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**Oded Hubert**

Vice President  
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December 19, 2016

BY COURIER

Ms. Kirsten Walli  
Secretary  
Ontario Energy Board  
Suite 2700, 2300 Yonge Street  
P.O. Box 2319  
Toronto, ON M4P 1E4

Dear Ms. Walli:

**EB-2014-0360 & EB-2015-0176: Report on (a) Progress in Migrating Hydro One's "Hard to Reach" Regulated Price Plan (RPP) Customers to Time-of-Use (TOU) Pricing and (b) Estimated Billing and Billing Accuracy for Hydro One's "Hard to Reach" RPP Customers**

Hydro One Networks Inc. ("Hydro One") has been granted two exemptions by the Board in respect of the identified "hard to reach" TOU customers in its service territory, whose meters do not communicate reliably with the smart meter network. In its Decision for EB-2014-0360, issued on March 26, 2015, the Board has exempted Hydro One from implementing TOU pricing by the mandatory date established in the Standard Supply Service Code for these "hard to reach" customers. In its Decision for EB-2015-0176, issued on September 24, 2015, the Board has exempted Hydro One from certain sections of the Distribution System Code related to estimated billing and billing accuracy for the same "hard to reach" customers. Both exemptions granted by the Board are effective until December 31, 2019.

Hydro One is providing the attached 2016 report to fulfill its reporting obligations tied to the exemptions, as set out by the Board in its Decisions for EB-2014-0360 and EB-2015-0176. The report has been divided into two sections. The first section addresses the reporting requirements of both the EB-2014-0360 and EB-2015-0176 Decisions while the second section addresses the additional reporting requirements unique to the EB-2015-0176 Decision. The key highlights of Sections 1 and 2 of the report are summarized below.

Section 1 of the report provides a summary of the progress that Hydro One has made in transitioning the identified "hard to reach" customers to TOU pricing and discusses the impact that technological and communication network infrastructure improvements have had on enabling this transition. From January until the end of November 2016, approximately 59,000 "hard to reach" customers who were on

two-tier pricing were migrated to TOU pricing due to improved meter communication reliability with Hydro One's Advanced Meter Reading Infrastructure (AMI) network. Many of the customer migrations that have occurred can be attributed to various technological and infrastructure improvements, most notably Bell Canada's upgrade of its existing network with Long Term Evolution infrastructure and corresponding upgrades reinforcements made by Hydro One to its AMI network infrastructure equipment. It is anticipated that an additional 20,000 "hard to reach" customers will be migrated from two-tier to TOU pricing in 2017 because of further expected improvements to meter communication reliability.

Section 2 details the frequency and accuracy of estimated bills that have been issued to the identified "hard to reach" customers. Based on the estimated bills that were issued to these customers from December 2015 until the end of November of 2016, approximately 72,000 "hard to reach" customers received estimated bills due to smart meter network communication issues. This represents a 29% decrease in the number of customers now receiving estimated bills compared to the same period a year ago, as detailed in last year's estimated billing and billing accuracy report. An assessment of the output data from the estimated billing function of our Customer Information System validates the findings in last year's report and confirms its high level of accuracy. The assessment shows that 95.7% of the estimates analyzed were within a 10% variance of the actual meter readings for the same billing window and 70.2% of the estimates were found to be within a 1% variance of the actual meter reading. The results of the assessment also confirm that no fundamental changes are required to be made to the billing system estimation routines and logic to improve billing estimate accuracy.

For further details related to our progress in transitioning these "hard to reach" customers to TOU pricing and our assessment of the accuracy of estimated bills for the identified "hard to reach" customers, please refer to the attached report.

