

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.1**

1

2

**3 JT 1.1**

4 To provide an updated version of Table A in OEB.Staff.47 showing 2021 amounts, and to  
5 include capital-related items for 2022-2025.

6

**7 RESPONSE:**

8

9 Please refer to Table A below, which replicates Table A in the response to interrogatory OEB-47,  
10 but also includes productivity savings that persist into the Test Year (2021).

11

12 Please note that during the process of updating the table, a number of inconsistencies were  
13 identified. Corrections and updates, where appropriate, are highlighted in yellow in Table A  
14 below, with explanations provided in the corresponding footnotes. This updated version of the  
15 table is likewise included in an UPDATED response to interrogatory OEB-47, which is appended  
16 herein as Attachment JT 1.1(A).

17

18 For a description of how the savings associated with each of these productivity initiatives are  
19 quantified, please see the response to undertaking JT 1.10.

20

21 As indicated in the Technical Conference transcript dated July 15, 2020, this undertaking  
22 pertains to OM&A only and does not include capital-related items for 2022-2025. Please refer to  
23 the response to undertaking JT 2.13 for capital-related productivity items.

1 **Table A – Annualized Savings of 2016-2021 Productivity Initiatives**

Productivity Initiative	Annualized Savings					
	2016 Historical Year	2017 Historical Year	2018 Historical Year	2019 Historical Year	2020 Bridge Year	2021 Test Year
Online Billing Enhancements	\$1.4M	\$1.4M	\$1.7M	\$1.9M	\$2.1M	\$2.3M
Customer Contact Centre Enhancements		\$0.4M	\$0.4M <sup>1</sup>	\$0.3M	\$0.3M	\$0.3M
Service Desk Manager					\$0.1M	\$0.1M
Payment Options			\$0.04M	\$0.04M	\$0.04M	\$0.04M
Outbound Calling for 48-Hour Disconnection Warning					\$0.4M	\$0.4M
Customer Information System Enhancement <sup>2</sup>					\$1.0M	
Mobile Workforce Management		\$0.3M	\$0.3M	\$0.3M	\$0.3M	\$0.3M
Outbound Calling for Planned Work and Vegetation Management Projects <sup>3</sup>			\$0.1M	\$0.1M	\$0.1M	\$0.1M
Gatekeeper/Collection Meter Consolidation	\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.1M
Cable Chamber Inspections <sup>4</sup>		\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.1M
Underground Locates (Extension of 30-Day Expiration to 60-Day)					\$0.3M	\$0.3M
Renegotiation of CC&B Maintenance Agreement				\$0.1M	\$0.1M	\$0.1M
<del>Data Center - Intelligent Migration<sup>5</sup></del>				<del>\$0.2M</del>		
Points-based FR Clothing System			\$0.1M	\$0.1M	\$0.1M	\$0.1M
Physical Records Clean-up/Digitization				\$0.1M	\$0.1M	\$0.1M
Negotiation of New Vegetation Management Service Contracts				\$0.3M	\$0.3M	\$0.3M
Negotiation of Alternate Locate Agreement for UG Locates				\$0.1M	\$0.1M	\$0.1M
Utilities Savings from Ground-Mounted Behind-the-Meter-Solar Systems					\$0.4M	\$0.4M
<del>Reduction in Overtime Usage<sup>6</sup></del>				<del>\$1.8M</del>		
Dark Fiber Lease <sup>7</sup>						\$0.9M
<b>TOTAL</b>	<b>\$1.5M</b>	<b>\$2.3M</b>	<b>\$2.84M</b>	<b>\$3.24M</b>	<b>\$4.94M</b>	<b>\$6.04M</b>

- 2 <sup>1</sup> The original rounding for this item in the response to interrogatory OEB-47 was incorrect.
- 3 <sup>2</sup> In updating this table, it was discovered that this item is a duplication of the line item "Renegotiation of CC&B
- 4 Maintenance Agreement." The \$1.0M in savings from the new contract will be achieved over nine years.
- 5 <sup>3</sup> Hydro Ottawa confirms that savings continue in 2019, 2020, and 2021.
- 6 <sup>4</sup> The original response to interrogatory OEB-47 should have noted that savings started in 2017. Hydro Ottawa
- 7 confirms that savings continue in 2019, 2020, and 2021.
- 8 <sup>5</sup> As per the discussion on page 1, this capital-related item has been removed, so that this table represents OM&A
- 9 items only.
- 10 <sup>6</sup> This item has been removed, seeing as it is not directly linked to a defined productivity initiative.
- 11 <sup>7</sup> This item was not included in the response to interrogatory OEB-47, as the savings are only set to commence in
- 12 2021.

- 1 In its original response to interrogatory OEB-47, Hydro Ottawa had presented the total savings
- 2 associated with 2016-2020 productivity savings as being \$17.5M. This figure has been revised
- 3 to \$14.82M in the revised presentation of savings included in Attachment JT 1.1(A).

**UPDATED INTERROGATORY RESPONSE - OEB-47**

**1-Staff-47**

**EXHIBIT REFERENCE:**

**Exhibit 1/Tab 1/Schedule 13**

**SUBJECT AREA: Productivity**

**Preamble:**

Hydro Ottawa identified productivity accomplishments from the 2016-2020 rate period, and identified initiatives planned for 2021-2025. OEB staff would like to understand how these initiatives are reflected in the proposed base revenue requirements for 2021-2025.

**Question(s):**

a) Please provide a table that summarizes (in millions) all actual productivity savings for the 2016-2020 rate period (2019 actual and 2020 forecast) and forecast productivity savings for the 2021-2025 rate period. Please provide a brief description for each initiative and provide actual and forecast savings by year. Please also classify initiatives by OM&A and capital.

b) For productivity initiatives identified for the 2021-2025 rate period, please explain how Hydro Ottawa forecasted savings for each initiative.

**RESPONSE:**

a) Please see Table A below. The amounts are estimated OM&A savings, ~~with the exception of the Data Center - Intelligent migration which was a capital saving.~~ With limited exceptions, descriptions for initiatives are available in Exhibit 1-1-13: Productivity and Continuous Improvement Initiatives.



1 **Table A – AS ORIGINALLY SUBMITTED – Annualized Savings of 2016-2020 Productivity**

2 **Initiatives**

Productivity Initiative	Annualized Savings					Total
	2016 Historical Year	2017 Historical Year	2018 Historical Year	2019 Historical Year	2020 Bridge Year	
Online Billing Enhancements	\$1.4M	\$1.4M	\$1.7M	\$1.9M	\$2.1M	\$8.5M
Customer Contact Centre Enhancements		\$0.4M	\$0.3M	\$0.3M	\$0.3M	\$1.3M
Service Desk Manager					\$0.1M	\$0.1M
Payment Options			\$0.04M	\$0.04M	\$0.04M	\$0.1M
Outbound Calling for 48-Hour Disconnection Warning					\$0.4M	\$0.4M
Customer Information System Enhancement					\$1.0M	\$1.0M
Mobile Workforce Management <sup>1</sup>		\$0.3M	\$0.3M	\$0.3M	\$0.3M	\$1.2M
Outbound Calling for Planned Work and Vegetation Management Projects			\$0.1M			\$0.1M
Gatekeeper/Collection Meter Consolidation	\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.5M
Cable Chamber Inspections			\$0.1M			\$0.1M
Underground Locates (Extension of 30-Day Expiration to 60-Day)					\$0.3M	\$0.3M
Renegotiation of CC&B Maintenance Agreement				\$0.1M	\$0.1M	\$0.2M
Data Center - Intelligent Migration				\$0.2M		\$0.2M
Points-based FR Clothing System			\$0.1M	\$0.1M	\$0.1M	\$0.3M
Physical Records Clean-up/Digitization				\$0.1M	\$0.1M	\$0.2M
Negotiation of New Vegetation Management Service Contracts				\$0.3M	\$0.3M	\$0.6M
Negotiation of Alternate Locate Agreement for UG Locates				\$0.1M	\$0.1M	\$0.2M
Utilities Savings from Ground-Mounted Behind-the-Meter-Solar Systems					\$0.4M	\$0.4M
Reduction in Overtime Usage				\$1.8M		\$1.8M
<b>TOTAL</b>	<b>\$1.5M</b>	<b>\$2.2M</b>	<b>\$2.7M</b>	<b>\$5.3M</b>	<b>\$5.7M</b>	<b>\$17.5M<sup>2</sup></b>

3

4 <sup>1</sup> These savings are associated with the termination of an external service contract, which was made possible as a  
5 result of the efficiency gains from the implementation of the Mobile Workforce Management solution.

6 <sup>2</sup> Totals may not sum due to rounding.

1 **Table A – AS REVISED – Annualized Savings of 2016-2020 Productivity Initiatives**

Productivity Initiative	Annualized Savings					Total
	2016 Historical Year	2017 Historical Year	2018 Historical Year	2019 Historical Year	2020 Bridge Year	
Online Billing Enhancements	\$1.4M	\$1.4M	\$1.7M	\$1.9M	\$2.1M	\$8.5M
Customer Contact Centre Enhancements		\$0.4M	\$0.4M <sup>3</sup>	\$0.3M	\$0.3M	\$1.4M
Service Desk Manager					\$0.1M	\$0.1M
Payment Options			\$0.04M	\$0.04M	\$0.04M	\$0.12M
Outbound Calling for 48-Hour Disconnection Warning					\$0.4M	\$0.4M
Customer Information System Enhancement <sup>4</sup>					\$1.0M	\$1.0M
Mobile Workforce Management <sup>5</sup>		\$0.3M	\$0.3M	\$0.3M	\$0.3M	\$1.2M
Outbound Calling for Planned Work and Vegetation Management Projects <sup>6</sup>			\$0.1M	\$0.1M	\$0.1M	\$0.3M
Gatekeeper/Collection Meter Consolidation	\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.5M
Cable Chamber Inspections <sup>7</sup>		\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.4M
Underground Locates (Extension of 30-Day Expiration to 60-Day)					\$0.3M	\$0.3M
Renegotiation of CC&B Maintenance Agreement				\$0.1M	\$0.1M	\$0.2M
Data Center - Intelligent Migration <sup>8</sup>				\$0.2M		\$0.2M
Points-based FR Clothing System			\$0.1M	\$0.1M	\$0.1M	\$0.3M
Physical Records Clean-up/Digitization				\$0.1M	\$0.1M	\$0.2M
Negotiation of New Vegetation Management Service Contracts				\$0.3M	\$0.3M	\$0.6M
Negotiation of Alternate Locate Agreement for UG Locates				\$0.1M	\$0.1M	\$0.2M
Utilities Savings from Ground-Mounted Behind-the-Meter-Solar Systems					\$0.4M	\$0.4M
Reduction in Overtime Usage <sup>9</sup>				\$1.8M		\$1.8M
<b>TOTAL</b>	<b>\$1.5M</b>	<b>\$2.3M</b>	<b>\$2.84M</b>	<b>\$3.24M</b>	<b>\$4.94M</b>	<b>\$14.82M<sup>10</sup></b>

2 <sup>3</sup> The original rounding for this item in the response to interrogatory OEB-47 was incorrect.

3 <sup>4</sup> In updating this table, it was discovered that this item is a duplication of the line item "Renegotiation of CC&B Maintenance Agreement." The \$1.0M in savings from the new contract will be achieved over nine years.

5 <sup>5</sup> These savings are associated with the termination of an external service contract, which was made possible as a result of the efficiency gains from the implementation of the Mobile Workforce Management solution.

6 <sup>6</sup> Hydro Ottawa confirms that savings continue in 2019, 2020, and 2021.

7 <sup>7</sup> The original response to interrogatory OEB-47 should have noted that savings started in 2017. Hydro Ottawa confirms that savings continue in 2019, 2020, and 2021.

10 <sup>8</sup> This has been removed, seeing as it is a capital-related item and Hydro Ottawa is addressing capital initiatives separately as part of its undertaking responses.

12 <sup>9</sup> This item has been removed, seeing as it is not directly linked to a defined productivity initiative.

13 <sup>10</sup> Totals may not sum due to rounding.

1 It is important to note that Table A above does not represent an exhaustive survey of  
2 each and every productivity initiative undertaken by Hydro Ottawa (along with its  
3 attendant level of savings) during the 2016-2020 rate period. As part of its commitment  
4 to continuous improvement and increased productivity, a host of other activities aimed at  
5 enhancing the efficiency of the utility's operations were undertaken and successfully  
6 implemented over the past five years. For additional information in this regard, please  
7 see the following evidence:

8

- 9 ● Attachments 1-1-10(A), 1-1-10(B), and 1-1-10(C): 2016, 2017, and 2018 Annual  
10 Summaries: Achieving Ontario Energy Board Renewed Regulatory Framework  
11 Performance Outcomes (respectively) – these Attachments consist of annual  
12 summaries of initiatives and outcomes from Hydro Ottawa's 2016-2020 rate plan  
13 which align with the performance outcome categories enshrined in the RRF.
- 14 ● UPDATED Exhibit 4-1-3: Operations, Maintenance and Administration Program  
15 Costs – section 2.4 provides a summary of 2016-2019 historical OM&A  
16 expenditures and confirms reductions in OM&A spending that Hydro Ottawa was  
17 able to achieve, in part, as a result of productivity initiatives.
- 18 ● UPDATED Exhibit 4-1-4: Operations, Maintenance and Administration Cost  
19 Drivers and Program Variance Analysis – this Exhibit provides year-over-year  
20 variance analysis for OM&A spending and, in so doing, helps to illustrate where  
21 successful execution of productivity initiatives and an enduring commitment to  
22 cost control translated into program savings and cost reductions.

23

24 For information on forecast productivity savings for the 2021-2025 period, please see the  
25 response to part (b) below.

26

27 b) Hydro Ottawa's response to this interrogatory should be read in concert with its response  
28 to interrogatory CCC-29. Therein, the utility pinpoints the pieces of evidence in support  
29 of this Application in which information can be found pertaining to the underlying

1 business cases and net savings associated with the productivity and continuous  
2 improvement initiatives identified for 2021-2025.

3

4 In addition, Hydro Ottawa wishes to emphasize that the application of a custom OM&A  
5 productivity escalator to its planned 2021 OM&A levels will translate into a reduction in  
6 OM&A spending of \$13.1M over the term of the utility's five-year rate plan. (Please see  
7 UPDATED Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework and  
8 UPDATED Exhibit 4-1-1: Operations, Maintenance and Administration Summary for  
9 details). Achievement of these OM&A savings will necessitate successful execution of  
10 the productivity and continuous improvement commitments for 2021-2025 set forth in  
11 Exhibit 1-1-13.

12

13 Moreover, it merits observation that many of the productivity initiatives identified in Table  
14 A above will have lasting effects and will translate into ongoing savings throughout the  
15 2021-2025 rate term.

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.2

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### 3 JT 1.2

4 To provide a budgeted number for CDM FTEs included in the revenue requirement, specifying  
5 how much OM&A is included in the revenue requirement.

6

### 7 RESPONSE:

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9 Please refer to Exhibit 4-1-6: Conservation and Demand Management (Section 6, 2021-2025  
10 CDM Staffing & Resources) where Hydro Ottawa is proposing an employee complement of four  
11 full-time equivalents ("FTEs"), along with a resourcing envelope to enable marketing and  
12 associated activities.

13

14 The four positions are budgeted to begin in August 2021, so as to not overlap with the final  
15 Conservation First Framework wind-down activities, which are scheduled to be substantially  
16 completed by mid-2021. Therefore, only five months were included in the 2021 budget. This is  
17 equivalent to 1.7 FTEs, as referenced in part (a) of the response to interrogatory OEB-188.  
18 More information on the appropriateness of including CDM staffing costs in OM&A has been  
19 provided in part (c) of interrogatory response OEB-134, as well as in the response to  
20 undertaking JT 1.27.

21

22 Please refer to UPDATED Exhibit 4-1-4: Operations, Maintenance and Administration Cost  
23 Drivers and Program Variance Analysis, Section 3.3, for the CDM amount of \$229,248 included  
24 in the 2021 OM&A budget for purposes of the revenue requirement calculation. Hydro Ottawa  
25 will work within the escalated OM&A, including the achievement of savings through productivity  
26 initiatives, in order to fund the additional \$0.3M to support this program during the period of  
27 2022-2025.

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.3**

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**3 JT 1.3**

4 Subject to confidentiality, to file the 2011 Executive Compensation Benchmarking Study.

5

**6 RESPONSE:**

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8 Appended to this response is Attachment JT 1.3(A): Hydro Ottawa Holding Inc. Executive Team  
9 Compensation Review - 2011. This file is a redacted copy of the Executive Team Compensation  
10 Review dated May 17, 2011 conducted by Towers Watson.

11

12 At page 2, the review finds that the overall positioning of Hydro Ottawa's executive  
13 compensation relative to the comparator groups is "...slightly below the 25<sup>th</sup> percentile..."

14

15 The redactions in Attachment JT 1.3(A) are consistent with those applied to the copy of the  
16 2019 executive compensation review which was previously filed as Attachment OEB-49(A):  
17 Hydro Ottawa Competitive Compensation Review - Executive Management Team.





# Hydro Ottawa Holding Inc.

## Executive Team Compensation Review

**Kimberly Oliver**  
**Elizabeth Greville**

**May 17, 2011**

## Executive Summary

- Overall, Hydro Ottawa's salary and target total cash are positioned slightly below the 25<sup>th</sup> percentile of the Combined and the Utilities Only Samples
  - However, we note that Hydro Ottawa's revenue is also positioned below the 25<sup>th</sup> percentile of the position-related revenue of the comparator groups
    - Actual positioning varies by incumbent
- The table below summarizes Hydro Ottawa's average positioning relative to the Combined and the Utilities Only Samples:

Summary of Hydro Ottawa's positioning against the Competitive Data (Hydro Ottawa as a % above/below the competitive data)						
Compensation Element	Combined Sample (Utilities, Government & Transportation)			Utilities Only Sample		
	25th	50th	75th	25th	50th	75th
<b>Salary</b>	-5%	-26%	-32%	-8%	-26%	-59%
<b>Target Total Cash</b> (Salary + Target bonus)	-10%	-31%	-37%	-10%	-31%	-58%

**Note:** There are insufficient data to provide an overall average against the Government Only sample



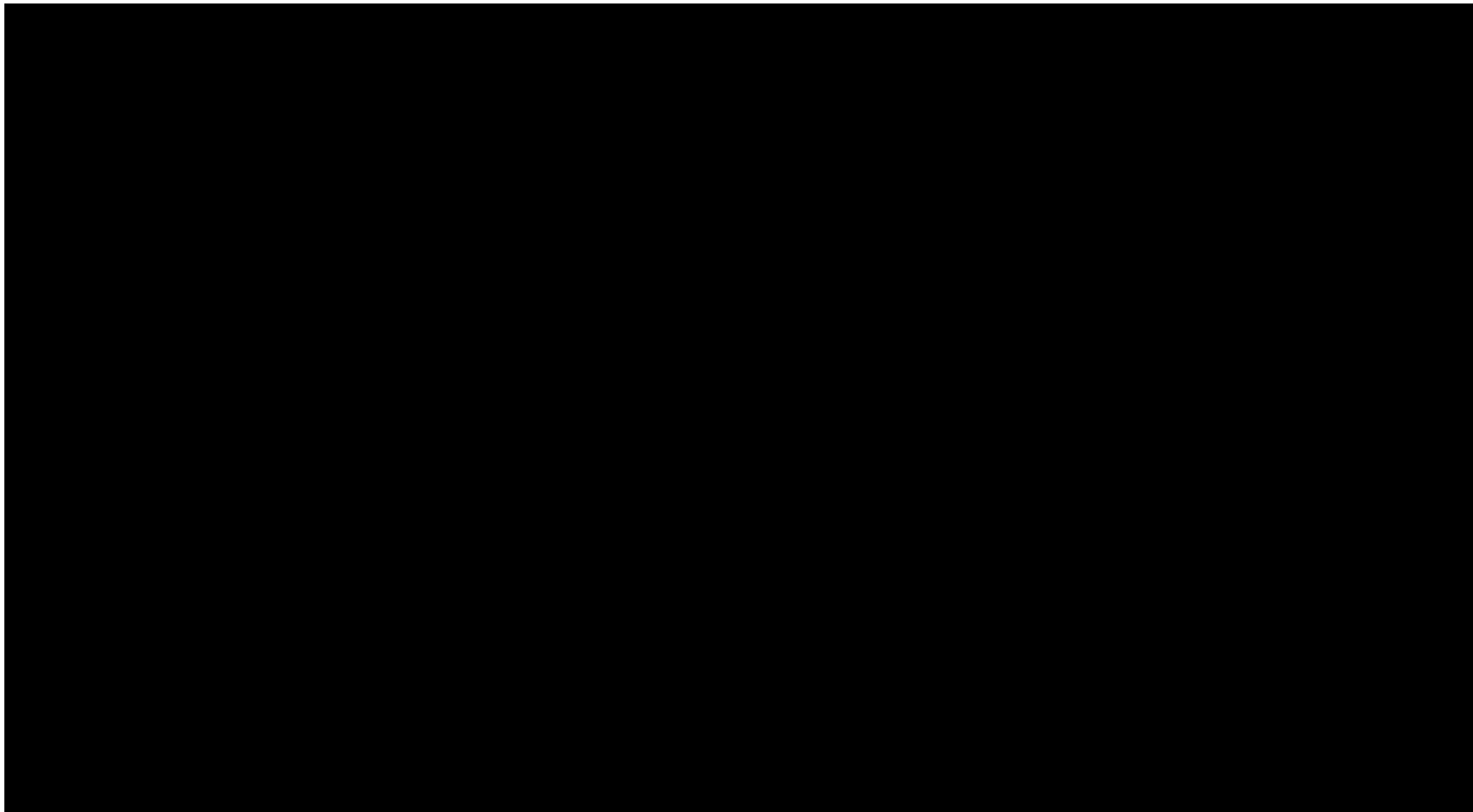
## Introduction & Background

- Hydro Ottawa Holding Inc. (“Hydro Ottawa”) has requested Towers Watson assistance in assessing the competitiveness of compensation provided to the CEO’s direct reports
  - This report updates the findings from our December 6, 2010 report for Hydro Ottawa by 1.85% to reflect 2011 pay levels
- Competitive compensation data have been sourced from Towers Watson’s 2010 Compensation Data Bank (“CDB”) General Industry Executive Compensation Survey for the following 6 positions:
  - Chief Financial Officer
  - COO – Distribution & Customer Service
  - COO – Generation
  - Chief Human Resources Officer
  - Chief Information Officer
  - Chief Energy Management Officer
- Consistent with the 2010 review, competitive compensation data reflect companies included in the following three comparator groups:
  - Combined Utilities, Government and Transportation Comparators (“Combined Sample”)
  - Utilities and Related Industry Comparators (“Utilities Only Sample”)
  - Government and Not-For-Profit Comparators (“Government Only Sample”)
- The remainder of this report provides our findings and observations
  - Our methodology and detailed results by position are included in the Appendices

## Observations & Findings

### Salary

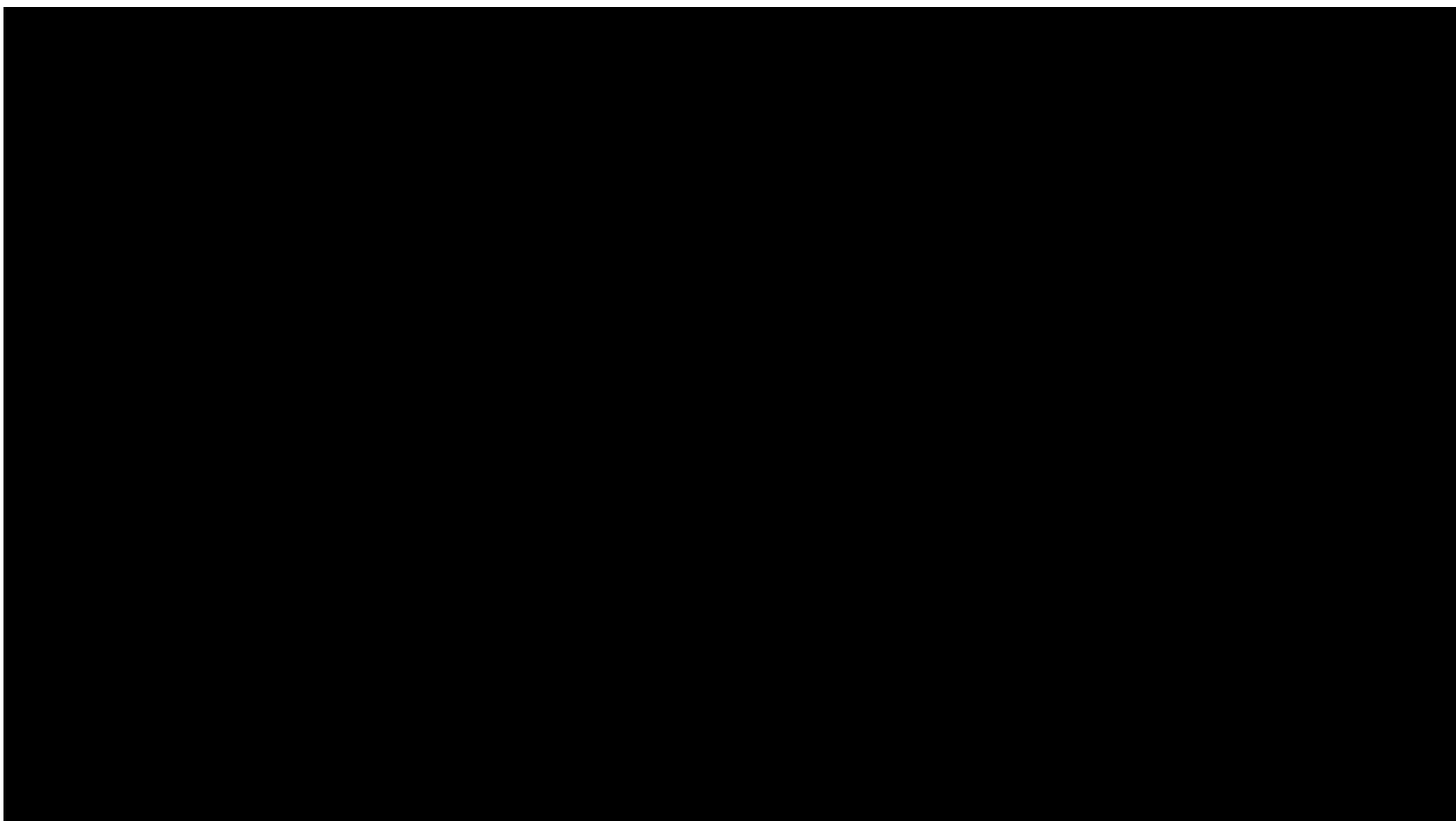
- On average, Hydro Ottawa is positioned at the 25<sup>th</sup> percentile of the Combined Sample and slightly below the Utilities Only Sample



## Observations & Findings

### Target Bonus

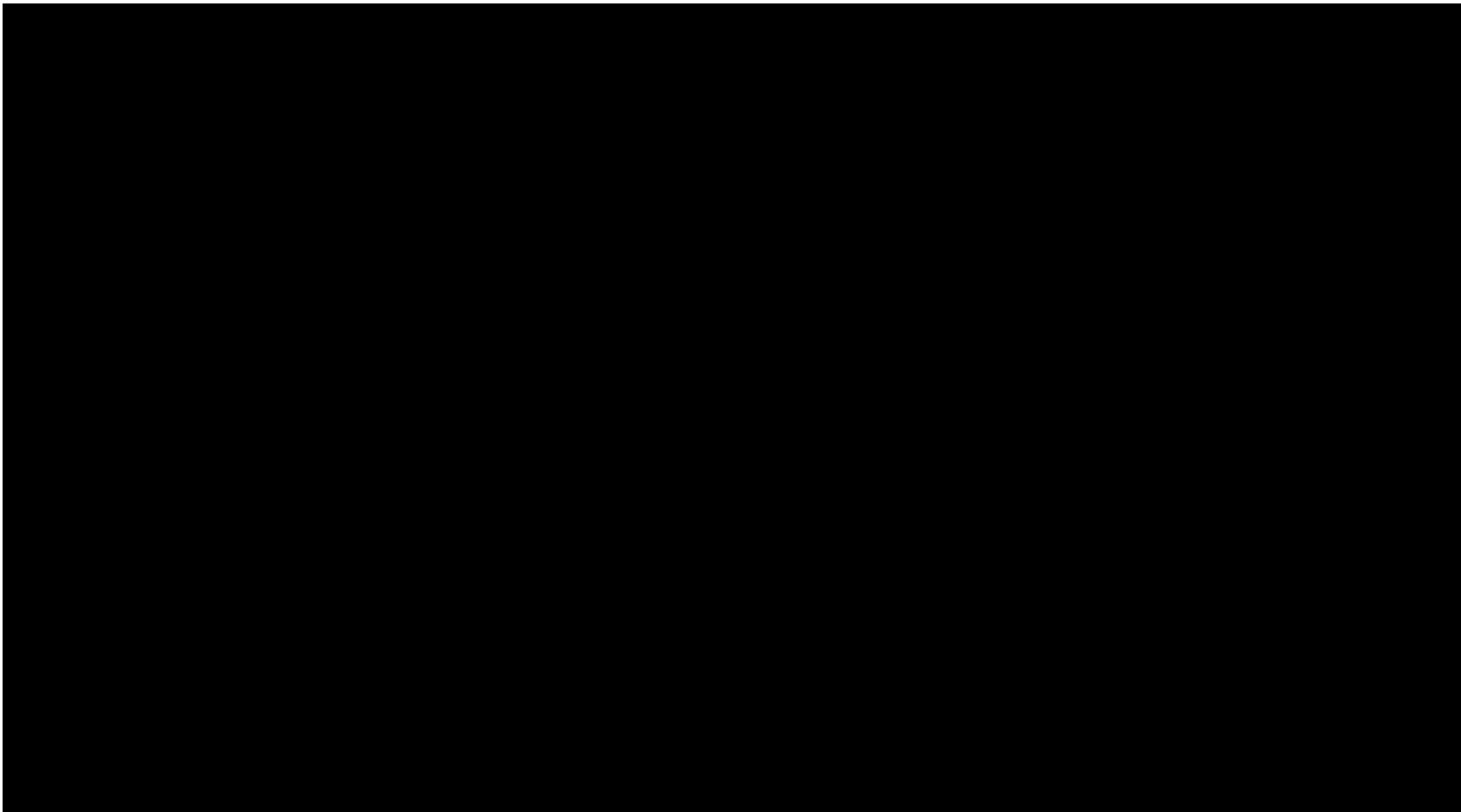
- Hydro Ottawa's target bonus is generally positioned at the 25<sup>th</sup> percentile of the Combined and the Utilities Only Samples



## Observations & Findings

### Target Total Cash (Salary + Target Bonus)

- On average, on a target total cash basis, Hydro Ottawa is positioned slightly below the 25<sup>th</sup> percentile of the Combined and the Utilities Only Samples



# Appendices

## Methodology

### Benchmarks

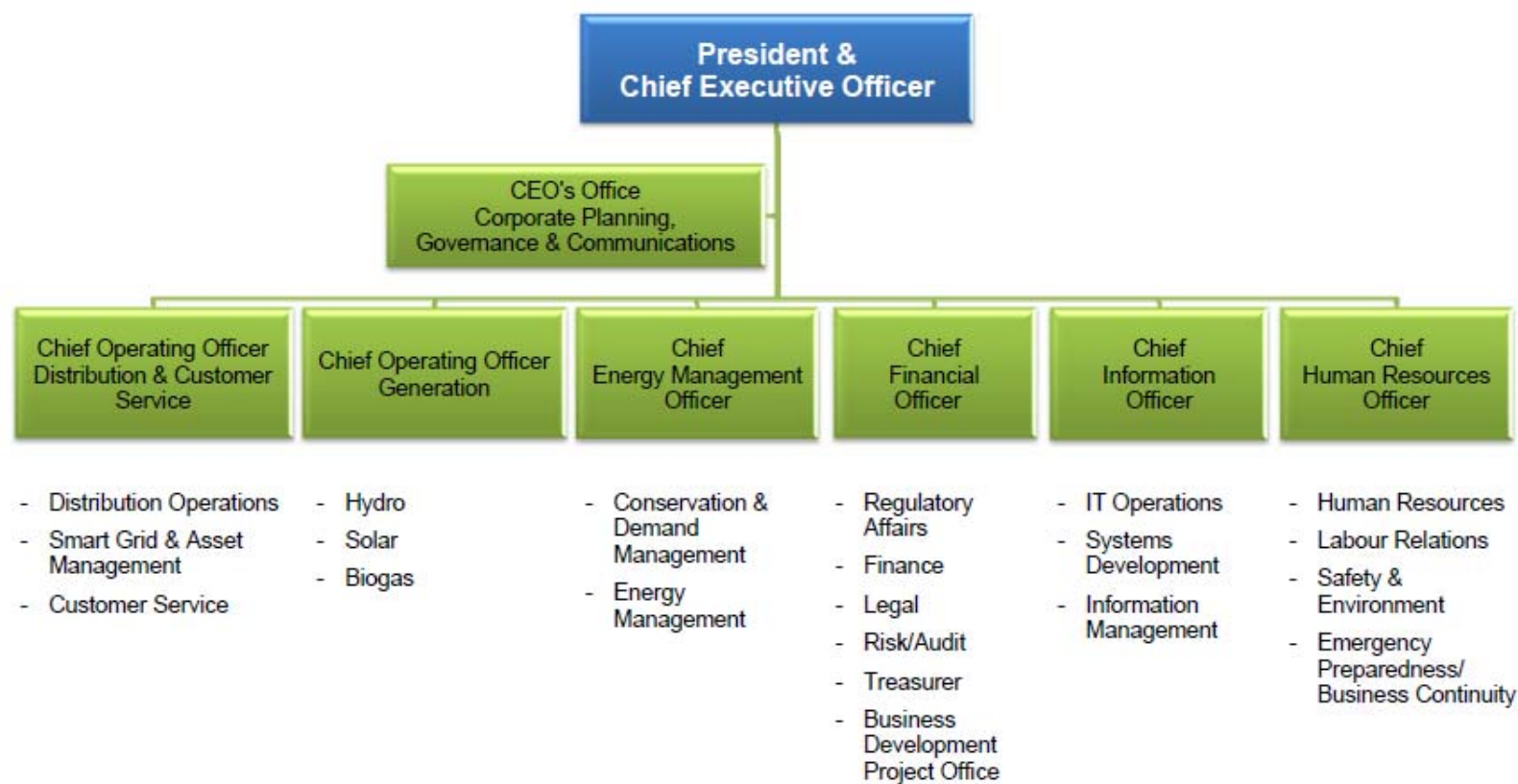
- Each Hydro Ottawa role has been matched to benchmarks in Towers Watson's 2010 Compensation Data Bank ("CDB") General Industry Executive Compensation Survey based on our understanding of Hydro Ottawa's organizational structure, the role and responsibilities. Benchmark matches are as follows:

Position	Towers Watson Benchmarks
Chief Financial Officer	Top Financial Executive
Chief Operating Officer - Distribution & Customer Service	Profit Center Head
Chief Operating Officer - Generation	Profit Center Head ( <i>discounted by 15%</i> )*
Chief Human Resources Officer	Top Human Resources Executive
Chief Information Officer	Chief Information Officer
Chief Energy Management Officer	Profit Center Head ( <i>discounted by 15%</i> )*

\*The COO – Generation and Chief Energy Management Officer roles have been decreased by 15% to reflect Hydro Ottawa's smaller scope relative to the competitive market.

# Methodology

## Hydro-Ottawa's Organizational Structure



## Methodology

### Comparator Groups

- Data have been sourced for the following comparator groups:
  - Combined Utilities, Government and Transportation Comparators (“Combined Sample”) – a sample of CDB participants in the utilities, government, not-for-profit, and transportation industries
  - Utilities and Related Industry Comparators (“Utilities Only Sample”) – a subset of the Combined Sample organizations that are classified as part of the utilities and power industries
  - Government and Not-For-Profit Comparators (“Government Only Sample”) – a subset of the Combined Sample organizations that are classified as government or not-for-profit
- In a review of the Combined Sample, we note the following:
  - 34 organizations are consistent year over year (from 2009)
  - 21 organizations that participated in 2009 did not participate in 2010
  - 9 organizations are new in the 2010 Combined Sample
- These changes in the comparator group may attribute to some of the changes in the competitive compensation data for the CFO, COO – Distribution & Customer Service, and the COO – Generation



## Methodology

### Competitive Data

- Raw data percentiles are presented and are calculated as follows when actual data points are arranged from highest to lowest:
  - 25<sup>th</sup> Percentile – the point at which 25% of the sample values are lower and 75% are greater
  - 50<sup>th</sup> Percentile (median) – the point at which 50% of the sample values are lower and 50% are greater
  - 75<sup>th</sup> Percentile – the point at which 75% of the sample values are lower and 25% are greater
- Competitive survey data have been adjusted by 1.85% to reflect 2011 projected pay levels
  - The adjustment factor is sourced from the Towers Watson's 2010 / 2011 Salary Budget Report and reflects the average of the Not-for-Profit and Utilities / Energy Sectors
  - The adjustment factor includes companies that do not expect to provide salary increases for 2011

## Methodology

### Comparator Groups – Combined Sample

Combined Sample Comparator Group		
AECL Atomic Energy of Canada Limited	City of Calgary	Ontario Power Authority
Air Canada	City of Medicine Hat	Ontario Power Generation Inc.
Alberta Securities Commission	Columbia Power Corporation	Port Metro Vancouver
AltaLink Management	Concordia University	Purolator Courier Ltd.
ATCO Ltd. & Canadian Utilities Limited	Emera Inc.	SaskEnergy
BC Hydro	ENMAX Corporation	SaskPower
BC TRANSMISSION	EPCOR Utilities Inc.	Terasen Gas
British Columbia Railway Company	Export Development Canada	Toronto Hydro Electric Systems Ltd.
Bruce Power	FortisAlberta Inc.	TransAlta Corporation
Calgary Airport Authority	Hydro One	Transat A.T. Inc.
Canada Post	Hydro-Québec	TransCanada Corp.
Canadian Nuclear Safety Commission	Manitoba-Hydro Electric	Westjet Airlines
Canadian Pacific Railway Limited	NAV CANADA	Workers' Compensation Board - Alberta
Capital Power Corporation	Nova Scotia Power	WorkSafeBC
CCS Corporation		

Revenues (In CAD Millions)	
<b>25th Percentile</b>	<b>\$258</b>
<b>50th Percentile</b>	<b>\$1,546</b>
<b>75th Percentile</b>	<b>\$2,770</b>
<b>Hydro Ottawa</b>	<b>\$754</b>

## Methodology

### Comparator Groups – Utilities Only Sample

Utilities Only Peer Group		
AECL Atomic Energy of Canada Limited	Columbia Power Corporation	Ontario Power Authority
AltaLink Management	Emera Inc.	Ontario Power Generation Inc.
ATCO Ltd. & Canadian Utilities Limited	ENMAX Corporation	SaskEnergy
BC Hydro	EPCOR Utilities Inc.	SaskPower
BC TRANSMISSION	FortisAlberta Inc.	Terasen Gas
Bruce Power	Hydro One	Toronto Hydro Electric Systems Ltd.
Capital Power Corporation	Hydro-Québec	TransAlta Corporation
CCS Corporation	Manitoba-Hydro Electric	TransCanada Corp.
City of Medicine Hat	Nova Scotia Power	

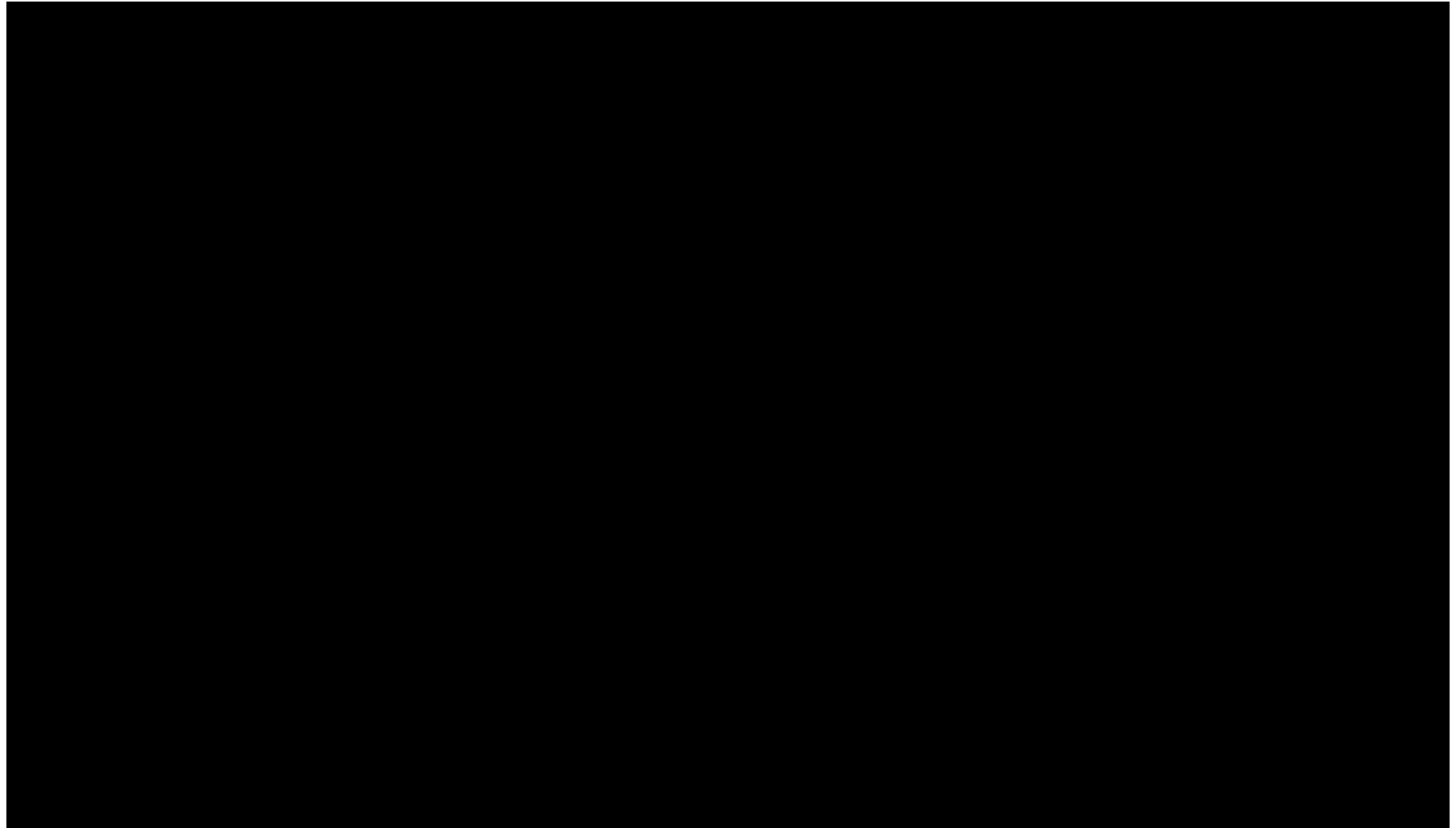
Revenues (In CAD Millions)	
<b>25th Percentile</b>	<b>\$413</b>
<b>50th Percentile</b>	<b>\$1,978</b>
<b>75th Percentile</b>	<b>\$2,855</b>
<b>Hydro Ottawa</b>	<b>\$754</b>

## Methodology

### Comparator Groups – Government Only Sample

Government Only Peer Group	
Alberta Securities Commission	Export Development Canada
Canadian Nuclear Safety Commission	NAV CANADA
City of Calgary	Workers' Compensation Board - Alberta
Concordia University	WorkSafeBC
Revenues (In CAD Millions)	
<b>25th Percentile</b>	<b>\$107</b>
<b>50th Percentile</b>	<b>\$781</b>
<b>75th Percentile</b>	<b>\$1,402</b>
<b>Hydro Ottawa</b>	<b>\$754</b>

## Detailed Findings by Position

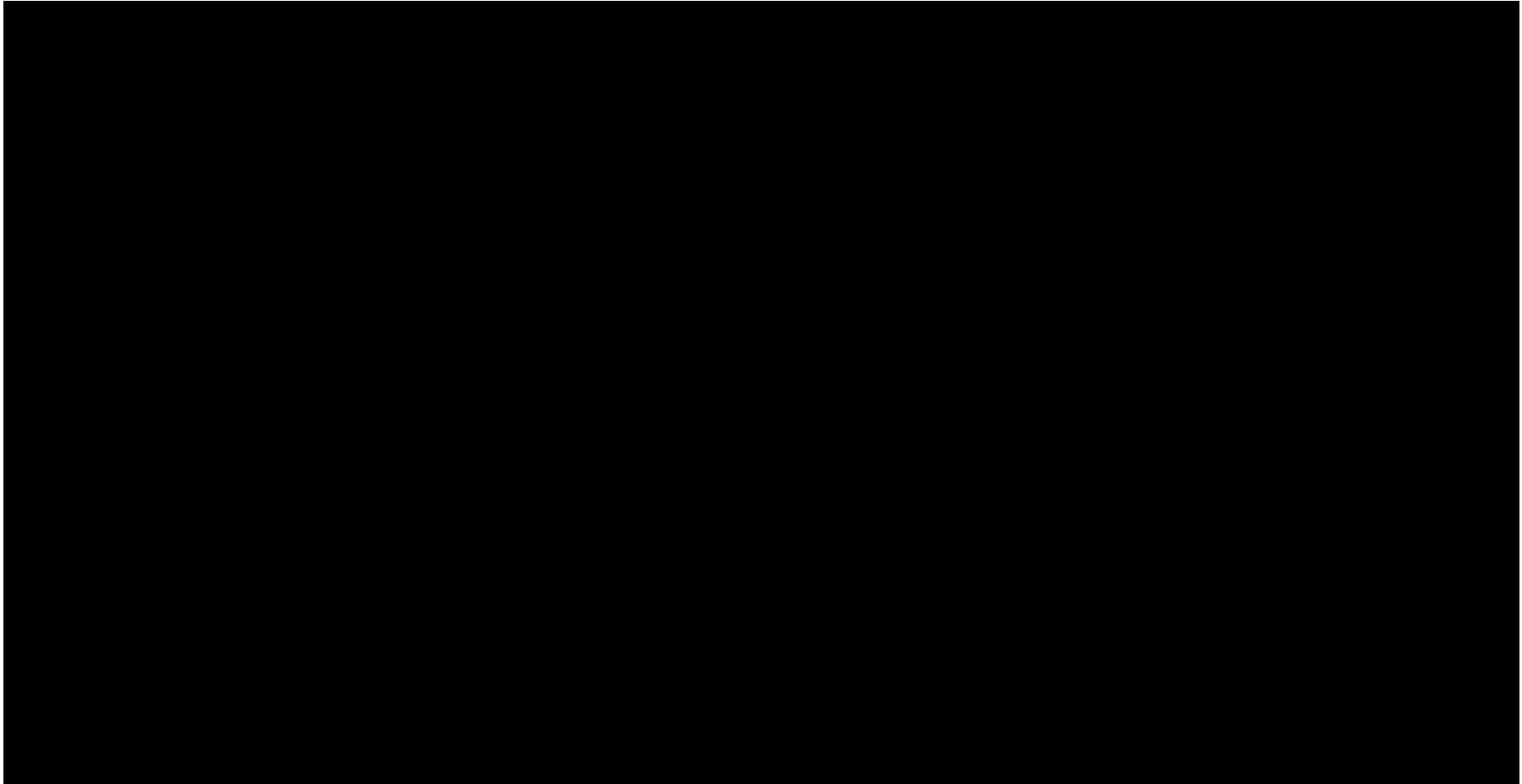


## Detailed Findings by Position

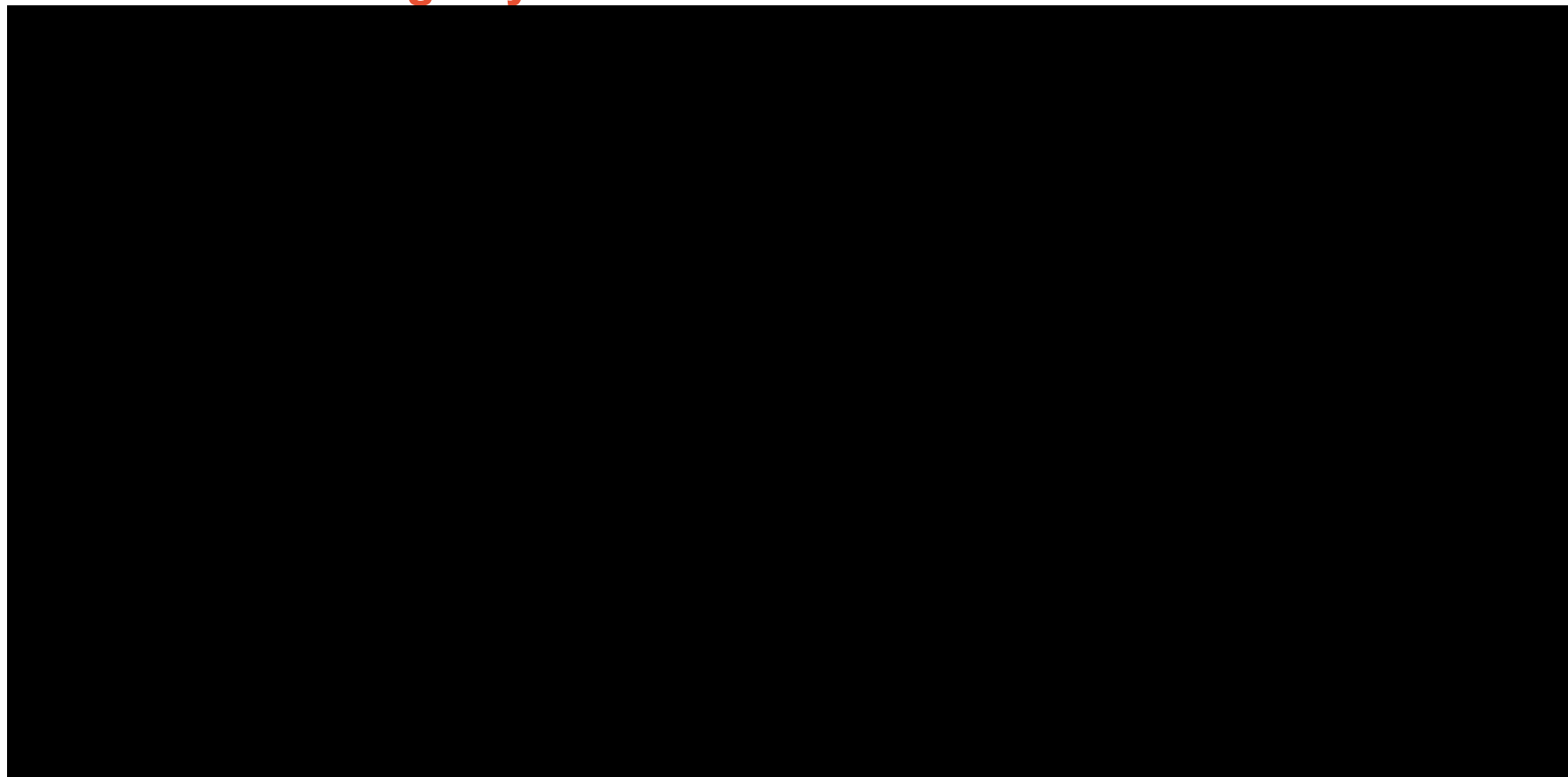
### Chief Operating Officer – Distribution and Customer Service

Compensation Element	2011 Target Hydro Ottawa Compensation	Competitive Compensation Data (000s) <i>Hydro Ottawa as a % above/below competitive data</i>								
		Combined Sample <i>(Utilities, Government &amp; Transportation)</i>			Utilities Only Sample			Government Only Sample		
		25th	50th	75th	25th	50th	75th	25th	50th	75th
Salary	\$212	\$190 11%	\$260 -19%	\$290 -27%	\$205 3%	\$255 -17%	\$495 -57%	Insufficient Data		
Target Bonus <i>(% of Salary)</i>	30%	30%	40%	55%	30%	45%	55%			
Target Total Cash <i>(TTC) (Salary + Target Bonus)</i>	\$275	\$270 2%	\$365 -25%	\$435 -37%	\$280 -2%	\$370 -26%	\$635 -57%			
Unit Revenue (\$ Millions)	\$754	\$344	\$825	\$1,730	\$438	\$1,001	\$2,732	-	-	-
<p><b>Benchmark:</b> Profit Center Head (2010 CDB General Industry Executive Database)</p> <p><b>Job Description:</b> Has primary responsibility for the profitability of a single organizational unit that typically combines marketing, sales and operations as well as some staff functions. In many organizations, this position is referred to as a division executive.</p>										

## Detailed Findings by Position

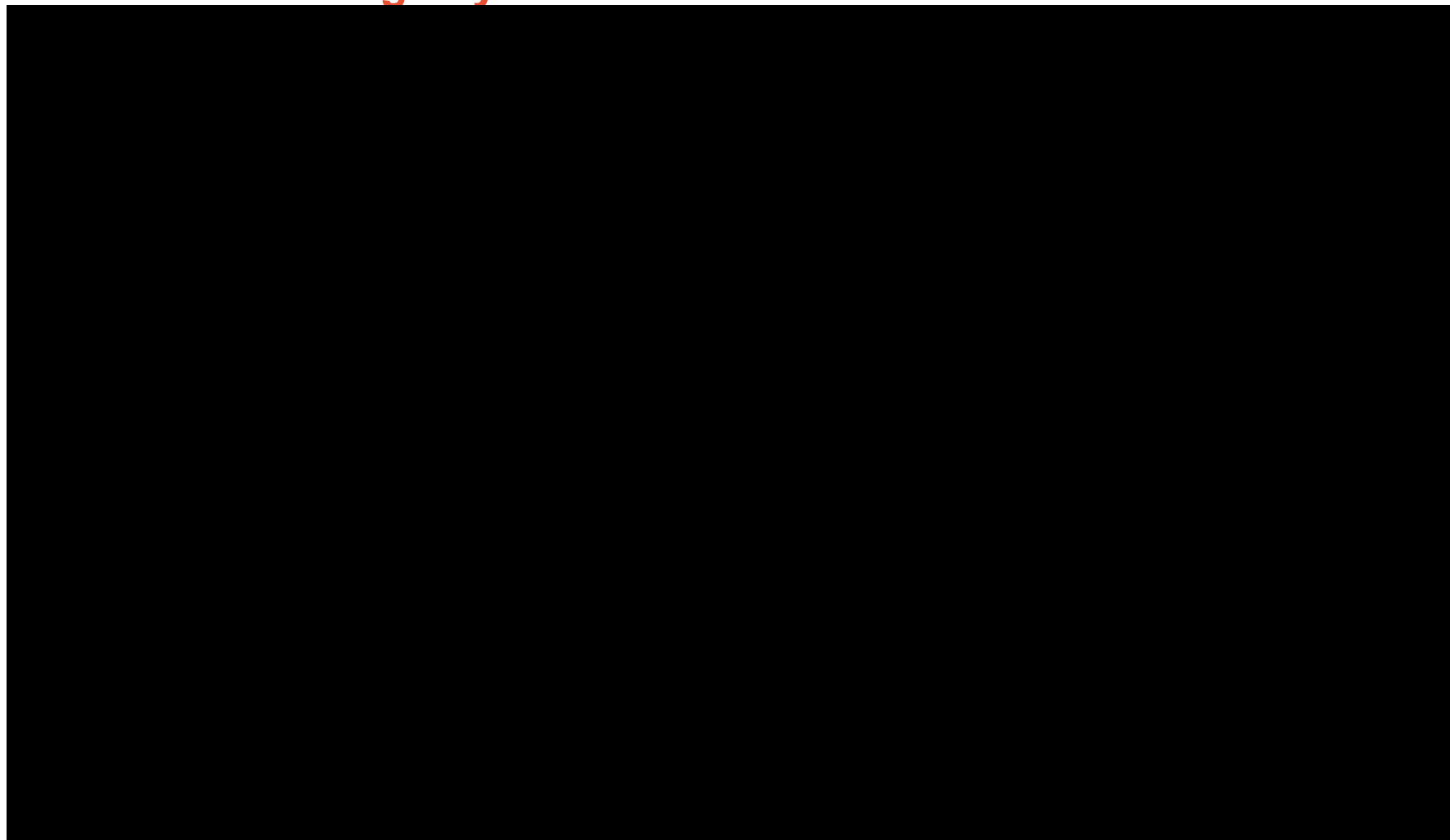


## Detailed Findings by Position

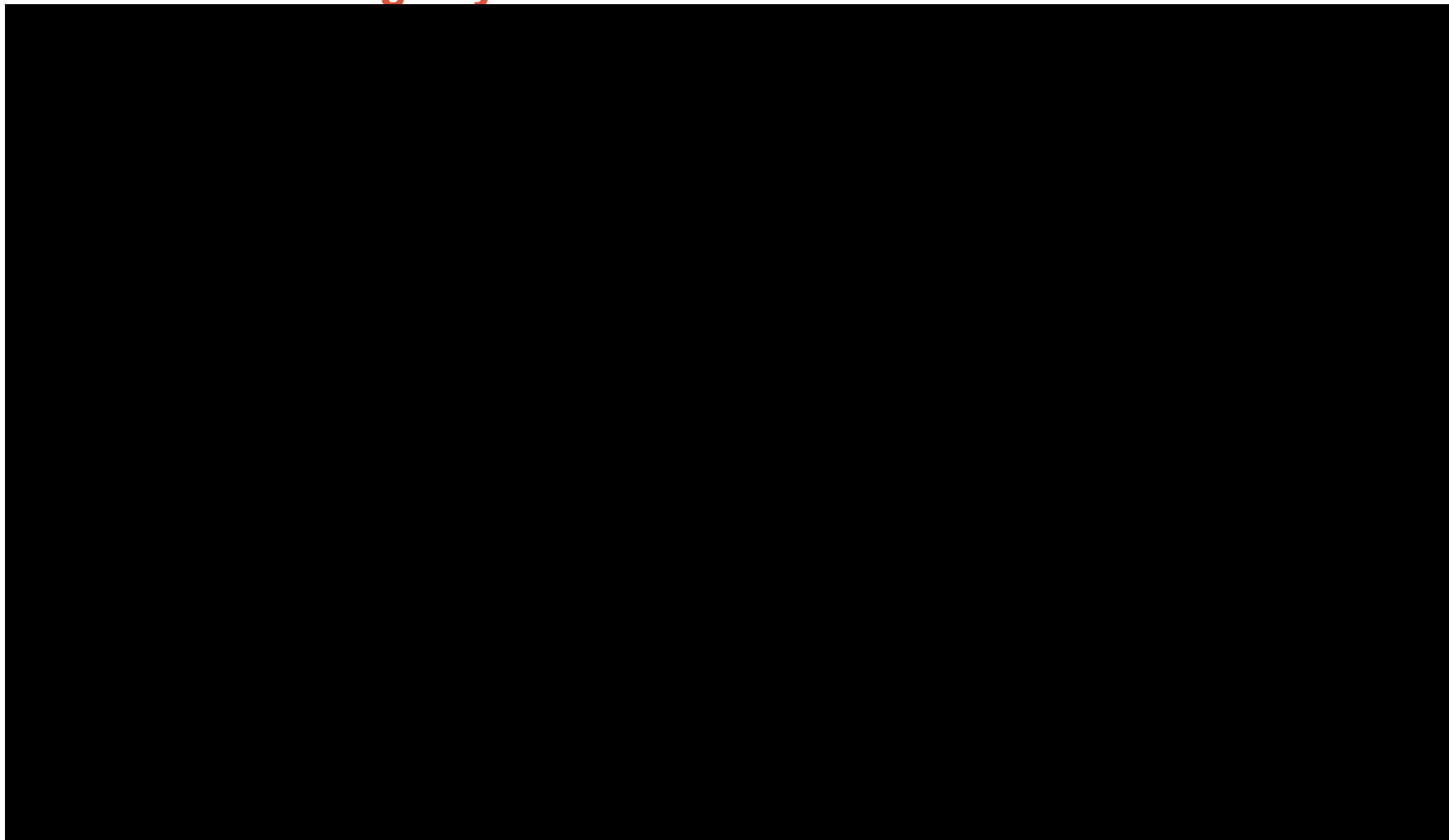




## Detailed Findings by Position



## Detailed Findings by Position



## TECHNICAL CONFERENCE UNDERTAKING - JT 1.4

### JT 1.4

To provide actual spending for furniture, development fees, professional fees.

