

EB-2024-0115
Hydro Ottawa 2026 to 2030 Rates Application

Interrogatories of Environmental Defence

Interrogatory # 1-ED-1

Reference: Exhibit 1, Tab 2, Schedule 3, p. 17

Question(s):

- a) Please provide a timeline for Hydro Ottawa's plans relating to a DSO model.

Interrogatory # 1-ED-2

Reference: Exhibit 1, Tab 3, Schedule 1

Question(s):

- a) Please describe how the proposed customer IR framework addresses revenue from new customers and costs to connect new customers. Please describe whether and how rates are set based on forecast revenues and costs relating to new customers and whether any true-ups are proposed. Please include a table indicating whether Hydro Ottawa bears the risks that fewer new customers than forecast connect (resulting in less revenue) and that greater new customers than forecast connect (resulting in greater connection costs).

Interrogatory # 1-ED-3

Reference: Exhibit 1, Tab 3, Schedule 1, p. 31

Question(s):

- a) Please describe how Hydro Ottawa will address situations where, mid-term, it is able to defer or avoid a capital expenditure with a NWS that involves an alternative capital investment, increased operational costs (e.g. payments to an aggregator), or a combination of both. Please provide examples with sample figures to explain the impacts.
- b) Please discuss a mechanism to reallocate costs between capital and operational budgets as necessary to reflect an NWS that reduces capital costs but increases operational costs.
- c) Please provide the criteria for NWS that can be implemented mid-term without seeking OEB approval. Please also provide the criteria or checklist that Hydro Ottawa believes would trigger the need for OEB approval. Please explain the response.

Interrogatory # 1-ED-4

Reference: Exhibit 1, Tab 3, Schedule 2 (custom scorecard)

Question(s):

- a) Will the performance metric for DER capacity be based nameplate capacity or export capacity?
- b) Is Hydro Ottawa willing to report on the nameplate capacity, export capacity, and the capacity of DERs that can be controlled by Hydro Ottawa in each rate application?
- c) Hydro Ottawa proposes to monitor scope 2 emissions. Please provide a forecast of scope 2 emissions over the rate term. Please provide an updated version that attributes the generation from all DERs located in Ottawa to Ottawa's electricity consumption (such that renewable DER expansion in Ottawa will reduce scope 2 emissions). Please also provide a table showing the GHGs avoided by incremental DERs forecast to be constructed in the Ottawa area over the rate term.
- d) Please provide a forecast of the MWh demand for power over the rate term and the MWh produced through renewable DERs in the Ottawa area over the rate term.

Interrogatory # 1-ED-5

Reference: Exhibit 1, Tab 3, Schedule 3, Attachment C, p. 23

Question(s):

- a) Hydro Ottawa indicates that all micro-generation projects "were connected within the prescribed time frame or at an agreed-upon date with the customer." Please indicate for each year the percent connected (i) within the prescribed time frame and (b) an agreed-upon date. For the five most recent projects connected on an agreed-upon date, please provide the correspondence in which the customer agreed upon an alternative date (with personal information redacted).
- b) Please provide the same information for other DER categories (small, mid-sized, large).

Interrogatory # 1-ED-6

Reference: Exhibit 1, Tab 3, Schedule 4, p. 8

Question(s):

- a) Hydro Ottawa indicates that it will install four storage systems. Please indicate the in-service dates.
- b) The storage systems will be used during contingency conditions. Can those conditions be reliably forecast? How many times a year are they expected to occur?
- c) Will Hydro Ottawa use the BESS systems for price arbitrage or to generate other value at times when contingency conditions are not forecast? If not, why not, and would Hydro Ottawa consider securing this additional value?
- d) If known, please identify the firm that Hydro Ottawa intends to contract with to purchase the BESS and operate the BESS.

Interrogatory # 1-ED-7

Reference: Exhibit 1, Tab 4, Schedule 1

Question(s):

- a) Does Hydro Ottawa survey its customers regarding the likelihood that they will purchase a cold climate heat pump in the near future? If yes, please provide the results. If not, why not, and is Hydro Ottawa willing to do so in the future? For an example of survey questions, see the Burlington Hydro customer engagement survey.
- b) Please summarize the results of all surveys on EV adoption and compare those to the EV adoption assumptions underlying Hydro Ottawa's load forecast.

