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BY COURIER

December 1, 2014

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

Dear Ms. Walli:

EB-2012-0384 – Hydro One Networks’ Request for an Extension to the Exemption for Time-of-Use Billing

Please find attached an application by Hydro One Networks Inc. (“Hydro One”) for an extension to the exemption from the provisions of the Standard Supply Service Code for Electricity Distributors requiring time-of-use pricing for regulated price plan customers with eligible time-of-use meters, as of the mandatory date.

Hydro One also requests an interim extension of the exemption granted by the Ontario Energy Board (“the Board”) on December 21, 2012 in proceeding EB-2012-0384, as of January 1, 2015, until such time the Board renders a final decision in this application.

Sincerely,

ORIGINAL SIGNED BY SUSAN FRANK

Susan Frank

Attach.

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*;

AND IN THE MATTER OF an Application by Hydro One Networks Inc. for an Order or Orders including an extension to the exemption from the provisions of the Standard Supply Service Code for Electricity Distributors requiring time-of-use pricing for regulated price plan consumers with eligible time-of-use meters, as of the mandatory date.

APPLICATION

1. The Applicant is Hydro One Networks Inc. ("Hydro One"), a subsidiary of Hydro One Inc. Hydro One is an Ontario corporation carrying on the business, among other things, of owning and operating electricity distribution facilities in Ontario.
2. Hydro One requests an extension to exemption from the provisions of the Standard Supply Service Code for Electricity Distributors (the "Code") requiring time-of-use pricing for regulated price plan ("RPP") consumers with eligible time-of-use ("TOU") meters, as of the mandatory date. The subject exemption was granted by the Ontario Energy Board (the "Board") on December 21, 2012, in proceeding EB-2012-0384, for approximately 122,000 RPP customers. This current request is for a total of approximately 170,000 customers.
3. Hydro One requests that the Board establish the exemption to begin on January 1, 2015 and to remain in place until December 31, 2019 – a duration of 5 years. The timing of this request is intended to coincide with the timing of Hydro One's current 2015-2019 Distribution Rate Application.
4. Hydro One requests that the reporting schedule that was required by the Board in its approval of the original exemption in EB-2012-0384 be eliminated as Hydro One already reports on the number of customers on time-of-use and two-tier pricing as part of the quarterly Reporting & Record Keeping Requirements.
5. Hydro One requests that all other terms and conditions that were granted by the Board in the original exemptions in EB-2012-0384 for customer billing apply during the period of this exemption.
6. Hydro One requests that this proceeding be conducted by way of a written hearing.
7. Hydro One also requests an interim extension of the exemption granted by the Board on December 21, 2012 in proceeding EB-2012-0384, as of January 1, 2015, until such time the Board renders a final decision in this application.

Section 1 – Background

Hydro One filed an application with the Board on September 16, 2010, under section 74 of the Ontario Energy Board Act, 1998, seeking an exemption from the mandated date for the implementation of TOU pricing date for approximately 150,000 “hard-to-reach” RPP customers. On January 13, 2011, the Board granted Hydro One a two-year exemption. This exemption applied until December 31, 2012. While about 28,000 “hard-to-reach” RPP customers had been successfully migrated to TOU pricing within the exemption period, there was no economic and compliant solution to migrate the remaining 122,000 “hard-to-reach” RPP customers to TOU pricing. For this reason, on September 21, 2012, Hydro One requested an extension to the exemption from its mandated TOU pricing date granted by the Board’s Decision of January 13, 2011. On December 21, 2012, the Board granted Hydro One a two-year exemption for about 122,000 hard-to-reach RPP customers effective January 1, 2013 to December 31, 2014. The Board also directed Hydro One to file reports, on April 30, 2013 and April 30, 2014, on its progress to transition the identified “hard-to-reach” RPP customers to TOU pricing.

Hydro One reported in both 2013 and 2014 that some progress was made and it had transitioned approximately 12,000 “hard-to-reach” customers to TOU pricing. While Hydro One continued its efforts to improve its smart meter network and explore various options, 110,000 customers (122,000 – 12,000 = 110,000) remain on 2-tier pricing as they cannot be connected to the smart meter network; or they are not reliable enough for TOU billing.

In September 2014, the Board issued a Draft Report on Electricity and Natural Gas Distributors’ Residential Customer Billing Practices and Performance (EB-2014-0198). The Board’s proposed 98% monthly bill accuracy requirement for all electricity distributors presents additional challenges with respect to Hydro One’s smart meter network.

