronto

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- Part of advisory team to Creative Energy on applying for a Certificate of Public Convenience and Necessity (CPCN) from the BC Utilities Commission for the Northeast False Creek Neighbourhood Energy System.
- Part of team for Creative Energy's feasibility study for a low-carbon fuel switch of the Vancouver steam network. This study work was co-funded by the City of Vancouver and a grant from the Federation of Canadian Municipalities.
- Part of advisory team to Simon Fraser University Facilities regarding shared plant with Corix' University district energy system.
- Advisor to ENMAX on district energy expansion opportunities.
- Advisor to Surrey City Energy on developing a Rate Review Panel.
- Part of advisory team to Creative Energy Canada on purchase of Central Heat in Vancouver, BC and on expansion opportunities throughout downtown Vancouver.
- Advisor to City of Chilliwack on rate design for the City's municipal water utility.
- Phase 1 screening study for Metro Vancouver Housing Corporation on district energy opportunities related to redevelopment of Heather Place site. Technical options include integration with Vancouver General Hospital plant.
- Advisor to Central Heat, City of Vancouver, and Port Metro Vancouver on alternative energy options for the existing Central Heat network and large industrial users on Burrard Inlet.
- Phase 2 screening analysis for University of British Columbia on district energy opportunities in the South Campus area, including waste heat recovery from the Triumf accelerator.
- Advisor to Parklane Homes on development of business case for River District Energy and on negotiations with Metro Vancouver regarding use of waste heat. Provided support for RDE's application to the BC Utilities Commission for a Certificate of Public Convenience and Necessity, and support on responses to information requests.
- Advisor to City of Surrey on district energy opportunities in the Central City area, including the new City Hall geoexchange system and a proposed large-scale system in Central City. Provided ongoing support to staff during project implementation.
- Developed business cases for Capital Regional District for multiple waste heat recovery opportunities from trunk sewers in the Greater Victoria area.
- Screening analysis for fuel switch opportunity for Lower Mainland Consolidated Health Authorities for a large hospital campus in Vancouver, BC, and continued support for the Health Authorities as they have negotiated with a proponent and sought internal approval for implementing the project.
- Provided support and quantitative analysis for phase 2 screening analysis of waste heat recovery opportunity in Saint John, NB.
- Provided analytical support for phase 2 analysis of district heating opportunity in
- Yellowknife, NT, including use of waste heat from an abandoned mine.
- Provided analytical support for pre-feasibility study for expansion of district energy system in Revelstoke, BC.

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- Screening analysis (Phase 2) for district energy in the Northeast False Creek area of Vancouver, including integration with existing district energy systems and opportunities to supplement with alternative energy sources.
- Screening analysis (Phase 1) of district energy opportunities and options for South Waterfront redevelopment area of Portland, including Oregon Health Sciences University Schnitzer Campus (Portland Development Commission and OHSU).
- Supported phase 2 analysis of district heating opportunities in Squamish, BC, with technical options including biomass and ocean heat recovery.
- Developed financial proformas for multiple run-of-river hydroelectric opportunities in British Columbia for Vancouver-based independent power producer.

BEFORE THE

BRITISH COLUMBIA UTILITIES COMMISSION

IN THE MATTER OF

AN APPLICATION BY FORTISBC INC. FOR
2017 COST OF SERVICE ANALYSIS AND RATE DESIGN

BCUC PROJECT NO. 1598939

PREPARED TESTIMONY OF

ELROY SWITLISHOFF

ON BEHALF OF

INDUSTRIAL CUSTOMERS GROUP

JULY 31, 2018

BEFORE THE
BRITISH COLUMBIA UTILITIES COMMISSION

IN THE MATTER OF
AN APPLICATION BY FORTISBC INC. FOR
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PREPARED TESTIMONY OF
ELROY SWITLISHOFF
ON BEHALF OF
INDUSTRIAL CUSTOMERS GROUP

JULY 31, 2018

Q. Please state your name and business address.

A. My name is Elroy Switlishoff. My business address is 3569 14th Avenue, Castlegar, British Columbia.

Q. By whom are you employed and what is your position?

A. I am owner and President of Jetson Consulting Engineers Ltd.

Q. On whose behalf are you submitting this testimony?

A. I am submitting this testimony on behalf of Industrial Customers Group (ñICGò). I have been engaged by ICG to review the rate design and transmission rates proposed by FortisBC Inc. (ñFortisBCò or ñFBCò) in this proceeding and provide my opinion or opinions as to their reasonableness.

Q. Please summarize your educational and professional background and qualifications.

A. I attended the University of British Columbia, receiving a Bachelor of Applied Science in Electrical Engineering degree in May 1986. I am registered as a

Professional Engineer in the Province of British Columbia. I later attended the University of Idaho, receiving a Masterôs Degree in Electrical Engineering in December 2000, specializing in power systems.

