EB-2026-0056
London Hydro 2027 Cost of Service

Interrogatories of Environmental Defence

Interrogatory # 1-ED-1

Reference: Exhibit 1, 1.3.3.3 Distribution System Plan (DSP), p. 36

"For this DSP period, higher than historical load growth is expected to continue with new customers and existing customers selecting electricity as their preferred energy choice"

Question(s):

a) Please explain the information underlying this statement. In particular, describe how London Hydro's higher-than-anticipated load growth is reflected in its revenue forecasts from new customers and its forecast costs of connecting new customers.

Interrogatory # 1-ED-2

Reference: Exhibit 1, Electrification: Hybrid Heating Pilot Results and System Impacts, p. 159

Question(s):

a) Please provide the data from the Hybrid Heating Pilot and detail any assumptions or methodologies used to evaluate the performance analysis for the right monitored homes, customer benefits, and identifying opportunities for further optimization.

Interrogatory # 1-ED-3

Reference: Exhibit 1, 1.3.3.3, (DSP – MTS-1)

Question(s):

a) Please provide a summary of which NWS were considered, and why they are not appropriate for the sustained load growth identified through Regional Planning and would not be able to ensure sufficient electrical capacity.

Interrogatory # 1-ED-4

Reference: Exhibit 1, 1.3.3.3, (DSP – System Service)

Question(s):

a) Please provide a list of all capital investments that will facilitate the installation of DERs. For each, please provide the amounts budgeted annually and over the rate term. Please also include a column explaining how the investment will facilitate DERs.

Interrogatory # 1-ED-5

Reference: Exhibit 1, p. 39, (Major Drivers of DSP, System Access)

Question(s):

a) Please provide a table showing the number of residential service upgrades in the past five years and a forecast for the rate term. Please provide columns for the total costs for service upgrades, the proportion covered by the homeowners whose service is being increased, and the proportion covered by ratepayers. Please include both capital costs and O&M costs.
b) Please discuss the feasibility and potential savings from offering customers seeking a service upgrade an alternative option via a load sharing device (e.g. circuit pauser or smart panel).[1]
c) Please discuss the feasibility and potential savings from offering customers seeking a service upgrade an alternative option via a SPAN Edge.[2]
d) If London Hydro has not considered the steps outlined in (b) and (c), will it commit to doing so? If yes, by when?
e) If customers are able to avoid a service upgrade, how does that impact the need for potential upstream capacity increases? For example, can upgrades to street-level transformers that may be needed if multiple homes upgrade their service be avoided if those service upgrades are avoided via the technologies noted above? What, if any, electricity infrastructure is built based on the size of residential services?

Interrogatory # 2-ED-6

Reference: Distribution System Plan, 5.3.1.1f Planning for Future Capacity Needs

Question(s):

a) Please confirm whether the proposed capital investments are sufficient to ensure that each London Hydro residential customer would be able to install an EV charger or electric heat pump without delay in any part of London Hydro's system. If not, please indicate where on its system there would be insufficient capacity.

[1] https://www.passivehousecanada.com/wp-content/uploads/2023/08/20231026-Electrification-without-a-service-upgrade-report.pdf
[2] https://www.span.io/blog/span-expands-beyond-smart-electrical-panels-creating-new-category-of-at-the-meter-products

b) What does London Hydro charge to facilitate upgrading a residential customer's service to 200 amps? Please provide a breakdown of the costs (e.g. application fee, disconnect/connection costs, conductor upgrade where necessary, transformer upgrade where necessary).
c) Please create a table to compare the charges in (b) to those charged by Hydro One, Toronto Hydro, and Elexicon Energy.
d) Please provide excerpts from the London Hydro conditions of service and the DSC that allow London Hydro to levy the charges/fees described above.
e) Please provide all studies and calculations justifying the fixed fees for a panel upgrade charged by London Hydro.
f) On average, how long does it take for London Hydro to carry out a service upgrade once requested by a customer?