Section 2 – TOU Exemption Request

Hydro One is requesting a five-year extension of the exemption, from January 1, 2015 to December 31, 2019 for approximately 170,000 RPP customers. Technical considerations that lead to this exemption application are discussed in Section 3 of this document.

Hydro One submits that the exact number of customers affected by this exemption request will fluctuate from time to time. The number of affected customers will be impacted by the number and location of new customers/connections, the phasing out of Bell Canada’s Code Division Multiple Access (CDMA) network, on-going commercial/mesh network changes, the complexity of Hydro One’s extensive smart meter network, the vast Hydro One service area, technology improvement and other unknown factors.

This five-year exemption covers the following groups:

Group 1 – 110,000 “hard-to-reach” customers remaining on two-tier pricing from the last OEB granted exemption (EB-2012-0384):

These customers are typically located in very rural and sparsely populated areas with no existing commercial cellular network or a low level of communication reliability.

Without a cellular network to back-haul the meter data to Hydro One, the existing technology platform (mesh network) does not work. The majority of these customers are located in areas outside of southern Ontario with low customer densities. While commercial cellular carriers have plans to reach some of these areas over time, the exact coverage and timing is uncertain.

For the customers with low level of meter communication reliability, a combination of factors including very low customer density, the extreme rugged nature of service territory, and dense foliage are in place. The reliability level of these meters results in a very high probability of multiple estimated bills for customers. After extensive tuning to economic limits, these meters have consistently demonstrated below 85%¹ communication reliability (daily reads over a 90-day period). Improving communication for these meters to a satisfactory level is not cost effective at the current time. This situation is not expected to be resolved until there is improved telecommunications infrastructure and/or when future technological advancements in automated meter reading infrastructure become available.

Various attempts of network tuning² over the past years have raised some meters' communication reliability. This group of meters has demonstrated initial ability to communicate and has the potential of being converted to TOU pricing within the exemption period. However, offsetting this, the phase out of Bell Canada's CDMA network, the backbone of Hydro One's smart meter network, has already begun to negatively impact both meter coverage and reliability. In spite of Hydro One's comprehensive investment plan to adapt to on-going technology changes (e.g. private commercial cellular carriers are shifting from CDMA network to High Speed Packet Access or "HSPA" and Long Term Evolution or "LTE" networks), the phasing out of CDMA network will likely result in changes in the number of meters connected to the Hydro One smart meter network as the conversion progresses and the need for meter remediation takes place. Most recently, the phase out of CDMA in the Thunder Bay area (providing Wide Area Network or WAN coverage to approximately 34,000 meters) has negatively impacted as many as 3,000 meters, due to changes in coverage area for HSPA and LTE networks (as

¹ 85% communication reliability is further discussed in section 3.2 of this document, and is related to the recently proposed OEB billing accuracy requirement.

² Network tuning economic limits are used to ensure the prudent purchase and installation of new smart meter network equipment (repeaters and regional collectors). A 10 year net present value calculation is conducted for network tuning comparing the cost of purchasing and installing new network equipment (repeaters and regional collectors) against the cost of performing manual meter reading.

compared to the old CDMA coverage area). With the imminent phase out of CDMA and other on-going commercial/mesh network changes, Hydro One expects some existing customers currently on TOU pricing may experience declining communication reliability. While some customers will migrate from two-tier to TOU pricing after minor network tuning, some customers will need to be move from TOU back to two-tier due to phasing out of CDMA and other network changes. These opposite migrations will likely cancel each other.

Group 2 – 50,000 customers currently on TOU pricing with consistently unreliable communication:

These meters have consistently demonstrated less than 85% communication reliability (daily reads over a 90-day period). They were initially reliable enough to convert to TOU pricing, but due to cellular/mesh network changes, combined with Radio Frequency ("RF") signal absorption¹, blockage due to seasonal foliage and other factors, have declined in communication reliability resulting in multiple consecutive estimated bills and customer dissatisfaction. This situation is not expected to be resolved until there is improved telecommunications infrastructure and/or when future technological advancements in automated meter reading infrastructure become available. Hydro One believes it is prudent to convert these customers from TOU prices back to two-tier prices for more reliable customer billing.

Upon approval of this exemption, Hydro One will prepare a communication plan to update these customers on their status and transition them back to two-tier pricing. As part of this plan, Hydro One will assess options to support these customers in managing their electricity use and costs as it is recognized that the demand management opportunities associated with time-of-use pricing will not be available to them. It is expected that the migration from TOU to two-tier pricing will take place in 2015.