I am presently a consultant providing utility regulatory, electrical engineering and renewable energy consulting services, primarily in British Columbia, an industry I have been employed in for approximately thirty years. I formed my present firm of Jetson Consulting Engineers Ltd. in July 2006.

Exhibit A is a copy of my current resume, which provides further particulars on my background and experience.

Q. What is the purpose of your testimony today?

A. In this testimony, I will present and explain my findings and conclusions regarding the transmission access rates proposed by FortisBC as they apply to Zellstoff Celgar Limited Partnership (ñZellstoff Celgarò).

Q. Are you sponsoring any exhibits in connection with this testimony?

A. Yes, in addition to Exhibit A, which I described above, I am sponsoring three other exhibits: Exhibit B, a letter from Don Debienne, FortisBC, dated June 30, 2006; Exhibit C, a Transmission Access Agreement between FortisBC Inc. and Zellstoff Celgar Limited Partnership, Effective November 1, 2006; and Exhibit D, a Service Agreement for Long-Term Firm Point-to-Point Transmission Service, September 23, 2010.

Q. Was Zellstoff Celgar correct in relying on the non-pancaking provision in Order G-12-99 as it has been interpreted to date for its investment in additional generation in 2008?

A. The current interpretation of the non-pancaking provision in Order G-12-99 has been consistently applied by FBC to Zellstoff Celgarôs power exports and was a fundamental assumption in Zellstoff Celgarôs 2008 decision to build additional generation for the purpose of selling the generated electricity to BC Hydro.

Exhibit B, the letter (ñLetterò) dated June 30, 2006 from Don Debienne of FBC to Brian Merwin of Mercer International specifically confirmed that the transmission rate for electricity delivered to ñthe Point of Delivery, the Kootenay Interconnection is an interconnection with BC Hydro, provided that 71L rights are not being exercised, and as such, the monthly rate charged under Rate Schedule 101 will be $0.00.ò[1] The Letter enabled exports via FBCôs transmission system for the period from July 1, 2006 to October 31, 2006.

Exhibit C, a Transmission Access Agreement (ñTAAò) between Zellstoff Celgar and FBC was entered into subsequent to the aforementioned Letter. The TAA re-confirmed ñthe monthly rate charged under Rate Schedule 101 will be $0.00.ò[2] The conditions of the TAA required verbal confirmation of each export transaction to FBC[3]. Some of the export transactions were to Powerex, the power marketing subsidiary of BC Hydro, and this counter-party to the transaction was communicated to FBC. Both the Letter and the TAA specifically stated that Rate Schedule 101 charges would apply if the power was scheduled by Zellstoff Celgar to the Bonneville

[1] Exhibit B, paragraph 2, point 5
[2] Exhibit C, Section 1

Power Administration (United States). Rate Schedule 101 identifies several applicable rates, such as the $0.00 rate, provisions for a discounted rate, as well as the undiscounted rate. Which of these applicable rates would apply to power scheduled by Zellstoff Celgar to the Bonneville Power Administration was not identified. The schedules to Powerex did not flow through the Bonneville Power Administration.

The TAA was relied upon by Zellstoff Celgar commencing from its effective date of November 1, 2006[4]. Notice of termination was never given by either party. On the strength of the export capability enabled by Order G-12-99 and incorporated into the TAA, Zellstoff Celgar considered adding additional generating capacity. This culminated in the addition of a second generator in September, 2010 at Zellstoff Celgarôs pulp mill in Castlegar, BC, driven by an Electricity Purchase Agreement (EPA) with BC Hydro.

Critical to the economic analysis associated with the cost of the second generator was the transmission cost associated with delivering electricity from the mill to the point of interconnection with BC Hydro. Working from the principles established in Order G-12-99 and incorporated into the TAA, FBC and Zellstoff Celgar executed on September 23, 2010 a Service Agreement for Long-Term Firm Point-to-Point Transmission Service[5] in order to transmit electricity to BC Hydro. BC Hydro was named specifically as the receiving party. At no time did FBC suggest the cost of wheeling under Rate Schedule 101 would be anything other than the $0.00 charge as previously agreed in the TAA.

