# Hydro Ottawa Limited
# 2016 - 2020 Custom IR Application
# EB-2015-0004

# OEB Staff Interrogatories

## Exhibit 1 Administration

### 1 Staff 1. Updates

Upon completing all interrogatories from OEB staff and intervenors, please provide updated RRWFs in working Microsoft Excel format with any corrections or adjustments that the Applicant wishes to make to the amounts in the previous version of the RRWFs included in the middle column. Please include documentation of the corrections and adjustments, such as a reference to an interrogatory response or an explanatory note.

Also upon completing all interrogatories from OEB staff and intervenors please provide any updates to the following Microsoft Excel documents in working format: PILS, any Appendix 2 changes (e.g. cost allocation, rate design, and bill impacts, and so on as required), EDDVAR spreadsheet, and the updated cost allocation model reflecting the revised revenue requirement in the updated RRWFs.

### 1 Staff 2. Custom IR Annual Updates

Hydro Ottawa has proposed a Custom IR in which there will be annual updates as well as a resetting of the inflation factor in the incremental formula for OM&A and the cost of capital for the final two years of the term. OEB staff would like to assemble a comprehensive list of Hydro Ottawa's proposal for annual rate adjustments. Please explain Hydro Ottawa's annual adjustments with respect to:

i. Changes in the cost of capital
ii. Changes in working capital
iii. Changes in tax rates

iv. Changes in third party pass through charges
v. Disposition of deferral and variance accounts
vi. Forecast revenue variances arising from changes in forecast customer count
vii. Forecast revenue variances arising from changes kWh and kW forecasts
viii. Cost impact from new or changes to regional or municipal plans
ix. Changes to OEB or Government policy (load transfers, cost allocation, environment, etc.)
x. Directives from the ministry or the OEB
xi. Changes to Ontario Market Rules or OEB codes that would impact costs or revenues
xii. Changes to the Distribution System Code
xiii. Changes in accounting policies

For each adjustment proposed, including rate riders and deferral accounts, please provide:

xiv. A reference to the OEB policy or to a precedent that provides for the adjustment. If no OEB policy or precedent exists for a proposed adjustment, please describe the particular circumstances of Hydro Ottawa that justifies the need for the adjustment.
xv. A best estimate of the materiality of the variance the adjustment is designed to address.
xvi. Hydro Ottawa's estimate of the annual time and cost (including intevernor participation) of implementing these annual updates.
xvii. If Hydro Ottawa considers there are other items that should be considered for annual update, please include them in this list.

**Reference**

**Exhibit A Tab 2 Schedule 1 Page 10**

Capital investments made during the IRM years of the OEB's price cap IR plan are recognized in rate base only upon rebasing. Hydro Ottawa indicates in its July 7, 2015 presentation that the main reason it is pursuing a custom IR option is that it provides "a timely return on needed capital investments"; it goes on to note that a guiding principle of the application is that it will permit earning "an appropriate rate of return in a timely

manner to permit continued investment in capital assets". This approach has evident benefits for the shareholder relative to Price Cap IR.

i. What are the benefits of custom IR for customers?

ii. Please provide a table that shows forecast annual net income under price cap IR with the forecast capital requirements that Hydro Ottawa anticipates in this plan.

Are there investments in capital that Hydro Ottawa would not make in reliability and system service if it were not pursuing custom IR from 2016-2020 and instead were on Price Cap IR?

## 1 Staff 3. Custom IR and the Ability to Manage Within the Rates

At page 19 of the RRFE report, the Board indicates that distributors applying under the Custom IR option to demonstrate the ability to manage within the rates set, given that actual costs and revenue will vary from forecast [emphasis added]. Please indicate how Hydro Ottawa's proposed annual adjustments for variances in cost and revenue are consistent with demonstrating this ability.

i. Prior to filing this application, did Hydro Ottawa consider a set of costs and supporting forecasts for a five year term that would not have required planned annual adjustments? Why or why not?

ii. With Hydro Ottawa's proposed tiered earnings sharing mechanism, the customers would be receiving a tiered share of the earnings. In what way might the OEB's off-ramp of ± 300 basis points be altered for Hydro Ottawa's Custom IR?

## 1 Staff 4. Custom IR and Comprehensive Rate Making

**Reference**

***Report of the OEB, Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario's Electricity Distributors (EB-2010-0379)*** **(RRFE Report)**

In the RRFE Report, the OEB (p. 8) defined "targeted rate-setting" as treating OM&A and capital separately and distinguished this from "a comprehensive approach to rate-setting" (p. 9) that recognizes the interrelationship between capital expenditures and OM&A expenditures. The RRFE Report also found (p. 9) "rate-setting that is comprehensive creates stronger and more balanced incentives and is more compatible

with the Board's implementation of an outcome-based framework." Table 1 on page 13 of the RRFE Report also shows that the Custom IR option must have comprehensive (i.e. capital and OM&A) coverage:

i. Given the application of the formula of I-X, please state whether or not Hydro Ottawa's Custom IR plan is more akin to what the Board describes in the RRFE report as a targeted rather than comprehensive approach to rate-setting? Please identify specifically any incentives that Hydro Ottawa has identified that ensure that its capital expenditures are subject to the same performance and productivity incentives as OM&A would be when subject to productivity and stretch factors.

ii. Please explain in detail how the Custom IR plan recognizes the interrelationship between capital expenditures and OM&A expenditures when the formula specifies different cost recovery mechanisms for changes in capital and OM&A costs.

## 1 Staff 5. Benchmarking

**Reference**

1. **Attachment D – 1(D) Power System Engineering, Inc. Report: Econometric Benchmarking of Hydro Ottawa's Historical and Projected Total Cost and Reliability Levels**
2. **Exhibit B Tab 1 Schedule 2**

Hydro Ottawa commissioned Power System Engineering, Inc. (PSE) to conduct an econometric benchmarking study of: (1) Hydro Ottawa's past and projected total cost performance, and (2) its historical reliability performance, in reference to the utility's 2016- 2020 Custom IR application.

The conclusions are given on page 9 of PSE report and are summarized by OEB staff:

> Hydro Ottawa's average 2011 to 2013 total costs were estimated to be 37.1% below benchmark values.
>
> By 2020, Hydro Ottawa is estimated to be below benchmark values by 13.9%.
>
> Hydro Ottawa's System Average Interruption Frequency Index (SAIFI) for their 2012-2014 average is 25.6% above benchmark expectations.
>
> Hydro Ottawa's System Average Interruption Duration Index (SAIDI) for their 2012-2014 average is 7.2% above benchmark expectations.

The general trend indicated in the conclusions in the PSE report is that cost performance will decrease in the 2016 – 2020 period while reliability improves relative to the respective benchmarks. It appears that there could be a trade-off between reliability and costs.

i. What forecast increases in expenses related to reliability is Hydro Ottawa planning that improves the forecast of reliability?

ii. What measures does Hydro Ottawa have as targets that would be used for investment decisions for addressing reliability?

iii. Run-to-failure is an asset management plan option. Has Hydro Ottawa any risk policy related to acceptable levels of outage frequency and duration?

iv. In planning to improve reliability, does Hydro Ottawa have cost/reliability targets?

Ottawa Hydro was ranked against 78 US distributors for SAIDI and SAIFI performance indices in the PSE study. Major Event Days (MED) were removed from the data to help normalize the analysis. However, a number of the utilities would not experience the weather that causes near MEDs that distributors in the north east would experience from road salt, ice storms and heavy snow, such as Mississippi Power Co., Southern California Edison Co., Tampa Electric Co., and El Paso Electric Co.

v. Please provide the cost and reliability rating for distributors experiencing similar weather, as would be found from distributors in NERC's regions of: Midwest Reliability Organization (MRO) Northeast Power Coordinating Council (NPCC) and ReliabilityFirst (RF). Please provide any explanation or comment on the results and replot Figure 1-2, Figure 1-5 and Figure 1-6.

## 1 Staff 6. Scorecards

**Reference**

1. **Hydro Ottawa's RRFE Score Card**
   **http://www.ontarioenergyOEB.ca/oeb/Industry/Rules%20and%20Requirements/Electricity%20Distributor%20Scorecards**
2. **Exhibit D-1-4. Attachment 1 Balanced Productivity Metrics**

Reference 1 is Hydro Ottawa's scorecard for the period 2009 – 2013. Hydro Ottawa established few "distributor targets" in the RRFE scorecard. Similarly, Hydro Ottawa has filed in Reference 2 its own scorecard. Again targets are not provided.

i. Please provide any additional targets that Hydro Ottawa may have developed since the date of the finalization of these documents.

ii. Please state how Hydro Ottawa established the targets for system reliability in Reference 1.

iii. Is Hydro Ottawa is developing targets for the measures in both the OEB's scorecard and its own scorecard that do not have measures?

iv. Please provide details of the development of remaining targets for each scorecard and the state of progress.

Hydro Ottawa in Reference 1 has set a target range for SAIDI and SAIFI.

v. How were these ranges determined?

vi. How does this range compare to other distributors in North America?

vii. Was there any public input to the setting of the ranges?

viii. Has there been any marginal cost established in achieving reductions?

ix. Has Hydro Ottawa assessed the value of an avoided interruption to its customers, or the costs to them from temporary loss of service?

x. Has there been any analysis on diminishing returns of investment to reduce SAIDI and SAIFI?

xi. Has there been any analysis to determine the "sweet point" or optimal investment vs reliability?

xii. Was investment to improve reliability the driver for capital, or was the reliability plan fit into the capital budget.

xiii. Do critical customers have their own back-up generation?

xiv. What, if any benchmarks for the cost effectiveness of investments for improving reliability did Hydro Ottawa employ, consult or construct in the preparation of its capital plan?