Sincerely,

ORIGINAL SIGNED BY ODED HUBERT

Oded Hubert

**2016 Report for EB-2014-0360 (TOU Pricing Exemption)  
& EB-2015-0176 (Billing Accuracy and Estimated  
Billing Exemption)**

**December 31, 2016**

## **BACKGROUND**

On December 1, 2014, Hydro One applied for an extension to its exemption (EB-2014-0360) from implementing Time-of-Use (TOU) pricing by the mandatory date specified in the Standard Supply Service Code for approximately 170,000 Regulated Price Plan ("RPP") customers, who are defined as "hard to reach." The Board granted the extension to the TOU Pricing Exemption in its Decision and Order on EB-2014-0360, dated March 26, 2015, subject to, among other things, to a requirement for a report to be filed on December 31, 2016 and December 31, 2018. Section 1 of this report addresses this reporting requirement and includes the following:

- Status updates of any potential significant improvements in telecommunications infrastructure and/or future technological advancements in Automated Meter Reading Infrastructure (Auto);
- An update on reliable cellular network coverage expansion and its impact on affected customers; and
- Hydro One's progress in transitioning hard to reach customers to TOU pricing

On May 6, 2015, Hydro One Networks Inc. ("Hydro One") applied for an exemption (EB-2015-0176) from certain sections of the Distribution System Code related to estimated billing and billing accuracy requirements for the same group of "hard to reach" customers covered under the TOU pricing exemption (EB-2014-0360)). The Board granted the exemption in its Decision and Order on EB-2015-0176, dated September 24, 2015, subject to the condition, among others, that Hydro One perform the following in respect of the "hard to reach" customers:

- For the portion of the ~170,000 "hard to reach" customers that are non-seasonal residential or General Service < 50 kW, Hydro One will bill these customers on a monthly basis and manually read their meters on a quarterly basis. To the extent that the Advanced Metering Infrastructure network provides remote reads within the billing window, these reads will be used to issue monthly bills between quarterly planned actual bills based on an actual read instead of a planned estimate.
- Similarly, for the portion of the "hard to reach" customers that are seasonal customers, Hydro One will bill these customers on a quarterly basis and manually read the meters on an annual basis. Again, to the extent that the Advanced Metering Infrastructure network provides remote reads within the billing window for these seasonal customers, these reads will be used to issue quarterly bills based on an actual read instead of a planned estimate.

In addition, the Board required that Hydro One file a report on its progress in transitioning the identified “hard to reach” customers to monthly billing based on actual reads 98% of the time on December 31, 2015, December 31, 2016, December 31, 2017 and December 31, 2018. The Board also requested for Hydro One to include the following information in this report, which is addressed in Section 2:

- The number of “hard to reach” customers receiving estimated bills as a result of smart meter network communications issues;
- An assessment of the accuracy of estimated bills;
- How Hydro One has and will be improving its accuracy with respect to estimated bills and how it is mitigating future estimated bills to be as accurate as possible.

The objective of this report is to satisfy the reporting requirements of both these Decisions and Orders.

## **SECTION 1 – PROGRESS IN TRANSITIONING CUSTOMERS TO TOU PRICING**

This section of the report provides information to the Board on significant technological improvements and updates on reliable cellular network expansion in Hydro One’s service territory as well as technological improvement in its AMI network as required by the Decision and Order in EB-2014-0360.

### **TECHNOLOGICAL AND COMMUNICATION INFRASTRUCTURE IMPROVEMENTS**

In 2016, Bell Canada commissioned approximately 25 macro cell sites in the Hydro One service territory in an effort to reinforce communication reliability within existing service areas. Bell continues to expand their network, but this is occurring at a slowing rate. Most of Bell’s focus is aimed at upgrading existing sites with Long Term Evolution (LTE) infrastructure. In addition, Hydro One has made some new product replacements to its mesh network that target older infrastructure that will be rendered obsolete as a result of Bell Canada decommissioning their CDMA network.

Hydro One has made significant progress in replacing older CDMA products with LTE compatible infrastructure. The upgrades have not resulted in any loss of Hydro One’s AMI and performance of the existing network has been maintained. Bell’s conversion to LTE has resulted in improved coverage to existing infrastructure resulting in reliability improvements on Hydro One’s existing AMI network but minimal impacts to its ability to expand AMI network reach.