### RESPONSE:

Please see Table A below for a summary of the actual cost of Furniture and Equipment, Professional Fees, and Development Fees included in the Facilities Renewal Program.

**Table A – Summary of the Actual Cost of Furniture and Equipment, Professional Fees, and Development Fees included in the Facilities Renewal Program**

Description	Final Cost
Furniture and Equipment	\$2,889,339
Professional Fees <sup>1</sup>	\$2,938,555
Development Fees <sup>2</sup>	\$2,114,323

<sup>1</sup> Costs for program management and architectural expertise.

<sup>2</sup> Costs for development charges from the City of Ottawa.

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.5**

1

2

**3 JT 1.5**

4 To review the calculation for the 2019 accelerated CCA impact for new facilities above \$66  
5 million.

6

**7 RESPONSE:**

8

9 The calculation of the accelerated Capital Cost Allowance ("CCA") impact on the new facilities  
10 has been reviewed, along with the Deferral and Variance Account ("DVA") Continuity Schedule  
11 provided as Attachment OEB-38(J): OEB Workform - Deferral and Variance Account (Continuity  
12 Schedule). Hydro Ottawa confirms the DVA schedule double counted a portion of the  
13 accelerated CCA and, as a result, was proposing to clear a higher balance than it should have.

14

15 A revised DVA Continuity Schedule to only include the grossed-up PILS variance regarding the  
16 accelerated CCA on the new facilities of \$99.5M (as calculated in UPDATED Attachment  
17 9-1-4(G): 2019 Accelerated Capital Cost Allowance - New Facilities \$99.5M and UPDATED  
18 Attachment 9-1-4(I): 2020 Accelerated Capital Cost Allowance - New Facilities \$99.5M, and  
19 shown on the bottom half of Table 2 in UPDATED Exhibit 9-1-4: Account 1592 PILS and Tax  
20 Variance) will be provided as part of Hydro Ottawa's response to undertaking JT 3.1, which will  
21 be submitted on August 5, 2020.

1                                   **TECHNICAL CONFERENCE UNDERTAKING - JT 1.6**

2

3   **JT 1.6**

4   To extend the analysis of the spreadsheet in KT1.4 back to 2006 or as far as possible.

5   \_\_\_\_\_

6   **RESPONSE:**

7

8   Please refer to Excel Attachment JT 1.6(A): Exhibit KT1.4 Long-Range Consensus Forecast -

9   Updates to 2006. This attachment provides an extension back to 2006 of the analysis set forth

10 in the spreadsheet labelled as Exhibit KT1.4 - Long-Range Consensus Forecast.

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.7**

**JT 1.7**

To provide a high-level assessment of the impact of changes to Regulation 429.04, if they were implemented.

---

**RESPONSE:**

In response to COVID-19 pandemic business impacts, the Government of Ontario amended O. Reg. 429/04 on May 29, 2020 to partially defer the Global Adjustment ("GA") charges applicable to customers that are not on the Regulated Price Plan ("RPP"), such as Class A and B consumers. The GA deferral effectively resulted in a uniform GA rate for the months of April through June 2020. These provisions are not expected to have any long-term impact on distributors, as the deferred GA amounts are likely to be recovered over 12 months, commencing January 2021.

On June 30, 2020, O. Reg. 429/04 was further amended to temporarily change how Class A eligibility would be determined for existing Class A customers, for the program years July 1, 2020 to June 30, 2021 and July 1, 2021 to June 30, 2022. As a result, existing Class A customers who do not meet the Class A eligibility threshold may remain as Class A customers, if they would have met the applicable threshold had the base period ended on February 29, 2020. Additionally, existing Class A customers will not be required to reduce consumption during peak hours, as their proportion of the GA amount will be frozen for two years. These amendments do not affect how distributors (or the Independent Electricity System Operator) must determine their peak demand factor for Class A customers.

While these provisions are intended to provide pricing stability for existing Class A customers who are in the process of recovering from the business impacts of the COVID-19 pandemic, Hydro Ottawa does not have sufficient information at this time to indicate that the proposed load forecast will be materially impacted. There remain too many unknowns in terms of the

- 1 pandemic trajectory, customer recovery timelines, and production levels on which to base a
- 2 revised load forecast.

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.8

### JT 1.8

To reforecast the 2021 compensation and benefit with a vacancy rate equivalent to 2019; to indicate savings in salaries and related benefits.

### RESPONSE:

The 2021 Test Year included a 4% vacancy assumption, which is in line with historical trending. The 2019 actual vacancy rate was 9%. The vacancy rate in 2019 was higher than normal for the reasons outlined below. Hydro Ottawa maintains that a 4% vacancy rate is the responsible and required assumption for the 2021 Test Year and that a vacancy rate of 9% is not sustainable.

Hydro Ottawa's attrition rate from resignations and retirements in 2019 was 7.89%, which is the highest rate experienced by the utility over the last decade. This high attrition rate resulted in a higher than usual number of vacancies in both specialized industry-related positions, as well as in non-industry-specific positions. The 2019 vacancy rate accounts for positions that were vacant for portions of the year, and those that remained vacant for most of the year.

Manager and Supervisor leadership-level positions that are core to the distribution business were especially challenging to fill in 2019, as this skill set is not readily obtainable in the marketplace and there are a limited number of internal candidates available. For example, in 2019, the following positions were vacant for periods of time and then subsequently staffed: Supervisor, Distribution Operations; Supervisor, Standards; Supervisor, Distribution Design Layout; Manager, Metering Systems; Manager, Distribution Operations; and Manager, Stations.

Non-industry-specific positions in Finance, Human Resources, and Information Technology were also difficult to fill in 2019 given the transferability of these skill sets from industry to industry. Additionally, the positions that were vacant required more advanced experience and knowledge in the areas of corporate financial planning, managerial accounting, compensation,



1 labour relations, and smart grid technology. With competition for individuals in these professions  
2 in Ottawa from federal government departments, Crown agencies, universities and colleges,  
3 hospitals, and a robust technology sector, all vying for the same limited resources, these  
4 positions took longer than usual to recruit for and fill in 2019.

5

6 The 2019 vacancy rate of 9% is simply not sustainable. Over the past year, many employees  
7 have had to assume some of the responsibilities of two and even up to three positions to ensure  
8 certain key business requirements were met. Continuing with this approach will only result in  
9 increased attrition, higher sick leave, and business requirements not being fulfilled.

10

11 Hydro Ottawa is confident that a vacancy rate of 4%, consistent with historical trending, is  
12 responsible, required, and attainable. The utility will be even better able to compete in both the  
13 industry and Ottawa markets on account of its positioning as a best employer; its new, more  
14 modern work environment and workplace, which it moved into in mid-2019; and its investment in  
15 technologies, such as its human resource ("HR") technology infrastructure and its client-centric  
16 HR service delivery model.

17

18 With its new, integrated HR technology, Hydro Ottawa's recruiting process is streamlined and  
19 automated. The technology provides for the posting of vacancies across many channels,  
20 delivers a better candidate experience with its self-serve functionality, and makes on-boarding  
21 more efficient.

22

23 And with its maturing HR service delivery model, initially introduced in 2018 and which includes  
24 the strategic position of HR Partner to the business, Hydro Ottawa is now seeing the benefits of  
25 this value-added role which supports the business in identifying future needs and potential gaps  
26 in skill sets through workforce planning, recruiting, succession planning, and learning and  
27 development plans.

28

29 Over the past year, Hydro Ottawa has leveraged its wide-ranging best employer recognition and  
30 this efficient and effective HR infrastructure to attract quality applicants for its career  
31 opportunities. By continuing to use traditional recruiting methods as well as an enhanced social

1 media presence to attract talent from all demographics, coupled with a focus on talent from  
2 diversified groups, Hydro Ottawa has successfully increased its applicant pools for its full-time  
3 positions. Applicants from LinkedIn have increased by over 80% in 2019 relative to 2018 levels,  
4 and by 67% from the Hydro Ottawa corporate career website. This trend is fully expected to  
5 continue in 2020, especially given the COVID-19 landscape, returning Hydro Ottawa to its  
6 historical vacancy rate of 4%.

7

8 It is for these reasons that Hydro Ottawa believes that the strictly hypothetical calculation of  
9 using the 2019 actual vacancy rate for the 2021 Test Year, which would result in a \$3.5M  
10 reduction in compensation costs, is not realistic.

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.9

### JT 1.9

With reference to SEC #1, covid impacts, to update data on the accounts receivable debt.

### RESPONSE:

Hydro Ottawa's accounts receivable aged arrears balances > 60 days increased as shown in Table A, when comparing balances as at June 30, 2020 relative to March 31, 2020.

**Table A – Comparison of March 2020 and June 2020 Accounts Receivable Aged Arrears Balances > 60 Days (\$'000s)**

Customer Class	Accounts Receivable Balance as of March 31, 2020	Accounts Receivable Balance as of June 30, 2020	Amount of Increase	Factor Increase
Residential Service	\$2,866	\$3,700	\$834	1.3 x
General Service < 50 kW	\$412	\$1,062	\$650	2.6 x
General Service > 50 kW	\$351	\$1,430	\$1,079	4.1 x
Other Service <sup>1</sup>	\$29	\$131	\$102	4.5 x
<b>TOTAL</b>	<b>\$3,658</b>	<b>\$6,323</b>	<b>\$2,665</b>	<b>1.7 x</b>

<sup>1</sup> "Other Service" means all remaining customers.

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.10**

1

2

**3 JT 1.10**

4 With respect to Table A in OEB Staff 47 updated in JT1.1, to please explain how Hydro Ottawa  
5 calculated savings for each of the listed initiatives.

6

**7 RESPONSE:**

8

9 Table A in Hydro Ottawa's response to interrogatory OEB-47 has been updated by way of the  
10 utility's response to undertaking JT1.1.

11

12 Concurrent with those updates, please find a description in Table A below of how the savings  
13 associated with productivity initiatives for 2016-2021 have been quantified.

1 **Table A – Description of Quantification Methodology for Annualized Savings from**  
2 **2016-2021 Productivity Initiatives**

Productivity Initiative	Description of Quantification Methodology
Online Billing Enhancements	<p>Online billing savings are determined by calculating the delta between the cost of an online bill and a physical bill (postage and bill print costs). The annual savings per customer, based on 12 bills per year, is then multiplied by the total number of customers that have converted to online billing (or are expected to have converted to online billing in the case of a future year's estimates). Billing costs would have been higher by these amounts in each of these years, if it were not for the success of Hydro Ottawa's e-billing productivity initiative.</p> <p>By way of illustration, the savings per bill between an online bill and a physical bill (including postage) is \$1.007. This is multiplied by 12 monthly bills for an annualized savings of \$12.084. In order to calculate estimated savings for the 2021 Test Year, these annualized savings are then multiplied by the anticipated number of customers (191,543) expected to be enrolled in e-billing through 2021. The result is an annualized cost savings of \$2.3M for 2021.</p>
Customer Contact Centre Enhancements	<p>In 2017, Hydro Ottawa switched to a new Contact Centre vendor. The savings are calculated based on the reduction negotiated in contract pricing (\$/minute), multiplied by the number of total minutes spent handling call inquiries. Availability and adoption of self-serve options, such as features in MyAccount and improved web-intake forms, are a driver for decreasing call volume, and by extension, the number of minutes associated with call handling. Conversely, major weather-related outage events can drive an increase in call volumes.</p>
Service Desk Manager	<p>Service Desk Manager savings are based on a 30% reduction in call volume, a decrease in the manual effort required to create and manage work orders, and elimination of the need to communicate with the customer regarding the quote.</p>
Payment Options	<p>These savings are a direct result of the following: (i) retirement of the third-party service that managed and stored Auto-Pay and Equal Monthly Payment Plan applications for Hydro Ottawa; and (ii) a reduction in manual application processing costs, resulting from the automation of enrollments for Auto-Pay requests through integration of MyAccount with the Customer Care and Billing system.</p>
Outbound Calling for 48-Hour Disconnection Warning	<p>Hydro Ottawa has eliminated the hand delivery of disconnection notices. The annual savings is based on the number of notices delivered multiplied by the delta between the cost of hand delivery (labour and fleet costs) and the cost of an automated disconnection telephone call.</p>

Productivity Initiative	Description of Quantification Methodology
Mobile Workforce Management ("MWM")	The cost savings are related to the decision not to renew an annual contract with the service provider for collections-related activities. The cost of these services was approximately \$300k annually. The ability to forego the contract renewal was the result of increased productivity of internal field collections staff from MWM's enhanced scheduling, dispatching, and routing of activities.
Outbound Calling for Planned Work and Vegetation Management Projects	Hydro Ottawa has eliminated the hand delivery of planned customer outage notices. The annual savings is based on the number of notices delivered multiplied by the delta between the cost of hand delivery (labour and fleet costs) and the cost of an automated telephone call.
Gatekeeper/Collection Meter Consolidation	The savings are calculated based on the number of phone lines reduced and the associated reduction in costs paid to the external providers.
Cable Chamber Inspections	The savings are based on reductions in program costs that were achieved by utilizing internal crews rather than external contractors. This has resulted in reduced costs associated with water pumping and return trips for minor repairs.
Underground Locates (Extension of 30-Day Expiration to 60-Day)	Hydro Ottawa extended the expiration of locates from 30 to 60 days to align with other utilities in the area. This resulted in a reduction in the number of locates required. The savings are calculated based on estimated reduction in volume multiplied by the average unit cost.
Renegotiation of CC&B Maintenance Agreement	The savings are calculated based on the new contract price in comparison with the previous contract price.
Points-based Flame Resistant ("FR") Clothing System	The savings are calculated based on the costs spent on FR clothing using our previous system versus the costs spent using the points-based system.
Physical Records Clean-up/Digitization	The savings are calculated based on the number of boxes of records destroyed or digitized multiplied by the external storage costs per box.
Negotiation of New Vegetation Management Service Contracts	The savings are calculated based on a reduction in the annual cost of regular cycle trim vegetation services in the new contract as compared with the costs in the previous contract.
Negotiation of Alternate Locate Agreement for UG Locates	The savings are based on the average cost of a field locate completed by the service provider multiplied by the total number of locates avoided by utilizing Alternate Locate Agreements.

Productivity Initiative	Description of Quantification Methodology
Utilities Savings from Ground-Mounted Behind-the-Meter-Solar Systems	The savings are calculated based on the current electricity bills for Hydro Ottawa's two new buildings (i.e. East Campus and South Campus) as compared to the electricity bills paid for the previous facilities (i.e. Albion and Merivale).
Dark Fiber Lease	The savings relate to the amount of the current lease payments made to the third-party service provider. This lease will be terminated in 2021.

1

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.11**

1

2

3 **JT 1.11**

4 To provide the updated analysis for OEB 126.

5

6 **RESPONSE:**

7

8 The pricing methodology for Finance Services provided by Hydro Ottawa to its affiliates  
9 changed in 2018 from being based on the proportionate share of cost, factored by time spent, to  
10 being based on the number and/or value of transactions processed. Affiliates were charged  
11 more for these services as a result of this change in methodology. This resulted in a \$152K  
12 increase in revenue for Hydro Ottawa.



**TECHNICAL CONFERENCE UNDERTAKING - JT 1.12**

1

2

**3 JT 1.12**

4 To provide the number for 2021 with particular to executives.

5

**6 RESPONSE:**

7

8 As noted on page 124 of the Technical Conference transcript dated July 15, 2020, merit  
9 increases include inflationary increases. Hydro Ottawa does not budget a different merit  
10 increase percentage for executives. The utility has used an assumption for merit increases for  
11 all management employees included in the Test Year (2021) that is similar to the  
12 non-compensation-related inflation rate, as noted in section 2.6 of UPDATED Exhibit 4-1-3:  
13 Operations, Maintenance and Administration Program Costs.

1                                   **TECHNICAL CONFERENCE UNDERTAKING - JT 1.13**

2  
3   **JT 1.13**

4   To file any presentations given at Board meetings in May and June 2020.

5 \_\_\_\_\_  
6   **RESPONSE:**

7  
8   This undertaking request should be read in conjunction with Hydro Ottawa's response to  
9   interrogatory CCC-13. That interrogatory had the following request: "Please provide the  
10   quarterly reports to the holding company and regulated distribution utility Boards for 2019 and  
11   Q1 2020."

12  
13   In its response to interrogatory CCC-13, Hydro Ottawa stated the following: "The Q4 2019 and  
14   Q1 2020 reports are not attached. In light of the COVID-19 pandemic, the year-end Committee  
15   and Board meetings originally scheduled for March and April 2020 have been rescheduled to  
16   May and June 2020. As a result, the Boards will not be receiving the Q4 2019 and Q1 2020  
17   quarterly reports until June 16, 2020."

18  
19   The Q4 2019 (or 2019 Corporate Results) and Q1 2020 reports were subsequently received by  
20   the Hydro Ottawa Holding Company and utility Boards of Directors on June 16, 2020. They are  
21   appended herein as Attachment JT 1.13(A): 2019 Corporate Performance Results and  
22   Attachment JT 1.13(B): 2020 Q1 President and CEOs Report.

23  
24   Consistent with the approach taken in Hydro Ottawa's response to interrogatory CCC-13, the  
25   aforementioned attachments have been redacted to remove information that is either not  
26   relevant to the scope of this proceeding (e.g. performance of affiliate companies) or that is not  
27   within the purview of the regulated distribution utility's Board of Directors.

May 29, 2020

***In-Camera* Agenda Item 1**

**HYDRO OTTAWA HOLDING INC.  
GOVERNANCE AND MANAGEMENT RESOURCES COMMITTEE  
*IN-CAMERA* REPORT NO. 1**

---

**TO THE HYDRO OTTAWA LIMITED BOARD OF DIRECTORS**

---

The Hydro Ottawa Holding Inc. Governance and Management Resources Committee (the “GMRC” and/or the “Committee”) met *in-camera* on May 29, 2020. The following report is provided for the information and consideration of the Hydro Ottawa Limited Board of Directors at its meeting of June 16, 2020.

---

**Members:** Yaprak Baltacioglu (Chair)  
Dale Craig  
Matt Davies  
Jim Durrell (ex-officio)  
Jan Harder  
Andrea Johnson

**Also Present:** Bryce Conrad, President and Chief Executive Officer  
Lyne Parent-Garvey, Chief Human Resources Officer  
Shaefann Sieuraj, Associate Corporate Secretary and Governance Officer  
Tina Tardioli, Director, Corporate Planning and Governance

<b>INDEX</b>	<b>PAGE</b>
<b>1. 2019 CORPORATE PERFORMANCE RESULTS</b>	<b>1-2</b>
<b>ANNEX “A” – 2019 CORPORATE PERFORMANCE RESULTS</b>	

**1. 2019 CORPORATE PERFORMANCE RESULTS**

The Governance and Management Resources Committee received the President and Chief Executive Officer’s 2019 Corporate Performance Results report attached at Annex “A”. The report provided an overview of the 2019 performance against the Board-approved priorities for Hydro Ottawa Limited, and included detailed performance results for each of the four key areas of focus around which the strategic plan is structured: financial strength; customer value; organizational effectiveness; and corporate citizenship.

Governance and Management Resources  
*In-Camera* Committee Report  
No. 01/20

2

May 29, 2020

**Governance and Management Resources Committee recommendation for approval by the  
Hydro Ottawa Limited Board of Directors:**

**That the Board of Directors of Hydro Ottawa Limited receive the 2019 performance results  
as outlined in the President and Chief Executive Officer's report dated May 29, 2020.**



## Board / Committee Report

**To:** Governance and Management Resources Committee

**Date:** 29 May 2020

**Submitted by:**

A handwritten signature in dark ink, appearing to read "B. Conrad", positioned above a horizontal line.

---

Bryce Conrad  
President and Chief Executive Officer

**Agenda Item:** 4 In Camera - 2019 Corporate Performance Results

### Report Recommendation(s):

That the Governance and Management Resources Committee recommend that the Board of Directors of Hydro Ottawa Holding Inc. approve that incentive payments in respect of the year 2019 be made to executive and management employees of Hydro Ottawa Holding Inc., Hydro Ottawa Limited, Energy Ottawa Inc., and Envari Energy Solutions Inc. on the basis of the consideration by the Board of Directors of Hydro Ottawa Holding Inc. of the results set out in the report of the President and Chief Executive Officer dated May 29, 2020 and entitled "2019 Corporate Performance Results".

### BACKGROUND:

1. The Hydro Ottawa Holding Inc. (HOHI) Board, in conjunction with the President and Chief Executive Officer, is responsible for developing a strategic plan for the enterprise. After the Board has approved the strategic plan, it must monitor HOHI's implementation of and progress toward achieving the plan.
2. The integrated planning and performance management and reporting framework for Hydro Ottawa endorsed by the Board in 2006 provides for a five-year strategic plan for the enterprise that is structured around four key areas of focus based on the *Balanced Scorecard* model of performance: Financial Strength; Customer Value; Organizational Effectiveness; and Corporate Citizenship.

3. The five-year strategic plan is operationalized on an annual basis through a Corporate Performance Scorecard that is set and monitored by the Board.
4. The Corporate Performance Scorecard establishes specific performance expectations (qualitative performance goals and priorities, and quantitative measures and targets) aligned to each of the four key areas of focus to drive the strategic plan in a given year.
5. Performance priorities for executive and management staff for a given year are cascaded from the Corporate Performance Scorecard through division/group scorecards and Individual Contribution Plans for management group employees.
6. Results highlights and progress against the scorecard (including Enterprise Risk Management [ERM] assessment) on a consolidated level are reported quarterly to the HOHI and HOL Boards by the President and Chief Executive Officer.
7. Full year corporate results on a consolidated level and the President and Chief Executive Officer's assessment of performance of the Executive Management Team are received and reviewed by the GMRC, and the GMRC in turn recommends to the HOHI Board the performance index score and the payment of incentives.
8. The HOL Board also receives and reviews the full year corporate results on a consolidated level that include results against those priorities and performance measures and targets having HOL Board oversight.

## **DISCUSSION:**

9. For 2019, the HOHI Board approved one corporate performance scorecard for the enterprise. The HOL Board also endorsed the scorecard.
10. Results highlights and progress against the scorecard (including ERM assessment) on a consolidated level were reported in Q1, Q2 and Q3-2019 to the HOHI and HOL Boards by the President and Chief Executive Officer.
11. The report attached at Annex "A" presents the President and Chief Executive Officer's summary of the full year results on a consolidated level against the approved 2019 Corporate Performance Scorecard, including results that would have previously been provided as part of the annual report of the Chief Human Resources Officer. This report will rise to both the Hydro Ottawa Limited and the Hydro Ottawa Holding Inc. Boards for information.

12. The President and Chief Executive Officer's (PCEO) assessment of the performance of the Executive Management Team will be provided to the GMRC at the time of its meeting on May 29, 2020. The PCEO's assessment will rise only to the Hydro Ottawa Holding Inc. Board and for approval.

**SUPPORTING DOCUMENTATION:**

Annex "A" – 2019 Corporate Performance Results

Annex "A"



A leading partner in a  
smart energy future



## 2019 Corporate Performance Results

Governance and Management Resources  
Committee

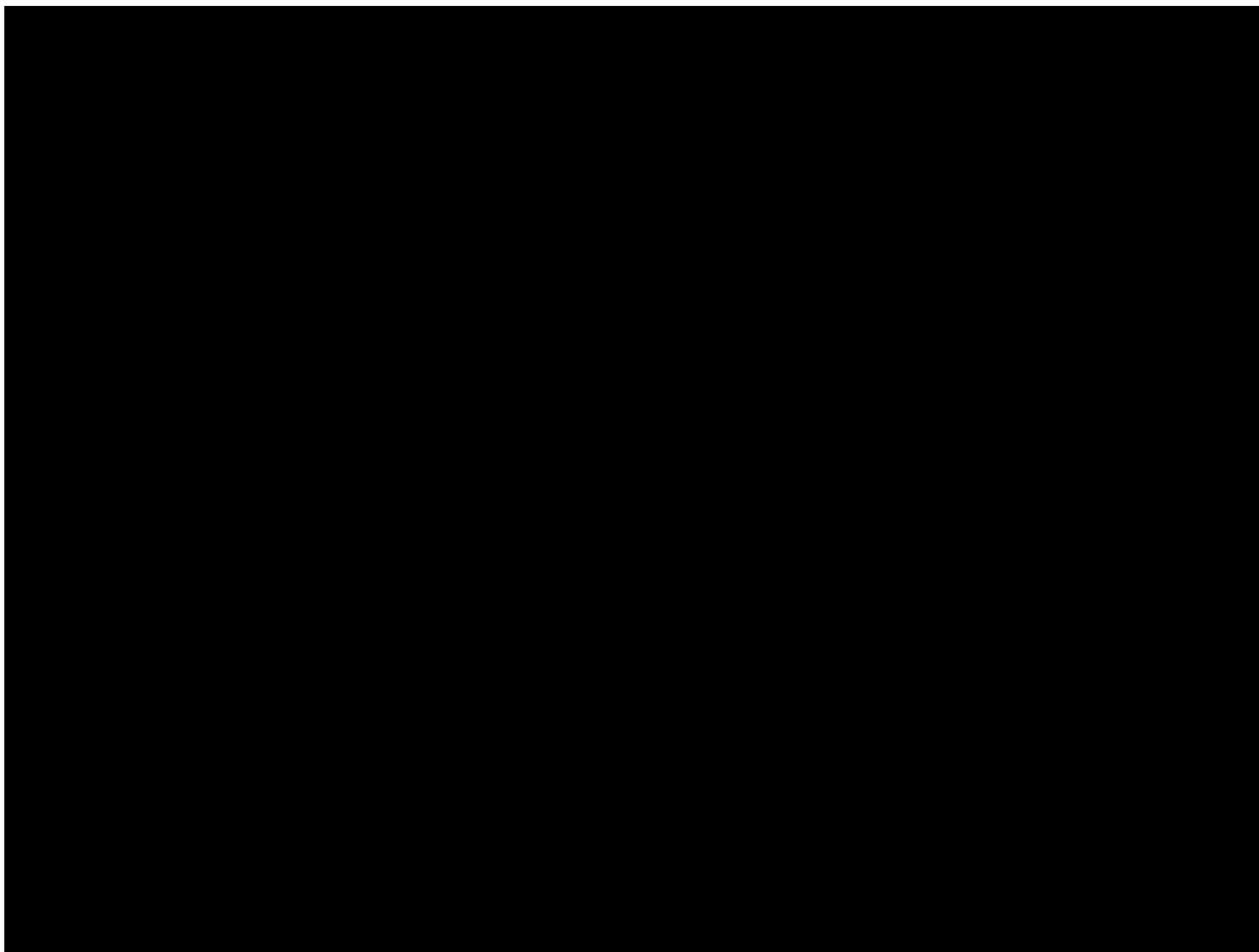
May 29, 2020



## Presentation Overview

- Decisions Required
- 2019 Corporate Review Process
- 2019 Corporate Performance Goals
- Section 1
  - 2019 Corporate Performance – Results by Key Area of Focus including ERM Assessment (Summary, Details, and Scorecard Assessment)
  - [REDACTED]
  - [REDACTED]
  - [REDACTED]
  - [REDACTED]





## The corporate review process is comprehensive and multi-faceted...

- Results highlights and progress against the Board-approved annual corporate performance scorecard (including ERM assessment) on a consolidated level are reported quarterly to the HOHI and HOL Boards by the P/CEO
- [REDACTED]
- [REDACTED]
- [REDACTED]
- the HOL Board of Directors also receives and reviews the full year corporate results (presented in this report at Sections 1A, B and C) that include results against those priorities (background in yellow) and performance measures and targets having HOL Board oversight



## 2019 Performance Goals Summary...

5-Year Enterprise Strategic Objectives and Outcomes (2016-2020)		2019 Corporate Performance Goals
Financial Strength	<p><b>Enterprise Strategic Objective:</b>            We will create sustainable growth in our business and our earnings  <i>By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i></p> <p><b>Enterprise Strategic Outcome:</b>            Growth in shareholder value</p>	<p><i>Note – at the April 14, 2015 GMRC meeting, the HOHI Board Chair directed that weightings be discontinued; this was implemented for the 2016 Corporate Performance Scorecard that was approved by the Board on November 26, 2015</i></p> <ul style="list-style-type: none"> <li>• <i>Grow revenues from new sources</i></li> <li>• <i>Enhance / protect revenues from existing business lines</i></li> </ul>
	<p><b>Enterprise Strategic Objective:</b>            We will deliver value across the entire customer experience  <i>By providing reliable, responsive and innovative services at competitive rates</i></p> <p><b>Enterprise Strategic Outcome:</b>            Customer loyalty</p>	
	<p><b>Enterprise Strategic Objective:</b>            We will achieve performance excellence  <i>By cultivating a culture of innovation and continuous improvement</i></p> <p><b>Enterprise Strategic Outcomes:</b>  <i>Efficient and effective operations            Safe and healthy work environment            Engaged, aligned and prepared workforce</i></p>	
	<p><b>Enterprise Strategic Objective:</b>            We will contribute to the well being of the community  <i>By acting at all times as a responsible and engaged corporate citizen</i></p> <p><b>Enterprise Strategic Outcomes:</b>  <i>Leading governance and business practices            Engaged stakeholders            Safe, secure and environmentally responsible services            Positive community impact</i></p>	
		<ul style="list-style-type: none"> <li>• <i>Assist customers in managing their energy consumption and electricity costs</i></li> <li>• <i>Deliver on customer expectations for service quality and responsiveness</i></li> <li>• <i>Maintain overall distribution system reliability</i></li> <li>• <i>Continue to enhance operational performance and productivity</i></li> <li>• <i>Maintain leading health and safety record</i></li> <li>• <i>Enhance organizational and employee capability</i></li> <li>• <i>Enhance our brand image in the community and the industry</i></li> <li>• <i>Continue to improve our environmental performance and reduce our impact on the environment</i></li> </ul>



## SECTION 1A

Summary Results by Key Area of  
Focus including Enterprise Risk  
Management Assessment

privileged and confidential

Financial Strength – Summary Key Corporate Priorities <i>Grow revenues from new sources and enhance / protect revenues from existing business lines</i>		Assessment ● ▲ X
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
5.	<u>2021 – 2025 Electricity Custom Incentive Rate Application</u> – finalize planning, preparations, and submission by end of 2019	▲
6.	[REDACTED]	■
7.	Maximize CDM GWh results to achieve 2020 financial incentives	X
■	[REDACTED]	■

Legend: ● Tracking to plan ▲ Tracking behind plan X Action required



## Summary Performance Highlights...

- **Financial Strength**

- [REDACTED]
  - | [REDACTED]
    - [REDACTED]
  - | [REDACTED]
    - [REDACTED]
    - [REDACTED]
  - | [REDACTED]
    - [REDACTED]
- HOL net income of \$37.7M exceeded budget by \$2.8M resulting in a **\$22.6M dividend**, \$2.6M above the dividend floor of \$20M and highest dividend payment based on HOL operations

- [REDACTED]
  - | [REDACTED]
    - [REDACTED]
  - | [REDACTED]
    - [REDACTED]
  - | [REDACTED]
    - [REDACTED]
- [REDACTED]
  - | [REDACTED]
    - [REDACTED]



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- A more than 5,000-page 2021 to 2025 Custom Incentive Rate Application was filed with the OEB in February 2020 including the results of special studies and customer engagement. An estimated total effort of more than 15,000 staff hours



<b>Customer Value – Summary Key Corporate Priorities</b> <i>Assist customers in managing their energy consumption and electricity costs; deliver on customer expectations for service quality and responsiveness; and maintain overall system reliability</i>		<b>Assessment</b> ●▲X
1.	Continue to deliver a range of CDM programs that are customer-centric, cost effective and generate strong GWh results, including a. Residential Programs including Hydro Ottawa's app b. Commercial Programs including Small Business Lighting and building retrofit	X X
2.	Maintain or enhance our best in class reliability metrics	●
3.	Continue implementation of Customer Experience Roadmap key deliverables including using data to drive decisions impacting customers	●
4.	Actively pursue and participate in energy innovation projects	●
5.	Smart Grid – continue implementation of the foundational grid transformation and modernization projects including Telecom Dark Fibre network and further leverage new SCADA system	▲
6.	Continue our improvements in maintenance and capital execution – emphasis on workforce scheduling and contractor management; complete all budgeted programs / plans on time and within budget	●

Legend: ● Tracking to plan ▲ Tracking behind plan X Action required



## Summary Performance Highlights...

- **Customer Value**

- **Hydro Ottawa's five-year, OEB-approved rate plan** continued to provide certainty and stability in distribution revenues to operate the company effectively and maintain the reliability of our electricity system
- **Reliability** – strong performance in 2019 with improvements over 2018; management of outage duration has been the best in 7 years; we continued to compare favourably with industry peers
- Delivered on our **distribution sustainment (system renewal and service) and demand (system access) capital program** as per the 2019 portion of the OEB-approved rate plan; major system access projects were the expansion work for the interconnection of our Quebec assets into Ontario and the ongoing work on the relocation and undergrounding of infrastructure as part of the Elgin Street renewal project



## Summary Performance Highlights...

- **Customer Value**

- **Notable progress on Customer Experience Roadmap initiatives** including the launch of Webchat (live customer chat) on MyAccount to support customer communications and inquiries
  - Revised hydroottawa.com – better mobile-friendly user experience, easier search capability, proper bandwidth, improved page load times, enhanced security, AODA compliant prior to 2021
  - Leveraged auto-dialer technology to deliver 48-hour collection notices and notify customers about tree trimming in their neighbourhoods (retired hand delivery process)
  - Introduced email campaign to welcome new customers to our service territory
- **Customer Education** - Continued engagement through social media including real-time information during outages; held “Open House” style sessions for upcoming community planned work; launched ThinkEnergy Podcasts – released 17; engaged our customers through focus groups, telephone survey, online workbooks and a workshop regarding our 2021-2025 rate application







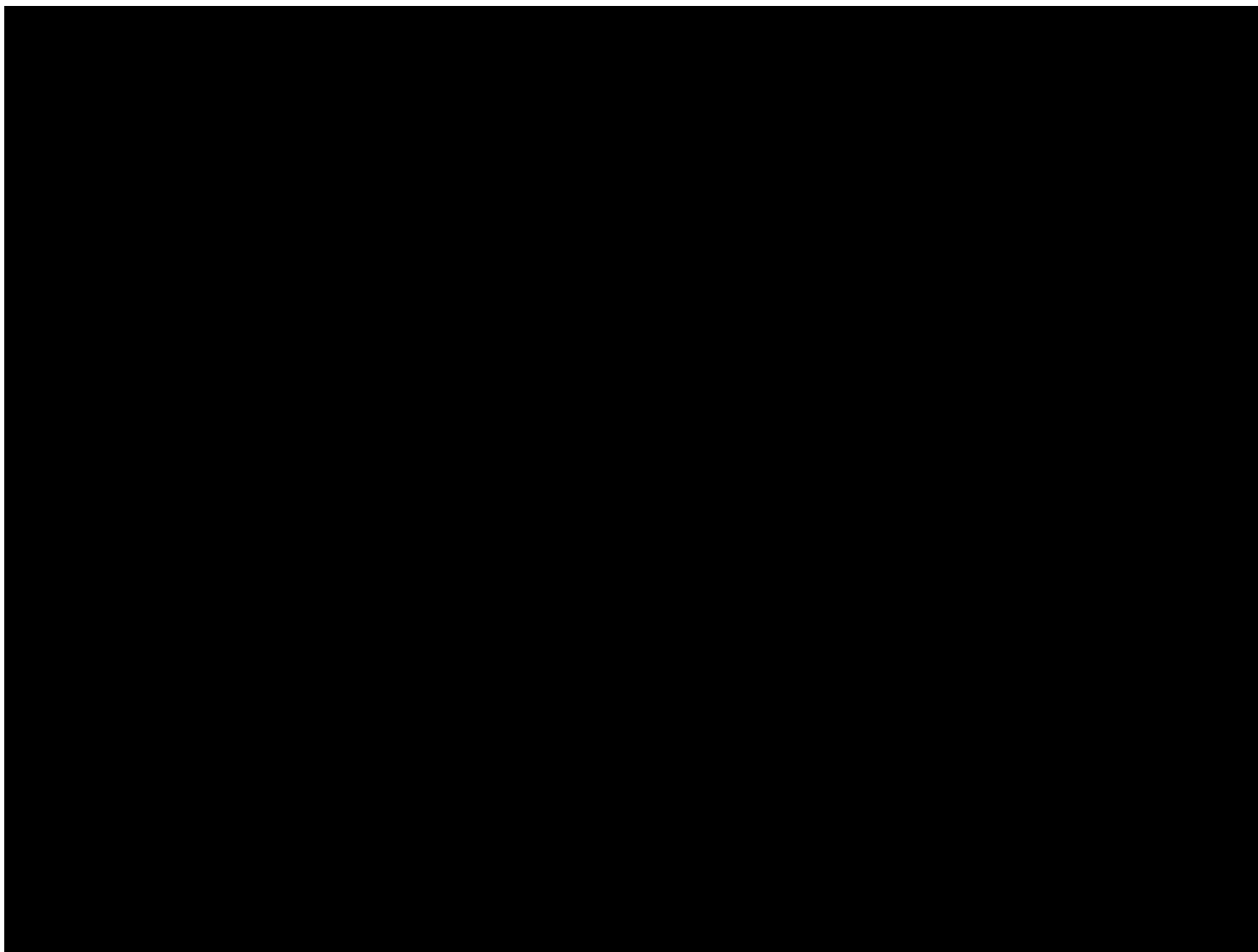
## Summary Performance Highlights...

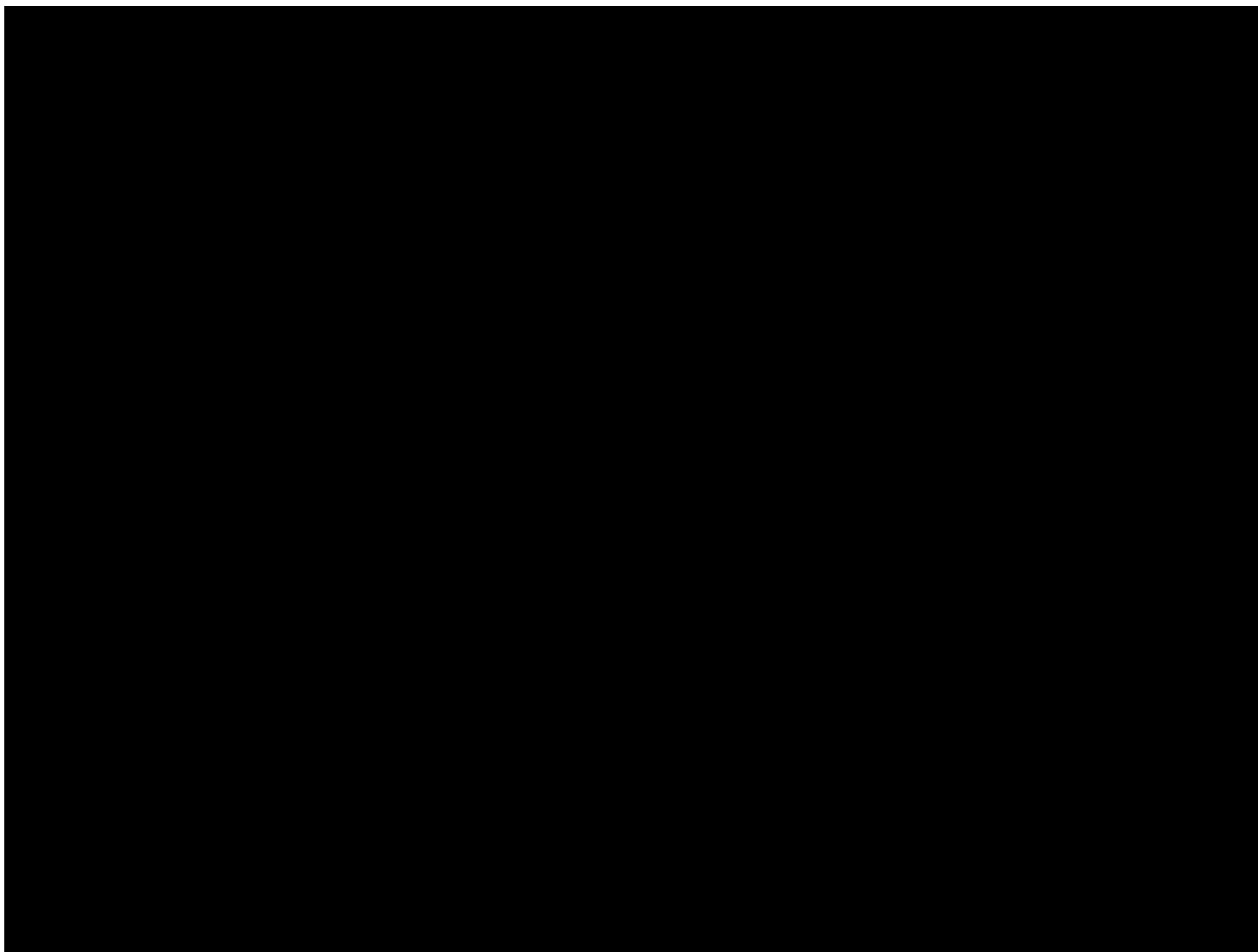
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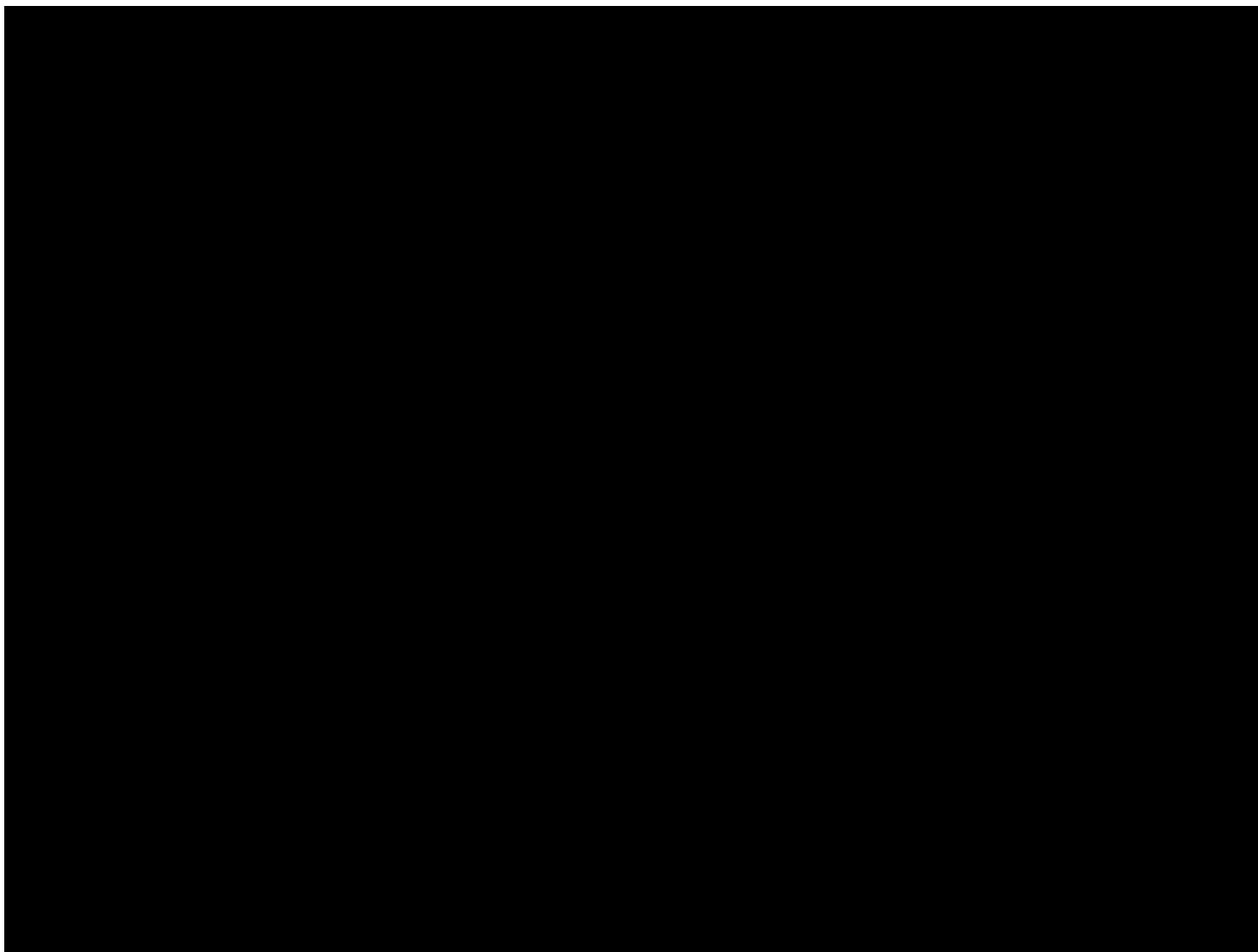
## Summary Performance Highlights...

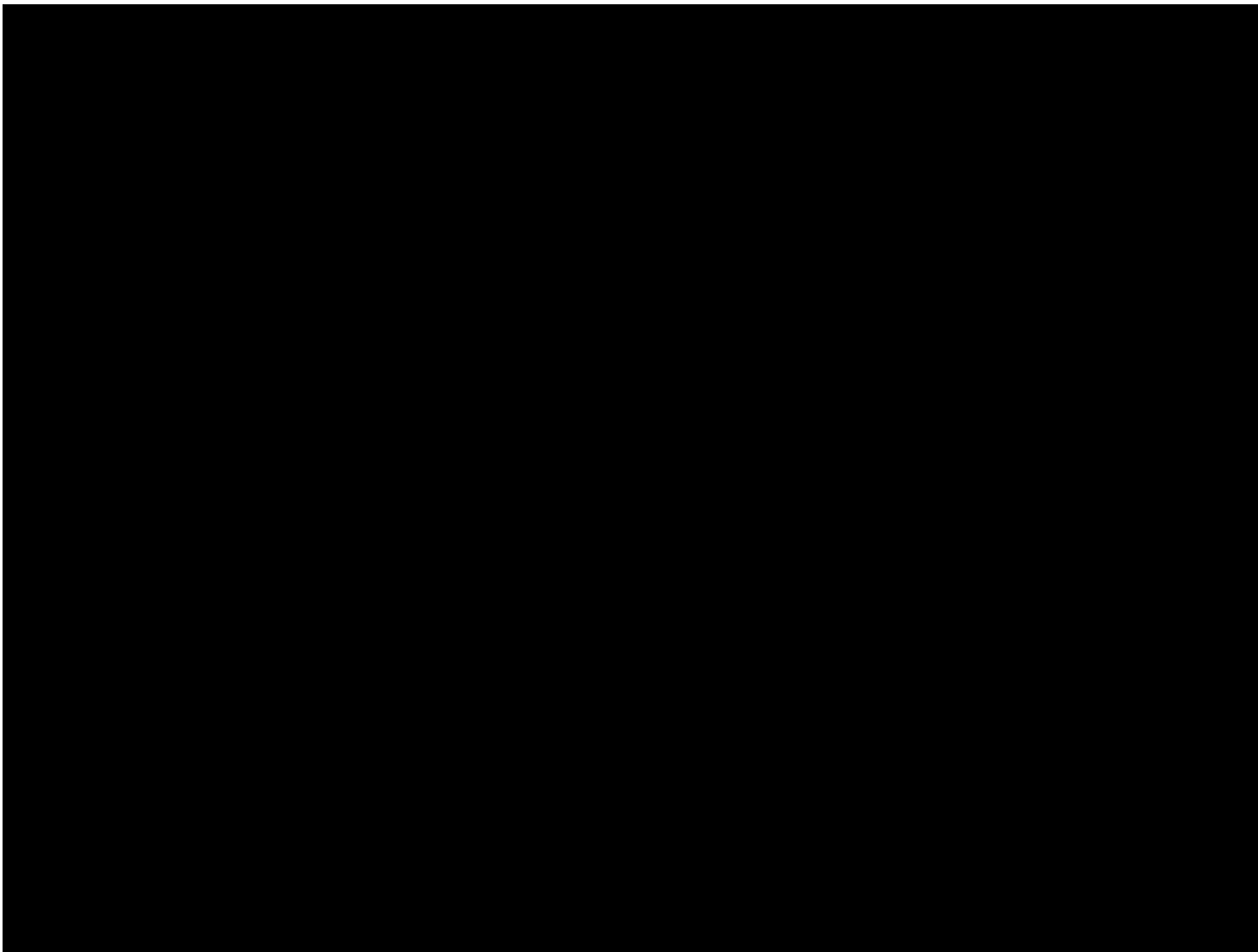
- **Organizational Effectiveness**
  - **Facilities Renewal Program** - completed on time and \$0.5M under budget; Albion and Merivale property dispositions were also completed; successful transition to the workplace of tomorrow – 80% of employees seamlessly moved and transitioned to three new facilities; and a Building Dedication Ceremony was held on June 18, 2019 including unveiling of dedication plaque with partners, Board members and Mayor. Employee Engagement and Consultation continued leading up to the move including
    - pre-move orientation tours
    - Relocation of the Fallen Worker Memorial from Merivale to East Campus by the Joint Health and Safety Committee
    - Records clean-up – 10,627 boxes of records disposed
  - **Union Management Relations**
    - [REDACTED]
    - Application for certification filed by the Society of Energy Professionals for representation at HOL continues to progress through the Ontario Labour Relations Board (OLRB); decision regarding first 8 Supervisors received on June 3, 2019; OLRB excluded all 8 Supervisors from Society's proposed bargaining unit as they exercise managerial functions as contemplated under the OLRA











HYDRO OTTAWA LIMITED  
2019 - FOURTH QUARTER - ENTERPRISE RISK MANAGEMENT OUTLOOK

FOCUS AREA / Risks	Q4 - 2019	Outlook for 2020	Long Term Outlook (2-5 years)	Watch Areas
<b>FINANCIAL STRENGTH</b>				
Stagnant or Declining Revenue	●	●	▲	Cautious 2-5 year outlook stemming from the pending Ontario Energy Board review of the 2021-25 Custom Incentive Rate Application, submitted in Q1, 2020.
Declining Profitability	●	●	▲	The 2-to5-year outlook is cautious as there is uncertainty about the policy / regulatory measures the Ontario government will enforce in reducing electricity bills by 12%.
Declining Financial Strength	▲	▲	▲	Debt capacity for future growth has become negative based on the 70% threshold approved by the Board. The budget approved by the Board in Nov reflects a D/C % of 72.1% for 2020.
Unexpected Financial Loss	●	●	●	
<b>CUSTOMER VALUE</b>				
Declining Service Delivery	●	●	●	
Declining Customer Loyalty	●	▲	●	The Province's March 2019 decision to centralize CDM programs at the IESO could adversely affect Hydro Ottawa's credibility and standing as a partner in conservation service offerings.
Declining Customer Satisfaction	●	●	▲	New regulations for the mandatory reporting of privacy breaches under PIPEDA came into effect late in 2018. More complexity likely in the secure management of customer information, especially if Canada adopts elements of GDPR.
<b>ORGANIZATIONAL EFFECTIVENESS</b>				
Declining Operational Effectiveness	●	●	●	
Loss of Operational Capacity	●	●	▲	OEB reform, including an anticipated change in leadership and new governance structure, presents potential for both opportunities and risks.
Declining Employee Morale, Motivation	▲	▲	▲	Legal proceedings continue on the Society of Energy Professionals' move to represent sections of HOL's workforce.
Unsafe / Unhealthy Business Work Environment	●	●	●	
<b>CORPORATE CITIZENSHIP</b>				
Loss of Credibility within the Community and Industry	●	●	▲	OEB reform, including an anticipated change in leadership and new governance structure, presents potential risks and uncertainties. It is possible that the provincial Government may continue to press its policy priorities for the sector (e.g. lower rates) through regulatory and other directive measures.
Erosion of Shareholder Value	●	●	●	

ERM REPORT ON KEY STRATEGIC INITIATIVES

FOURTH QUARTER 2019

STRATEGIC INITIATIVES	Q4 - 2019	Outlook for Project Completion	Watch Areas
[REDACTED]			
2021-2025 Custom IR Rate Setting Application	●	●	- The 2021-25 Custom Incentive Rate Application was filed in February, 2020. Preparation is underway for the upcoming intervenor / interrogatory process.
[REDACTED]			
[REDACTED]			
[REDACTED]			
[REDACTED]			
[REDACTED]			





## SECTION 1B

### Detailed Results By Key Area of Focus

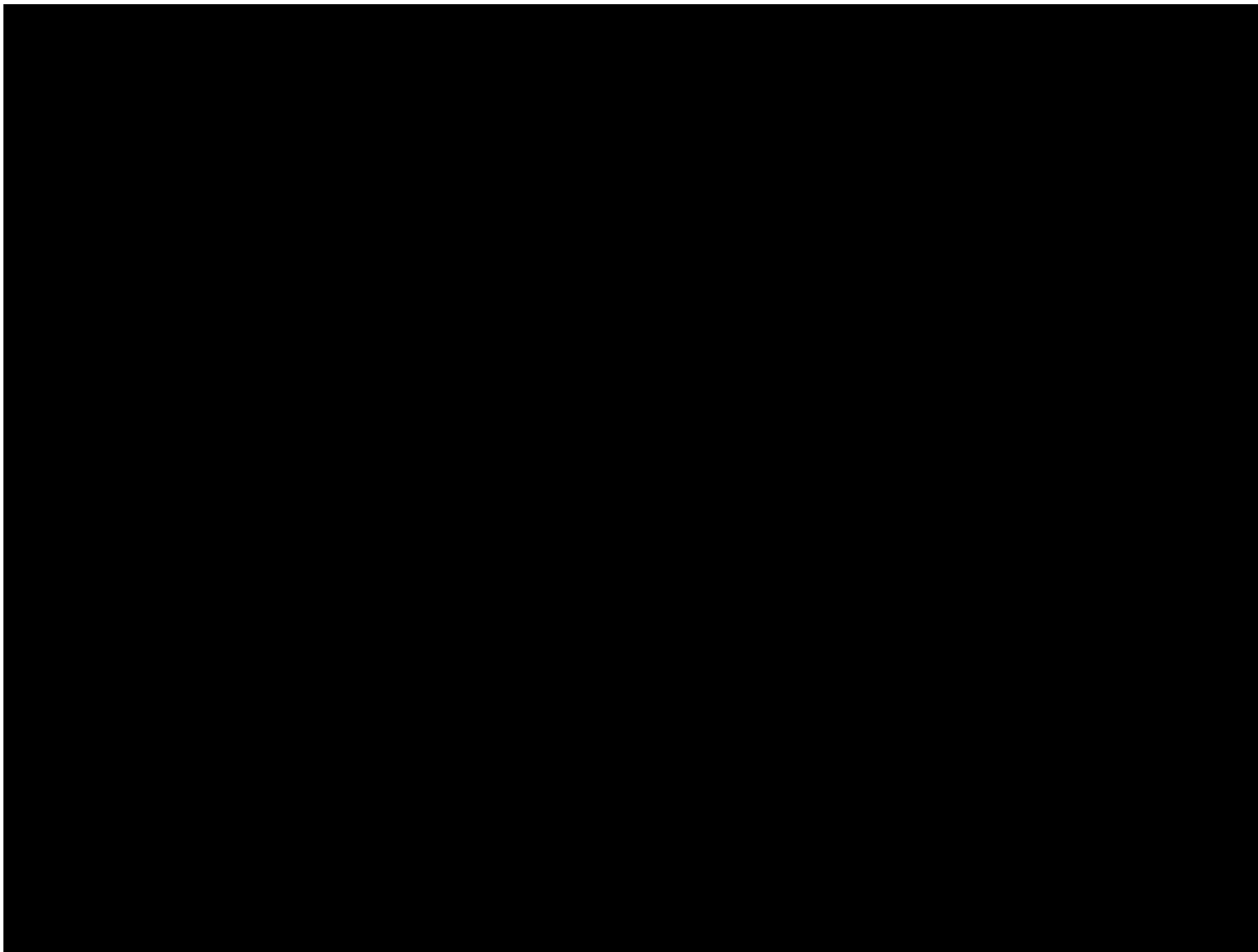
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## FINANCIAL STRENGTH

Our commitment is to provide sustained  
shareholder value now and in the future...