Interrogatory # 2-ED-7

Reference: Distribution System Plan, 5.3.1.1f Planning for Future Capacity Needs

Question(s):

a) What barriers exist to installing EV chargers in existing multi-residential buildings?
b) What roles does London Hydro typically play with respect to the installation of EV chargers in the parking area of multi-residential buildings.
c) Please provide a breakdown of the number of and percent of multi-residential buildings in each rate class, with a description of how distribution charges are levied in each class (fixed, per kWh, or per kVA?).
d) If distribution system upgrades are required to allow a multi-residential building to install EV chargers, how are the costs to be paid by the building customer calculated? Is the forecast incremental revenue from the incremental load considered as part of those calculations? If not, why not. Please describe two cases: (i) with individual meters for each unit and (ii) a single meter for the property.
e) How many and what percent of multi-residential buildings have a meter for each unit?
f) What additional steps could London Hydro take to ease the connection of EV chargers in multi-residential buildings?

Interrogatory # 2-ED-8

Reference: Distribution System Plan, 5.3.3e.3 Metering Lifecycle Optimization Policies and Practices

Question(s):

a) What number and percent of residential meters does London Hydro plan to replace with an AMI 2.0 meter over the rate term?
b) What percentage of London Hydro meters already have bi-directional capabilities such that no meter replacement is needed for a customer to move to net metering?

c) Are the AMI 2.0 meters that London Hydro will be installing bi-directional such that customers moving to net metering would not need a meter replacement?
d) Would London Hydro agree to prioritize the rollout of AMI 2.0 meters for customers installing a DER by installing AMI 2.0 meters for those customers out of the AMI 2.0 meter replacement budget versus cost recovery from the customer?

Interrogatory # 2-ED-9

Reference: Distribution System Plan, 5.3.3e.3 Metering Lifecycle Optimization Policies and Practices

Question(s):

a) Please discuss emerging AMI 2.0 meters that are able to act as a DERMS (i.e. monitor and control a DER.
b) Will the London Hydro AMI 2.0 meters have that capability?
c) If that capability is still emerging, when does London Hydro believe it will be commercially available at a cost-effective price.

Interrogatory # 2-ED-10

Reference: Distribution System Plan, System Renewal, p. 234
5.2.1d Capital Investment Outcomes Assessment, p.13

Question(s):

a) How many kms of conductors does London Hydro expect to replace or install in each of the rate term years? How many transformers does London Hydro expect to purchase and install over the rate term? What is the average physical lifetime of the conductors and transformers that London Hydro is currently installing?
b) How will London Hydro ensure that the conductors and transformers that it will install over the rate term will not need to be replaced before the end of their lives due to demand growth outstripping their capacity?
c) If all homes heated with gas were to be electrified by 2050, approximately what percent of the conductors and transformers that London Hydro expects to install over the rate term would need to be replaced by 2050 to meet the increased demand (with all other aspects of London Hydro's load forecast remaining unchanged)? Please provide as much of a specific answer to this question as possible and make and state assumptions as necessary. For instance, London Hydro could assume that homes are electrified via 50% air-source and 50% ground-source heat pumps.
d) If all transportation were to be electrified by 2050, approximately what percent of the conductors and transformers that London Hydro expects to install over the rate term would need to be replaced by 2050 to meet the increased demand (with all other aspects of London

Hydro's load forecast remaining unchanged)? Please provide as much of a specific answer to this question as possible and make and state assumptions as necessary.

Interrogatory # 2-ED-11

Reference: Distribution System Plan, Deployment Plan (2027-2031), p. 242

Question(s):

a) Please provide the approximate number and percent of London Hydro customers that are unable to connect a distributed energy resource (i.e. DERs or BTM generation) due to electricity system constraints (e.g. thermal or short circuit constraints). This can be estimated, for instance, by determining the number of customers on restricted/constrained feeders. If possible, please provide the number that are unable to connect due to (i) thermal constraints, (ii) short circuit constraints, or (iii) both.
b) Please provide the approximate number and percent of customers for whom a technical restriction (e.g. short circuit or thermal constraint) on connecting a DER will be removed due to investments that London Hydro is planning.
c) Please describe the measures that London Hydro is undertaking to reduce restrictions on its customers connecting DERs.
d) Does London Hydro offer Flexible Interconnection Capacity Solutions?[3] If not, does it intend to do so in the future, and if yes, when?
e) Does London Hydro have DER Management Systems (DERMS) in place to cost effectively monitor and, where appropriate, control DERs? If not, does it intend to do so in the future, and if yes, when?
f) Does London Hydro have DER Management Systems (DERMS) in place to cost effectively monitor and, where appropriate, control micro-generation and small DERs (e.g. utilizing less expensive solutions such as PCS and TCP/IP)? If not, does it intend to do so in the future, and if yes, when?