## 1 Staff 7. Productivity

**Reference**

1. **Exhibit A Tab 2 Schedule 1**
2. ***Report of the OEB, Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario's Electricity Distributors (EB-2010-0379)*** **(RRFE report)**

3. **PEG Report, Productivity and Benchmarking Research in Support of Incentive Rate Setting in Ontario: Final Report to the Ontario Energy OEB, Corrected January 24, 2014**
4. **Exhibit D Tab 1 Schedule 2 Attachment D-1(A) Budget Memo**
5. **Exhibit D Tab 1 Schedule 4 Historical and Forward Looking Productivity Initiatives**
6. **Exhibit D Tab 1 Schedule 5 Attachment D-1(D) Econometric Benchmarking of Hydro Ottawa's Historical and Projected Total Cost and Reliability Levels**
7. **EB-2013-0416/EB-2014-0247 Decision Hydro One Networks Inc. March 12, 2015**

Hydro Ottawa is proposing to index its OM&A costs based on the formula I – X where I is an inflation factor and X is composed of a productivity factor and a stretch factor representing efficiency gains. Hydro Ottawa has averaged the four productivity factors submitted by experts found in Reference 3 and is proposing the average, -1.145% be the productivity factor to adjust the proposed inflation factor. On page 17 of the RRFE report, the OEB said: "The OEB has determined that the appropriate value for the productivity factor (Industry TFP) for Price Cap IR is zero." The OEB also said:

> The OEB acknowledges that achieved productivity growth in the Ontario distribution sector has likely slowed in recent years. However, the OEB does not believe it appropriate for a rate setting regime to project and entrench declining productivity expectations into the future. The productivity component of the X-factor is intended to be an external benchmark which all distributors are expected to achieve. Setting a productivity benchmark for the industry that would not encourage distributors to achieve and share productivity gains is inconsistent with the OEB's policy direction – doing so would be counter to facilitating a culture of continuous improvement.

Hydro Ottawa was categorized into Group 3 in the PEG report. Group 3 has a stretch Factor of -0.30%

OEB staff has developed the following table which compares Hydro Ottawa's proposal to an IRM application, using the inflation rate that Hydro Ottawa is proposing:

| I-X Factor | | |
|---|---|---|
| | **Proposal (%)** | **IRM (%)** |
| Inflation | 2.100 | 2.100 |
| Productivity | -1.145 | 0.000 |
| Stretch | 0.000 | 0.300 |
| IR Factor | 3.245 | 1.800 |

i. Please confirm that the table is correct. If it is not, please correct the table.
ii. Why has Hydro Ottawa proposed a productivity factor below the OEB's views on using a productivity factor below zero?
iii. Why has Hydro Ottawa chosen the average of four productivity factors, submitted by experts found in the referenced OEB report?

Regarding the PEG factors proposed by Hydro Ottawa, the OEB said on page 17, "In addition, the OEB agrees with the analysis by PEG (supported by the OM&A analysis by OEB Staff) that the 2012 TFP results appear anomalous and therefore may not be a reliable indicator of the future productivity trend." The OEB did not approve the factors.

iv. If Hydro Ottawa is categorized into group 3, why wouldn't Hydro Ottawa employ the OEB's stretch factor?
v. Has Hydro Ottawa more recent productivity or stretch factors? If so please submit them.

The purpose of Hydro Ottawa's budget memo in Reference 4 is stated to be a guideline for the preparation of 2015 – 2020 budgets and financial plans, and includes inflation rates for the period 2015 – 2020 to guide in setting the budgets. It appears that there are ground-up budgets with top down guidance for 2017 – 2020 that are not based on applying (I-X) to 2016 expenses. The budget memo also stated that productivity is as key area of focus.

vi. Does the Chief Financial Officer, have ultimate authority for ensuring that the guidelines are properly carried out?
vii. Please provide the OM&A budgets for 2017 – 2020 based on the assumed inflation rates provided in the budget memo and file, at a minimum, Appendix 2-JA Summary of Recoverable OM&A Expenses.

In Reference 7 the OEB found:

> "The OEB expects Custom IR rate setting to include expectations for benchmark productivity and efficiency gains that are external to the company. The OEB does not equate Hydro One's embedded annual savings with productivity and efficiency incentives. …It is not sufficient to embed savings in cost forecasts. …The productivity and efficiency elements allow the OEB to move away from detailed input cost assessment and focus more on utility performance. These factors provide utilities with strong incentives to continually seek efficiencies and

share expected savings with ratepayers 'up front', avoiding 'after the fact' regulatory scrutiny."

viii. Please provide the estimated the stretch factor or other productivity and efficiency index to be applied in each of the years 2016 – 2020 that would equate to the productivity or efficiency embedded in each year's forecast.

The budget memo also refers to a placeholder value of 2.5% per year vacancy allowance and constraints on hiring, compensation and benefits.

ix. What is the vacancy allowance built into the costs underpinning the revenue requirement for each of the years 2016 – 2020 that were developed following the budget memo?

## 1 Staff 8. Earnings Sharing Mechanism

**Reference**

1. **Exhibit A Tab 2 Schedule 1**
2. ***Report of the OEB Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach October 18, 2012***

Hydro Ottawa is proposing a tiered sharing of earnings described in the first reference in Table 5 – Hydro Ottawa's Earnings Sharing Proposal. In the second reference on page 19 the OEB states that a regulatory review may be initiated if the distributor performs outside of the ±300 basis points earnings dead band.

i. Please calculate the value of the additional 150 basis points of earnings for each year in the plan.

ii. What rationale has Hydro Ottawa for not sharing the first 150 basis points above the allowable ROE?

iii. What additional incentive does the retention of the first 150 basis points of earnings provide Hydro Ottawa that is not sufficiently rewarded in the rate plan? What specific actions will Hydro Ottawa perform as a result of the potential to retain additional income?

iv. Is there an additional benefit for the customer?

v. At what point of over-earnings would Hydro Ottawa expect its rates to be revisited by the OEB?

vi. Would Hydro Ottawa apply on its own initiative, or would it expect the OEB to initiate a review of the rates?

## 1 Staff 9. Customer Engagement

**Reference**

1. **Exhibit A Tab2 Schedule 1 page 8 line 11**
2. **Exhibit A Tab 3 Schedule 1 Customer Consultation Report pages 77-78**

Hydro Ottawa provided Innovative Research Group Inc. with contact information for 40,000 residential and 8,000 commercial customers to conduct a customer survey. The survey was a combination of educating the customer, having customers reflect on their personal experience with the distribution system, and having them make value judgments on trade-offs between system reliability and bill impact.

i. What has Hydro Ottawa learned about customer expectations as a result of its customer engagements?
ii. How do these expectations affect planning (e.g. are resources shifted from one area to another based on these expectations)?
iii. What elements of the Distribution System Plan (DSP) were added or modified as a result of customer engagement?
iv. What elements of the DSP may have been changed due to the fact that a considerable number of customers agreed that Hydro Ottawa should reduce its investments to lessen bill impacts?
v. How did Hydro Ottawa balance the customer responses with the drivers of the DSP?

Considering the sampling:

vi. What was the response rate for residential customers (after the eight calls or hard refusal)?
vii. Did Hydro Ottawa make any attempt to correct for non-response bias besides the sample stratification (e.g. by follow-up calls to non-responders) in the residential class?
viii. Were 8,000 general service customers contacted or were 8,000 called? What was the response rate?
ix. Did Hydro Ottawa make any attempt to correct for non-response bias in the general service class?

### 1 Staff 10. Letters of Comment

The OEB received 36 letters of comment. Most commented on the rate increase, however another area of comment was the dividend payout by Hydro Ottawa.

In regard to the rate increase and recognizing that what the customer sees in its bills is not all driven by Hydro Ottawa's revenue requirement:

i. What efforts has Hydro Ottawa made to inform the media and its customers of Hydro Ottawa's business model (its cost structure, considering partners, such as IESO, Hydro One Networks Inc. that affects the total bill for the customer)?

In regard to the dividend comments:

ii. Please state the payout ratio for Hydro Ottawa for the years 2012 – 2015.

iii. What is Hydro Ottawa's dividend payout plan for 2016 – 2020?

iv. Please provide comparative distribution utility payouts for 2012 – 2015 with A – stable ratings..

## Exhibit 2 Rate Base

### 2 Staff 11. Asset Planning - General

**References**

1. **Exhibit B Tab1 Schedule 2 page 27 Fig 1.02**
2. **Exhibit B Tab1 Schedule 2 page 23 lines 1 and 8**
3. **Exhibit B Tab1, Schedule 2 page 26, lines 1-11**
4. ***Ontario Energy OEB Report, Renewed Regulatory Framework for Electricity Distributors: A Performance-based Approach, October 18, 2012.***

Reference 2 states, "Historically, HOL has produced an Annual Planning Report (APR) which covers the four main areas of planning described above, with a 20-year outlook, summarizing the outcomes of the process described in Section 2 of this DSP. As the DSP and the Annual Planning Report share a number of commonalities, the 2014 APR has been included in Attachment B-1(B), and is referenced throughout the DSP."