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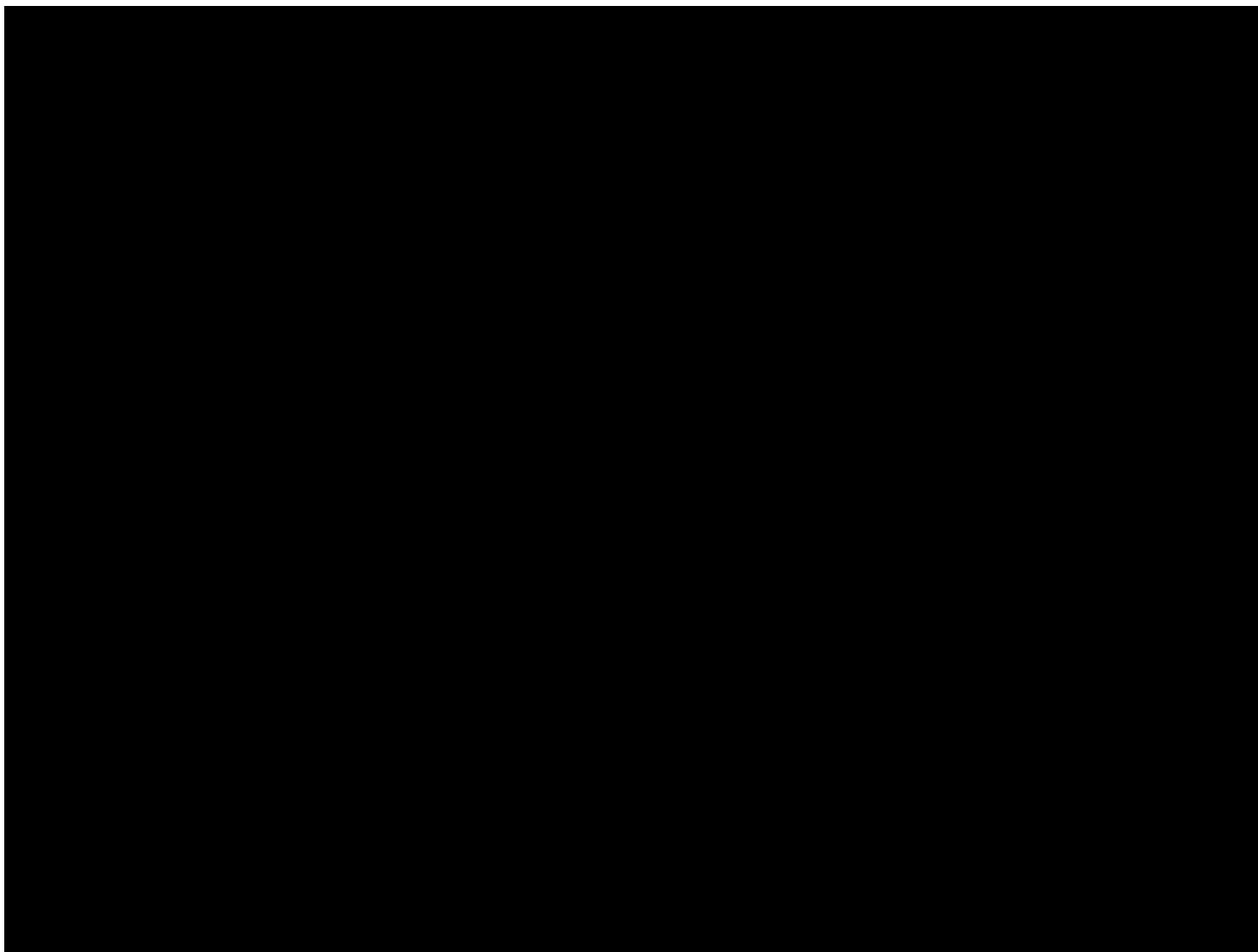


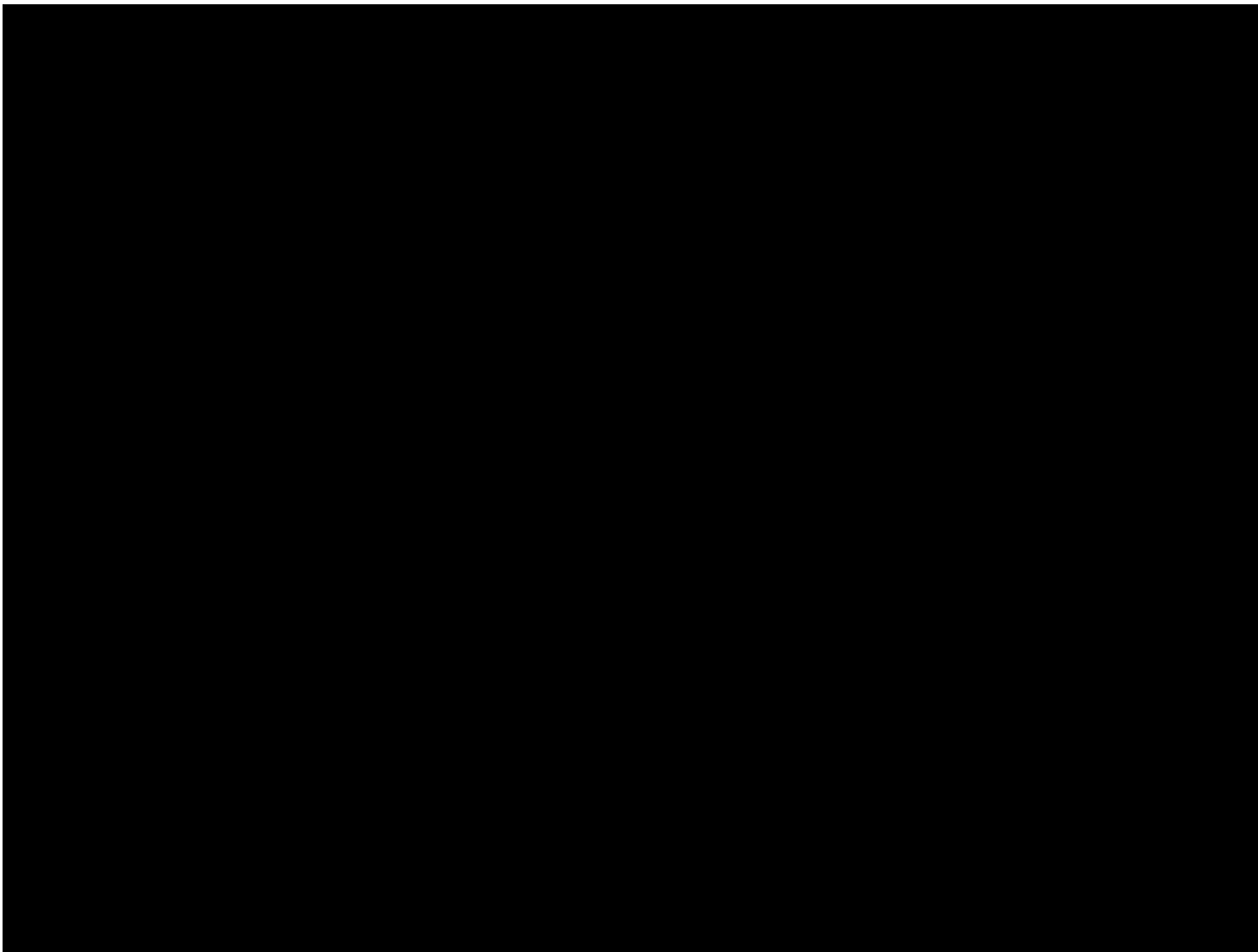


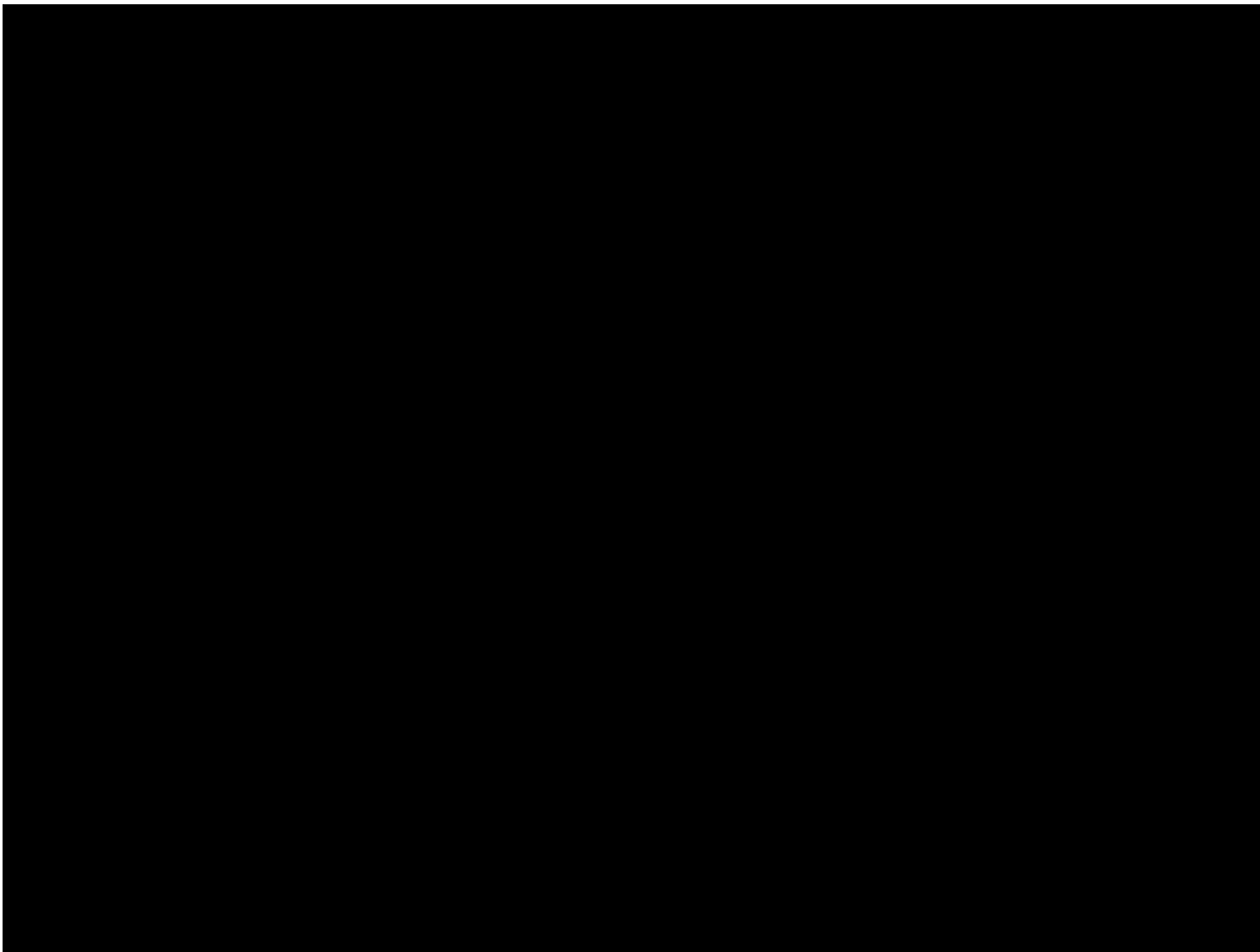
## **HOL Net Income was ahead of Budget resulting in a \$22.6M Dividend - \$2.6M above the \$20M floor...**

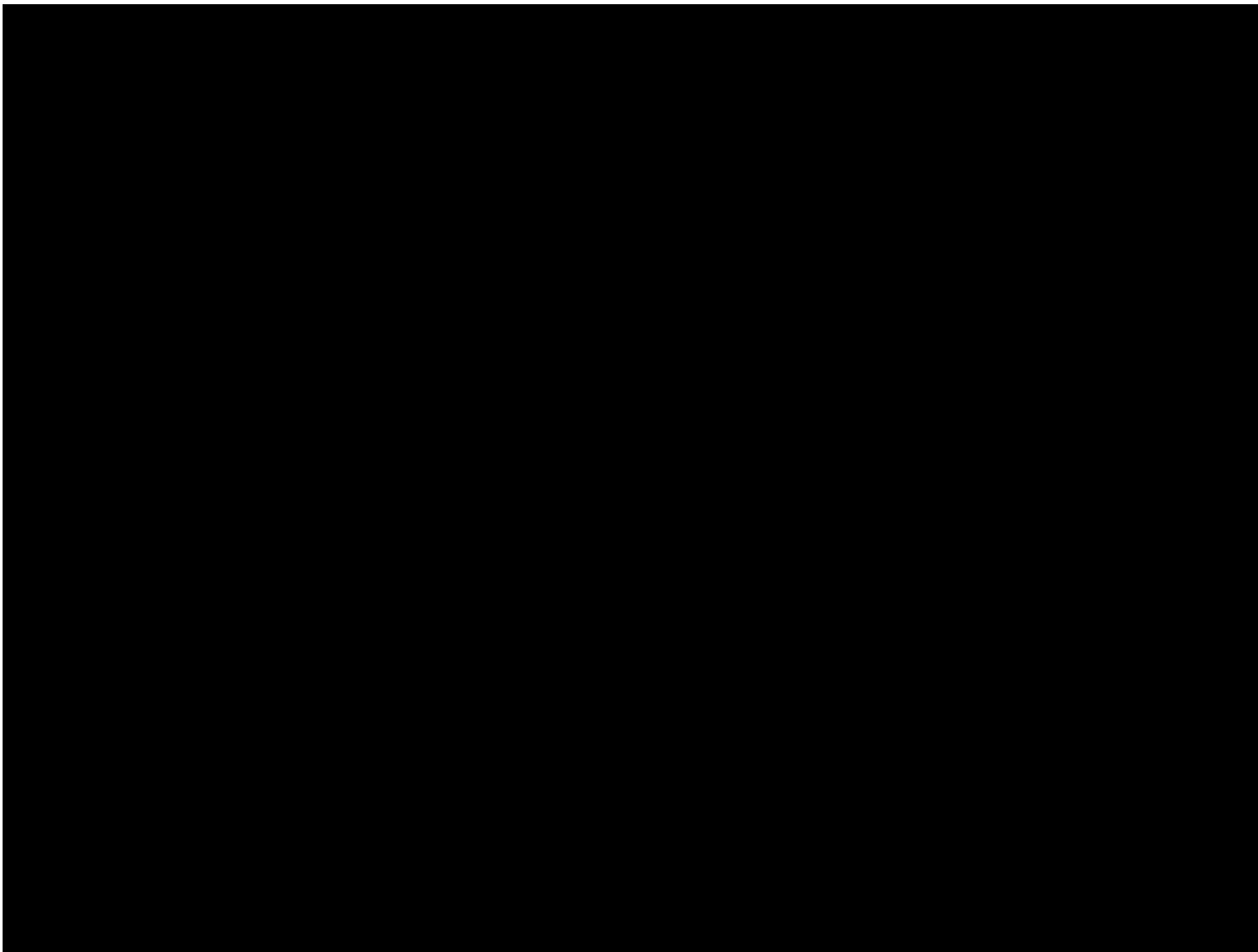
- Net income of \$37.7M surpassed budget by \$2.8M or 8%
  - Revenues of \$210.2M exceeded budget by \$1.5M (1%)
  - Expenses of \$100.3M exceeded budget by \$3.9M (4%)
- EBITDA of \$109.9M below budget by \$2.4M or 2% largely explained by the \$2.3M distribution revenue adjustment per OEB direction regarding Bill C-97 (Offset in taxes – no impact to net income). EBITDA increased from prior year by \$1.7M
- Annualized Return of Equity of 10.2% exceeds budget of 9.4%
- 60% of HOL Net Income results in a \$22.6M dividend, \$2.6M above the \$20M floor

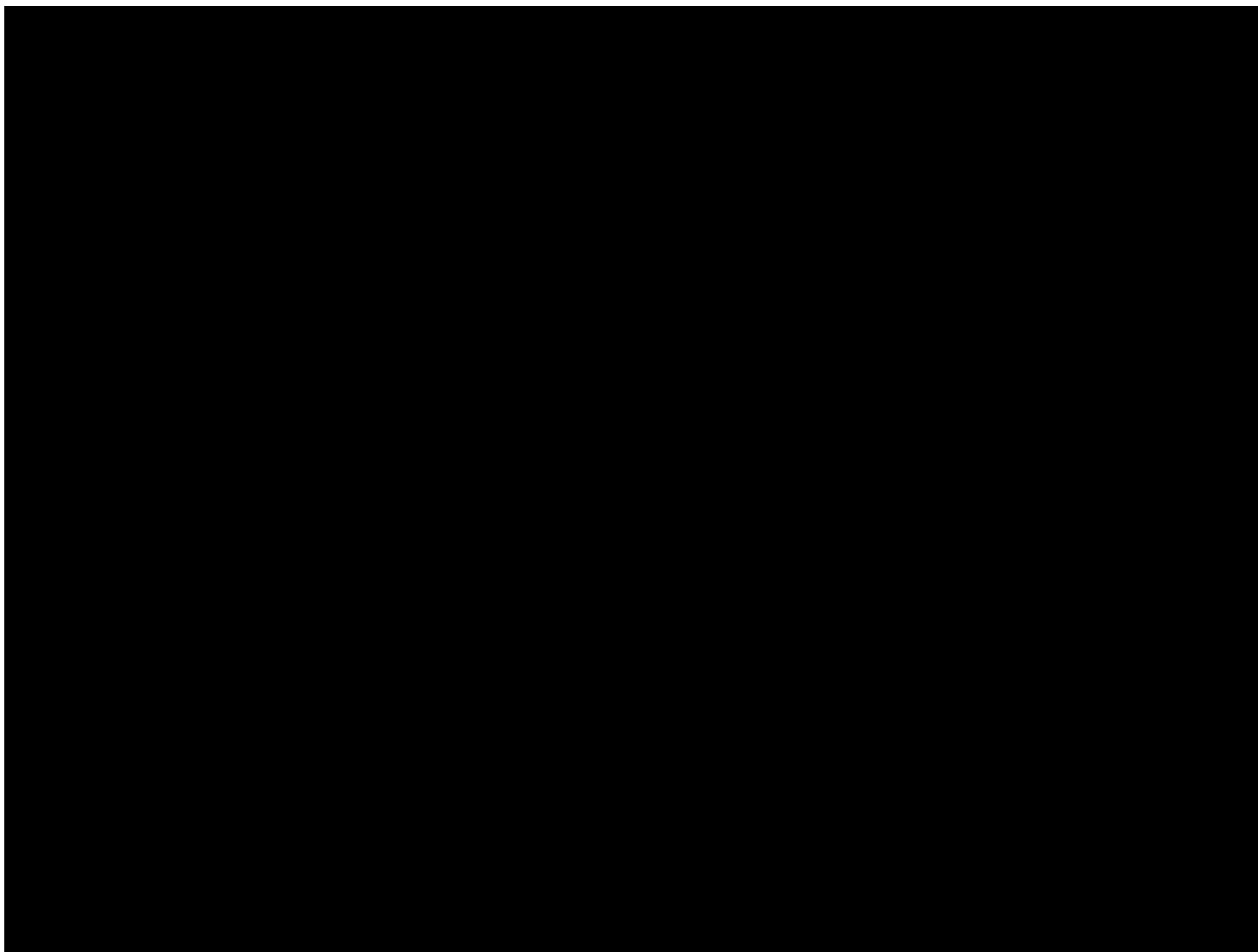


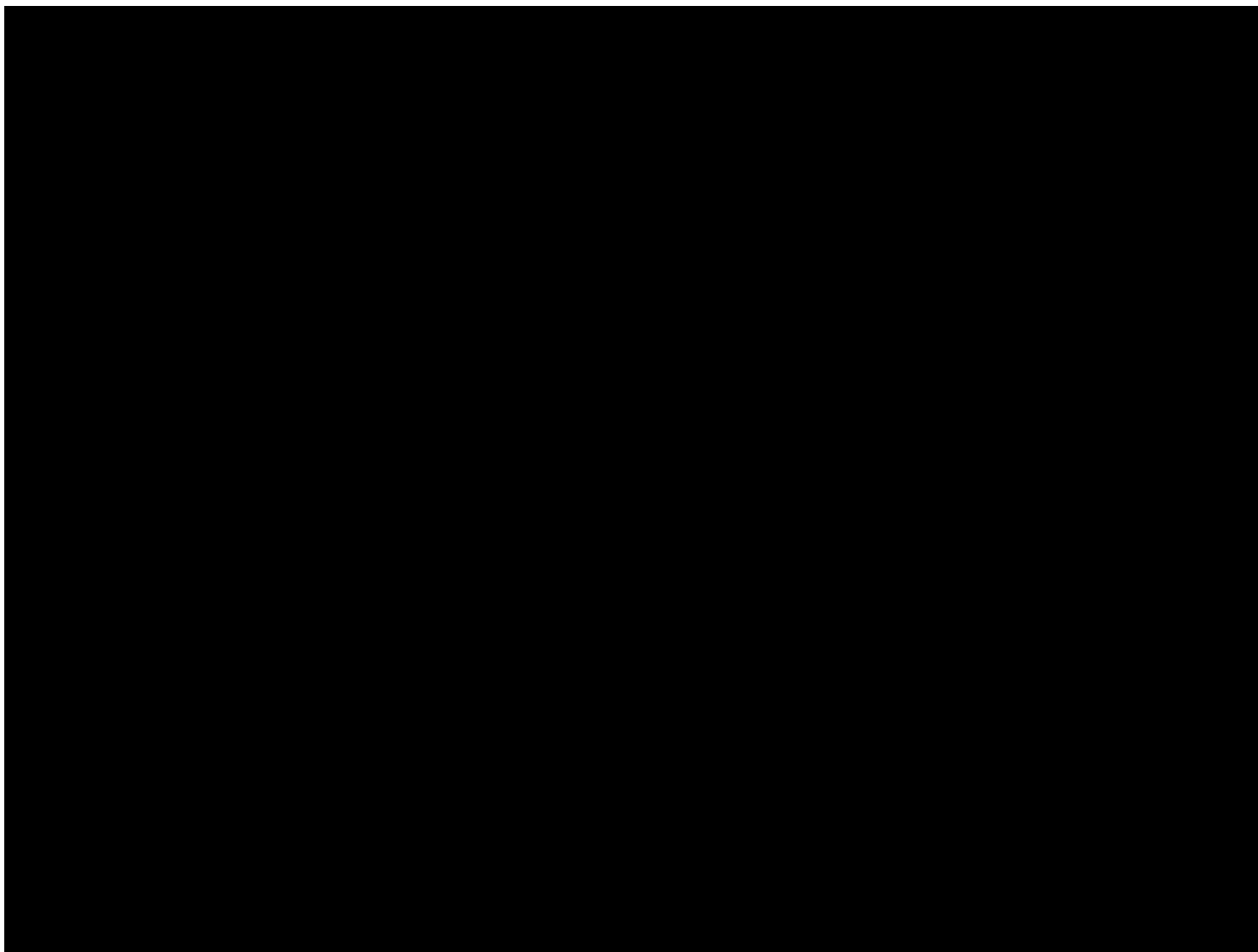














## CUSTOMER VALUE

We strive to deliver a reliable product, while keeping our service efficient and friendly, and our costs as low as possible

privileged and confidential

## Once again, change was the only constant in our policy and regulatory landscape...

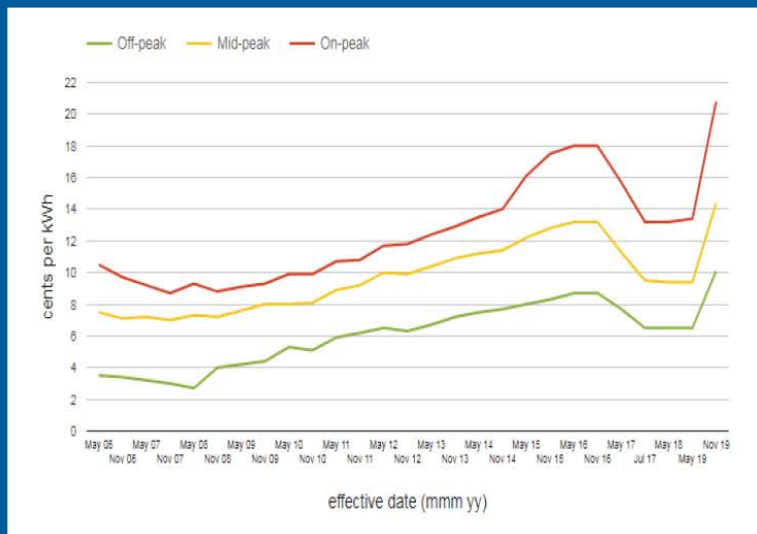
- Major developments in 2019 were OEB governance reform and modernization, downsizing of Ontario's conservation framework, and replacement of the Fair Hydro Plan with the Ontario Electricity Rebate
  - Others included new OEB customer service rules and consultations on utility remuneration/distributed energy resources, [REDACTED], reforms to federal environmental assessment processes, 2019 federal election, and Ottawa's declaration of a climate change emergency
- We remained active in seeking to influence policy and regulation
  - Collaboration and education with government, OEB, IESO, and industry groups
  - [REDACTED]
  - Comments and advocacy on key initiatives (OEB customer service rules, utility remuneration, innovation; Ontario Electricity Rebate (OER) regulatory amendments; New York energy legislation)
- Recognized for thought-leadership in proposing policy solutions
  - OEB modernization and reform, components of OER implementation package, options for interim conservation framework





## Politics continued to play a large role in electricity prices...

Historical Electricity Prices (2006-2019)

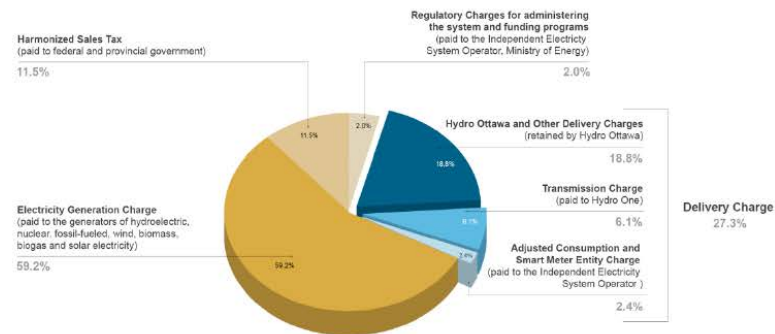


- In May 2019, the government passed legislation replacing Ontario's Fair Hydro Plan (FHP) with a new rate relief structure
- On November 1, 2019, the Ontario Electricity Rebate commenced, giving eligible customers a reduction of 31.8%.
  - In parallel, Regulated Price Plan prices once again reflected the true cost of electricity, thereby causing the spike in prices illustrated in the adjoining chart (the drop in 2017 was as a result of the FHP)
- The Ford government has committed to a **12% reduction** in electricity costs

## Hydro Ottawa rate increases were kept to a minimum without sacrificing system reliability and performance...

- Hydro Ottawa's costs now represent **18.8% of the total bill**
- Rate increases have been held to the minimum to operate effectively while ensuring appropriate revenue to maintain the reliability of our electricity system
- Our five-year OEB-approved rate settlement provides certainty and stability through 2020.

Break-down of Charges effective January 1, 2020



\* For the average Standard Supply Service residential customer using 700 kWh per month. The percentage above does not include the Ontario Electricity Rebate.

	JAN 1, 2012	JAN 1, 2013	JAN 1, 2014	JAN 1, 2015	JAN 1, 2016	JAN 1, 2017	JAN 1, 2018	JAN 1, 2019	JAN 1, 2020
Hydro Ottawa rate increases	9.16% <sup>1</sup>	0.95% <sup>1</sup>	1.34% <sup>1</sup>	1.28% <sup>1</sup>	0.04% <sup>1</sup> 0.79% <sup>2</sup>	1.79% <sup>2</sup>	1.65% <sup>2</sup>	-0.16% <sup>2</sup>	-1.94% <sup>3</sup>
OEB commodity rate changes for electricity generation <sup>4</sup>	16.36% <sup>1</sup>	4.89% <sup>1</sup>	12.02% <sup>1</sup>	6.84% <sup>1</sup>	13.33% <sup>1</sup>	3.90% <sup>2</sup>	-26.24% <sup>2</sup>	-0.21% <sup>2</sup>	54.9.% <sup>3</sup>

<sup>1</sup> Based on consumption of 800 kWh per month (OEB's then historical average customer).

<sup>2</sup> Based on consumption of 750 kWh per month (OEB's then historical average customer).

<sup>3</sup> Based on consumption of 700 kWh per month (OEB's new average customer).

<sup>4</sup> Collected by HOL without mark-up and passed through to other electricity market participants. The commodity rate change represents all RPP changes in the year.

## A top priority across HOL was moving the 2021-2025 rate application towards the finish line...

- A 5,209 page (approximately 15,000 staff hours) 2021 to 2025 Custom Incentive Rate Application was filed with the OEB on February 10, 2020 including
  - the results of special studies and customer engagement
  - the defense for \$33.5M in Facilities Renewal Program costs not previously approved by the OEB in the last rate application (OEB previously approved \$66M)
- With this application, Hydro Ottawa has requested an increase for a typical residential customer of \$1.31 per month in 2021 (or 1.32% on the total bill). Over the full 2021-2025 period, the increase would be an average of \$1.38 per month
- For a typical commercial customer (using 2,000 kilowatt-hours per month with a demand of less than 50 kilowatts), Hydro Ottawa has requested an increase of \$1.74 per month in 2021 (or 0.65% on the total bill). For the full five-year period, the increase would be an average of \$3.45 per month





## Customers endorsed our 2021-2025 plans...

- Between January and October 2019 nearly 21,000 customers participated in Hydro Ottawa's rate application customer engagement process, an unprecedented level of response according to Innovative Research Group
- This included focus groups, telephone survey, online workbooks and a workshop with mid-market and key accounts

With regards to Hydro Ottawa's draft plan, which of the following statements best represents your view?

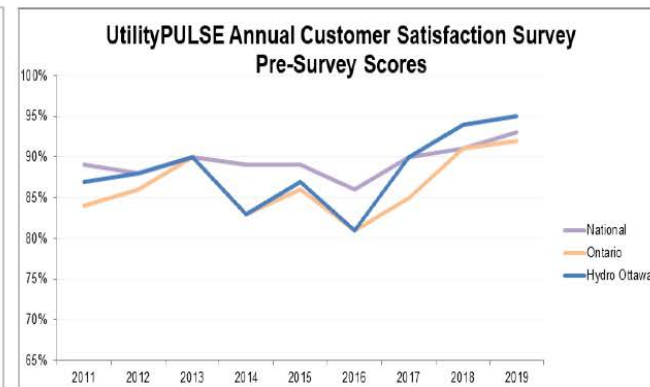
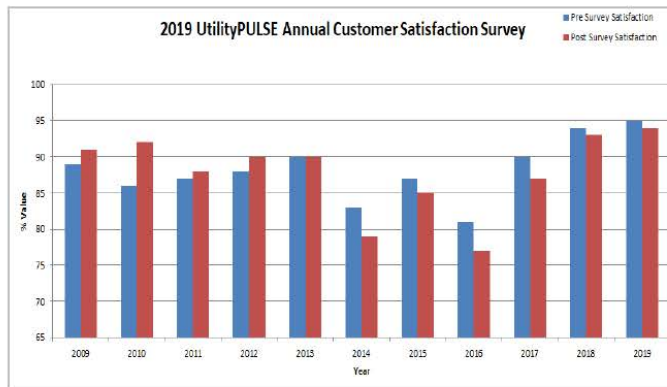
- The majority of residential customers (84%), small business customers (76%), and mid-market and key account customers (9/13 or 69%) shared that they supported Hydro Ottawa's planned increase or even spending a bit more to improve service

Online Workbook <i>n-size for sample sizes &lt;60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Improve service, even if that means an increase that exceeds current plan	35%	29%	3/13	28%
Maintain increase associated with current plan	48%	47%	6/13	50%
Keep rate increase below what is associated with current plan	9%	12%	3/13	13%
Other	4%	9%	1/13	4%
Don't know	4%	3%	0/13	5%
<b>Maintain plan or improve service</b>	<b>84%</b>	<b>76%</b>	<b>9/13</b>	<b>77%</b>



## And our overall customer satisfaction score increased – highest in a decade...

- Our annual overall customer satisfaction score increased from 94% in 2018 to 95% in 2019 (pre-survey); our post-survey results at 94% continue to rank higher than the National average of 92%
- Our Call Centre satisfaction rate increased from 78% in 2018 to 87% in 2019 restoring satisfaction to 2017 levels as a result of increased reporting and active Call Centre vendor management



## Focus continued on improving the customer's experience...

### Revised hydroottawa.com

- a better mobile-friendly user experience
- easier search capability
- proper bandwidth in the event of a storm when website traffic is at its peak
- improved page load times
- enhanced security
- AODA compliant prior to 2021 requirement

**Launched Webchat (live customer chat) on My Account** – over 2,800 chats were handled without any advertising with a 94% satisfaction rate

**Introduced email campaign** to welcome new customers to our service territory

### Hydro Ottawa Website Feedback

#### Data Notations:

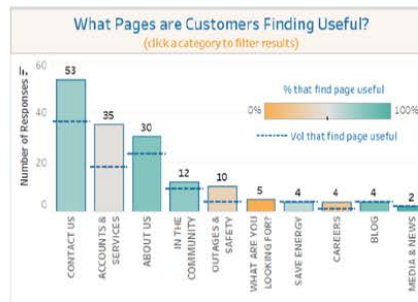
Includes all feedback received since November 2019 up to January 31, 2020.  
 Feedback Requiring review identified as those cases where the customer indicated the page was not useful and also provided comments.  
 Response Counts based on the customers clicking either "Yes" or "No" to the question "Was this page useful?"  
 CSAT % (Customer Satisfaction) based on % of customers that answer "Yes" to the question "Was this Page Useful?"

#### Website Feedback Summary

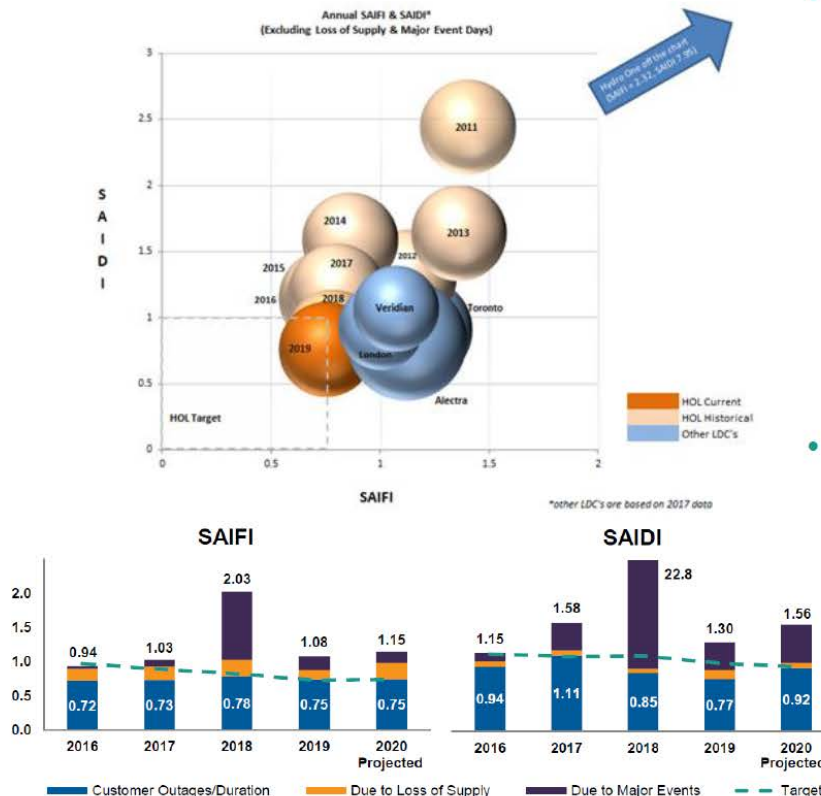
	Nov-19	Dec-19	Jan-20	Grand Total
Responses	12	172	159	343
% that Found Content Useful	25%	54%	84%	57%
Responses with Feedback	7	99	78	184
Thumbs Down w/Feedback	7	67	40	114
% of Feedback requiring review	100%	68%	51%	62%

MONTH  
 January 2020

RESPONSES	% that found content useful	RESPONSES (w/feedback)	% of feedback Requiring our Review
159	64%	78	51%



## A reliable supply of electricity remained a top priority...



- Reliability performance excluding loss of supply and major event days improved in 2019 compared to 2018
  - The annual results for SAIIFI (frequency of outages) and SAIDI (duration of outages) were 0.75 and 0.77 respectively compared to 2018 results of 0.78 and 0.85
  - The annual result for SAIIFI closely aligned to the target of <0.75, while the annual result for SAIDI was markedly better than the target of <1.00
  - The SAIDI result represents our best performance since 2012
- Reliability performance including Loss of Supply and Major Event Days was impacted by three major events (April and July Loss of Supply from the Provincial Grid and a November wind storm)
  - The annual results for SAIIFI (frequency of outages) and SAIDI (duration of outages) were 1.08 and 1.30 respectively compared to 2018 results of 2.03 and 22.8



## And we continued to invest in our distribution system to address reliability, aging infrastructure and growth...



- We continued to deliver our distribution sustainment (system renewal and service) capital programs as per the OEB-approved 2016-2020 rate plan
  - \$56.5M in Sustainment work, \$6.46M below budgeted amounts as a result of a management decision to offset overspends from the previous year to align with commitments for the period
  - Continued focus was placed on aging infrastructure, assets representing imminent reliability risks, and projects providing contingency benefits
  - Completed the Merivale and Richmond South station projects to increase reliability and service quality in Nepean and Richmond Village
  - Secured regulatory approval for the new South Nepean transformer station on Cambrian Road – part of a joint project with Hydro One that includes the upgrade of the transmission line to the new station
- Delivered an additional \$49.3M of Demand Capital (System Access) work (two large projects in 2019 were the System Expansion work for the interconnection of our Quebec assets into Ontario and the ongoing work on the relocation and undergrounding of infrastructure as part of the Elgin Street Renewal project)
- The evolution of the grid progressed with installation of dark fibre and further leveraging our new SCADA (Supervisory Control and Data Acquisition) system adding substations and transformers in 2019 improving situational awareness for faster outage response

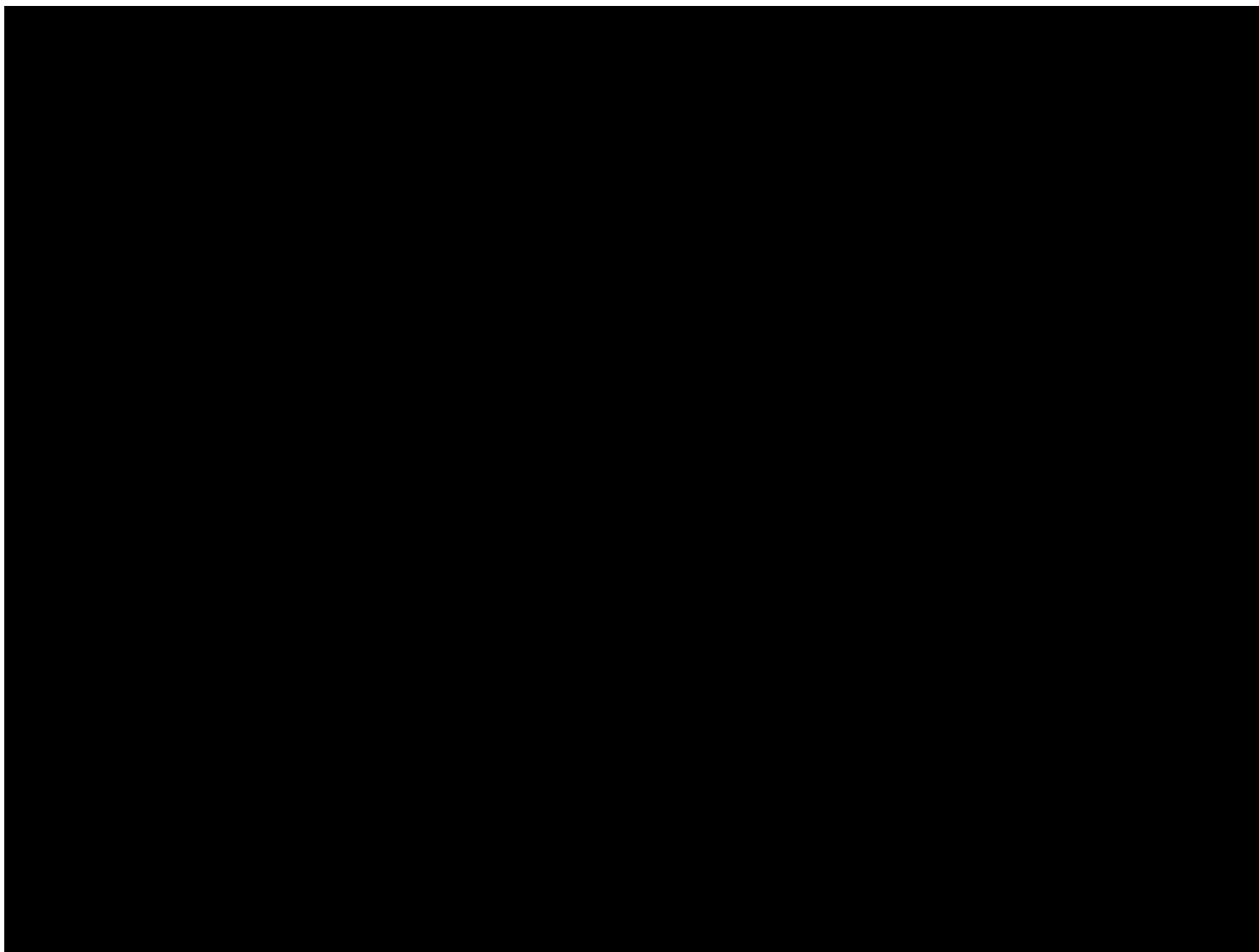




# ORGANIZATIONAL EFFECTIVENESS

Achieving our goals for customer and shareholder value requires a high performance workforce, and efficient and effective operations

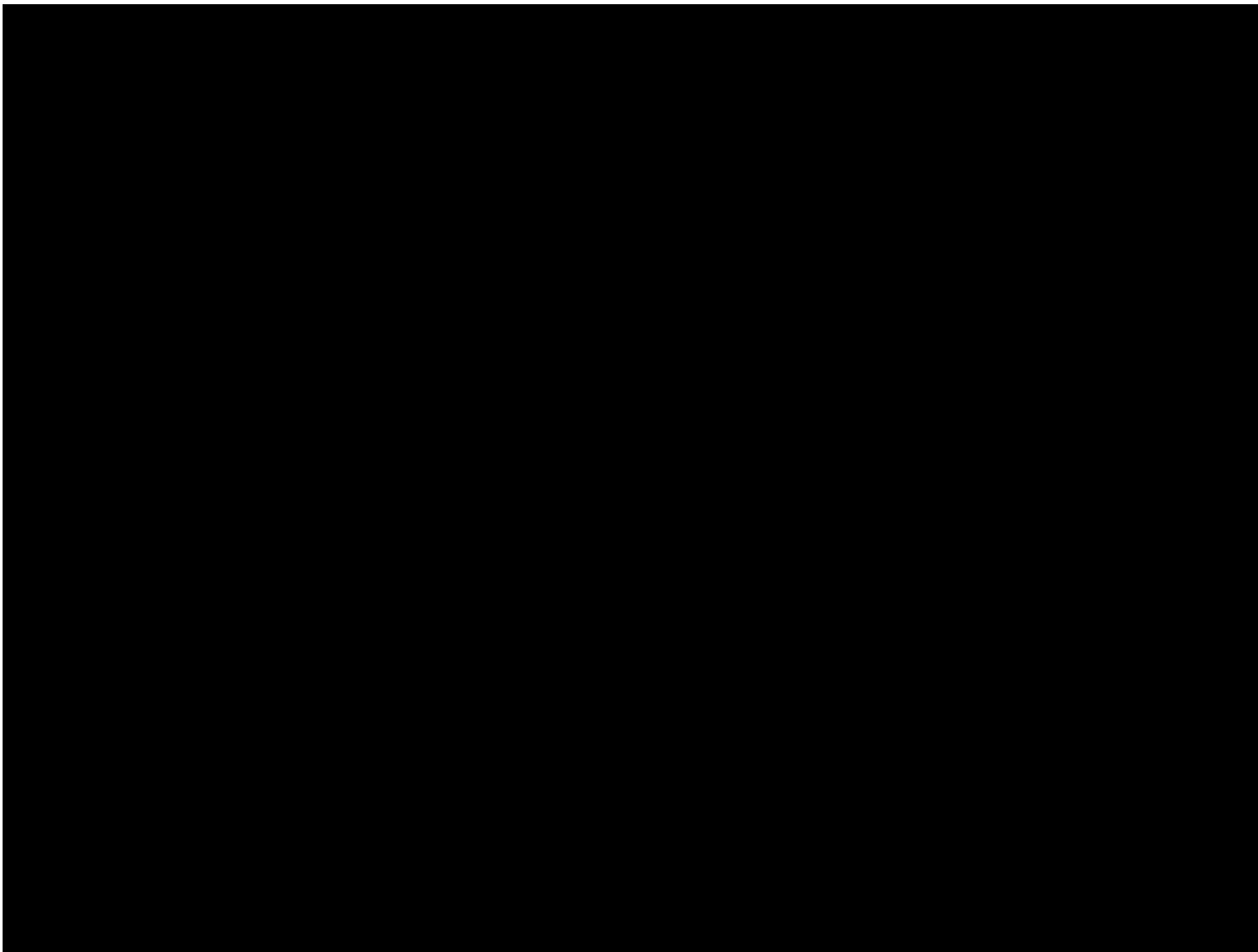
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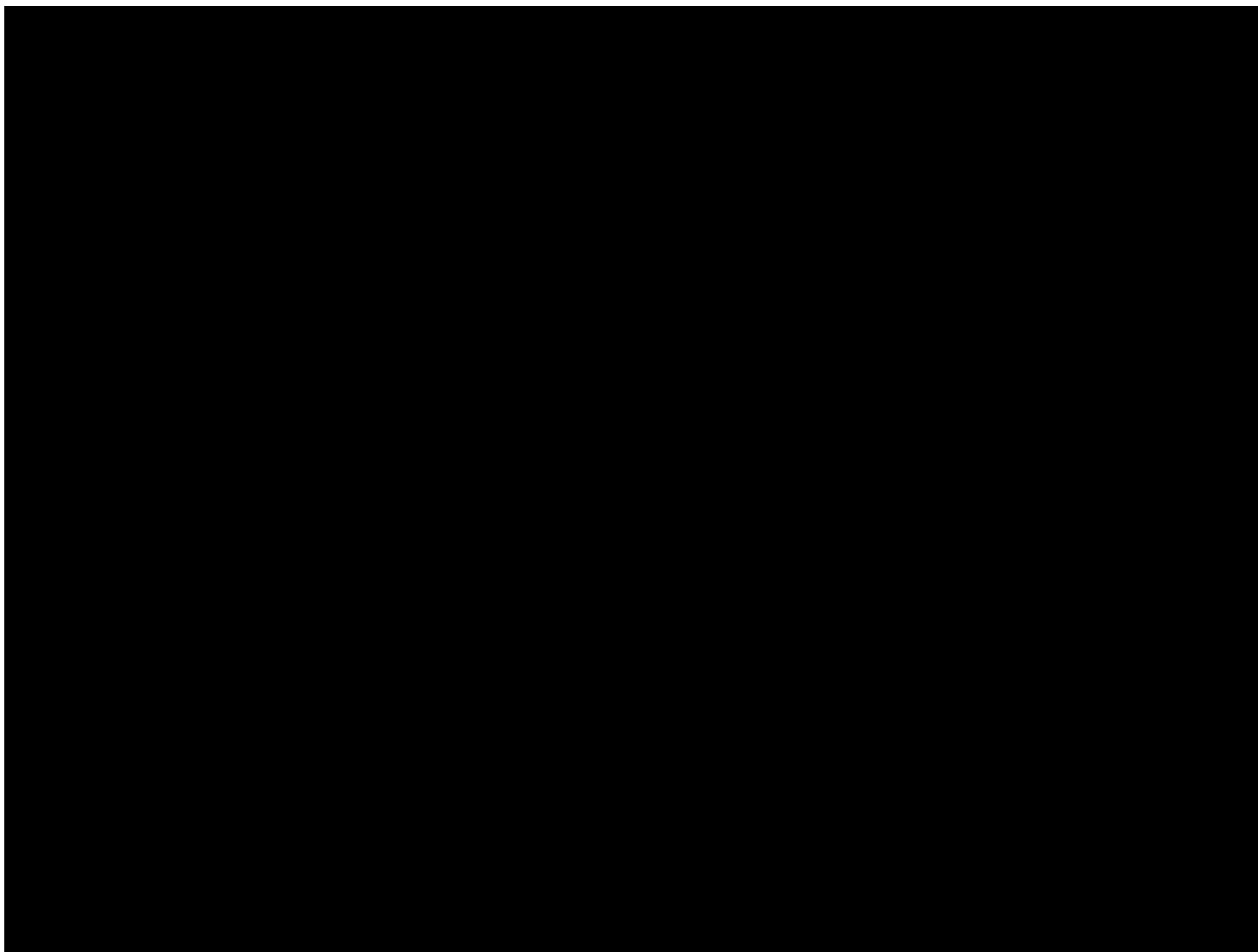


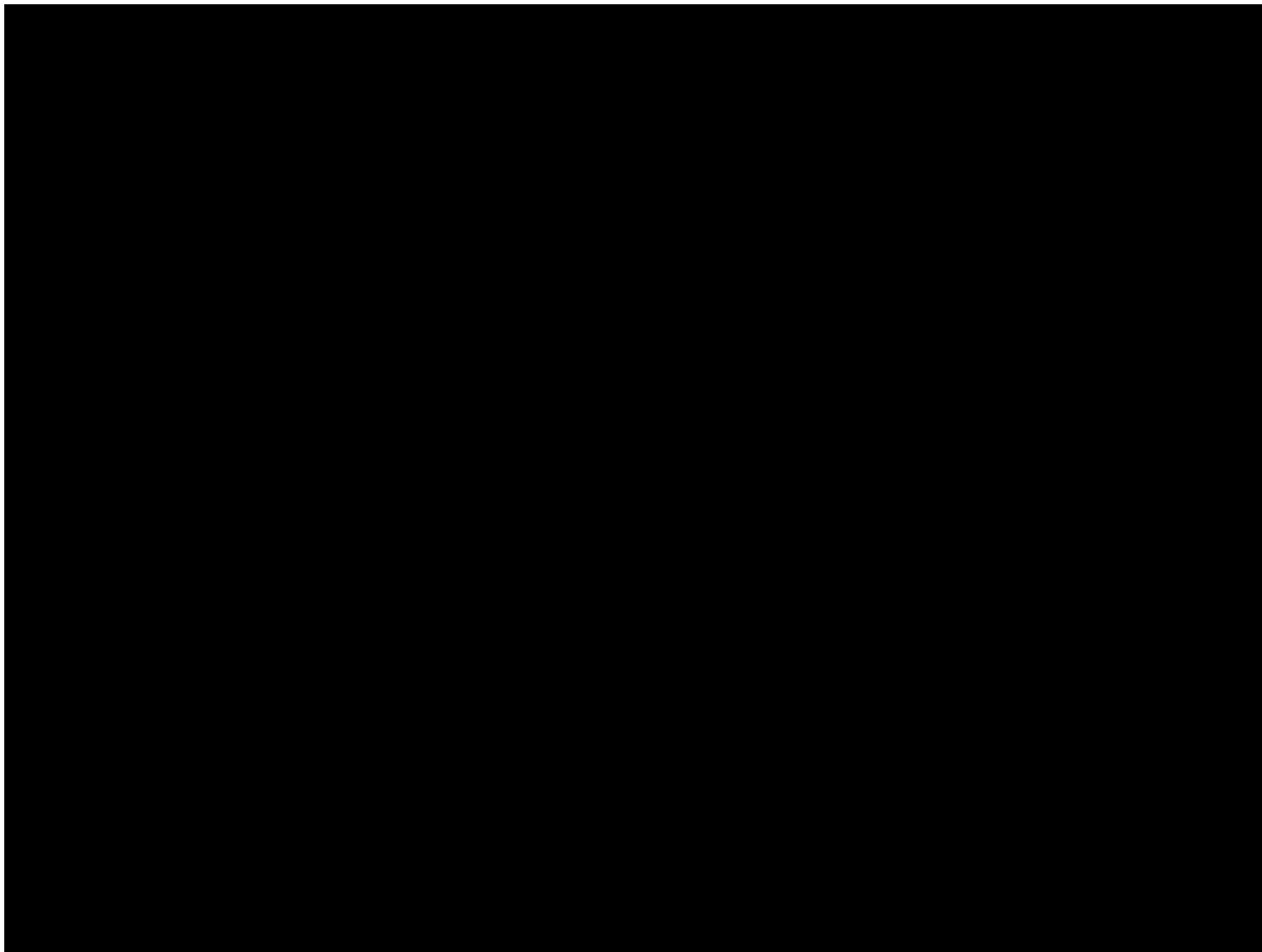
## We tracked progress and reported quarterly against productivity scorecard measures including labour utilization, OM&A costs, asset efficiency and profitability...

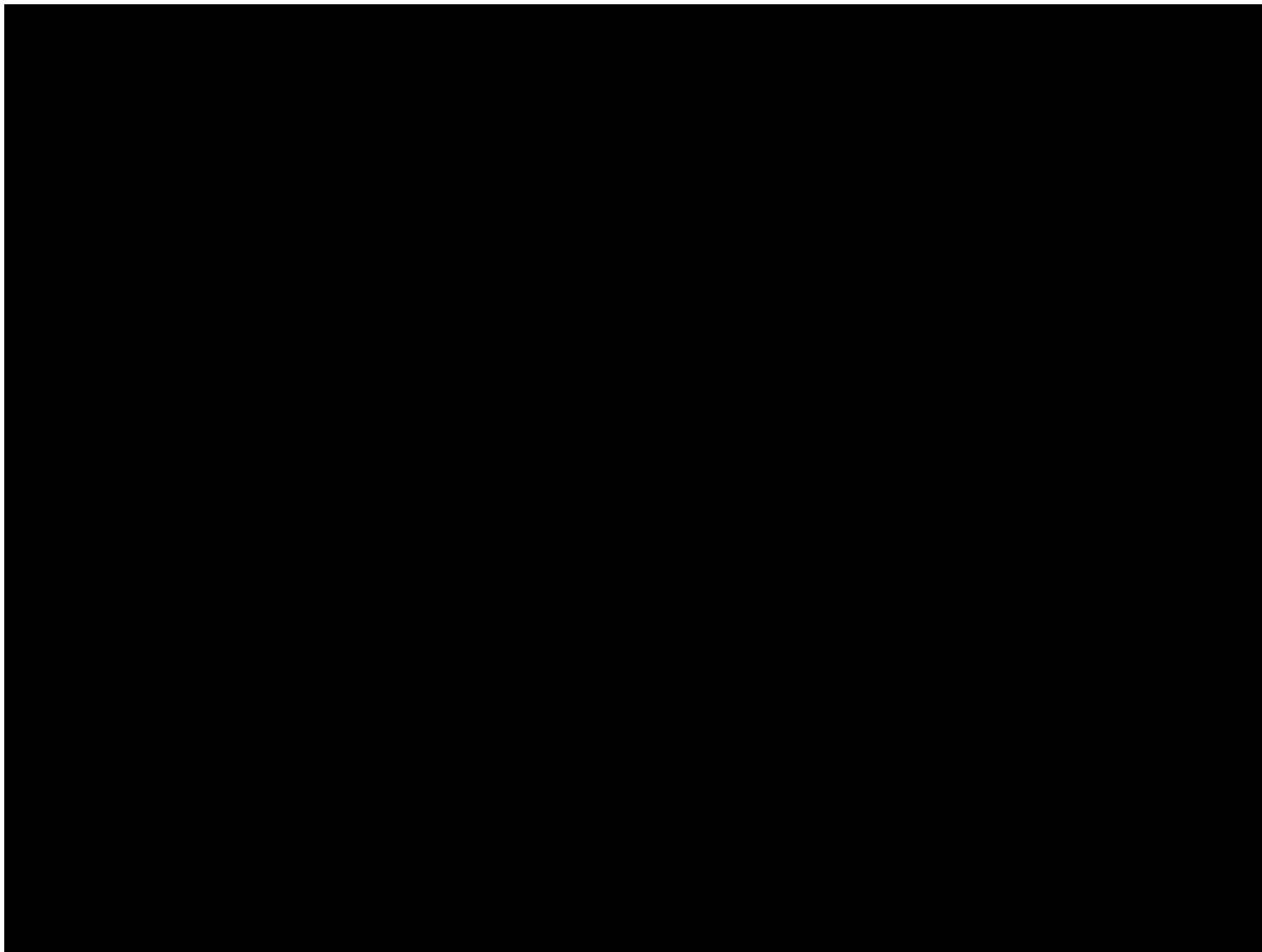
efficiency and profitability...