Interrogatory # 2-ED-12

Reference: Distribution System Plan, Appendix 5.3.5

Question(s):

a) Please provide a listing of all LHI's charges to connect DERs.
b) Please provide a copy of all LHI DER connection guidelines or policies (or links thereto, if LHI agrees that the documents at said links can be referred to as evidence).
c) When does LHI require transfer trip? Why is that the threshold? If it is lower than other utilities, please justify that.
d) For each fixed charge, please provide all assumptions and calculations justifying the charge.

[3] For a description of Flexible Interconnection Capacity Solutions and their benefits see https://restservice.epri.com/publicdownload/000000003002022432/0/Product.

Interrogatory # 2-ED-13

Reference: Distribution System Plan, Appendix 5.3.5

Question(s):

a) Please provide all underlying documentation relating to NWS assessments London Hydro has undertaken with respect to each project during the rate term over $2 million. If it is not clear from that underlying documentation, please indicate each of the NWSs explored for each project and why each was rules out.
b) Has London Hydro already completed a full NWS assessment for each project over $2 million planned during the rate term? If not, please list the projects for which an NWS assessment has not yet been completed and the value of each.
c) Please provide a table with a row for each project over $2 million and columns to indicate whether each of the following NWSs was considered: demand response, energy efficiency, storage, solar/storage, and a combination of those solutions. Please also include a column to indicate whether one or more third party NWS developers or aggregators were approached to assess whether they could meet the distribution needs at a lower cost.
d) In assessing NWSs, did London Hydro approach one or more third party NWS developers or aggregators were approached to assess whether they could meet the distribution needs at a lower cost? If yes, please indicate which ones were approached and provide the documentation provided to them (e.g. a request for proposal or equivalent).
e) For each, please also indicate, if London Hydro decides that an NWS would be appropriate during the rate period, will it request OEB approval or do so via its existing funding envelopes?

Interrogatory # 2-ED-14

Reference: Distribution System Plan, Appendix 5.3.5

Question(s):

a) Please provide a copy of London Hydro's internal NWS screening methodology and any other internal NWS guidance documents.

Interrogatory # 2-ED-15

Reference: Exhibit 2, Tab 5, Schedule 1 (DSP)

Question(s):

a) Please provide a list of all capital investments that will facilitate the installation of DERs. For each, please provide the amounts budgeted annually and over the rate term. Please also include a column explaining how the investment will facilitate DERs.

Interrogatory # 3-ED-16

Reference: Exhibit 3, Customer and Load Forecast

Question(s):

a) Please list the differing assumptions and methodologies used when forecasting peak load for the purposes of billing determinants and for assessing capital needs at the various levels of the electricity system (e.g. transmission, large scale distribution, street-level distribution). For each, please ensure that assumptions regarding distributed energy resources (e.g. whether they are assumed to be generating, not generating, or otherwise).
b) If a residential customer increases their service (e.g. from 40 amp to 200 amp), how will that impact the various peak load forecasts (if at all). For the purpose of this question, please assume that the customer's peak and annual load remains the same. The purpose of this question is to determine whether efforts to help customers avoid service upgrades when electrifying heating or transportation can help reduce costs driven by peak demand in any part of the electricity system.
c) Please provide a table showing for each customer class: the number of customers, the annual demand, and the peak demand, including historical figures for the past 5 years and forecast figures for as long as is available. If possible, please include a breakdown of summer and winter peak demand.

Interrogatory # 7-ED-17

Reference: Exhibit 7 (cost allocation)

Question(s):

d) Does London Hydro agree that the higher the load factor, the more efficiently its system is being used, and the lower the cost of the distribution and transmission system on a $/MWh basis? Please explain the answer.
e) Please discuss how increased off-peak electricity demand could potentially assist in lowering volumetric distribution charges (i.e. charges based on $/kWh).
f) What additional steps could London Hydro take to increase the load factor, such as encouraging increased off-peak electricity demand (i.e. electrification of transportation, etc.)?

Interrogatory # 8-ED-18

Reference: Exhibit 8, 8.4 Retail Transmission Service Rates (RTSRS)

Question(s):

a) Please confirm whether technical losses within London Hydro's distribution system impact ratepayers. In particular, please describe how the costs associated with technical losses are recovered through distribution rates.
b) Please confirm whether London Hydro has identified opportunities to reduce these losses through its proposed capital investments.

