PALIARE ROLAND
BARRISTERS

Richard P. Stephenson
T 416.646.4325 Asst 416.646.7419
F 416.646.4301
E richard.stephenson@paliareroland.com
www.paliareroland.com

File 98995

December 6, 2021

**VIA RESS FILING and EMAIL**

Ms. Christine E. Long
Registrar
Ontario Energy Board
2300 Yonge Street, 27th Floor,
P.O. Box 2319
Toronto, ON M4P 1E4

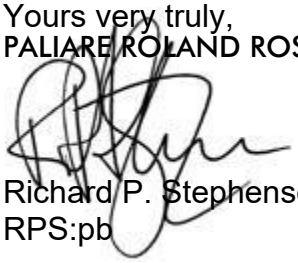
Dear Ms. Long,

**Re: EB-2021-0110 – Hydro One Networks**

Pursuant to Procedural Order No. 1 herewith the technical conference areas and time estimate of the PWU.

The PWU intends to focus on the Transmission System Plan and the Distribution System Plan. In total, the PWU estimates that is will require 30-45 minutes.

Yours very truly,
PALIARE ROLAND ROSENBERG ROTHSTEIN LLP



Richard P. Stephenson
RPS:pb

Attach.

Doc 4046346

**EB-2021-0110**

**HYDRO ONE NETWORKS Inc.**

**Joint Custom IR Distribution and Transmission Application (2023-2027)**

**POWER WORKERS' UNION INTERROGATORIES**

## 3.0 TRANSMISSION SYSTEM PLAN

**Issue 6:** **Does the Transmission System Plan adequately address customer needs and preferences?**

**Issue 7:** **Are the proposed Transmission capital expenditures appropriate?**

**Issue 8:** **Is the Transmission benchmarking evidence sufficient?**

**B2-PWU-1**

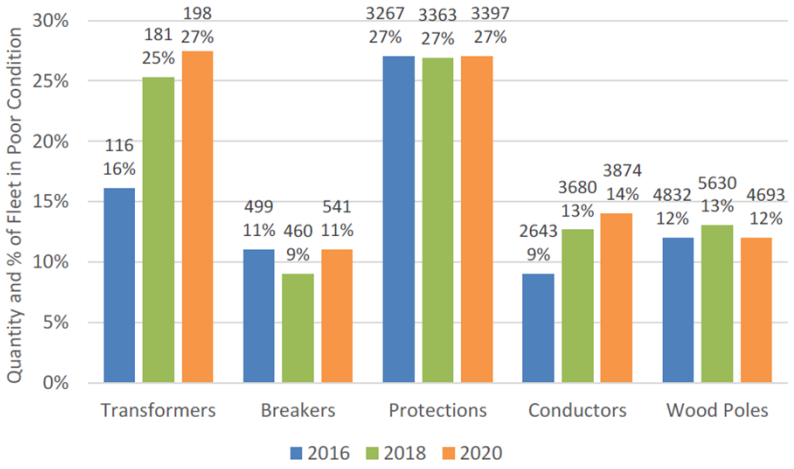
**Ref 1: Exhibit B-2-1 Section 2.1 Page 3 of 30**

**System Renewal investments have been reasonably paced to address assets that are in poor condition, have inadequate performance or are obsolete including 3.3% of the transformer fleet per year, 2.5% of the breaker fleet, 3.4% of the protection fleet per year, 1.1% of the conductor fleet per year, 3.3% of the insulator fleet per year, 2.7% of the wood pole fleet, and to coat 1.0% of the steel structure fleet per year to extend their useful life. Investments continue the replacement of obsolete and poor performing air-blast circuit breakers that are installed at critical network stations connecting hydroelectric and nuclear generators.**

**Ref 2: Exhibit B-2-1 Section 2.3 Page 4 of 8**

**During the last five years, on average Hydro One replaced 2.1% of its wood poles annually. The comparator group mean was 2 .6%. Hydro One expects to replace 2.9% of its poles per year over the next five years compared to the comparator group mean of 2/2%/ Given the age and condition of Hydro One's wood poles, "a marginally higher replacement rate is expected"**