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[3] Exhibit C, Section 6
[4] Exhibit C, Section 2
[5] Exhibit D, Service Agreement for Long-Term Firm Point-to-Point Transmission Service, September 23, 2010

Zellstoff Celgarôs economic analysis took into account that the BC Hydro EPA had a term of ten years, even though the second generator had a projected life expectancy of at least 25 years. The economic analysis associated with the decision to construct the second generator therefore considered the export conditions following the expiry of the EPA because Zellstoff Celgar had no plans to add significant additional load. Part of that post-EPA environment included transmission access costs outside the FBC system. Zellstoff Celgar relied on the principle that was confirmed in the Letter, re-confirmed in the TAA, and further implemented for satisfaction of electricity deliveries to BC Hydro since 2010. That principle was that the cost of Rate Schedule 101 would be $0.00 if the electricity exported by Zellstoff Celgar was delivered to a point of interconnection between FBC and BC Hydro by virtue of the Rate Schedule 101 harmonization provisions. If FBC is now allowed to change the interpretation of the Rate Schedule 101 harmonization provisions, it would fundamentally change the premise upon which Zellstoff Celgar invested millions of dollars in the addition of the second generator based on FBCôs earlier interpretation. FBC stands to put itself in preferential position to access Zellstoff Celgarôs generation post-EPA, because only FBC could avoid transmission wheeling costs.

Q. How would BC Hydro's treatment of transmission access issues create a competitive advantage for self-generators in its service territory compared to self-generators in FBC's service territory?

A. Prior to the re-integration of the BC Transmission Corporation (BCTC) into BC Hydro in 2010, BC Hydro nominated self-generators with which it had EPAôs as

generation resources under BCTCôs Network Integration Transmission Service (NITS). There was no payment by self-generators to BCTC comparable to FBCôs Rate Schedule 101 for the electricity sent from the self-generatorsô facilities for use by BC Hydro. BC Hydro paid BCTC for electricity wheeling under the NITS tariff, which included the charge for wheeling from the self-generatorsô points of interconnection to the points of utilization in BC Hydroôs system.

Following the re-integration of BCTC into BC Hydro, this NITS nomination process was not transparent, and the process occurred internally within BC Hydro. Still, there was no payment by self-generators to BC Hydro comparable to FBCôs Rate Schedule 101 for the electricity sent from the self-generatorsô facilities for use by BC Hydro.

The annual cost of FBCôs proposed re-interpretation of Rate Schedule 101 would be $504,000[6] for a reservation of 10 MW, whether it was used or not. For a full 8760 hours of delivery of 10 MW over the course of a year, this would add $5.75/MW.h to the cost of the electricity. However, for self-generation based on an underlying industrial process, maintaining full generation has proven to be difficult to achieve. If the annual exported electricity is only 5 MW on average for every hour, that same 10 MW transmission reservation over the course of a year would add $11.51/MW.h compared to the current interpretation of Rate Schedule 101. Self-generators in BC Hydroôs service territory selling to BC Hydro are not subject to charges for either point-to-point or network integration transmission service, which creates a competitive advantage for such self-generators compared to self-generators in FBCôs service territory seeking to sell electricity to BC Hydro.

Q. Was the current EPA between Zellstoff Celgar and BC Hydro based on the non-pancaking provision in Order G-12-99 as it has been interpreted to date?

A. As described earlier, the harmonization provisions in Rate Schedule 101 that gave rise to the interpretation that the cost of Rate Schedule 101 would be $0.00 if electricity generated within FBCôs service territory was delivered to a point of interconnection between FBC and BC Hydro for use by BC Hydro were relied upon for the BC Hydro EPA. Furthermore, those same provisions were relied upon to exist after the expiry of the EPA because the life expectancy of the second generator was much longer than the term of the EPA. The economic analysis that led to the decision to incur the capital expenditure to install the second generator therefore considered post-EPA export conditions, which included the current interpretation of the Rate Schedule 101 harmonization provisions.

[6] Exhibit B-15-1, FBC Response to ICG IR 1.11.13, Table 1, Errata. Note that the Errata shows the incorrect total annual cost for the proposed changes to the transmission wheeling rates. The correct annual total should read $786.811.

ELROY SWITLISHOFF

Professional Engineer

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Castlegar, BC, CANADA V1N 4J2

Office and Fax: (250) 365-8040 Mobile: (250) 304-4632
Email: elroy@jetson.biz

HIGHLIGHTS OF QUALIFICATIONS

- Experienced in electrical power generation, transmission, and distribution
- Extensive field "hands-on" background in equipment troubleshooting, commissioning and operation
- Experienced in project management, planning, permitting and development
- Proven track record in project execution from concept to in-service maintenance and operations
- Senior managerial experience in an electrical utility environment leading cross-functional mixed teams of professionals and tradespeople encompassing regulatory, planning and operational responsibilities
- Business oriented, running a successful engineering consultancy for over 10 years

RELEVANT EXPERIENCE

Technical and Analytical Competencies

- Technically proficient in electricity generation (hydro, thermal, solar) and rotating electrical equipment, power transformers, substation equipment, electrical transmission and distribution systems, power electronics and power system analysis. Experienced in all facets of renewable generation projects (solar, hydro, biomass) from project planning, permitting and construction through to operational failure analysis and corrective action.
- Senior electrical engineer in a large heavy industrial setting (mineral processing). Increasing responsibility culminated in the role of senior engineer for the entire facility, which had a load of 220 MW and a 475 MW hydro generating station. Specific engineering experience consisted of design, project coordination, construction, commissioning and maintenance of a wide variety of systems including generators, power distribution, power electronics, process and equipment control systems.
- Responsible for energy management in a large heavy industrial setting. Coordinated usage of large volumes of electricity and natural gas, incorporating trade-off analysis and efficiency projects. Responsible for marketing of excess generated electricity.