### **CUSTOMERS MIGRATED TO TOU PRICING IN 2016**

The results from Bell network upgrades and Hydro One’s AMI network reinforcement and equipment upgrades to address the decommissioning of CDMA technology have improved meter communication reliability and allowed Hydro One to migrate approximately 59,000 “hard to reach” customers to TOU pricing in 2016 and we expect to move another approximate 20,000 “hard to reach” customers from two-tier to TOU pricing in 2017.

## **SECTION 2 – ESTIMATED BILLING AND BILLING ACCURACY**

This section of the report provides an update to the Report on Billing Accuracy and Estimated Billing submitted in 2015 that fulfilled the reporting requirements of EB-2015-0176.

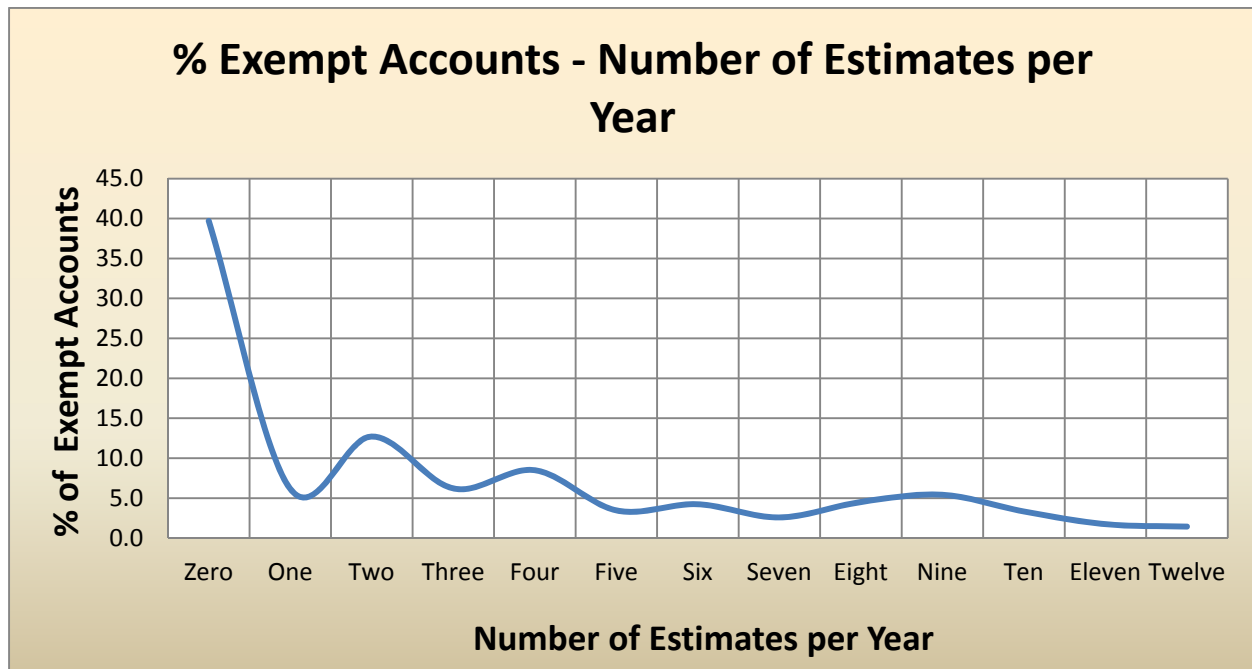
### **2016 BILLING ESTIMATION FREQUENCY**

The total population of “hard to reach” customers fluctuates over time and is currently split about 80/20 between non-seasonal (both residential and commercial) and seasonal customers respectively. As of the end of November 2016 the volume is approximately 120,000, down 14% from the 140,000 customers at the end of 2015 – 96,000 are non-seasonal (residential and commercial) and 24,000 are seasonal residential customers.