**Ref 3: Exhibit B-2-1 Section 2.8 Page 14 of 28**




a) Ref 1 indicates that Hydro One plans to replace 2.7% of the wood pole fleet per year whereas Ref 2 states Hydro One plans to replace 2.9% of its poles per year over the next five years. Please explain the discrepancy.

b) For each asset category listed in Ref 1, provide a chart that shows the number and share (%) in total asset that are in poor condition, inadequate performance and obsolete. For guidance, please use a chart similar to the following:

| | Transformer | | Breaker | | Protection | | Conductor | | Insulator | | Wood Poles | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # | % | # | % | # | % | # | % | # | % | # | % |
| In Poor Condition | | | | | | | | | | | | |
| Inadequate Performance | | | | | | | | | | | | |
| Obsolete | | | | | | | | | | | | |

c) For each asset category listed in Ref 1, please conform whether or not the indicated annual replacements are directed at addressing assets in poor condition only OR a combination of assets in poor condition, assets with poor/inadequate performance and assets that are obsolete.

d) For the most recent 5 years with historical and forecast data, please fill out the following chart

| **Asset** | **Share of assets in poor condition (Base Year)** | **Average Annual Replacement Rate of Assets in Poor Condition** | **Share of Assets in Poor Condition** | | | | |
|---|---|---|---|---|---|---|---|
| | | | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** |
| Transformers | | | | | | | |
| Breakers | | | | | | | |
| Protections | | | | | | | |
| Conductors | | | | | | | |
| Wood poles | | | | | | | |
| | | | | | | | |

e) On best efforts basis, please fill out the chart below assuming that the proposed spending on replacements of assets in poor condition is approved by the Board

**Share of Assets in Poor Condition Assuming Replacement Plans are Approved by the Board as proposed**

| | | Expected Share of Assets in Poor Condition | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proposed Average Annual Replacement Rate | 2023 | | 2024 | | 2025 | | 2026 | | 2027 | | |
| | | # | % | # | % | # | % | # | % | # | % | |
| Transformers | | | | | | | | | | | | |
| Breakers | | | | | | | | | | | | |
| Protections | | | | | | | | | | | | |
| Conductors | | | | | | | | | | | | |
| Wood Poles | | | | | | | | | | | | |
| | | | | | | | | | | | | |

f) For each asset category above, and assuming the proposed plan is approved and the planned work is actually undertaken, please confirm whether the share of assets in poor condition at the end of 2027 will be higher or lower than the share of assets in poor condition at the end of 2022?

**B2-PWU-2**

**Ref: Exhibit B-2-1 Section 2.9 Page 6 of 16**

**2.9.2.2 SYSTEM RENEWAL**

**Table 3 - System Renewal**

| OEB Category | Historical (Previous Plan and Actual / Forecast) | | | | | | Bridge | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2020 | | | 2021 | | | 2022 | | |
| | OEB Approved | Actual | Variance | OEB Approved | Forecast | Variance | OEB Approved | Forecast | Variance |
| | $M | $M | % | $M | $M | % | $M | $M | % |
| System Renewal | 810.1 | 804.0 | -1% | 982.8 | 739.6 | -25% | 958.2 | 971.5 | 1% |

**Over the 2020-22 period, System Renewal investments are forecasted to be approximately $236M (9%) below approved levels, however the variance reflects decreased expenditures due to productivity initiatives and other adjustments (e.g., OPEB, pension and compensation directive adjustments). The variance is primarily driven by redirections across OEB categories to accommodate emerging, mandatory system growth investments and required system upgrades as well as to enable improved business outcomes through General Plant investments. The redirections primarily account for $21M variance to System Access and a $53M variance to System Service and General Plant investment categories.**

a) Please provide a list, if any, of System Renewal projects/work that have been cancelled, deferred or materially reduced as a result of the redirection of resources to System Access, System Service and General Plant categories.