Management and Supervision

- Supervised the contract preparation, award, rewinding and commissioning of a 7 MW hydroelectric generator.
- Managed and supervised planning, engineering and project management groups for an electrical utility that operated six hydroelectric generating stations, and served about 350,000 customers via 1500 km of transmission lines ranging from 63 kV to 230 kV and over 5000 km of distribution lines.
- Responsibility for setting, managing and monitoring annual sustaining capital budgets of $7 million to $10 million for electrical utilities, and individual project responsibilities to $70 million
- Responsible for generating station, transmission line, and substation design engineering departments.

Project Planning, Permitting and Engineering

- Owner's Engineer for British Columbia's largest solar photovoltaic generating facility (1 MW, dual-axis tracking) located in Kimberley, BC and constructed in 2014/15.
- Project management of the development phase of a $900 million 335 MW hydroelectric powerplant expansion.
- Responsible for the successful permitting and approval of a $70 million 500kV/230kV substation and transmission line project including negotiation of power supply and interconnection contracts with other utilities. Proficient in technical, financial, and special interest presentations to corporate management, regulatory entities, project stakeholders and the public sector, including First Nations.
- Prepared concept scopes, feasibility budgets and regulatory business cases for hydroelectric generating unit life extensions and upgrades (up to 25MW). Provided team leadership for all permitting, approvals, and engineering design necessary for project execution. Performed project management of hydroelectric unit rehabilitations.
- Prepared utility regulatory applications and performed regulatory analysis of over 60 applications by BC Hydro and FortisBC to the B.C. Utilities Commission, covering capital expenditure plans, resource acquisition plans, energy purchase agreements, and other regulatory applications.

EMPLOYMENT HISTORY

2018 - 2003	Principal Engineer	Jetson Consulting Engineers Ltd., Castlegar, BC (client and project list available on request)
2018 - 2004	Engineering Instructor (part-time)	Selkirk College, Castlegar, BC
2010 - 2007	Project Manager, Waneta Expansion	Columbia Power Corporation, Castlegar, BC (under contract)
2003 - 2002	Manager, Transmission Assets	Aquila Networks Canada (formerly WKP)
2002 - 1999	Manager, Generation Planning and Engineering	West Kootenay Power (WKP), Trail, BC
1999 - 1996	Power Administrator	Cominco Limited, Trail, BC
1996 - 1991	Senior Control Systems Engineer Senior Electrical Engineer	Cominco Limited, Trail, BC
1991 – 1988	Electrical Engineer	CESL, Vancouver, BC
1987	Junior Semiconductor Engineer	BC Microelectronics Centre, UBC

EDUCATION

2002 – 1997 Simon Fraser University Executive MBA Program, Vancouver, BC
Commercial Law, Financial Analysis, Marketing, and Macroeconomic Modules

2000 University of Idaho Post-Graduate Program, Moscow, ID
M.Eng. - Electric Power System Engineering

1988 University of British Columbia Post-Graduate Program
Completed course work towards M.A.Sc. in Electrical Engineering

1986 University of British Columbia, Vancouver, BC
B.A.Sc. – Electrical Engineering

1981 Selkirk College, Castlegar, BC
Electronics Technology (Honours)

Other Courses:
(selected list)

Schweitzer protective relay applications, 2017
Schweitzer protective relay applications, 2015
Solar Power Systems Design Course, 2012
Smart Grid Implementation, 2009
Risk Management Planning, 1999
Interpersonal Skills, 1996
Project Management, 1995
Environmental Awareness, 1994
Cold Regions (Arctic) Engineering (UBC, U of A, Alaska) 1991

AFFILIATIONS & AWARDS

- President's Award for Community Service 2016 (Engineers and Geoscientists of British Columbia)
- Recognized as a Fellow by Engineers Canada (FEC), (2015)
- Registered member of the Engineers and Geoscientists of British Columbia, (P.Eng.)
- Member of the IEEE (Institute of Electrical and Electronics Engineers)
- Twice Chairman of the West Kootenay Branch of the Engineers and Geoscientists of British Columbia, current member of the Executive Committee, past member of the Nominating Committee

REFERENCES AVAILABLE ON REQUEST

FORTISBC

Don Debienne
Vice President,
Generation and
Regulatory Affairs

FortisBC Inc.
5th Floor, 1628 Dickson Avenue
Kelowna, BC, V1Y 9X1
(250) 469-8083
don.debienne@fortisbc.com
www.fortisbc.com

