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April 12, 2013

Ms. Erica Hamilton  
Commission Secretary  
British Columbia Utilities Commission  
Sixth Floor – 900 Howe Street  
Vancouver, BC V6Z 2N3

Dear Ms. Hamilton:

**RE: British Columbia Utilities Commission (BCUC)  
British Columbia Hydro and Power Authority (BC Hydro)  
2012 Network Economy Annual Report**

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BC Hydro writes to the BCUC in compliance with Section 10 of the Settlement Agreement approved by BCUC Order No. G-127-06 in connection with the British Columbia Transmission Corporation (BCTC) Application for Network Economy and Open Access Transmission Tariff (October 19, 2006).

BC Hydro also writes to report on the results of its historical analysis of the error noted in its letter to the BCUC dated April 3, 2013 and bulletin posted on the same date (**Bulletin**).<sup>1</sup> As discussed below, BC Hydro's analysis shows that while the results of the economic test for Network Economy Service<sup>2</sup> were incorrect in certain hours due to incorrect data being inadvertently used in the calculation, there were no interruptions to non-firm transmission service due to Network Economy Service during those hours.

#### **A Filing of 2012 Network Economy Annual Report**

Section 10 of the Settlement Agreement, attached to BCUC Order No. G-127-06 as Appendix 1, requires that BC Hydro prepare an annual report for each calendar year which will provide the annual domestic volumes allocated under the Transfer Pricing Agreement and the net amount imported using the Network Economy Service that passed the Economic Test set out in section 2 of Attachment Q-2 of the OATT. Pursuant to Letter No. L-20-13, dated April 4, 2013, the BCUC granted BC Hydro an extension to file the 2012 Network Economy Annual Report on April 12, 2013.

In compliance with BCUC Order No. G-127-06 and Letter No. L-20-13, please find attached BC Hydro's 2012 Network Economy Annual Report.

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<sup>1</sup> The Network Economy bulletin is available online at:  
[http://transmission.bhydro.com/transmission\\_scheduling/bulletins/2013/#Posting1](http://transmission.bhydro.com/transmission_scheduling/bulletins/2013/#Posting1).

<sup>2</sup> The term Network Economy Service is used as defined in section 1 of Attachment Q-2 of the OATT.

## **B Identification of Inadvertent Error in Economic Test**

As indicated in BC Hydro's letter to the BCUC dated April 3, 2013 and in the Bulletin, BC Hydro recently received an inquiry from a market participant regarding the economic test results for Network Economy Service that are conducted in accordance with Attachment Q-2 of the OATT and Tariff Supplement 80 (**TS No. 80**). As set out in section 2 of Attachment Q-2, if the economic test results pass in a given hour then Network Economy Service receives the reservation priority assigned to it under section 14.7 of the OATT, which allows Network Economy Service to interrupt non-firm point-to-point transmission service. If the economic test fails in a given hour, then Network Economy Service receives the same reservation priority as non-firm point-to-point service.

In response to the inquiry, BC Hydro reviewed the economic test results for Network Economy Service and determined that there was an inadvertent error in the data used to calculate the Trigger Price referred to in Attachment Q-2 and defined in TS No. 80. In particular, BC Hydro discovered that during some time periods the Threshold Sale Price had been input into the economic test, instead of the Threshold Purchase Price.<sup>3</sup> As set out in section 2(a) and (b) of TS No. 80, the Threshold Purchase Price is a factor in the Trigger Price except from November 1 to February 28/29 for transactions on the U.S.-B.C. intertie, when the Trigger Price is calculated using the Sumas 2 Gas Index multiplied by the Burrard Heat Rate (**the Winter Calculation**).

## **C Duration and Extent of Data Error**

BC Hydro has conducted a review of the data used in the economic test since its inception to determine the duration and extent of the error and any impact to the economic test results. This review identified a potential error in approximately one month in 2007, and determined that the incorrect data was used in a portion of F2013, as further described below.