## 4.0 DISTRIBUTION SYSTEM PLAN

**Issue 9: Does the Distribution System Plan adequately address customer needs and preferences?**

**Issue 10: Are the proposed Distribution capital expenditures appropriate?**

**Issue 11: Is the Distribution benchmarking evidence sufficient?**

## B3-PWU-3

## Ref: Exhibit B-3-1 Section 3.2 Page 7 of 108

**The current average age of Hydro One's distribution transformer fleet is 39 years (Figure 2). Currently, 33% of the fleet are beyond their ESL of 50 years, and an additional 17% (if no capital replacements are undertaken) will reach or exceed their ESL by 2027, which would bring the total to 50%.**

a) For the 2023-2027 plan period, please provide a chart showing the share of distribution transformer fleet that would be beyond their ESL under two scenarios: 1) Planned replacements are undertaken as proposed, and 2) No replacements are undertaken;

b) Assuming that the work plan anticipated in the application with respect to transformers replacement for 2023-2027 is actually undertaken, would the average age of transformers beyond ESL in 2027 be older or younger than the average age of transformers beyond ESL at the end of 2022? What are the average ages for each cohort at those two points in time?

c) What additional funding in capital and OM&A would be required in order to execute a workplan which would result in:

   (i) The total number of transformers beyond expected service life at the end of 2027 being no greater than the total number of transformers beyond expected service life at the end of 2022; and

   (ii) The average age of transformers beyond expected service life at the end of 2027 being no older than the average age of transformers beyond expected service life at the end of 2022.

## B3-PWU-4

## Ref: Exhibit B-3-1 Section 3.2 Page 8 of 108

**Approximately 20% (237) of Hydro One's distribution station transformers fall into the poor condition category.**

a) For each year since 2018 (5 years) prepare and provide a chart which provides (i) the average annual rate of replacement of transformers and the corresponding number and (ii) share of transformers in "poor" condition for the year;

b) What is the average annual rate of replacement being proposed for distribution station transformers in poor condition in the current application for the 2023-2027 Plan period?

c) At the proposed rate of replacement for the 2023-2027 period, please provide, on best effort basis, the number and share of transformers that would be in poor condition requiring replacement or corrective measure, assuming the proposed replacement plan is approved.
d) Assuming that the proposed capital spending for replacement is approved, would the share of transformers in poor condition at the end of 2027 be higher or lower than at the end of 2022?

**B3-PWU-5**

**Ref: Exhibit B-3-1 Section 3.2 Page 11 of 108**

**With planned replacements, Hydro One expects the number of Class 1 and Class 2 failures over the 2023 to 2027 planning period to be consistent with historical years. In the absence of planned replacements, the number of failures would significantly increase, and Hydro One would not have enough MUS to temporarily bypass the failed transformers and supply customers. Once the MUS fleet has been depleted, subsequent failures would result in customer interruptions, which would take more than 24 hours to restore load.**

a) Given the criticality of transformers, and in particular of Class 1 failures, please explain why Hydro One is not proposing an accelerated replacement?

b) What would be the incremental capital (over and above the proposed spending) that would be required to replace all transformers in poor condition?