June 30, 2006

~~Mr. Brian Merwin~~
~~Mercer International~~
~~Suite 2840, PO Box 11576~~
~~650 West Georgia Street~~
~~Vancouver, BC V6B 4N8~~

Mr. Dave Brien
Zellstoff Celgar Limited Partnership
P.O. Box 1000
1921 Arrow Lakes Drive
Castlegar, B.C.
V1N 3H9

Re: ~~Zeltsoff~~ Celgar Exports – Interim Agreement
Zellstoff

Dear Mr. Merwin,

This letter contains the proposal (the "Interim Agreement") from FortisBC Inc. ("FortisBC" or the "Company") to facilitate the export of power generated at the Zellstoff-Celgar mill located north of Castlegar, BC. It is understood that the terms outlined in this letter are offered on a short term basis, without prejudice, to allow for the exports while a longer term agreement is arrived at through negotiation between FortisBC and ~~Zeltsoff~~ Zellstoff-Celgar. If a longer term agreement is not entered into between the parties this agreement will expire and the original terms of the Electricity Supply Brokerage Agreement, Power Supply Contract and the Curtailment Agreement will apply. The initial request for this service was received in an email from you dated May 3, 2006.

FortisBC will provide Firm Point-to-Point Transmission Service to Zeltsoff-Celgar under the following conditions:

1. The term of this Interim Agreement will be from July 1, 2006 to October 31, 2006.

2. As per Section 17 of the FortisBC Wholesale Tariff, a completed application for transmission service is received.

3. That a standard Umbrella Agreement For Short-Term Firm Or Non-Firm Point-To-Point Transmission Service (as attached), be completed before service commences.

4. That, for the duration of the Interim Agreement, Losses shall be calculated as per Schedule 109 of the FortisBC Electric Tariff. It is understood that this is an issue that FortisBC intends to explore and may reconsider its position under the next agreement.

5. As mentioned in your e-mail of May 3rd, I can confirm that as the Point of Delivery, the Kootenay Interconnection is an interconnection with BC Hydro, provided that 71L rights are not being exercised, and as such, the monthly rate charged under Rate Schedule 101 will be $0.00. If 71L rights are being exercised then for scheduling purposes, the Kootenay

Interconnection is treated as an Interconnection with the Bonneville Power Administration and as such, Rate Schedule 101 charges apply.

6. That ~~Zeltsoff~~ Zellstoff-Celgar is required to purchase from FortisBC the Scheduling, System Control and Dispatch Service, (SSCD), Reactive Supply and Voltage Control, (RSVC) and Energy Imbalance (if there is a difference between the actual and scheduled delivery of energy) Ancillary services as per Schedules 103, 104 and 106.

It is our position that the ability to export power from the FortisBC system fundamentally changes the nature of the relationship that our two companies have enjoyed. This drives the need to amend other Agreements including the Electricity Supply Brokerage Agreement and Power Supply Contract.

With respect to Zeltsoff-Celgar's intent to sell all or part of its surplus to someone other than FortisBC, please note that it is the view of FortisBC that this would require an amendment of clause 8 of our Electricity Supply Brokerage Agreement. Put paragraph here

FortisBC would be agreeable to ~~an~~ amendment of the Brokerage agreement ~~which replaces clause 8 with~~ adding the following clauses, which will also form part of this Interim Agreement. These were discussed during our meeting in Trail and appeared to be acceptable at the time.

1. ~~Zeltsoff~~ Zellstoff Celgar may not take any power from FortisBC under our General Service Power Contract in any hour in which Celgar is exporting out of the FBC service area. Zellstoff Celgar during these times will be covered by operating reserves.
2. ~~Zeltsoff~~ Zellstoff Celgar is required to provide timely notice, details to be finalized before July 7, 2006 to FortisBC when each export out of its service area has been scheduled. The details of this requirement should be arrived at through a discussion with Mr. Dan Egolf of FortisBC.

For the Interim Agreement period, we agree to continue to take power delivered to FortisBC at the rate provided under clause 8 in the current Brokerage agreement. In the longer term, we believe this to be an inequitable situation to be the topic of further discussion.

We propose that these should be interim arrangements applicable to the period for which you have requested transmission service and should allow you to export your surpluses.

In summary, we proceed as above on an interim basis with the understanding that further changes may be required to the Brokerage agreement and General Service Power Contract. Except as modified in this Interim Agreement, all other provisions of the Electricity Supply Brokerage Agreement, Power Supply Contract, the Curtailment Agreement and FortisBC's Electrical Tariff shall apply.