Measures	Description	2014A	2015A	2016A	2017A	2018A	2019 Target	2019 Actual			
Labour Utilization	Productive Time	% of Billable Hours / Total Regular Hours	71%	74%	74%	73%	72%	≥ 74%	72%	X	Below target but on par with prior year. Over 3,000 hours reported on an administrative work order associated with relocation work to Dibblee and Hunt Club
	Labour Allocation to CAPEX	% of Labour Time on Capital Activities / Total Productive Time	60%	61%	62%	60%	58%	≥ 60%	58%	X	Below target but on par with prior year. Shift from Capital to WFO due to flood mitigation work for Portage and mutual aid (Maine and HQ) (both of these are recoverable from HOL's perspective)
	Average Sick Days per FTE (annualized)	Total Sick Days / Total Employees	5.9	6.3	5.9	6.0	7.1	≤ 6.0	7.8	X	Exceeded target and prior year. Long term sick leave accounts for 40%. We are above the Ontario average of 7.4 days but below the National average of 8.5 days
	e-Learning Training per employee (annualized)	Number of hours of e-learning / Total Employees	N/A	N/A	N/A	1.0	1.8	≥ 2.0	3.9	●	Surpassed target. Increase in e-Learning hours in 2019 from Rate Application Online Collaboration Tools (AO Docs and Gsuite), Cybersecurity, and Code of Conduct online modules.
OM&A	Bad Debt as a % of Total Electricity Revenue	Bad Debt / Total Electricity Revenue	0.18%	0.01%	0.13%	0.20%	0.13%	≤ 0.12%	0.08%	●	Surpassed target and at lowest level in 4 years. The reduction in bad debt is explained by improved AR aging and overall Fair Hydro Plan. Residential class greater than 90 days improved by 32% due to increased OESP (Ontario Electricity Support Program) enrolments, disconnection moratorium is not having an impact on bad debt.
Asset Efficiency	Technology Infrastructure Cost per Employee	(External IT support costs + computer hardware & software depn) / # of FTE	\$21.5K	\$23.3K	\$24.4K	\$22.8K	\$26.5K	≤ \$24.9K	\$22.5M	●	Surpassed target and prior year primarily due to decrease in depreciation from longer useful life for CC&B and ERP.
Profitability Metrics	EBITDA as a % Revenue *										
	EBITDA \$ / Total Revenue - Hydro Ottawa Limited		44%	46%	52%	53%	54%	≥ 54%	52%	X	Below target and prior year. Lower EBITDA due to higher expenses (leak remediation costs and one-time facilities costs) and lower distribution revenue partially due to Accelerated CCA tax change with offset below EBITDA
	Inventory Turnover Ratio and Value	Cost of Materials Used / Average Inventory	1.83	1.73	2.27	1.93	1.55	≥ 2.00	1.62	▲	Below target but improvement from prior year. Results primarily due to deferral of capital projects - ordering inventory in advance of need - continue to work with project managers









## We also accomplished a truly successful generational renewal of our facilities...



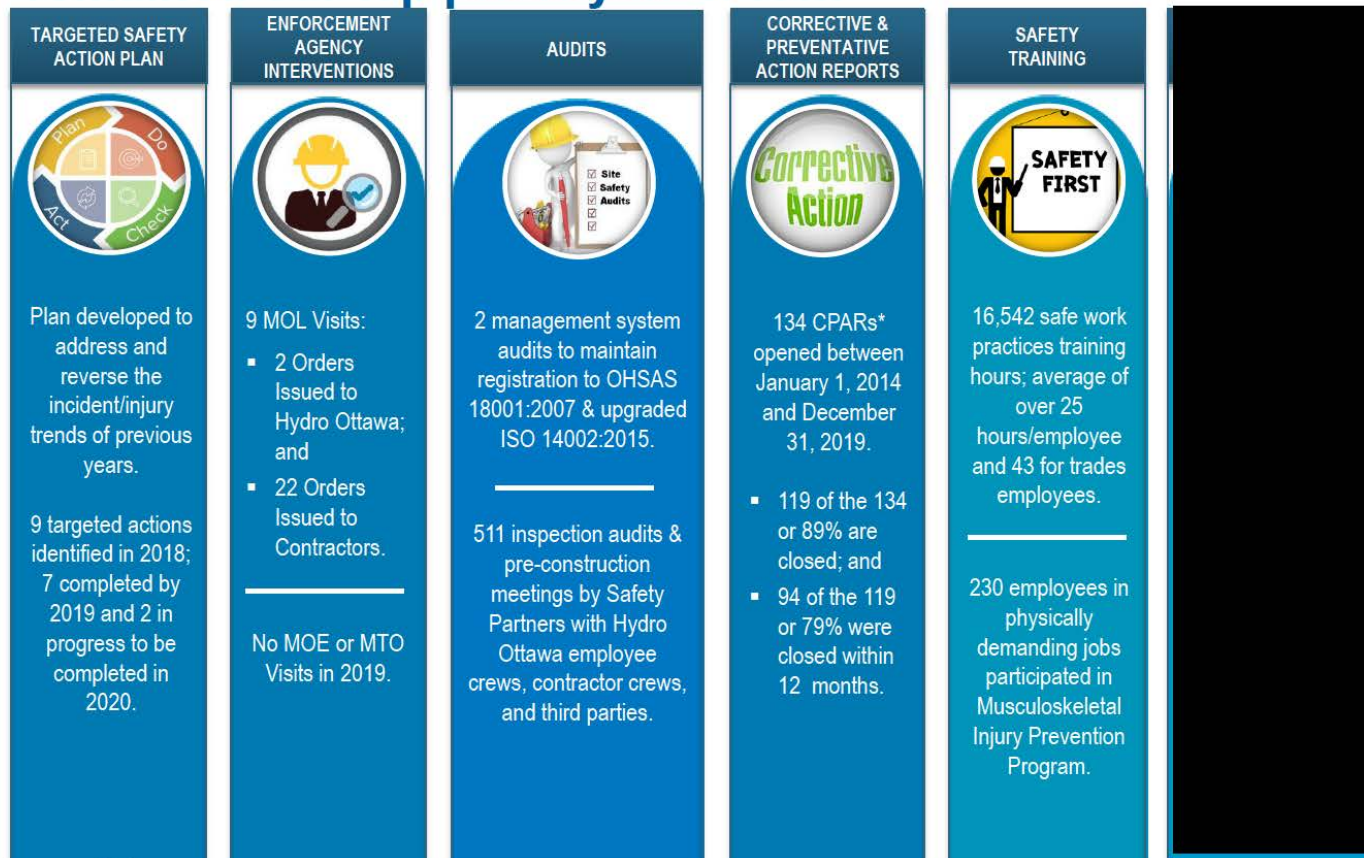


## Including a seamless transition to the workplace of tomorrow...

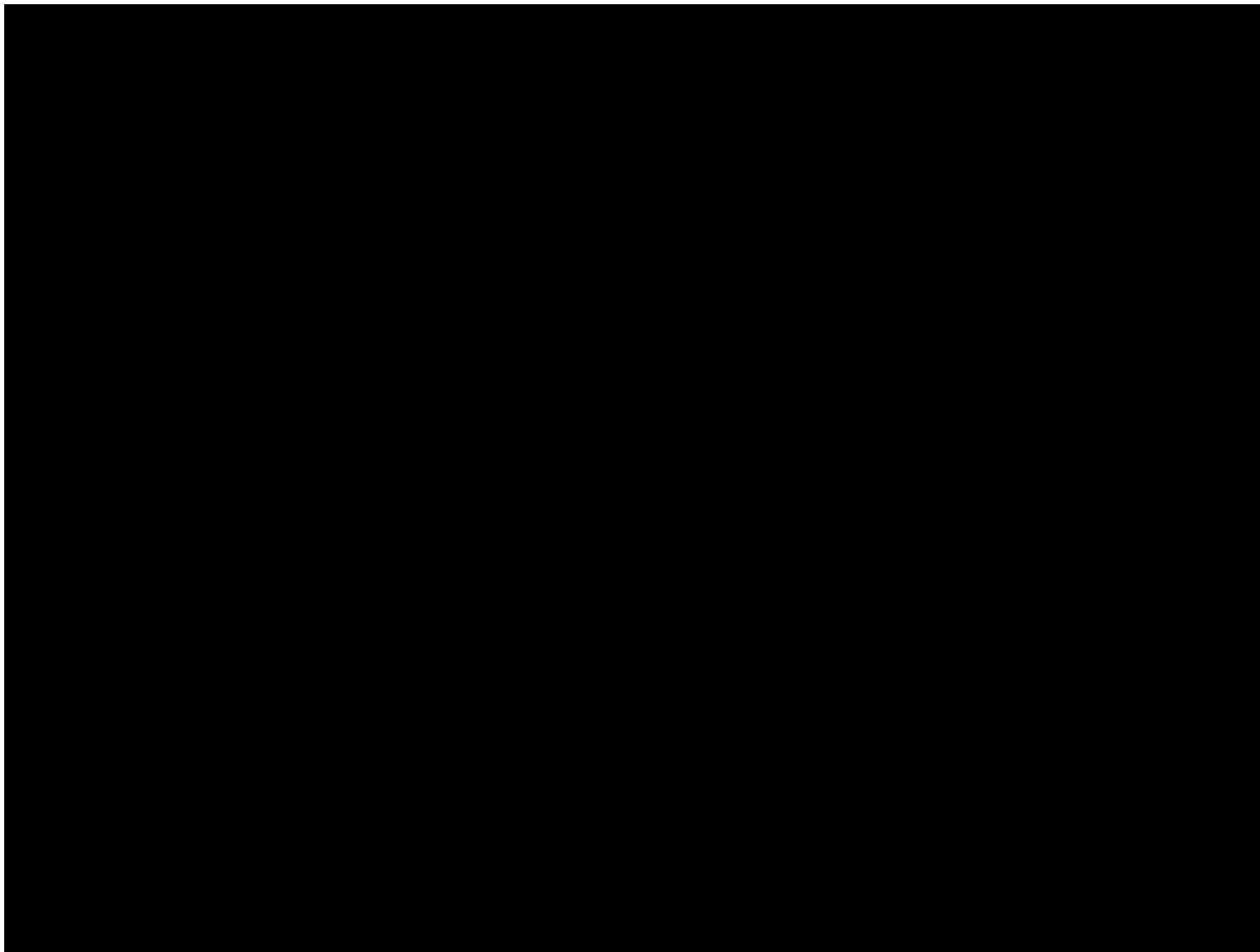
Cultural Legacy Integration	Advanced Technology	Sustainability	Health & Wellness	Flexibility & Adaptability	Innovation	Collaboration
<ul style="list-style-type: none"> <li>• Atrium Historical Timeline Wall</li> <li>• Alumni Room</li> <li>• Time Capsule</li> <li>• Meeting Room Naming Convention</li> <li>• Historical Photo Gallery</li> <li>• Accent Colours</li> <li>• Awards Cabinet</li> <li>• Fallen Worker Memorial</li> </ul>	<ul style="list-style-type: none"> <li>• New Data and Control Room</li> <li>• Integrated Technology Plan</li> <li>• Digitization</li> <li>• Laptops and Dual Monitors</li> <li>• Digital and Wayfinding Screens</li> <li>• Live Streaming for Events</li> <li>• Three Layer Security – Perimeter, Building, Critical Assets</li> </ul>	<ul style="list-style-type: none"> <li>• LEED Gold Certified</li> <li>• Paperless Environment</li> <li>• Building Automation</li> <li>• EV Charging</li> <li>• Premium Carpool Parking</li> <li>• Centralized Waste Mgmt. – 4 Streams</li> <li>• Solar Arrays</li> <li>• Solar-Powered Carport</li> </ul>	<ul style="list-style-type: none"> <li>• Fitness Spaces</li> <li>• Healthy, Fresh Cafeteria Menu</li> <li>• Sit-Stand Desks</li> <li>• Ergonomic Task Chairs</li> <li>• Multi-Faith Room</li> <li>• Natural Light</li> <li>• Outdoor Patio</li> <li>• Walking Path</li> <li>• Sunken Garden</li> <li>• Kitchenettes</li> <li>• Covered Bicycle Storage</li> </ul>	<ul style="list-style-type: none"> <li>• Furniture Solutions</li> <li>• Reconfigurable Meeting Rooms</li> <li>• Quiet Rooms</li> <li>• Universal Bathrooms</li> <li>• Efficient Vehicle Flow</li> <li>• Drive-in/Drive-out Garages</li> <li>• Proximity to Highways 416 and 417</li> <li>• Icon Signage</li> </ul>	<ul style="list-style-type: none"> <li>• Sound-Masking</li> <li>• Task-Based Work Spaces</li> <li>• Kitting Bays in Garages</li> <li>• Dedicated PILC Building</li> <li>• Campus-Wide Wi-Fi – Work Anywhere</li> <li>• Wall Mounted Tablets in Garages</li> <li>• Centralized Printing and Supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple Collaboration Spaces, most with Advanced and Interactive Technology</li> <li>• Cafeteria Work Spaces</li> <li>• Divisional Neighbourhood Designs</li> <li>• Multiple Working Meeting Rooms</li> </ul>

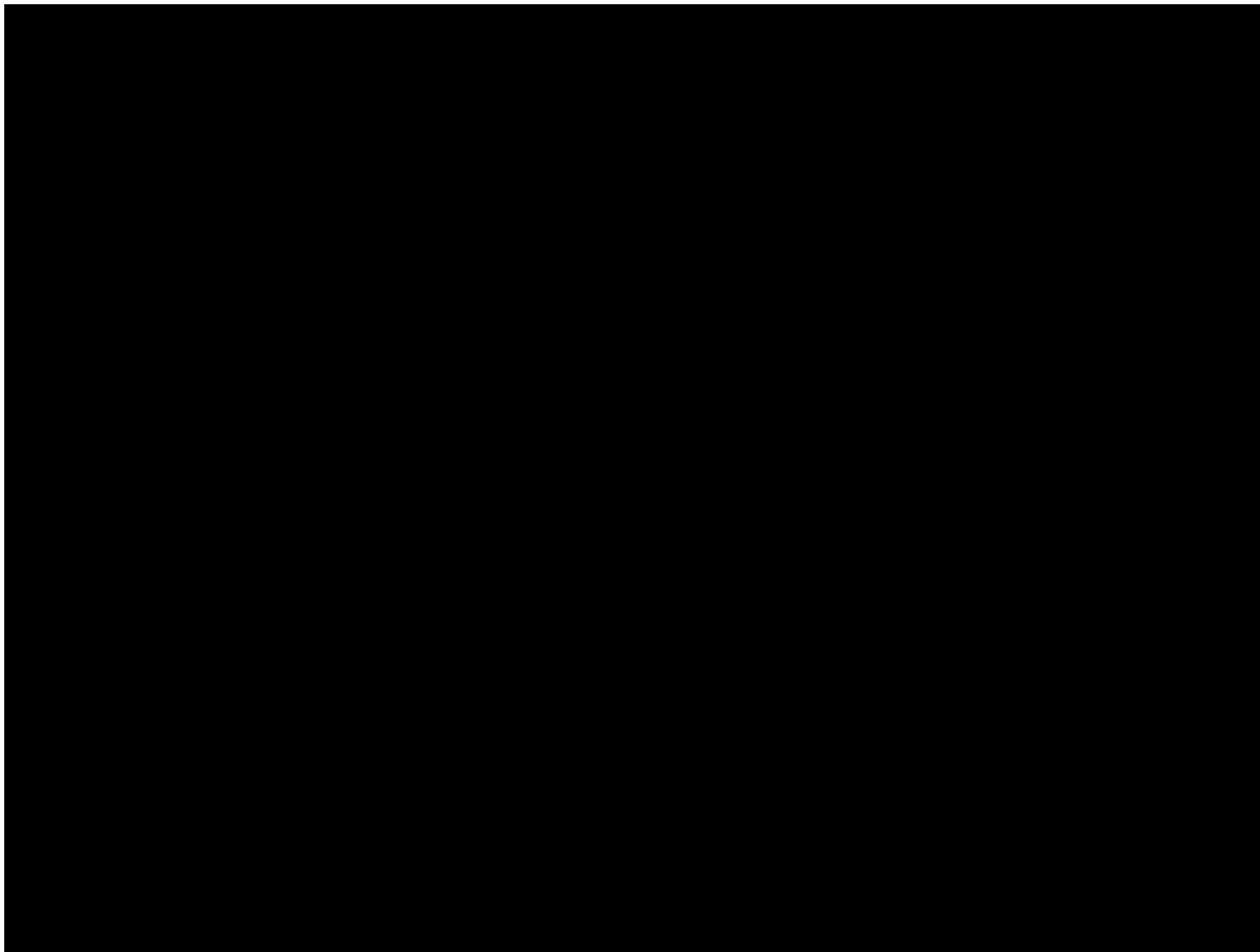


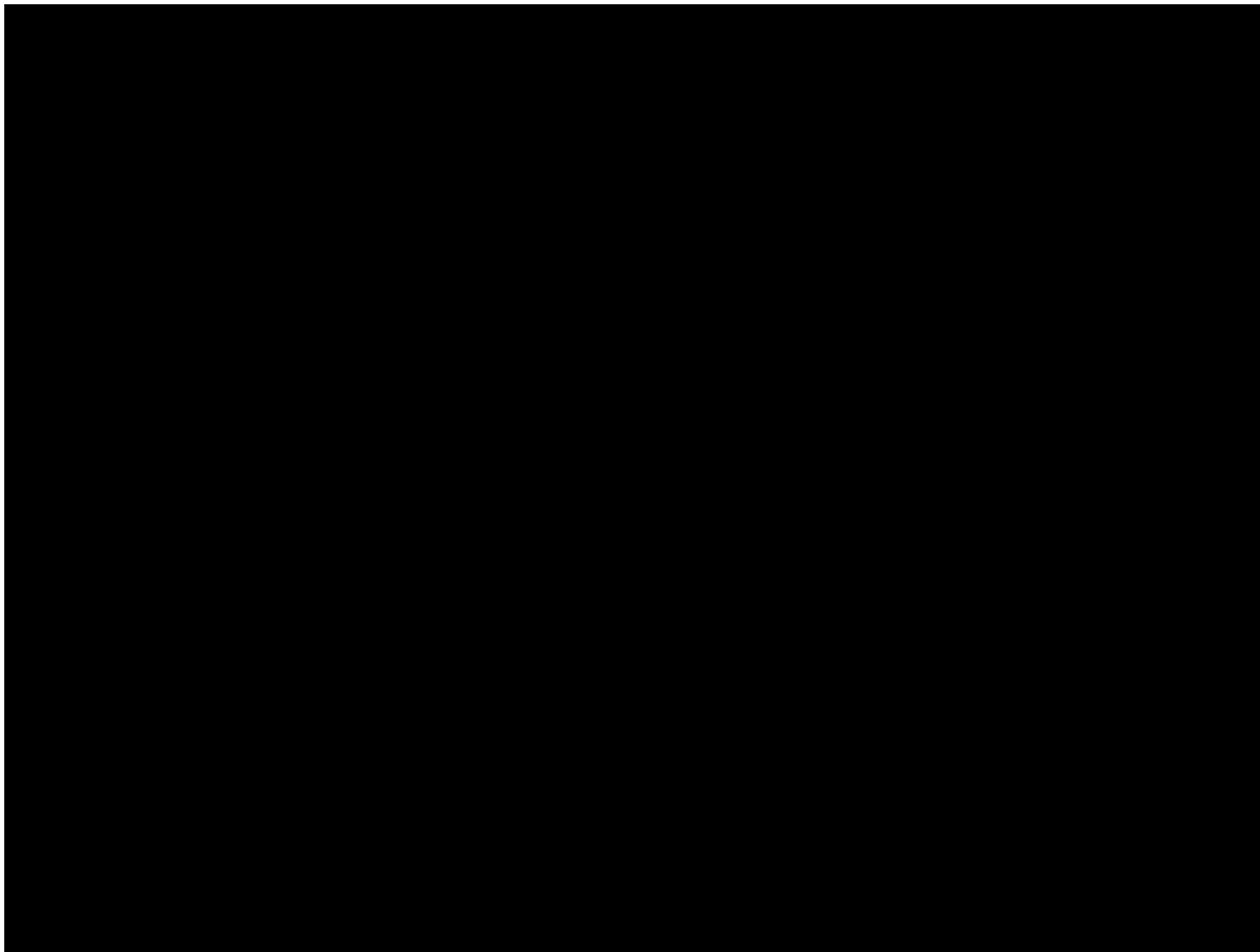
## Protection of employee and public health & safety remained our top priority in 2019...



\*CPARS are initiated to address deficiencies identified through incident investigations, audits or events/exercises.









## Positive relations with bargaining agents continued...

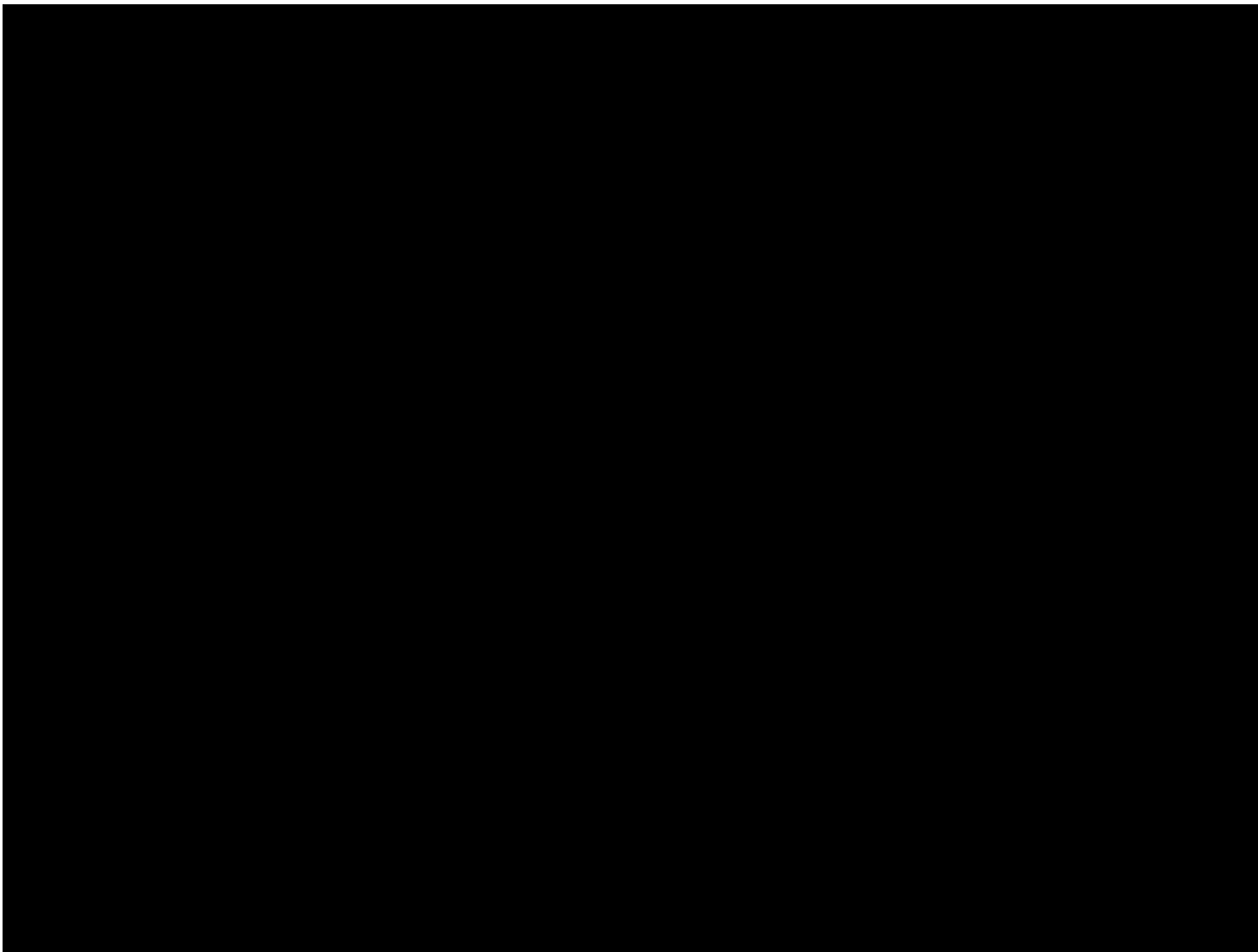


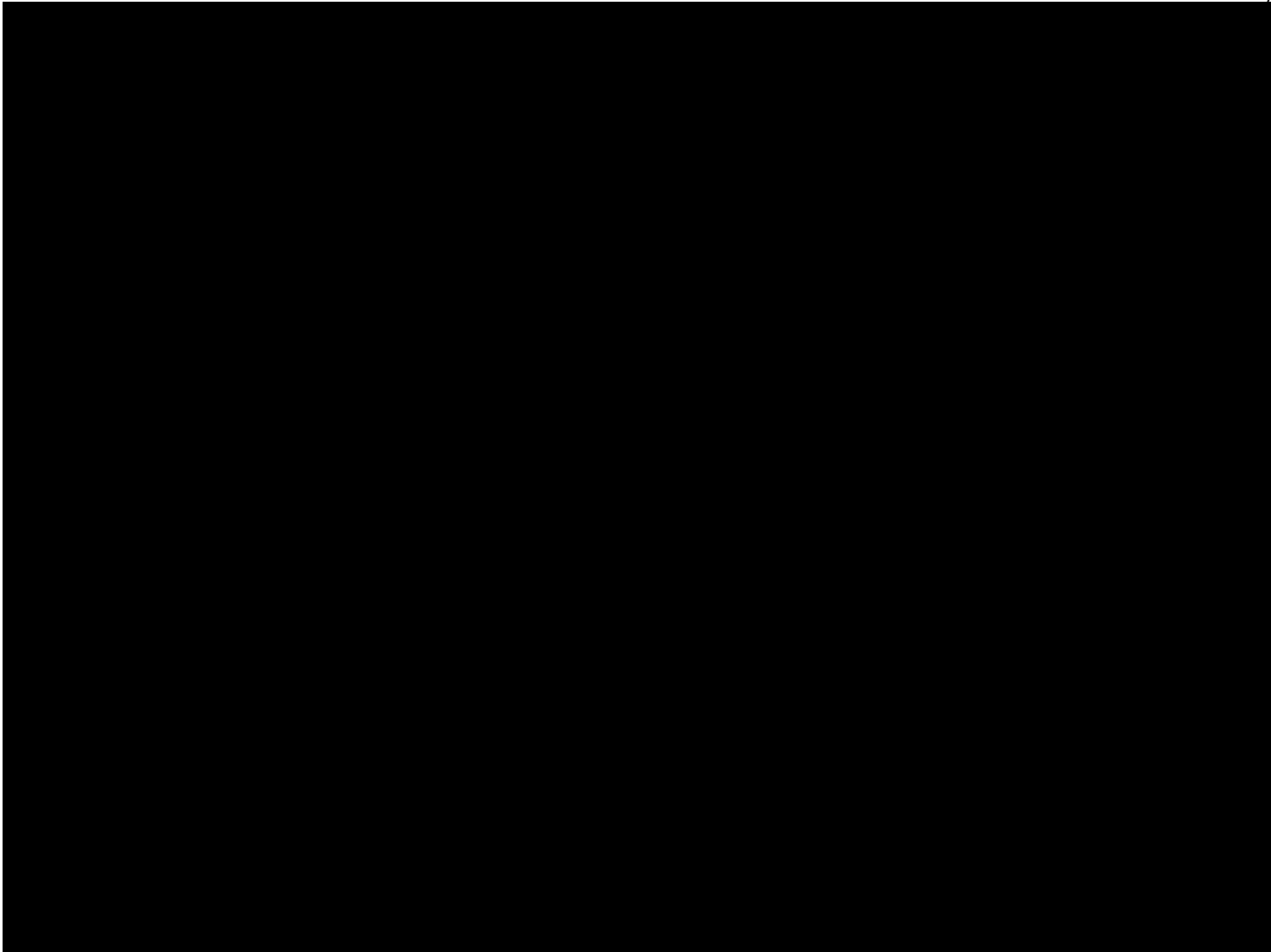
- 7 grievances filed in 2019 – 3 resolved, 2 in grievance process, and 2 referred to arbitration
- 1 outstanding grievance from previous years in mediation/arbitration
- Arbitration related to termination completed; arbitrator determined that Hydro Ottawa had met the burden of discharge and dismissed the grievance



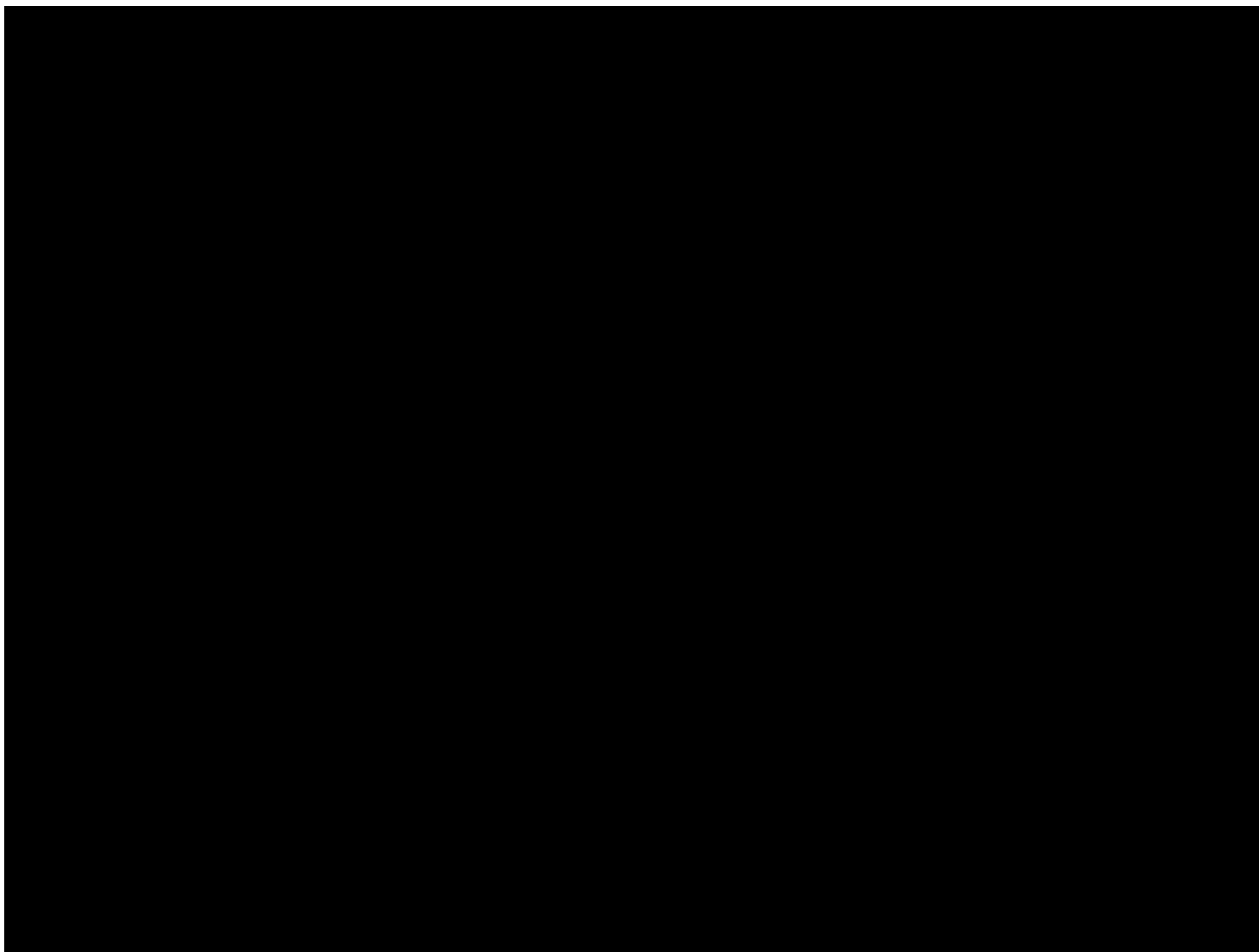
- Ontario Labour Relations Board (OLRB) decision regarding first 8 Supervisors received on June 3, 2019; OLRB excluded all 8 Supervisors from Society's proposed bargaining unit as they exercise managerial functions as contemplated under the OLRA
- OLRB process continues with hearing dates scheduled for March and April 2020