During the twelve month period ending November of 2016, 72,000 of these “hard to reach” customers received estimated bills as a result of smart meter network communication issues. This represents an improvement of 29% over 2015 when 101,000 such customers received estimated bills. In accordance with Hydro One’s proposed billing plan, non-seasonal “hard to reach” customers would have received one out of three bills in each quarter (or 33%) based on actual reads, and seasonal customers would have received one out of four bills each year (or 25%) based on actual reads.

The graph in Figure 1 on the next page illustrates the distribution of “hard to reach” non-seasonal customer accounts that received bills based on estimated reads over the one year period. From this figure, it can be seen that the manual meter reading effort and frequency continue to be significantly augmented by the availability of additional actual reads from the Advanced Meter Reading Infrastructure (AMI) network in months when an estimate was originally planned.

In fact, 15% of non-seasonal customers received four or fewer actual reads over the course of a year, which defines the minimum threshold for the number of actual reads that should be received for non-seasonal customers. As a result, billing accuracy for “hard to reach” customers has greatly improved simply because Hydro One has been able to use remote actual reads more frequently for billing than was originally planned.



**Figure 1:** Percentage Distribution of non-seasonal “Hard to Reach” Customers Receiving Bills Based on Estimated Reads

For the 12 months ending November 2016, the number of bills issued based on actual reads for these “hard to reach” customers was substantially higher than planned such that:

- 42% of non-seasonal “hard to reach” customers (approximately 40,000) received *all* of their bills based on actual meter reads and this segment has been assessed for potential migration to TOU rates;
- 64% of these customers had more than 75% of their bills issued based on actual reads, compared to the minimum planned level of 33% and;
- 72% of these customers had more than 60% of their bills issued based on actual reads.

However, despite this better performance for the majority of these customers, Hydro One was unable to obtain manual readings as specified in its proposed plan for approximately 15% of the identified non-seasonal “hard to reach” customers. These customers received a higher number of estimated bills than planned. For these occurrences, manual readings could not be obtained due to meter access issues – specifically the inability to gain physical access to inside meters and access issues due to road conditions or water access issues in more remote areas.