Sincerely,

Don Debienne
FortisBC Inc.
Vice President, Generation
and Regulatory Affairs

Accepted this ____ day of _____, 2006.
Zellstoff Celgar Limited Partnership by its General Partner, Zellstoff Celgar Ltd.

~~Zeltsoff Celgar Limited, Per: Brian Merwin~~
David Brien
Vice President Finance

Ron Zeitsoff
Acting Mill Manager.

Transmission Access Agreement

Between

FortisBC Inc. and Zellstoff-Celgar Limited Partnership

Zellstoff-Celgar Limited Partnership ("Customer") is a customer of FortisBC supplied under FortisBC's Industrial Rate Schedule 33. The Customer operates a pulp mill at Castlegar, B.C. The Customer also operates a 50 MW Turbogenerator as part of mill operations. The Customer, at times, generates power in excess of the requirements of the mill, and has, pursuant to Section 17 of Tariff Supplement No. 7, Transmission Access Terms and Conditions, applied for transmission service pursuant to the provisions of the Tariff.

Generally speaking, Transmission Service is provided under the provisions contained in FortisBC Tariff rate schedules 101 through 109, as approved by the British Columbia Utilities Commission. In order to ensure that Transmission Service is provided by the Company, and taken by the Customer in accordance with the applicable Tariff Supplement and subject to the following terms, the Company and Customer have agreed as follows:

1. **Point of Delivery:** The Point of Delivery shall be the Kootenay Interconnection, an interconnection with BC Hydro, provided that TeckCominco 71L rights are not being exercised by Celgar, and as such, the monthly rate charged under Rate Schedule 101 will be $0.00. If 71L rights are being exercised then for scheduling purposes, the Kootenay Interconnection is treated as an Interconnection with the Bonneville Power Administration and as such, Rate Schedule 101 charges apply.

2. **Term:** Service pursuant to this contract shall be deemed to COMMENCE on November 1, 2006. The TERM of this contract shall be for one year, and shall continue thereafter until terminated by 6 months prior notice in writing by either party to the other.

3. **Ancillary Services:** Zellstoff-Celgar is required to purchase from FortisBC the Scheduling, System Control and Dispatch Service, (SSCD), Reactive Supply and Voltage Control, (RSVC) and Energy Imbalance (if there is a difference between the actual and scheduled delivery of energy) Ancillary services as per Schedules 103, 104 and 106.

4. **Scheduled Exports:** FortisBC is obligated to supply Celgar 10/25 MVA of power under the General Service Power Contract unless Celgar has scheduled exports from the system, in which case the FortisBC obligation to supply is set to zero under the General Service Power Contract. Celgar and FortisBC agree that once Celgar has informed their marketing agent that power is available for sale, immediate notification will also be made, through their marketing agent, to FortisBC and that such notification shall be considered a scheduled export regardless of if an actual export arrangement is entered into for the hour or not. This notification can be revoked up to 60 minutes before the start of the hour, but can not be revoked after that time. If an export transaction is not entered into between Celgar's agent and a counter party and Celgar has advised FortisBC it intended to export, the General Service Power Contract applies with the Firm Capacity reservation set to 0 MVA for the hour.

5. **Settlement of Scheduled Export Hours:** If an export is entered into, any imbalance between the export amount and the Celgar generation will be settled as per the wheeling tariff.

6. **Notification of Schedules in Place**: Once a deal has been reached to export power, Celgar, through their marketing agent, shall make reasonable notification as per industry practice to the FortisBC Generation desk of the export schedule. The e-tag does not constitute proper notification as is the industry practice. FortisBC requires a phone call to notify the FortisBC Generation desk.

7. **Wheeling Imbalance:** Celgar is expected to plan to generate the actual amount of any export schedule entered into. It is recognized that from time to time the actual amount of power delivered to FortisBC may vary from this planned amount. It is required under the tariff that net variances within the 2 MW bandwidth should be driven to zero as much as is practical. However, as under generation, even within the 2 MW bandwidth, can create problems for FortisBC, Celgar agrees to attempt to minimize these fluctuations.

8. **Operating group meeting:** Representatives from Celgar mill and FortisBC operations staff will meet once per year to discuss operating issues.

9. FORTISBC shall not be liable for any direct, indirect or consequential damage or loss to the Customer or its agents as a result of any action undertaken as a result of this Agreement.

10. THE TERMS AND CONDITIONS OF FORTISBC INC. ATTACHED HERETO HAVE BEEN FILED WITH AND APPROVED BY THE BRITISH COLUMBIA UTILITIES COMMISSION, AND FORM PART OF THIS CONTRACT AND BY THIS REFERENCE ARE INCORPORATED HEREIN. THE TERMS AND CONDITIONS AND SCHEDULES MAY BE AMENDED FROM TIME TO TIME SUBJECT TO APPROVAL BY THE COMMISSION, AND THE CUSTOMER SHALL BE SUBJECT TO ANY SUCH

AMENDMENTS AND THE TERMS AND CONDITIONS AS AMENDED SHALL BECOME PART OF THIS CONTRACT.

