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Frank D'Andrea

Vice President
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BY COURIER

June 22, 2018

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-2017-0049 Hydro One Networks Inc. 2018-2022 Distribution Custom IR Application
(the "Application") – Undertaking Responses**

Please find enclosed responses to undertakings J7.3, J7.4 and J7.5 from the oral hearing in regards to the above noted proceeding.

This filing has been submitted electronically using the Board's Regulatory Electronic Submission System and two (2) hard copies will be sent via courier.

Sincerely,

ORIGINAL SIGNED BY FRANK D'ANDREA

Frank D'Andrea

Enc.

UNDERTAKING – J 7.3

Reference

N/A

Undertaking

To provide the age profile of the poles that have failed tests.

Response

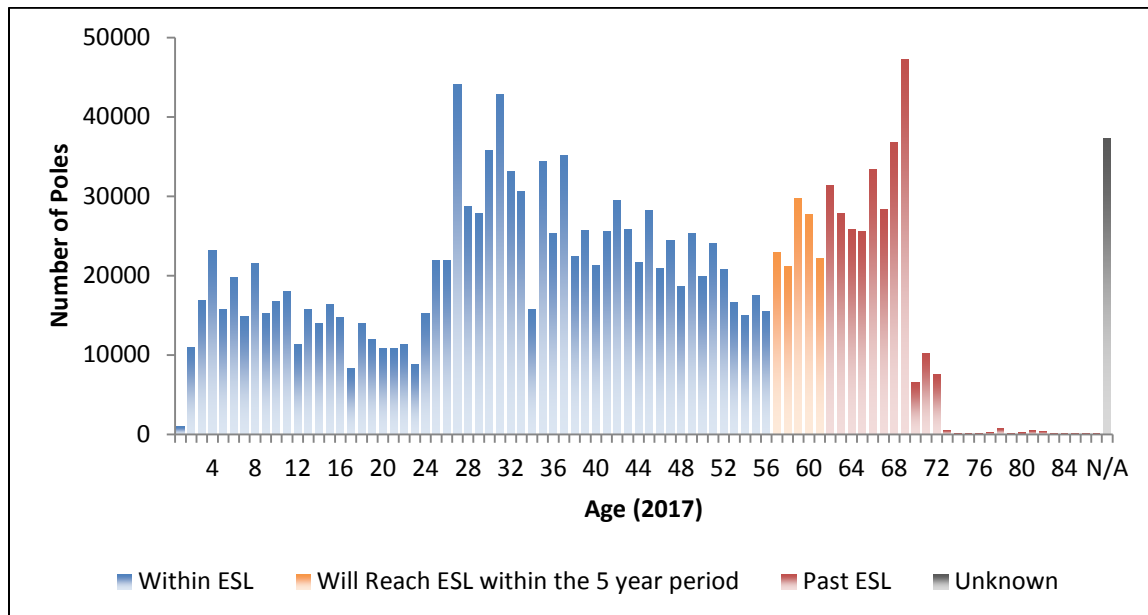
This response is intended to address undertakings J7.3, J7.4, and J7.5.

Background:

Hydro One's distribution system contains about 1.6 million wood poles. The current average age of the wood pole population is 38 years as shown in the demographics, illustrated in Figure 1. Based on Figure 1 below there are about 280,000, or 17% poles (illustrated by the red bars below) that are beyond their expected service life of 62 years with an additional 120,000 or about 7% poles (illustrated by the orange bars below) reaching their expected service life within the next five years.

The Navigant benchmarking study (Exhibit B-1-1, DSP Section 1.6 Attachment 1), shows "the replacement rate has been slower than for the comparison utilities, with the result that Hydro One's pole inventory is the oldest".