BC Hydro has identified that there may have been an error in the economic test data from July 20, 2007 to August 16, 2007. During this approximately one month period, incorrect data for the Threshold Purchase Price was provided to BCTC and it may be that this data was used, and that the economic test results were incorrect. However, due to the change in business systems, changes in business practices, unavailability of economic test results, and retrieval issues of archived data, BC Hydro has been unable to determine whether in fact the incorrect data was used or whether the economic test results were in fact incorrect.

BC Hydro has also determined that the incorrect data was used to calculate the Trigger Price from April 6, 2012 to March 29, 2013, excluding: (i) October 26, 2012 to

<sup>3</sup> Both the Threshold Sale Price and Threshold Purchase Price are defined terms in the 2003 Transfer Pricing Agreement for Electricity and Gas between BC Hydro and Powerex.

October 28, 2012;<sup>4</sup> and (ii) November 1, 2012 through February 28, 2013 for the U.S.-B.C. intertie.<sup>5</sup> This time period is referred as the “F2013 period”. For the F2013 period, BC Hydro identified that 2117 hours on the Alberta to B.C. import intertie and 1663 hours on the U.S. to B.C. import intertie were originally calculated as a pass, in the economic test, when they should have been a fail.

#### **D Impact on Non-Firm Transmission Service Reservations**

BC Hydro has also conducted a historical review to determine the extent of any impact on non-firm transmission service reservations due to the incorrect economic test results during the affected periods.

As required by section 7 of the Settlement Agreement approved by BCUC Order No. G-127-06, BC Hydro posts Weekly Network Economy Utilization Reports which, amongst other items, report on “Network Economy interruptions of Non-Firm Point-to-Point transmission service at XX:40, reflecting the last action that resulted in the interruption.” These reports are available on BC Hydro’s website.<sup>6</sup>

The posted Weekly Network Economy Utilization reports indicate that there were no non-firm transmission service reservations interrupted by Network Economy Service for the 2007 and F2013 time periods in question. This indicates that the higher priority assigned to Network Economy Service due to the incorrect economic test results did not result in any interruptions to non-firm transmission service.

As a point of comparison, BC Hydro also considered the time prior to the F2013 period, from December 1, 2010 to March 31, 2012, to determine the extent to which Network Economy has interrupted non-firm transmission service in the past. This review indicated that there were only two hours of non-firm transmission service interrupted by Network Economy Service over this time and that the volume of non-firm interrupted in these two hours was a total of 91 MWh. These results are consistent with our analysis with respect to the 2007 and F2013 periods.

This historical review indicates that Network Economy Service has not been a significant factor in non-firm transmission interruptions in recent years, and that Network Economy Service did not interrupt non-firm transmission service due to the incorrect economic test results during the affected periods.

<sup>4</sup> During these days, the Threshold Purchase Price was used for the economic test.

<sup>5</sup> During this time and for transactions on this intertie, the Winter Calculation of the Trigger Price does not include the Threshold Purchase Price.

<sup>6</sup> Online at:  
[http://transmission.bchydro.com/transmission\\_scheduling/transaction\\_data/network\\_economy/network\\_economy\\_utilization/](http://transmission.bchydro.com/transmission_scheduling/transaction_data/network_economy/network_economy_utilization/).

**E Additional Analysis for the F2013 Period**

In order to confirm the conclusions reached through review of the posted Weekly Network Economy Utilization reports, BC Hydro conducted an additional analysis for the F2013 period. In the analysis below, BC Hydro will refer to the following transmission paths:

The Import Paths	The Export Paths	The Wheelthrough Paths
AESO-BCHA (the Alberta Import Path)	BCHA-AESO (the Alberta Export Path)	AESO-BPAT (the Alberta to U.S. Wheelthrough Path)
BPAT-BCHA (the U.S. Import Path)	BCHA-BPAT (the U.S. Export Path)	BPAT-AESO (the U.S. to Alberta Wheelthrough Path)