An "E-TAG" is an electronic energy schedule that is sent between transmission companies to notify them of a schedule to flow power over a certain length of time.

Service Agreement For

Long-Term Firm Point-To-Point Transmission Service

1.0 This Service Agreement, dated as of September 23rd, 2010, is entered into, by and between FortisBC Inc. (the "Transmission Provider"), and Zellstoff Celgar Limited Partnership (the "Transmission Customer").

2.0 This Service Agreement replaces the temporary agreement dated April 17, 2008 between FortisBC Inc. (the "Transmission Provider"), and Zellstoff Celgar Limited Partnership (the "Transmission Customer").

3.0 The Transmission Customer has been determined by the Transmission Provider to have a Completed Application for Long-Term Firm Point-To-Point Transmission Service for 78 MW of reserved transmission capacity under Tariff Supplement No. 7 (the "Tariff Supplement"). Zellstoff Celgar has firm point to point transmission access for its existing 52 MW turbine. The remaining 26 MW of firm point to point transmission access will begin once Celgar completes its proposed turbine installation.

4.0 The Transmission Customer has provided to the Transmission Provider an Application deposit in accordance with the provisions of Section 17.3 of the Tariff Supplement.

5.0 Service under this Service Agreement shall commence on the later of: (1) the requested service commencement date, of September 25th, 2010; or (2) such other date as it is permitted to become effective by the Commission. The service will be available at all times: (1) in the absence of system contingencies; and (2) in the presence of single system contingencies on the completion of Direct Assignment Facilities and/or Network Upgrades.

6.0 The Transmission Customer acknowledges that until the communications upgrade contemplated in clause 6.3 of the attached specifications for Long-Term Point-to-Point Transmission Service is completed the Transmission Provider will not have any method of shedding the Transmission Customer's generation at the source. The majority of the

time, the Transmission Customer is served by a dedicated sub-transmission circuit from Brilliant Switching Station. The loss of one of the two sub-transmission circuits would require the remaining sub-transmission circuit to service both the Transmission Customer and other customers in the Castlegar area. While the Transmission Customer is generating at a high level for export, the Transmission Provider does not want the Transmission Customer sharing a sub-transmission circuit with other customers in the Castlegar area unless the Transmission Provider can shed the Transmission Customer's generation due to the fact that other customers could be subjected to damaging voltage should they become isolated together with the Transmission Customer. Therefore, until such time as the communications upgrade is completed, if one of 6L or 26L should be unavailable, transmission service on the remaining circuit will be curtailed to scheduling up to 8 MW of physical injection plus the amount of internal mill load being supplied from sources external to the mill if the circuit is also providing service to other customers in the Castlegar area.

7.0 This contract shall remain in force and effect commencing upon the date contemplated in provision 5.0 herein and shall have a term of 12 months.

8.0 The Transmission Provider agrees to provide and the Transmission Customer agrees to take and pay for long-term Firm Point-To-Point Transmission Service in accordance with the provisions of Part II of the Tariff Supplement and this Service Agreement.

9.0 Any notice or request made to or by either Party regarding this Service Agreement shall be made to the representative of the other Party as indicated below.

<u>Transmission Provider</u>:
FortisBC Inc.
1975 Springfield Road
Kelowna, B.C. V1Y 7V7
Attention: Barry Smithson, Director Network Services
Email: Barry.Smithson@fortisbc.com

Transmission Customer:
Zellstoff Celgar Limited Partnership
Suite 2840, PO Box 11576
650 West Georgia Street
Vancouver, B.C., V6B 4N8
Attention: Brian Merwin, Vice President of Strategic & Business Initiatives
Email: bmerwin@mercerint.com
Fax: 604-684-1094

10.0 No failure by the Transmission Provider or the Transmission Customer at any time or from time to time to enforce or require a strict observance of any of the provisions of this Service Agreement shall constitute a waiver of the provision or affect or impair such provisions or the right of the Transmission Provider or the Transmission Customer at any time to enforce such provisions or to avail itself of any remedy it may have.

11.0 (a) This Service Agreement shall be construed in accordance with the laws of the Province of British Columbia; and

(b) The Transmission Provider and the Transmission Customer will promptly comply with all relevant laws and regulations and the relevant orders, rules and requirements of all authorities having jurisdiction including any Tariff changes approved by the British Columbia Utilities Commission.

12.0 Nothing contained in this Service Agreement shall restrict or limit either Party from establishing, altering or terminating interconnection points with any entity not a party to this Service Agreement or amending or entering into such agreements.

