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Ontario

BY E-MAIL

May 30, 2017

Attention: Ms. Kirsten Walli, Board Secretary

Dear Ms. Walli:

Re: Thunder Bay Hydro Electricity Distribution Inc.
Application for Rates
Board File Number EB-2016-0105

In accordance with Decision on Settlement Proposal and Procedural Order No. 5 issued on May 4, 2017, please find attached the Ontario Energy Board staff interrogatories on the new expert report filed by Thunder Bay Hydro Electricity Distribution Inc.

Original Signed by

Martin Davies
Project Advisor, Rates
Major Applications

Attachment

cc: Parties to EB-2016-0105

Ontario Energy Board Staff Supplemental Interrogatories
2017 Electricity Distribution Rate Application
Thunder Bay Hydro Electricity Distribution Inc. (Thunder Bay Hydro)
Expert Report (Yuri Tsimberg)
EB-2016-0105
May 30, 2017

ER-Staff-79
Ref: p. 3

At the above reference, it is stated that:

> It is important to note that the final System Renewal budget for 2017 was not directly and exclusively derived from the Health Index distribution in the ACA report (the relationship is described in detail in the body of this report). Furthermore, although condition based needs represent an important input in developing System Investment capital requirements, there are other factors that are taken into account when deciding on appropriate System Renewal level, such as physical obsolescence, functional obsolescence, compliance with standards, municipal initiatives, and corporate considerations, e.g. financial constraints, input from customers, safety and environmental concerns, etc.

a) Please define each of the above referenced other factors and provide an example of how each has been incorporated into the Thunder Bay Hydro renewal capital expenditures planned for the test year.

b) Please discuss how physical obsolescence and functional obsolescence, as used in the above statement, should be differentiated from the ACA Health Index distribution.

c) In Mr. Tsimberg's opinion, did Thunder Bay Hydro sufficiently take both physical and functional obsolescence of assets into account when "deciding on appropriate System Renewal level" as filed in the application?

ER-Staff-80
Ref: p. 3

At the above reference, it is stated that:

> Although increase in System Renewal investments is expected to result in improved reliability it is not possible to quantify such an improvement due to many unknown factors that contribute to supply interruptions to customers.

a) Please provide the basis for the claim that an "increase in System Renewal investments is expected to result in improved reliability", given that Thunder Bay

Hydro's SAIDI and SAIFI performance has historically been driven by significant weather events, as described in EB 2016-0105 Ex. 1, p. 21, lines 20 – 27. Please explain in detail.

b) If accurate quantification of the anticipated reliability improvement is not possible, is it possible to provide an order of magnitude or qualitative discussion of anticipated performance improvement?

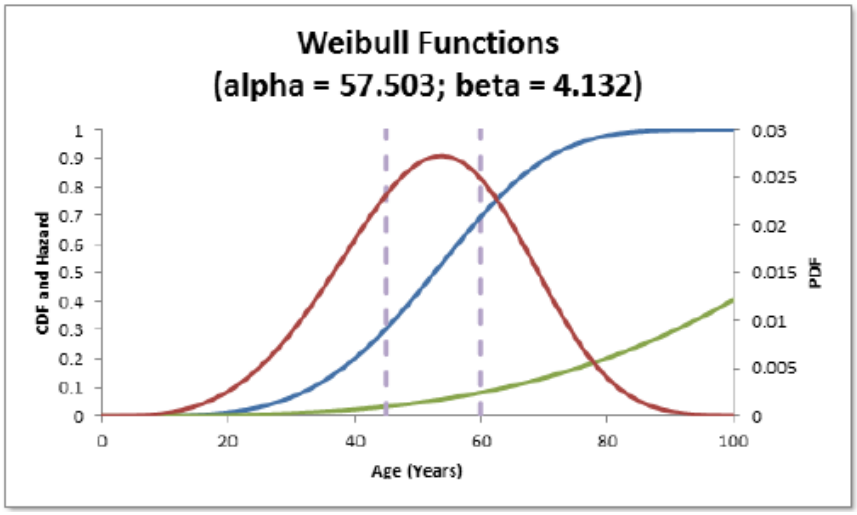
c) In Mr. Tsimberg's opinion, is the Thunder Bay Hydro system presently providing acceptable performance based on SAIDI and SAIFI values, if Hydro One Networks loss of supply events are excluded?