Hydro Ottawa indicates that the purpose of the DSP is to consolidate Hydro Ottawa's practices as they relate to planning and execution. Typically, practices are not as

thoroughly documented as policies, and adherence to practices is not as strictly enforced as adherence to policies.

i. Please explain how the outcomes of the RRFE (Reference 4) are reflected in Hydro Ottawa's objectives.

ii. In Reference 1 are the outcomes of the RRFE intended to be captured in the box "Regulatory Compliance"?

iii. Is the DSP regarded by Hydro Ottawa as adjunct to the Annual Planning Report? If so, please explain.

iv. Please confirm whether Hydro Ottawa only has practices, or also has formal policies to govern the planning and execution of System Access, System Renewal, System Service and general Plan investments through the Asset Management process.

v. Please provide the criteria used to set the asset management objectives and related initiatives.

## 2 Staff 12. Regional Planning

**References**

**Exhibit B Tab 1 Schedule 2 Section 1.2.1.4 City of Ottawa Utility Coordinating Committee (UCC)**

Hydro Ottawa states that it meets every fall with the UCC. The UCC provides a forum for communication between invited utilities and the City of Ottawa in order to ensure safe and efficient management of the infrastructure within road allowances and other right-of-ways.

i. Please provide a summary of the outcomes of the meetings with the UCC.

## 2 Staff 13. Smart Grid

**References**

1. **Exhibit B Tab 1 Schedule 2 page 200 line 28**
2. **Exhibit B-1(C) pages 23-24**
3. **Exhibit B-1(C) page 24**
4. **Exhibit B-1(C) page 40 (Appendix C)**
5. ***Ontario Energy OEB Report, Renewed Regulatory Framework for Electricity Distributors: A Performance-based Approach, October 18, 2012.***

6. ***OEB Chapter 5 Filing Requirements for Electricity Transmission and Distribution Applications, section 5.1.1.***
7. ***OEB Report of the OEB: Supplemental Report on Smart Grid February 11, 2013***

In Reference 5, the OEB states that the objectives of the renewed regulatory framework would best be met when there is no distinction between "smart grid" and more traditional investments included in rate base. Hydro Ottawa states in Reference 1 that smart grid is, "The integration and application of real-time monitoring, advanced sensing, communications, to accommodate existing and new forms of supply, delivery, and use in a secure, reliable and efficient electric power system, from generation source to end-user."

Reference 3 states, "The OEB is currently undertaking a process to establish the regulatory framework pertaining to Smart Grid deployment. It is therefore an opportunity to provide input to their process to hopefully steer their rules in a direction that is positive towards our GTAP development. Since 2012 the OEB has created a Smart Grid Working Group, and Advisory Council, to provide guidance on Smart Grid related programs."

i. Does Hydro Ottawa consider its definition of smart grid stated in Reference 1 consistent with that of the OEB as found in Reference 5? If not, please explain.
ii. Please state any differences Hydro Ottawa has identified in the treatment of "smart grid" investments in rate base?
iii. If there is a different rate base treatment identified for "smart grid" investments, how does Hydro Ottawa generally allocate such investment to the four categories required by Reference 6?
iv. Please identify which items on the list in Reference 3 cannot be classified as system access, system renewal, system service or general plant. Explain why.
v. With regard to Reference 3, is Hydro Ottawa aware that the OEB's process for providing guidance to distributors on the Minister's Smart Grid Directive is concluded and that the guidance is provided in References 5 and 7?
vi. Please identify which of the listed projects in Reference 4 cannot be classified as system access, system renewal, system service or general plant. If they cannot please explain.

## 2 Staff 14. Performance Measures and Continuous Improvement

**References**

1. **Exhibit B Tab1 Schedule 2 page 51, line 18**
2. **Exhibit B Tab1 Schedule 2 page 53, line 3**
3. **Exhibit B Tab1 Schedule 2 page 55 lines 4 -8**
4. **Exhibit B Tab1 Schedule 2 page 56 lines 3 -7**

Reference 1 states, "HOL's objective is to improve the System Reliability Performance Indicators from year to year." In addition, OEB staff is interested in any other performance measure to encourage continuous improvement.

i. Has Hydro set any targets for its worst performing feeders index (allowing for the lags) for 2016-2020? (Reference 2)

ii. Has Hydro set any targets for 2016-2020 for the Labour Allocation index; and, the Health and Safety and Environment indicators? (Reference 3)

iii. Please indicate the extent to which asset management KPIs factor into the relevant staff's performance appraisal processes. (Reference 4)

## 2 Staff 15. Capital Expenditure Plan

Capital Expenditure Variances

**Reference**

**Exhibit B Tab 1 Schedule 2 p. 217 Section 3.4 Capital Expenditure Summary Table 3.4.1**

Some of the variances in the Reference 1 do not look correct.

i. Please review and confirm all variances.

Table of Alternate Section Headings

**References**

1. ***OEB Document Chapter 5 - Consolidated Distribution System Plan Filing Requirements*, Section 5.2 Distribution System Plans**
2. **Exhibit B Attachment B-(1)A Material Investments**

In Reference 1 the OEB states "If a distributor's application uses alternative section headings and/or arranges the information in a different order, the distributor shall demonstrate that these requirements are met by providing a table that clearly cross-

references the headings/subheadings used in the application as filed to the section headings/subheadings indicated"

ii. Please provide a cross reference table as indicated for the various section headings used in the material investment descriptions in Reference 2.

Drivers for Specific Projects

**References**

3. **Exhibit B Attachment B-(1)A Material Investments**
4. **Exhibit B Attachment B-(1)A Material Investments General Plant, Section 2.2.3 Main and Secondary Drivers**
5. **Exhibit B Attachment B-(1)A Material Investments General Plant, Section 3.2.3 Main and Secondary Drivers**
6. **Exhibit B Attachment B-(1)A Material Investments General Plant, Section 6.2.3 Main and Secondary Drivers**
7. **Exhibit B Attachment B-(1)A Material Investments System Service, Section 4.1.2.3 Main and Secondary Drivers**
8. **Exhibit B Attachment B-(1)A Material Investments System Service, Section 5.1.2.3 Main and Secondary Drivers**
9. ***OEB Chapter 5 Consolidated Distribution System Plan Filing Requirements Section 5.4.5.2*** **B1 a)**

In References 1, 2 and 3 the drivers are listed for three General Plant information technology projects, and in References 4 and 5, the drivers are listed for two System Service projects. In Reference 6 the drivers for the General Plant and System Service Investment Category are listed and described. In Reference 7 the OEB has listed the criteria to show that main and secondary drivers demonstrate that an investment is consistent with the criteria used to evaluate any material investment.

iii. In References 1, 2, 3,4 and 5 please describe how the project drivers relate to the drivers specified in Reference 6 following the guidelines in Reference 7

Risks and Mitigation of Risks for Specific Project/Programs

**References**

1. **Exhibit B Attachment B-(1)A Material Investments System Service, Section 4.1.5.2 Risks to Completion and Risk Mitigation Strategies**
2. **Exhibit B Attachment B-(1)A Material Investments General Plant, Section 6.5.2 Risks to Completion and Risk Mitigation Strategies**
3. **OEB Chapter 5 Consolidated Distribution System Plan Filing Requirements, Section 5.4.5.2 A bullet 4**

In References 1 and 2 the risks to completion of the project/program and mitigation strategies for these risks have not been detailed as described in Reference 3.

iv. Please list the risks for the completion (i.e. execution) of the project/program and how these will be mitigated.

Telecommunications Master Plan Project

**Reference**

**Exhibit B Attachment B-(1) A Material Investments System Service, Section 4.1 Telecommunications Master Plan**

In the Reference comments are made about the cost of Hydro Ottawa's current communications system. This is highlighted throughout the description by such comments as "long term financial viability of Hydro Ottawa's communications needs" (4.1.2.3), "containing future costs" (4.1.2.4), "the preferred alternative is the most cost efficient over the long term" (4.1.3.1.3) and "providing required connectivity at a drastically lower cost than the current solutions" (4.1.3.2). However, no costing information about the expected or avoided costs of the current communications system is given.

v. Please provide information about the expected and avoided costs of the current communications system and how this will provide benefits in terms of mitigating the cost of the proposed future communications network.

New Investment Planning Tool

**Reference**

**Exhibit B Tab1 Schedule 2, page 32, Lines 9-11 through to page 33, line 27**

Hydro Ottawa is implementing a new asset investment planning tool, and other new technology

vi. Please confirm when the software will be fully implemented and when its impact will be reflected in the forecasts provided.

vii. Please provide an assessment of the O&M savings referenced on lines 26-27 of page 33.