Group 3 – up to 10,000 new customers, who are expected to be connected to the Hydro One service area during the requested exemption period:

Based on historical data and recent trends, approximately 10,000 new RPP customers will be added to the Hydro One service area annually. Assuming among these new customers, about 20% may be located in very rural low density areas with no/poor cellular coverage. Therefore, within the requested exemption period (5 years), Hydro One expects up to 10,000 new customers (10,000 x 20% = 2,000/year, 2,000 x 5 = 10,000) will not be able to meet the 85% smart meter communication reliability threshold. This situation is not expected to be resolved until there is improved telecommunications infrastructure and/or when future technological advancements in automated meter reading infrastructure become available. As such, Hydro One believes it is prudent to set up and leave these customers on two-tier pricing for more reliable customer billing.

Hydro One requests this exemption because these meters cannot be connected to the smart meter network; or they are not reliable enough for TOU billing to meet full compliance. The options that are

¹ RF Absorption - Weakening of RF signal as it is absorbed by various landscape, trees and other materials.

available will only achieve partial compliance, at best, and the costs are excessively high, which would result in upward pressure on rates.

Under two-tier pricing, manual meter and customer provided reads can be used to generate actual bills. Since these options are not available under TOU pricing, with this exemption Hydro One will be able to provide more reliable billing, and therefore better customer service, by reducing the number of estimated bills. During the exemption period Hydro One proposes that the above customers would consume power on two-tier pricing as specified in section 3.3 of the Code. Hydro One will utilize meter reads over the smart meter network for these meters if/when readings are available, and augment with manual meter readings when required.

Section 3 – Exemption Rationale

Hydro One has a very unique service territory among Ontario Local Distribution Companies. It faces challenges directly related to both connecting its customers to its smart meter network and making the meters reliable enough for dependable TOU billing once they are connected. These service territory challenges include:

- Private commercial cellular coverage, the backbone of the smart meter network's Wide Area Network (WAN), is not ubiquitous across Hydro One's service territory and therefore connectivity is not possible in many areas;
- Extremely low customer density in many parts of the service territory, makes it impossible to build out the smart meter network and to make the meters communicate reliably enough for TOU billing on a cost-effective basis given current technology;
- The extreme rugged nature and topography of many parts of Hydro One's service territory (hills, valleys, Canadian Shield) can both block and/or absorb RF signal impacting signal strength and range; and
- Extensive tree coverage and growth across many parts of Hydro One's service territory impacts signal strength and range depending on type of tree, season, and other environmental factors. Wet trees absorb RF energy more than dry trees. Coniferous trees absorb more than deciduous trees. Snow on coniferous trees in winter will also absorb signals. These variations in absorption make the network reliability susceptible to changes in seasons and conditions; especially in sparsely populated areas that are typically heavily forested.

Overcoming these issues has been a significant challenge and Hydro One's effort has been recognized by the North American utility industry. For the above stated reasons, it is not possible to economically connect some meters to the smart meter network, and in other cases, it is not possible to increase their communication reliability to a level for regular and dependable time-of-use billing. For most of the customers in this exemption request, the situation is not expected to be resolved until there is improved telecommunications infrastructure and/or when future technological advancements in automated meter reading infrastructure become available.

Therefore, Hydro One is seeking a five-year TOU exemption for approximately 170,000 customers.

Section 3.1 – Alternative Solutions

Lack of Commercial Cellular Networks:

Hydro One has evaluated a number of alternatives to address the gaps in private cellular coverage (discussed below) and found them not to be economic.

Satellite and WiMax (1.8 GHz) Enabled Collector: This alternative works just like the primary platform solution except it utilizes a satellite or “WiMax” network (Worldwide Interoperability for Microwave Access – a wireless broadband technology) to back-haul smart meter data to Hydro One. After investigation, this option is not economic at this time nor is it expected to become economic in the foreseeable future.

Power Line Carrier: Power Line Carrier (PLC) is the method of transmitting data through power lines and is one of the technologies that has been used for automated meter reading in other jurisdictions. Hydro One evaluated this technology and has concluded that this is not an economic solution for the volume of customers across its service territory. The deployment would have to span across the majority of Hydro One’s system to reach a relatively low volume of customers. Such a deployment would be costly as PLC equipment is required at each transformer and on each feeder. Additionally, at each distribution or transmission station, new equipment would need to be installed to ensure that data is accurately transmitted across differing voltage levels. Furthermore, investing in PLC would require Hydro One to support an untested third technology platform to serve a small percentage of its customer base. The combination of these factors makes this option uneconomic.