Interrogatory # 2-ED-8

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

Question(s):

- a) Please provide all underlying documentation relating to NWS assessments Hydro Ottawa 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 ruled out.
- b) Has Hydro Ottawa 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 Hydro Ottawa 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 Hydro Ottawa decides that a NWS would be appropriate during the rate period, will it request OEB approval or do so via its existing funding envelopes?

Interrogatory # 2-ED-9

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

Question(s):

- a) These questions concern the proposed system access spending, including the spending to connect new housing developments. Please provide a table showing the average connection costs per lot for residential developments. Please provide a breakdown showing the average costs for developments with and without gas heating. Please include the full costs, including the amounts that will be included in rate base and the amounts that will be covered by the developer. Please provide the information based on the previous 5 years of connections. If that is not feasible, please select a feasible timeframe.
- b) Please provide a figure comparing the results in (a) to the figures on page 14 of the following PwC report prepared for the OEB:
<https://www.oeb.ca/sites/default/files/uploads/documents/reports/2024-10/Report-Back-to-Minister-on-System-Expansion-for-Housing-Developments-20241021.pdf>.
- c) Please discuss additional steps that Hydro Ottawa could take to fulfill the Ontario Government's goal of reducing the cost of electrical connections for housing developments. Please address, in particular, steps that could be taken to reduce the costs of all-electric developments (i.e. those without gas heating).

Interrogatory # 2-ED-10

Reference: Exhibit 2, Tab 5, Schedule 1, (DSP – DER connection capacity)

Question(s):

- a) Please provide the approximate number and percent of Hydro Ottawa 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 Hydro Ottawa is planning.
- c) Please describe the measures that Hydro Ottawa is undertaking to reduce restrictions on its customers connecting DERs.
- d) Does Hydro Ottawa offer Flexible Interconnection Capacity Solutions?¹ If not, does it intend to do so in the future, and if yes, when?
- e) Does Hydro Ottawa 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 Hydro Ottawa 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-11

¹ For a description of Flexible Interconnection Capacity Solutions and their benefits see <https://restservice.epri.com/publicdownload/000000003002022432/0/Product>.

Reference: Exhibit 2, Tab 5, Schedule 1, (DSP – general plant, buildings)

Question(s):

- a) Whenever Hydro Ottawa is replacing fossil fuel heating equipment, it is replacing it with electric heat pumps (per EB-2023-0195, 1B-ED-3). Is Hydro Ottawa planning and committing to do the same? If yes, the remaining parts in this question need not be answered.
- b) Please provide a table listing each building owned by Hydro Ottawa, how they are heated, their approximate annual gas consumption, the age of any fossil fuel heating equipment, the approximate life left in any fossil fuel heating equipment, the annual fossil fuel costs (all inclusive, including commodity, delivery, and fixed charges), and the annual incremental electricity costs that would arise were the fossil fuel equipment with an appropriate electric heat pump.
- c) Please provide a table showing all fossil fuel heating equipment in its buildings that is at the end of its expected useful life or will reach the end of its useful life within the rate term. For each piece of equipment, please indicate whether Hydro Ottawa expects to replace it with fossil fuel or electric equipment, and why.

Interrogatory # 2-ED-12

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

Question(s):

- a) How many kms of conductors does Hydro Ottawa expect to replace or install in each of the rate term years? How many transformers does Hydro Ottawa expect to purchase and install over the rate term? What is the average physical lifetime of the conductors and transformers that Hydro Ottawa is currently installing?
- b) How will Hydro Ottawa 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 Hydro Ottawa expects to install over the rate term would need to be replaced by 2050 to meet the increased demand (with all other aspects of Hydro Ottawa'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, Hydro Ottawa 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 Hydro Ottawa expects to install over the rate term would need to be replaced by 2050 to meet the increased demand (with all other aspects of Hydro Ottawa'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-13

Reference: Exhibit 2, Tab 5, Schedule 1, (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 (e.g. new conductors or transformers) and O&M costs (e.g. costs to de-energize and energize the home).
- 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).²
- c) Please discuss the feasibility and potential savings from offering customers seeking a service upgrade an alternative option via a SPAN Edge.³
- d) If Hydro Ottawa 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-14

Reference: Exhibit 2, Tab 5, Schedule 1, (DSP, system access) also Exhibit 8 (service charges)

Question(s):

- a) Please confirm whether the proposed capital investments are sufficient to ensure that each Hydro Ottawa residential customer would be able to install an EV charger or electric heat pump without delay in any part of Hydro Ottawa's system. If not, please indicate where on its system there would be insufficient capacity.
- b) What does Hydro Ottawa 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 Alectra, Toronto Hydro, and Elexicon Energy.
- d) Please provide excerpts from the Hydro Ottawa conditions of service and the DSC that allow Hydro Ottawa to levy the charges/fees described in (b).
- e) Please provide all studies and calculations justifying the fixed fees for a panel upgrade charged by Hydro Ottawa.

