EB-2016-0160

Hydro One Networks Inc. Transmission Application for electricity transmission revenue requirement and related changes to the Uniform Transmission Rates beginning January 1, 2017 and January 1, 2018

VULNERABLE ENERGY CONSUMERS COALITION
("VECC")
CROSS-EXAMINATION
COMPENDIUM PANEL 3
NAVIGANT BENCHMARKING
STUDY

November 28, 2016

TAB 1

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Exhibit I
Tab 1
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Ontario Energy Board (Board Staff) INTERROGATORY #095

Reference:

Exhibit B2/Tab 1/Sch1 – Section 7: Productivity Metric Selection, pg. 13

"In the [Transmission Total Cost Benchmarking Study], the median levels amongst the peer set for these metrics were found to be:

- *Total Capital Expenditures + OM&A/Gross Fixed Asset Value = 13.9%*
- *Total Capital Expenditures/Gross Fixed Assets = 6.6%*
- *Total O&M/Gross Fixed Asset Value = 4.3%"*

Interrogatory:

a) Please confirm that the median expenditure levels presented in the citation above are derived from a different set of peers than the CEA Composite Group against which Hydro One has compared its reliability performance in Exhibit B1/Tab1/Schedule 3 of this filing.

b) Please compare Hydro One's cost metrics against the cost metrics of the CEA peer group members.

Response:

a) Yes, the Transmission Total Cost Benchmarking Study done by Navigant used a different peer set than the CEA Composite Group.

b) The CEA metrics are not available to Navigant, so comparison of the CEA versus the Hydro One cost study is not possible.

TAB 2

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Association of Major Power Consumers in Ontario (AMPCO)
INTERROGATORY #064

Reference:

B2/2/1 Attachment 1

Interrogatory:

Preamble: Hydro One has, in all its rate hearings, repeatedly suggested that sustainment CAPEX and OM&A needs are significantly driven by asset condition considerations and that furthermore, asset condition is substantially driven by age.

a) In this study, did Navigant compare the relative ages of the assets in the peer group?

Response:

a) Although a direct comparison of asset age was not performed, the study did include a look at the age of various assets in terms of the percent installed by decade.

While not necessary for cost metrics that are normalised based on gross asset value, to normalise currency across U.S. and Canadian utilities, the average annual USD:CAD exchange rate was used. The USD:CAD exchange rate increased from 0.9700 in 2010 to 1.1043 in 2014.

While gross asset value has been previously shown to be the best predictor of spending levels, there are potential limitations that need to be considered when using it as a normalising factor. For example, if the age profile of the subject company is substantially different from that of the peer group it could bias the results. To address this, the peer group should include companies with a range of age profiles and the subject company should fall somewhere within that range, which is the case for this peer group and Hydro One. Another consideration is the starting gross asset value of the peer group companies, or the underlying capital efficiency. To address this, the peer group should be sufficiently broad, and consideration should be paid to the subject company's historical capital expenditures relative to the peer group. In this case, Hydro One's capital expenditure has been at or below the median level of the peer group for the past five years.

TAB 3

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School Energy Coalition (SEC) INTERROGATORY #043

Reference:

B2/2/1, Attachment 2, p. 33

Interrogatory:

Please provide a table showing each of the comparators actually used in the benchmarking study, and for each, show how they meet the comparator characteristics referred to on this slide.

Response:

Table shown below:

Company	Gross Transmission Assets ($000)	Customers	Service Territory (sq. km)	KM of Transmission Lines	MWH Transmitted	Ownership*	Regulatory Regime**	Susceptible to Storms
Baltimore Gas & Electric	1,179,098,656	1,351,891	3,701	2,090	30,562,078	IOU		Yes
B.C. Hydro	5,111,155,732	1,945,599	42,370	18,508	54,637,557	Provincial		Yes
CenterPoint Energy	2,059,764,178	2,299,248	8,045	5,984	101,741,203	IOU	Open	Yes
Commonwealth Edison	3,389,679,995	3,842,198	18,388	8,656	89,977,031	IOU	Open	Yes
CPS Energy	877,775,489	771,603	2,438	2,407	26,334,008	Municipal	Open	
East Kentucky Power Coop.	569,099,123		N/A	4,728	22,790,243	Cooperative		
Kansas City Power & Light	1,297,124,005	903,776	28,838	4,273	24,731,534	IOU		Yes
Manitoba Hydro	1,055,000,000	555,760	650,000	12,800	30,000,000	Provincial		
Oncor Electric Delivery	7,005,354,033	3,310,530	86,032	25,776	114,905,829	IOU	Open	Yes
PECO Energy	1,439,589,112	1,234,338	3,379	1,757	37,501,023	IOU	Open	Yes
PPL Electric Utilities	2,408,545,384	1,400,118	26,000	8,771	40,599,247	IOU	Open	Yes
PSE&G	5,845,024,497	2,259,205	2,011	2,317	40,746,702	IOU		Yes
Southern California Edison	11,071,660,300	4,967,691	80,450	26,206	88,986,000	IOU	Open	
Tucson Electric Power	936,496,126	414,748	1,617	3,114	18,278,352	IOU		
Westar Energy	2,053,092,375	695,972	16,251	9,952	30,436,785	IOU		Yes

Witness: Ben Grunfeld

TAB 4

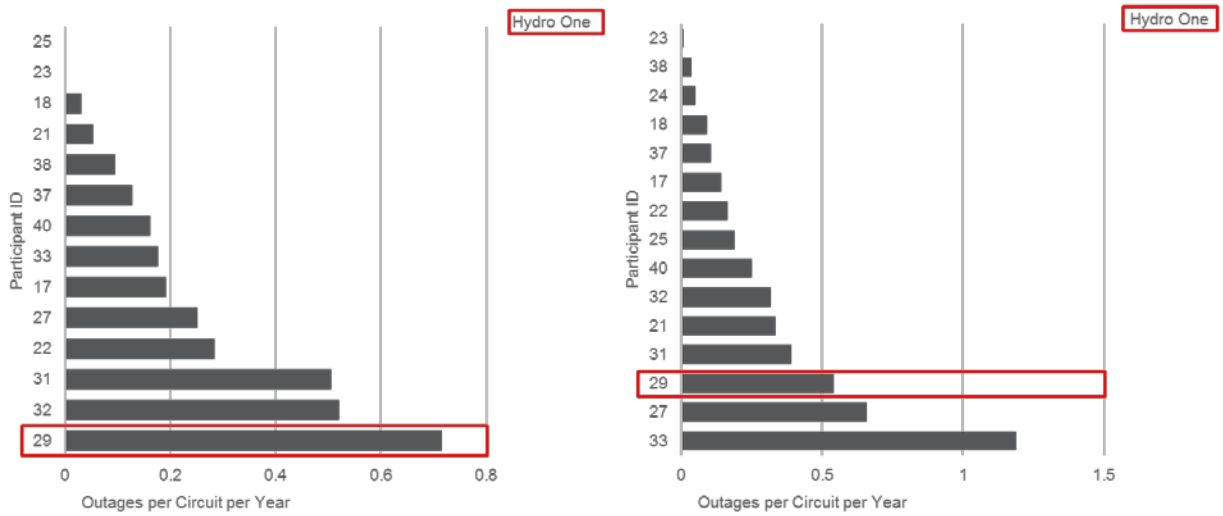
While TADS is not intended to provide determinative performance measures, it is used to quantify certain performance aspects. In addition to collecting simple transmission equipment availability, TADS collects detailed information about individual outage events that, when analysed at the regional and NERC levels, will provide data that may be used to improve reliability of the interconnected North American grid. Specific equipment outages can be linked to disturbance reports filed with the NERC, enabling better association of transmission outages with load and generation outages. Additionally, outages by one transmission owner can be tracked to outages of other transmission owners so that any relationship between multiple outages can be established. Although transmission system outages frequently do not directly affect delivery customers, both methodologies (availability and outage performance) are effective tools for gathering reliability information and for assessing overall transmission system performance.