**B3-PWU-6**

**Ref (1): Exhibit B-3-1 Section 3.1 Page 4 of 28, Table 1**

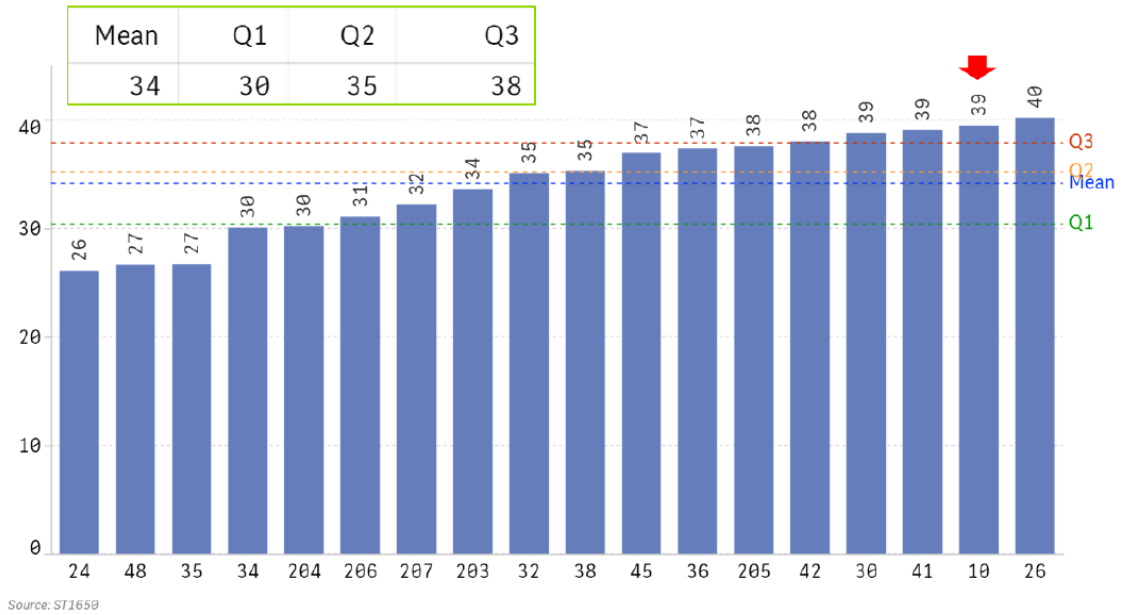
The reference indicates that the Pole Sustainment Program (D-SR-07) projects to replace 51,500 wood poles (66%) and refurbishing an additional 14,000 (18%) of poor condition wood poles.

**Ref (2): Exhibit B-3-1 Section 3.2 Page 4 of 108**

**The average age of poles is 40.2 years. There are currently 378,000 poles (23%) that are 60 years of age or older. Over the 2023 to 2027 planning period, the number of poles 60 years or older would increase to 500,000 poles (31%) in the absence of pole replacements.**

**Ref (3) Exhibit B-3-1, Section 3.3, Attachment 1, Page 12 of 24**

**Figure 9 – Average Age of Distribution Wood Poles**




**Ref (4) Exhibit B-3-1, Section 3.3, Attachment 1, Page 17 of 24**

**A final observation is that the industry as represented by the comparator group appears to be replacing or refurbishing its poles at a rate that is insufficient to sustain it over the long term. The stated expected service life for wood poles for most utilities is an average of 47 years. The average wood pole is 34 years old, with many older than that, indicating that in 13 years, the average pole will reach its expected lifespan. The comparator utilities' actions are more consistent with an expected 75-100 year lifespan for the average pole, yet it is clear to industry observers that achieving this lifespan is unlikely. The gap between the expected service life for poles and the current replacement rates is cause for concern for the industry.**

a) Please confirm if the statement in Ref (1) means that 84% of would poles in poor condition (66,500 poles) will be replaced or refurbished under the Pole Sustainment Program;

b) Does the number of poles proposed for replacement or refurbishment include red pine poles? How many red pine poles are included?

c) In Ref (3) the ESL of a wood pole is stated as 47 years. Is that the ESL that Hydro One uses for planning purposes? If yes, what is the number and share of poles that are beyond their ESL?

d) What is the significance of “60 years” as a statistical benchmark in Ref (2) to describe the age profile of Hydro One distribution’s wood poles?

e) Given that only 51, 500 wood poles that are in poor condition are planned for replacement, and that poles in poor condition don’t necessarily include all poles that are 60 years or older, what is Hydro One’s projection of wood poles 60 years or older by the end of the 2023-2027 Plan, assuming the Board approved the replacement program as proposed.

f) How many of Hydro One’s wood poles are <u>both:</u> (i) above the ESL of 47 years; and (ii) categorized as being in better than “poor” condition?

g) Given that the average age of HONI’s poles is the second highest within the comparison panel at 39 years (Ref (3)), compared to the group average of 34 years, does Hydro One believe its proposed rate of replacement would be enough to address the concern cited in Ref (4) in regard to the gap between the ESL for poles and the current replacement rates by the industry?

h) Prepare and provide a chart which provides the following information for each year of the last 5 years for which there is data:

    (i) The number of wooden poles beyond expected service life?