² <https://www.passivehousecanada.com/wp-content/uploads/2023/08/20231026-Electrification-without-a-service-upgrade-report.pdf>

³ <https://www.span.io/blog/span-expands-beyond-smart-electrical-panels-creating-new-category-of-at-the-meter-products>

- f) On average, how long does it take for Hydro Ottawa to carry out a service upgrade once requested by a customer.

Interrogatory # 2-ED-15

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

Question(s):

- a) Please provide a table showing, for each year from 2025 to 2029, the forecast number of new connections, the forecast contribution to co-incident system peak demand (summer and winter) for those that are gas heated, the forecast contribution to co-incident system peak demand (summer and winter) for those that are electrically heated, the forecast total demand for those that are electrically heated and those that are gas heated.
- b) Please provide the information requested in (a) but for the most recent year of historical data.
- c) Please provide a list of all expected connection requests during the rate period, the forecast peak (summer and winter) and annual demand of each, and how each is forecast to be heated.
- d) If all new construction in Ottawa over 2025 to 2029 were to be heated with efficient heat pumps (i.e. no fossil fuels), would Hydro Ottawa be able to provide the required electrical service? If not, what would the shortfall be and how would it arise?
- e) If all of the new construction in Ottawa over 2025 to 2029 that is expected to be heated by fossil fuels were to switch to heat pumps instead, approximately (i) how much additional revenue would Hydro Ottawa collect from those customers due to incremental demand (nominal lifetime and NPV), and (ii) approximately how much additional cost would Hydro Ottawa have to invest in its system that would not be covered by contributions in aid of construction from the connecting customers?
- f) Please provide a sample of the Appendix B DCF calculations for a typical new condominium construction with geothermal heating versus gas heating? Please indicate (i) the electricity connection capital costs for each heating scenario and (ii) the 25-year revenue offset for the connection costs under Appendix B (i.e. how much more distribution revenue would be paid and thus be used to offset the contribution in aid of construction).

Interrogatory # 2-ED-16

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

Question(s):

- a) If customer connection costs are higher than forecast, how would Hydro Ottawa manage the cost?
- b) Please confirm that DSC allows utilities to apply a longer revenue horizon beyond the standard horizon for calculating contributions in aid of construction. Has Hydro Ottawa ever done this? Would Hydro Ottawa consider doing this where the customer implements technology that lowers its impact on the system peak (such as geothermal, which lowers summer cooling requirements)?

- c) Please compare the co-incident peak summer electricity demand from a typical commercial or residential tower that is cooled with geothermal versus traditional air conditioning.
- d) Please provide the 20 highest winter demand hours and summer demand hours for each of the past five years for Hydro Ottawa's system, including the date, hour, and demand.
- e) On average, what is the peak demand on Hydro Ottawa's system in the summer versus the winter?

Interrogatory # 2-ED-17

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

Question(s):

- a) What barriers exist to installing EV chargers in existing multi-residential buildings?
- b) What roles does Hydro Ottawa 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 Hydro Ottawa take to ease the connection of EV chargers in multi-residential buildings?

Interrogatory # 2-ED-18

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

Question(s):

- a) What number and percent of meters does Hydro Ottawa plan to replace with an AMI 2.0 meter.
- b) What percentage of Hydro Ottawa 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 Hydro Ottawa will be installing bi-directional such that customers moving to net metering would not need a meter replacement?
- d) Would Hydro Ottawa 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-19

Reference: Exhibit 2, Tab 5, Schedule 1, p. 103 (DSP)

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 Hydro Ottawa AMI 2.0 meters have that capability?
- c) If that capability is still emerging, when does Hydro Ottawa believe it will be commercially available at a cost-effective price.

Interrogatory # 2-ED-20

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

Question(s):

- a) Hydro Ottawa is predicting significant increases in customer connection costs and capacity upgrades. These upgrades will presumably be accompanied increased revenue in the future from new customers. Please quantitatively assess the degree to which the increased costs for connections and capacity upgrades (p. 95 & 104) will be offset in future years by load and revenue growth (both within and beyond the rate term).