Reliability data was gathered for Hydro One from both the CEA as well as TADS as part of this study. The data includes reported outage causes. Outage causes provide not only a look at the frequency of specific causes but also whether the event was generated within the Hydro One transmission system or by an external factor.

Using the TADS metrics, Hydro One's sustained outage frequency for the lower voltage lines (below 200kV) was the highest in the peer group (Figure 17). Even excluding worst performing circuits (Figure 18), Hydro One's sustained outage frequency for the lower voltage lines remains among the highest in the peer group.

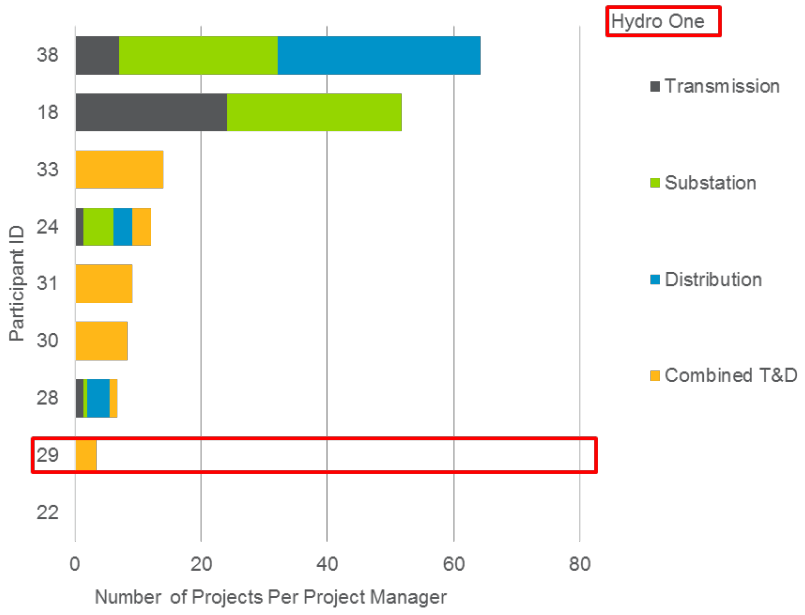
The results in Figure 17 and Figure 18 are outages per circuit element in 2014. An element would be a breaker, a transformer, a span circuit between two breakers. It does not adjust for the length of spans between breakers, which may be different lengths for different companies.

Figure 17. Element Sustained Outage Frequency for <200 kV (left) and ≥200 kV (right)



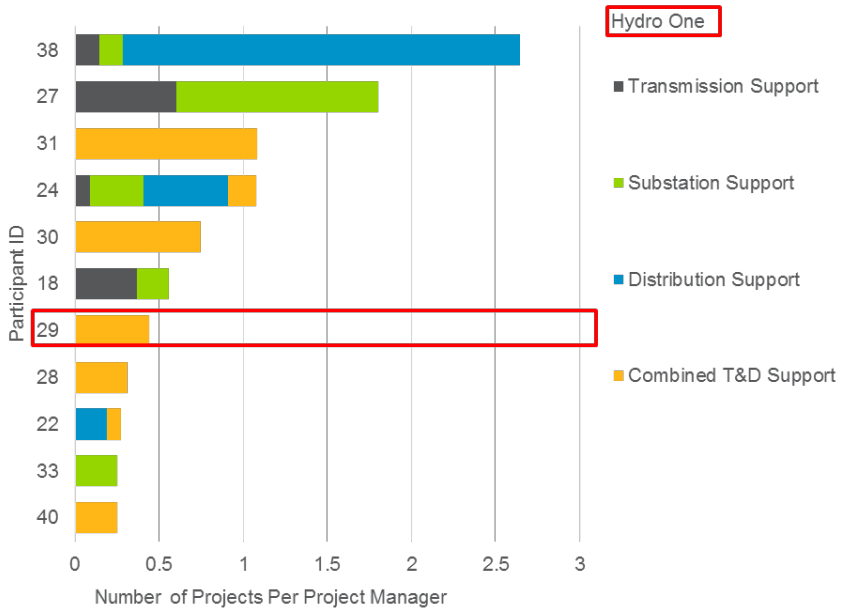
TAB 5

Figure 23. Project Manager Assignments to Projects



The comparatively high number of project managers per capital project might positively influence the effectiveness of the company's project managers. However, the project managers must also complete the tasks normally assigned to support resources (cost analysts, schedulers, material coordinators, contract managers, etc.), which takes them away from the focused management of their projects and programs. As shown in Figure 24, Hydro One project managers do not have as many support resources as project managers at other utilities.