13.0 This Service Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors.

14.0 The Tariff Supplement and the attached Specifications for Long-Term Firm Point-To-Point Transmission Service are incorporated herein and made a part hereof.

15.0 If at any time during the term of this Service Agreement the parties shall deem it necessary or expedient to make any alteration or addition to any article, clause, matter or thing contained in it or supplement the Service Agreement in any way, they may do so in writing signed by each party. Such alteration, addition or supplement shall be adhered to and have the same force as if had originally formed part of this Service Agreement.

IN WITNESS WHEREOF, the Parties have caused this Service Agreement to be executed by their respective authorized officials.

Transmission Provider:

By: BARRY SMITHSON DIRECTOR, NETWORK OPS SEPT. 23/10

Name Title Date

Transmission Customer:

By: Brian Merwin Vice President - Strategic Initiatives September 23rd 2010

Name Title Date

Specifications For Long-Term Firm Point-To-Point Transmission Service

1.0 Term of Transaction: As stated in provisions 5.0 and 7.0 of the Service Agreement dated September 23rd, 2010 entered into between FortisBC Inc. (the "Transmission Provider"), and Zellstoff Celgar Limited Partnership (the "Transmission Customer").

2.0 Description of capacity and energy to be transmitted by Transmission Provider including the electric Control Area in which the transaction originates.

The Transmission Customer is expanding existing facilities at its pulp mill in Castlegar, B.C., and adding a new steam condensing turbine generator set. The Transmission Customer will have the physical ability to generate up to a maximum of 87 MW for the situation where the entire mill load of 45 MW is being supplied from the pulp mill's generators and 42 MW is being simultaneously injected into the system. The Transmission Customer will have the physical ability to inject electricity into the system up to 42 MW and to schedule electricity exports of up to the sum of 42 MW plus the amount of internal mill load being supplied from sources external to the mill, to a maximum of 78 MW. This power will be transported over the Transmission Provider's system and supplied to BC Hydro (as defined below) at the Kootenay Interconnection. For greater certainly, nothing herein constitutes a representation, warranty, acknowledgement or other commitment by the Transmission Provider or the Transmission Customer regarding obligations relating to the supply of power to the Transmission Customer or the regulatory framework pertaining to the extent of the Transmission Customer's legal ability to export electricity.

3.0 Point(s) of Receipt: Load side of Kraft substation disconnect switch DS26-1, and/or,
Load side of Kraft substation disconnect switch DS6-1

Delivering Party: the Transmission Customer as defined in provision 1.0 herein

4.0 Point(s) of Delivery: The Kootenay Interconnection, as defined in Schedule B of the

2005 Canal Plant Agreement, as may be amended from time to time.

Receiving Party: British Columbia Hydro and Power Authority ("BC Hydro")

5.0 For further clarity regarding the distinction between physically injected electricity and scheduled electricity, the maximum amount of electricity that can be physically injected at the Point of Receipt (Reserved Capacity) is 42 MW, and as long as this physical maximum is respected, Celgar will have the physical ability to schedule electricity exports up to the sum of 42 MW plus the amount of internal mill load being supplied from sources external to the mill, to a maximum of 78 MW.

6.0 Service under this Agreement may be subject to all or some combination of the charges detailed below.

6.1 General:

The appropriate charges for individual transactions will be determined in accordance with the terms and conditions of the general Electric Tariff B.C.U.C. No. 1 (the "Tariff") and the Tariff Supplement as amended and supplemented from time to time.

6.2 Transmission Charge:

Tariff Rate Schedule 101 – Long-term and Short-term Firm Point-to-Point Transmission Service, as amended from time to time.

6.3 System Impact and/or Facilities Study Charge(s):

Facilities studies and engineering charges as required for the implementation of a second communications link between the FortisBC Remedial Action Scheme control system and the Kraft substation, and upgrading of the existing Power Line Carrier communications system.

6.4 Direct Assignment Facilities Charge:

All equipment and construction charges as required for the implementation of a second communications link between the FortisBC Remedial Action Scheme control system and the Kraft substation, and upgrading of the existing Power Line Carrier communications system.

6.5 Ancillary Services Charges:

If not otherwise supplied by either the Delivering Party or the Receiving Party, the following ancillary services, only as applicable and as determined by the Transmission Provider and the Transmission Customer, acting reasonably and in accordance with Good Utility Practice, will be charged based on the Tariff:

(a) Scheduling, System Control and Dispatch: Rate Schedule 103

(b) Reactive Supply and Voltage Control: Rate Schedule 104

(c) Regulation and Frequency Response: Rate Schedule 105

(d) Energy Imbalance: Rate Schedule 106

(e) Operating Reserve – Spinning: Rate Schedule 107

(f) Operating Reserve – Supplemental: Rate Schedule 108

(g) Transmission Losses: Rate Schedule 109