Interrogatory # 2-ED-21

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

Question(s):

- a) Please explain how the forecast of increasing non-renewable electricity generation capacity at Exhibit 2, Tab 5, Schedule 4, p. 294 is consistent with the Clean Electricity Regulations.
- b) At Exhibit 2, Tab 5, Schedule 4, p. 299, Hydro Ottawa states that it “is actively pursuing the solutions above to remove the short circuit restrictions on 36 feeders and the thermal restriction on 13 feeders, in order to accommodate new DERs.” Please provide the completion date for each of the solutions, broken down by the feeder being targeted.

Interrogatory # 2-ED-22

Reference: Exhibit 2, Tab 5, Schedule 4, Attachment F (DSP, decarbonization study)

Question(s):

- a) Please provide a table and a chart showing the share of residential energy use (MWh) and residential heating energy demand (MWh) served by electricity, RNG, and fossil gas for each of the scenarios in the Decarbonization Study and the figures underlying or implied by Hydro Ottawa’s load forecasts. Please also provide the same figures for buildings as a whole. Please annual figures for the time period of the decarbonization study.

- b) Please provide a table and a chart showing the heating type breakdown (heat pumps, gas furnaces, etc.) for each of the scenarios in the Decarbonization Study and the figures underlying or implied by Hydro Ottawa's load forecasts. Please annual figures for the time period of the decarbonization study.

Interrogatory # 2-ED-23

Reference: Exhibit 2, Tab 5, Schedule 4, Attachment F (DSP, decarbonization study)

Preamble: We ask for this interrogatory to be separately answered by Hydro Ottawa and Black and Veatch.

Question(s):

- a) Please confirm that the Cost-Effective Pathways Study prepared for the Ontario Government⁴ used a cost optimization model to assess the most cost-effective pathways to decarbonize the province.
- b) Does Hydro Ottawa agree that this study prepared for the Ontario Government is credible?
- c) Please confirm that the most cost-effective pathway to reach net zero resulted in almost a complete elimination of gas as a source of energy for residential customers (as shown on page 56).
- d) Please compare this cost-optimal pathway with the forecasts used by Hydro Ottawa.

Interrogatory # 2-ED-24

Reference: Exhibit 2, Tab 5, Schedule 4, Attachment F (DSP, decarbonization study)

Preamble: We ask for this interrogatory to be separately answered by Hydro Ottawa and Black and Veatch.

Question(s):

- a) Please confirm that the Canadian Climate Institute used a cost optimization model to assess the most cost-effective pathways to decarbonize the country and each province.⁵
- b) Does Hydro Ottawa agree that this study is credible?
- c) Please confirm that this study concludes that the most cost-effective path to net zero would result in a 96% decline in gas use in Ontario (see page 17).
- d) The study concludes as follows: "Feedstock constraints are an important limiting factor for biomethane production. Recent studies estimate that, given current feedstock availability and existing production technologies, Canada could feasibly produce between 90 and 218 petajoules of biomethane per year (Abboud et al. 2010; Kelleher Environmental 2013; Stephen et al. 2020). This is equivalent to only 2 to 5 per cent of Canada's total 2021 gas demand (CER 2023)." (p. 30) Does Hydro Ottawa and its experts agree?
- e) Please comment on the following conclusion from this study: "Likewise, low-carbon gases like hydrogen and biomethane will not serve as replacement fuels on a scale that can justify

⁴ <https://www.ontario.ca/files/2025-06/mem-cost-effective-energy-pathways-study-for-ontario-en-2025-06-10.pdf>

⁵ <https://climateinstitute.ca/wp-content/uploads/2024/06/Heat-Exchange-Report-Canadian-Climate-Institute.pdf>

continued gas network expansion. Our modelling and numerous other studies find that these gases are either too scarce or too costly to heat more than a small fraction of Canada's buildings, and are instead taken up by other sectors such as heavy industry. Even under lower-cost assumptions for these fuels, electrification of building heat still dominates." (p. III)

- f) Please provide a chart or table comparing the conclusions in this report on the role of electricity in providing building heat versus Hydro Ottawa's forecasts and the scenarios in the Decarbonization Report.

Interrogatory # 2-ED-25

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

Question(s):

- a) How many Hydro Ottawa customers have EVs?
- b) How many Hydro Ottawa customers have EVs that are capable of bi-directional charging?