    (ii) The number and share (%) of wooden poles in “poor” condition;

    (iii) The average annual rate of replacement of poles in poor condition that was applied

    (iv) The number of poles replaced as part of a planned work program;

    and

    (v) The number of poles replaced outside of a planned work program.

i) For the 2023-2027 plan period, please provide a chart showing the number and share of wooden poles that would be in poor condition under two scenarios: 1) Planned replacements/refurbishments are undertaken as proposed, and 2) No replacements/refurbishments are undertaken

j) What additional funding in capital and OM&A would be required in order to execute a workplan which would result in:

(i) The total number of poles beyond expected service life at the end of 2027 being no greater than the total number of poles beyond expected service life at the end of 2022; and

(ii) The average age of poles beyond expected service life at the end of 2027 being no older than the average age of poles beyond expected service life at the end of 2022?

**B3-PWU-7**

**Exhibit B-3-1 Section 3.5 Page 63 of 66**

**Advanced Meter Infrastructure 2.0 (AMI 2.0) (D-SR-12) – Replacing AMI 1.0 (1.4 million smart meters) with a modern AMI platform. Approximately 45% of the total meter population is projected to fail by the end of the plan period.**

a) How many of the 1.4 million AMI 1.0 smart meters is Hydro One proposing to replace during the 2023 -2027 Plan?

## 7.0 OPERATIONS MAINTENANCE & ADMINISTRATION COSTS

**Issue 18: Are the proposed Transmission OM&A spending levels appropriate?**
**Issue 19: Are the proposed Distribution OM&A spending levels appropriate?**

**E-PWU-8**

**Ref: Exhibit E, Tab 2, Schedule 1, Page 2**

**"This includes a temporary, one-time reduction in Transmission OM&A in 2019 as a result of an inflationary adjustment application for that year, where Hydro One was required to manage within the approved revenue requirement (as that application did not rebase for either the required costs or the appropriate load forecast). The subsequent 2020-2022 transmission decision (EB-2019-0082) reduced the OM&A envelope for 2020 by $10.1M, which in turn similarly reduced 2021 and 2022 OM&A by virtue of the Custom IR formula."**

a) Please provide a list of projects and subsequent OM&A costs that were deferred as a result of the OEB Decision.

b) Please provide a list of projects that were deferred as a result of the previous OEB Decision and are now included in the 2023-2027 application.

c) Provide estimates, if available, of the difference in OM&A costs of projects that were deferred and are now included in the 2023-2027 application.

d) Is the recent increase in inflation – particularly with raw materials – expected to have a material impact on the overall cost of deferred work? If so, please provide a comparison of the original budget scope for deferred projects and the budget included in this application.

## E-PWU-9

## Ref: Exhibit E, Tab 2, Schedule 1, Page 7

**"Increased Sustainment OM&A costs of $18.7M necessary to: (i) address deferred stations maintenance that allowed Hydro One to continue funding PCB remediation work as planned in 2019-2022; and (ii) address security needs related to evolving security threats and NERC CIP standards (detailed in Exhibit E-02-02)"**

a) Please provide a list and OM&A cost estimate of stations work that was deferred as result of PCB remediation work and is now included in the 2023-2027 application.

## E-PWU-10

## Ref: Exhibit E, Tab 2, Schedule 2, Page 8

**"Hydro One plans to resume preventive maintenance on transmission power equipment that was deferred in 2019-2022, returning this work to historical levels."**

a) Please provide a list and OM&A cost estimate of the preventative maintenance on transmission power equipment that was deferred in 2019-2022.

b) Please provide any estimates on the whether the recent inflationary increase in materials and other cost has materially changed the overall cost of deferred work (capital and operating, if appropriate).