Technology-based Opportunities

**References**

1. **Exhibit B Tab 1 Schedule 2 page 202 - 203**
2. **Exhibit B Tab 1 Schedule 3 Page 16**

Hydro Ottawa is implementing an IT roadmap over a multi-year horizon.

viii. Given that Hydro Ottawa will continue to implement smart grid technologies over a five year period as indicated in Reference 1, please provide the point at which efficiencies related to this implementation will start to materialize and to what extent will they be reflected in terms of actual financial impact?

ix. Please provide an assessment of the impact of the SCADA implementation stated in Reference 1, and in particular, the expected impact on the asset management plan from the increased information to be gained from the upgraded system.

x. Please provide the total capital expenditures, by year, of the 10 year IT roadmap mentioned in Reference 1.

xi. Please state the cost for the IT roadmap, and specifically, whether Hydro Ottawa is trying to fit the project into the budget, or defining the requirements and setting the budget around those requirements.

xii. Please state the approval process and prioritising of spending that does not fit within the IT roadmap, but are required on a short term basis.

xiii. Please state when the 'Expected Outcomes' identified in Reference 2 are expected to be realised, and whether the financial impacts have been factored into the forecast.

Capital Expenditure Forecast

**References**

1. **Exhibit B Tab1 Schedule 2, Tables 3.4.1 and 3.4.2.**
2. **Exhibit B Tab1 Schedule 2, pages 219, and 220.**

OEB staff is interested in Hydro Ottawa's forecast of capital expenditures.

xiv. What inflation rate was used when developing the forecast in Reference 1?

xv. Despite the expectation of continued growth, forecast system access investments are flat as indicated in Reference 1. Please explain Hydro Ottawa's rationale for maintaining costs at a flat level over the forecasted period. Please also provide the historical variance to budget related to

system access costs, so that the reasonableness of relying on historical data can be assessed. Given the historical spending increase in Reference 2, is a long term flattening of costs reasonable?

xvi. Please confirm whether a sensitivity analysis process is undertaken with respect to projected costs.

xvii. Please explain the rationale for the decrease in system renewal costs, given comments throughout Hydro Ottawa's submission that numerous system renewal initiatives will have to occur on a continuous basis.

Substation Automation

**Reference**

**Exhibit B-1(B) 2014 Reliability Plan, Section 4.4 Substation Automation page 27**

Increased automation will bring increased monitoring to feed into Hydro Ottawa's asset management process. Reduction in investigation and response time are expected.

xviii. Please provide an assessment of whether increased monitoring will identify additional maintenance requirements and will increase O&M costs

xix. Please confirm what is meant by ""will eventually lead to a significant reduction…" when is the reduction expected, and has this reduction been quantified?

Long term Investment Strategy

**References**

1. **Exhibit B-1(B) 2014 Annual Planning Report, pages 16 & 19**
2. **Exhibit B-1(B) 2014 System Capacity Plan, page 3**

The Annual Planning Report contains many recommendations related to asset investments, but does not delineate these between periods. Reference 1 indicates that annual investment increases of 5% are required to 2033 and $72 million is required to manage failures and replace equipment. Reference 2 indicates a $230 million requirement over a 20 year period commencing in 2014.

xx. Please reconcile the (a) 5% to 2033, (b) $72 million between 2014 and 2024, and the (c) $230 million over 20 years. Please state the amount included in the 2015-2020 forecasts.

xxi. Please confirm the level of capital projects that Hydro Ottawa is capable of delivering, given current resource levels, and in particular, bearing in mind

the labour resource constraints outlined throughout Hydro Ottawa's application.

xxii. Please provide the implications on asset health of deferring the recommended spend by 5 years.

## 2 Staff 16. Asset Management

Asset Management Process Components

**Reference**

**Exhibit B Tab 1 Schedule 2 Distribution System Plan Figure 2.1.2 Asset Management Consequence Matrix**

Hydro Ottawa states: "HOL's Asset Management Process, as shown in Figure 2.1.2, is a function of 5 difference 2 phases:

1) Project Concept Definition (Section 2.1.2.1)

2) Project Evaluation (Section 2.1.2.2)

3) Project Prioritization (Section 2.1.2.3)

4) Project Execution (Section 2.1.2.4)

5) Risk Assessment & Review (Section 2.1.2.5)"

i. Please provide an asset management flow chart showing supporting asset management activities connected with the above five phases and indicate in this asset management flow chart the process which would be followed for assessment and prioritization of "backlogs" i.e. work not completed in the year, legacy work, emergency and unplanned work, etc.

ii. Please provide Hydro Ottawa's organization flow chart which supports the asset management process and clarify whether there is a separate asset management department within Hydro Ottawa with staff dedicated for asset management work. Include the positions and the responsibilities with respect to the asset management activities and interrelations within the Hydro Ottawa organization as a whole

iii. Hydro Ottawa and Hydro One Networks Inc. systems are interconnected. Please clarify whether there is a relationship between Hydro Ottawa's aging infrastructure management process and that of Hydro One. If there is such relationship, please explain the process of work prioritization

iv. Please clarify whether there should be a Step 6 "Return to Step 1" if the defined work is not started or not completed.

Project Concept Definition

**References**

1. **Exhibit B Tab 1 Schedule 2 Table 2.1.1 Driver Descriptions**
2. **Exhibit B Tab 1 Schedule 2 Table 2.2.5 Assets Demographics and Condition**
3. **Exhibit B Tab 1 Schedule 2 Table 2.2.6 Asset Management Strategy**
4. **Exhibit B Tab 1 Schedule 2 page 89**
5. **Exhibit B Tab 1 Schedule 2 page 63**

Hydro Ottawa states in Reference 5: "The Project Concept Definition phase gathers all internal and external drivers to describe the needs of our organizational environment. Concept projects are created to meet requirements, mitigate or remove risk, and reach Corporate Strategic Objectives." Reference 1 outlines the 4 description of the drivers by Investment Category, which are detailed in following sections.

Hydro Ottawa states in Reference 4: "Table 2.2.5 summarizes the condition and population statistics for the asset classes that are detailed in the following sections"

Table 2.2.5 - Asset Demographics & Condition

| Asset Type | Population | Average Age | % in Poor & Critical Condition |
|---|---|---|---|
| Poles | 59,450 | 39 | 12% |
| Polemounted Transformers | 15,663 | 30 | 11% |
| Kiosk & Padmounted Transformers | 15,633 | 33 | 4% |
| Vault Transformers | 3,474 | 34 | 7% |
| Distribution Cables (XLPE) | 4,128 km | 25 | 17% |
| Distribution Cables (PILC) | 356 km | 35 | 15% |
| Underground Switchgear | 439 | 15 | 2% |
| Station Transformers | 170 | 36 | 2% |
| Station Breakers | 1,003 | 36 | 5% |

Table 2.2.6 - Asset Management Strategy

| Type | Asset | Strategy | Age / Condition Based Replacement |
|---|---|---|---|
| Substation | Transformers | Proactive | Condition |
| | Switchgear | Proactive | Condition |
| | Batteries | Proactive | Age |
| | Overhead Conductor | Proactively replaced with other projects | N/A |
| Distribution | Poles | Proactive | Condition |
| | Cable – PILC | Reactive | N/A |
| | Cable – XLPE | Proactive/Refurbish | Condition |
| | Cable – Butyl Rubber | Proactive | Condition |
| | Cable – EPR | Reactive | N/A |
| | Padmounted & Kiosk Transformers | Reactive | N/A |
| | Polemounted Transformers | Reactive | N/A |
| | Vault Transformers | Reactive | N/A |
| | Underground Switchgear | Proactive | Age |
| | Underground Civil Structures | Proactive | Condition |
| | Overhead Distribution Switches and Reclosers | Reactive | N/A |

v. Please include a separate chart, or refer to an existing chart in this application if one exists, which would indicate the relationships among Investment Categories “System Renewal” and “General Plant” (listed in Table 2.1.1 on page 63), corresponding asset groups (mentioned on page 65, line 24), Health Indices (listed on page 66, line 13), Capital Projects, OM&A and corresponding budgeted amounts. Also, please indicate where the corresponding budgeted amounts are shown in this document and confirm that the budgeted amounts represent optimized and prioritized expenditures.

vi. Please clarify whether the above asset lists in Tables 2.2.5 and 2.2.6 provide a complete list of Assets. The titles and order of asset classes in subsequent sub-sections do not appear to match up between the contents of Tables 2.2.5 and 2.2.6. For clarity, please rearrange the information so that the Asset Classes listed in the Tables align with the titles and sequence in the following sections in the text.

vii. Please provide a Table, or refer to an existing table in the application, which would indicate a complete list of Asset Groups, Asset Classes, Asset Types and the corresponding generic asset descriptions within each. For example, please indicate if assets such as cables are treated as a single Asset Class, or separately for PILC, XLPE EPR and Butyl Rubber. If Assets are grouped

into a single class, please explain how this Asset Class information is used for replacement planning and provide (or point to) quantitative examples.

viii. If a reference in the main text exists, please identify which section in the application describes the content and the purpose of Table 2.2.6

Project Evaluation

**Reference**

**Exhibit B Tab 1 Schedule 2 Page 71 line 3**

Hydro Ottawa states: "Each consequence has an associated weighting, see Figure 2.1.3, each having a dual function to normalize and to rank. While it is intended that the scoring scales between measures are normalized, the use of the weighting factors to assist in this is acceptable. Further, weighting is used to rank both the priority of a measure and its impact; a measure which has a relatively low impact on its associated initiative will also have a lower weighting. The sum of the weights of all the measures for a given Asset Management Objective must be equal to 1. The weighting of the measures is under the purview and approval of the Manager of Asset Planning."

ix. The values of weighting factors can have a major impact on the outcomes of the project ranking process. What determines that "the use of weighting factors are acceptable". Is there formal guidance or other reference mandating this approach? In particular, please explain (or point to) how the authority of the Manager of Asset Planning defined and overseen in application of this process? Please describe the process, especially for definition and review of weight factors and include examples of the derivation of the weights. In particular, please discuss the metrics applied and how they were obtained.

x. Figures 2.1.3 and 2.1.4 illustrate the "roll up" of weighting factors. To increase the clarity of the information contained in these figures, please provide a table containing the subcategory weights and the resultant product in each case of their multiplication.

xi. Please clarify whether the Manager of Asset Planning is:

a) A single person charged with a task to manage one asset group, or.

b) A single person charged with managing all the asset groups, or

c) A statement to represent the overall Asset Planning Department.