Interrogatory # 2-ED-26

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 # 2-ED-27

Reference: Exhibit 2, Tab 5, Schedule 7

Question(s):

- a) Please explain and elaborate on the following paragraph on page 135: "Furthermore, the AMI 2.0 system's interoperability supports the integration of DERs like solar panels and battery storage. By seamlessly communicating with these DERs, Hydro Ottawa can monitor and optimize their performance, enabling a more dynamic and flexible grid that can adapt to changing energy demands and supply conditions. This integration is key to supporting decarbonization by facilitating the adoption of renewable energy sources and enabling greater customer participation in energy programs." Please include example use cases and the role of AMI 2.0 in cost-effective DERMS.

Interrogatory # 3-ED-28

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 # 4-ED-29

Reference: Exhibit 4 (DER facilitating costs)

Question(s):

- a) Please provide a list of all forecast operating expenses 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 line item will facilitate DERs.

Interrogatory # 7-ED-30

Reference: Exhibit 7, Tab 1, Schedule 3 (standby rates)

Preamble: These questions explore potential alternatives on the current/proposed standby rates with the aim of encouraging DERs that lower total system costs. An alternative could be applied to all standby customers or just new customers with load displacement.

Question(s):

- a) What alternatives has Hydro Ottawa considered to charging standby rates?
- b) Please discuss the pros and cons of charging coincident demand charges to all customers instead of the current/proposed standby charges (see EB-2015-0043, Staff Discussion Paper, March 31, 2016 for details).

- c) Please discuss the pros and cons of charging a Capacity Reserve Charge as described in Ontario Energy Board, Staff Report to the Board, *Rate Design for Commercial and Industrial Electricity Customers*, EB-2015-0043 (February 21, 2019).
- d) Please discuss the pros and cons of a Capacity Allocation approach (i.e., Capacity Contracted for capacity) where the load customer would pay the Capacity Allocation each month and would pay a ratchet charge if they ever consume above that. The ratchet would also increase the Capacity Allocation for some time period (e.g., 12/24/36 months) to further incentivize the customer to not overconsume during peak demand periods.

Interrogatory # 7-ED-31

Reference: Exhibit 7, Tab 1, Schedule 3 (standby rates)

Preamble: These questions explore potential variations on the current/proposed standby rates with the aim of encouraging DERs that lower total system costs. A variation could be applied to all standby customers or just new customers with load displacement.

Question(s):

- a) Please discuss the feasibility and pros and cons of only charging standby rates to the extent that a customer's demand exceeds their contracted demand at the time of the coincident system peak. Please discuss how this could encourage customers to refrain from conducting maintenance or other downtime at the time of the distribution system peak.
- b) Please analyze three customers subject to standby charges. Please select the one with the largest DER, the smallest DER, and the mid-size DER.⁶ For each, please indicate how much they paid in standby charges annually for the past three years. For each, please indicate the number of instances in which backup service was utilized (i) outside of the time of distribution system peak and (ii) at the time of distribution system peak.
- c) Please discuss other methods that could be used to encourage customers to refrain from conducting maintenance or other downtime at the time of the distribution system peak. Similarly, please discuss other adjustments to Hydro Ottawa's standby rates proposals that would ensure they are charged only where there is a contribution to the system peak.
- d) If Hydro Ottawa were to wish to pilot alternative approaches to standby rates with a small number of new DER customers without rolling out those approaches across the full customer base, what regulatory approvals would be required in this proceeding to allow for the deviations from the standard rate structure required to said piloting? Please provide details.

Interrogatory # 7-ED-32

Reference: Exhibit 7, Tab 1, Schedule 3 (standby rates)

Question(s):

⁶ If necessary to assure anonymity, please randomly select examples from the top quartile, bottom quartile, and middle quartiles.

- a) Please provide a table for the past five years and forecast for the next five years showing the revenue generated from standby rates. For at least the historic figures, please provide a breakdown by the type of charge.
- b) How many customers are subject to standby rates? How many customers with DERs larger than 500 kW are not subject to standby rates?
- c) Please provide a breakdown of the customers subject to standby rates (both # and MW capacity) by generator type (e.g. solar, gas co-generation, battery, gas other, etc.).