Figure 1: Pole Population Demographics



Source: Figure 29 in Exhibit B1-1-1 DSP Section 2.3

Witness: GARZOUZI Lyla

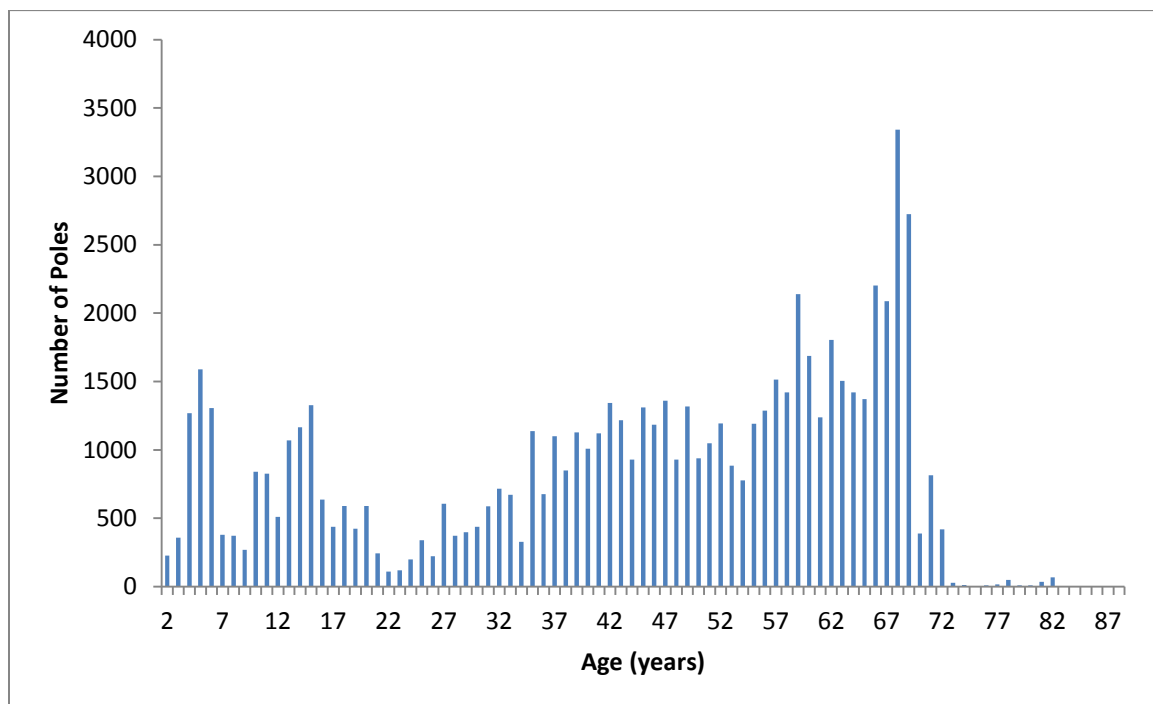
Condition of Population:

Hydro One inspects the condition of each pole as part of the line patrols required by Appendix C – Minimum Inspection Requirements of the Distribution System Code (i.e. once every six years for all rural feeders and once every three for all urban feeders).

As noted in Exhibit I-24-AMPCO-23, currently 4% of the wood pole population (67,000 poles) are in poor condition. Poor condition means poles within this category have failed wood pole inspection/testing criteria and therefore require replacement.

The demographics of poles in poor condition are shown in Figure 2 below. The average age of these poles is 45 years. Figure 2 below shows an increasing failure rate as the population ages.

Figure 2: Demographics of Poles that are in Poor Condition



Based on the last five years of annual inspections and testing, Hydro One forecasts approximately 13,400 additional poles will be assessed to be in poor condition each subsequent year. Therefore, it is expected that over the period of 2018 to 2022, approximately 67,000 additional poles will need to be replaced (see response to Exhibit I-29-PWU-11).

1 In addition to these poor condition wood poles, there is a subset of red pine poles
2 (approximately 39,000 poles) that do not meet the CSA Standard for penetration and
3 retention of treatment. The high risk red pine poles will be targeted for replacement.

4
5 Pole Replacement Program

6
7 Hydro One follows an industry best practice of proactively replacing end-of-life poles,
8 and has never run its poles to failure. This is because poles in poor-condition pose a high
9 probability of failure with the consequence of such failures impacting public safety,
10 reliability of the system, long duration customer interruptions, and higher cost to replace.
11 The proposed replacement program in this application will replace a total of about 72,000
12 poor-condition wood poles over the 5 year plan.

13
14 Taking a run to failure approach would result in all the poor-conditions poles having a
15 high probability of failure within five years, requiring reactive replacement impacting
16 public safety, reliability of the system, long duration customer interruptions, and higher
17 cost to replace.

18
19 Hazard Curves

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21 Statistical analysis of the wood pole population has indicated that the expected service
22 life of Hydro One's population of wood poles is approximately 62 years. This is shown
23 in the 2014 Asset Failure Analysis Report prepared by Foster Associates and filed as
24 Exhibit I-1-20 Attachment 1, in the EB-2016-0160 proceeding. It is common for utilities
25 to use this type of analysis to assess probabilities of failure, and inform the pacing of
26 required replacements.

27
28 Hydro One does not use hazard rates or curves to justify making specific asset
29 replacements. All planned wood pole replacements are made strictly based on asset
30 condition assessment results. Assets that are in poor condition are the candidates for
31 replacements and are prioritized based on the risk posed to the system, and paced to
32 manage customer rates.

UNDERTAKING – J 7.4

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Reference

N/A

Undertaking

To produce the hazard curve.

Response

Please refer to undertaking J7.3.

UNDERTAKING – J 7.5

Reference

N/A

Undertaking

To provide a response to Dr. Elsayed's question: Similarly to other assets that you've said you run to failure, if HONI were running poles to failure, if HONI were waiting until the poles fail, how many would HONI replace every year

Response

Please refer to undertaking J7.3.