Execution

**Reference**

**Exhibit B Tab 1 Schedule 2 Page 78**

Hydro Ottawa states: "The Execution phase follows an Hydro Ottawa internal project management methodology called "Project Coach" which defines the core lifecycle for projects."

xii. Please clarify whether the Project Coach is applied in the Asset Management process and where the responsibility for applying lies.

xiii. Please describe the process to utilize the "lessons learned" from the projects execution for application of asset management process of prioritization of future work.

2014 Testing, Inspection & Maintenance Plan Annual Planning Report

**Reference**

**Exhibit B-1(B) 2014 Testing, Inspection & Maintenance Plan Page 3**

Hydro Ottawa states: "Hydro Ottawa's testing, inspection and maintenance (TIM) programs are crucial to ensuring a reliable and sustainable distribution system. Information from the testing, inspection and maintenance programs feed back into the Asset Management Plan to allow for effective life-cycle planning of assets."

xiv. Please clarify whether these inspections include all information identified as required for collecting asset information for asset condition assessment and for evaluation with respect to end of life criteria or are additional activities for the Asset Management conducted. If the latter, please specify which activities would be additional.

Distribution Testing, Inspection and Maintenance

**Reference**

1. **Exhibit B-1(B) 2014 Testing, Inspection & Maintenance Plan Annual Planning Report, page 6**
2. **Distribution System Code Appendix C, Minimum Inspection Requirements**

In Reference 2 it states:

> "It is expected that distributors will file both annual summary reports of detailed patrol inspection activities that have taken place during the previous year as well as an outline of inspection plans ("compliance plans") for the forthcoming year."

xv. Please clarify whether the expected annual summary reports Reference 1 were filed.

xvi. If they were not filed, why not? If filed please direct OEB staff to where they are filed.

Kinectrics Letter

**Reference**

**Exhibit B-1(B) Letter from KINECTRICS INC. to Jim W. Pegg Hydro Ottawa dated February 26, 2015**

KINECTRICS INC. states: "The existing risk-based approach used by Hydro Ottawa could be further refined and extended to include more asset categories. Also, for some asset categories more data and information in addition to age could be incorporated to improve confidence in the existing Health Indexing results. This will allow Hydro Ottawa to further improve on their long-term "flagged for action" plan for all of their asset categories."

xvii. Please clarify whether Hydro Ottawa plans to further refine the risk approach as recommended by Kinectrics. If so, what actions would be taken and over what time frame.

## 2 Staff 17. Asset Condition Study

System Renewal Assets at End of Service Life

**Reference**

**Exhibit B Tab 1 Schedule 2 page 65**

Hydro Ottawa states: "HOL describes its asset replacement strategy, or asset management plan, in the Asset Management Planning Report (AMPR),"

i. Please clarify whether Hydro Ottawa developed a complete set of end-of-life criteria which would be used along with the Asset Condition Assessment (ACA). If so, please describe what they are, or cite where the information can be found in the application, how they are applied in system renewal and

how they relate to the asset management process health indices and prioritization of the work.

ii. Please state if the data obtained for ACA are collected according to surveys designed specifically for use in asset condition assessments and subsequently directly useable for prioritization using health indices as well as directly comparable against the end-of-life criteria for each group of assets. If so, please describe steps involved in designing asset inspection surveys, including that of the identification of survey deliverables and explain how they differ from those inspections which are part of the testing, inspection and maintenance programs

General Plant Life Cycles

**Reference**

**Exhibit B Tab 1 Schedule 2 page 69, line 27**

Hydro Ottawa states in line 27: Non-System Physical Plant captures the life cycle requirements for buildings.

iii. Please explain the interrelation between the buildings asset condition assessment and the overall asset management program for electrical distribution system equipment located within or connected with the buildings in terms of risk ranking and prioritization of work.

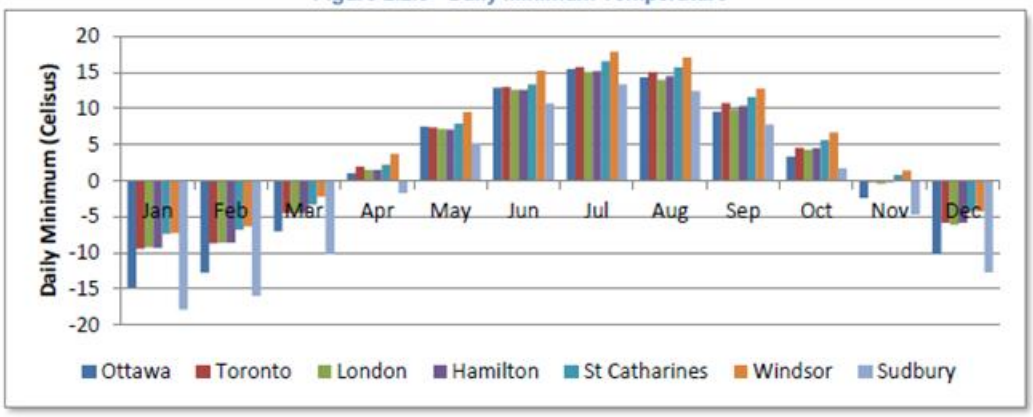
iv. Please include a reference in this document to the list of the “Non-System” buildings.

Temperature

**Reference**

**Exhibit B Tab 1 Schedule 2 pages 84-87**

Figure 2.2.3 - Daily Minimum Temperature




The Ottawa region temperature profile requires that equipment operate under a temperature range of -40 to +40 degrees centigrade. Various pieces of equipment that contain inert gasses may not operate reliably at the lower end of this range and thus require extra heaters to ensure reliable operation. Extra heaters on equipment causes design changes and non-standard equipment procurement. The requirement of additional heaters thus impacts capital investment and may require a larger initial investment than that of a similar equipment model in an area with a warmer temperature range.

v. Are the larger initial investments required to adapt to these temperature requirements quantified? If so please provide (or point to) a quantitative indication by Asset Category of this impact on cost

vi. As noted concerning figures 2.2.2 and 2.2.3, Sudbury experiences colder winter temperatures. Are specifications used in design requirement for procurement developed jointly with other utilities sharing similar environmental factors? If so, please describe the efforts taken and results achieved from such inter-utility co-operation.

vii. Similar local environmental challenges are described in subsequent paragraphs of the report, for Seismic Zone effects, Ice accumulation and Snow loading, and Soil conditions. Please provide investment impacts and any shared design-specification initiatives and results achieved as requested above for temperature requirements.

Health Index

**Reference**

1. **Exhibit B Tab 1 Schedule 2 page 66 line 11**
2. **Exhibit B Tab 1 Schedule 2 page 88 line 5**
3. **Exhibit B Tab 1 Schedule 2, Figure 2.2.9**
4. **Exhibit B-1(B) Asset Management Plan Figure 3.1**
5. **Exhibit B-1(B) Asset Management Plan Figure 7.2**

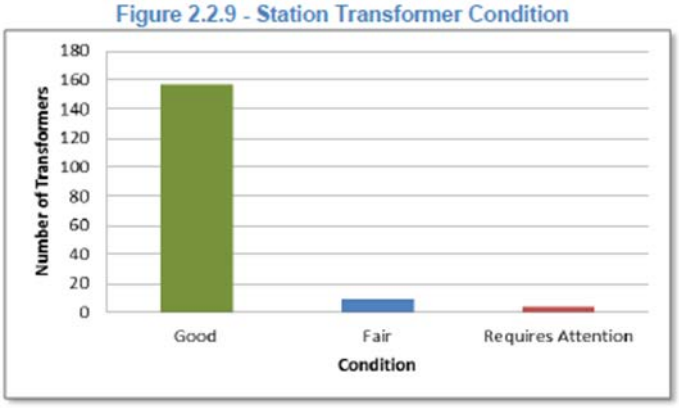
Reference 1 states:

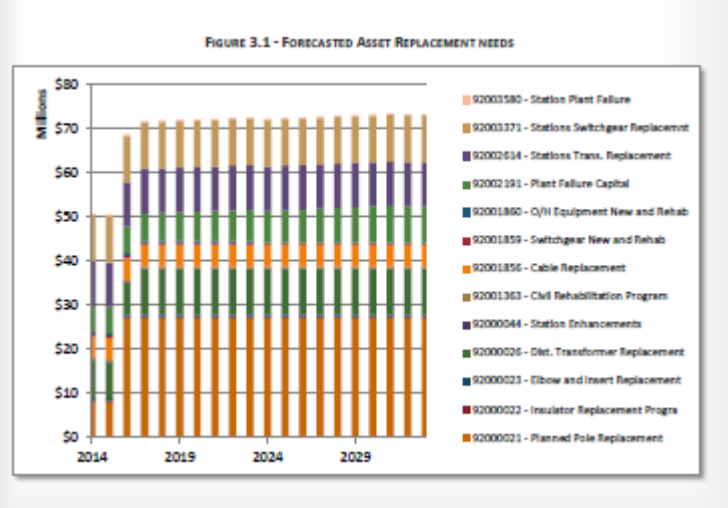
> "the following list describes the results of the asset management planning process.
>
> - Recommended asset replacement rates, refurbishment and associated annual spend;
> - Asset condition (health index); and
> - Projected failure rates based on spending/replacement levels."