Interrogatory # 8-ED-33

Reference: Exhibit 8, Tab 1, Schedule 2, p. 6 (fixed/variable split)

Question(s):

- a) Please provide a table showing the proposed fixed monthly service charges and the ceiling (Minimum System with PLCC Adjustment) by rate class (excluding the residential rate class) for each year in the rate term. Please also provide the same information for the past five years (actuals).
- b) Is Hydro Ottawa's proposal with respect to the fixed monthly service charges the same as was ordered by the OEB in the previous Hydro Ottawa rebasing decision? Please explain.
- c) If Hydro Ottawa's proposals with respect to the fixed monthly service charges differ from what was ordered by the OEB in the previous Hydro Ottawa rebasing decision, please provide the same information provided in response to Environmental Defence interrogatories and undertaking requests relating to the fixed monthly service charge, but adding updated actual figures and updated forecasts for the years within the rate term. (We wish to avoid causing Hydro Ottawa to undertake unnecessary work, so if you are unsure whether this detail is required in light of Hydro Ottawa's proposals, please contact counsel for Environmental Defence.)
- d) Please provide all underlying calculations and studies justifying the fixed and variable rates for standby power.

Interrogatory # 8-ED-34

Reference: Exhibit 8, Tab 2, Schedule 1 (RTSRs etc.)

Question(s):

- a) Please provide the total transmission charges (i.e. UTRs) paid by Hydro Ottawa 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 %)?
- b) Please list the transmission system upgrades made to serve Ottawa over the past 10 years and forecast over the next 10 years. For each, please indicate the in-service date and the portion of Hydro Ottawa's system that is served by the upgrade.
- c) To the extent that Hydro Ottawa's service territory is growing quickly, how can it be said that gross load billing is justified for the UTRs it pays? For example, how can it be said that

that distributed generation in Hydro Ottawa territory is causing stranded assets (i.e. assets built for Hydro Ottawa customers that are unused due to load displacement).

- d) Please provide excerpts from OEB document justifying gross load billing for UTRs.
- e) The OEB has said that Hydro One can seek case-by-case exemptions for gross load billing. Will Hydro Ottawa consider seeking such an exemption in order to lower the UTRs that it is required to pay to Hydro One?

Interrogatory # 8-ED-35

Reference: Exhibit 8, Tab 2, Schedule 1 (RTSRs etc.)

Question(s):

- a) Please confirm whether Hydro Ottawa proposes to charge RTSRs to its customers on a gross load basis (versus a net load basis)? Please explain why or why not.
- b) If yes, please provide the following:
 - i) The breakdown of customers subject to gross load billing for RTSRs by generator type (i.e. solar, gas, etc.) for both the amount and capacity (# & MW).
 - ii) The amount that Hydro Ottawa collected annually for each of the past five years, and forecasts to collect over the next five years, that is attributable to gross load billing of RTSRs (i.e. gross load amounts minus net load amounts).
 - iii) Will Hydro Ottawa consider exemptions from gross load billing on a case-by-case basis? If yes, what criteria will it apply?

Interrogatory # 8-ED-36

Reference: Exhibit 8, Tab 2, Schedule 1 (RTSRs etc.)

Question(s):

- f) Please confirm whether Hydro Ottawa 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.
- g) Please provide the total transmission charges paid by Hydro Ottawa 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-37

Reference: Exhibit 8 (service charges) & Exhibit 2 (NWS)

Question(s):

- a) Please provide a list of all approved and proposed service charges that are related to or triggered by DER connections.
- b) Please provide a list of all charges that Hydro Ottawa levies on customers connecting distributed energy resources (i.e. BTM generation). Please divide the charges by DER

category (i.e. micro, small, medium, etc.) and include a breakdown by type of charge (application fees, meter replacement, connection impact assessments, commissioning, etc.). For each category, please indicate whether it is a fixed fee or a variable fee (i.e. payment for work at cost). For variable fees, please provide the average amount charged over a convenient period of applications (e.g. the past five years).