ER-Staff-81
Ref: p. 7

At the above reference, it is stated that:

The Figure 2 below shows Weibull curves used extensively in electrical utilities business to estimate relationship between HI score of individual assets and the corresponding Rate of Failure.

Figure 2 - Weibull Probability of Failure Curves



Failure density curve (the red curve) is first generated using removal statistics and then the rate of failure curve (the green curve) and probability of failure curve (the blue curve) are derived from the failure density curve. TBHEDI, like most other utilities, did not have sufficient removal statistics records required to generate the curves, so instead assumptions based on the experience of the TBHEDI's staff regarding typical useful life and extreme useful life of various assets were used to generate these curves. This is common practice amongst utilities who do not currently have removal statistics available. It is expected that going forward TBHEDI will start collecting removal information so that the risk assessment phase of the ACA process will improve in the future.

a) Please quantify the ratio of the missing Thunder Bay Hydro removal data as a percentage of a complete data set, where 100% indicates that all required

removal data is available, and 0% indicates that none of the required data is available.

b) How important is removal data when calculating utility-specific Health Index ("HI") values?

c) To what extent does depending upon the opinions of experienced staff in the absence of complete actual removal data impact the confidence intervals associated with HI values? Please quantify.

d) Are removal data typically categorized by driver, e.g.: does removal data separately track storm-induced failures, electrical failures, tree-fall failures, vehicle accident failures and premature retirements due to customer requests (such as road widening or business closures)?

ER-Staff-82
Ref: p.7 and 8

At the above reference, it is stated that:

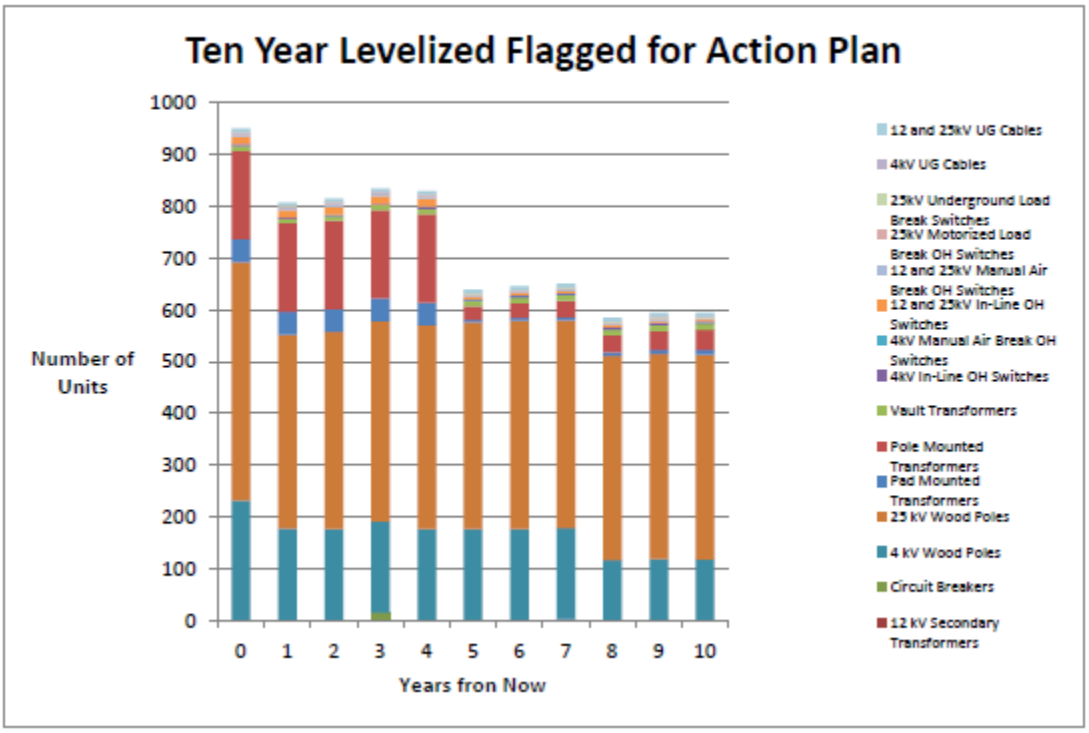
> Rather than using the term "Replacement Plan", FFAP was used because replacement is NOT the only option available when asset is found to be in a poor condition. For example some assets that are typically replaced proactively or before they fail are station transformers, circuit breakers and wood poles. Rather than replacement there are a number of actions that could be taken, such as refurbishment, more frequent inspections, specific operating procedures, increased spare equipment inventory, etc.