Interrogatory # 8-ED-19

Reference: Exhibit 8, 8.4 Retail Transmission Service Rates (RTSRS)

Question(s):

c) Please provide the total transmission charges (i.e. UTRs) paid by London Hydro over the past five years and a forecast over the next five years. Please also provide a table showing, if those charges were levied on a net load basis (instead of a gross load basis) how much less would they be (approximately, $ and %)?
d) Please list the transmission system upgrades made to serve London over the past 10 years and forecast over the next 10 years. For each, please indicate the in-service date and the portion of London Hydro's system that is served by the upgrade.
e) To the extent that London Hydro's service territory is growing quickly, how can it be said that gross load billing is justified for the UTRs is pays? For example, how can it be said that that distributed generation in London Hydro territory is causing stranded assets (i.e. assets built for London Hydro customers that are unused due to load displacement).
f) Please provide excerpts from OEB document justifying gross load billing for UTRs.

Interrogatory # 8-ED-20

Reference: Exhibit 8, 8.4 Retail Transmission Service Rates (RTSRS)

Question(s):

g) Please confirm whether London Hydro proposes to charge RTSRs to its customers on a gross load basis (versus a net load basis)? Please explain why or why not.

Interrogatory # 8-ED-21

Reference: Exhibit 8, 8.4 Retail Transmission Service Rates (RTSRS)

Question(s):

h) Please confirm whether London Hydro proposes to charge rates aside from RTSRs to its customers on a gross load basis (versus a net load basis)? Please explain why or why not.

i) Please provide the total transmission charges paid by London Hydro over the past five years and a forecast over the next five years. If those charges were levied on a net load basis (instead of a gross load basis) how much less would they be (approximately, $ and %).

Interrogatory # 8-ED-22

Reference: Exhibit 8, 8.4 Retail Transmission Service Rates (RTSRS)

Question(s):

j) Please confirm whether the reduced RTSRs applicable to participating EV charging stations under the EVC Rate affect London Hydro's recovery of transmission costs from other rate classes.[4] Please identify whether any resulting difference in transmission cost recovery are allocated to other ratepayers.

Interrogatory # 8-ED-23

Reference: Exhibit 8, 8.10.2 Determination of Loss Adjustment Factors, Table 8-12

Question(s):

a) Please provide the forecast losses (kWh), losses at peak (kW), and cost of losses to customers for each year in the rate term and total over the full term. Please also provide the same information for the past five years (actuals). Please include the underlying calculations, inputs, and assumptions.

Interrogatory # 8-ED-24

Reference: Exhibit 8, 8.10.2 Determination of Loss Adjustment Factors, Table 8-12

Question(s):

a) For each of the past 10 years, and forecast for the next 5 years, please provide the following:
   i) Total distribution system losses;
   ii) Total distribution system losses as a percentage of total throughput;
   iii) Total distribution system at the peak hour;
   iv) Total distribution system at the peak hour as a percentage of the peak demand hour;
b) Please discuss what the best metric would be to assess success in cost-effectively reducing distribution system losses.

[4] Electric Vehicle Charging Rate Overview – Final Report (EB-2023-0071).

Interrogatory # 8-ED-25

Reference: Exhibit 8, 8.10.2 Determination of Loss Adjustment Factors, Table 8-12

Question(s):

a) Please describe all operational measures undertaken by LHI to cost-effectively reduce losses.
b) Please describe how LHI considers the value of loss reductions in capital projects (e.g. conductor sizing, transformer choice, etc.). Please provide all guides or documentation used by LHI. Please provide two examples of project documentation (e.g. business cases) showing how loss reductions are considered with respect to new conductors and new transformers.

Interrogatory # 8-ED-26

Reference: Exhibit 8, 8.10.2 Determination of Loss Adjustment Factors, Table 8-12

Question(s):

a) Does LHI have a financial incentive to cost-effectively reduce distribution losses? Please explain why or why not.
b) Please discuss options to provide LHI with that financial incentive to reduce distribution losses.

Interrogatory # 8-ED-27

Reference: Exhibit 8 (rate design)

Question(s):

a) Please discuss the benefits of co-incident peak demand charges in encouraging behaviour that lowers system costs, such as peak shaving and peak shifting.
b) Please provide a table listing the demand charges for each customer class and whether they are co-incident peak demand charges.
c) Would London Hydro consider increasing the proportion of the rates that it charges through co-incident peak demand charges in order to encourage more efficient use of the electricity system?