- c) Please provide the total amounts charged to generation connection customers in the small facility category for each year in the past five years, the kW of generation connected, and the \$/kW on average each year
- d) Please provide copies of the regulatory documents authorizing the various fees referenced in (a) and (b) and indicate the relevant section.
- e) Please provide a copy of the Hydro Ottawa interconnection procedures applicable to distributed energy resources. Please prepare a table comparing those procedures with the Interstate Renewable Energy Council's Model Interconnection Procedures (2023).⁷

Interrogatory # 8-ED-38

Reference: Exhibit 8 (service charges) & Exhibit 2 (NWS)

Question(s):

- a) What changes to its connections procedures, costs, and thresholds is Hydro Ottawa implementing (or considering to implement) in order to meet the province's DER goals and DER strategy as set out in its Integrated Energy Plan?
- b) Please confirm that Hydro Ottawa is able to treat DERs with a nameplate capacity of above 10kW as a micro-generation connection. Please provide the relevant DSC section.
- c) Is Hydro Ottawa willing to implement (or consider implementing) a policy to treat all DERs with a nameplate capacity of up to 20 kW as a micro-generation connection? Please explain, including a discussion of whether this would be directionally consistent with IREC recommendations⁸, consistent with the system impacts of smaller DERs, and improving the ratio of connection costs to total project costs for small DERs.
- d) If not, is Hydro Ottawa willing to consider otherwise raising the threshold/criteria for micro-generation connections?

Interrogatory # 8-ED-39

Reference: Exhibit 8, Tab 2, Schedule 3, Attachment B (system losses plan)

Question(s):

- a) Please estimate on a best efforts basis the reduction in losses (kWh and annual peak kW) and the savings to customers (\$) arising from Hydro Ottawa's actions taken as a direct result of its distribution system loss analysis over the rate term. Please include the underlying analysis

⁷ <https://irecusa.org/wp-content/uploads/2023/08/IREC-Model-Interconnection-Procedures-2023-FINAL-8.23.23.pdf>

⁸ <https://irecusa.org/wp-content/uploads/2023/08/IREC-Model-Interconnection-Procedures-2023-FINAL-8.23.23.pdf>

- b) Please list the actions Hydro Ottawa has taken and plans to take as a direct result of its distribution system loss analysis over the rate term. For future work, please provide the timeline.
- c) Please file a copy of the CIMA+ study report and results, along with any associated slide decks.
- d) Please provide a table comparing the (i) methodology, (ii) scope, (iii) high-level results, and (iv) recommendations of the CIMA+ study conducted by Hydro Ottawa and the CIMA+ losses study conducted by Burlington Hydro (available in its application materials at Exhibit 8, Appendix C). For any elements of the study for Burlington Hydro that were not included in the Hydro Ottawa study, is Hydro Ottawa considering whether to incorporate those in a future study?
- e) CIMA+ studied 10 of Hydro Ottawa's feeders. Will Hydro Ottawa be extrapolating the findings and recommendations to all Hydro Ottawa feeders? If yes, please explain how and the timeline.
- f) Please list the recommendations and conclusions of CIMA+ and indicate for each whether Hydro Ottawa agrees, and where applicable, will be implementing the recommendation.
- g) Hydro Ottawa's System Losses Plan includes a number of steps/actions that Hydro Ottawa states that it intends to take. Please provide a table listing each of those with a column showing the current status and the outcome, including whether implementation is complete or pending.
- h) Please estimate the percentage of losses from the primary voltage distribution lines versus elsewhere in the Hydro Ottawa system.
- i) What other incremental steps is Hydro Ottawa planning with respect to losses over the upcoming rate term?
- j) Is Hydro Ottawa open to retaining CIMA+ to conduct a review of the implementation of its recommendations?

Interrogatory # 8-ED-40

Reference: Exhibit 8, Tab 2, Schedule 3, Attachment B (system losses plan)

Question(s):

- a) Please ask CIMA+ to comment on what it would suggest potentially including in a further study during the next rate period to build on the learnings from its report to Hydro Ottawa, address any potential missing data or other gaps, and explore additional means to cost-effectively reduce distribution losses.

Interrogatory # 1-ED-41

Reference: Exhibit 8, Tab 2, Schedule 3, Attachment B (distribution loss study)

Question(s):

- a) For each of the following loss reduction measures indicated in the CIMA+ study, please indicate the staff positions that are responsible for the measure and whether additional staffing or O&M funding would assist in achieving incremental loss reductions.
- b) The CIMA+ report for Burlington Hydro notes that “Embedded Distributed Generation (DG) can offer the LDC an opportunity to improve a feeders’ voltage profile” Please discuss how inverter-based DERs can or can’t be used to improve the voltage profile or for power factor correction. Would Hydro Ottawa agree to internally study the option of contracting with customers with existing or new DERs to provide that service?
- c) Please describe how Hydro Ottawa considers losses in its procurement of conductors and transformers. Please include any internal guides or documentation relevant to that topic.
- d) Some LDCs assess alternatives with respect to conductors and transformers by comparing the all-in lifetime cost of each alternative (e.g. different sized conductors, different transformer brands) in a way that includes the forecast volume of losses arising from each alternative. Does Hydro Ottawa do this? If not, why not? If yes, please provide the internal guides or documentation that detail this.