Please further discuss the options other than replacement that are listed as available, including what would determine when they were used in place of replacement and to what extent each of these options would represent an expenditure of capital, OM&A or other dollars.

ER-Staff-83
Ref: p.8

At the above reference, the figure below is shown:

Figure 3 – TBHEDI's 10-Year FFAP



a) Please explain the reasons for the significantly higher number of units flagged for action during the first five years (year 0 to 4) shown in Figure 3, and particularly the number of units in year 0. Please quantify the explanation, to the extent possible.

b) Does the Flagged-for-Action Plan (FFAP) shown in Figure 3 incorporate the asset replacements forecast in the present filing? If not, please provide an updated version of Figure 3 that does incorporate the forecast replacements.

c) What would be the anticipated reliability impacts of implementing a replacement program that was more evenly paced over the planning horizon shown in Figure 3?

d) Please compare the FFAP with historical replacements for the 5 year period immediately prior to year 0 in Figure 3.

e) Please explain the reasons for any significant (>10%) inter-annual unit flagged for action counts over the historical and planned horizons, by asset class.

ER-Staff-84
Ref: p. 11 and p. 13

At the first reference above, the following statement is made:

> Since most of the equipment caused outages are due to line components failures and TBHEDI spends the least amount per line km and close to the lowest cost per customer among the peer LDCs while experiencing by far the highest number of outage frequency rate and second highest outage duration rate, it could be concluded based on this benchmarking that TBHEDI is underspending on its line assets.

At the second reference above, the following statement is made:

> In addition to the outages caused by equipment failures due to equipment at the end-of-life, there are also random equipment failures involving assets recently installed or at mid-life. In such cases equipment is replaced or repairs are made and equipment stays in service, yet such outages also contribute to unreliability and cannot be addressed proactively.
>
> Finally, there are many factors that impact reliability performance, such as weather induced stresses, electrical faults, external causes (e.g. animals and drivers).

a) Please compare the frequency of equipment-caused outages to outages caused by weather events, tree contacts vehicle accidents and other external causes.

b) Are asset failures due to deteriorated asset condition a primary cause of Thunder Bay Hydro outages?
c) Will increasing the level of System Renewal expenditures noticeably reduce the outage frequency caused by weather events, tree contacts or vehicle accidents? Please quantify.

ER-Staff-85
Ref: p. 11

At the above reference, the following statement is made:

> Table 1 below provides a comparison of Typical Useful Life (TUL) and Maximum useful Life (Max UL) used in the Kinectrics ACA study with the values provided as a guideline in the OEB's publication "Asset Deprecation Study for the Ontario Energy Board" issued on July 8, 2010.

Table 1 – Comparison of TBHEDI's Useful Lives with OEB Guideline Values

Asset Category	TBHEDI		OEB	
	TUL	Max UL	TUL	Max UL
Station Transformers	60	70	45	60
Circuit Breakers	60	70	45	65
Wood Poles	60	75	45	75
Painted Wood Poles	45	60	N/A	N/A
Pad Mounted Transformers	35	45	40	45
Pole Mounted Transformers	50	65	40	60
Vault Transformers	40	55	35	45
Overhead Switches	45	60	45	55
Non-TR Underground Cables	35	55	25	30
TR Underground Cables	40	60	40	55

It is seen from this comparison that in the Kinectrics ACA study TBHEDI's assets were assumed to last longer than the OEB's guideline values and, thus, the results of the ACA report were derived using conservative assumptions regarding assets useful lives. This means that if TBHEDI's TULs were assumed to be shorter, e.g. in line with the OEB guideline, than the ACA study would have identified more units for the inclusion in the FFAP thus resulting in higher System Renewal requirements.

Please correlate the TUL and Max UL values shown in Table 1 with the FFAP counts shown in Figure 3, i.e.: show how the year 0 replacement count for each asset class is related to the Table 1 TUL and Max UL values.?