It is important to recall that Network Economy Service is an import service only, and therefore only used on the two import paths: the Alberta Import Path and the U.S. Import Path. In contrast, non-firm transmission service is used for wheelthroughs, predominately from the U.S. to Alberta, but also occasionally from Alberta to the U.S. These wheelthroughs require transmission not only on the import paths used by Network Economy Service, but also on the exports paths. Wheelthroughs can be purchased as a single reservation on a wheelthrough path, or in two legs (i.e. a combination of an import path and an export path). As reserving two legs of transmission costs twice as much, market participants typically reserve on one of the wheelthrough paths. A wheelthrough path still requires available transfer capability (ATC) to be available on both the applicable import and export paths.

*Alberta to U.S. Wheelthroughs*

Interruptions to non-firm transmission service due to Network Economy on the Alberta to U.S. Wheelthrough Path are generally not expected in recent years because there is ample non-firm ATC in the vast majority of hours. During the F2013 period, for instance, there were only 11 hours where ATC was constrained. During these 11 hours, all non-firm transmission reservations flowed 100 per cent as the scheduling limit on the path was positive taking into account counterflows (energy scheduled and flowing on the opposite path).<sup>7</sup> There were no Network Economy reservations during these 11 hours. The fact that there is positive ATC in all but 11 hours, and positive scheduling limits in all hours, demonstrates that there were no constraints on the ability of market participants to make non-firm reservations on the Alberta to U.S. Wheelthrough Path during the F2013 period.

<sup>7</sup> Please refer to BC Hydro's OATT Business Practice – Curtailment of Transmission and Energy, available online at: <http://transmission.bchydro.com/NR/rdonlyres/6CFD3BFA-6056-4979-BB06-832CF8717797/0/CurtailmentsAugust82012.pdf>.

To further confirm that there were no impacts of the error on Alberta to U.S. wheelthroughs, BC Hydro identified instances where non-firm transmission reservations were purchased on the Alberta Import Path, the U.S. Export Path, and the Alberta to U.S. Wheelthrough Path. BC Hydro identified 74 hours where non-firm transmission reservations were purchased on the Alberta to U.S. Wheelthrough Path. BC Hydro then identified Network Economy transmission reservations made during the corresponding Non-Firm transmission reservation hours in order to confirm whether Network Economy interrupted Non-Firm transmission service. Of these 74 hours, there were only five hours where Network Economy was reserved on the Alberta Import Path; however, Network Economy did not interrupt Non-Firm transmission service in these five hours. Further analysis showed that there were no curtailments to these 74 hours by BC Hydro. Rather, all energy that was scheduled on these Non-Firm transmission reservations flowed for these 74 hours.

This additional analysis confirms that there were no impacts on Alberta to U.S. wheelthroughs in the F2013 period due to the error.

#### *U.S. to Alberta Wheelthroughs*

Interruptions to non-firm transmission service on the U.S. to Alberta Wheelthrough Path due to Network Economy Service are also not expected because the U.S. Import Path is typically not constrained, while the Alberta Export Path is constrained. To explain, if there is no constraint on the U.S. Import Path, then Network Economy Service (an import-only service) would not interrupt non-firm transmission reservations on wheelthroughs to Alberta. If the Alberta Export Path is constrained, then non-firm transmission reservations on the U.S. to Alberta Wheelthrough Path would not be able to flow, regardless of any Network Economy Service reservations on the U.S. Import Path.

To test the extent to which Network Economy Reservations could potentially interrupt non-firm transmission service, BC Hydro analyzed the hours where the final Non-Firm ATC on the U.S. Import Path was constrained and the final Non-Firm ATC on the Alberta Export Path was not constrained. BC Hydro identified only one hour in the F2013 period where these conditions were satisfied. Further investigation showed that the Non-Firm ATC on the Alberta Export Path during this hour was not available until after the start of the hour, which is too late for a reservation to occur. Thus, Non-Firm ATC was in fact not available for purchase for this constrained hour due to the Alberta Export Path.