Interrogatory # 8-ED-42

Reference: Exhibit 8, Tab 2, Schedule 3, Attachment B (system losses plan)

Question(s):

- a) Hydro Ottawa committed to endeavouring to maintain a five-year average total system loss below the target of 3.02%. Please provide what the five-year average was. Please confirm whether the figures include upstream transmission losses. For the target and the actual figure, please indicate how they were calculated and what they include. In doing so, please except the wording from the settlement agreement on the losses calculations.
- b) If it was higher, than 3.02%, please discuss any factors within Hydro Ottawa’s control that could be cost-effectively implemented to achieve lower losses.

Interrogatory # 8-ED-43

Reference: Exhibit 8, Tab 2, Schedule 3, Attachment B (system losses plan)

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-44

Reference: Exhibit 8, Tab 4, Schedule 2 (Generation Charges)

Question(s):

- a) Please provide a table showing the generation charges of Hydro Ottawa compared to those of Toronto Hydro, Alectra, and Hydro One.

Interrogatory # 8-ED-45

Reference: Exhibit 8 (rates)

Question(s):

- a) Please provide a table showing the load factor for the past five years and the forecast load factor for the next five years.
- b) Does Hydro Ottawa 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.
- c) Please discuss how increased off-peak electricity demand could potentially assist in lowering volumetric distribution charges (i.e. charges based on \$/kWh).
- d) What additional steps could Hydro Ottawa take to increase the load factor, such as encouraging increased off-peak electricity demand (i.e. electrification of transportation, etc.)?

Interrogatory # 1-ED-46

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 Hydro Ottawa 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?

Interrogatory # 1-ED-47

Reference: Exhibit 8 (rate design)

Question(s):

- a) Does Hydro Ottawa agree with the following conclusion of the following report: EB-2016-0004, Report by Dr. Stanley Reitsma, P. Eng.,⁹ :
“Though geothermal relies on electricity as an input (to power the pump), geothermal system actually reduces electricity demand in the summer, and

⁹ Dr. Stanley Reitsma, P. Eng., *Ontario's Low Carbon Future: Geothermal Heat Pumps*, March 21, 2016 (<http://www.rds.oeb.ca/HPECMWebDrawer/Record/521626/File/document>).

increases it in the winter, relative to traditional methods of heating and cooling (heating with fossil fuels and cooling with traditional AC systems). For Ontario, a summer peaking jurisdiction, a greater reliance on geothermal would reduce peaking power needs and also reduce surplus baseload generation. Coincidentally, the load profile of a geo system is similar to the production profiles of Ontario wind energy facilities.”¹⁰

“For the cooling of buildings, Geo HP’s use about half the electricity to operate compared to air source heat pumps and AC systems, and, geo’s electrical demand doesn’t spike as it gets hot outside, since the ground loop temperature remains relatively unchanged. They can reduce the “heat wave” electricity system demand spikes by up to 75%.”¹¹

- b) Does Hydro Ottawa agree that the expansion of geothermal systems would reduce peak demand on Hydro Ottawa’s system, on which distribution system capacity is based?
- c) Does Hydro Ottawa agree that geothermal systems have the capacity to provide important benefits to the electricity distribution system, especially in comparison to traditional baseboard heating?
- d) Does Hydro Ottawa agree that the benefits of geothermal systems are not reflected in the distribution costs paid by residential consumers because those charges do not vary based on coincident peak demand?
- e) Does Hydro Ottawa agree that increases in heat pumps would assist the City in achieving its GHG reduction targets?
- f) Would Hydro Ottawa agree to study the possibility of offering customers with geothermal systems a reduction in their distribution charges that would approximately reflect the benefits those customers provide to the distribution system? Assume the overall rate structure would continue to make Hydro Ottawa whole for its revenue requirement.
- g) Please provide Hydro Ottawa’s best information on the number and proportion of its customers with (i) electrical, (ii) natural gas, (iii) propane, (iv) oil, (v) wood, and (vi) other kind of space heating.

¹⁰ *Ibid.* p. 5.

¹¹ *Ibid.* p. 6.