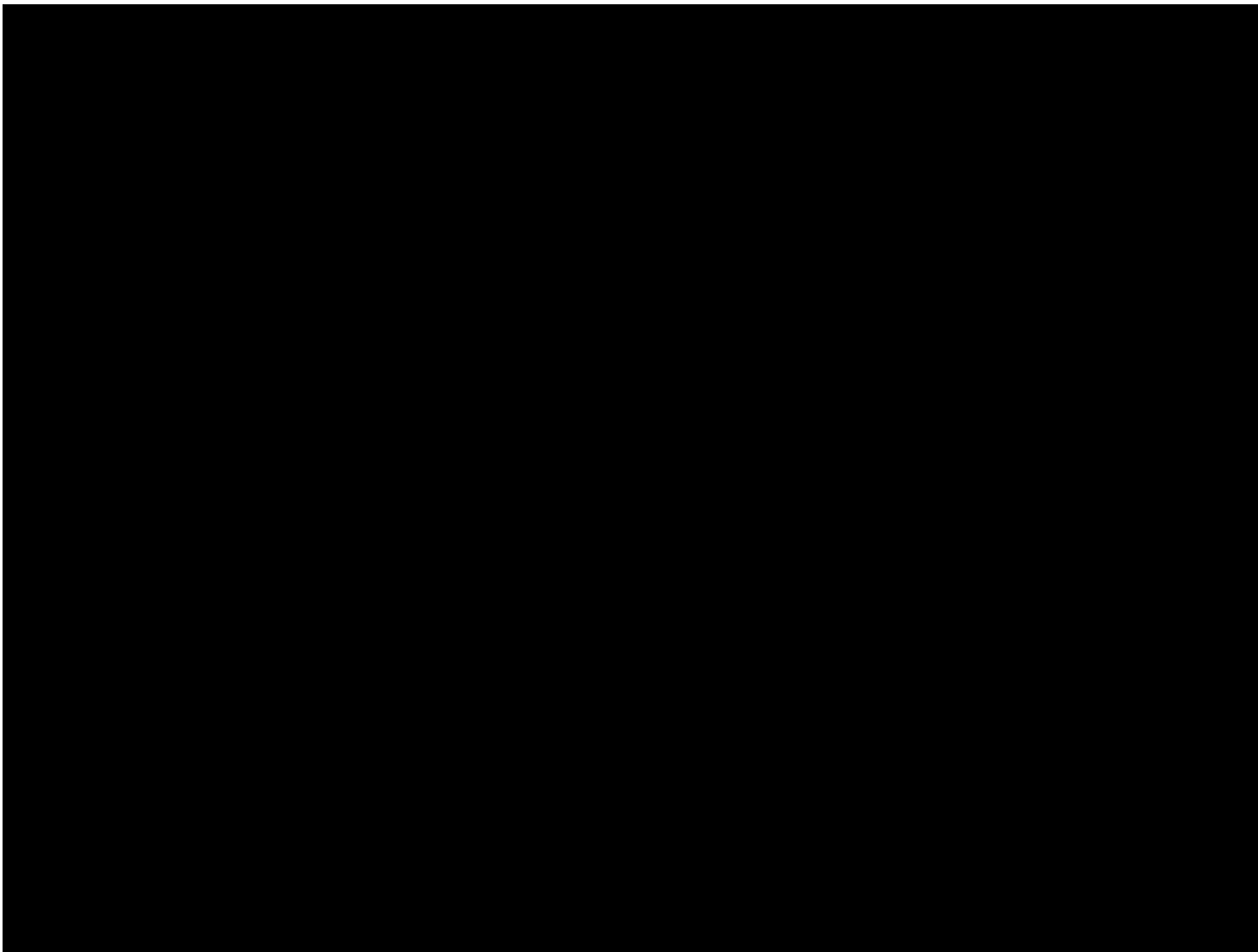


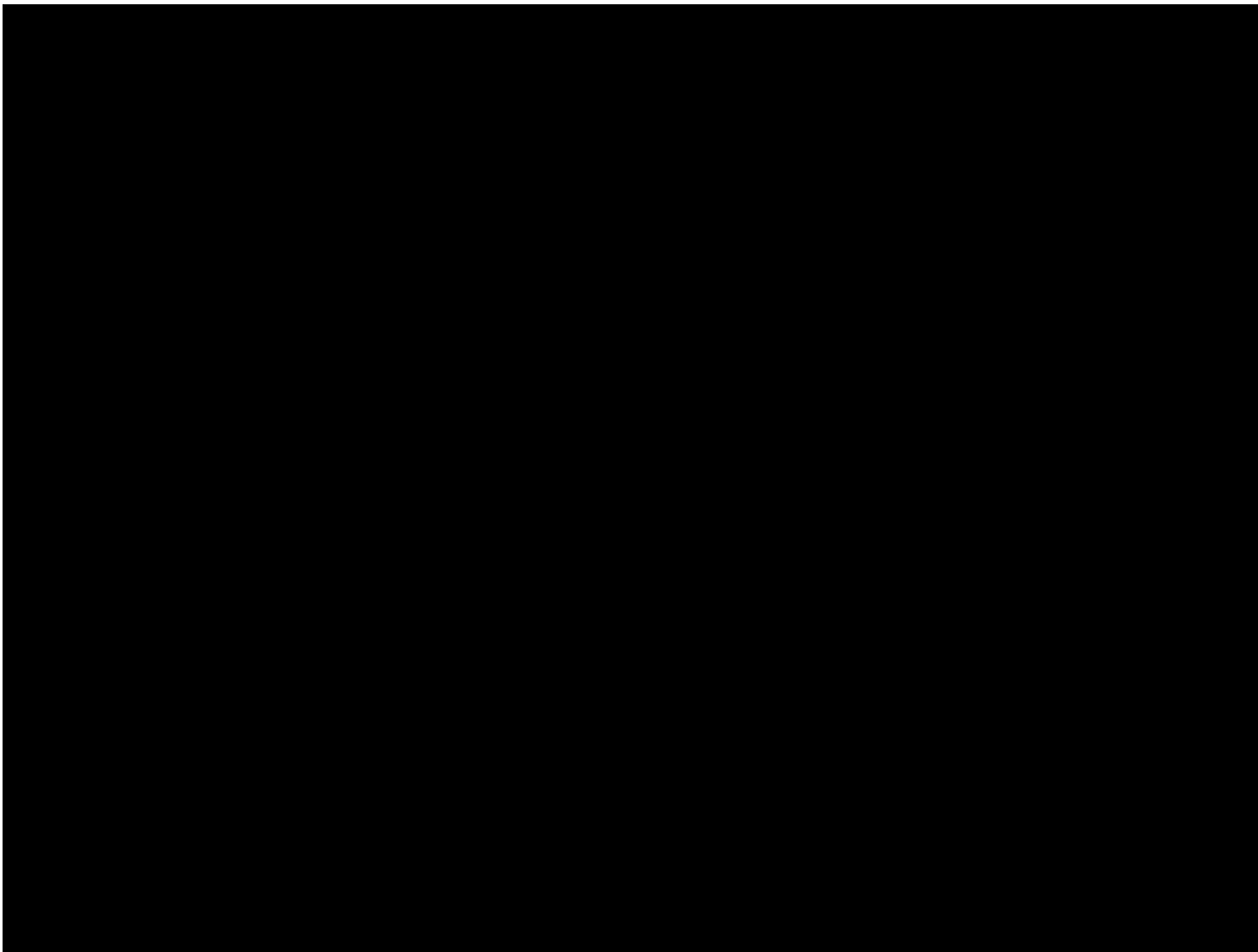


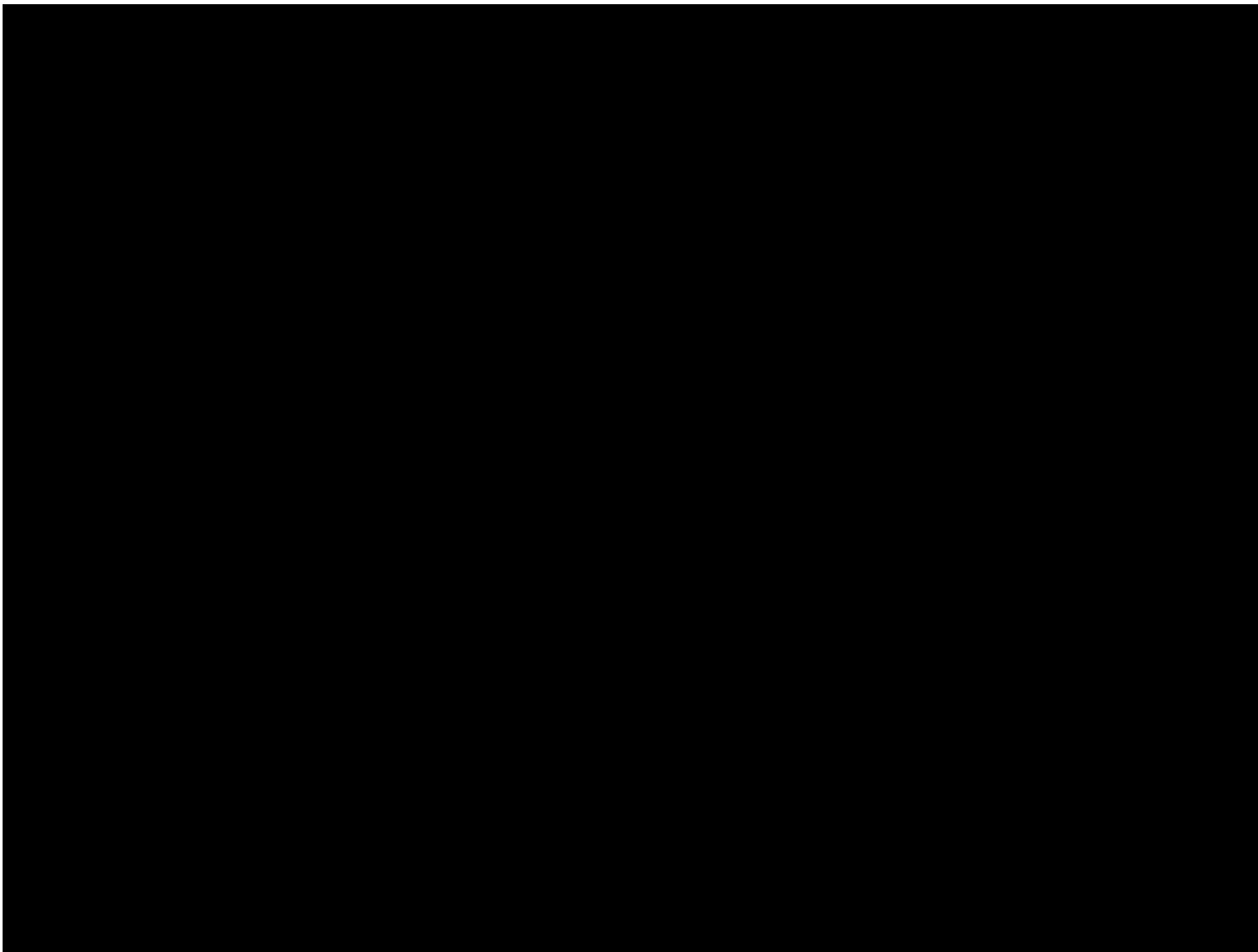


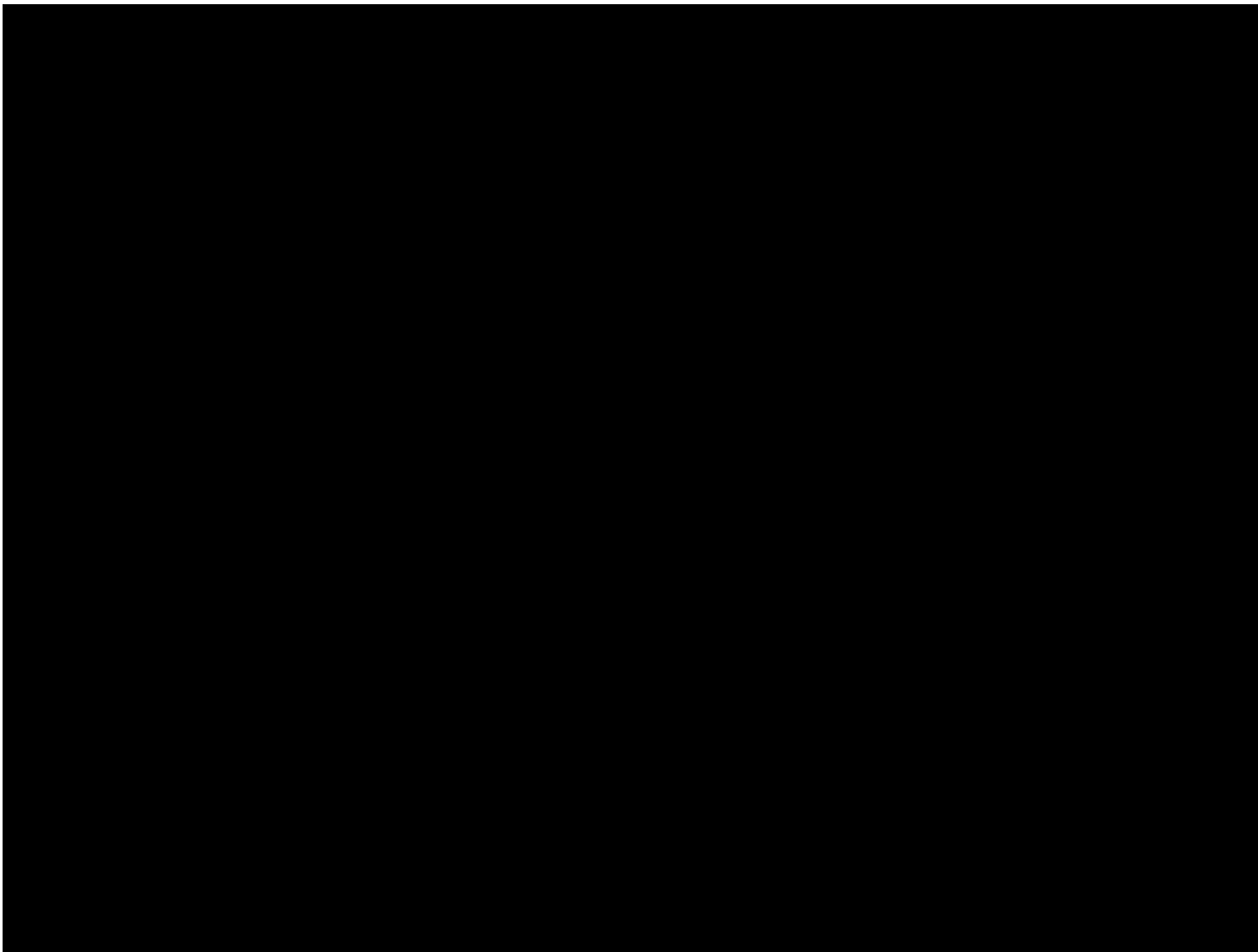


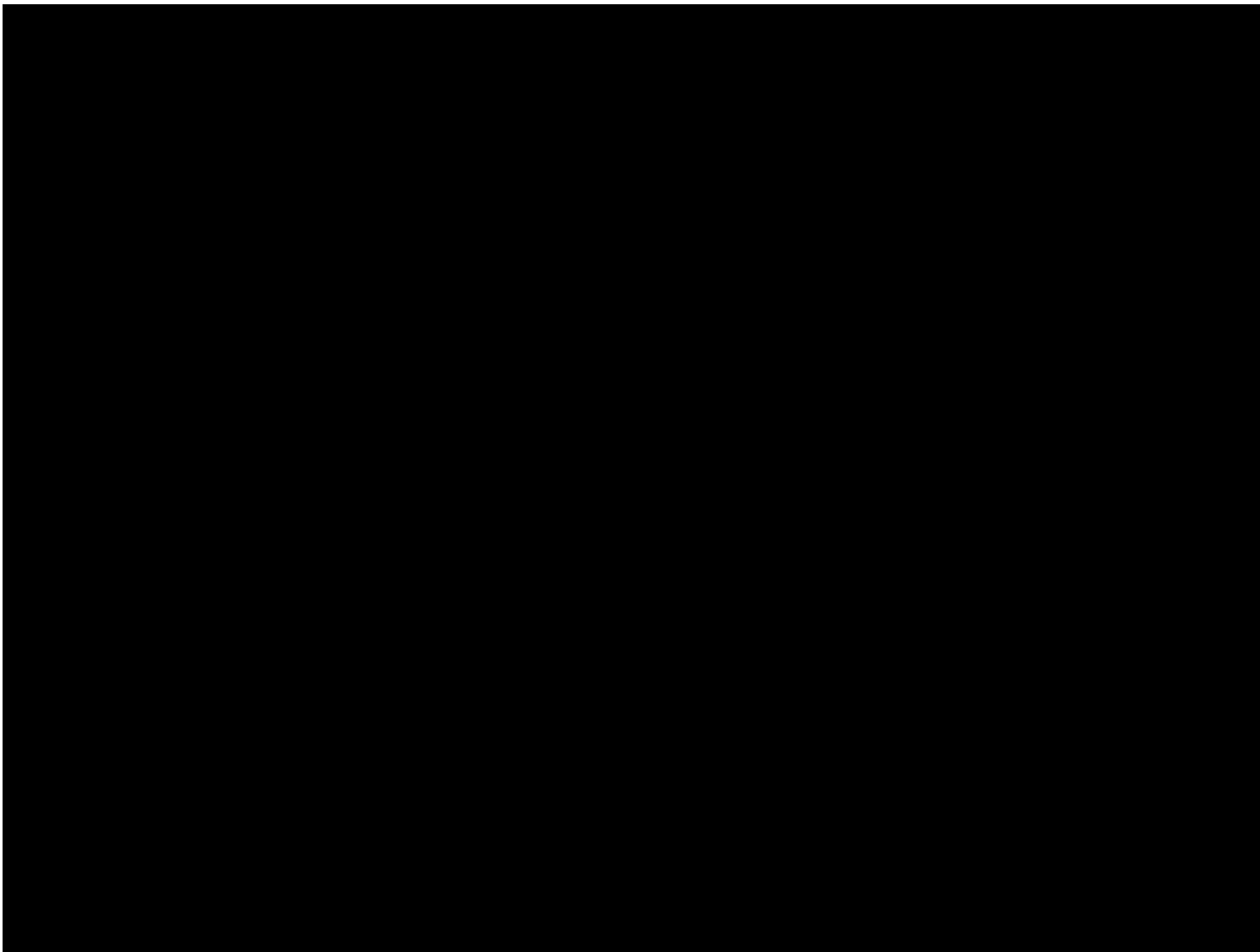


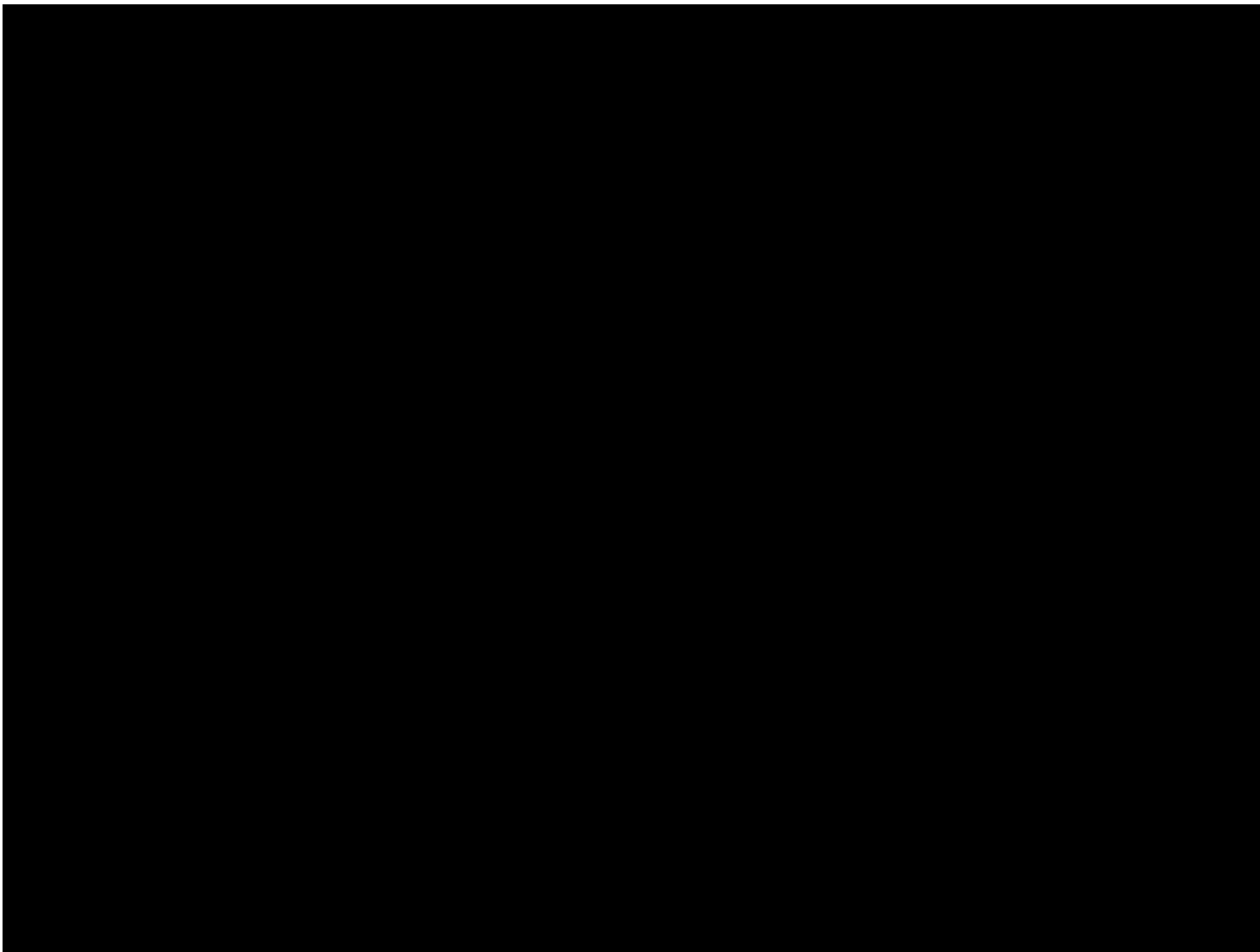


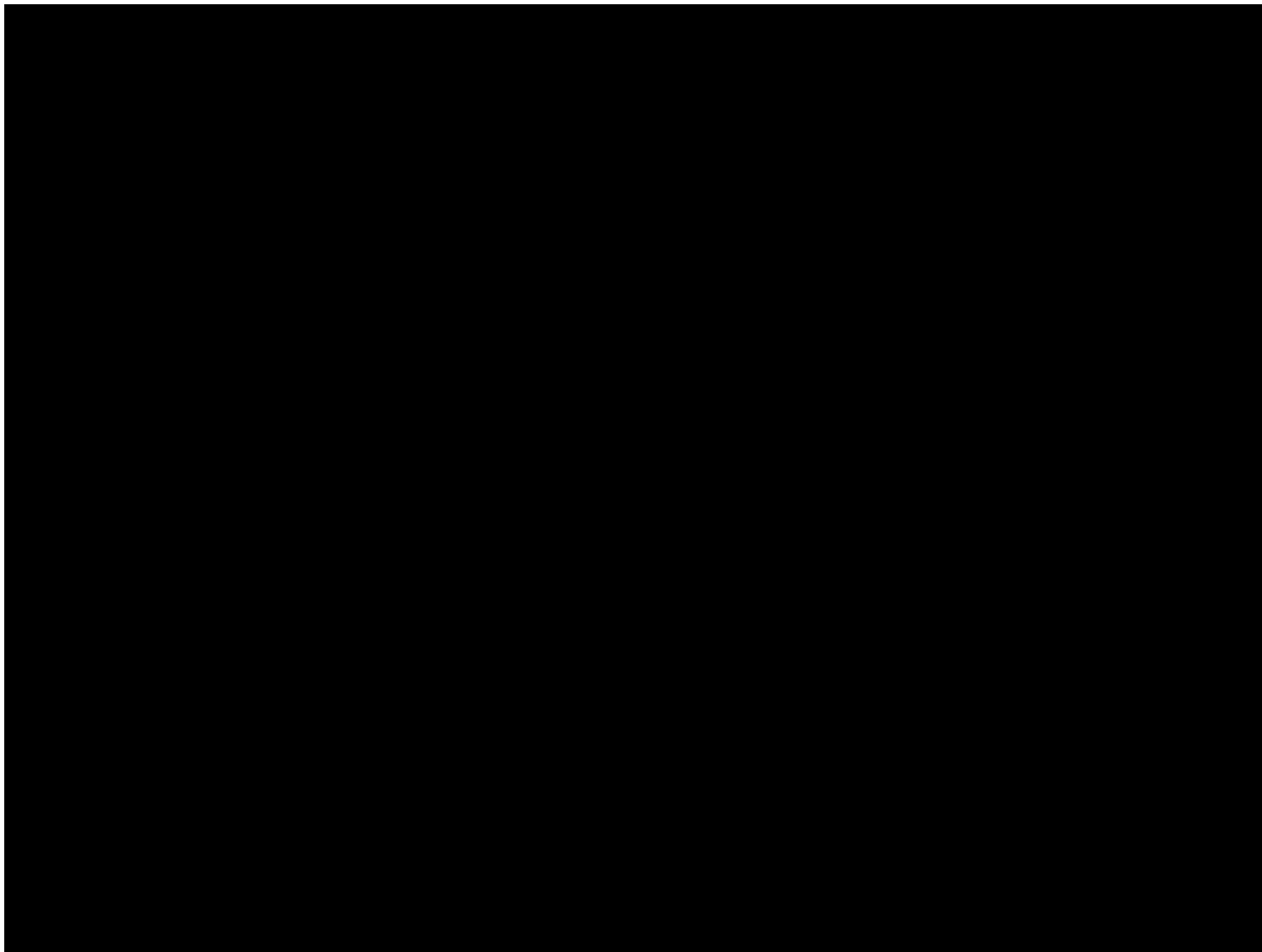




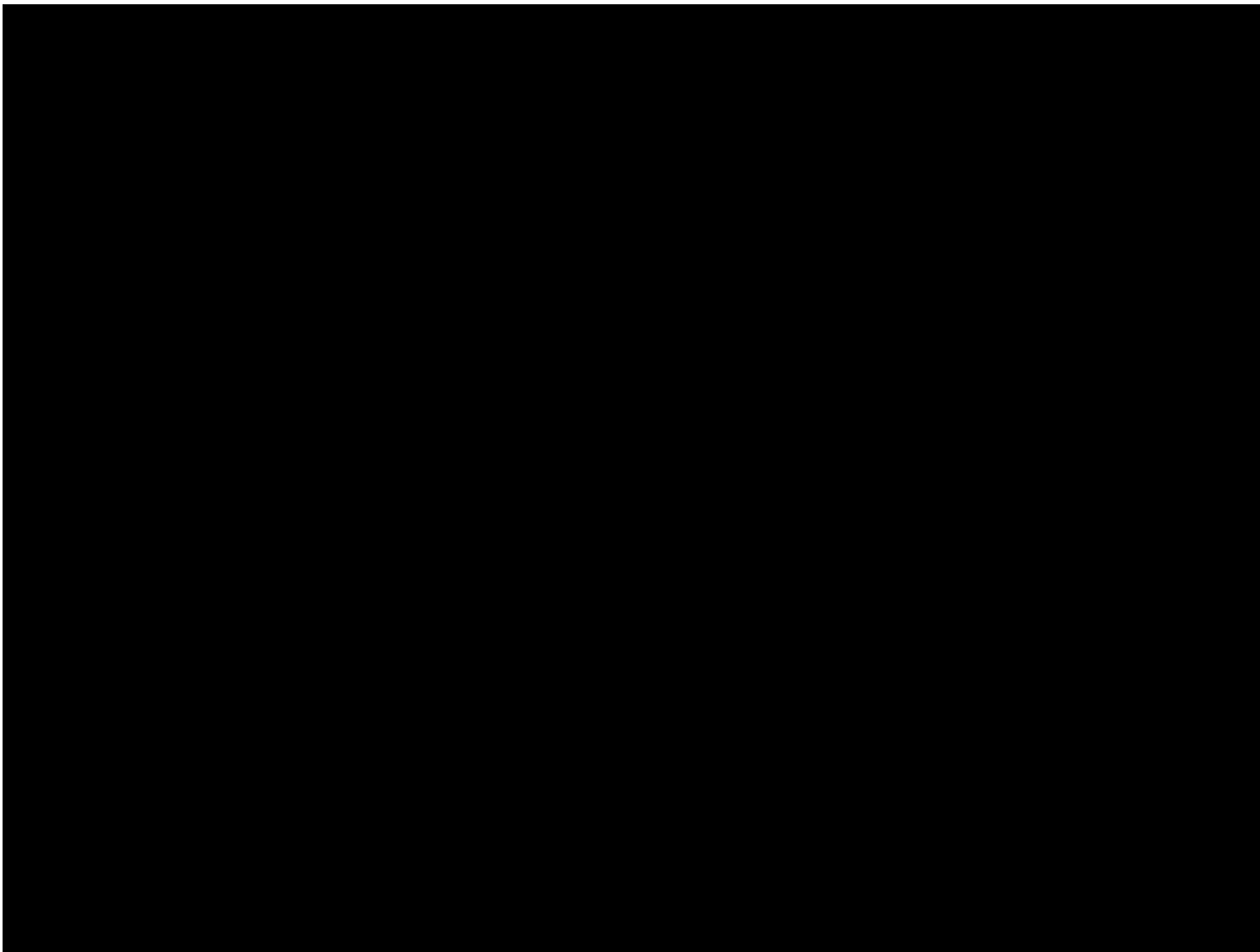










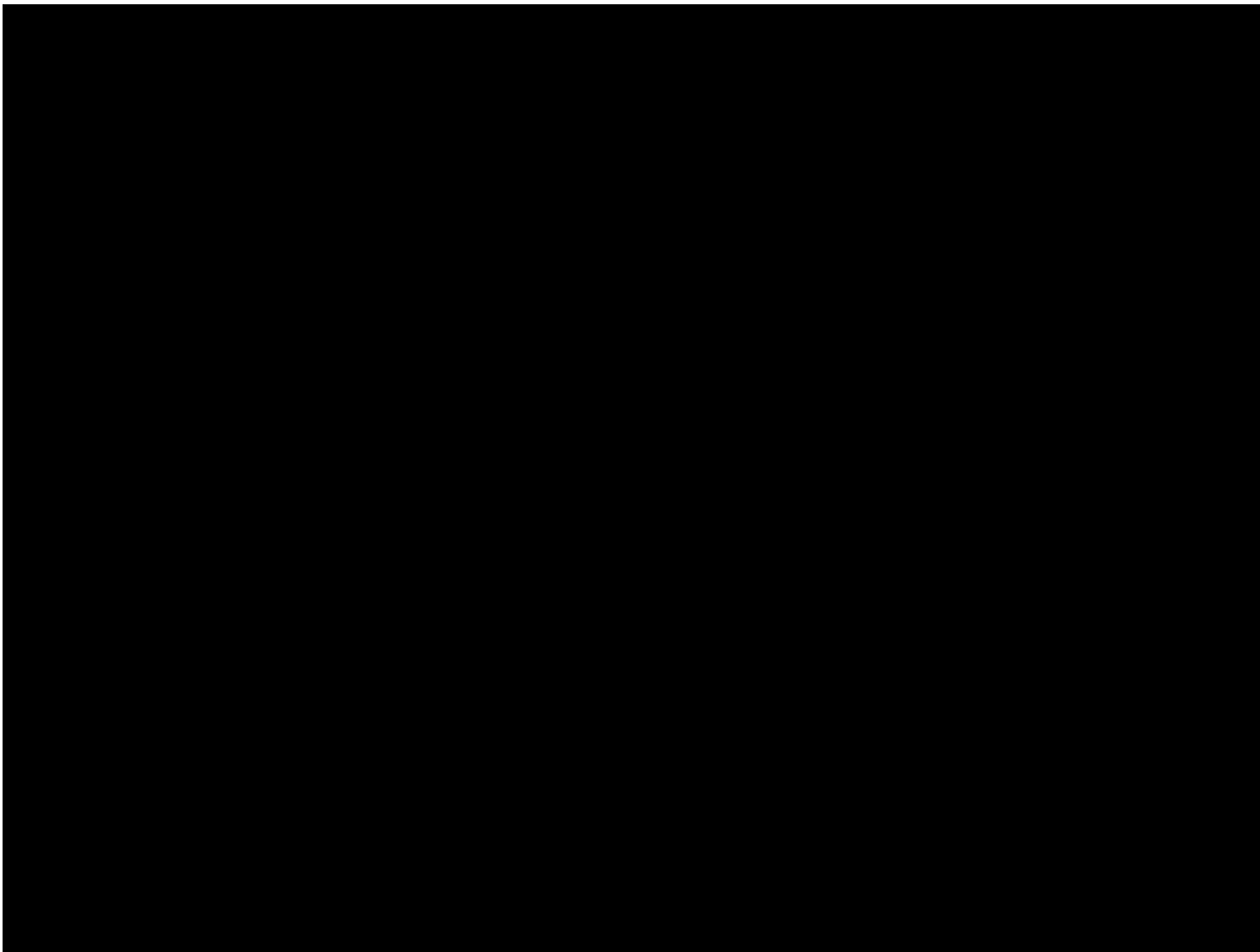


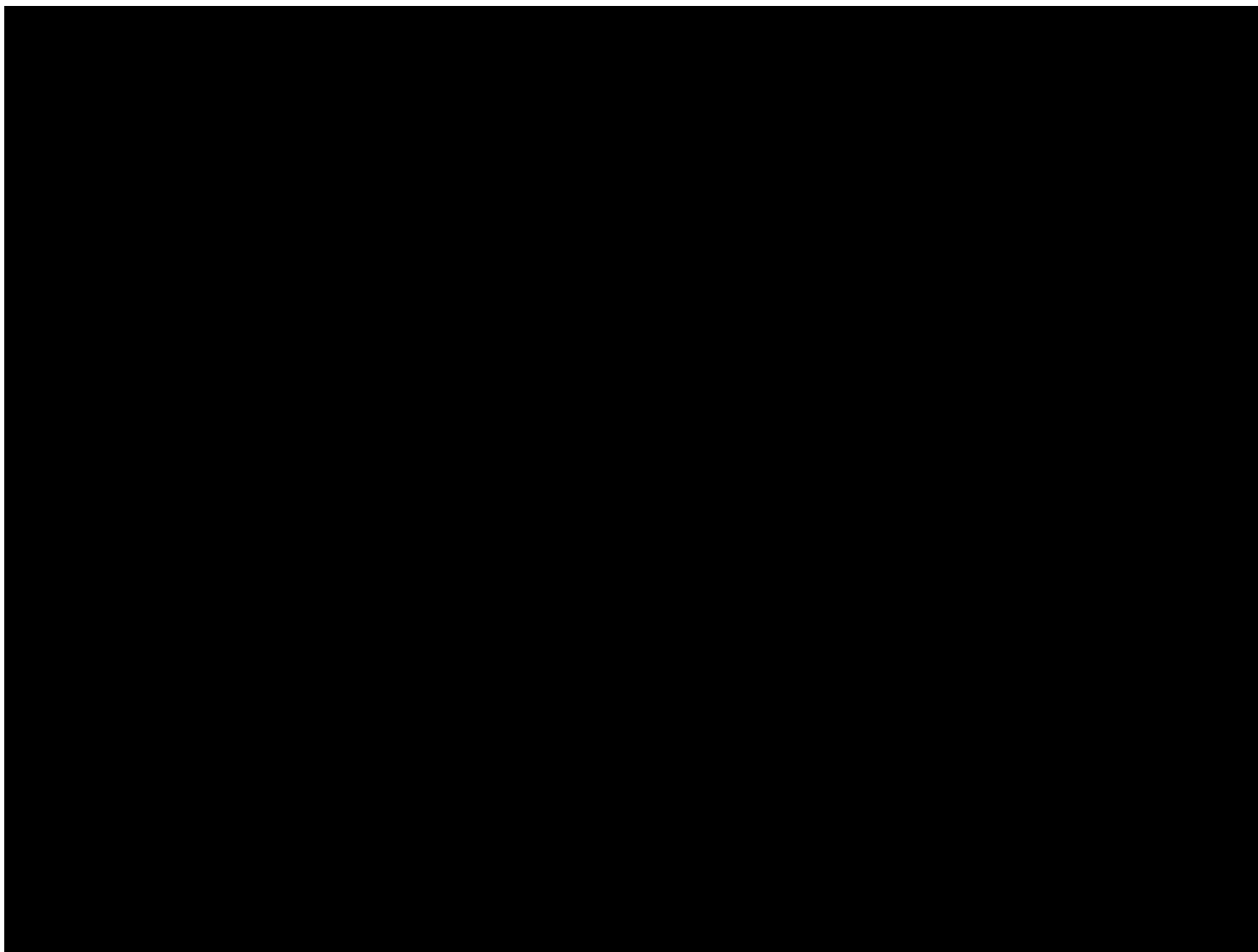


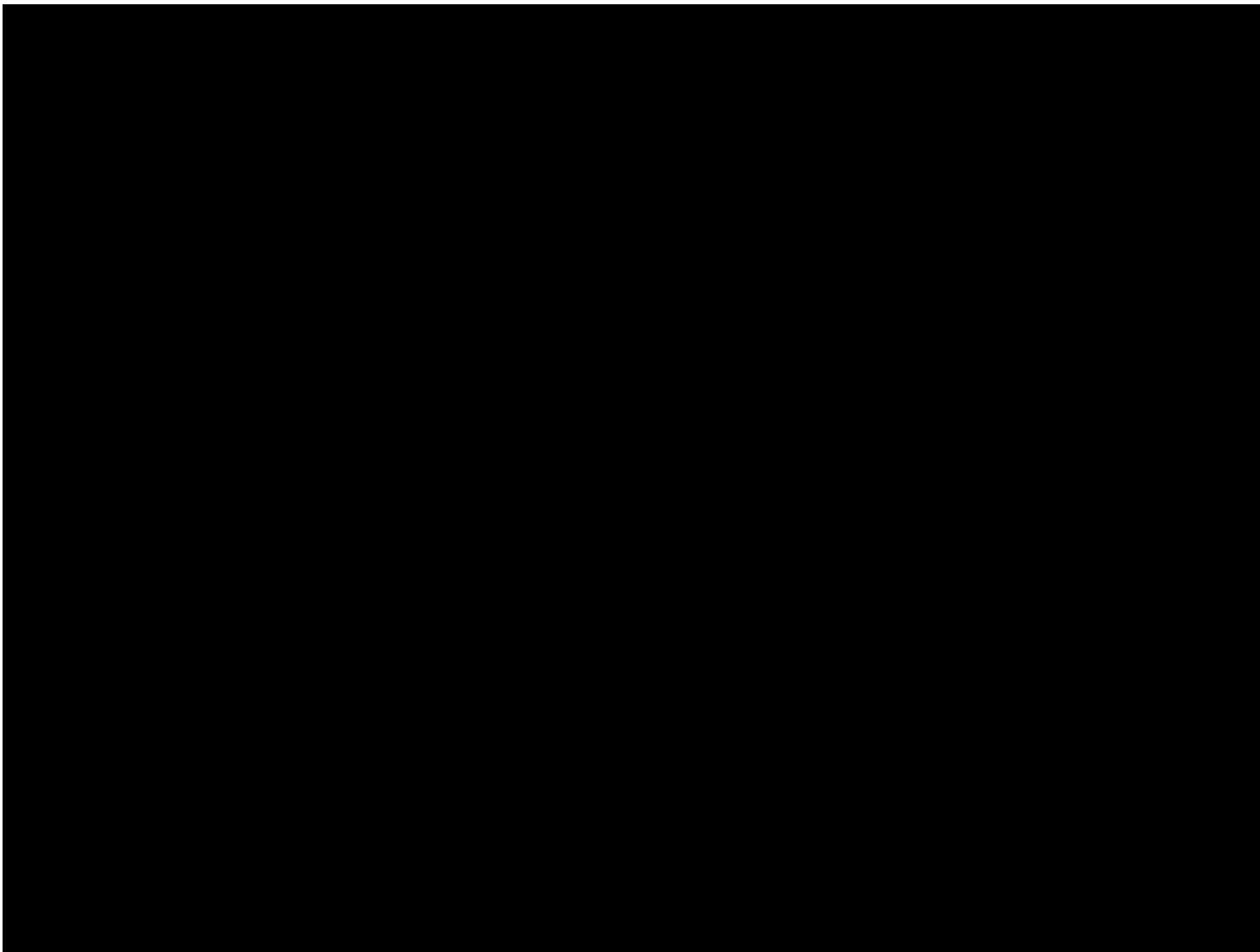
# CORPORATE CITIZENSHIP

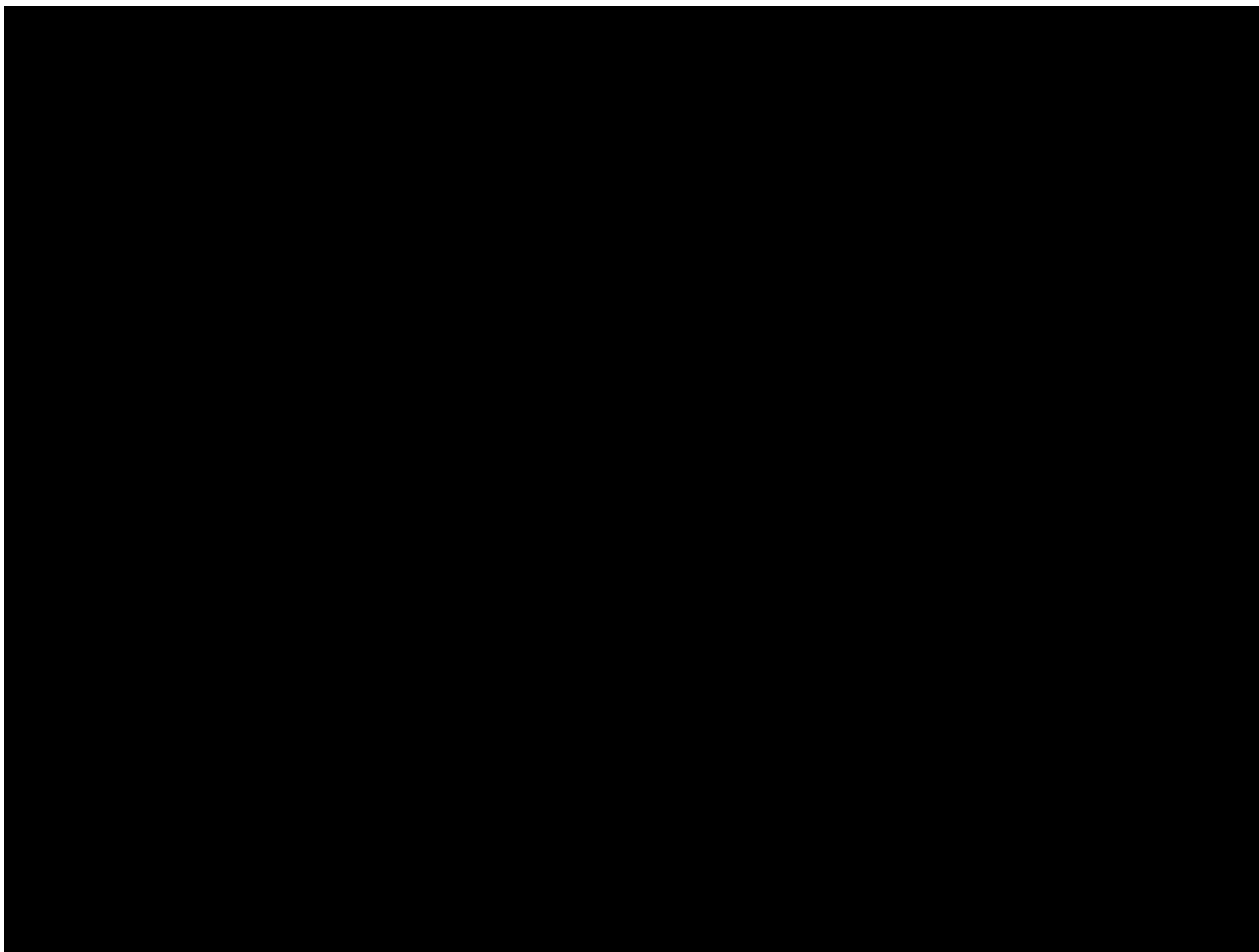
We seek to contribute to positive  
outcomes in our community and  
beyond

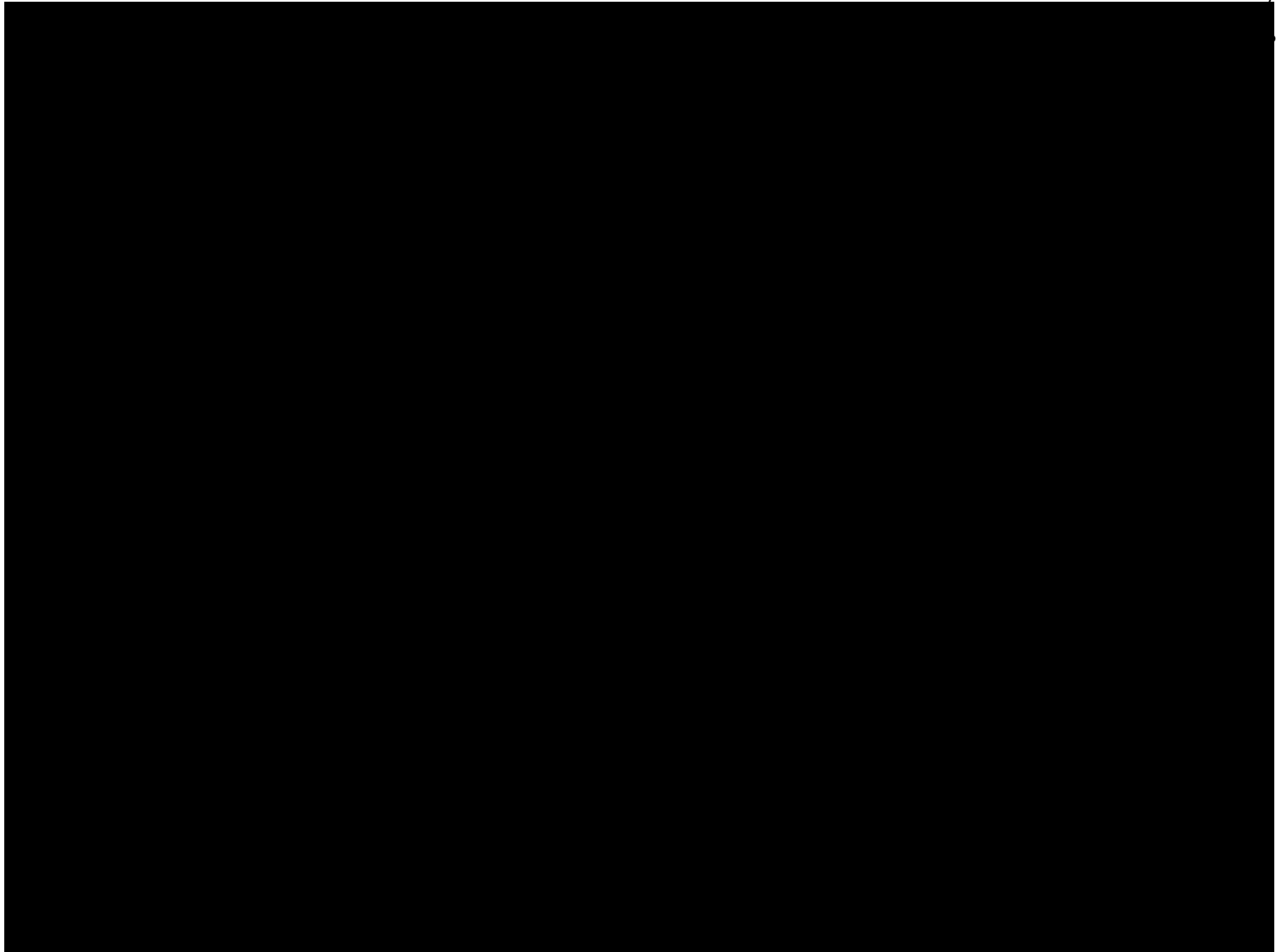
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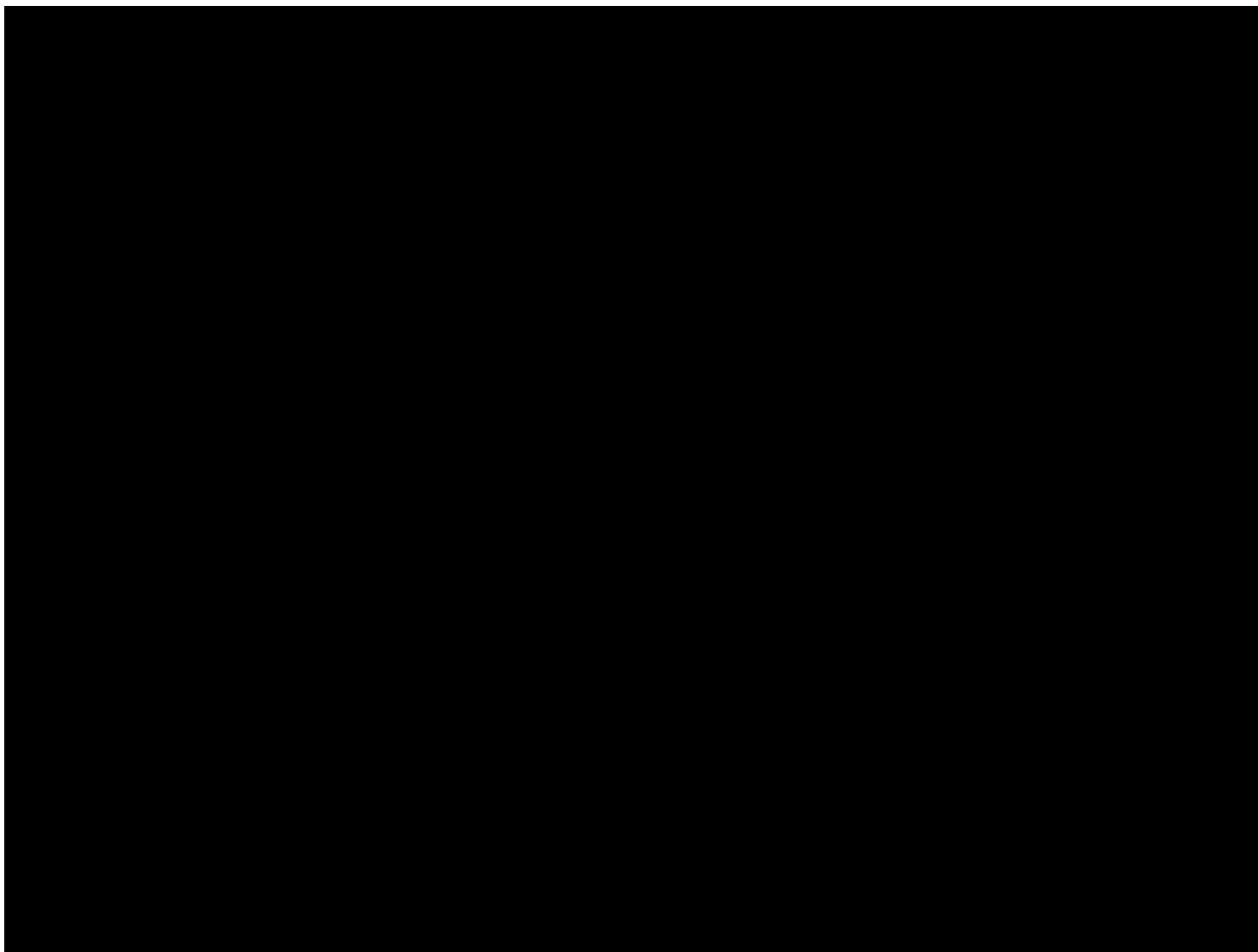




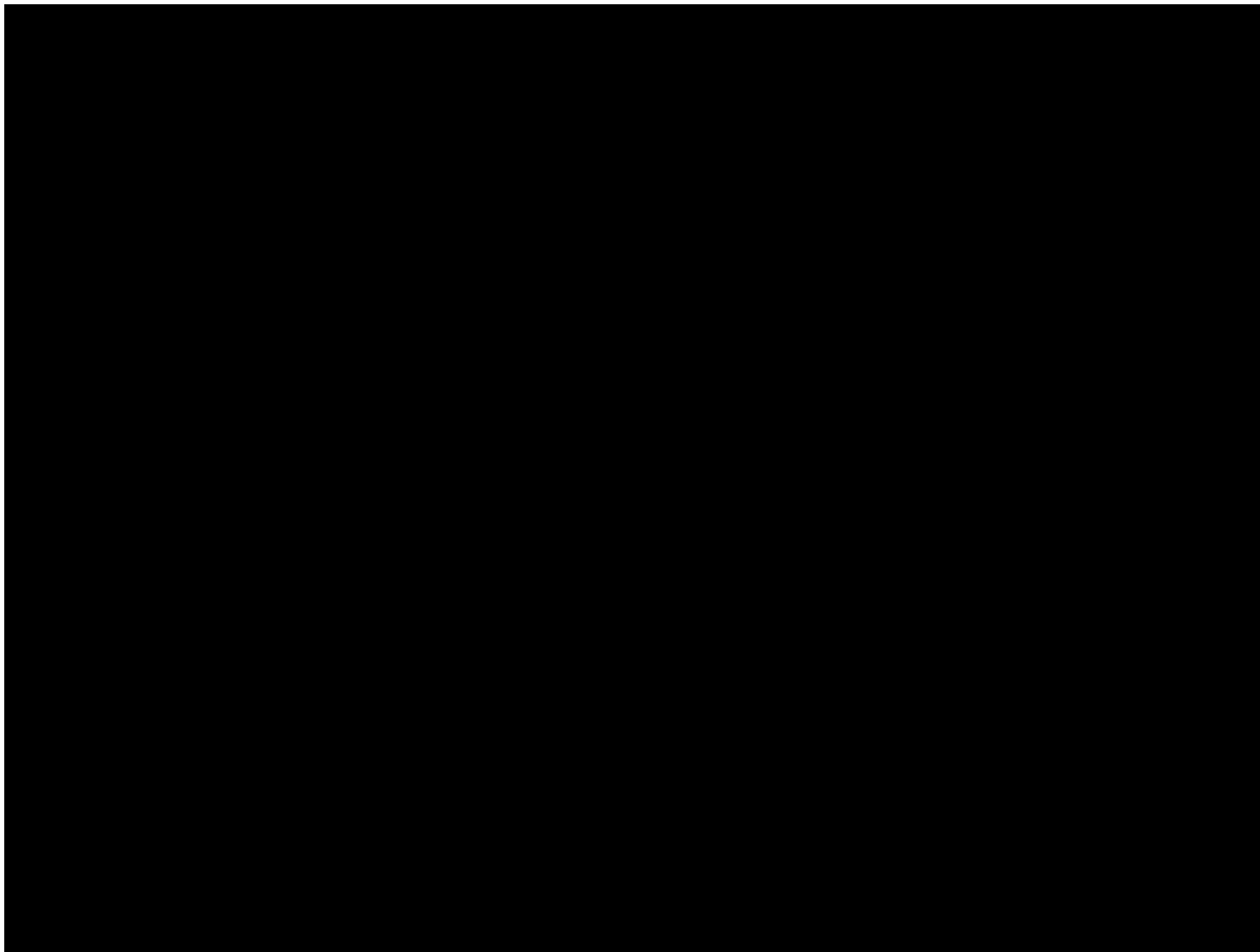














## SECTION 1C

### 2019 Corporate Performance Scorecard - Assessment

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## HOL Financial Strength – Year to Date Results Q4 2019

### Corporate Performance Measures And Targets

Enterprise Strategic Objective	We will create sustainable growth in our business and our earnings By improving productivity and pursuing business growth opportunities that leverage our strengths, our core capabilities, our assets and our people							
Enterprise Strategic Outcome	Growth in shareholder value							
2019 HOL Performance Measures	2014A CGAAP	2015A IFRS	2016A IFRS	2017A IFRS	2018A IFRS	2019T IFRS	2019 Actual IFRS	2019 Assessment ●X
Net Income	\$27.9M	\$35.5M	\$34.3M	\$36.5M	\$37.2M	\$34.9M	\$37.7M	●
Revenue (excl CDM) <sup>1</sup>	\$168.5M	\$172.8M	\$182.0M	\$187.1M	\$199.2M	\$208.7M	\$210.2M	●
OM&A - Net (excl CDM) <sup>1</sup>	\$86.0M	\$84.5M	\$87.9M	\$87.5M	\$95.1M	\$96.4M	\$100.3M	X
Return on Equity	10.1%	12.1%	11.0%	11.1%	10.7%	9.4%	10.2%	●
Cash Flow from Operations <sup>2</sup>	\$94.3M	\$69.0M	\$78.0M	\$78.3M	\$114.3M	\$110.3M	\$99.1M	X
CAPEX System Renewal and Service (excl Plant Failure) <sup>3</sup> Plant Failure <sup>3</sup> General (incl Facilities Renewal Program) <sup>3</sup>	\$74.0M N/A \$15.7M	\$54.5M N/A \$10.2M	\$57.3M \$7.8M \$15.7M	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A
Cumulative Capital Additions General Plant System Renewal & Service	N/A N/A	N/A N/A	N/A N/A	\$31.0M \$116.0M	\$37.9M \$186.4M	\$39.8M \$220.0M	\$53.1M \$270.4M	● ●
Labour Allocation to CAPEX	60%	61%	62%	60%	58%	60%	58%	X
Debt to Capitalization Ratio <sup>4</sup>	N/A	N/A	N/A	N/A	N/A	65%	65.9%	X
CDM – Cumulative GWh reduction <sup>5</sup>	415 GWh	78 GWh	90 GWh	276 GWh	324 GWh	375 GWh	N/A	N/A

<sup>1</sup> In 2016, these measures were modified to exclude CDM

<sup>2</sup> In 2016 & 2017, Cash flow from Operations on financial statement includes reclassifications of deferred revenue and customer deposits, the actual results are based on the previous reporting method to compare to the target, starting 2018, result was aligned with financial statement reporting

<sup>3</sup> In 2016, Plant Failure was added as a separate measure and excluded from the overall CAPEX measure

<sup>4</sup> New measure added in 2019

<sup>5</sup> 2015 and 2016 are annual reductions not cumulative. 2015, 2016, and 2017 results restated based on IESO confirmed results received in subsequent years. Announced on March 2019, LDCs will no longer receive incentive payments for achieving assigned targets for electricity savings

78



## Customer Value – Year to Date Results Q4-2019

### Corporate Performance Measures and Targets

Enterprise Strategic Objective	We will deliver value across the entire customer experience By providing reliable, responsive and innovative services at competitive rates							
Enterprise Strategic Outcome	Customer loyalty							
2019 Corporate Performance Measures	2014A	2015A	2016A	2017A	2018 A	2019T	2019 Actual	2019 Assessment
<b>SATISFACTION</b>								
Residential & Small Commercial Annual Satisfaction Survey	HO/ON Pre83%/83% Post79%/80%	HO/ON Pre 87%/86% Post85%/83%	HO / ON Pre81%/81 Post77%/74%	HO / ON Pre90%/85% Post87%/81%	HO / ON Pre 94%/91% Post 93%/89%	≥91%	HO / ON Pre 95%/92% Post 94%/92%	●
Large Commercial Annual Satisfaction Survey	N/A	N/A	N/A	90%	HO / ON Pre 94%/93% Post 95%/93%	≥85%	HO / ON Pre 96%/92% Post 97%/96%	●
Call Centre Monthly Transaction Survey	88%	90%	89%	87%	78%	≥90%	87%	×
Ability to deal with issues (First Call Resolution)	84%	85%	85%	84%	86%	≥86%	89%	●
Complaints – Total Number	140	124	106	71	182	≤120	29	●
Complaints – At Fault	N/A	N/A	N/A	N/A	N/A	≤20 <sup>2</sup>	4	●
<b>VALUE</b>								
Number of hydroottawa.com sessions <sup>1</sup>	1,047,749	1,267,505	3,170,766	6,088,429	6,623,907	>2,500,000	2,880,541	●
Number of MyAccount customers	122,300	136,890	158,112	167,114	184,067	>186,000	202,031	●
Number of e-bill accounts	85,991	102,007	123,801	134,761	150,991	>160,000	169,514	●
Number of Auto pay accounts	46,098	48,751	51,520	54,789	63,014	>70,000	70,331	●
Number of App Registrants (Downloads)	N/A	N/A	N/A	12,519	24,363	>30,000	35,377	●
Number of Mobile App Sessions <sup>1</sup>	N/A	N/A	N/A	8,585	8,585	>130,000	58,323	×
Number of Twitter Followers <sup>1</sup>	7,630	10,825	12,976	15,687	33,293	>40,000	36,630	×
Number of Facebook Followers <sup>1</sup>	N/A	482	2,006	3,039	7,292	>8,500	8,220	×
Number of LinkedIn Followers <sup>1</sup>	N/A	2,500	3,358	4,892	6,274	>6,200	8,441	●

<sup>1</sup> These metrics were moved from Corporate Citizenship Scorecard to Customer Value Scorecard

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## Customer Value – Year to Date Results Q4-2019

### Corporate Performance Measures and Targets

Enterprise Strategic Objective	We will deliver value across the entire customer experience By providing reliable, responsive and innovative services at competitive rates							
Enterprise Strategic Outcome	Customer loyalty							
2019 Corporate Performance Measures	2014A	2015A	2016A	2017A	2018A	2019T	2019 Actual	2019 Assessment ● X
<b>PRODUCT RELIABILITY</b>								
SAIFI – Average Number of Times that Power to a Customer is Interrupted 5 year average <sup>1</sup> <del>3-year-average</del> <sup>4</sup>	0.99 <del>1.12</del>	0.97 <del>0.99</del>	0.89 <del>0.80</del>	0.82 <del>0.80</del>	0.73 <sup>4</sup>	≤0.75	0.74	●
SAIFI – Average Number of Times that Power to a Customer is Interrupted Annual excluding LOS and MEDs <sup>2</sup> Annual including LOS and MEDs <sup>3</sup>	0.74 0.86	0.72 0.75	0.69 0.78	0.79 0.87	0.78 2.03	≤0.75 N/A <sup>3</sup>	0.75 1.08	●
SAIDI – Average Number of Hours that Power to a Customer is Interrupted 5 year average <sup>1</sup> <del>3-year-average</del> <sup>4</sup>	1.07 <del>1.51</del>	1.13 <del>1.46</del>	1.09 <del>1.29</del>	1.10 <del>1.29</del>	0.99 <sup>4</sup>	≤1.00	0.94	●
SAIDI – Average Number of Hours that Power to a Customer is Interrupted Annual excluding LOS and MEDs <sup>2</sup> Annual including LOS and MEDs <sup>3</sup>	1.08 1.59	1.08 1.15	1.00 1.13	1.19 1.58	0.85 22.8	≤1.00 N/A <sup>3</sup>	0.77 1.30	●
FEMI (Feeders Experiencing Multiple Interruptions) – Number of feeders with 10 or more interruptions per year	8	9	5	15	10	≤12	10	●

<sup>1</sup> Excludes Loss of Supply and Major Event days, previously this measure was a three year average, however both industry and the OEB reports on a 5 year average, as of 2018 only 5 year average reported

<sup>2</sup> LOS = Loss of Supply, MED = Major Event Days

<sup>3</sup> No target set for SAIFI and SAIDI including LOS and MEDs

<sup>4</sup> Value previously reported for 2018 SAIFI 5 year average of 0.93 and 2.05 for SAIDI were incorrect



## Customer Value – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will deliver value across the entire customer experience <i>By providing reliable, responsive and innovative services at competitive rates</i>	
Enterprise Strategic Outcome	Customer loyalty	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ X
<b>3. Assist customers in managing their energy consumption and electricity costs</b>		
<b>a. CDM</b> - Continue to deliver a range of CDM programs that are customer-centric, cost effective and generate strong GWh results, e.g.		X
i. Residential Programs including Hydro Ottawa's app		
ii. Commercial Programs including Small Business Lighting and building retrofit		X
<b>b. Electricity Support Programs</b> – Continue to manage the provincial program(s) that provide ongoing financial assistance to qualifying low-income electricity consumers including		● ● ●
i. Ontario Electricity Support Program (OESP)		
ii. Low-Income Energy Assistance Program (LEAP)		
iii. Affordability Trust		
<b>c. Customer Education Program</b> – Continue to increase understanding of the industry and Hydro Ottawa's role and achievements within it; demystify and educate by leveraging multiple modes (digital and social media, video, open houses, workshops, etc.) and multiple channels (local media, Councillors, subject matter experts, executive and senior management)		●
<b>d. Energy Innovation Projects</b> – Actively pursue and participate in innovation projects to identify new energy saving product/service offerings for our customers		●
i. Great Demand Response Project (IESO Smart Grid funding in partnership with industry and academia, e.g. Ottawa and Gloucester Community Housing, Ottawa U, Panasonic, Tabouchi)		
ii. EV Support Equipment Manifold (EVSEM) – charging infrastructure pilot project for constrained urban environments (pending funding by NRCAN)		
iii. EV Innovation Development/Deployment (EVID) – working with local taxi company to facilitate the charging infrastructure for an electric taxi fleet (pending funding from NRCAN)		
iv. Distributed Energy Resources – continue to monitor and engage on opportunities		●



## Customer Value – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will deliver value across the entire customer experience <i>By providing reliable, responsive and innovative services at competitive rates</i>	
Enterprise Strategic Outcome	Customer loyalty	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ X
4. Deliver on customer expectations for service quality and responsiveness		
a. Improve Customer Service – Implement the ‘whole of company’ Customer Experience (Cx) Strategy and Roadmap with a focus on modernization, customer communications and customer self-serve:		▲
i. Change Management Plan – Implement the multi-year change management plan to align people and organization to the Cx Strategy and Roadmap, with a focus on increasing organization-wide awareness, support and alignment for a customer-centric culture consistent with the Organizational Culture Strategy		●
ii. New Service / Product Offerings – Work with existing customers to define and tailor product/service offerings, e.g. EV and energy storage solutions		●
iii. Regulatory: e.g. provincial programs, migration to fixed rate and C1 class customers to HOEP		●
iv. Customer Touchpoint Improvements –		
aa. Outage communications - Incorporate technology solutions to support outbound outage reporting across multiple channels / app & SMS		●
bb. Annual Go Paperless campaign		●
cc. Hydro Ottawa app engagement campaign		●
v. Understanding Customers – Implement systems and processes to support a 1:1 conversation with customers		
aa. Customer Preference Dashboard (database) – continue development of interface to centralize customer data points to support targeted and personalized communications		●
bb. Marketing Automation Platform – extend solution to automate and provide insightful analytics of marketing campaigns and communications for HOL		●
cc. Email Management Platform – Implement email management solution to streamline routing of customer communications		●
dd. Strategic Account Management Plan – Continue relationship building with, and develop of product offerings for, key accounts, developers and contractors; capture market intelligence, improve internal collaboration, increase customer value and create trusted advisor role		●
ee. Business Intelligence – Leverage Tableau Reporting tool to allow us to better target customer segments for different program / service offerings		●
vi. Technology and Process Enhancements		
aa. Website – Upgrade external websites		●
bb. Enterprise Communications Platform - Leverage platform functionality for multi-channel communication (voice, text, email, chat, etc.)		●



## Customer Value – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will deliver value across the entire customer experience <i>By providing reliable, responsive and innovative services at competitive rates</i>	
Enterprise Strategic Outcome	Customer loyalty	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ●▲X
5. Maintain overall distribution system reliability		
a. Smart Grid – Continue implementation of grid transformation and modernization projects including		●
i. New SCADA system - implement additional modules		
ii. Telecom Dark Fibre network – continue construction and installation (target 100 Km in 2019)		▲
b. Maintain or enhance our best in class reliability metrics		●
c. Continue our improvements in maintenance and capital program execution – Emphasis on workforce scheduling and contractor management; Complete all budgeted programs / plans on time and within budget		●
i. Distribution System Renewal and Service (Sustainment Capital Program) – Ongoing implementation of refurbishment and enhancement programs with particular emphasis on aging infrastructure, areas with chronic reliability issues, and on station capacity		●
ii. Distribution System Access (Demand Capital Program) – Ongoing implementation of new residential and commercial customer connections, system expansions, and third party driven plant relocations and upgrades		●
iii. Distribution Testing, Inspection and Maintenance Programs – Ongoing implementation of distribution system and station asset evaluations (testing and inspections of poles, cables, manhole chambers and switches); forestry program execution		●

## Organizational Effectiveness – Year to Date Results Q4-2019

### Corporate Performance Measures and Targets

Enterprise Strategic Objective	We will achieve performance excellence By cultivating a culture of innovation and continuous improvement							
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>Efficient and effective operations</li> <li>Safe and healthy work environment</li> <li>Engaged, aligned and prepared workforce</li> </ul>							
2019 Corporate Performance Measures	2014A	2015A	2016A	2017A	2018A	2019T	2019 Actual	2019 Assessment
OM&A per customer - HOL only (excl CDM) <sup>1</sup>	\$269	\$261	\$268	\$264	\$284	≤\$284	\$295	X
Revenue per employee (excl CDM) <sup>2</sup>	\$0.32M	\$0.31M	\$0.32M	\$0.34M	\$0.379M	≥\$0.38M	\$0.41M	•

<sup>1</sup> In 2016, this measure was modified to exclude CDM only (LRT was excluded in previous years).

<sup>2</sup> In 2016, these measures were modified to exclude CDM & Street Lighting, and in 2019 the measure was modified to exclude CDM only, streetlighting included in Envari base revenue



## Organizational Effectiveness – Year to Date Results Q4-2019

### Corporate Performance Scorecard

Enterprise Strategic Objective	We will achieve performance excellence <i>By cultivating a culture of innovation and continuous improvement</i>
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Efficient and effective operations</i></li> <li>• <i>Safe and healthy work environment</i></li> <li>• <i>Engaged, aligned and prepared workforce</i></li> </ul>

Measures	Description	2014A	2015A	2016A	2017A	2018A	2019 Target	2019 Actual		
Labour Utilization	Productive Time	% of Billable Hours / Total Regular Hours	71%	74%	74%	73%	72%	≥ 74%	72%	X Below target but on par with prior year. Over 3,000 hours reported on an administrative work order associated with relocation work to Dibblee and Hunt Club
	Labour Allocation to CAPEX	% of Labour Time on Capital Activities / Total Productive Time	60%	61%	62%	60%	58%	≥ 60%	58%	X Below target but on par with prior year. Shift from Capital to WFO due to flood mitigation work for Portage and mutual aid (Maine and HQ) (both of these are recoverable from HOL's perspective)
	Average Sick Days per FTE (annualized)	Total Sick Days / Total Employees	5.9	6.3	5.9	6.0	7.1	≤ 6.0	7.8	X Exceeded target and prior year. Long term sick leave accounts for 40%. We are above the Ontario average of 7.4 days but below the National average of 8.5 days
	e-Learning Training per employee (annualized)	Number of hours of e-learning / Total Employees	N/A	N/A	N/A	1.0	1.8	≥ 2.0	3.9	● Surpassed target. Increase in e-Learning hours in 2019 from Rate Application Online Collaboration Tools (AO Docs and Gsuite), Cybersecurity, and Code of Conduct online modules.
OM&A	Bad Debt as a % of Total Electricity Revenue	Bad Debt / Total Electricity Revenue	0.18%	0.01%	0.13%	0.20%	0.13%	≤ 0.12%	0.08%	● Surpassed target and at lowest level in 4 years. The reduction in bad debt is explained by improved AR aging and overall Fair Hydro Plan. Residential class greater than 90 days improved by 32% due to increased OESP (Ontario Electricity Support Program) enrolments, disconnection moratorium is not having an impact on bad debt.
Asset Efficiency	Technology Infrastructure Cost per Employee	(External IT support costs + computer hardware & software depn) / # of FTE	\$21.5K	\$23.3K	\$24.4K	\$22.8K	\$26.5K	≤ \$24.9K	\$22.5M	● Surpassed target and prior year primarily due to decrease in depreciation from longer useful life for CC&B and ERP.
Profitability Metrics	EBITDA as a % Revenue *									
	EBITDA \$ / Total Revenue - Hydro Ottawa Limited		44%	46%	52%	53%	54%	≥ 54%	52%	X Below target and prior year. Lower EBITDA due to higher expenses (leak remediation costs and one-time facilities costs) and lower distribution revenue partially due to Accelerated CCA tax change with offset below EBITDA
	Inventory Turnover Ratio and Value	Cost of Materials Used / Average Inventory	1.83	1.73	2.27	1.93	1.55	≥ 2.00	1.62	▲ Below target but improvement from prior year. Results primarily due to deferral of capital projects - ordering inventory in advance of need - continue to work with project managers

## Organizational Effectiveness – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will achieve performance excellence <i>By cultivating a culture of innovation and continuous improvement</i>	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Efficient and effective operations</i></li> <li>• <i>Safe and healthy work environment</i></li> <li>• <i>Engaged, aligned and prepared workforce</i></li> </ul>	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ ✖
6. Continue to enhance operational performance and productivity		

## Organizational Effectiveness – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will achieve performance excellence By cultivating a culture of innovation and continuous improvement	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Efficient and effective operations</i></li> <li>• <i>Safe and healthy work environment</i></li> <li>• <i>Engaged, aligned and prepared workforce</i></li> </ul>	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ ✕
6. Continue to enhance operational performance and productivity		

## Organizational Effectiveness – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will achieve performance excellence By cultivating a culture of innovation and continuous improvement	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>Efficient and effective operations</li> <li>Safe and healthy work environment</li> <li>Engaged, aligned and prepared workforce</li> </ul>	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ ✕
6. Continue to enhance operational performance and productivity (continued)		
<div style="background-color: black; height: 150px; width: 100%;"></div>		
f. <b>Facilities Renewal Program</b> - Advance the implementation of the Board approved plan to replace the end of life main office and the south and east operations centres with purpose built facilities which will address location, energy efficiency, employee engagement, etc.		●
i. Complete the design build of the Administration building and the East and South Operations Centres, operational integration and migration, regulatory case preparation, and property disposition		
7. Maintain leading health and safety record		
a. <b>Occupational Health, Safety and Environment (OHSE) Management System</b>		●
i. Maintain registration of OHSE management system and prepare for update to new ISO 45001 standard (replacing OHSAS 18001)		●
ii. Complete required OHSE training		●
iv. Continue implementation of OHSE Targeted Action Plan		●
v. Renew physical demands analysis for positions requiring significant physical effort		▲



## Organizational Effectiveness – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will achieve performance excellence <i>By cultivating a culture of innovation and continuous improvement</i>	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Efficient and effective operations</i></li> <li>• <i>Safe and healthy work environment</i></li> <li>• <i>Engaged, aligned and prepared workforce</i></li> </ul>	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ ✕
8. Continue to enhance organizational and employee capability		
a. Union Management Relations –		
i. Application for certification by SEP for representation at HOL		-

## Corporate Citizenship – Year to Date Results Q4-2019

### Corporate Performance Measures And Targets

Enterprise Strategic Objective	We will contribute to the well being of the community <i>By acting at all times as a responsible and engaged corporate citizen</i>							
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Leading governance and business practices</i></li> <li>• <i>Engaged stakeholders</i></li> <li>• <i>Safe, secure and environmentally responsible services</i></li> <li>• <i>Positive community impact</i></li> </ul>							
2019 Corporate Performance Measures	2014A	2015A	2016A	2017A	2018 A	2019T	2019 Actual	2019 Assessment

[illegible]

## Corporate Citizenship – Year to Date Results Q4-2019

### Corporate Performance Goals and Priorities

Enterprise Strategic Objective	We will contribute to the well being of the community <i>By acting at all times as a responsible and engaged corporate citizen</i>	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Leading governance and business practices</i></li> <li>• <i>Engaged stakeholders</i></li> <li>• <i>Safe, secure and environmentally responsible services</i></li> <li>• <i>Positive community impact</i></li> </ul>	
2019 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ ✕
9. Enhance our brand image in the community and the industry		





## Board / Committee Report

**To:** Hydro Ottawa Holding Inc. Board of Directors

**Date:** 16 June 2020

**Submitted by:**

A handwritten signature in black ink, appearing to read "B. Conrad", positioned above a horizontal line.

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Bryce Conrad  
President and Chief Executive Officer

**Agenda Item:** 12 - President and Chief Executive Officer Quarterly Report Year to  
Date as at March 31, 2020

**Report Recommendation(s):**

That the Board of Directors of Hydro Ottawa Holding Inc. receive the quarterly report of the President and Chief Executive Officer year to date as at March 31, 2020.

## EXECUTIVE SUMMARY:

NA

## BACKGROUND:

1. Further to their respective charter responsibilities, the Hydro Ottawa Holding Inc. (HOHI) Board must regularly monitor HOHI's implementation of the enterprise Strategic Plan and HOHI's progress toward achieving that plan, and the Hydro Ottawa Limited (HOL) Board must regularly monitor HOL's implementation of its Business Plan (that is aligned to the enterprise Strategic Plan established by HOHI) and HOL's progress toward achieving it.
2. The quarterly President and Chief Executive Officer (CEO) report of progress against the annual Board-approved Corporate Performance Scorecard assists the Boards in fulfilling these charter responsibilities.
3. The quarterly President and CEO report and the Corporate Performance Scorecard are components of Hydro Ottawa's integrated planning and performance management framework that was put in place in April 2007 to strengthen alignment between our strategy and guiding principles to individual contribution and performance. This was in response to a need that had been identified in the 2005-2006 Governance Work Plan approved by the HOHI Board in August 2005 to improve Hydro Ottawa's governance and business practices.
4. The integrated planning and performance management framework provides for the following:
  - a. An enterprise strategic plan (our Strategic Direction) approved by the HOHI Board that sets our course for a five-year period;
  - b. Board-approved annual business plans at the both the HOHI and HOL levels comprised of a Corporate Performance Scorecard (priorities and measures and targets) and Budget that operationalize the enterprise strategic plan in a given year, and that cascade to employees through Individual Contribution Plans and performance appraisal system);
  - c. Regular monitoring and reporting of performance and progress against annual plans and budget including
    - i. Monthly reviews by the Executive Management Team of financials, status of priorities and critical projects, and performance measures and targets as established for each key area of focus in the annual Corporate Performance Scorecard,
    - ii. **A quarterly President and CEO Report to the two Boards of progress against the Corporate Performance Scorecard, including ERM reporting,**
    - iii. Quarterly Financial Reports and Monthly Updates to the Shareholder, and
    - iv. An Annual Report to the Shareholder; and
  - d. An annual review of the critical issues and opportunities facing the company by the Executive Management Team and subsequently by the Boards of Directors

to determine whether an adjustment to our five-year course is required as part of the development of the annual plan (Corporate Performance Scorecard and budget & financial outlook) for the next year.

**DISCUSSION:**

5. The presentation attached at Annex “A” is the President and CEO quarterly report to the Boards year to date as at March 31, 2020. It includes the following information:
  - a. Quarter at a Glance – Summary Corporate Priorities;
  - b. Enterprise Risk Management (ERM) Assessment;
  - c. Q1 2020 Results Highlights;
  - d. Progress Against Plan – Corporate Performance Scorecard (Qualitative Corporate Priorities and Quantitative Performance Measures and Targets);  
and
  - e. Compliance, Legal Issues and Provincial Programs.

**SUPPORTING DOCUMENTATION:**

Annex “A” - President & CEO Report Year to Date as at March 31, 2020





A leading partner in a  
smart energy future

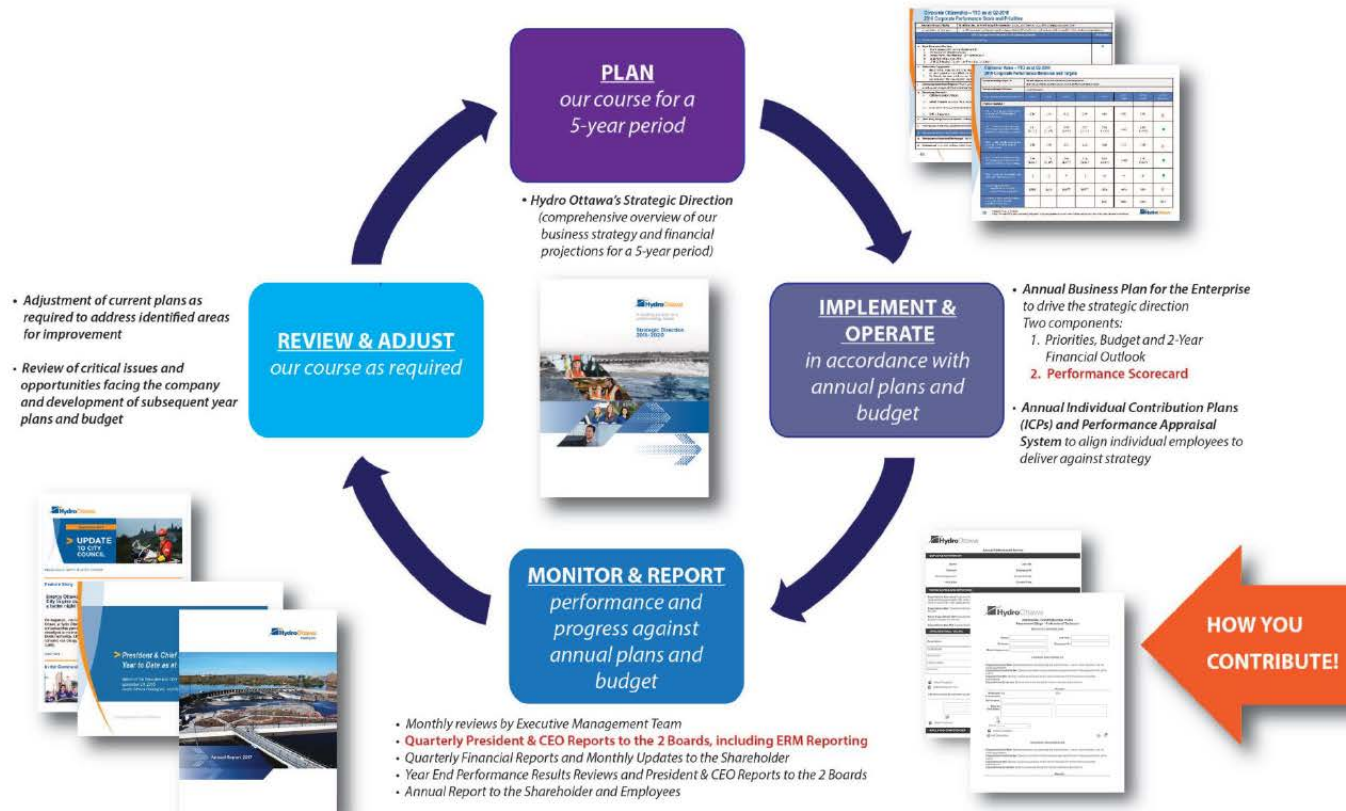


## President & CEO Report Year to Date as at March 31, 2020

Hydro Ottawa Limited and Hydro Ottawa  
Holding Inc. Boards of Directors

June 16, 2020

# Context – Our Integrated Planning & Performance Management Framework



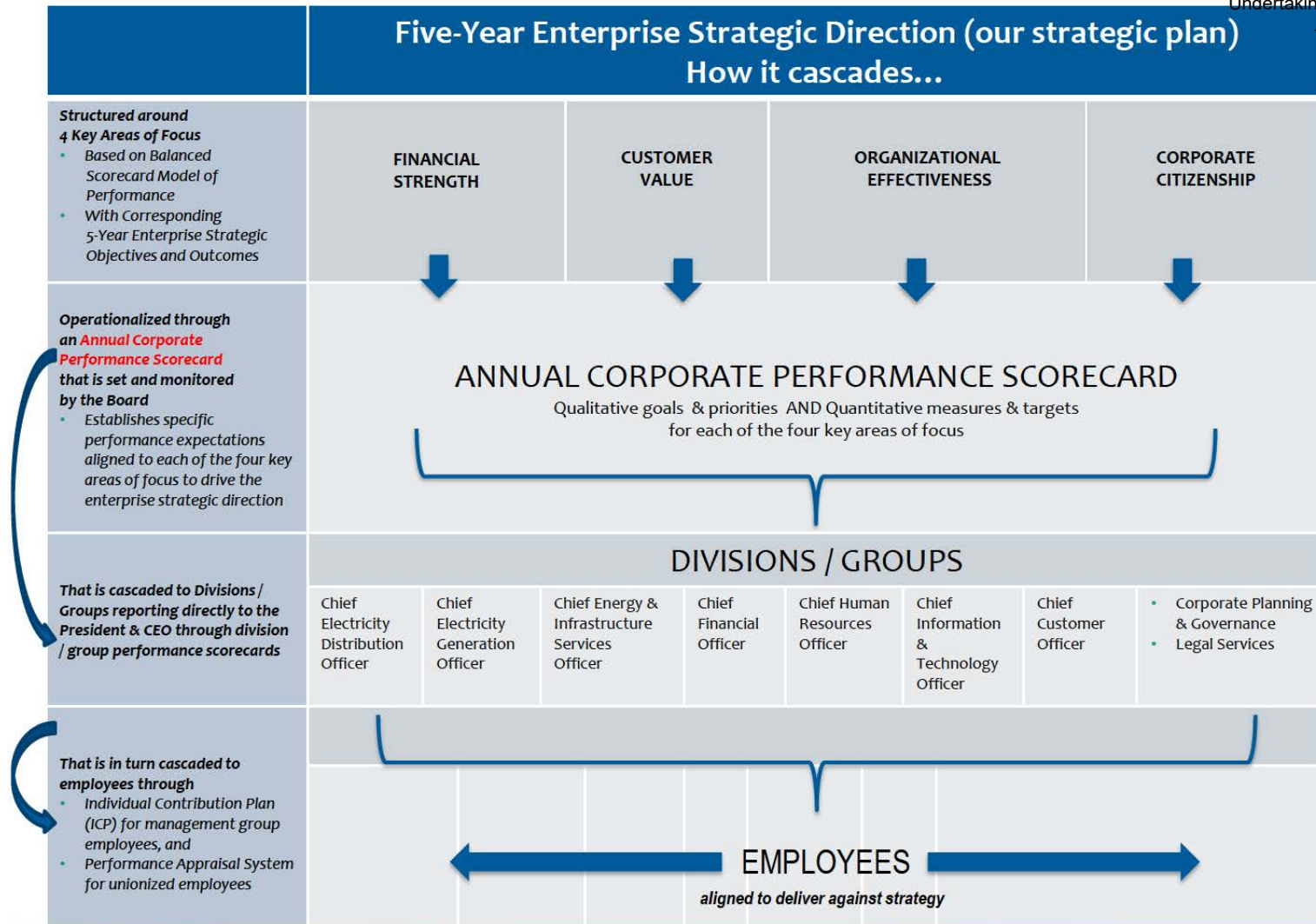
## Context – 2020 Corporate Performance Scorecard...