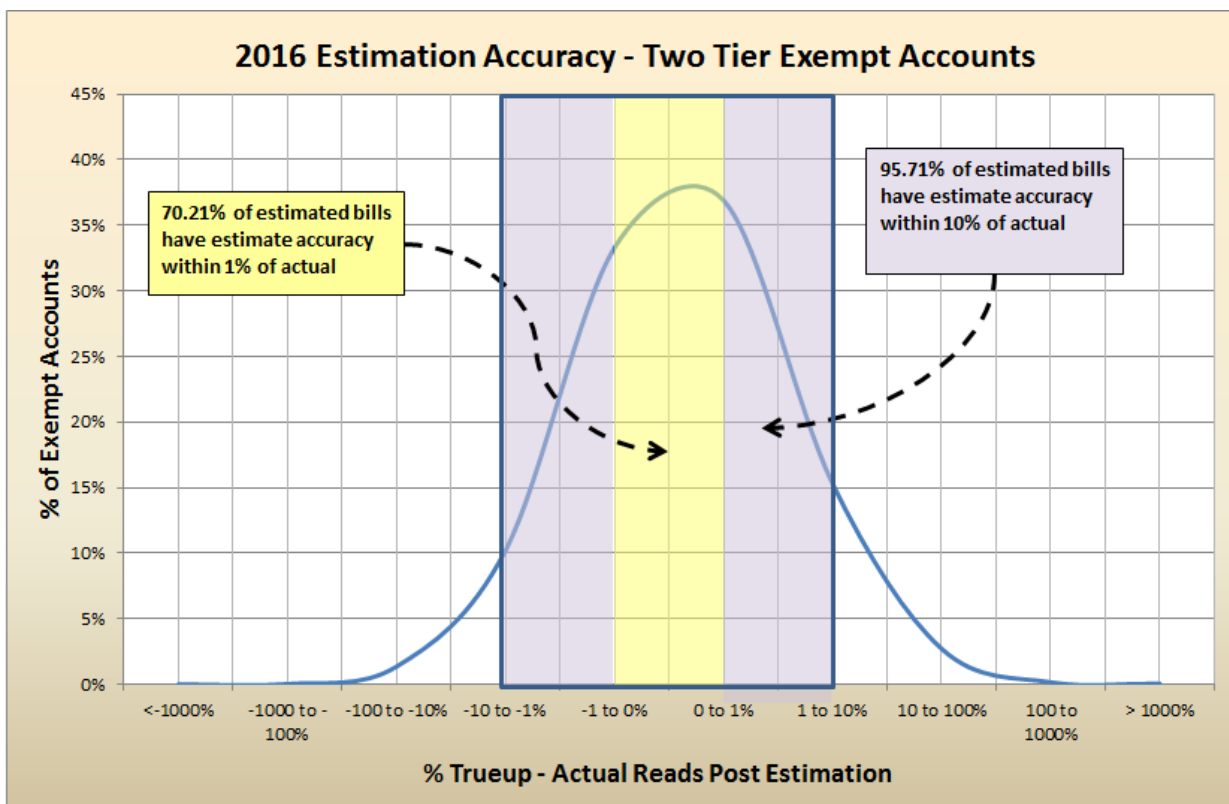


For the identified seasonal “hard to reach” customers, 99% received a higher number of bills based on actual readings than planned, with 31% receiving *all* of their bills based on actual meter readings due to the availability of automated meter reads. Only 1% of seasonal customers identified as “hard to reach” received a higher number of estimates than planned. This was due to the fact that Hydro One was unable to obtain the planned annual manual reading due to access issues.

## 2016 BILLING ESTIMATION ACCURACY

The accuracy of estimated bills was assessed by comparing *estimated* usage data from Hydro One’s billing system to *actual* meter read/usage data reported to our Advanced Meter Reading Infrastructure from those same meters, for the same billing cycle period.

The graph in Figure 2 below shows that for 95.71% of bills issued based on estimated data, the variance was within 10% of the actual meter readings/data. Furthermore, 70.21% of those bills were based on estimates that were within a variance of 1% the actual meter reads. This estimate accuracy is virtually the same as that identified in the 2015 report (95.6% and 72.4% respectively).



**Figure 2:** Bill Estimation Accuracy for all “Hard to Reach” Customers

It is evident based on the assessment performed that the accuracy of billing estimates from Hydro One's billing system continues to be dramatically improved since the billing system implementation in 2013, due to the availability of customer-specific historical consumption data. A detailed review of the billing system estimation routines and algorithms has not revealed any significant or systemic issues with the logic and this is further supported by the analysis presented above.

An audit of those "hard to reach" accounts where the estimates exceeded 10% of the actual/true-up meter read was performed utilizing billing/usage history, contact notes and service notifications for the account to gain insight into the specific factors that led to the less accurate estimates. As in 2015, the following factors were identified in those cases involving estimates with a greater than 10% variance:

1. Significant change in customer consumption pattern from the previous year, typically caused by a change in heating source at the premise, a significant building renovation or expansion, a household change in terms of number of occupants/occupancy pattern or a major equipment addition/removal.
2. New service/move-in connections where there is no relevant consumption history available.
3. Meter access challenges (i.e. meters located on islands, seasonally closed roads, meters located within enclosures, breakers that are before (on the line side versus the load side) of the meter, etc.)

Hydro One continues to improve the estimates in these situations in the following ways:

- requesting additional information from customers at the time of new service/move-in connection;
- where there is inadequate customer-specific usage history available, using usage history for the premise or the average for the rate class in the geographic area;
- continuing to encourage customers to advise of significant changes in their consumption patterns and/or power-consuming equipment;
- continuing to work with customers where we have persistent access challenges by encouraging customer reads and/or providing advance notice to the customer of the next planned meter reading window so that, to the extent possible, access issues can be resolved and our field staff can obtain actual meter readings/data.