Reference 2 states;

> "2.2.3 Asset Demographics and Condition
>
> The following section summarizes the demographics and condition assessment for the major 6 asset classes within Hydro Ottawa's system. Asset condition is based upon health index calculations which are unique for each asset class. Where information is lacking, a correlation is implied between condition and age. Further details on the asset demographics can be found in the AMPR.
>
> 7.2.2.1 Health Index (of Station Switchgear)
>
> The health index of station switchgear is assessed through the insulation condition, breaker timing, arc protection and structure support. *Currently, there is no reliable centralized information available to support the proposed health index,* therefore age and qualitative information about the structural support condition is used to prioritize replacement projects. The structural support condition is evaluated and rated on a scale from 0 to 1 during regular maintenance inspections using the criteria laid out in Table 7.1."

Figure 2.2.9 - Station Transformer Condition




Reference 5 states: "Figure 7.2 gives an indication of the condition of the station transformer population calculated using the above equation. Based on the Health index, transformers can be grouped into three categories: Good – Health Index =0, Fair – 0 >Health Index <= 1, and Requires Attention –Health Index > 1."

viii. Considering the text in italics above from Reference 2, the part played by Health Indices appears slightly different in each case. Please provide in general, (or point to), descriptions of the quantitative links between asset condition and system renewal requirements. Where Health Indices (HIs) were used to derive replacement plans, please explain how and provide a tabulation of the HI values and their supporting calculations for each Asset Class. In particular, please show the relationship in each case to demographic values and identify those Asset Classes where factors in addition to age were used. Where information beyond age is not yet

available, please outline any plans and corresponding timetables to address this.

ix. Are the categories “Good”, “Fair” and “Requires Attention” associated with specific Health Index (HI) Values throughout, as illustrated in the text above which accompanies Fig 7.2 of the Asset Management Plan? If so please explain (or point to) the process used to relate these values to corresponding HIs and provide them wherever non-quantitative condition categories are used (e.g. poles – Fig 2.2.14 ). If numerical HIs are not used, please explain(or point to) the steps used in forecasting Asset Replacement needs as illustrated in Figure 3.1 above.

Overhead Conductors

**References**

1. **Exhibit B Tab 1 Schedule 2 Figure 2.2.9, page 92**
2. **Exhibit B-1(B) 2014 Asset Management Plan page 19**

Hydro Ottawa states in Reference 1 that it “owns and operates on over 2900km of overhead conductor. Due to the rarity of overhead conductor failures, Hydro Ottawa does not record or perform inspections.”

x. Are ground-based visual inspections carried out as part of regular line “patrols”, e.g. to identify excessive sagging, irregularities in pole-top equipment etc.? In the reply, please indicate the frequency of such inspections and the degree to which they are (or would be) useful in contributing to conductor HIs.

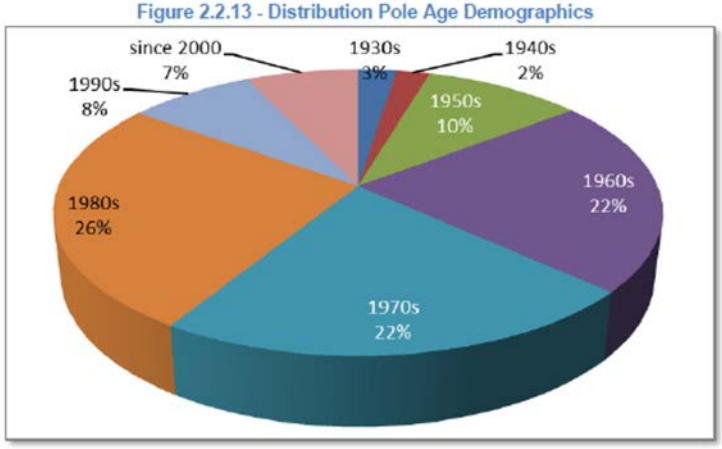
Wood Poles

**References**

1. **Exhibit B Tab 1 Schedule 2 pages 93-94**
2. **2.Exhibit B Tab 1 Schedule 2 page 122**
3. **3.Exhibit B-1(B) 2014 Asset Management Plan Figure 6.5 page19**

In Reference 1, Hydro Ottawa provides the following:

Figure 2.2.13 - Distribution Pole Age Demographics




"The condition of poles is evaluated against a health index developed by HOL. The health index for poles is based on determining the percentage of remaining strength left in the pole."

"Health Index Inputs:

1. Maximum and minimum ground line circumference to determine the extent of surface rot and mechanical damage due to vehicles and snow plows;

2. Width and depth of pocket holes along the pole caused by rot or woodpeckers; and

3. Width of the external shell of a pole, measured from the center, which can be reduced due to internal rot.

Hydro Ottawa has inspected 14,370 poles since 2011, an average of 3,592 poles per year with a continued program inspection target of 4,500 poles per year over a ten year cycle. Inspections are initially done visually and if a pole appears to be in a degraded state a drill test is completed. As mentioned above, if the pole is determined to have a remaining strength below 60% it is replaced. When an area is identified as having numerous poles in a degraded state a pole replacement project is initiated."

xi. For ease of comparison with other asset classes and useful life information from other sources, please relate the percentages in Fig 2.2.13 to the pole-age data by referencing Fig 6.5 in the Aging Management Plan (Part3). Is more rapid degradation of wood poles experienced for some wood (tree) species? If so would it be useful to create an Asset subclass (or subclasses) for these, each with its own Asset HI based in part on the

Useful Life of the subclass? If so, please indicate how the costs of pole replacement assumed might be affected by such Asset Class subdivision.

xii. What is meant by the statement "The condition of poles is evaluated against a Health Index developed by HOL"? Please provide the quantitative relationship between pole information and the corresponding Health Indices. If applicable, please explain how the "Health Index Inputs" listed above, any other visual characteristics, and the resistograph drill outputs are combined to create an Asset Class Health Index and the Health Index value for individual assets. In particular, how is the "remaining strength left in the pole" determined: for example is this done by calculation, or employing some form of experiential model incorporating the Health Index Inputs (or both)?

Distribution Cables (PILC)

**References**

1. **Exhibit B Tab 1 Schedule 2 pages 95-97**
2. **Exhibit B-1(B) 2014 Asset Management Plan page 40**

In Reference 1, Hydro Ottawa states:

> "HOL owns and operates 356 km of triple conductor Paper Insulated Lead Cable (PILC). It… is some of the oldest cable in the service area. The vast majority of the underground polymer cable is XLPE. Butyl Rubber is in the process of being phased out of Hydro Ottawa's system due to the number of failures. Ethylene Propylene Rubber has been newly introduced into the Hydro Ottawa system and only makes up a small portion of underground cable. Therefore, the condition of underground polymer cable uses data collected from tests on XLPE cable. The condition of distribution XLPE cables are monitored through an underground cable testing program which collects information useful for developing an asset health index. The health index for XLPE is based on the remaining insulation strength of the cable. The tests done on XLPE provide a Quality (Q) Value which indicate the condition of the cable. Hydro Ottawa uses the criteria that once the Q Value reaches a value of 32 or greater, it is considered to in either Bad or Critical condition and should be scheduled for replacement."

xiii. What is the percentage of Distribution Cable of each type? If available, please provide a complete table of the cable lengths by type in the Hydro Ottawa's service area by breaking out the data in Table 6.5 of the Asset Management Plan. Have the "remaining useful life" values for each cable type been determined? I f so, please explain how this information is used in

the Asset Management Plan, and in particular please link this to the costs and timing of replacement.

xiv. Is the Health Index calculation for XLPE cable based only on the insulation strength of the cable? How is it correlated with "remaining useful life". Please explain the HI calculation. In particular, please explain the significance of a "Q Value of 32 or greater". Has a correlation of "Q Value and age been performed? If so please provide or point to it. Please explain the HI equivalent of "Bad" and "Critical".

Transformers and Switchgear

**Reference**

3. **Exhibit B Tab 1 Schedule 2 pages 99-102**
4. **Exhibit B-1(B) 2014 Asset Management Plan page 35**

Reference 1 states: "Similar statements are provided for pole mounted (2.2.3.9), Vault (2.2.3.10) transformers, and underground switchgear (2.2.3.11)"

xv. In Reference 2, Section 6.5.2.3, and accompanying figures 6.21and 6.22 please indicate if a Health Index is developed for the overall Asset Class of pad mounted transformers, and if individual indices are computed for each transformer. Please explain how correlations are made between "Critical" and "Poor" categories and corresponding HIs

xvi. If available, please provide or point to equivalent information for pole mounted and vault transformers and underground switchgear. There is a substantial difference between Weibull Analysis and Historical Failure data ages in deriving critical and poor between pad mounted and pole mounted transformers. Please explain. Please provide a comparative table and explain similarities and differences in the Weibull vs Historical data for all 3 transformer Asset Classes. Please comment on the validity of Health Indices derived only from age data, and the potential implications for the replacement programs for these Asset Classes.

xvii. For Underground Switchgear, there appears to be a relatively short Useful Life. Given their risk of failure, please comment on the potential utility of conducting visual or other forms of field inspections to supplement the statistical analysis? If so, please indicate which kinds of inspections would be useful and the likely costs vs benefits of including these, such as improved HIs and more accurate determination of asset replacement schedules.