## E-PWU-11

## Ref: Exhibit E, Tab 2, Schedule 2, Page 3

**"From 2018 to 2022, total sustainment OM&A funding declined by 9% (from $229.4M to $208.3M). To accommodate the reprioritization of maintenance activities while remaining within the OM&A funding envelope and completing necessary PCB remediation work (PCB expenditures increased from 3% of the budget in 2018 to 8% of the budget in 2022), Hydro One had to defer certain preventive maintenance activities**

**and condition assessments on stations power equipment, as well as certain planned transformer refurbishments. Hydro One selected these deferrals by using updated asset condition data to determine which maintenance activities could be deferred for a short period of time without unduly jeopardizing the performance of Hydro One's transmission system. This deferred work must now be completed, as Hydro One's asset management approach relies on sustaining asset performance to maintain transmission system safety and reliability."**

a) Please provide a list of deferred work

    1. Stations power equipment

    2. Transformer equipment

b) Please provide details on how Hydro One defines "unduly jeopardizing" the performance of Hydro One's transmission system.

c) Please provide any estimates on the impact of deferred work on the reliability of the transmission network in terms of number and length of outages.
d) If Hydro One has not undertaken an analysis on deferred work and its reliability impact, please explain why.

## E-PWU-12

## Ref: Exhibit E, Tab 2, Schedule 2, Page 6

**"To accommodate the reprioritization of maintenance activities in order to remain within the OM&A funding envelope and support the PCB remediation program, Hydro One deferred certain preventive maintenance activities for transformers, circuit breakers, and switches. Using asset condition and maintenance data, Hydro One identified areas where specific time-based preventive maintenance activities could be deferred for a short period of time only."**

a) Please provide particulars of the deferred work in each of the following areas:

    1. Transformers

    2. Circuit Breakers

    3. Switches

b) Please describe what is meant by "short period of time only" in terms of deferring maintenance work.

c) Did any of the deferred work extend beyond Hydro One's definition of "short period of time?" If so, please provide a list of those projects and particulars of the deferrals.

d) Please provide any analysis that Hydro One has performed regarding the time-period impact of deferred maintenance work and its impact on reliability in terms of number and length of outages.

## E-PWU-13

## Ref: Exhibit E, Tab 2, Schedule 2, Page 16

**"As a result of the deferrals described above in 2019-2022, Hydro One has a backlog of preventive maintenance activities that need to be addressed through increased expenditures starting in the 2023 Test Year. These expenditures are in line with pre-2019 spending levels, notwithstanding the accumulated backlog that must be addressed."**

a) Please provide details, on an annual basis, of the cost of work that was deferred in the 2019-2022 time period and is now included in the 2023-2027 rate application;
b) Provide details on whether the costs associated with deferred work have changed from the 2019-2022 estimate to the current rate application.

## E-PWU-14

## Ref: Exhibit E, Tab 2, Schedule 2, Page 18

**"Hydro One approached the deferral of preventive maintenance activities by using updated asset condition data to identify assets for which certain preventive maintenance activities could be deferred for a short period of time with comparatively lower risk to system performance and reliability. The preventive maintenance activities that were deferred during 2019-2022 (e.g., breaker and transformer intrusive maintenance) need to be resumed to repair equipment deficiencies, and because the ongoing condition data from these activities is necessary to properly assess the need for, prioritize, and execute capital replacements. Thus, to mitigate the risk of unplanned equipment failure impacting the reliability of the transmission system, Hydro One must resume the proposed level of preventive maintenance to ensure that the necessary maintenance activities are completed in a timely manner and new capital replacements candidates are identified."**

a) Please provide details on the analysis that Hydro One performed on asset condition that allowed it to defer maintenance work that had a "comparatively lower risk to system performance and reliability".

b) Please explain how Hydro One defines an acceptable level of risk tolerance in this area;

c) Please provide details on what work was deferred compared to what work was considered a higher risk to system reliability.

d) Please provide details in the differential in impacts on system reliability work that was deferred compared to work that was considered high risk – i.e. what would the reliability impact had been if Hydro One performed all work or none of the high risk work?