Figure 24. Number of Support Staff per Project Manager



TAB 6

4. RECOMMENDATIONS

Hydro One performs well relative to the peer group utilities and maintains low cost in many areas. However, there are several areas in which Hydro One was under-performing relative to the industry as identified through the benchmarking. These recommendations are detailed, with steps to their implementation and expected impact, in Figure 32.

Figure 32. Best-Practice Recommendations and Implementation Strategy

Issue	Best-Practice Recommendation	Impact	First Steps	Longer-Term Steps
Performance Tracking (Metrics)	Reassess and adjust performance indicators across all levels of the organisation	Reduce costs, improve performance, build culture of continuous improvement	Establish corporate goals and objectives Identify existing metrics used throughout the organisation Identify new metrics that align performance goals and objectives across the organisation	Implement standard tracking and reporting framework Incorporate performance indicators into human capital and performance management processes
Capital Project Delivery (Pipeline)	Continue building on use of external resources for engineering to create a pipeline of construction-ready projects	Full capital budget implementation, improved schedule performance	Implement a short-term initiative utilising external resources to generate a backlog of designed projects that can be released to construction on short notice and completed in the current year Maintain a project backlog totalling 20%–30% of annual capital spending	Formalise the engineering and design processes so that key milestones are clearly defined Develop engineering key performance indicators (KPIs) that measure the engineering and design process Utilise internal engineering resources as owner engineers
Expenditure Forecasts (Contingencies, Probabilities)	Manage the contingency budgets at the portfolio/ corporate level	Frees funds for other priority investment opportunities	Eliminate contingencies in individual projects and allow some spending dead-band for project managers	Develop probability weighted forecasts to inform decision-making on projects and portfolio choices
Substations Maintenance	Target a corrective maintenance spend that is ~25% of total corrective and preventative	Eventually anticipate better (lower cost) results if more is preventive than corrective	Investigate the drivers of the high percentage of corrective maintenance to see if steps could be taken through more preventive work to avoid or reduce the corrective actions	Implement a “worst performer” type of program (analogous to a “worst circuit” program for lines) to target the stations with the most corrective maintenance experienced
Administrative Costs	Work to reduce administrative costs	Eventually identify opportunities for cost reduction	Investigate the causes for the relatively high administrative (corporate and common allocated) costs	Once identified, implement programs and/or process improvements to streamline and minimise administrative costs

Issue	Best-Practice Recommendation	Impact	First Steps	Longer-Term Steps
Project Management (Resources and Process)	Allocate project management resources to improve effectiveness	Improve project cost and schedule performance	Review and adjust project management resources (schedulers, cost analysts, document managers, procurement coordinators, etc.) to provide adequate back-office support for large or complex projects Utilise project managers only for large or complex projects	Refine project management-related processes that define organisational interrelationships and establish accountability for project success
Portfolio Management (Capital Budget and Portfolio)	Formalise a rolling two-year capital budget and project portfolio and reporting framework, including projected earned value analysis	Provide the flexibility needed to reschedule projects within a two-year rolling window; improves ability to achieve planned annual investments	Develop parameters and business rules for a two-year rolling authorisation process and approval	Reinstitute earned value analysis (EVA) to measure project progress as part of a proactive project management framework Establish project management KPIs that leverage the forecasted/projected monthly cash flow and EVA
Safety (Driver)	Refresh formal driver training program	Reinforces driver safety and provides employees with focused behind-the-wheel training	Establish a preventable motor vehicle accident rate target—e.g., zero to leverage the Journey to Zero program	Track progress on driver performance, continue enhancements to programs