DISTRIBUTED RESOURCE COALITION (DRC) INTERROGATORIES

M-DRC-1

Reference: Exhibit M, pp. 36-62.

Preamble: Clearspring Energy Advisors (**Clearspring**) and Pacific Economics Group's (**PEG**) performed analysis of HOL's base total factor productivity (**TFP**) trend and stretch factor (including underlying benchmarking analysis).

a) Does Clearspring's or PEG's analysis of HOL's base TFP trend and stretch factor (and the underlying benchmarking analysis) include any adjustments or predictions concerning how distributed energy resources (**DERs**) (including energy storage, electric vehicles (**EV**s), and grid modernization) may produce total cost savings, reliability improvements, improved peak load management, or other benefits? Please explain.

b) How would you expect more widespread DERs (including energy storage, EVs, and grid modernization) to impact HOL's:

(i) base TFP trend; and
(ii) stretch factor.

Response to DRC-1:

a) PEG was engaged by OEB Staff to benchmark Hydro Ottawa's performance in managing the costs of base rate inputs (capital, materials, and services) and to calculate the productivity trend of distributors in the use of operation, maintenance, and administrative ("OM&A") inputs. Since these studies are intended for use in rate-setting, environmental costs of distributor operations and some costs that are subject to variance account treatment were not considered. We were not asked to benchmark Hydro Ottawa's reliability performance.

In both our cost benchmarking and productivity work, conservation and demand management ("CDM") expenses were removed from the cost of sampled Ontario

utilities. Customer service and information ("CS&I") expenses were removed from the costs of the sampled U.S. utilities because these expenses usually include costs of utility CDM programs, and these costs have in recent years often been substantial, greatly exceeding other CS&I costs. Costs of advanced metering infrastructure ("AMI") were included in both studies and PEG's total cost and capital cost models include an AMI penetration variable that has a positive parameter estimate. All three cost models contain a ratcheted peak demand variable and its value may be affected by DERs (negatively) and EVs (positively).

Hydro Ottawa proposes a revenue cap index (intended to escalate OM&A revenue in aggregate) which features the number of customers as the scale variable. This is a sensible choice for the IR of a power distributor, as Dr. Lowry discusses in Section 3.1 of his report.[1] Productivity indexes used to choose the X factor for such a revenue cap index would sensibly use the number of customers as the sole output measure. Electric vehicle loads were therefore not considered in the productivity calculations.

All in all, PEG's cost benchmarking and productivity research in this proceeding are not well suited for capturing net benefits of DERs. However, some of the costs and benefits of DERs are reflected in the results.

b) If DERs are used cost effectively they would likely accelerate TFP growth over time. The effect on cost performance is less clear since they could reduce ratcheted peak demand as well as cost, and costs of CDM programs are excluded from calculated cost.

[1] EB-2019-0261 Exhibit M, pp. 31-34.

M-DRC-2

Reference: Exhibit M, pp. 11, 43-44.

Preamble: The evidence notes that a recent study on the productivity trends of US power distributors was published in 2017 by Lawrence Berkeley National Laboratory (the **Berkeley Study**).

In the Berkeley Study, PEG calculated multifactor productivity index (**MFP**) trends of a large sample of US power distributors. PEG reported TFP trends of 0.45% for the full 1980-2014 sample period and of 0.39% for the more recent 1996-2014 sample period.

In testimony for the Massachusetts Attorney General's office (the **Massachusetts Testimony**), PEG reported a TFP trend of 0.33% for a large sample of U.S. power distributors over the 21 years from 1997 to 2017.

a) Please file a copy of the Berkeley Study.

b) Please file a copy of the Massachusetts Testimony.

c) HOL estimates in Exhibit 2, Tab 4, Schedule 3, Section 8.1.6.4 that, based on provincial EV per capita rates, Ottawa will have 2,959 EVs, as of 2018. By the end of 2019, this number is projected to rise to 4,832, a 63% increase. If trends continue, by 2039, the number of EVs within Ottawa is forecasted to grow to 511,332 and EVs will make up 66% of all light vehicles in Ottawa.

Based on the conclusions of the Berkeley Study and the Massachusetts Testimony, please provide your best directional estimate of the impacts of these EV trends and projections on:

(i) HOL's X factor (base TFP trend and stretch factor), if any; and

(ii) any alternative capital factor (**C factor**) approach.

Please explain your response.

Response to DRC-2:

a) Please see our response to SEC-4 (Exhibit L/Tab 4/Schedule 4) for a copy of the requested Berkeley Lab report.

b) Please see Attachment 6 of the OEB Staff IRs filed May 8, 2020 and referenced in 1-OEB-36 for a copy of the requested Massachusetts testimony.

c) Hydro Ottawa has proposed to operate under a revenue cap index with a customer growth scale escalator. It makes sense then to use the number of customers as the scale variable in any X factor study. The effect of growing electric vehicle loads on the X factor is therefore likely to be minor.