## E-PWU-15

## Ref: Exhibit E, Tab 2, Schedule 2, Page 41

**"Current outsourced service providers are not able to access certain internal Hydro One systems and tools that help drive more effective and efficient triage, assessment, and response to physical and cyber alerts. Instead, these providers rely on existing Hydro One staff to provide input and perform these functions on their behalf."**

a) Please provide any estimates on the cost of Hydro One employees undertaking work on behalf of firms performing outsourced work?

b) If there are no details, please explain how Hydro One tracks this work?

## E-PWU-16

## Ref: Exhibit E, Tab 3, Schedule 2, Page 7

**"The marginal increase in the Stations Demand and Planned Corrective program is required to address an expected increase of station transformer related defects as the transformer population continues to age. As discussed in DSP Section 3.2 currently, 30% of the fleet is beyond their expected service life of 50 years, and an additional 20% will reach or exceed their expected service life by 2027 (in the absence of capital investment). Transformers that are in fair condition or poor condition which will not be addressed through capital investments must be addressed through corrective maintenance expenditures. Hydro One has been able to keep Distribution Stations Demand and Planned Corrective Maintenance OM&A expenses at a rate of growth generally in-line with inflation."**

a) Please provide any analysis on the cost impact of replacing transformers in poor condition compared to preventative maintenance;

b) Please provide any analysis on the reliability impact of replacing transformers in poor condition compared to preventative maintenance.

## E-PWU-17

## Ref: Exhibit E, Tab 3, Schedule 5, Page 14

**"To execute planned work efficiently, Hydro One Distribution expects to continue strategically balancing staffing levels with the optimized use of overtime (OT) hours to manage demand. Distribution uses OT primarily to meet work requirements that bear a limited degree of predictability. Most OT within Distribution is classified as "demand overtime" and is associated with customer demand and emergency work such as Trouble Calls. This is distinct from "planned overtime" which is the planned scheduling of additional work to meet project or work-related completion schedules while managing the size of the workforce or perform work outside of regular working hours to minimize outage impact to customers. For Distribution, demand overtime is necessary to address trouble calls, equipment failure, high priority defect corrections, and storm response. The Distribution work execution plan for the 2023-2027 forecasting period assumes OT usage will remain static. These planning assumptions are based on an analysis of types of work that result in overtime hours as well as the average observed over the four year period prior to the filing of this application."**

a) Please provide any analysis that Hydro One has undertaken on previous forecasts for overtime compared to actuals;

b) Please provide any analysis that Hydro One has undertaken comparing the difference in costs in overtime compared to hiring full-time staff, particularly now that Hydro One has a policy of temporarily re-assigning full-time employees when needed.

## E-PWU-18

## Ref: Exhibit E, Tab 6, Schedule 1, Page 17

**The results of Hydro One's planning process are captured in Table 1, which shows Hydro One's actual and planned FTEs for both Transmission and Distribution, reflecting staffing levels appropriate for the type and volume of work to be performed and contracting out portions of incremental work. A significant portion of the growth shown in Table 1 during the 2023-2027 rate period is attributable to increases in the PWU HH to manage work that is not of an on-going nature. Where necessary, Hydro One plans to add a small number of regular and casual FTEs to the existing workforce. Between 2023 and 2027, the total number of FTEs is projected to increase by only 1.4% notwithstanding the significant increase in planned work. During this period, Hydro One has prioritized maximizing output from its existing workforce, and enabling the execution of greater amounts of work with existing staff across all lines of business.**

a) Please provide a detailed cost estimate on the difference of meeting the “significant increase in planned work” using the current breakdown of casual workers compared to full-time employees.

**E-PWU-19**

**Ref: Exhibit E-6-1, Attachment 2A Page 1 of 1**

**Total compensation for Regular PWU employees has declined from $271 million in 2018 to $169 million in 2021 (budgeted).**

a). Please provide the total compensation for PWU employees as a percentage of total spend for 2018 – 2027.

b). Please provide those numbers for both the DX and TX operations.