In-Person Meter Reading (DriveX): This solution involves deploying Hydro One service personnel to travel to the affected distinct locations and download smart meter readings on a periodic basis using a hand-held device. The meter information stored on this hand-held device would then be transferred for processing and subsequent use for time-of-use billing. This option has the additional challenge of overcoming the security of the meter to allow for the information to be downloaded. While this option may be an effective means for collecting TOU meter readings on infrequent occasions, it is too expensive to implement for regular readings for large numbers of meters. Moreover, this solution is only partially compliant as it does not provide hourly consumption data to customers on a daily basis.

Poor Communication Reliability:

A number of alternative solutions have been evaluated and/or implemented for these meters with consistently unreliable communication. They include:

Further Significant Network Tuning: Hydro One’s smart meter network has been deployed in areas around these meters which has enabled some meters to communicate, however at a lower than required level of reliability for dependable TOU billing. Significant network tuning efforts to increase meter reliability further have been analyzed but the installation of additional network equipment would be above economic limits.

400Mhz Extension: The 400MHz Extension to the existing collector population has been evaluated and deployed among several hard to reach areas in the service territory. The cost of deploying the 400 MHz solution is higher than the normal smart meter network, making it only economically feasible in areas with higher meter densities.

Section 3.2 – Change of Smart Meter Communication Reliability Criteria

With respect to the conversion of customers from two-tier pricing to TOU pricing, Hydro One's initial conversion criterion was the achievement of a reliability level of 70% daily on-time reads over a one-month period prior to conversion. This criterion was based on the rationale that the customer would not receive adjusted bills over consecutive months because of the high probability of the meter achieving at least one read in the billing window. However, due to cellular/mesh network changes, combined with RF absorption, blockage due to seasonal foliage and other factors, the communication performance of some meters declined. As a result of these learnings, Hydro One established new TOU reliability criteria to minimize the probability of multiple estimated bills. The revised reliability criteria required the achievement of 70% daily on-time communication over the prior 90-day period, instead of the one-month period. This new criterion provided a better indicator of overall meter reliability and thus improved the likelihood to achieve meter reads within the bill window over multiple months. Hydro One's tuning and remediation efforts throughout 2013 and 2014 has been based on this 70% meter reliability criteria over 90 days.

The other factor driving reliability standards is the OEB's recently proposed target for 98% monthly bill accuracy. Hydro One has determined that it would need to adopt a revised reliability criterion of 85% daily, on-time communication over the previous 90 days, instead of 70% communication reliability to meet the OEB's proposed standard. This higher reliability requirement better correlates to meter reads available in a bill window to provide the customer with a bill based on actual usage each month. Therefore, Hydro One has employed the 85% communication reliability criterion for this exemption request.

Section 4 – Conclusion

It is not possible to economically connect all meters to the smart meter network or make all meters communicate reliably enough to issue regular time-of-use bills based on actual meter readings. The costs associated with options available to connect more meters and make more meters reliable are excessively high and would result in upward pressure on rates. This situation is not expected to be resolved until there is improved telecommunications infrastructure in the province or when future technological advancements in automated meter reading infrastructure become available.

Therefore, Hydro One is seeking a five-year TOU exemption for approximately 170,000 customers, which will result in more reliable billing and increased satisfaction for the affected customers. During the exemption period Hydro One proposes that the affected customers would consume power on two-tier pricing as specified in section 3.3 of the Code.

Under two-tier pricing, manual meter and customer provided reads can be used to generate actual bills. Since these options are not available with TOU pricing, with this exemption Hydro One will be able to provide more reliable billing, and therefore better customer service, by reducing the number of estimated bills.

Upon approval of this exemption, Hydro One will prepare a communication plan to update the affected customers on their status, and in the case of TOU customers, transition them back to two-tier pricing in 2015. As part of this plan, Hydro One will assess options to support these customers in managing their electricity use and costs as it is recognized that the demand management opportunities associated with time-of-use pricing will not be available to them.

Hydro One continues to support TOU pricing. The Company will, where cost effective for ratepayers, continue to invest in network improvements and will continue to seek opportunities to improve compliance by moving customers onto TOU pricing. However, this will only be done when Hydro One is confident that customer expectations can be met using options that are economically viable.