The result of this analysis confirms that, during the F2013 period, the constraining factor for non-firm transmission service reservations on U.S. to Alberta wheelthroughs was the Alberta Export Path, and not Network Economy Service on the U.S. Import Path.

## **G Economic Test Results Going Forward**

As reported by BC Hydro in its April 3, 2013 letter to the BCUC and the Bulletin posted on the same date, the correct data is now reflected in the posted economic test results for Network Economy Service for March 30, 2013 onwards.

In light of the discovery of the error, BC Hydro is reviewing its internal processes to explore further process improvements that can be made to ensure that this type of error does not occur in the future.

Pursuant to the BCUC Order No. G-127-06, Appendix 1, the BCUC directed BC Hydro, then BCTC, to convene annual Network Economy Meetings to discuss, on a “without prejudice” basis issues arising with respect to the use of Network Economy Service. Pursuant to BCUC Letter No. L-45-10, BC Hydro is only expected to convene an annual Network Economy Meeting if customers of BC Hydro expressly ask for a meeting by way of a letter to BC Hydro with a copy to the BCUC.

BC Hydro will be posting a bulletin in the next month soliciting customers’ input on the need for a Network Economy Meeting to discuss the use of Network Economy in F2013. If customers have concerns with the error that impacted the economic test results as described above, the Network Economy Meeting would be an appropriate forum to raise these concerns.

## **H Summary and Conclusions**

In summary, BC Hydro has identified an inadvertent error in the data used in the calculation of the economic test for Network Economy. BC Hydro has analyzed the available data to determine the duration and extent of the error and the potential effects. While the economic test was incorrect during certain times due to the error, the posted Weekly Network Economy Utilization Reports show that there were no interruptions of non-firm transmission service by Network Economy Service due to the incorrect economic test results during the affected periods. BC Hydro’s further analysis confirmed that there was no impact arising from the error because there was generally ample ATC to accommodate Alberta to U.S. wheelthroughs, and the Alberta Export Path was the constraining segment for U.S. to Alberta wheelthroughs, rather than Network Economy Service Reservations on the U.S. Import Path.

BC Hydro has corrected the error going forward. If customers have concerns with respect to the error, they will have an opportunity to request that a Network Economy Meeting be convened to discuss their concerns.

BC Hydro will be posting this letter and the attached report on its website at [http://www.bchydro.com/toolbar/about/planning\\_regulatory/regulatory.html](http://www.bchydro.com/toolbar/about/planning_regulatory/regulatory.html). BC Hydro will also post a bulletin on its transmission website notifying customers of the filing of this report including a link to the report.

April 12, 2013  
Ms. Erica Hamilton  
Commission Secretary  
British Columbia Utilities Commission  
2012 Network Economy Annual Report

For further information, please contact Gordon Doyle at 604-623-3815 or by email at [bhydroregulatorygroup@bhydro.com](mailto:bhydroregulatorygroup@bhydro.com).

Yours sincerely,



Janet Fraser  
Chief Regulatory Officer

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Enclosure (1)

## BC Hydro

### 2012 Network Economy Annual Report

(January 1, 2012 – December 31, 2012)

Total Domestic Volumes allocated under the Transfer Pricing Agreement for the calendar year of 2012 were negative 5,110,839 MWh. This negative volume indicates that the domestic system was in a net export situation during the 2012 calendar year.

In the period ending December 31 2012, 1,651,931 MWh were imported using Network Economy Service that were determined to have passed the economic test, as set out in section 2 of Attachment Q-2 of the OATT. The amounts reported here were subject to an inadvertent error in the data used in the calculation of the economic test, which resulted in incorrect economic test results in certain hours of the time period reported below. BC Hydro has confirmed that there are no instances of Network Economy Service interrupting non-firm transmission service due to the incorrect economic test results. Please refer to the cover letter to this report for further information.

<b>Time Period</b>	<b>Transfer Pricing Agreement Volumes</b>	<b>Net Amount Imported Using Network Economy Service</b>
January - December 2012	(5,110,839) MWh	1,651,931 MWh