- For 2020, the Board approved **one corporate performance scorecard for the enterprise**
- The scorecard established qualitative performance goals and priorities and quantitative measures and targets in each of our four key areas of focus to support the advancement of the Strategic Direction in 2020

- Customer Value
- Financial Strength
- Organizational Effectiveness
- Corporate Citizenship



- The scorecard also included separate quantitative Financial Strength performance targets for the HOL entity
- Performance priorities for executive and management staff for 2020 cascade from the corporate performance scorecard (*see next slide*)
- Results highlights and progress against the scorecard (including ERM assessment) are reported quarterly to the HOHI and HOL Boards by the President & CEO





## Overview of Report

1. Quarter at a Glance – Summary Corporate Priorities
2. Enterprise Risk Management (ERM) Assessment
3. Q1 2020 Results Highlights
4. Compliance, Legal Issues and Provincial Programs
5. Progress Against Plan – Corporate Performance Scorecard
  - Qualitative Corporate Priorities
  - Quantitative Performance Measures and Targets





## Section 1 – Summary Corporate Priorities








## 2020 Performance Goals Summary

5-Year Enterprise Strategic Objectives and Outcomes (2016-2020)		2020 Corporate Performance Goals
Financial Strength	<p><b>Enterprise Strategic Objective:</b>            We will create sustainable growth in our business and our earnings  <i>By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i></p> <p><b>Enterprise Strategic Outcome:</b>  <i>Growth in shareholder value</i></p>	<ul style="list-style-type: none"> <li>• Grow revenues from new sources</li> <li>• Enhance / protect revenues from existing business lines</li> </ul>
Customer Value	<p><b>Enterprise Strategic Objective:</b>            We will deliver value across the entire customer experience  <i>By providing reliable, responsive and innovative services at competitive rates</i></p> <p><b>Enterprise Strategic Outcome:</b>  <i>Customer loyalty</i></p>	<ul style="list-style-type: none"> <li>• Assist customers in managing their energy consumption and electricity costs</li> <li>• Deliver on customer expectations for service quality and responsiveness</li> <li>• Maintain overall distribution system reliability</li> </ul>
Organizational Effectiveness	<p><b>Enterprise Strategic Objective:</b>            We will achieve performance excellence  <i>By cultivating a culture of innovation and continuous improvement</i></p> <p><b>Enterprise Strategic Outcomes:</b>  <i>Efficient and effective operations            Safe and healthy work environment            Engaged, aligned and prepared workforce</i></p>	<ul style="list-style-type: none"> <li>• Continue to enhance operational performance and productivity</li> <li>• Maintain leading health and safety record</li> <li>• Enhance organizational and employee capability</li> </ul>
Corporate Citizenship	<p><b>Enterprise Strategic Objective:</b>            We will contribute to the well being of the community  <i>By acting at all times as a responsible and engaged corporate citizen</i></p> <p><b>Enterprise Strategic Outcomes:</b>  <i>Leading governance and business practices            Engaged stakeholders            Safe, secure and environmentally responsible services            Positive community impact</i></p>	<ul style="list-style-type: none"> <li>• Enhance our brand image in the community and the industry</li> <li>• Continue to improve our environmental performance and reduce our impact on the environment</li> </ul>

Financial Strength – Summary Key Corporate Priorities		Assessment
<i>Grow revenues from new sources and enhance / protect revenues from existing business lines</i>		● ▲ ✕
■	[REDACTED]	■
■	■ [REDACTED] ■ [REDACTED] ■ [REDACTED]	■ ■
■	■ [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED]	■ ■ ■ ■
■	■ [REDACTED] ■ [REDACTED]	■
5.	Rate Application – Defend 2021-2025 Custom Incentive Rate Setting application as part of Ontario Energy Board proceedings in 2020, including defense of Facilities Renewal Program; monitor and execute approved 2016-2020 rate application	●
■	■ [REDACTED] ■ [REDACTED]	■
■	■ [REDACTED]	■





<b>Customer Value – Summary Key Corporate Priorities</b> <i>Assist customers in managing their energy consumption and electricity costs; deliver on customer expectations for service quality and responsiveness; and maintain overall system reliability</i>		<b>Assessment</b> 
1.	Maintain or enhance our best in class reliability metrics	
2.	Continue implementation of Customer Experience Roadmap key deliverables including using data to drive decisions impacting customers	
3.	Actively pursue and participate in energy innovation projects	
4.	CDM – continue to deliver Interim Conservation Framework (wind down) programs and actively pursue and participate in regional CDM programs that are customer centric, cost-effective and generate strong GWh results	
5.	Smart Grid – continue implementation of the foundational grid transformation and modernization projects including Telecom Dark Fibre network and Distribution Management System (leveraging and building on SCADA, Outage Management System and Geographic Information System information)	
6.	Continue our improvements in maintenance and capital execution – emphasis on workforce scheduling and contractor management; complete all budgeted programs / plans on time and within budget	



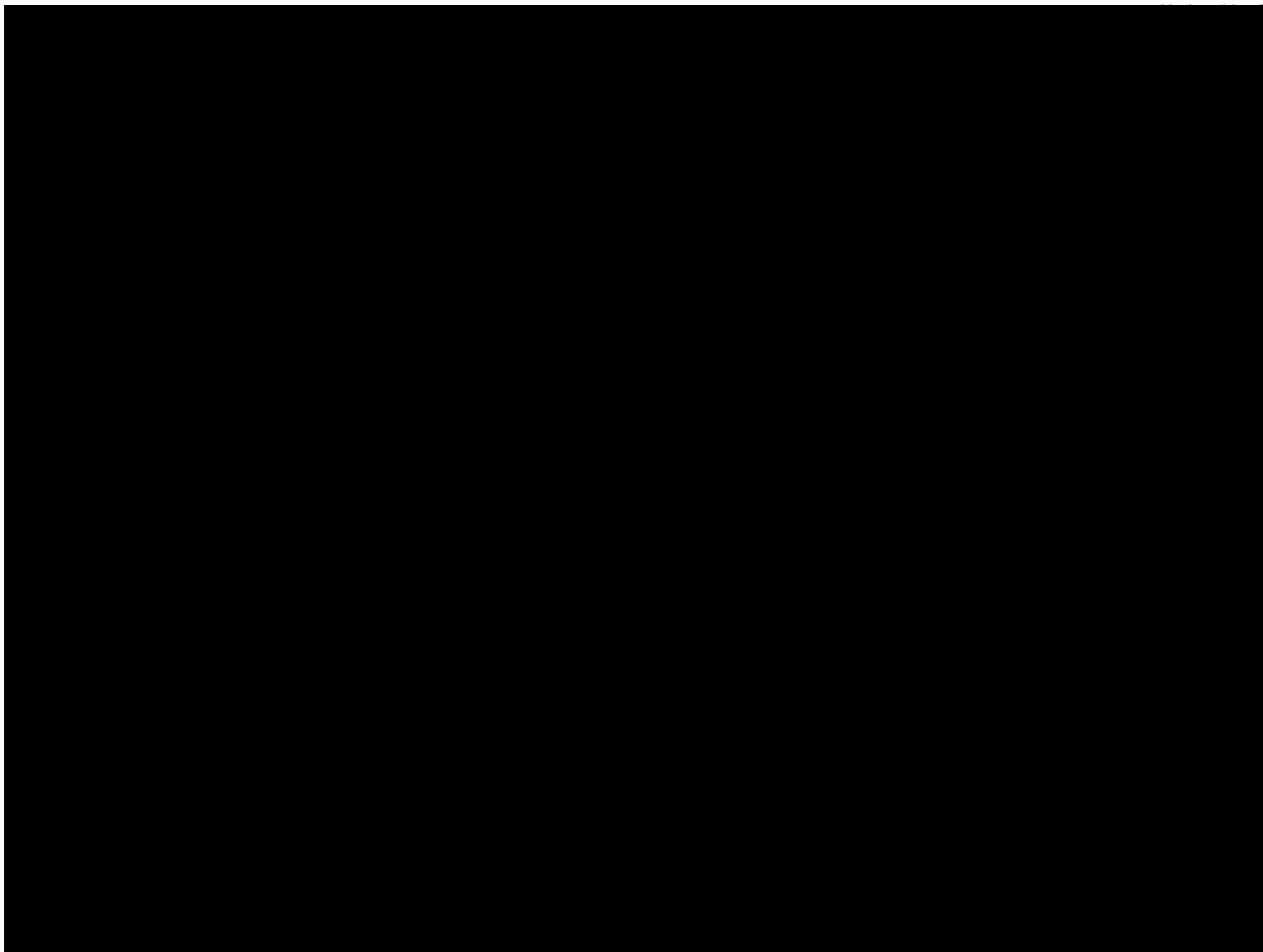


Corporate Citizenship – Summary Key Corporate Priorities		Assessment
<i>Enhance our brand image in the community and the industry; improve our environmental performance and reduce our impact on the environment</i>		● ▲ ✕
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■
■	[REDACTED]	■



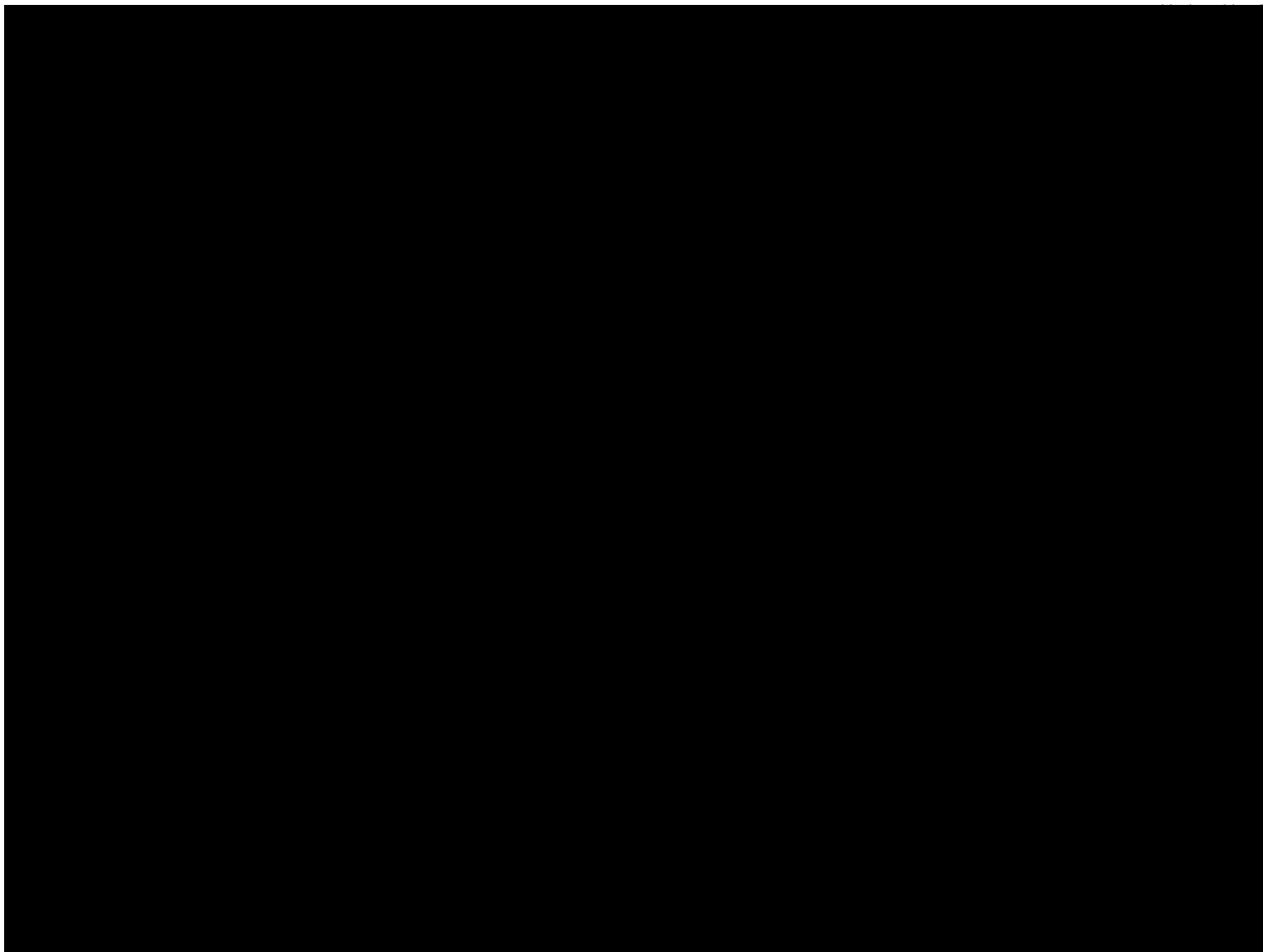


## Section 2 – Enterprise Risk Management (ERM) Assessment



HYDRO OTTAWA LIMITED  
2020 - FIRST QUARTER - ENTERPRISE RISK MANAGEMENT OUTLOOK

FOCUS AREA / Risks	Q1 - 2020	Outlook for 2020	Long-term outlook (2-5 years)	Watch Areas
<b>FINANCIAL STRENGTH</b>				
Stagnant or Declining Revenue	●	▲	▲	Cautious 2-to-5 year outlook stemming from the pending Ontario Energy Board review of the 2021-25 Custom Incentive Rate Application, submitted in Q1, 2020.  COVID-19: the Ontario government announced that effective 24-March-2020, time-of-use customers are to be billed at off-peak rates, 24/7, for an initial period of 45 days.
Declining Profitability	●	▲	▲	The 2-to-5-year outlook is cautious as there is uncertainty about the policy / regulatory measures the Ontario government will enforce in reducing electricity bills by 12%.  COVID-19: the 2020 capital program has been substantially pared back, while the costs of delivering the program have increased (e.g. new schedules for power line maintainers and power cable technicians; employees traveling individually in vehicles, etc.)
Declining Financial Strength	▲	▲	▲	Debt capacity for future growth has become negative based on the 70% threshold approved by the Board. The budget approved by the Board in Nov reflects a DFC % of 72.1% for 2020.  COVID-19: with customers experiencing financial hardship (e.g. layoffs, business closures), the winter 2019-20 disconnection moratorium was extended through to July 31, 2020. Bad debts / write-offs may increase.
Unexpected Financial Loss	▲	▲	●	COVID-19: even during this economic downturn, the LDC is required to remit payments to the IESO for the cost of power, increasing working capital requirements
<b>CUSTOMER VALUE</b>				
Declining Service Delivery	▲	▲	●	Fire at Lincoln Heights station had a negative impact on quarterly reliability metrics.  COVID-19: capital work requiring large scale planned outages has been deferred given citizens in Ottawa are working from home.
Declining Customer Loyalty	●	▲	●	The Province's March 2019 decision to centralize CDM programs at the IESO could adversely affect Hydro Ottawa's credibility and standing as a partner in conservation service offerings.
Declining Customer Satisfaction	●	●	▲	New regulations for the mandatory reporting of privacy breaches under PIPEDA came into effect late in 2018. More complexity likely in the secure management of customer information, especially if Canada adopts elements of GDPR.
<b>ORGANIZATIONAL EFFECTIVENESS</b>				
Declining Operational Effectiveness	●	●	●	2-to-5 year outlook: OEB reform, including changes to the composition of its Board, presents potential risks and uncertainties.
Loss of Operational Capacity	●	▲	▲	COVID-19: precautions in place to support the health, safety, and availability of staff include: (1) new schedules for power line maintainers and power cable technicians; (2) field staff traveling individually in vehicles; (3) facilities have been closed to visitors and non-essential contractors; (2) non-essential staff working from home as of 17-Mar-2020
Declining Employee Morale, Motivation	●	▲	▲	Legal proceedings continue on the Society of Energy Professionals' move to represent sections of HDL's workforce.  COVID-19: employee morale may be challenged by questions surrounding the return-to-work, the "new normal", staffing decisions (e.g. hiring freezes, co-op program), etc.
Unsafe / Unhealthy Business Work Environment	●	●	●	
<b>CORPORATE CITIZENSHIP</b>				
Loss of Credibility within the Community and Industry	●	●	▲	OEB reform, including the appointment of Richard Dierini as Chair of the OEB, presents potential risks and uncertainties. It is possible that the provincial Government may continue to press its policy priorities for the sector (e.g. lower rates) through regulatory and other directive measures.
Erosion of Shareholder Value	●	●	●	








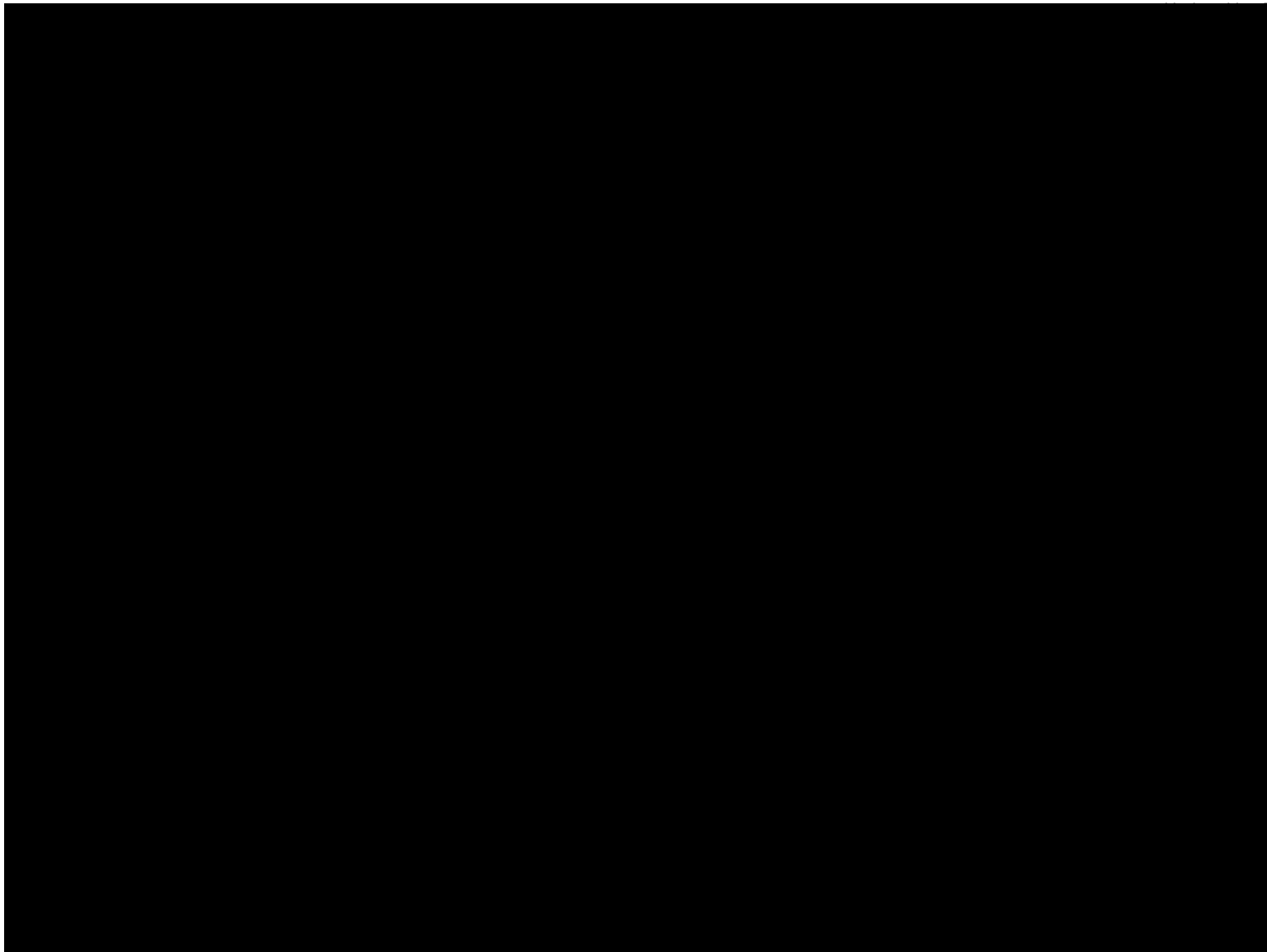
**ERM REPORT ON KEY STRATEGIC INITIATIVES  
 FIRST QUARTER 2020**

STRATEGIC INITIATIVES	Q1 - 2020	Outlook for Project Completion	Watch Areas
<b>Master Telecom Plan (Installation of Fibre Optic Network)</b>	●	●	- Delayed permits and slower than expected installation rates may compress initial project schedules. Cost overruns are anticipated due to higher than expected Field Area Network costs. No risk foreseen to project completion.
<b>2021-2025 Custom IR Rate Setting Application</b>	●	●	- The 2021-25 Custom Incentive Rate Application was filed in February, 2020. Preparation is underway for the upcoming intervenor / interrogatory process.
<b>Cambrian Station</b>	●	●	- On track internally. Hydro One reporting potential challenges with their suppliers, which could delay delivery of the transmission supply line. No risk foreseen to project completion.





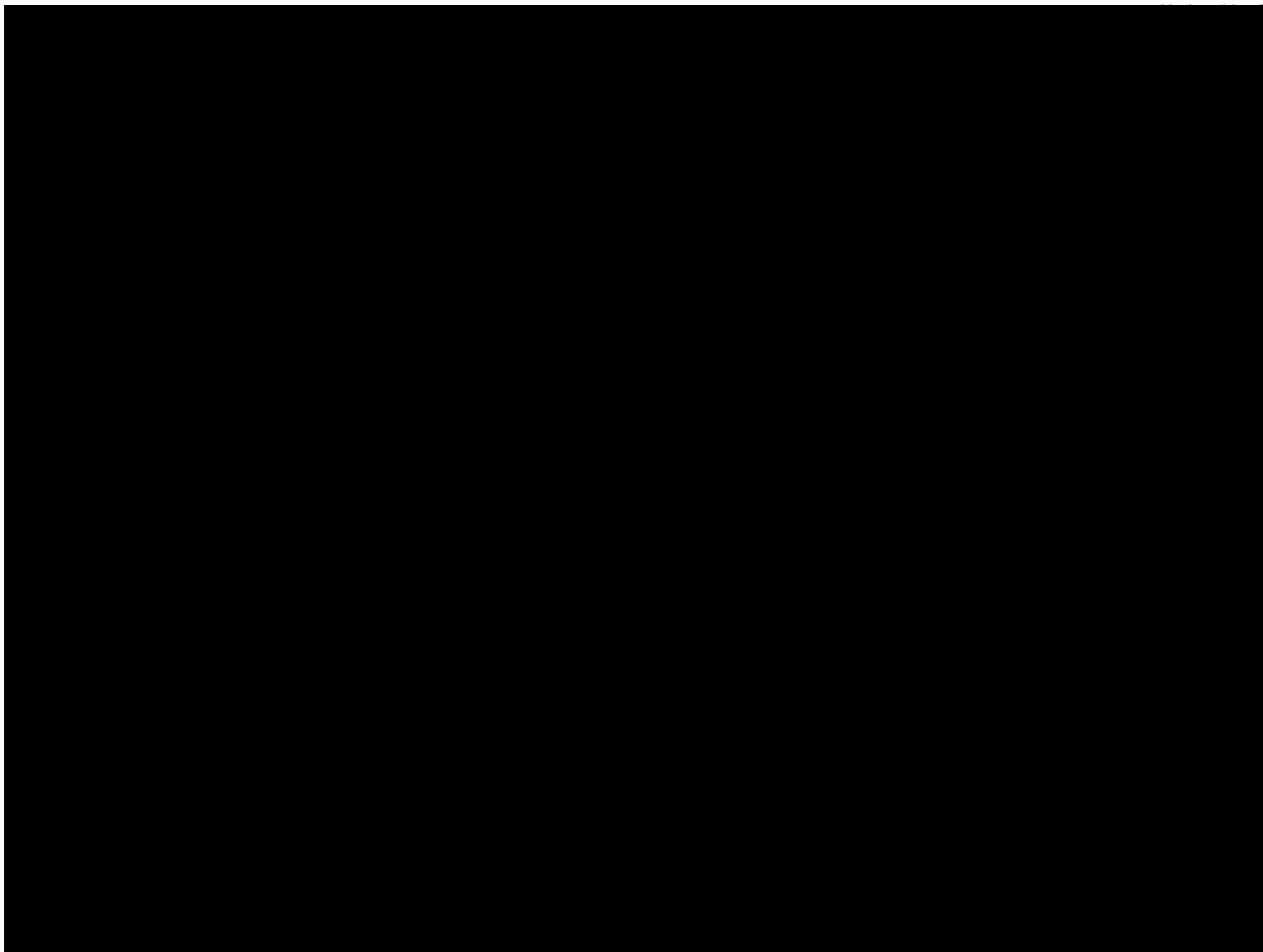
## Section 3 – Q1 2020 Results Highlights

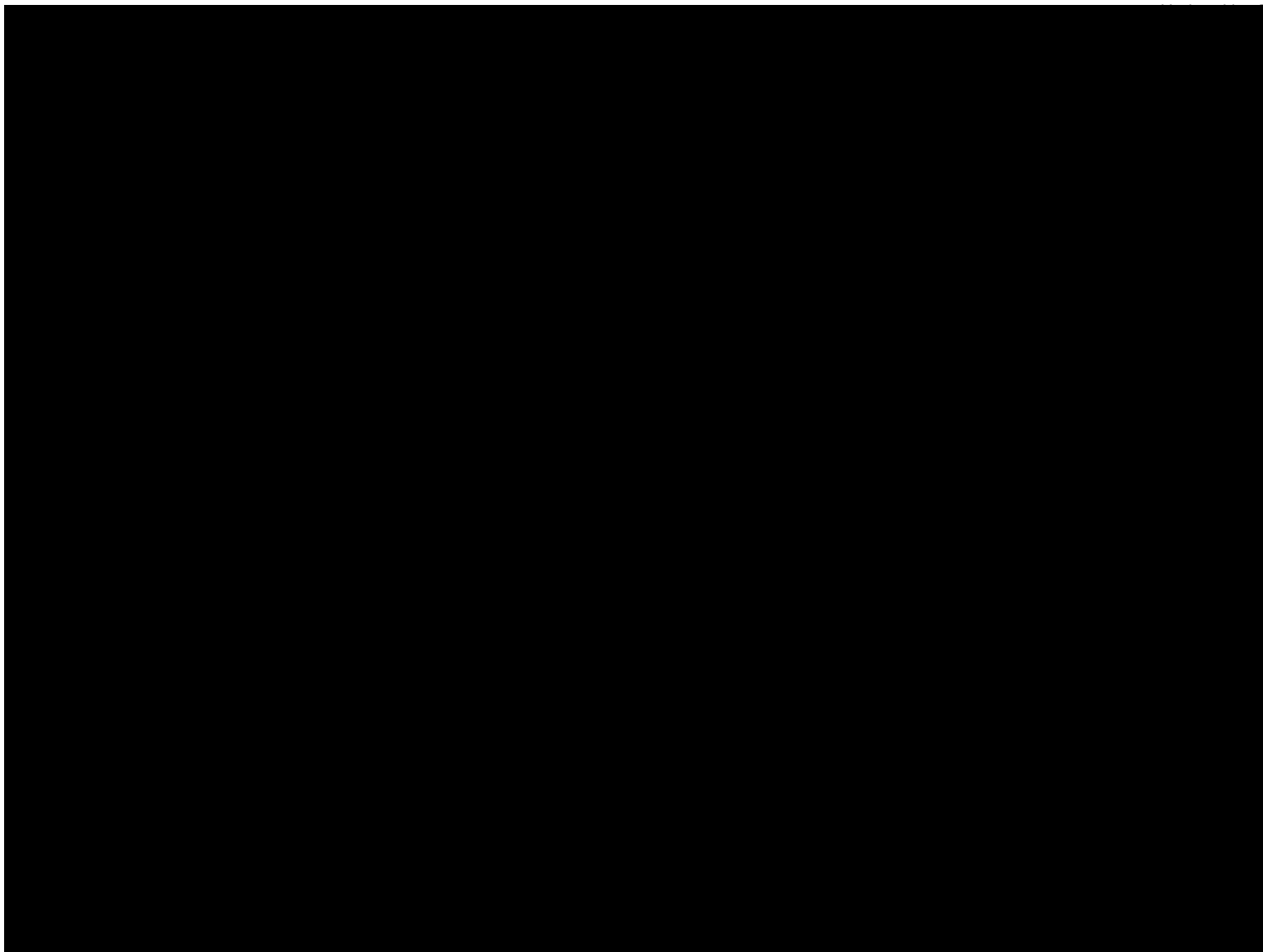


## **Q1-2020 HOL Net Income was also ahead of budget, however, we are forecasting a larger COVID-19 impact ...**

- Net income of \$10.9M surpassed budget by \$1.3M or 13%
  - Revenues of \$52.7M below budget by \$0.7M (1%)
  - Expenses of \$23.8M below budget by \$1.5M (6%)
  - Resulting EBITDA exceeded budget by \$0.8M (3%)
- Forecast net income to below annual budget by \$3.8M
- Net capital investments of \$23.1M below budget by \$0.8M
- Forecast capital investments below budget by \$5.2M
- Net cash inflows from operating activities of \$21.8M below cash outflows from acquisition of capital assets of \$32.8M by \$11.0M







## Q1 customer satisfaction results were above target, but reliability was impacted by Lincoln Heights Station fire...

### • SATISFACTION

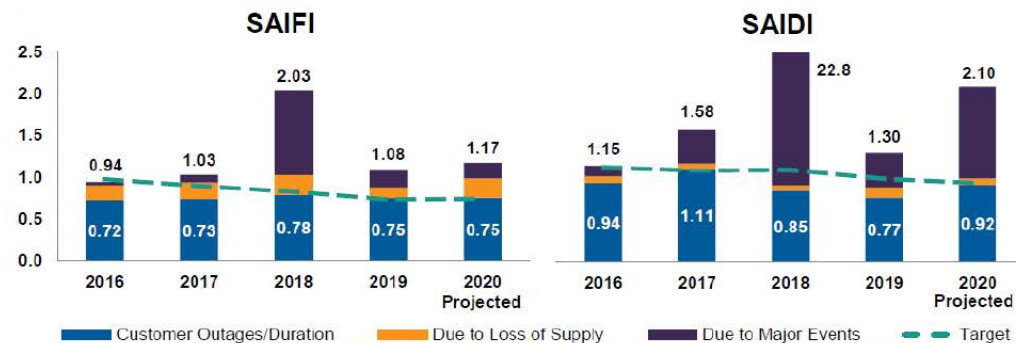
- Call center customer satisfaction was 89% YTD 2020 (target is 85%)
- First call resolution was 91% YTD 2019 (target 85%)
- Brand sentiment (media coverage) was 100% YTD 2019 (target 97%)

### • VALUE

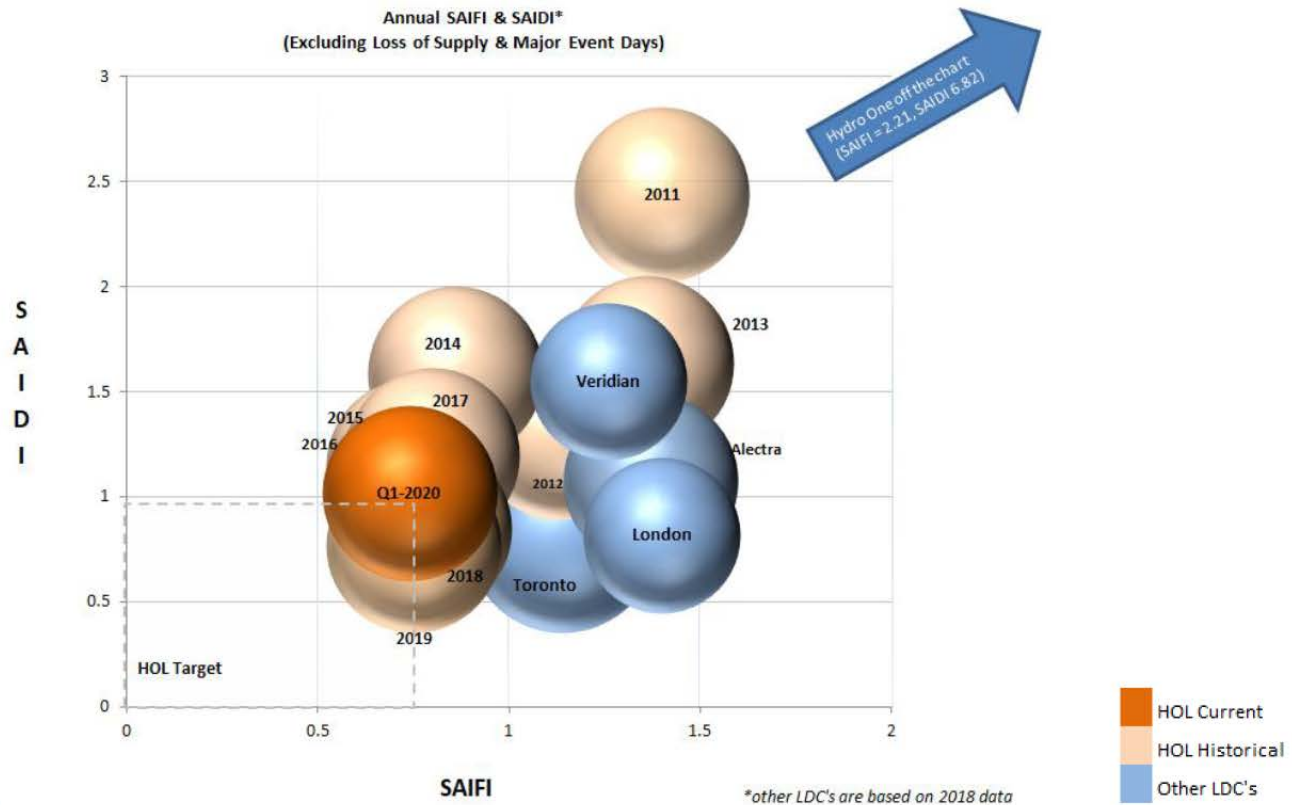
- My Account registrations increased by 3%; 207,337 accounts
- Online Billing registration increased by 3%; 174,670 accounts
- Autopay registrations increased by 2%; 71,869 accounts

### • RELIABILITY

- The projected annual reliability performance for SAIFI and SAIDI, excluding Loss of Supply and Major Events, is 0.75 and 0.92 respectively. For SAIFI, this is slightly above the previous 5 year average target of 0.74. For SAIDI, this is slightly below the previous 5 year average target of 0.94
- **There was one Major Event Day (MED) in 2020, on March 7. A catastrophic breaker operation led to a fire within the Lincoln Heights Station. The outage lasted 24 hours and affected 12,000 customers at the height of the event. Given the extraordinary nature of the failure and the extent of the resulting contamination, restoration was carried out efficiently**
- With the exception of the March 7 MED, reliability indicators for the month were generally aligned to past performance and projections to year-end remain in line with 5-year averages for both SAIFI and SAIDI



## We continued to compare favourably to our peers and to previous performance...



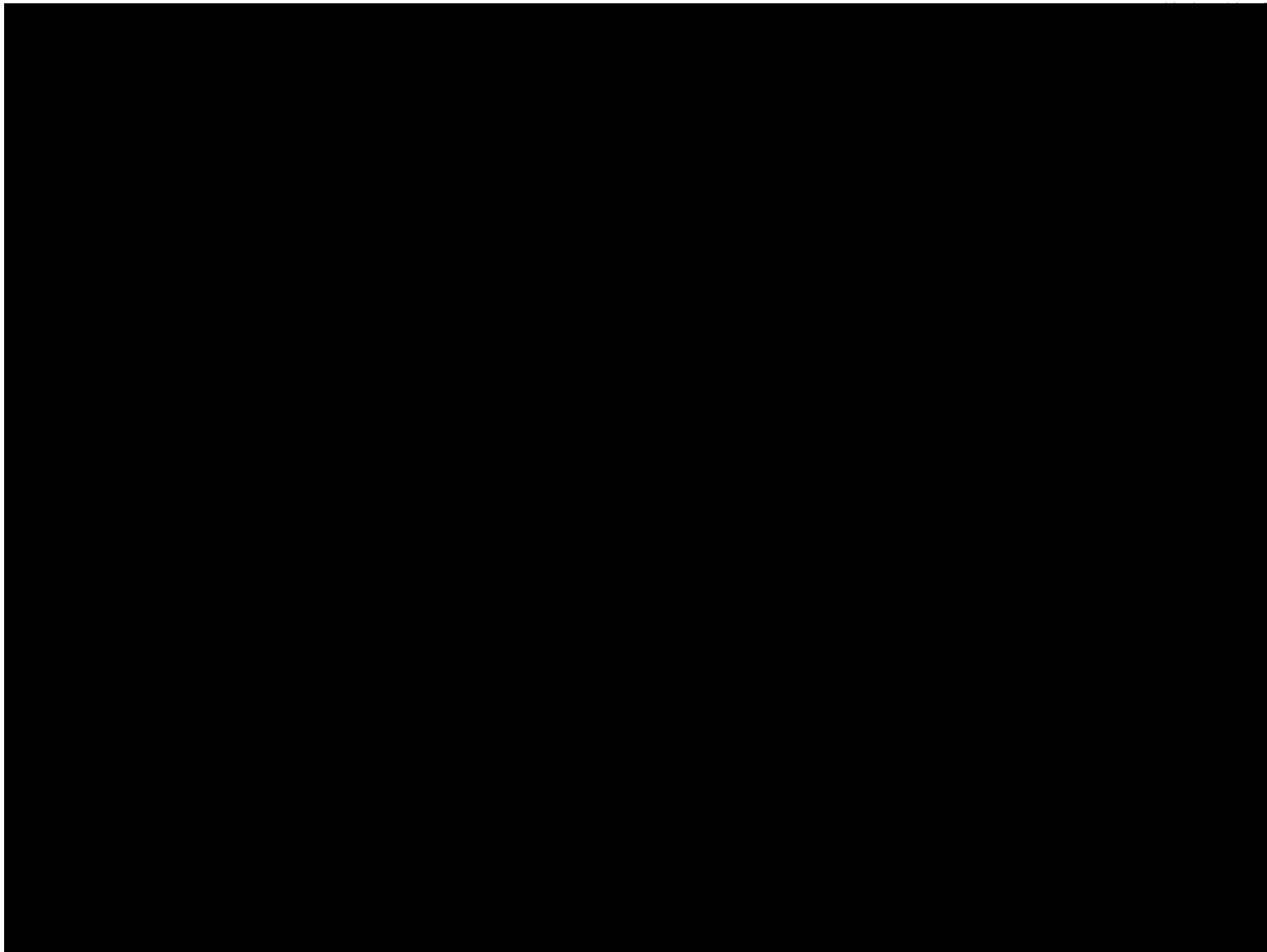


## And we invested in our distribution system...

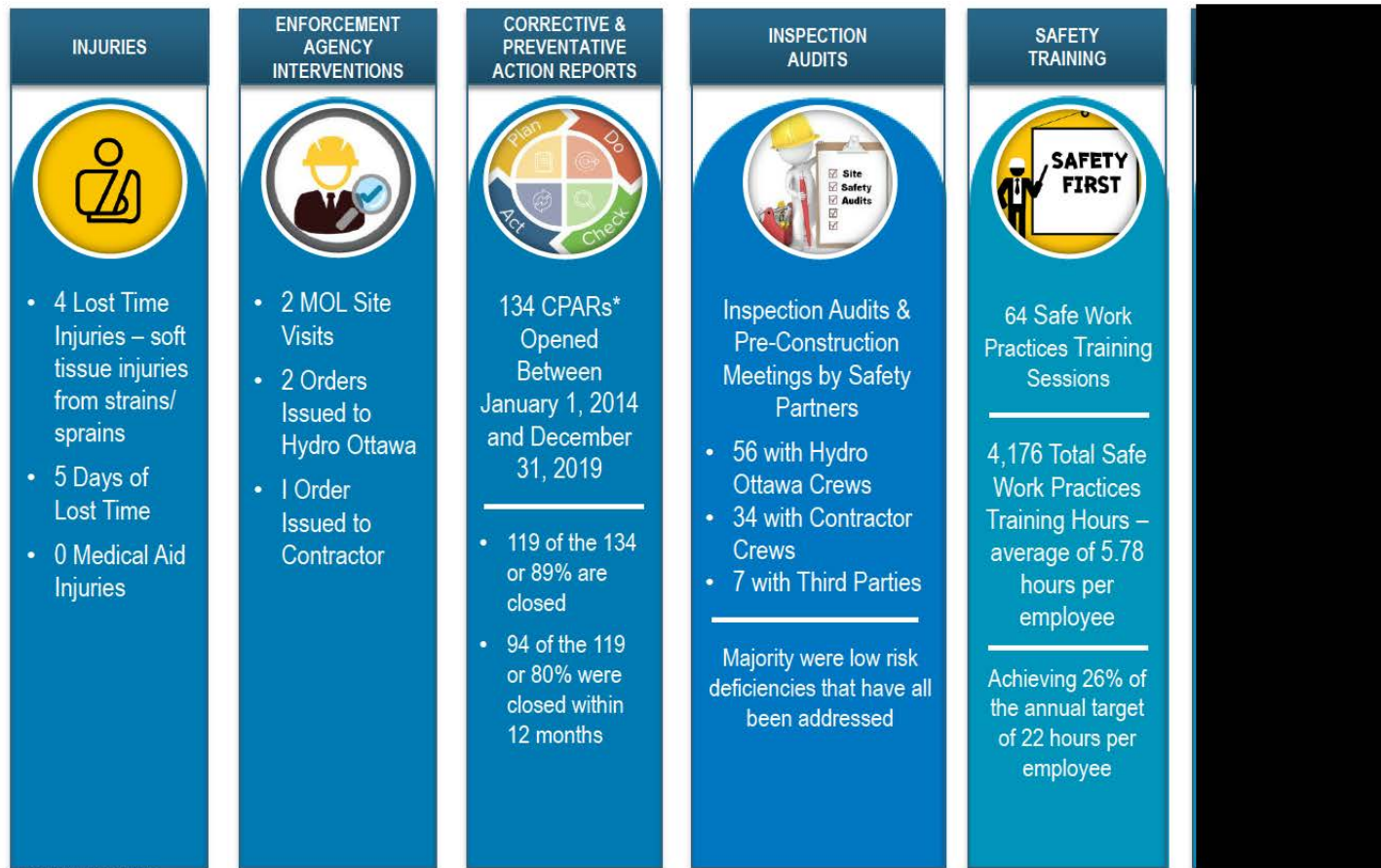
### OVERALL DISTRIBUTION SYSTEM RELIABILITY

- **Smart Grid - implementation of foundational grid transformation and modernization projects**
  - **Telecom Dark Fibre Network** – 9 fiber segments completed – approx. 30km installed; 14 segments outstanding – approx. 45km; Currently on track to complete by end of 2020
- **Continued improvements in maintenance and capital program execution to enhance reliability of our distribution system**
  - **Distribution System Renewal and Service (Sustainment Capital Program)**
    - System Renewal & Service: on budget, slight delay in multi-year station projects
    - Emergency Renewal (Plant Failure): exceeded budget by \$1.3M, \$0.5M relating to the Lincoln Fire on March 7
    - Cambrian Station: cumulative costs \$13.9M including CCRAs of \$10.6M. YTD variance is timing of construction costs
  - **Distribution System Access (Demand Capital Program)**
    - System Access: below budget by \$1.7M mainly in System Expansion for LRT Phase II partially offset by overspend in Plant Relocations on Elgin Street
  - **Distribution Testing, Inspection and Maintenance Programs**
    - Spending year-to-date is \$4.6M, which represents a variance of (\$0.3M) under the planned budget. The program variance is largely due to timing of execution

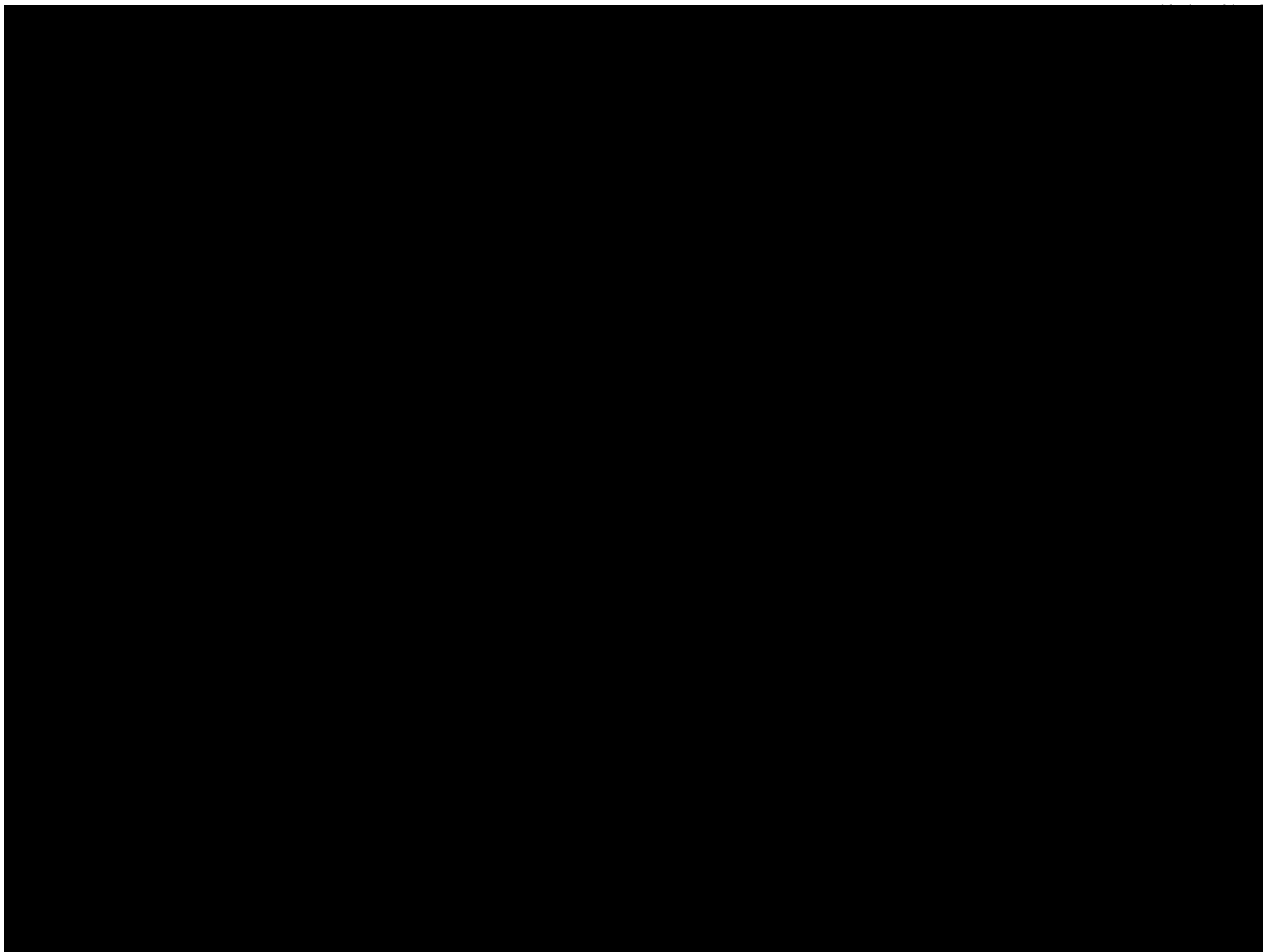


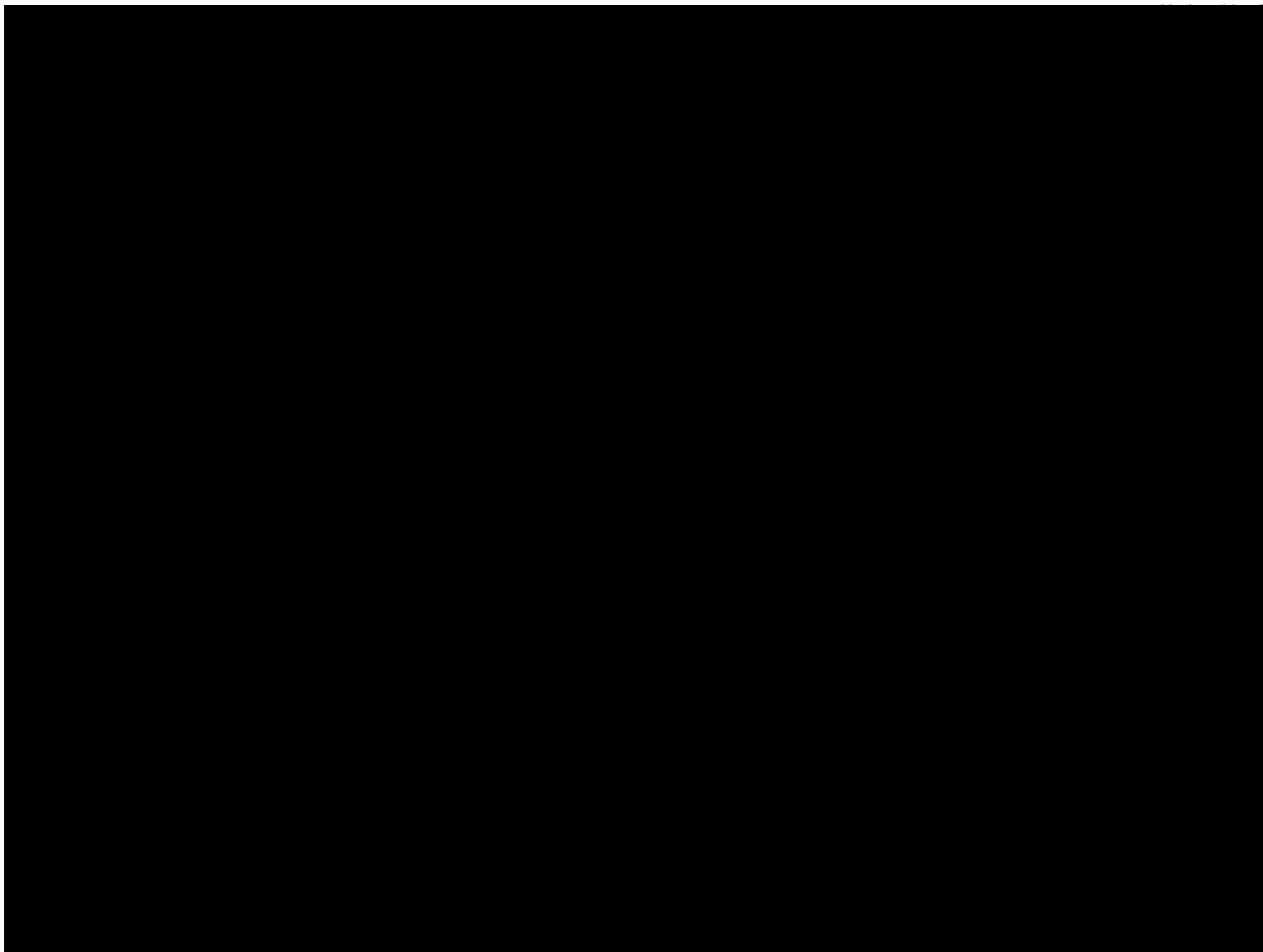


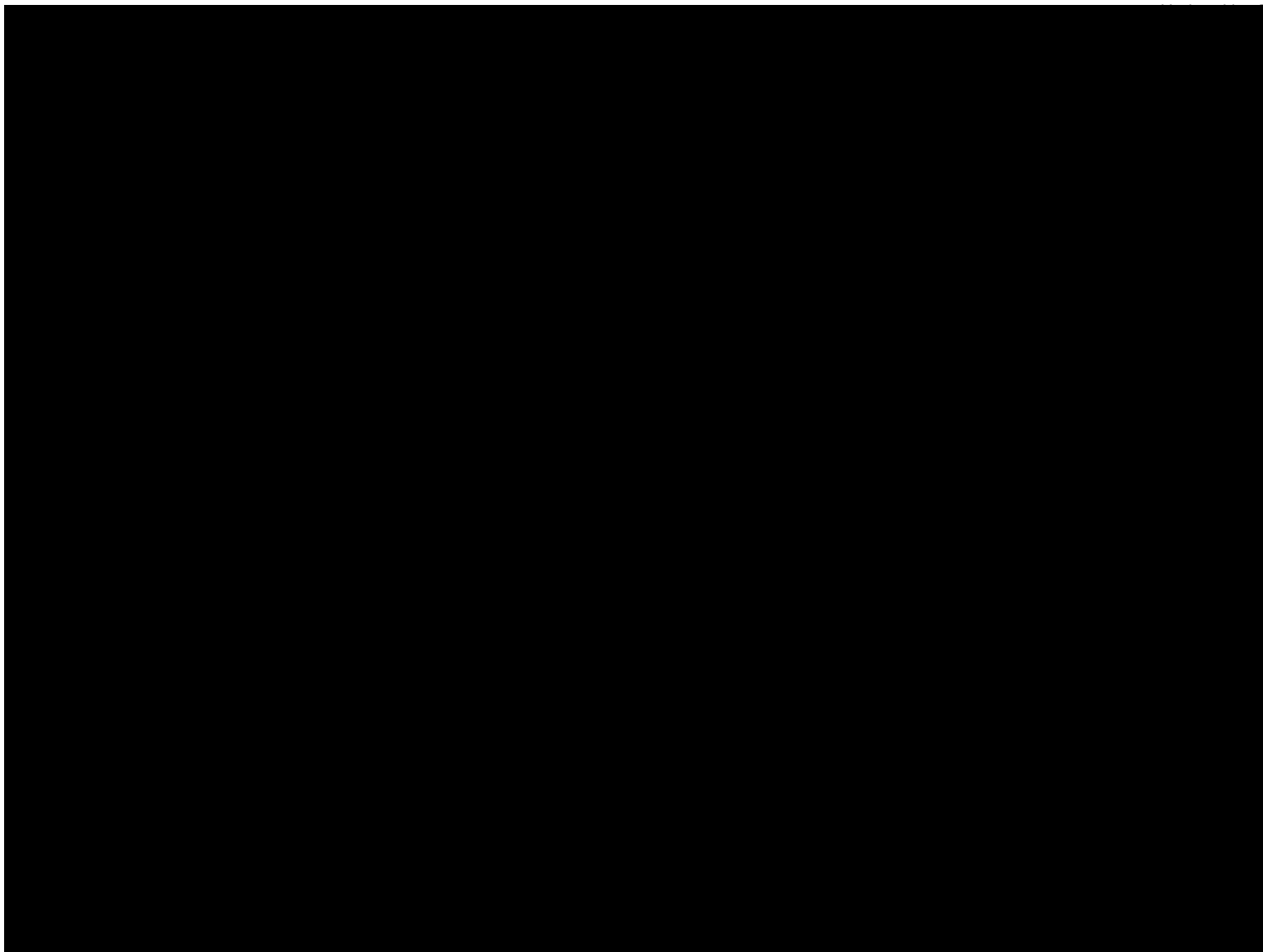
## Health and safety performance trended well...