Replacement and Rehabilitation

**References**

1. **Exhibit B-1(B) 2014 Asset Management Plan page 39**
2. **Exhibit B Tab 1 Schedule pages113**

Hydro Ottawa states:

(a) At Reference 2 regarding underground civil structures:

"The asset class has been divided into two primary groups; Duct Structures and Underground Chambers. While duct structures are run to the unlikely event that they fail, underground chambers are maintained through a replacement and rehabilitation program based on regular condition assessment. Based on the currently available inspection data it is recommended that the program target a minimum of 10 underground chambers per year."

(b) At Reference 2 regarding life extension:

"Refurbishment of an asset is a life extension investment to offset the planned replacement. HOL determines the best course of action, refurbishment or retirement, by examining:

- Asset remaining useful operating life;
- Life extension forecasted from refurbishment activity;
- Cost of refurbishment as compared to cost of replacement;
- Availability of replacement parts;
- Obsolescence of asset;
- Impact to reliability, refurbishment outage vs. replacement outage;
- Refurbishment warranty; and
- Asset remaining financial life: cost of de-recognition if replaced"

xviii. Please clarify that the "program target" referred to above means either replacement or rehabilitation of a single chamber and comment on how the "recommended target" is determined. If the "program target" is not as stated, please state what it is. In particular, please provide (or point to) a summary of the "currently available inspections data", indicating if the data analysis involves creation of a HI for this Asset Class, as for other Asset Classes? If yes please explain how, if not please explain why not and what is used instead.

xix. Please comment on the differentiation between rehabilitation and replacement of underground chambers and outline (or point to) the factors leading to choice between the options, the relative costs associated with each for this Asset Class, and the overall cost implications to the program (for example by pointing to Section 2.3.1.1. if this is relevant).

xx. Please discuss how each point in the "Policies and Practices" is quantified (e.g. metrics used). For example are precise numerical values determined or are general "value" scales used and values assigned based on judgement? Please identify any weighting factors applied in integrating the factors and explain the rationale for their choice of values.

Run to Failure

**References**

1. **Exhibit B Tab 1 Schedule 2 page104**
2. **Exhibit B-1(B) 2014 Asset Management Plan page 49**

In Reference 1, Hydro Ottawa states: "The overhead switch and recloser program is typically a run-to-failure asset class unless a technical or health and safety issue have been identified."

xxi. Please explain the criteria applied for designating an Asset Class "run to failure", and please provide a list of other significant "run to failure" asset classes. Please explain (or point to in the submission) how "run to failure" assets are managed vis a vis others in the overall AM program (e.g. absence of periodic Condition Assessment). Please discuss the costs and risks of this approach.

Proactive Replacement

**Reference**

**Exhibit B Tab 1 Schedule 2 page112 - 113**

Hydro Ottawa states in Reference 1:

> "While it is preferred for all investments to be selected based on this prioritization, mandated investments will arise typically due to external drivers. When such investments occur they have reasoning clearly documented and are scored so that the impact to objectives is clearly understood and communicated. An example of this type of replacement would be due to equipment recalls, environmental regulation or major safety concerns.

2.3.1.1.2 Reactive Replacement 1

Hydro Ottawa has developed capital programs that manage assets through reactive replacement. These assets have minimal failure consequence, have spares readily available, and require minimal resources for installation. Hydro Ottawa reactive replacement strategy has been developed based on historical failure rates and considers utility best practices."

xxii. Please quantify and state the extent to which investments driven by external drivers occur and their effects on the AM program. Please differentiate the approach described in the text under "Proactive Replacement" from "Reactive Replacement". Please explain how "HOL reactive replacement strategy has been developed based on historical failure rates" and how utility best practices are considered

Dissolved Gas Analysis

**Reference**

1. **Exhibit B Tab 1Schedule 2 page119-120 and 126**
2. **Exhibit B-1(B) 2014 Asset Management Plan page 54**

Hydro Ottawa in Reference 1 with respect to dissolved gas analysis (DGA) states: "DGA and oil quality tests identify abnormalities within the transformer and provide detailed information to allow for sound decision making for future operation and maintenance of the transformer."

xxiii. Reference 2 illustrates the calculation of transformer HIs. The HI calculation does not appear to include other inputs such as IR scanning. Please discuss any plans to include other factors in the HI and anticipated benefits in terms of improved asset replacement planning.

## 2 Staff 18. Priority Setting

Prioritization Setting

**References**

1. **Exhibit B Tab 1 Schedule 2 page 77 starting at line 10**
2. **Exhibit B Tab 1 Schedule 2 Figure 2.1.4.**
3. **Exhibit B1(A)**
4. ***OEB Chapter 5 Filing Requirements for Electricity Transmission and Distribution Applications*, Section 5.4.5.2 B**

OEB staff is interested in details on setting priorities.

i. How are the criteria listed in Reference 4 and in the individual project summaries for material investments in Reference 3 factored into the priority setting described in section 2.1.2.3. in Reference 1?

ii. Please outline the process for developing the measure weightings in Reference 2.

System Service and General Plant

**References**

1. **Exhibit B Part 1 Section 2.1.2.3 Project Prioritization**
2. **Exhibit B Part 2 Material Investments, System Service**
3. **Exhibit B Part 2 Material Investments, General Plant**
4. **Exhibit B Part 2 Material Investments General Plant Section 1.8 Prioritization**
5. **Exhibit B Part 2 Material Investments General Plant Section 5.6 Prioritization**
6. **Exhibit B Part 2 Material Investments General Plant Section 6.4 Prioritization**

In Reference 1 Hydro Ottawa has described its method for project prioritization. In the material investment projects described in Reference 2 this method is used for System Renewal projects and some System Service projects; however it does not appear to be used for other System Service projects and is not used for any General Plant projects in Reference 3.

For material investment projects in References 4, 5 and 6 no priority has been assigned. Other projects in the General Plant category all have a priority of “high”.

i. Please explain how prioritization has been done for General Plant projects and for System Service projects such as Distribution Automation and SCADA Upgrade projects described in Reference 2 and 3 with respect to the method described in Reference 1.

ii. Please explain how System Service prioritizations for Distribution Automation and SCADA Upgrade projects described in Reference 2 relate to the prioritizations of other projects in the System Service category

iii. How were decisions made about which material investment projects were included in the General Plant category, and were any other material investment projects not included in this category?

### 2 Staff 19. IFRS Transition

**References**

1. **Appendix 2-BA-FA Fixed Asset Continuity 2014**
2. **Exhibit B Tab 2 Schedule 1 page 1**
3. **Exhibit A – Tab 4 – Schedule 7 – page 1**

On the fixed asset continuity schedule for 2015, Hydro Ottawa booked an adjustment related to IFRS.

| | |
|---|---|
| Cost Adjustment | $113,527,137 |
| Accumulated depreciation Adjustment | ($114,029,619) |
| Net Adjustment | $502,481 |

The net adjustment is discussed Reference 2

For purposes of the prior rate order (EB-2011-0054), Hydro Ottawa's rate base was calculated under MIFRS. Therefore, our expectation is that no further adjustments between GAAP under Parts V (CGAAP) and Part I (IFS) of the CPA Handbook would be required.

i. Please explain why this adjustment was made. Please provide justification for making this adjustment.
ii. Please calculate a rate rider to return this amount plus the weighted average cost of capital back to the customers.

## Exhibit 3 Operating Revenues

### 3 Staff 20. Load Forecast Model

**Reference**

**Exhibit C Tab 1 Schedule 2 Attachment C-1(A)**

In the Reference, Figure 5 compares monthly system sales, against an economic index (weighted GDP and Population), an efficiency index (weighted residential and commercial energy intensity), and a combination of the economic and efficiency index (Base Use). It is difficult to discern any trend in monthly system sales due to the seasonal oscillations.

i. Please add a plot of the rolling 12 month average monthly system sales.

In Section 3 Forecast Methodology a series of plots for each rate class is provided which shows the fit between the plot of actual class sales and predicted sales.

ii. Please provide tables showing actual sales, predicted sales, the kWh difference by year, and the percent difference by year. Please proved totals for each.

## 3 Staff 21. Specific Service Charges

Special Billing Service (formerly Request for other Billing Information)

### References

1. **Exhibit H, Tab 7, Schedule 1, Page 4**
2. **Attachment H-7(A)**
3. ***2006 Electricity Distribution Rate Handbook***

The proposed charge is based on Hydro Ottawa's work for others hourly rate of $95.00. In the establishment of the default Specific Service Charges in Chapter 11 in Reference 3, the following hourly rates were used:

| | |
|---|---|
| Direct Labour inside staff | $23.00 |
| Direct Labour field staff | $27.00 |
| Direct Labour field staff overtime | $27.00 with a 2 hour minimum |
| Payroll Burden | 30% |

The calculation of the rate was based on 0.4 hours.

i. Please provide Hydro Ottawa's current equivalent hourly rates to the ones used in Reference 3.

ii. Please provide the basis and calculations for the work for others hourly rate of $95.00.

iii. Please provide the rationale and explicit data to support the use of a one hour minimum for this charge.

iv. The description of the proposed charge implies that the work done in providing the requested information is done by inside staff. In Reference 2 the establishment of the charge shows the rate for labour component does not vary for inside or outside labour. Please explain the determination $95.00 for Direct Labour, regardless of inside or field staff.