\*CPARs are initiated to address deficiencies identified through incident investigations, audits or events/exercises

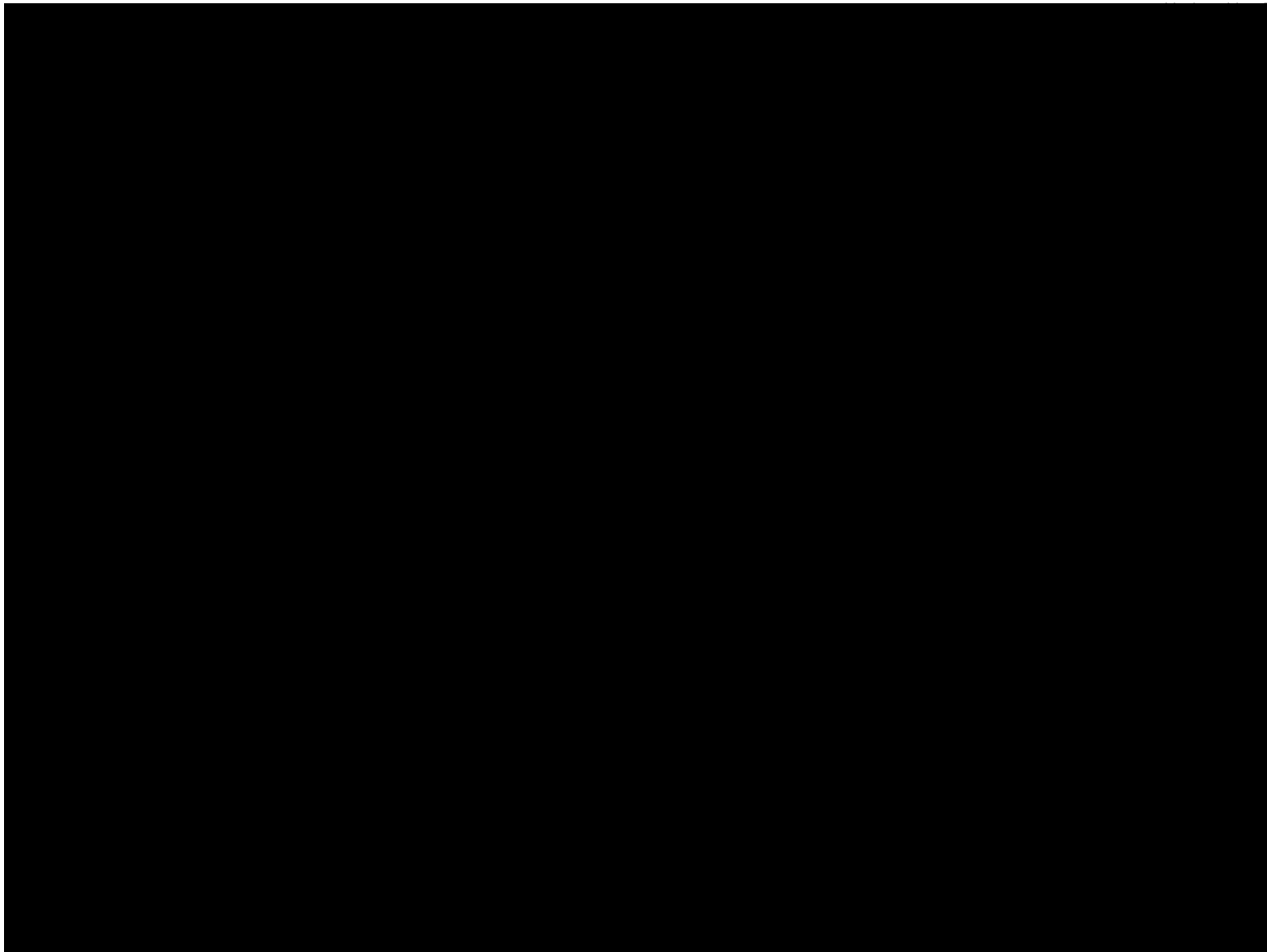








## Section 4 – Compliance, Legal Issues and Provincial Programs







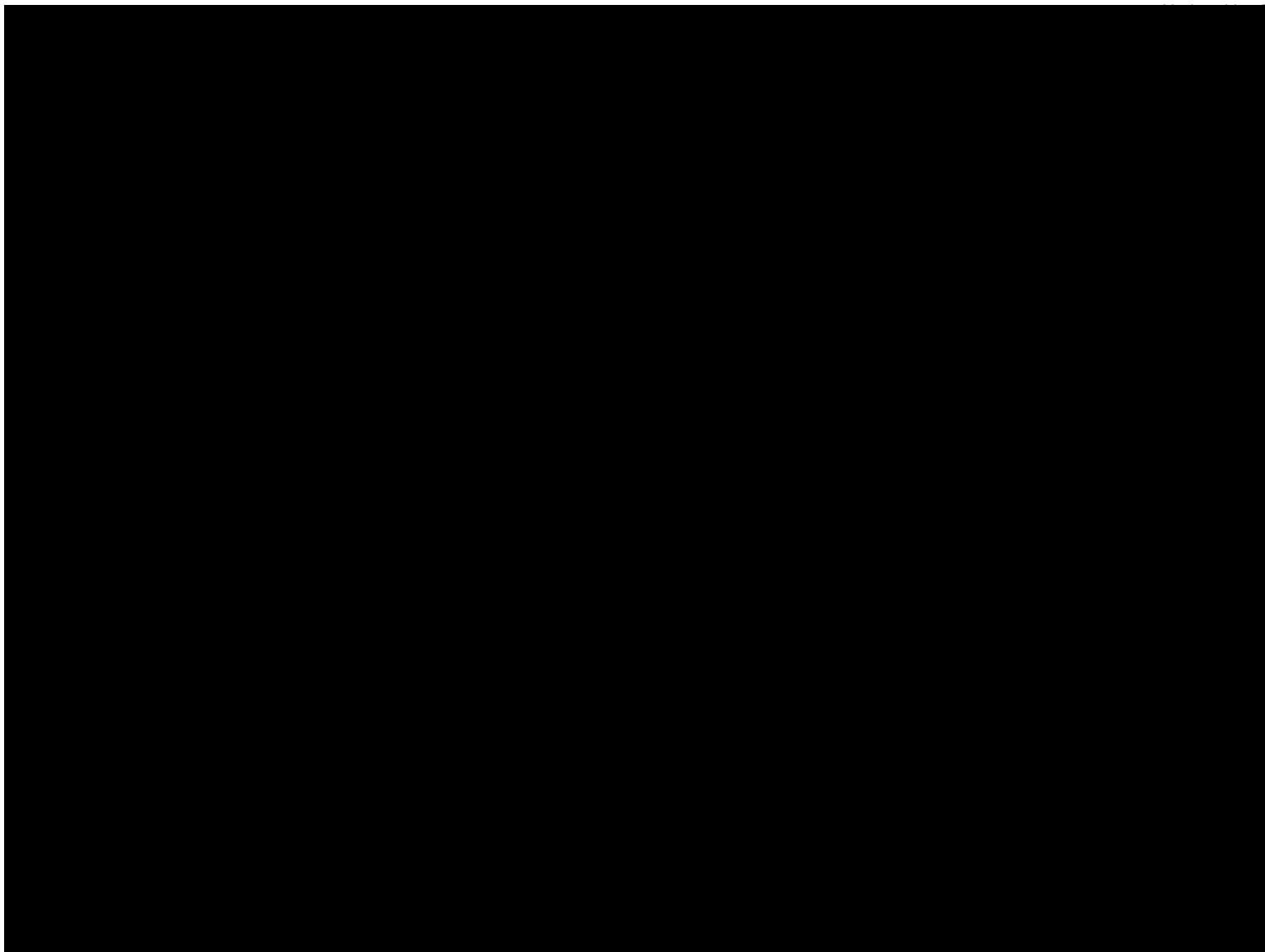
## Section 5 – Progress Against Plan – Corporate Performance Scorecard

## Financial Strength – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

Enterprise Strategic Objective	<p><b>We will create sustainable growth in our business and our earnings</b>  <i>By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i></p>	
Enterprise Strategic Outcome	Growth in shareholder value	
2020 Corporate Performance Goals and Supporting Priorities		Assessment ●▲×
1. <i>Grow revenues from new sources</i>		
<b>b. Distribution</b>		▲
i. Continue to approach other LDCs in Ontario regarding potential acquisition/mergers/partnerships		▲
ii. Continue to expand our distribution system through acquisition of customer-owned assets (e.g. Ottawa International Airport, DND Uplands)		
<b>d. Other ancillary services that leverage Hydro Ottawa's brand and competitive advantage in the industry</b>		▲
i. <b>Electrical service and construction offerings</b> - emergency repair and replacement of customer-owned distribution assets, meter services for other entities, distribution sub-station services to other LDCs and private businesses, forestry services		
ii. <b>Regional Training</b>		●
aa. Continue development and implementation of all levels of Training Delivery Agent Status Powerline Technician training and certification with Algonquin College		
bb. Continue to market and enhance training services to other LDCs / contractors		●





## HOL Financial Strength – Year-to-Date Results Q1-2020

### Corporate Performance Measures And Targets

Enterprise Strategic Objective	We will create sustainable growth in our business and our earnings By improving productivity and pursuing business growth opportunities that leverage our strengths, our core capabilities, our assets and our people							
Enterprise Strategic Outcome	Growth in shareholder value							
2020 HOL Performance Measures	2016A IFRS	2017A IFRS	2018A IFRS	2019A IFRS	2020 Target IFRS	Q1 YTD Target IFRS	Q1 YTD Actual IFRS	Q1 YTD Assessment ●X
Net Income	\$34.3M	\$36.5M	\$37.2M	\$37.7M	\$34.7M	\$9.7M	\$10.9M	●
Revenue (excl CDM) <sup>1</sup>	\$182.0M	\$187.1M	\$199.2M	\$210.2M	\$212.7M	\$53.4M	\$52.7M	X
OM&A - Net (excl CDM) <sup>1</sup>	\$87.9M	\$87.5M	\$95.1M	\$100.3M	\$101.8M	\$25.3M	\$23.8M	●
Return on Equity	11.0%	11.1%	10.7%	10.2%	9%	9%	7.6%	X
Cash Flow from Operations <sup>2</sup>	\$78.0M	\$78.3M	\$114.3M	\$99.1M	\$115.7M	\$23.4M	\$21.8M	X
CAPEX								
System Renewal and Service (excl Plant Failure) <sup>3</sup>	\$57.3M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Plant Failure <sup>3</sup>	\$7.8M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
General (incl Facilities Renewal Program) <sup>3</sup>	\$15.7M	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative Capital Additions								
General Plant	---	\$31.0M	\$37.9M	\$53.1M	\$54.8M	\$53.5M	\$54.7M	●
System Renewal & Service		\$116.0M	\$186.4M	\$270.4M	\$301.1M	\$278.1M	\$276.6M	X
Labour Allocation to CAPEX	62%	60%	58%	58%	N/A	N/A	N/A	N/A
Labour Allocation to Maintenance & Administrative Work (Regular Hrs) <sup>6</sup>	---	---	---	---	≤ 34%	≤ 34%	37%	X
Debt to Capitalization Ratio <sup>4</sup>	---	---	---	65.9%	67%	65.3%	65.6%	X
CDM – Cumulative GWh reduction <sup>5</sup>	90 GWh	276 GWh	324 GWh	N/A	N/A	N/A	N/A	N/A

<sup>1</sup> In 2016, these measures were modified to exclude CDM

<sup>2</sup> In 2016 & 2017, Cash flow from Operations on financial statement includes reclassifications of deferred revenue and customer deposits, the actual results are based on the previous reporting method to compare to the target, starting 2018, result was aligned with financial statement reporting

<sup>3</sup> In 2016, Plant Failure was added as a separate measure and excluded from the overall CAPEX measure

<sup>4</sup> New measure added in 2019

<sup>5</sup> 2016 is annual reduction not cumulative. 2016 and 2017 results restated based on IESO confirmed results received in subsequent years. Announced on March 2019, LDCs will no longer receive incentive payments for achieving assigned targets for electricity savings

<sup>6</sup> In 2020, replaced Labour Allocation to Capex measure with Labour Allocation to Mtnce & Admin to further support performance management

## Customer Value – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

Enterprise Strategic Objective	We will deliver value across the entire customer experience <i>By providing reliable, responsive and innovative services at competitive rates</i>	
Enterprise Strategic Outcome	Customer loyalty	
2020 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ X
3. Assist customers in managing their energy consumption and electricity costs		
a. <b>CDM</b> - Continue to deliver the Interim Conservation Framework (wind down) programs and actively pursue and participate in regional CDM programs that are customer-centric, cost effective and generate strong GWh results		●
b. <b>Electricity Support Programs</b> – Continue to promote and support the provincial program(s) that provide ongoing financial assistance to qualifying low-income electricity consumers including <ul style="list-style-type: none"> <li>i. Ontario Electricity Support Program (OESP)</li> <li>ii. Low-Income Energy Assistance Program (LEAP)</li> <li>iii. Affordability Fund Trust</li> </ul>		●
c. <b>Customer Education Program</b> – Continue to increase understanding of the industry and Hydro Ottawa's role and achievements within it; demystify and educate by leveraging multiple modes (digital and social media, video, open houses, workshops, etc.) and multiple channels (local media, Councillors, subject matter experts, executive and senior management)		▲
d. <b>Energy Innovation Projects</b> – Actively pursue and participate in innovation projects to identify new energy saving product/service offerings for our customers		●





## Customer Value – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

Enterprise Strategic Objective	We will deliver value across the entire customer experience <i>By providing reliable, responsive and innovative services at competitive rates</i>	
Enterprise Strategic Outcome	Customer loyalty	
2020 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ X
<b>4. Deliver on customer expectations for service quality and responsiveness</b>		
<b>a. Improve Customer Service</b> – Implement the ‘whole of company’ Customer Experience (Cx) Strategy and Roadmap with a focus on modernization, customer communications and customer self-serve:		●
i. <b>Change Management Plan</b> – Implement the multi-year change management plan to align people and organization to the Cx Strategy and Roadmap, with a focus on increasing organization-wide awareness, support and alignment for a customer-centric culture consistent with the Organizational Culture Strategy		▲
ii. <b>New Service / Product Offerings</b> – Work with existing customers to define and tailor product/service offerings, e.g. EV and energy storage solutions		●
iii. <b>Regulatory</b> : e.g. provincial programs, migration to fixed rate and C1 class customers to HOEP		●
iv. <b>Customer Touchpoint Improvements</b> –		●
aa. Outage communications - continue to incorporate technology solutions to support outbound outage reporting across multiple channels / app & SMS		●
bb. Direct Serve – continue to incorporate technology solutions to support self-service for customers		▲
v. <b>Understanding Customers</b> – Implement systems and processes to support a 1:1 conversation with customers		
aa. <b>Customer Preference Dashboard</b> (database) – continue development of interface to centralize customer data points to support targeted and personalized communications		▲
bb. <b>Strategic Account Management Plan</b> – Continue relationship building with, and develop of product offerings for, key accounts, developers and contractors; capture market intelligence, improve internal collaboration, increase customer value and create trusted advisor role		▲
cc. <b>Business Intelligence</b> – Continue to leverage Tableau Reporting and marketing automation tools to allow us to better target customer segments for different program / service offerings		▲
vi. <b>Technology and Process Enhancements</b>		▲
aa. <b>Enterprise Communications Platform</b> - Leverage platform (e.g. Avaya, Salesforce) functionality for multi-channel communication (voice, text, email, chat, etc.)		▲



## Customer Value – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

<b>Enterprise Strategic Objective</b>	<b>We will deliver value across the entire customer experience</b> <i>By providing reliable, responsive and innovative services at competitive rates</i>	
<b>Enterprise Strategic Outcome</b>	<b>Customer loyalty</b>	
<b>2020 Corporate Performance Goals and Supporting Priorities</b>		<b>Assessment</b> ● ▲ X
<b>5. Maintain overall distribution system reliability</b>		
<b>a. Smart Grid – Continue implementation of grid transformation and modernization projects including</b>		▲
i. Telecom Dark Fibre network – Augment Dark Fiber network with Field Area network implementation (target completion of remaining 115-135 km in 2020)		
ii. Distribution Management System – continue to develop system leveraging and building on SCADA, Outage Management System and GIS information		X
<b>b. Maintain or enhance our best in class reliability metrics</b>		●
<b>c. Continue our improvements in maintenance and capital program execution – Emphasis on workforce scheduling and contractor management; Complete all budgeted programs / plans on time and within budget</b>		●
i. <b>Distribution System Renewal and Service (Sustainment Capital Program)</b> – Ongoing implementation of refurbishment and enhancement programs with particular emphasis on aging infrastructure, areas with chronic reliability issues, and on station capacity		●
ii. <b>Distribution System Access (Demand Capital Program)</b> – Ongoing implementation of new residential and commercial customer connections, system expansions, and third party driven plant relocations and upgrades		
iii. <b>Distribution Testing, Inspection and Maintenance Programs</b> – Ongoing implementation of distribution system and station asset evaluations (testing and inspections of poles, cables, manhole chambers and switches); forestry program execution		●





## Customer Value – Year-to-Date Results Q1-2020

### Corporate Performance Measures and Targets

Enterprise Strategic Objective	We will deliver value across the entire customer experience By providing reliable, responsive and innovative services at competitive rates							
Enterprise Strategic Outcome	Customer loyalty							
2020 Corporate Performance Measures	2016A	2017A	2018 A	2019A	2020T	Q1 YTD Target	Q1 YTD Actual	Q1 YTD Assessment ●X
<b>SATISFACTION</b>								
Residential & Small Commercial Annual Satisfaction Survey	HO / ON Pre81%/81 Post77%/74%	HO / ON Pre90%/85% Post87%/81%	HO / ON Pre 94%/91% Post 93%/89%	HO / ON Pre 95%/92% Post 94%/92%	≥90%	Annual Metric		
Large Commercial Annual Satisfaction Survey	N/A	90%	HO / ON Pre 94%/93% Post 5%/93%	HO / ON Pre 96%/92% Post 97%/96%	≥90%	Annual Metric		
Call Centre Monthly Transaction Survey	89%	87%	78%	87%	≥85%	≥85%	89%	●
Ability to deal with issues (First Call Resolution)	85%	84%	86%	89%	≥85%	≥85%	91%	●
Complaints – Total Number Complaints – At Fault	106 N/A	71 N/A	182 N/A	29 4	≤120 ≤20	<30 <5	11 6	● X
<b>VALUE</b>								
Number of hydrottawa.com sessions <sup>1</sup>	3,170,766	6,088,429	6,623,907	2,880,541	>2,500,000	>625,000	848,086	●
Number of MyAccount customers	158,112	167,114	184,067	202,031	>210,000	>204,023	207,337	●
Number of e-bill accounts	123,801	134,761	150,991	169,514	>175,000	> 170,886	174,670	●
Number of Auto pay accounts	51,520	54,789	63,014	70,331	>75,000	>71,498	71,869	●
Number of App Registrants (Downloads) Number of Mobile App Sessions <sup>1</sup>	N/A N/A	12,519 8,585	24,363	35,377 58,323	>40,000 >40,000	>36,533 >10,000	38,445 11,146	● ●
Number of Social Media Followers (Twitter, Facebook, LinkedIn, Instagram) <sup>1, 2</sup>	18,340	23,618	46,859	36,630	>64,500	>43,598	56,240	●

<sup>1</sup> These metrics were moved from Corporate Citizenship Scorecard to Customer Value Scorecard

<sup>2</sup> In 2020, the Social Media follower measures were combined into one, with the historical figures updated to include all platforms with Instagram included in the targets as of 2020

## Customer Value – Year-to-Date Results Q1-2020

### Corporate Performance Measures and Targets

Enterprise Strategic Objective	We will deliver value across the entire customer experience By providing reliable, responsive and innovative services at competitive rates							
Enterprise Strategic Outcome	Customer loyalty							
2020 Corporate Performance Measures	2016A	2017A	2018A	2019A	2020T	Q1 YTD Target	Q1 YTD Actual	Q1 YTD Assessment ●●●
<b>PRODUCT RELIABILITY</b>								
SAIFI – Average Number of Times that Power to a Customer is Interrupted 5 year average	0.89	0.82	0.73 <sup>3</sup>	0.74	≤0.72	≤0.72	0.74	X
SAIFI – Average Number of Times that Power to a Customer is Interrupted Annual excluding LOS and MEDs <sup>1</sup> Annual including LOS and MEDs <sup>2</sup>	0.69 0.78	0.79 0.87	0.78 1.78 <sup>3</sup>	0.75 1.08	≤0.75 N/A <sup>2</sup>	≤0.09 N/A <sup>2</sup>	0.10 0.14	X
SAIDI – Average Number of Hours that Power to a Customer is Interrupted 5 year average	1.09	1.10	0.99 <sup>3</sup>	0.94	≤0.92	≤0.92	1.02	X
SAIDI – Average Number of Hours that Power to a Customer is Interrupted Annual excluding LOS and MEDs <sup>1</sup> Annual including LOS and MEDs <sup>2</sup>	1.00 1.13	1.19 1.58	0.85 22.724	0.77 1.30	≤0.95 N/A <sup>3</sup>	≤0.12 N/A <sup>3</sup>	0.10 0.67	●
FEMI (Feeders Experiencing Multiple Interruptions) – Number of feeders with 10 or more interruptions per year	5	15	10	10	≤11	≤11	11	●

<sup>1</sup> LOS = Loss of Supply, MED = Major Event Days

<sup>2</sup> No target set for SAIFI and SAIDI including LOS and MEDs

<sup>3</sup> Value previously reported for 2018 SAIFI 5 year average of 0.93 and 2.03 for SAIDI were incorrect



## Organizational Effectiveness – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

Enterprise Strategic Objective	We will achieve performance excellence <i>By cultivating a culture of innovation and continuous improvement</i>	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Efficient and effective operations</i></li> <li>• <i>Safe and healthy work environment</i></li> <li>• <i>Engaged, aligned and prepared workforce</i></li> </ul>	
2020 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ ✕
6. Continue to enhance operational performance and productivity		

## Organizational Effectiveness – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

<b>Enterprise Strategic Objective</b>	<b>We will achieve performance excellence</b> <i>By cultivating a culture of innovation and continuous improvement</i>	
<b>Enterprise Strategic Outcomes</b>	<ul style="list-style-type: none"> <li>• <i>Efficient and effective operations</i></li> <li>• <i>Safe and healthy work environment</i></li> <li>• <i>Engaged, aligned and prepared workforce</i></li> </ul>	
<b>2020 Corporate Performance Goals and Supporting Priorities</b>		<b>Assessment</b>
<b>6. Continue to enhance operational performance and productivity</b>		●▲X
<b>c. Business Process and Productivity Improvements / Innovation</b>		
i. <u>All Divisions</u> – Leadership and implementation of the President and CEO's ongoing productivity efforts – continue to prioritize and control spending, eliminate non-value added steps in processes, and leverage innovation and technology to improve efficiency and enhance service including downsizing as necessary and realigning resources to higher priority areas		●
ii. <u>Chief Electricity Distribution Officer Division</u>		
aa. Leverage new facilities / work locations / technology to reduce crew travel times		●
bb. Optimize contractor management program using performance metrics		●
cc. Continue to improve asset management system to achieve ISO 55001 certification		●
iii. <u>CFO Division</u>		
aa. Continue to streamline and automate financial processes		●
bb. In conjunction with Legal Services Group, review procurement process with view to streamlining and focus on value added services to achieve operational objectives		▲
cc. Review and strengthen cash management and collections processes		●
iv. <u>CHRO Division</u>		
aa. Implement revised suite of performance metrics leveraging Workday		●
bb. Continue to evolve the HR Service Delivery / Operating Model		●
cc. Continue to automate manual HR processes through Workday or other solutions as appropriate		●
dd. Implement Corporate Change Management Framework		●
ee. RFP for service providers of CHLP and EO Generation Pension Plans		X
v. <u>Chief Customer Officer Division</u>		
aa. Evaluate and implement process automation across the CCO Division, e.g. billing, collections and contact centre		▲
vi. <u>Chief Information Technology Division</u>		
aa. Implement 'ServiceNow' IT service, asset and portfolio management software		▲
vii. <u>Legal Services Group</u>		
aa. Formalize processes and develop and implement precedents (e.g. terms sheets and MOUs, and procurement and licensing agreements) to improve turnaround times		●
bb. Evolve the Legal Services service delivery / operating model		●



## Organizational Effectiveness – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

Enterprise Strategic Objective	We will achieve performance excellence By cultivating a culture of innovation and continuous improvement	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>Efficient and effective operations</li> <li>Safe and healthy work environment</li> <li>Engaged, aligned and prepared workforce</li> </ul>	
2020 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ ✕
6. Continue to enhance operational performance and productivity (continued)		
f. Facilities Renewal Program		●
i. Finalize deficiency review and continue transition to optimize facility functionality and efficiency		
7. Maintain leading health and safety record		
a. Occupational Health, Safety and Environment (OHSE) Management System		●
i. Maintain registration of OHSE management system and prepare for update to new ISO 45001 standard (replacing OHSAS 18001)		●
ii. Complete required OHSE training		●
iv. Continue implementation of OHSE Targeted Action Plan		●
v. Renew physical demands analysis for positions requiring significant physical effort		●

## Organizational Effectiveness – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

Enterprise Strategic Objective	<b>We will achieve performance excellence</b> <i>By cultivating a culture of innovation and continuous improvement</i>	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Efficient and effective operations</i></li> <li>• <i>Safe and healthy work environment</i></li> <li>• <i>Engaged, aligned and prepared workforce</i></li> </ul>	
2020 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ X
8. Continue to enhance organizational and employee capability		
a. Union Management Relations – i. Application for certification by SEP for representation at HOL		●

## Organizational Effectiveness – Year-to-Date Results Q1-2020

### Corporate Performance Measures and Targets

Enterprise Strategic Objective	We will achieve performance excellence By cultivating a culture of innovation and continuous improvement							
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>Efficient and effective operations</li> <li>Safe and healthy work environment</li> <li>Engaged, aligned and prepared workforce</li> </ul>							
2020 Corporate Performance Measures	2016A	2017A	2018A	2019A	2020 Target	Q1 YTD Target	Q1 YTD Actual	Q1 YTD Assessment
OM&A per customer - HOL only (excl CDM) <sup>1</sup>	\$268	\$264	\$284	\$295	≤\$297	≤\$74	\$70	●
Revenue per employee (excl CDM) <sup>2</sup>	\$0.32M	\$0.34M	\$0.379M	\$0.41M	≥\$0.41M	≥\$0.10M	\$0.11M	●

<sup>1</sup> In 2016, this measure was modified to exclude CDM

<sup>2</sup> In 2016, these measures were modified to exclude CDM & Street Lighting, and in 2019 the measure was modified to exclude CDM only, streetlighting included in Envari base revenue



## Organizational Effectiveness – Year-to-Date Results Q1-2020

### Corporate Performance Measures And Targets

Enterprise Strategic Objective		We will achieve performance excellence By cultivating a culture of innovation and continuous improvement										
Enterprise Strategic Outcomes		<ul style="list-style-type: none"><li>Efficient and effective operations</li><li>Safe and healthy work environment</li><li>Engaged, aligned and prepared workforce</li></ul>										
							2020	Q1	Q1			
Measures	Description	2015A	2016A	2017A	2018A	2019A	Target	Target	Actual			
Labour Utilization	Productive Time	% of Billable Hours / Total Regular Hours	74%	74%	73%	72%	74%	≥ 74%	74%	69%	X	Below target and prior year. Over 3,000 hours were COVID-related down time
	Reg Labour Allocation to Mtnce & Admin *	% of Labour Time on Mtnce & Admin / Total Productive Time	N/A	N/A	N/A	N/A	N/A	≤ 34%	≤ 34%	37%	X	Exceeded target. The result was within target as of Feb, but jumped to 37% in March due to increased hours in Admin workorders resulting from COVID
	Average Sick Days per FTE (annualized)	Total Sick Days / Total Employees	6.3	5.9	6.0	7.1	8.2	≤ 6.0	6.0	8.3	X	Exceeded target. Long term sick leave absences account for 34% of total. Furthermore there was a sharp increase of long term absences in March of 35.5 % due to COVID-19 related absences
	e-Learning Training per employee (annualized)	Number of hours of e-learning / Total Employees	N/A	N/A	1.0	1.8	0.3	≥ 2.0	1.0	1.4	●	Achieved Q1 target. Total of 242 e-learning hours introduced, four time higher than Q1 2019 due to the assignment of target eLearning and the launch of New Ways of Learning
OM&A	Bad Debt as a % of Total Electricity Revenue	Bad Debt / Total Electricity Revenue	0.01%	0.13%	0.20%	0.13%	0.16%	≤ 0.12%	≤ 0.12%	0.21%	X	Exceeded target and prior year. The increase in bad debt is explained by increased accounts receivable balance in Disconnect Finalled Accounts over 60 days
Asset Efficiency	Technology Infrastructure Cost per Employee	(External IT support costs + computer hardware & software depn) / # of FTE	\$23.3K	\$24.4K	\$22.8K	\$26.5K	\$26.8K	≤ \$25.8K	≤ \$23.6K	\$25.4K	X	Exceeded target. Total technology costs were within budget, however lower number of employees than budget, therefore the cost per employee was higher
G												
Profitability Metrics	EBITDA as a % Revenue											
		EBITDA \$ / Total Revenue - Hydro Ottawa Limited	46%	52%	53%	54%	55%	≥ 52%	53%	55%	●	Exceeded target. Increased EBITDA due to reduced costs, largely in compensation explained by increased vacant positions and reduced overtime usage
	Inventory Turnover Ratio and Value	Cost of Materials Used / Average Inventory	1.73	2.27	1.93	1.55	1.64	≥ 2.00	≥ 2.00	1.76	▲	Below target. Jan and Feb turns were up but dropped in Mar as project activity slow down. Additional inventory for transformers and wood poles to prepare for supply chain risk and disruption

\* New measure introduced in 2020



## Corporate Citizenship – Year-to-Date Results Q1-2020

### Corporate Performance Goals And Priorities

Enterprise Strategic Objective	We will contribute to the well being of the community <i>By acting at all times as a responsible and engaged corporate citizen</i>	
Enterprise Strategic Outcomes	<ul style="list-style-type: none"> <li>• <i>Leading governance and business practices</i></li> <li>• <i>Engaged stakeholders</i></li> <li>• <i>Safe, secure and environmentally responsible services</i></li> <li>• <i>Positive community impact</i></li> </ul>	
2020 Corporate Performance Goals and Supporting Priorities		Assessment ● ▲ X
9. Enhance our brand image in the community and the industry		





\_\_\_\_\_

\_\_\_\_\_

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.14**

1

2

3 **JT 1.14**

4 To advise the factors behind the increase in overall net earnings.

5

6

7

8 **RESPONSE:**

9

10 A response to this undertaking will be provided in full as soon as possible.

1                                   **TECHNICAL CONFERENCE UNDERTAKING - JT 1.15**

2

3   **JT 1.15**

4   To file the Canadian Institute of Quantity Surveyor document that describes the different  
5   classes.

6   \_\_\_\_\_

7   **RESPONSE:**

8

9   Please see Attachment JT 1.15(A): Quantity Surveying and Cost Consulting Services published  
10   by the Canadian Institute of Quantity Surveyors. The Class C Estimate is described in Section  
11   1.3 on page 5; the Class B Estimate, in Section 1.4 on page 6.

# Quantity Surveying & Cost Consulting Services

Schedule of Services and Recommended Charges

**Sixth Edition  
2012**

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Canadian Institute of  
Quantity Surveyors

Institut canadien des  
économistes en construction

# Quantity Surveying & Cost Consulting Services

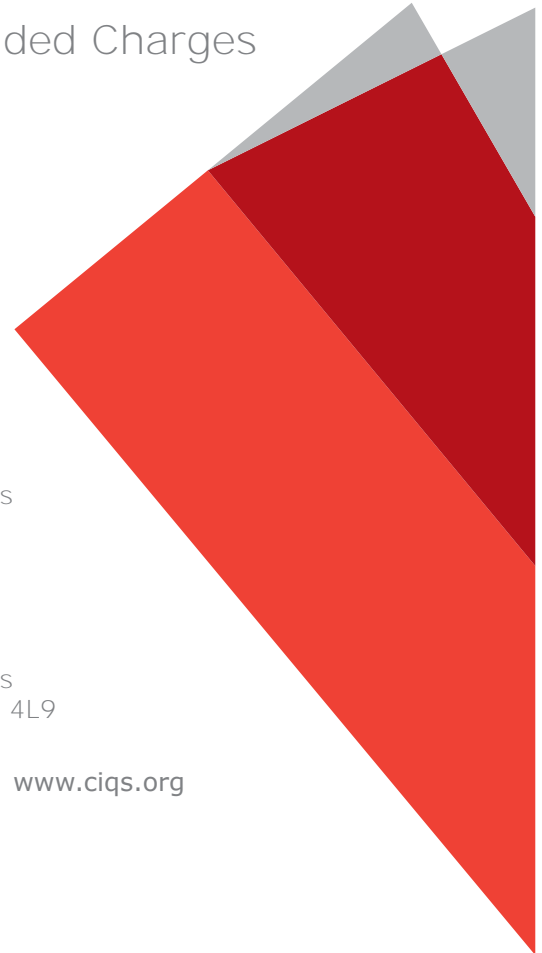
## Schedule of Services and Recommended Charges

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## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### Contents

Preface .....	1
The Professional Quantity Surveyor (PQS) .....	1
Available Services .....	2
1.0 Cost Planning Services	
1.1 Feasibility Study .....	3
1.2 Functional Program .....	4
1.3 Schematic Design .....	5
1.4 Design Development .....	6
1.5 Working Drawings .....	7
1.6 Pre Tender .....	8
1.7 Tender Package .....	9
1.8 Tender Review & Contractor Selection .....	9
1.9 Reconciliation .....	9
1.10 Value Management .....	9
1.11 Functional Cost Analysis .....	9
2.0 Post Tender Services	
2.1 Services related to Fixed Price or Stipulated Sum Contracts .....	10
2.2 Services related to Cost Plus Contracts .....	11
2.3 Services related to Management Contracts .....	11
3.0 Recommended Charges	
3.1 Hourly Charges .....	12
3.2 Feasibility Studies .....	12
3.3 Functional Program .....	12
3.4 Project Design (Schematic Design to Tender Review) .....	12
3.5 Recommended Fee Table .....	13
3.6 Categories of Buildings .....	14
3.7 Functional Cost Analysis .....	16
3.8 Multi Building Projects .....	16
3.9 Alteration Work .....	16
3.10 Post Tender Services .....	16
3.11 Other Services .....	16
3.12 Fees for Mechanical and Electrical Quantity Surveyors .....	16
3.13 Disbursements .....	17
3.14 Payment of Accounts, Interest & Copyright .....	17
4.0 Requests for Proposals	
4.1 Recommended Format .....	17
4.2 Proposal Requirements .....	18
4.3 Submission Evaluation .....	20
4.4 Suggested Consultant Evaluation Form .....	20
5.0 Recommended Standard Form of Agreement .....	21
Contact Us .....	28
Publications .....	29



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### Preface

This booklet has been prepared by the Canadian Institute of Quantity Surveyors (CIQS) as a guide for the engagement of the services of a Professional Quantity Surveyor (PQS).

The PQS is a vital member of, and brings added value to, the design and construction team. In this team, just as in any other, success is achieved by skill and cooperation. The skills of the PQS emanates from their training, experience and expertise in the field of construction costs, enabling them to perform duties combining the functions of an economist, an estimator and an accountant.

The PQS is specifically focused on the management of construction cost and value.

Depending upon the sophistication of the client in design and construction, the PQS can be retained to provide input and advice from inception to total completion or for specific tasks therein. Experience has shown that Clients who include the PQS as part of their team from inception to completion tend to maximize their return on this investment in professional expertise.

When you embark on a construction program, you are making a commitment to what may be a major investment in an unknown quantity. While defining the proposed facility broadly in terms of size and function is possible, there are significant variables that need attention such as:

- How well and how long will the facility serve its intended purpose?
- Will it be responsive to the needs of its users and the community?
- What will it say about your image?
- Will it be financially feasible?

The PQS you select will work with you and the design team to establish the program budget. As the design progresses through the various design stages, the PQS will prepare elemental cost plans which will be used to report changes and variations in the anticipated cost, allowing for timely decisions on additions or deletions to the design while maintaining the initial program budget. Prior to tender, the elemental cost plan will again be reviewed and this pre-tender estimate will be used to evaluate bids received.

During the design and construction of your project, the PQS effectively becomes a major contributor to your organization, serving as advisor and technical manager and in large measure, he or she will determine the financial success of the project.

Obviously, selecting the right PQS should not be a casual or offhand process. You will want to find a PQS whose experience, interests and capabilities fit your requirements best, and with whom you can work well.

### The Professional Quantity Surveyor (PQS)

The PQS is a professional who has dedicated his or her career to the practice of construction economics and the management of construction through effective cost control. To become a PQS, an individual must successfully complete the education requirements of the CIQS, followed by several years of monitored experience in all aspects of practice. The designation PQS can only be granted by the CIQS. Any breach of established ethical standards by a PQS can result in disciplinary action, suspension or cancellation of membership.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### Available Services

Members of the CIQS operate in all areas of construction including private consulting firms, contractors, architectural firms, government departments at municipal, provincial and federal levels and educational facilities.

The following list identifies services that may be provided by members of the CIQS, however, it should be noted that not all members will be able to provide all of the services listed. The enquirer should ensure that the member requested to perform a particular service is suitably experienced. For additional information please contact the CIQS or your local affiliated association.

#### Cost Consulting, incorporating:

Feasibility Studies and Conceptual Estimating; Project Budgeting; Cost Planning / Cost Control Estimates (in either elemental or trade format); Assembly of Tender Packages; Tender Review and Contractor Selection; Functional Cost Analysis; Review and Recommendation of Project Progress Payments; Review and Negotiation of Change Orders and Contractual Claims

#### Mortgage Monitoring, incorporating:

Review and Verification that Project Budget is adequate to complete the Project; Progress Draw Review and Monitoring of Costs incurred; Verification of Borrower payments.

#### Value Management, incorporating:

Review of Project Program, Design and Cost Studies; Service Provider for Value Management Workshops; Evaluating Processes and Components; Preparation of Recommendations.

#### Life Cycle Costing, including:

Life Cycle Cost Plans; Discounted Cash Flows; Sensitivity Analysis.

#### Other Services:

Reserve Fund Studies and Cost to Complete Reports; Property Condition Reports; Risk Analysis; Insurance Replacement Cost Assessment; Project Management; Project Scheduling; Construction Management; Construction and Project Cash Flows; Mediation and Arbitration; Expert Witness; Bills of Quantities and/or Materials; Material Take-offs.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 1.0 Cost Planning Services

The following services are identified at specific stages in the work for ease of reference only. The Client will only recognize the full benefit of engaging a PQS if that person or firm is an active participant in the design team, able to provide costing advice on an ongoing and continuous basis.

The following sets out some of the cost planning services a PQS may provide.

#### 1.1 Feasibility Study - Class D Estimate(s)

At the earliest stages of a project, a Feasibility Study may be requested by the Client as a means to develop the project requirements and identify a range of solutions that meet those requirements. The Feasibility Study provides the information base to be used to evaluate solutions and determine the optimum project solution. Its level of detail will depend on the nature, complexity and sensitivities of the project.

During this stage, the Client may request the PQS to develop Class D estimates of the construction costs, operating and maintenance costs, and cash flows for one or any of the solutions that are to be evaluated. The PQS may also, working with other market specialists, provide advice on feasibility studies analysing commercial returns, profitability, financing arrangements, land acquisition, revenue forecasts and market analysis.

For public, institutional and commercial construction projects, the PQS typically prepares a study which will consist of an analysis of budget requirements, analysis of possible building size within a fixed budget and preparation of cost studies including operating and maintenance cost evaluations.

Since it is common to evaluate more than one project solution and the level of evaluation may vary depending on nature, complexity and sensitivities of the project, fee proposals will vary depending on the services requested by the Client.

To prepare a Feasibility Study Class D estimate, the following recommended minimum requirements are to be provided:

- project plan detailing the project function, purpose, and characteristics including information relating to the gross floor area of prime building spaces, equipment, and building systems
- floor-to-floor heights and general information about the exterior elements
- building geographical location, site configuration, planning limitations, known soil and rock information, availability of utility services to the building, as-found drawings and intrusive investigations for existing building (if applicable)
- procurement methodology and notional timing
- cost limitations and allowances



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 1.2 Functional Program - Class D Estimate(s)

Also during the early stages of a project, the Client may request the PQS to develop Class D estimates based on a Functional Program. A Functional Program is a pre-design document describing the functional requirements or user requirements of a building or renovation in sufficient detail to initiate preliminary costing. It may include space types and sizes, space finishes, space adjacencies, special mechanical or electrical services, and any equipment.

The PQS will draw upon accumulated experience and recorded cost data to prepare an estimate(s) of the probable cost consistent with the known requirements. Clearly this early assessment of cost will involve a number of basic assumptions as to the nature and construction of the project. It is common for the Client to request more than one cost option at the Functional Program stage if a site has not been selected, method of procurement has not been chosen, or the Client may request options for different building sizes and configurations. Fee proposals will vary depending on the services requested by the Client.

The more complex projects, generally institutional developments, may also be costed at this stage based on a Facilities Program.

To prepare a Class D estimate, the following recommended minimum requirements are to be provided:

- project plan detailing the project function, purpose and characteristics including information relating to the gross floor area of prime building spaces, equipment, and building systems
- Functional Program or User Requirements document
- floor-to-floor heights and general information about the exterior building elements
- geographical location, site configuration, planning limitations, known soil and rock information, availability of utility services to the building, as-found drawings and intrusive investigations for existing building (if applicable)
- procurement methodology and notional timing
- cost limitations and allowances



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 1.3 Schematic Design - Class C Estimate(s) (Documents 5%-25% complete)

At the Schematic Design stage, the Project Team establishes the general scope and provides schematic drawings showing scale and relationships among the components of the project. The outcome of Schematic Design is to analysis alternative design solutions and to arrive at a clearly defined, concept design while meeting the project requirements.

Based on the Client approved schematic design documents, the PQS shall meet with the Project Team, review the nature and scope of the entire project, and prepare for the Client's review, a Budget Cost Estimate(s) and Cost Plan that reflects the size and character of the entire Project, including the architectural, structural, mechanical and electrical systems, and such other elements as may be appropriate. This Budget Cost Estimate(s) and Cost Plan shall be presented as a Class C Estimate, including backup sheets showing quantities, unit rates and amounts for composite or individual items of work, as well as an Elemental Cost Summary.

The PQS shall, if required, meet with the Client and/or Project Team for the purposes of reviewing the submitted Budget Cost Estimate(s), and making any subsequent revisions. At the Schematic Design phase, the Client may request from the designers, more than one conceptual design, and therefore more than one Class C Estimate to assist in the decision to move forward with one design option. Fee proposals will vary depending on the services requested by the Client.

The agreed-upon Budget Cost Estimate shall become the Cost Plan, and shall form the basis for Cost Control in the subsequent Design Phases.

To prepare a Class C estimate, the following recommended minimum requirements are to be provided:

- principal floor plans
- structural foundation system and typical framing system
- principal exterior wall sections and roof system selections
- preliminary finish schedule by rooms
- mechanical and electrical systems outline (suggested equipment requirements)
- outline specification
- basic site plans and original site drawings and investigations
- finish grades with paving and parking requirements
- storm drainage solution and existing utility locations
- as-found drawings for existing building (if applicable)
- demolition drawings (if renovation), including clear indication of existing materials to remain



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 1.4 Design Development - Class B Estimate (Documents 25%-33% complete)

Based on the Client's approved design development documents, the PQS shall prepare, for the Client's review, a Project Cost Estimate or Construction Cost Estimate as applicable, that reflects the size and character of the entire Project, including the architectural, structural, mechanical and electrical systems, and such other elements as may be appropriate. This Estimate shall be presented as a Class B Estimate, including backup sheets showing quantities, unit rates and amounts for composite or individual items of work, as well as an Elemental Cost Summary.

This Estimate shall be accompanied by a report explaining the basis on which the Estimate has been prepared (including documentation list), outlining the scope of work, any limitations or qualifications, and including an Elemental cost comparison highlighting any deviations from the Cost Plan. The report shall also include any recommendations for cost reduction if this is required to adhere to the Cost Plan.

If any major deviation from the Cost Plan is apparent, a formal cost reduction program may be offered to the Client.

During the course of Design Development, the PQS shall review the design documentation from time-to-time, and shall participate in evaluating and analyzing alternative configurations, materials and systems. Such input shall be on the basis of milestones agreed to with the Client at the outset.

To prepare a Design Development Class B Estimate, the following recommended minimum requirements are to be provided:

- developed (<25%) floor plans, reflected ceiling plans, roof plans
- structural foundation design, typical structural framing
- developed (<25%) building elevations and sections
- typical interior wall types and acoustical guidelines
- preliminary finish schedule with material selections
- developed (<25%) mechanical plans indicating: main branch piping and ductwork; major equipment types and layouts; fire protection requirements; and basic controls system description.
- developed (<25%) electrical plans indicating: single line riser/distribution layout; basic panel information; lighting requirements and layout; basic communications, fire alarm, and security requirements.
- outline specification with selected equipment, sizes, and performance requirements
- site plans, indicating building locations and site improvements (including all paved areas, site utilities, and building or vertical structure locations)
- additional site investigations, as required
- topographical information (current and engineered topographical information)
- utility location (showing all underground structures and lines)
- demolition/removal plans and information
- sustainable design requirements
- special client-requested requirements



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 1.5 Working Documents- Class B Estimate (Documents 50%-66% complete)

Based on the Client's approved 50%-66% contract drawings and specifications, the PQS shall prepare, for the Client's review, a Project Cost Estimate or Construction Cost Estimate as applicable, that reflects the size and character of the entire Project, including the architectural, structural, civil, mechanical and electrical systems, and such other elements as may be appropriate. This Estimate shall be presented as a Class B Estimate, including backup sheets showing quantities, unit rates and amounts for each item of work, as well as an Elemental Cost Summary. If requested by the Client, a Trade Summary format estimate may be provided suitable for comparison with contractors' tenders or proposals.

This Estimate shall be accompanied by a report explaining the basis on which the Estimate has been prepared (including documentation list), outlining the scope of work, and any limitations or qualifications. The report shall also include any recommendations for cost reduction if this is required to adhere to the Cost Plan.

If any major deviation from the Cost Plan prepared in the Working Drawings Phase is apparent, and was not corrected in the Design Development Phase, a formal cost reduction program may be offered to the Client as an additional service and fee.

To prepare a Working Drawings (50%-66%) Class B Estimate, the following recommended minimum requirements are to be provided:

- developed (<50%) floor plans, reflected ceiling plans, roof plans
- structural foundation design, typical structural framing
- developed (<50%) building elevations and sections
- typical interior wall types and acoustical guidelines
- developed (<50%) finish schedule with material selections
- developed (<50%) mechanical plans
- developed (<50%) electrical plans
- developed (<50%) specifications
- developed (<50%) site/civil/landscape plans
- demolition/removal plans and information
- sustainable design requirements
- special client-requested requirements





## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 1.6 Pre Tender Contract Documents - Class A Estimate (Documents 90%-100% complete)

Based on the Client's approved Pre Tender contract drawings and specifications, the PQS shall prepare, for the Client's review, a Project Cost Estimate or Construction Cost Estimate as applicable, that reflects the size and character of the entire Project, including the architectural, structural, civil, mechanical and electrical systems, and such other elements as may be appropriate. This Estimate shall be presented as a Class A Estimate, including backup sheets showing quantities, unit rates and amounts for each item of work, as well as an Elemental Cost Summary and a Trade Summary suitable for comparison with contractors' tenders or proposals.

This Estimate shall be accompanied by a report explaining the basis on which the Estimate has been prepared (including documentation list), outlining the scope of work, and any limitations or qualifications. The report shall also include any recommendations for cost reduction if this is required to adhere to the Cost Plan.

If any major deviation from the Cost Plan prepared in the Pre-Tender Phase is apparent, and was not corrected in the Working Drawing Phase, a formal cost reduction program may be offered to the Client as an additional service and fee.

To prepare a Pre-Tender Class A Estimate, the following recommended minimum requirements are to be provided:

- detailed (<90%) floor plans, reflected ceiling plans, roof plans
- detailed (<90%) demolition drawings (if renovation), including clear indication of existing materials to remain
- detailed (<90%) structural plans, notes, sections, and details fully describing the structural building requirements
- building elevations and building sections
- exterior wall sections
- details of exterior walls, stairs, toilet rooms, etc.
- finish schedule and notes
- special details and conditions (millwork, handrails, etc.)
- conveyance plans, specifications and sections fully describing elevators, escalators and lifts
- detailed (<90%) mechanical plans, notes, sections and details fully describing the plumbing, HVAC and fire protection, controls, equipment requirements
- detailed (<90%) electrical plans, notes, sections and details fully describing the electrical, communications, security, and equipment requirements
- project specifications, completely describing materials and performance requirements
- final site drawings showing current and engineered topical information
- utility locations and design showing all underground structures and utility lines



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

- landscaping - all landscape layout and materials, grading and drainage, planting and construction detail drawings
- details, schedules and notes to be used in the construction of the project.

### 1.7 Tender Package

As the tender package is being assembled, the PQS should be made aware of all changes from the documents used to prepare the pre tender update. It is not uncommon for the final details to significantly alter costs of the work. The PQS can consider these changes and advise the Client and design team to take appropriate action.

During the tender period, questions often arise that result in addenda being issued by the design consultants. As an additional value-added service and charge, the PQS may receive all of the addenda for review and report on any cost impact to the client prior to tender closing. This will enable proper appraisal of the tender results.

### 1.8 Tender Review & Contractor Selection

In the case of competitively tendered prices, the PQS may examine the bids together with alternative prices and the various unit prices, analyse the particulars and report to the client and design team with a recommendation as to the most satisfactory tender.

In the event that the tendered prices are unacceptable, the PQS may assist the Client and the design team in the negotiations and recommend an equitable price. Such negotiations are facilitated by reference to the PQS's estimates.

Where a cost plus contract is to be used, the PQS may advise on the selection of a suitable contractor and on the form of the contract.

### 1.9 Reconciliation

Reconciliation services between the PQS and an Owner, Client or Construction Manager may occur at any estimating phase and is charged as an additional value-added service.

### 1.10 Value Management

Value Management services may be required at any estimating phase and is charged as an additional value-added service.

### 1.11 Functional Cost Analysis

When required, and as an additional value-added service and charge, the PQS may prepare a functional cost analysis of the project, based on the accepted tender. A functional cost analysis shows the cost of various functions contained within a project, for instance, the cost of classrooms in schools or patient areas in hospitals, offices, circulation space, mechanical rooms, and the like.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 2.0 Post Tender Services

While many Client/PQS agreements are completed at the successful conclusion of a tender, the Client, by utilizing the services of a PQS after the contract has been awarded, can benefit greatly from the detailed cost information the PQS has compiled and their knowledge of the quantities of the work. With all of the pre-contract information at hand, the PQS is ideally equipped to deal with the administrative issues that arise during the construction of a project.

The following sets out some of the post tender services a PQS may provide as a value-added additional service.

#### 2.1 Services Relating to Fixed Price or Stipulated Sum Contracts

a) Schedule of Values

The PQS may review the schedule of values submitted by the contractor, and in consultation with the Client and design team make recommendations for changes, adjustments and acceptance.

b) Progress Advance Approvals

The PQS may examine the various applications from the contractor for progress payments, verify them against the work actually performed, evaluate the work in accordance with the contract, including the balance to complete, advise on the amount of Lien Holdback, and make recommendations as to the amount of such payments.

c) Contract Changes

The PQS may, in conjunction with the design team, also initiate and maintain procedures for evaluating change orders and may negotiate with the contractor and recommend adjustments to the contract sum and project schedule.

d) Contract Status

During the course of the construction work, the PQS may prepare at regular intervals, statements showing the current expenditures to date incorporating all change orders authorized and contemplated indicating the anticipated final cost.

e) Final Account

On completion of the work a full and detailed final account incorporating all change orders and cash allowances adjustments may be prepared.

f) Payment Certifier Services

The PQS is trained in the administration of contracts and is knowledgeable of the provisions of the Builder's Lien Act. As such the PQS is an appropriate choice to provide the Payment Certifier functions described by the Act.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 2.2 Services Relating to Cost Plus Contracts

- a) Cost Reporting  
The PQS may set up proper accounting procedures for checking the contractor's labour and material costs, and reporting same against the target budget.
- b) Contract Changes  
The PQS may also initiate and maintain procedures for evaluating change orders and will negotiate with the contractor and recommend adjustments to the contract sum.
- c) Contract Status  
During the course of the construction work, the PQS may prepare at regular intervals, statements showing the current expenditures to date incorporating all change orders authorized, and indicating the anticipated final cost
- d) Final Account  
On completion of the work, a full and detailed final account incorporating all change orders and cash allowances adjustments may be prepared.
- e) Payment Certifier Services  
The PQS is trained in the administration of contracts and is aware of the provisions of the Builder's Lien Act. As such the PQS is a natural choice to provide the Payment Certifier functions described by the Act.

### 2.3 Services Relating to Management Contracts

- a) Provide a breakdown of the elemental estimate to conform with the other estimating formats such Masterformat™, Unifomat Index and to enable a budget target cost to be agreed with the Project or Construction Manager.
- b) Provide a breakdown of the elemental estimate to conform with trade packages identified by the Project or Construction Manager, to assist in calling tenders
- c) Examine the various applications from the contractor for progress payments, verify them against the work actually performed, evaluate the work in accordance with the contract, and make recommendations for the amount of such payments.
- d) Evaluate change orders, negotiate costs and make recommendations on changes to the contract amount and progress schedule.
- e) Prepare a final account of all the trade contracts, incorporating all changes and adjustments to cash allowances etc



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 3.0 Recommended Charges

The undernoted recommended fee scales and hourly rates are exclusive of disbursements, which should be charged in accordance with section 3.12, and the Goods and Services Tax (GST) or Harmonized Sales Tax (HST), which will be charged at the prevailing rate.

#### 3.1 Hourly Charges

The actual hourly rates vary across the country and by the level of experience and seniority of the PQS. The following rates are recommended rates to be used as a guide when determining time based fees.

- a) For any other work performed on an hourly basis, a principal's time should be charged at not less than \$250.00 per hour and staff engaged on work shall be charged at pre-agreed hourly billing rates.
- b) For services in connection with arbitration or contractual disputes, subsequent to completion of an expert report when required, when consulting with council, reviewing and commenting on reports from other parties, preparing for and appearing in court or at an arbitration hearing whether formal or informal, the PQS's fee should be \$450.00 per hour, with a 4 hour minimum per day, or as otherwise set out in Article 4.1 or the Form of Agreement.

#### 3.2 Feasibility Studies

For providing studies into the overall feasibility of construction projects during the feasibility study stage, the PQS's fee should be charged in accordance with section 3.11 "Hourly Charges".

#### 3.3 Functional Program

For services at the functional program stage as described in section 1.2 above, the PQS's fee should be charged in accordance with section 4.12 "Hourly Charges".

#### 3.4 Project Design (Schematic Design to Tender Review – 4 Estimates [one Class C Estimate, two Class B Estimates, and one Class A Estimate])

For project design work including schematic design through to tender review inclusive, the PQS's Base Fees should be calculated in accordance with the following table. Where not all 4 Estimates are provided, the fees should be apportioned, based on the services to be provided.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

3.5 Recommended Fee Table

BUILDING CATEGORY		1	2	3	4	5	6	7
CONSTRUCTION COSTS (hst/gst extra)	Less than \$1M	hourly rates	hourly rates	hourly rates	hourly rates	hourly rates	hourly rates	hourly rates
	\$1M to <\$2M	\$12,000 plus 0.675% over \$1M	\$12,800 plus 0.72% over \$1M	\$13,600 plus 0.765% over \$1M	\$14,400 plus 0.81% over \$1M	\$16,000 plus 0.90% over \$1M	\$17,600 plus 0.99% over \$1M	\$19,200 plus 1.08% over \$1M
	\$2M to <\$5M	\$18,750 plus 0.525% over \$2M	\$20,000 plus 0.56% over \$2M	\$21,250 plus 0.595% over \$2M	\$22,500 plus 0.63% over \$2M	\$25,000 plus 0.70% over \$2M	\$27,500 plus 0.77% over \$2M	\$30,000 plus 0.84% over \$2M
	\$5M to <\$10M	\$34,500 plus 0.375% over \$5M	\$36,800 plus 0.40% over \$5M	\$39,100 plus 0.425% over \$5M	\$41,400 plus 0.45% over \$5M	\$46,000 plus 0.50% over \$5M	\$50,600 plus 0.55% over \$5M	\$55,200 plus 0.60% over \$5M
	\$10M to <\$20M	\$53,250 plus 0.30% over \$10M	\$56,800 plus 0.32% over \$10M	\$60,350 plus 0.34% over \$10M	\$63,900 plus 0.36% over \$10M	\$71,000 plus 0.40% over \$10M	\$78,100 plus 0.44% over \$10M	\$85,300 plus 0.48% over \$10M
	\$20M to <\$30M	\$83,250 plus 0.263% over \$20M	\$88,000 plus 0.28% over \$20M	\$94,350 plus 0.298% over \$20M	\$99,900 plus 0.315% over \$20M	\$111,000 plus 0.35% over \$20M	\$122,100 plus 0.385% over \$20M	\$133,200 plus 0.42% over \$20M
	\$30M to <\$40M	\$109,500 plus 0.225% over \$30M	\$116,800 plus 0.24% over \$30M	\$124,100 plus 0.255% over \$30M	\$131,400 plus 0.27% over \$30M	\$146,000 plus 0.30% over \$30M	\$160,600 plus 0.33% over \$30M	\$175,200 plus 0.36% over \$30M
	\$40M to <\$60M	\$132,000 plus 0.188% over \$40M	\$140,800 plus 0.20% over \$40M	\$149,600 plus 0.213% over \$40M	\$158,400 plus 0.225% over \$40M	\$176,000 plus 0.25% over \$40M	\$193,600 plus 0.275% over \$40M	\$211,200 plus 0.30% over \$40M
	\$60M to <\$80M	\$169,500 plus 0.165% over \$60M	\$180,800 plus 0.176% over \$60M	\$192,100 plus 0.187% over \$60M	\$203,400 plus 0.198% over \$60M	\$226,000 plus 0.22% over \$60M	\$248,600 plus 0.242% over \$60M	\$271,200 plus 0.264% over \$60M
	\$80M to <\$100M	\$202,500 plus 0.15% over \$80M	\$216,000 plus 0.16% over \$80M	\$229,500 plus 0.17% over \$80M	\$243,000 plus 0.18% over \$80M	\$270,000 plus 0.20% over \$80M	\$297,000 plus 0.22% over \$80M	\$324,000 plus 0.24% over \$80M
	\$100M to <\$130M	\$233,250 plus 0.135% over \$100M	\$248,800 plus 0.144% over \$100M	\$264,350 plus 0.153% over \$100M	\$279,900 plus 0.162% over \$100M	\$311,000 plus 0.18% over \$100M	\$342,100 plus 0.198% over \$100M	\$373,200 plus 0.216% over \$100M
	\$130M to <\$160M	\$273,000 plus 0.128% over \$130M	\$291,200 plus 0.136% over \$130M	\$309,400 plus 0.145% over \$130M	\$327,600 plus 0.153% over \$130M	\$364,000 plus 0.17% over \$130M	\$400,400 plus 0.187% over \$130M	\$436,800 plus 0.204% over \$130M
	\$160M to <\$200M	\$311,250 plus 0.12% over \$160M	\$332,000 plus 0.128% over \$160M	\$352,750 plus 0.136% over \$160M	\$373,500 plus 0.144% over \$160M	\$415,000 plus 0.16% over \$160M	\$456,500 plus 0.176% over \$160M	\$498,000 plus 0.192% over \$160M
	>\$200M	\$359,350 plus 0.113% over \$200M	\$383,200 plus 0.12% over \$200M	\$407,150 plus 0.128% over \$200M	\$431,100 plus 0.135% over \$200M	\$479,000 plus 0.15% over \$200M	\$526,900 plus 0.165% over \$200M	\$574,800 plus 0.18% over \$200M



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## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 3.6 Categories of Buildings

A building generally will fall into one of the categories on this list, according to its type and complexity. Buildings not listed in any of these categories belong in the category to which they most closely relate.

#### Category 1

- 1.1 Warehouse (10 percent maximum office area, but not exceeding 600 sq. m)
- 1.2 Barn, Stable, Storage, Kennel, Shed
- 1.3 Parking Garage (free-standing)
- 1.4 Shopping Centre, Large Mercantile Store, Factory (excluding tenant fit-up)

#### Category 2

- 2.1 Multiple Housing, e.g., Condominium, Co-operative and Rental Apartment Building
- 2.2 Institutional Residence, e.g., Dormitory, Parks Bunkhouse
- 2.3 Motel, Motor Inn

#### Category 3

- 3.1 General Purpose Office Building
- 3.2 Armed Forces Base and Yard, Armoury, Drill Hall, Aircraft Hangar
- 3.3 Summer Camp, Resort Building, Trailer Park, Marina
- 3.4 Elementary Schools, Day Care Centres
- 3.5 Specialized Airport Facility, e.g., Security Control, Garbage Incinerator, Electronic Maintenance, Aircraft Garbage Dump Station, Aircraft De-Icing Station
- 3.6 Freight Handling Facility
- 3.7 Bowling Alley

#### Category 4

- 4.1 Defined Purpose Office Building
- 4.2 Bank, Stock Exchange
- 4.3 Swimming Pool (indoor), Ice Arena (indoor), Gymnasium, Covered Ice Rink
- 4.4 Sports and Fitness Facility, Recreational Building
- 4.5 Grandstand, Stadium, Arena
- 4.6 Convention Hall, Exhibition Building, Hotel
- 4.7 Manufacturing, Processing or Specialized Storage Plant, Postal Plant, Abattoir, Distillery
- 4.8 Ambulance Station, Fire Station, Post Office



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

- 4.9 Restaurant, Bar, Lounge
- 4.10 Minimum Security Correctional Institution
- 4.11 Club Building, Country Club, Community Centre, Golf Club House
- 4.12 Tenant Fit-up, Space Planning
- 4.13 Maintenance Building, Service Garage, Gas and Fuel Station, Car Dealership
- 4.14 Place of Worship, Monastery, Convent
- 4.15 Central Utility Plant
- 4.16 Junior and Senior High School

### Category 5

- 5.1 Terminal Building or Station, e.g., Air, Bus, Ferry, Rail
- 5.2 Police Station, Customs and Immigration Building
- 5.3 Cemetery Chapel, Mausoleum, Crematorium, Funeral Home, Undertaking Establishment
- 5.4 Concert Halls, Performing Arts Facilities, Theatre
- 5.5 City Hall, Town Hall, Chancery
- 5.6 Parliament Building, Mint, Treasury
- 5.7 Courthouse, Archives Building, Library
- 5.8 Medium Security and Multi-level Security Correctional Institution
- 5.9 Casinos and Gaming Facilities
- 5.10 Extended Care, Convalescent, Geriatrics Nursing Facility
- 5.11 Amusement Park Building, Zoo, Botanical Garden
- 5.12 University and College Teaching Buildings
- 5.13 Specialized Agricultural Building, e.g., Dairy Barn, Swine Operation, Poultry Laying House

### Category 6

- 6.1 Hospital, Chronic Care Facility, Psychiatric Facility, Medical Research Facility, Dental Building, Clinics e.g., Veterinary Health, Radiology
- 6.2 Communications Building, Radio or TV Facility
- 6.3 Art Gallery, Museum, Observatory, Planetarium, Aquarium
- 6.4 Science Building, Laboratory Building, Weather Station
- 6.5 Combined Flight Services/Passenger Services Building
- 6.6 Radar Building, Air Traffic Services School, Meteorological Services Building
- 6.7 Specialized Parks Building, e.g., Park Administration Building, Beach Change House and Washrooms, Amphitheatre, Park Warden Station, Kitchen Shelter
- 6.8 Official Government Residence, Consulate, Embassy, Custom Residence, Custom Swimming Pool



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## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### Category 7

- 7.1 Emergency Operations Centre
- 7.2 Decorative Work, Exhibition Display, Public Garden, Promenade, Fountain, Commemorative and Funeral Monument, Fortifications
- 7.3 Air Traffic Control Tower
- 7.4 Opera House
- 7.5 Critical Care Facility
- 7.6 Data Centre and Computer Centre
- 7.7 Maximum Security Correctional Institution

### 3.7 Functional Cost Analysis

For functional cost analysis services described in section 1.11 above, the PQS's fee should be charged in accordance with section 3.11 "Hourly Charges".