Temporary Service

**References**

1. **Exhibit H, Tab 7, Schedule 1, Page 5**
2. **Attachment H-7(A)**
3. ***2006 Electricity Distribution Rate Handbook***

In the establishment of the default Specific Service Charges in Chapter 11 in Reference 3, the following hourly rates were used:

| | |
|---|---|
| Direct Labour inside staff | $23.00 |
| Direct Labour field staff | $27.00 |
| Direct Labour field staff overtime | $27.00 with a 2 hour minimum |
| Payroll Burden | 30% |

| | |
|---|---|
| Small Vehicle Time | $10.00 |
| Large Vehicle Time | $42.00 |

Hydro Ottawa has used different hour estimates in Reference 2 for the three temporary services Hydro Ottawa has proposed to change; overhead & no transformer, underground & no transformer, and overhead and transformer.

v. Given the differences between the hours used in the Rate Handbook and the hours used in Hydro Ottawa`s calculations for all three charges, please confirm that the proposed charges cover both the installation and removal of the temporary service (i.e. the charge is only applied once).

vi. Given the differences between the material costs used in Reference 3 and the costs used in Hydro Ottawa`s calculations for all three charges, please provide a detailed breakdown of the material costs.

Access to Power Poles

**References**

1. **Exhibit H, Tab 7, Schedule 1, Page 5,**
2. **Attachment H-7(A)**
3. **in Reference 3**

Hydro Ottawa is proposing to increase the rate for attachments to utility poles from $22.35 to $57.00.

vii. In Reference 2, it indicates that there are 35,663 poles with attachments. Please provide the calculations to show that the number of third party attachers is 2.

viii. In Reference 2, no use of the number of third party attachers (2) is made in the Direct Costs section, as used in Reference 3 that established the original pole attachment charge. Please explain.

ix. Please provide supporting calculations and any necessary explanations for each of the components of the Indirect Costs section.

x. Given the magnitude of the proposed increase in this charge, please discuss whether or not Hydro Ottawa has considered phasing in the proposed increase over the period of the application. Please explain why Hydro Ottawa decided not to adopt this approach.

xi. If Hydro Ottawa has not considered phasing in the proposed increase, please provide Hydro Ottawa's views on such an approach, including potential options for implementing a phase in period that would be appropriate for the custom IR application that Hydro Ottawa has filed, while maintaining revenue offset benefits to load customers.

High Bill Investigation Charge

**Reference**

1. **Exhibit H, Tab 7, Schedule 1, Page 7,**
2. **Attachment H-7(A)**

The level of the proposed charge shown in Reference 1 Table 2 for 2016 is $213, whereas the table outlining the determination in Reference 2 of the charge shows $212.

xii. Please explain the difference.

Revised Retail Service Charges

**Reference**

**Exhibit H, Tab 7, Schedule 1, Page 6**

Hydro Ottawa states: "A detailed review and analysis of costs associated with serving this market has resulted in modest adjustments for each of the years 2016 through 2020.

xiii. Please provide the referenced "detailed review and analysis of costs associated with serving this market".

xiv. Please provide the rationale for the proposed level of rates for 2016 to 2020

Revised Generator Charges

**Reference**

**Exhibit H, Tab 7, Schedule 1, Page 6**

The description of the existing microFIT Classification is standard across all distributors. No reference is made to "Micro-Net Metering".

xv. Please explain what this Micro-Net Metering terminology refers to and why Hydro Ottawa proposes to add this service to the microFIT classification.

xvi. Please explain why this should not be on the Tariff Sheet as a rate.

The usual practice among distributors with regard to dealing with FIT and other Energy Resource Facilities is to classify them into the equivalent load classifications and apply the applicable distribution charges as appropriate.

xvii. Please explain why Hydro Ottawa proposes to establish two new classifications rather than following the general practice.

# Operating Costs

## 4 Staff 22. Cost Drivers

**Reference**

**Exhibit D Tab 1 Schedule 3**

Hydro Ottawa's OM&A has increased $14.0 million in or 19.2% in four years. That is a cumulative average growth rate (CAGR) of 4.8% per year. Hydro Ottawa is also proposing to index its OM&A for 2015 – 2020 using the I-X proposal of 3.24%. OEB staff notes that both historical and proposed increases are above average inflation.

i. Table 2 indicates that salary and wages have a CGAR of 4.0% representing a $8.4 million increase, and Benefits have a CGAR of 5.3% representing a $2.7 million increase since the last Board approved budget. What steps is Hydro Ottawa taking to significantly reduce these increases for 2016 – 2020?

ii. Underground locates costs are increasing significantly since 2012. While the number of locates is also increase, the $/locate continues to increase. What is Hydro Ottawa doing to build in more efficiencies and productivity?

iii. Bad debt is increasing at a CGAR of 8.4% over the past four years. What programmes or actions is Hydro One planning for the 2016 – 2020 period to better control bad debt.

## 4 Staff 23. Staffing, Wages and Benefits

**References**

**Appendix 2-K**

Hydro Ottawa has not provided detail of employee costs for 2017 – 2020.

i. Please complete Appendix 2-K Employee Costs for the years 2017 – 2020.

### 4 Staff 24. Regulatory Costs

**Reference**

**Appendix 2-M**

Hydro Ottawa is proposing a custom IR that will have a regulatory burden due to annual updates. No forecast of regulatory costs is provided.

i. Please complete Appendix 2-M Regulatory Costs for the years 2017 – 2020.

### 4 Staff 25. PILS Model

**Reference**

**2016 PILs Workform**

Hydro Ottawa is forecasting tax losses for 2014 and 2015. The total losses are $8 million. ($497,799 and $7,517,675). The benefit of the $8 million of losses does not seem to be reflected in the PILs calculation.

i. In what year will Hydro Ottawa use these non-capital losses to reduce taxable income?

## Cost of Capital

### 5 Staff 26. Long Term Debt

**Reference**

1. **Exhibit E Tab 1 Schedule 1 Page 5**
2. ***Report of the Board on Cost of Capital for Ontario's Regulated Utilities December 11, 2009* (2009 Report).**

Hydro Ottawa states in Reference 1 that it calculated its forecast cost of long term debt using an approach that is used in the 2009 Report. In Reference 1 Table 2 Hydro Ottawa calculates the cost of its debt for 2016 – 2020.

i. Please state the source for the Government of Canada 10-year Yield for each of the years in Reference 1 Table 2.

ii. Please provide the calculation of each year's forecast of the Government of Canada 10-year Yields found in the table.

iii. Please show the Hydro Ottawa's calculation of the Historical Spread for the 30-year Government of Canada Yield over the 10-year Government of Canada Yield.

iv. Please show the calculations of the Hydro Ottawa Historical Spread over the Government of Canada 30-year Yield.

v. Please provide the spreadsheets used for these calculations.

# Cost Allocation

## 7 Staff 27. Street Lighting

**Reference**

***OEB Letter June 12, 2015, Issuance of New Cost Allocation Policy for Street Lighting Rate Class***

The OEB will be posting a revised cost allocation model in mid-July incorporating the policy for street lighting.

i. Please use the updated OEB model for the allocation of costs for 2016 – 2020.

ii. Please redesign the rates for 2016 – 2020 based on the results of the cost allocations.

## 7 Staff 28. Demand Factors

**References**

1. **Exhibit C Tab 1 Schedule 2 Attachment C-1(A)**
2. **Cost Allocation Model**

In the first Reference, volumetric forecast only developed peak demands for rate classes that have billing demands. Reference 2 uses peak demands for all rate classes as allocators.

i. Did Hydro Ottawa use the peak demands from the forecast in Reference 1?

ii. How did Hydro Ottawa develop the peak demand data by class in Tab I8 Demand Data.

# Deferral and Variance Accounts

## 9 Staff 29. EDDVAR Continuity Schedule

**Reference**

1. **EDDVAR Continuity Schedule**
2. **Exhibit B/Tab 4/ Schedule 1**

OEB staff requires additional information to validate the calculation of the rate riders.

i. Please explain the calculation for the projected interest balance in Other Regulatory Assets – Sub Account - Deferred IFRS Transition Costs column BN, amount of $251,105.

Reference 2 states that Hydro Ottawa is proposing to return the over collected of $5,974k related to stranded meters to rate payers. Hydro Ottawa has shown this amount in the EDDVAR model for Account 1555 on Tab 2 Continuity Schedule as a negative value and has not shown allocated to rate classes under Tab 6. Allocation of Balances.

ii. Pease explain why it is not allocated.

iii. Is there an offsetting entry?

iv. Please explain why the entry is in column BM which is for interest.

OEB staff notes that the exact same negative amount is also shown under Account 1508 Incremental Capital Charges.

v. Please indicate and provide evidence if the entries under these two accounts are shown correctly.

vi. Please explain why the entry is in column BM which is for interest.