### 3.8 Multi-Building Projects

On projects comprising two or more separate buildings in a complex, the foregoing Fee Schedule shall apply to each building as if on separate projects.

### 3.9 Alteration Work

The foregoing Fee Schedule shall apply only to new work. The costs for projects involving alterations, renovations or heritage designated building may be subject to additional fees.

### 3.10 Post Tender Services

For post tender services described in section 2 above, the PQS's fee should be charged in accordance with section 3.11 "Hourly Charges".

### 3.11 Other Services

Fees for other services should be negotiated, or charged in accordance with section 3.11 "Hourly Charges".

### 3.12 Fees for Mechanical and Electrical Quantity Surveyors

- a) Mechanical PQS fees should be proportional to the value of the mechanical value of the construction budget
- b) Electrical PQS fees should be proportional to the value of the electrical value of the construction budget



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 3.13 Disbursements

Disbursements normally include, but are not limited to, the following, and should be charged at cost plus an allowance for overheads, or as otherwise set out in Article 2.5 of the Form of Agreement.

- Travelling and living expenses
- Long distance telephone calls and facsimile transmissions
- Photocopying and/or printing
- Courier services
- Any other agreed disbursements

### 3.14 Payment of Accounts, Interest & Copyright

The PQS's fees shall be paid monthly in direct proportion to the amount of work done, or as otherwise set out in the Form of Agreement. The PQS's account for fees and disbursements is due when presented. Accounts overdue by 30 days or more will be subject to interest charges as set out in the Form of Agreement.

Payment of the PQS's fees give the Client the right to use, for their intended purpose only, the documents prepared by the PQS as instruments of service. The copyright and ownership of these instruments of service remains with the PQS and may not be used for any other project, or sold, or offered for sale (or as part of a sale of property) by the Client, unless the PQS has given written consent accordingly.

## 4.0 Requests for Proposals

### 4.1 Recommended Format

1. If first placing an advertisement to solicit expressions of interest, the following brief information should be provided.
  1. Heading: i.e. ***Request for Expressions of Interest for Professional Quantity Surveying and Cost Consulting Services.***
  2. The ***name of the project and its location.***
  3. A brief description of the project and the scope of quantity surveying services required.  
i.e. ***Consultant services to establish project budget and cost control during design and construction for new Junior High School.***
  4. The ***name of your organization.***
  5. Contact: ***name, address, phone, fax and e-mail.***
2. When requesting proposals, the following information should be provided to PQSs who will be submitting proposals.
  1. Heading: i.e. ***Request for Proposals for Professional Quantity Surveying and Cost Consulting Services.***
  2. The ***name of the project and its location.***



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

3. As detailed a description of the project as is possible, including, i.e. ***New 10,000 m<sup>2</sup> four storey multi-tenant office building or Renovations and Alterations to existing 25,000m<sup>2</sup> Junior High School.***
4. As detailed a breakdown of the ***project budget*** as possible.
5. The ***project client***.
6. The number of copies required of the proposal and the time, date and location for receipt of proposals.
7. The requirements of the project PQS. i.e.

The PQS will provide written elemental cost estimates in accordance with the current CIQS elemental format, at the following stages of project development.

- Feasibility Study – Class D Estimate(s)
- Functional Program – Class D Estimate(s)
- Schematic Design – Class C Estimate(s)
- Design Development – Class B Estimate
- 50%-66% Contract Documents – Class B Estimate
- Pre-Tender Contract Documents Class A Estimate

The PQS may also

- Review the documents as issued for tender
- Review and price accordingly all addenda during the tender period
- Prepare a written post tender analysis of the bids received, and;
- Prepare a functional cost analysis

### 4.2 Proposal Requirements

PQSs submitting proposals should detail their experience, qualifications, specialized abilities, resumes of key personnel, recent projects undertaken of a similar nature and their proposed fees for carrying out the defined scope of quantity surveying work in addition to the following information that should be used in connection with the suggested evaluation form included in section 4.4.

- The PQS with overall responsibility for the project.
- The project team indicating the names of individuals who will work on the project, their responsibilities, disciplines and experience. (Client reserves the right to approve all consultants proposed by the submitting firm).
- Provide a time frame to complete each estimate, with a brief description of current office workload and the ability to complete the commission within the suggested time frame. It is understood that “time is of the essence” for this project.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

- List the firm's experience in Cost Consulting for the project type.
- Past performance in Cost Consulting
- Provide a current list of client references, including name of organization, contact person, title and phone number. A minimum of three references is recommended.

Proposals may also include the following requirements:

Submitting PQS must:

- Have the lead PQS registered with the affiliate holding jurisdiction in the location of the work.
- Have Principals qualified as PQS's and members in good standing with CIQS.
- Have Mechanical and Electrical sub-consultants qualified as PQS and members in good standing with CIQS.
- Have staff and sub-contractors available for attendance at all meetings as required for the project.
- Make available on request all information to the Project Manager noted in the RFP.
- Assemble the necessary team required to complete all aspects of the project. Individual contracts will not be signed with individual consultants.
- Include fees in accordance with the schedule of services and charges for all services.
- Include an estimate (if requested) for reimbursable expenses required for the completion of the project in accordance with the guidelines.

Other general information that may be included in a Request for Proposal includes:

- The proposal must be signed by the person(s) authorized to sign on behalf of the Proponent and bind the Proponent to statements made in response to this RFP.
- Proposals are to be irrevocable and open for acceptance for 30 days from date of submission.
- The Client reserves the right to negotiate changes after proposals have been evaluated and the contract awarded.
- The contents of the selected proposal, these Terms of Reference and all further correspondence related to it will become a part of any contract entered into by the parties, and will be binding on all parties. Should any discrepancy in terms and conditions arise between the Proponent's documentation and the documentation of the Client, the Client's documentation will prevail.
- Submitting Proponents are solely responsible for their own expenses in preparing a proposal and for subsequent negotiations with the Client, if any. If the Client elects to reject any or all proposals, the Client will not be liable to any proponent for any claims or damages incurred by the submitting Proponent in preparing the proposal.
- Proponents are encouraged to seek clarification if required by contacting the Project Manager noted in the RFP.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### 4.3 Submission Evaluation

1. From review of the proposals submitted, interview the proponent you have ranked highest (usually three to five) and complete a consultant evaluation for each of the proponents. A suggested format for an evaluation form follows.
2. Ensure that the preferred proponent seems able to work with you. Check their references, especially other clients.
3. Advise unsuccessful PQSs of the basis upon which you made the selection and reasons why their proposal was not accepted. This advice may be in an oral or written form, and should be provided individually to each proponent.

### 4.4 Suggested Consultant Evaluation Form

Evaluation Date .....

Proponent	Points	Ranking
A.		
B.		
C.		
D.		

	points available	A.	B.	C.	D.
<b>Team Experience &amp; Capabilities</b>					
Team experience & ability specific to project	25				
Past performance	20				
Current workload	5				
<b>Proposal</b>					
Organization & clarity	5				
Proposed methodology	10				
Ability to meet time lines	10				
Understanding of project objectives & goals	10				
Demonstration of understanding of related issues	5				
<b>Compensation</b>					
Fees	10				
<b>Total</b>	<b>100</b>				



**QUANTITY SURVEYING & COST CONSULTING SERVICES  
SCHEDULE OF SERVICES AND RECOMMENDED CHARGES**

**5.0 Recommended Standard Form of Agreement**

**CANADIAN INSTITUTE OF QUANTITY SURVEYORS/  
INSTITUT CANADIEN DES ÉCONOMISTES EN CONSTRUCTION**

**STANDARD FORM OF AGREEMENT BETWEEN CLIENT AND  
PROFESSIONAL QUANTITY SURVEYOR**

THIS AGREEMENT made in duplicate as  
of the \_\_\_\_\_  
day of \_\_\_\_\_  
in the year \_\_\_\_\_

BETWEEN

\_\_\_\_\_  
*(Hereinafter referred to as the "Client")*

AND

\_\_\_\_\_  
*(Hereinafter referred to as the "PQS")*

FOR THE FOLLOWING PROJECT: \_\_\_\_\_  
*(Include detailed description of scope of work, project name, location and address)*

\_\_\_\_\_  
\_\_\_\_\_

NOW THEREFORE, the Client and the PQS for the considerations named  
herein agree as follows:



Canadian Institute of  
Quantity Surveyors

Institut canadien des  
économistes en construction

**QUANTITY SURVEYING & COST CONSULTING SERVICES  
SCHEDULE OF SERVICES AND RECOMMENDED CHARGES**

**ARTICLE 1.0 SERVICES**

1.1 The PQS shall perform for the Client those services described in the **SCHEDULE OF QUANTITY SURVEYING SERVICES** as follows:-  
*(List services below or attach list)*

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1.2 At the request in writing of the Client, the PQS shall perform such additional work as may be agreed between the parties, such additional work to be as set out below, and or as subsequently agreed and paid as set out in Article 2.4.

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**QUANTITY SURVEYING & COST CONSULTING SERVICES  
SCHEDULE OF SERVICES AND RECOMMENDED CHARGES**

**ARTICLE 2.0 THE CLIENT'S RESPONSIBILITIES**

2.1 The Client shall provide the information required by the PQS to perform his services. Such information shall be provided in sufficient time for the PQS to meet any scheduled date for the completion of his work. The Client agrees that the PQS shall be entitled to rely upon the accuracy and correctness of the documentation provided and any additional work required due to inaccuracies in the documentation will be paid for at the rates set out in Article 4.1.

2.2 The Client shall pay to the PQS, in addition to the undernoted fees and hourly rates, all applicable *Value Added Taxes*, which are excluded from all undernoted fees and hourly rates.

2.3 The Client shall pay to the PQS a fee for the services specified in Article 1.1 in accordance with the following terms:

*(List amount of fee for each stage)*

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2.4 The Client shall pay to the PQS a fee for additional services specified in Article 1.2 in accordance with the following terms:

*(List agreed fees for additional services)*

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2.5 The Client shall reimburse the PQS for the following disbursements charged at cost plus \_\_\_\_\_ percent to cover office services and handling:

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2.6 All amounts included in this agreement are in Canadian funds.





## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### ARTICLE 3.0 VARIATION OF FEE

3.1 If, after the PQS has commenced the services described in Article 1.0 of this agreement the construction budget is revised to a sum which is 10% or more above the approved budget, the PQS shall be paid an additional fee based on the time spent. The agreed rates shall be as noted in Article 4.0 of this agreement.

### ARTICLE 4.0 HOURLY CHARGES

4.1 For additional services requested on the project but not identified in Article 1.2 of this agreement, the following rates will be charged.

Principal	\$ _____ per hour/diem
Principal performing other work	\$ _____ per hour/diem
Senior Quantity Surveyor	\$ _____ per hour/diem
Quantity Surveyor	\$ _____ per hour/diem
Junior Quantity Surveyor	\$ _____ per hour/diem
Technical Assistant	\$ _____ per hour/diem

### ARTICLE 5.0 PAYMENT OF ACCOUNTS, INTEREST & COPYRIGHT

5.1 The PQS's fees shall be paid monthly in direct proportion to the amount of work done, or as otherwise set out in the Form of Agreement. The PQS's account for fees and disbursements is due when presented. Accounts overdue by 30 days or more will be subject to interest charges of \_\_\_\_\_% per annum as set-out in the Form of Agreement.

5.2 Payment of the PQS's fees give the Client the right to use, for their intended purpose only, the documents prepared by the PQS as instruments of service. The copyright and ownership of these instruments of service remains with the PQS and may not be used for any other project, or sold, or offered for sale (or as part of a sale of property) by the Client, unless the PQS has given written consent accordingly.



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### ARTICLE 6.0 TERMINATION

- 6.1 Either party may terminate this agreement at any time upon giving notice in writing at least thirty days prior to the date of termination. In the event of such termination, the PQS shall be paid for his services to the date of termination on the following basis:

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### ARTICLE 7.0 ARBITRATION

- 7.1 All matters in dispute between the parties under this agreement shall be submitted to arbitration by a single arbitrator in accordance with the laws of the Province of \_\_\_\_\_ at the application of either party. The award of the arbitration board shall be final and binding on both parties.

### ARTICLE 8.0 INSURANCE

- 8.1 The PQS shall, during the term of this agreement, provide, maintain and pay for the following insurance: Comprehensive General Liability Insurance in an amount not less than \$\_\_\_\_\_ inclusive per occurrence, insuring against bodily injury, personal injury and property damage. Automobile Liability on all vehicles owned, operated or licensed in the name of the PQS in the amount not less than \$1,000,000.

### ARTICLE 9.0 OWNERSHIP OF DOCUMENTS

- 9.1 All estimates, budgets, reports, and similar documents prepared by the PQS shall remain the property of the PQS. The Client shall have access to all documents and worksheets related to the project and they shall be made available upon request. Should copies be required, they shall be prepared by the PQS. The cost of reproduction shall be borne by the Client.
- 9.2 All documentation provided to the PQS in the provision of services shall remain in the hands of the PQS. The PQS acknowledges that this is for record only and ownership of the documents so provided does not transfer to the PQS.



**QUANTITY SURVEYING & COST CONSULTING SERVICES  
SCHEDULE OF SERVICES AND RECOMMENDED CHARGES**

**ARTICLE 10.0 CONFIDENTIALITY**

10.1 The PQS shall not divulge any information that has been given to him or acquired by him on a confidential basis in the course of carrying out services as provided herein.

**ARTICLE 11.0 COST ACCURACY**

11.1 Pricing by the PQS reflects probable construction costs obtainable in the location of the project as of the date of the report and is a determination of fair market value for the construction of this project and should not be taken as a prediction of low bid.

11.2 This pricing assumes competitive bidding for every portion of the construction work including all subcontractors as well as the general contractor, and assumes a minimum of five (5) general bidders. If fewer bids are received, the bid results can be expected to be higher.

11.3 It is recognized, however, that the PQS does not have control over the cost of labour, materials or equipment, over a contractor's methods of determining bid prices, or over competitive bidding, market or negotiation conditions.

11.4 Accordingly, the PQS cannot and does not warrant or represent that bids or negotiated prices will not vary from this nor any subsequent estimate of construction cost or evaluation prepared by or agreed to by the PQS.

**ARTICLE 12.0 ADDRESSES FOR NOTICE**

12.1 Notices in writing between the Client and the PQS should be addressed as follows:

To the Client at:

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To the PQS at:

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Canadian Institute of  
Quantity Surveyors

Institut canadien des  
économistes en construction

**QUANTITY SURVEYING & COST CONSULTING SERVICES  
SCHEDULE OF SERVICES AND RECOMMENDED CHARGES**

IN WITNESS HEREOF the parties hereto have executed this Agreement in \_\_\_\_\_  
on the day of \_\_\_\_\_ in the year \_\_\_\_\_.

**CLIENT**

\_\_\_\_\_  
*name of client*

\_\_\_\_\_  
*signature*

\_\_\_\_\_  
*name and title of person signing*

**WITNESS**

\_\_\_\_\_  
*signature*

\_\_\_\_\_  
*name and title of person signing*

**PROFESSIONAL QUANTITY  
SURVEYOR**

\_\_\_\_\_  
*name of professional quantity surveyor*

\_\_\_\_\_  
*signature*

\_\_\_\_\_  
*name and title of person signing*

**WITNESS**

\_\_\_\_\_  
*signature*

\_\_\_\_\_  
*name and title of person signing*



## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### Contact us

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Institut canadien des économistes en construction (ICÉC)**

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Web site: [www.aeecq.org](http://www.aeecq.org)

**Canadian Institute of Quantity Surveyors (CIQS)- Maritimes/  
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Website: [www.nsaqs.org](http://www.nsaqs.org)

**Canadian Institute of Quantity Surveyors (CIQS) – Newfoundland & Labrador/  
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## QUANTITY SURVEYING & COST CONSULTING SERVICES SCHEDULE OF SERVICES AND RECOMMENDED CHARGES

### Publications

The following publications are produced by the Canadian Institute of Quantity Surveyors. For ordering information, contact the Canadian Institute of Quantity Surveyors at (905) 477-0008 or order on-line at [www.ciqs.org](http://www.ciqs.org).

#### **Method of Measurement of Construction Works**

8th edition, 2006. ISBN # 978-1-896606-09-1

#### **Elemental Cost Analysis, Measurement of Buildings by Area & Volume**

4th edition, 2006. ISBN # 1-896606-07-5

#### **Construction Budgeting**

3rd edition, 2011. ISBN #978-1-896606-19-9

#### **Canadian Building Law**

5th edition, 2001. ISBN # 1-896606-34-2

#### **Construction Planning & Scheduling – An Introduction**

1st edition, 1997. ISBN # 1-896606-16-4

#### **Available Services & Finding, Selecting and Engaging a Professional Quantity Surveyor/Services offerts & Guide pour rechercher, sélectionner et engager un économiste en construction agréé**

2nd edition, 2006. ISBN # 1-896606-05-9

#### **Quantity Surveying & Cost Consulting Services – Schedule of Services and Recommended Charges/Économie de la construction & services de consultation en coûts – Liste des services et honoraires recommandés**

6th edition, 2012. ISBN # 978-1-896606-23-7

#### **Career Information**

2010 ISBN # 978-1-896606-21-0

#### **Construction Economist (quarterly journal of the CIQS)**

ISBN # 0836-6179

#### **Index of Standard Abbreviations**

2nd edition, 1994.

#### **Estimate Pads (take-off paper)**



Canadian Institute of  
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Institut canadien des  
économistes en construction

1                                   **TECHNICAL CONFERENCE UNDERTAKING - JT 1.16**

2

3   **JT 1.16**

4   To file a Geotechnical Report for the East Campus. Also to advise what testing of the site was  
5   done prior to the acquisition of the property, or what was done on the site prior to the acquisition  
6   of the property.

7   \_\_\_\_\_

8   **RESPONSE:**

9

10 Please find enclosed Attachment JT 1.16(A): East Campus Geotechnical Investigation Report.  
11 This document was prepared by the provincially-certified environmental firm Paterson Group  
12 and is dated May 10, 2016.

13

14 In addition, Table A below provides a listing of the land, geotechnical, environmental, and  
15 engineering testing, reports, and studies made available to Hydro Ottawa prior to the acquisition  
16 of the property in 2013. As shown, there was extensive technical land data available, including  
17 multiple geotechnical and environmental reports, tree and natural assessment reports, and a  
18 Ministry of Environment Record of Site Condition dated October 2007. This was considered  
19 sufficient for Hydro Ottawa to perform the necessary pre-purchase due diligence for the property  
20 acquisition.

1 **Table A – Land, Geotechnical, and Environmental Reports Made Available to Hydro**  
2 **Ottawa Prior to the Acquisition of Land for the East Campus**

Report Name and Reference	
Hawthorne Environmental	
3.101_07.05.1993_Phase 1 Environmental Assessment Jacques Whitford	
3.102_30.07.1993_Phase 2 Environmental Assessment Jacques Whitford	
3.103_27.10.1993_Phase 2 Environmental Groundwater & Methane Jacques Whitford	
3.104_03.11.2000_Phase 2 Enviro Jacques Whitford	
3.105_15.12.2000_Monitoring Well & Ground Sampling Jacques Whitford	
3.106_02.01.2003_Methane Sampling & Ground Water Monitoring Jacques Whitford	
3.107_25.04.2003_MOE Information	
3.108_16.05.2003_Preliminary Environmental Geotechnical John D Paterson	
3.109_28.05.2003_2 Environmental	
3.110_09.08.2007_Environmental Review John D Paterson	
3.111_11.09.2007_Environmental Sampling John D Paterson	
3.112_28.11.2007_Phase 1 Environmental Assessment John D. Paterson	
3.113_02.10.2007_Record of Site Condition Number 33502	
3.114_30.09.2009_Tree Conservation Report IFS Associates	
3.115_00.11.2009_Natural Environmental Assessment Brunton Consulting Services	
3.116_17.06.2010_Integrated Environmental Review Delcan	
Hawthorne Geotechnical	
3.201_16.05.2003_Preliminary Geotechnical John D. Paterson	
3.202_28.12.2007_Geotechnical Review Report PG1582 Paterson Group	
3.203_01.12.2009_Geotechnical Investigation	

3





Geotechnical  
Engineering

Environmental  
Engineering

Hydrogeology

Geological  
Engineering

Materials Testing

Building Science

Archaeological Services

## **Geotechnical Investigation**

Proposed Hydro Ottawa East Operations  
Hunt Club Road at Hawthorne Road  
Ottawa, Ontario

Prepared For

Hydro Ottawa

**Paterson Group Inc.**  
Consulting Engineers  
154 Colonnade Road South  
Ottawa (Nepean), Ontario  
Canada K2E 7J5

Tel: (613) 226-7381  
Fax: (613) 226-6344  
[www.patersongroup.ca](http://www.patersongroup.ca)

May 10, 2016

Report: PG3590-1 Revision 1

## Table of Contents

	Page
1.0 Introduction. . . . .	1
2.0 Proposed Project. . . . .	1
3.0 Method of Investigation	
3.1 Field Investigation. . . . .	2
3.2 Field Survey. . . . .	3
3.3 Laboratory Testing. . . . .	3
4.0 Observations	
4.1 Surface Conditions. . . . .	4
4.2 Subsurface Profile.. . . .	4
4.3 Groundwater. . . . .	5
5.0 Discussion	
5.1 Geotechnical Assessment. . . . .	6
5.2 Site Grading and Preparation.. . . .	6
5.3 Foundation Design.. . . .	8
5.4 Design for Earthquakes. . . . .	8
5.5 Basement Slab. . . . .	9
5.6 Pavement Structure.. . . .	9
6.0 Design and Construction Precautions	
6.1 Foundation Drainage and Backfill. . . . .	12
6.2 Protection of Footings Against Frost Action.. . . .	12
6.3 Excavation Side Slopes. . . . .	12
6.4 Pipe Bedding and Backfill.. . . .	13
6.5 Groundwater Control.. . . .	14
6.6 Winter Construction.. . . .	14
7.0 Recommendations. . . . .	15
8.0 Statement of Limitations. . . . .	16

## Appendices

- Appendix 1    Soil Profile and Test Data Sheets  
                 Symbols and Terms
  
- Appendix 2    Figure 1 - Key Plan  
                 Aerial Photographs  
                 Drawing PG3590-1 - Test Hole Location Plan

## 1.0 Introduction

Paterson Group (Paterson) was commissioned by Cresa Toronto on behalf of Hydro Ottawa to conduct a geotechnical investigation for a proposed Hydro Ottawa operations to be located along Hunt Club Road, just east of Hawthorne Road, in the City of Ottawa, Ontario (refer to Figure 1 - Key Plan in Appendix 2).

The objectives of the current investigation were to:

- ☐ Determine the subsurface soil and groundwater conditions by means of boreholes.
- ☐ Provide geotechnical recommendations for the design of the proposed development including construction considerations which may affect the design.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. This report contains the findings and recommendations pertaining to the design and construction of the subject development as understood at the time of writing this report.

Investigating the presence or potential presence of contamination on the subject property was not part of the scope of work for this geotechnical investigation.

## 2.0 Proposed Project

Based on the current site plan, a five storey administrative building (EC1) with a basement level is to be located within the south portion of the site along Hunt Club Road. A large structure housing a garage area and material management space (EC2) is to be constructed within the west portion of the site along with an additional building (PILC - EC3) of slab-on-grade construction to be located within the north portion of the site. The remainder of the site will consist of parking areas, access lanes and landscaped areas.

## **3.0 Method of Investigation**

### **3.1 Field Investigation**

#### **Field Program**

The field program for the current investigation was completed on November 3, 4, 6, 9 and November 19, 2015. A total of 16 boreholes and 9 probeholes were completed across the subject site. The test hole locations were distributed in a manner to provide general coverage of the subject site. The locations of the test holes are shown on Drawing PG3590-1 - Test Hole Location Plan included in Appendix 2.

The boreholes and probeholes were completed by Paterson were drilled with a truck-mounted auger drill rig operated by a two-person crew. All fieldwork was conducted under the full-time supervision of Paterson personnel under the direction of a senior engineer. The drilling procedure consisted of augering to the required depths at the selected locations, sampling and testing the overburden.

#### **Sampling and In Situ Testing**

Soil samples were recovered with a 50 mm diameter split-spoon sampler or from the auger flights. The split-spoon and auger samples were classified on site, placed in sealed plastic bags, and transported to the laboratory for further review. The depths at which the split-spoon and auger samples were recovered from the boreholes are shown as SS and AU, respectively, on the Soil Profile and Test Data sheets in Appendix 1.

The Standard Penetration Test (SPT) was conducted in conjunction with the recovery of the split-spoon samples. The SPT results are recorded as "N" values on the Soil Profile and Test Data sheets and is the number of blows required to drive the split-spoon sampler 300 mm into the soil after a 150 mm initial penetration using a 63.5 kg hammer falling from a height of 760 mm.

Subsurface conditions observed in the boreholes were recorded in detail in the field. The soil profiles are presented on the Soil Profile and Test Data sheets in Appendix 1.

## **Groundwater**

A flexible piezometer pipe was installed within the boreholes to permit monitoring of the groundwater levels subsequent to the completion of the sampling program.

## **Sample Storage**

All samples will be stored in the laboratory for a period of one month after issuance of this report unless we are otherwise directed.

### **3.2 Field Survey**

The ground surface elevation at the test hole location and test hole location were surveyed by Annis, O'Sullivan and Vollebekk Limited. The ground surface elevations are referenced to a geodetic datum.

### **3.3 Laboratory Testing**

Soil samples were recovered from the subject site and visually examined in the laboratory to review the field log results.

## **4.0 Observations**

### **4.1 Surface Conditions**

The subject site is vacant and the majority of the site was formerly occupied by a bedrock quarry operation. Currently, the ground surface across the site is grass and brush covered, and the grade slopes downward to the east-central portion of the site with a grade difference of approximately 2 to 4 m below the surface elevation of Hunt Club Road. Historical aerial photographs indicate that the quarried area was located within the central and north portions of the site. The south portion of the site was not impacted by the quarry operation. A historical aerial photograph from 1976 of the subject site is enclosed in Appendix 2 which indicates the quarry excavated limits.

### **4.2 Subsurface Profile**

The subsurface profile encountered at the test hole locations within the south portion of the site consisted of a topsoil layer underlain by a sandy silt and/or clayey silt to silty clay layer followed by a glacial till deposit. Based on the SPT values and undrained shear strength testing, the native silty clay layer was noted to be a stiff to very stiff consistency.

The subsurface profile encountered at the test hole locations within the remainder of the subject site consisted of a topsoil layer underlain by a silty sand to silty clay fill layer with occasional organic layers. Methane gas pockets were encountered at several borehole locations at depth within the fill material. It is assumed the methane gas was associated with the decomposition of the observed organic layers within the fill material. Specific details of the subsurface profile at each test hole location are presented on the Soil Profile and Test Data sheets in Appendix 1.

Based on available geological mapping, the subject site is located in an area where the bedrock consists of interbedded limestone and shale from the Billings formation. Also, based on available geological mapping and historical information, the overburden thickness is expected to range from 5 to 20 m.

### 4.3 Groundwater

The groundwater level readings within the piezometers installed at the borehole locations were taken on November 23, 2015. The readings are presented in the Soil Profile and Test Data sheets presented in Appendix 1. It should be noted the water can become trapped within a backfilled borehole, which can lead to higher than normal groundwater level readings. The long-term groundwater level can also be estimated based on the recovered soil samples' moisture levels, consistency and colouring. Based on these observations, the long-term groundwater level is estimated to be between 3 to 4 m depth. The groundwater level could be different at the time of construction due seasonal fluctuations.



## **5.0 Discussion**

### **5.1 Geotechnical Assessment**

The subject site is considered satisfactory from a geotechnical perspective for the proposed development. It is anticipated that the proposed building (EC1) within the south portion of the subject site will be founded on spread footing foundations placed over a lean concrete in-filled trench extending to bedrock. Specific details of the lean concrete in-filled trench are provided in Subsection 5.3.

The remainder of the proposed buildings (EC2 and EC3) will be located over the previously in-filled quarry area. It is expected that ground improvement techniques will be required to provide a suitable bearing medium to support the proposed buildings on conventional spread footing foundations.

Due to the presence of methane gas pockets within the existing fill material, a passive ventilation system is recommended to be in place below the proposed building footprints to be located over the existing fill layer.

The above and other considerations are further discussed in the following sections.

### **5.2 Site Grading and Preparation**

#### **Stripping Depth**

Topsoil, and fill, containing significant amounts of deleterious or organic materials, should be stripped from under any building, paved areas, pipe bedding and other settlement sensitive structures as directed by the geotechnical consultant at the time of excavation.

#### **Fill Placement**

Fill placed for grading beneath the building areas should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or OPSS Granular B Type II. The fill material should be tested and approved prior to delivery to the site. The fill should be placed in maximum 300 mm thick lifts and compacted to 98% of the material's standard Proctor maximum dry density (SPMDD).

Non-specified existing fill along with site-excavated soil can be placed as general landscaping fill where settlement is a minor concern of the ground surface. These materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids. If these materials are to be placed to increase the subgrade level for areas to be paved, the fill should be compacted in maximum 300 mm thick lifts and to a minimum density of 95% of the respective SPMDD. Non-specified existing fill and site-excavated soils are not suitable for placement as backfill against foundation walls unless a composite drainage blanket connected to a perimeter drainage system is provided along the foundation perimeter.

### 5.3 Foundation Design

#### Building EC1 - Conventional Shallow Footings

Footings placed on an undisturbed, very stiff silty clay bearing surface or compact glacial till bearing surface can be designed using a bearing resistance value at serviceability limit states (SLS) of **250 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **400 kPa**. A geotechnical resistance factor of 0.5 was applied to the bearing resistance value at ULS. Footings designed using the bearing resistance value at SLS will be subjected to potential post-construction total and differential settlements of 25 and 20 mm, respectively.

An undisturbed soil bearing surface consists of a surface from which all topsoil and deleterious materials, such as loose, frozen or disturbed soil, whether in situ or not, have been removed, in the dry, prior to the placement of concrete for footings.

#### Building EC1 - Footings Placed over Lean Concrete In-filled Trench

Alternatively, footings placed over a zero entry, lean concrete in-filled trench extending to the bedrock surface can be designed using a bearing resistance value at SLS of **1,000 kPa** and a factored bearing resistance value at ULS of **1,500 kPa**. The zero entry trench should extend at least 300 mm beyond the outside footing face. A minimum 15 MPa lean concrete should extend from a clean, bedrock surface to underside of footing level. The bedrock surface should be reviewed and approved by the geotechnical consultant at the time of excavation.

#### Buildings EC-2, EC-3 and EC-4

Consideration should be given to undertaking a ground improvement program consisting of dynamic compaction to consolidate the deep underlying fill layer and will consist of the following:

- ☐ Compaction of the entire building footprint areas. The compaction would extend at least 5 m beyond the footprint of the building.
- ☐ The design criteria for this ground improvement program would consist of the following:
  - ☐ Bearing resistance value (SLS). . . . . 150 kPa
  - ☐ Bearing resistance value (ULS). . . . . 225 kPa
  - ☐ Long term total design settlement. . . . . 25 mm
  - ☐ Long term differential design settlement. . . . . 20 mm
- ☐ The successful completion of the above ground improvement would allow for conventional spread footing foundations and floor slab construction.
- ☐ A 900 mm thick granular working mat consisting of blast rock or crushed concrete (150 mm minus) or an OPSS Granular B Type II crushed stone will be required for the areas being subjected to ground improvement. A portion of the material will be driven into the underlying fill layer due to the pounding from the ground improvement operation. Once completed, this layer can be regraded and any plus material can be placed elsewhere on site where granular material is required (parking areas and access roadways).
- ☐ The parking areas and access roadways would be compacted using conventional ride on roller methods. It is expected that minor long-term settlements could be tolerated. Furthermore, the paving of the parking and access roadway areas would only take place once sufficient time was provided to consolidate the underlying fill materials to help lessen the effects of long term settlement.

For design purposes, structures founded on an engineered fill pad directly over the improved fill bearing surface can be designed using a modulus of subgrade reaction of **30 MPa/m**.

### **Lateral Support**

The bearing medium under footing-supported structures is required to be provided with adequate lateral support with respect to excavations and different foundation levels. Adequate lateral support is provided to a silty clay, glacial till above the groundwater table when a plane extending horizontally and vertically downward from the footing perimeter at a minimum of 1.5H:1V slope passing through in situ soil of the same or higher capacity as the bearing medium soil.

## 5.4 Design for Earthquakes

The site class for seismic site response can be taken as **Class A** for the foundation at the Administration building (EC1) to be located within the south portion of the subject site. A site specific seismic shear wave velocity test will be completed to confirm the Class A. The results of the shear wave velocity test will be issued under separate cover. The site class for the foundations within the remainder of the site can be taken as **Class D**. The soils underlying the subject site are not susceptible to liquefaction. Refer to the latest revision of the 2012 Ontario Building Code for a full discussion of the earthquake design requirements.

## 5.5 Slab-on-Grade Construction

### Granular Material Requirements

The removal of all topsoil and deleterious fill, such as those containing organic materials, within the proposed building(s) footprint, the native soil surface or approved ground improvement area will be considered to be an acceptable subgrade on which to commence backfilling for floor slab construction. It is recommended that the upper 150 mm of sub-floor fill consist of Granular A crushed stone. All backfill materials within the footprint of the proposed buildings should be placed in maximum 300 mm loose lifts and compacted to at least 98% of its SPMDD.

### Methane Passive Ventilation

Due to organic pockets within the deeper fill areas, a passive ventilation system is required to deal with possible methane. Although no significant accumulation of methane is expected, a passive ventilation system is recommended as a precautionary measure.

For preliminary design purposes, the passive ventilation system should consist of a series of 150 mm perforated, corrugated PVC pipes extending across the entire building footprint and placed at a maximum 6 m spacing. The perforated pipe should be surrounded with 10 mm clear stone and should be located at a depth of 500 mm below the underside of the floor slab.

The passive ventilation system should be connected to a goose neck solid ventilation pipe located at least 1 m above the exterior finished grade. These vertical pipes should be located at the longitudinal ends of the buildings. Additional details can be provided once a more detailed building design is completed.

## 5.6 Pavement Structure

The recommended flexible pavement structures for car only parking areas, access lanes and heavy truck parking areas and gravel training areas are presented in Tables 1 to 3.

Minimum Performance Graded (PG) 58-34 asphalt cement should be used for this project.

If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be excavated and replaced with OPSS Granular B Type II material.

<b>Table 1 - Recommended Flexible Pavement Structure - Car Only Parking Areas</b>	
<b>Thickness (mm)</b>	<b>Material Description</b>
50	<b>Wear Course</b> - HL-3 or Superpave 12.5 Asphaltic Concrete
150	<b>BASE</b> - OPSS Granular A Crushed Stone
300	<b>SUBBASE</b> - OPSS Granular B Type II
<b>SUBGRADE</b> - Either fill, in situ soil or OPSS Granular B Type I or II material placed over in situ soil or fill	

<b>Table 2 - Recommended Flexible Pavement Structure Access Lanes and Heavy Truck Parking Areas</b>	
<b>Thickness (mm)</b>	<b>Material Description</b>
40	<b>Wear Course</b> - HL-3 or Superpave 12.5 Asphaltic Concrete
50	<b>Binder Course</b> - HL-8 or Superpave 19.0 Asphaltic Concrete
150	<b>BASE</b> - OPSS Granular A Crushed Stone
400	<b>SUBBASE</b> - OPSS Granular B Type II
<b>SUBGRADE</b> - Either fill, in situ soil or OPSS Granular B Type I or II material placed over in situ soil or fill	

<b>Table 3 - Recommended Gravel Pavement Structure Training Areas</b>	
<b>Thickness (mm)</b>	<b>Material Description</b>
150	<b>BASE</b> - OPSS Granular A Crushed Stone
400	<b>SUBBASE</b> - OPSS Granular B Type II
<b>SUBGRADE</b> - Either fill, in situ soil or OPSS Granular B Type I or II material placed over in situ soil or fill	

The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 98% of the SPMDD using suitable vibratory equipment.

## **6.0 Design and Construction Precautions**

### **6.1 Foundation Drainage and Backfill**

A perimeter foundation drainage system is recommended to be provided for the proposed buildings. The system should consist of a 150 mm diameter perforated corrugated plastic pipe, surrounded on all sides by 150 mm of 19 mm clear crushed stone, placed at the footing level around the exterior perimeter of the structures. The pipe should have a positive outlet, such as a gravity connection to the storm sewer.

Backfill against the exterior sides of the foundation walls should consist of free-draining non frost susceptible granular materials. The greater part of the site excavated materials will be frost susceptible and, as such, are not recommended for placement as backfill against the foundation walls, unless placed in conjunction with a drainage geocomposite, such as Miradrain G100N or System Platon, connected to the perimeter foundation drainage system. Imported granular materials, such as clean sand or OPSS Granular B Type I granular material, should otherwise be used for this purpose.

### **6.2 Protection of Footings Against Frost Action**

Perimeter footings of heated structures are required to be insulated against the deleterious effects of frost action. A minimum of 1.5 m of soil cover alone, or a minimum of 0.6 m of soil cover, in conjunction with adequate foundation insulation, should be provided.

Exterior unheated footings, such as those for isolated exterior piers, are more prone to deleterious movement associated with frost action than the exterior walls of the heated structure and require additional protection, such as soil cover of 2.1 m or an equivalent combination of soil cover and foundation insulation

### **6.3 Excavation Side Slopes**

The side slopes of excavations in the soil and fill overburden materials should either be excavated to acceptable slopes or retained by shoring systems from the beginning of the excavation until the structure is backfilled. Sufficient room should be available in selected areas of the excavation to be completed by open-cut methods (i.e. unsupported excavations).

The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be excavated at 1H:1V or shallower. A shallower slope is required for excavation below groundwater level. The subsurface soil is considered to be mainly a Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects.

Excavated soil should not be stockpiled directly at the top of excavations and heavy equipment should be maintain safe working distance from the excavation sides.

Slopes in excess of 3 m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.

A trench box should be installed at all times to protect personnel working in trenches with steep or vertical sides. Services are expected to be installed by “cut and cover” methods and excavations should not be remain open for extended periods of time.

#### **6.4 Pipe Bedding and Backfill**

Bedding and backfill materials should be in accordance with the most recent Material Specifications & Standard Detail Drawings from the Department of Public Works and Services, Infrastructure Services Branch of the City of Ottawa.

A minimum of 150 mm of OPSS Granular A should be placed for bedding for sewer or water pipes when placed on soil subgrade. The bedding should extend to the spring line of the pipe. Cover material, from the spring line to a minimum of 300 mm above the obvert of the pipe should consist of OPSS Granular A (concrete or PSM PVC pipes) or sand (concrete pipe). The bedding and cover materials should be placed in maximum 225 mm thick lifts and compacted to 95% of the SPMDD.

Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.8 m below finished grade) should match the soils exposed at the trench walls to reduce the potential differential frost heaving. The trench backfill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of the SPMDD.



## 6.5 Groundwater Control

The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium. The rate of flow of groundwater into the excavation through the overburden should be low for the proposed founding levels. Pumping from open sumps is expected to be sufficient to control the groundwater influx through the sides of the excavations provided the excavation does not extend below the long term groundwater level.

A temporary MOECC permit to take water (PTTW) will be required for this project only if more than 50,000 L/day are to be pumped during the construction phase. A minimum of 4 to 5 months should be allowed for completion of the application and issuance of the permit by the MOECC.

## 6.6 Winter Construction

Precautions must be taken if winter construction is considered for this project.

The subsurface conditions mostly consist of frost susceptible materials. In presence of water and freezing conditions ice could form within the soil mass. Heaving and settlement upon thawing could occur.

In the event of construction during below zero temperatures, the founding stratum should be protected from freezing temperatures by the installation of straw, propane heaters and tarpaulins or other suitable means. The base of the excavations should be insulated from sub-zero temperatures immediately upon exposure and until such time as heat is adequately supplied to the building and the footings are protected with sufficient soil cover to prevent freezing at founding level.

The trench excavations should be constructed in a manner to avoid the introduction of frozen materials, snow or ice into the trenches.

Precaution must be taken where excavations are in close proximity of existing structures which may be adversely affected due to the freezing conditions. In particular, where a shoring system is installed, the soil behind the shoring system will be subjected to freezing conditions and could result in heaving of the structure(s) placed within or above frozen soil. Provisions should be made in the contract document to protect the walls of the excavations from freezing, if applicable.

## 7.0 Recommendations

For the foundation design data provided herein to be applicable that a materials testing and observation services program is required to be completed. The following aspects be performed by the geotechnical consultant:

- ☐ Observation of all bearing surfaces prior to the placement of concrete.
- ☐ Inspection of the ground improvement program.
- ☐ Sampling and testing of the concrete and fill materials.
- ☐ Observation of the placement of the foundation insulation, if applicable.
- ☐ Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.
- ☐ Observation of all subgrades prior to backfilling and follow-up field density tests to determine the level of compaction achieved.
- ☐ Field density tests to determine the level of compaction achieved.

A report confirming the construction has been conducted in general accordance with the recommendations could be issued, upon request, following the completion of a satisfactory materials testing and observation program by the geotechnical consultant.

## 8.0 Statement of Limitations

The recommendations provided are in accordance with the present understanding of the project. Paterson requests permission to review the recommendations when the drawings and specifications are completed.

A soils investigation is a limited sampling of a site. Should any conditions at the site be encountered which differ from those at the test locations, Paterson requests immediate notification to permit reassessment of our recommendations.

The recommendations provided herein should only be used by the design professionals associated with this project. They are not intended for contractors bidding on or undertaking the work. The latter should evaluate the factual information provided in this report and determine the suitability and completeness for their intended construction schedule and methods. Additional testing may be required for their purposes.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Hydro Ottawa, Cresa Toronto or their agents is not authorized without review by Paterson for the applicability of our recommendations to the alternative use of the report.

**Paterson Group Inc.**



David J. Gilbert, P.Eng.



Carlos P. Da Silva, P.Eng.

**Report Distribution:**

- ☐ Cresa Toronto (3 copies)
- ☐ Paterson Group (1 copy)

# **APPENDIX 1**

## **SOIL PROFILE AND TEST DATA SHEETS**

### **SYMBOLS AND TERMS**

# patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

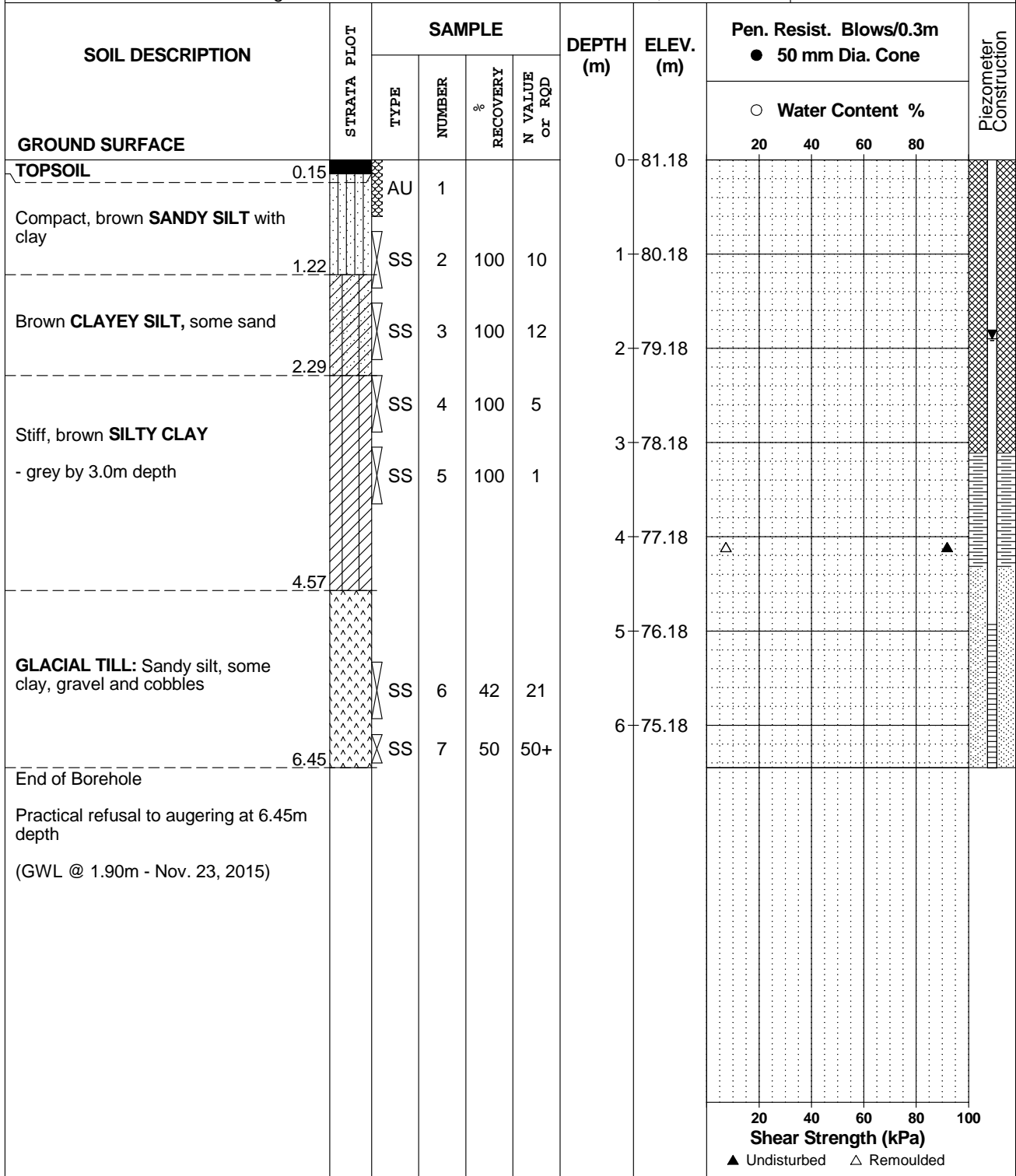
FILE NO.  
**PG3590**

REMARKS

HOLE NO.  
**BH 1**

BORINGS BY CME 55 Power Auger

DATE November 3, 2015



SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			○ Water Content %				
<b>GROUND SURFACE</b>								20	40	60	80	
<b>TOPSOIL</b>	0.15	AU	1			0	81.38					
Compact, brown <b>SANDY SILT</b> , some clay and organics		SS	2	92	18	1	80.38					
	1.52	SS	3	100	18	2	79.38					
Brown <b>CLAYEY SILT</b> , trace sand		SS	4	100	10							
	3.05	SS	5	100	6	3	78.38					
Brown <b>SILTY CLAY</b> , trace sand												
	3.81					4	77.38					
<b>GLACIAL TILL:</b> Brown sandy silt, some gravel, cobbles, boulders, trace clay		SS	6	100	50+	5	76.38					
	5.26											
End of Borehole												
Practical refusal to augering at 5.26m depth												
(BH dry @ 2.1m - Nov. 23, 2015)												
								20	40	60	80	100
								<b>Shear Strength (kPa)</b>				
								▲ Undisturbed    △ Remoulded				

[illegible]

[illegible]



# patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

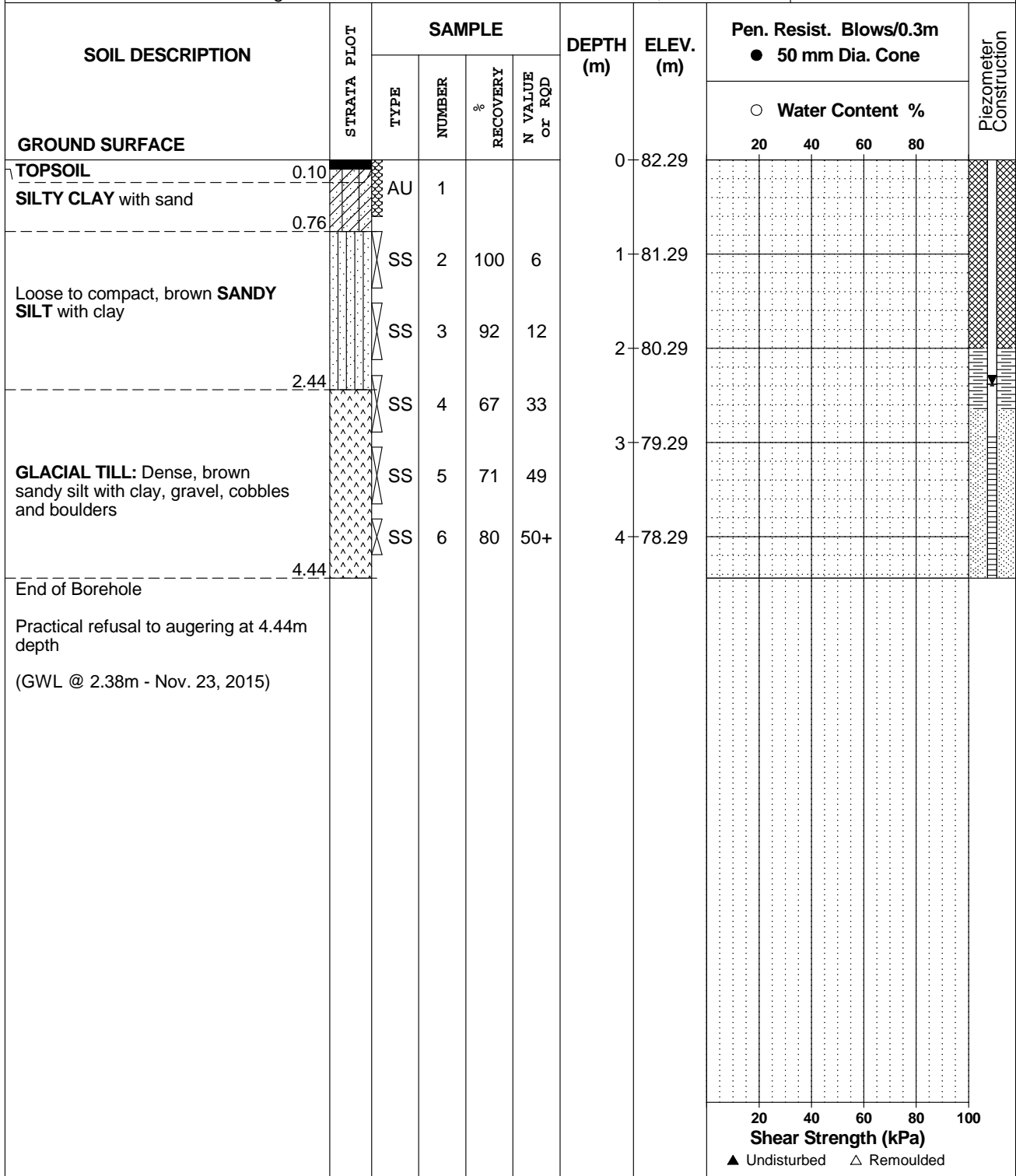
FILE NO. **PG3590**

REMARKS

HOLE NO. **BH 5**

BORINGS BY CME 55 Power Auger

DATE November 3, 2015



**patersongroup** Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Proposed Buildings - East Campus - Hunt Club Road  
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

FILE NO.  
**PG3590**

REMARKS

HOLE NO.  
**BH 6**

BORINGS BY CME 55 Power Auger

DATE November 3, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction		
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %						
								20	40	60	80			
GROUND SURFACE														
<div>FILL: Brown silty sand with clay, trace gravel and cobbles</div> <div>- organics and rootlets noted in upper 600mm of layer</div>		AU	1			0	81.54							
		SS	2	75	16	1	80.54							
		SS	3	50	21	2	79.54							
		SS	4	62	8									
		SS	5	71	3	3	78.54							
		SS	6	75	3	4	77.54							
		SS	7	92	4	5	76.54							
		SS	8	100	4									
		SS	9	21	16	6	75.54							
		SS	10	42	3	7	74.54							
		SS	11	83	6	8	73.54							
		SS	12	75	5									
		SS	13	50	6	9	72.54							
						10	71.54							
								20	40	60	80	100		
								Shear Strength (kPa)						
								▲ Undisturbed    △ Remoulded						

**patersongroup** Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

**SOIL PROFILE AND TEST DATA**

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

FILE NO. **PG3590**

REMARKS

HOLE NO. **BH 6**

BORINGS BY CME 55 Power Auger

DATE November 3, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						10	71.54						
FILL: Brown silty sand with clay, trace gravel and cobbles						11	70.54						
						12	69.54						
						13	68.54						
						14	67.54						
						15	66.54						
						16	65.54						
						17	64.54						
						18	63.54						
End of Borehole	18.69												
Practical refusal to augering at 18.69m depth													
(GWL @ 3.55m - Nov. 23, 2015)													
								20	40	60	80	100	
								Shear Strength (kPa)					
								▲ Undisturbed    △ Remoulded					

# patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

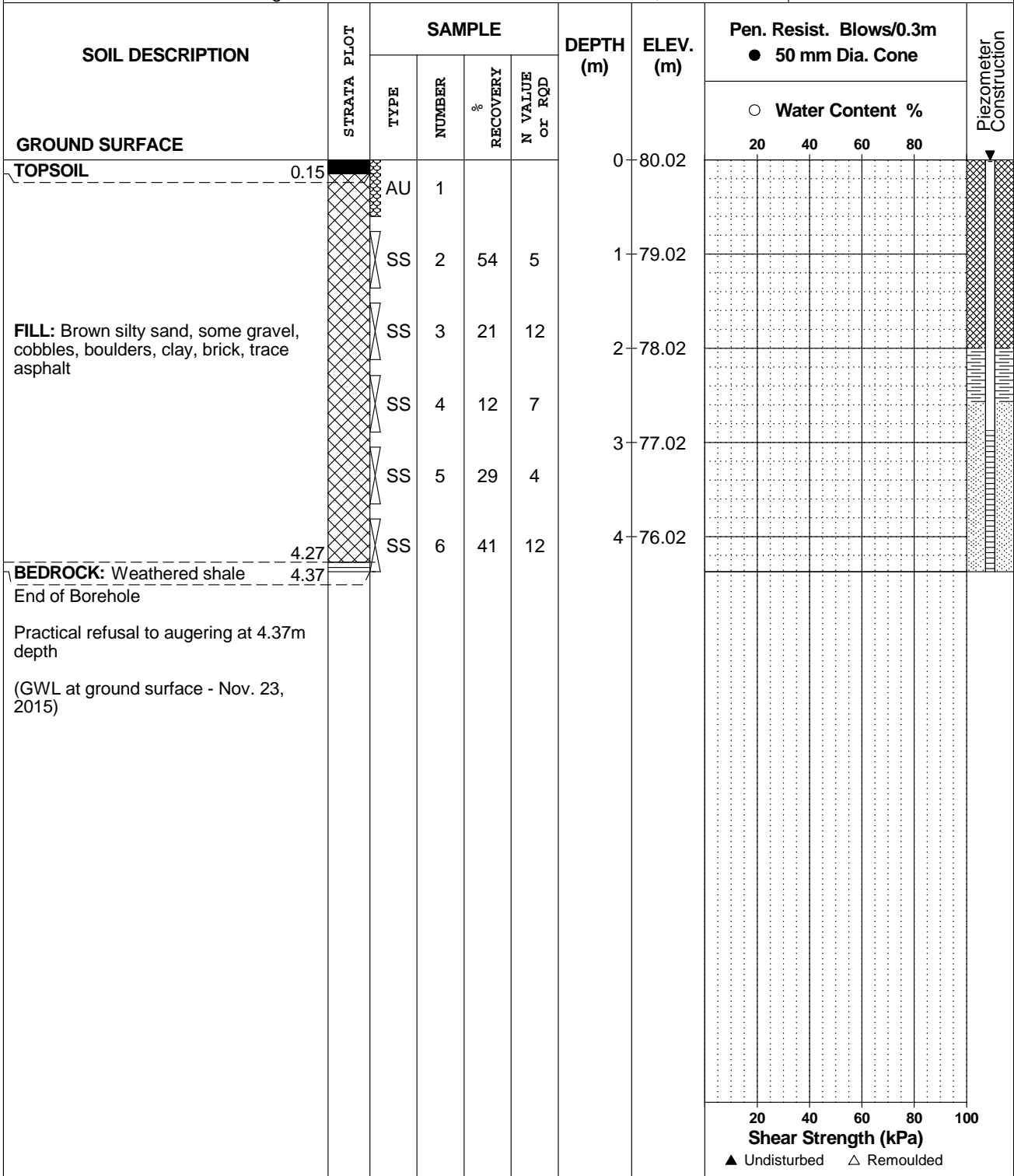
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REMARKS

HOLE NO. **BH 7**

BORINGS BY CME 55 Power Auger

DATE November 4, 2015



# patersongroup Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

FILE NO.  
**PG3590**

REMARKS

HOLE NO.  
**BH 8**

BORINGS BY CME 55 Power Auger

DATE November 4, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
FILL: Dark brown sandy silt, some gravel and cobbles		AU	1			0	79.33					
		SS	2	33	13	1	78.33					
FILL: Brown silty clay with sand and gravel  - glass pieces at 2.8m depth		SS	3	38	9	2	77.33					
		SS	4	62	5							
		SS	5	21	4	3	76.33					
		SS	6	100	2	4	75.33					
		SS	7	92	4	5	74.33					
		SS	8	100	2	6	73.33					
		SS	9	100	4							
		SS	10	100	4	7	72.33					
		SS	11	67	12	8	71.33					
		SS	12	46	37	9	70.33					
		SS	13	50	36							
FILL: Grey silty sand with clay, gravel, cobbles, boulders and organics						10	69.33					

20406080100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
GROUND SURFACE								20	40	60	80	
<b>FILL:</b> Grey silty sand with clay, gravel, cobbles, boulders and organics						10	69.33					
						11	68.33					
						12	67.33					
		SS	14	33	13	13	66.33					
						14	65.33					
		SS	15	50	10	15	64.33					
						16	63.33					
					17	62.33						
End of Borehole	17.27											
Practical refusal to augering at 17.27m depth												
(GWL @ 2.75m - Nov. 23, 2015)												
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				

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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

FILE NO.  
**PG3590**

REMARKS

HOLE NO.  
**BH 9**

BORINGS BY CME 55 Power Auger

DATE November 4, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
TOPSOIL	0.10	AU	1			0	80.20					
FILL: Brown silty sand with clay, gravel, cobbles, trace brick		SS	2	62	10	1	79.20					
		SS	3	50	13	2	78.20					
		SS	4	25	7							
		SS	5	25	10	3	77.20					
		SS	6	33	10	4	76.20					
		SS	7	42	6	5	75.20					
		SS	8	62	24	6	74.20					
		SS	9	33	2							
		SS	10	50	8	7	73.20					
		SS	11	25	9	8	72.20					
- decaying wood debris at 5.7m depth		SS	12	50	11	9	71.20					
	7.92	SS	13	79	15							
FILL: Brown silty sand with clay, gravel, cobbles, organics and trace brick						10	70.20					
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				

FILL: Brown silty sand with clay, gravel, cobbles, trace brick

- decaying wood debris at 5.7m depth

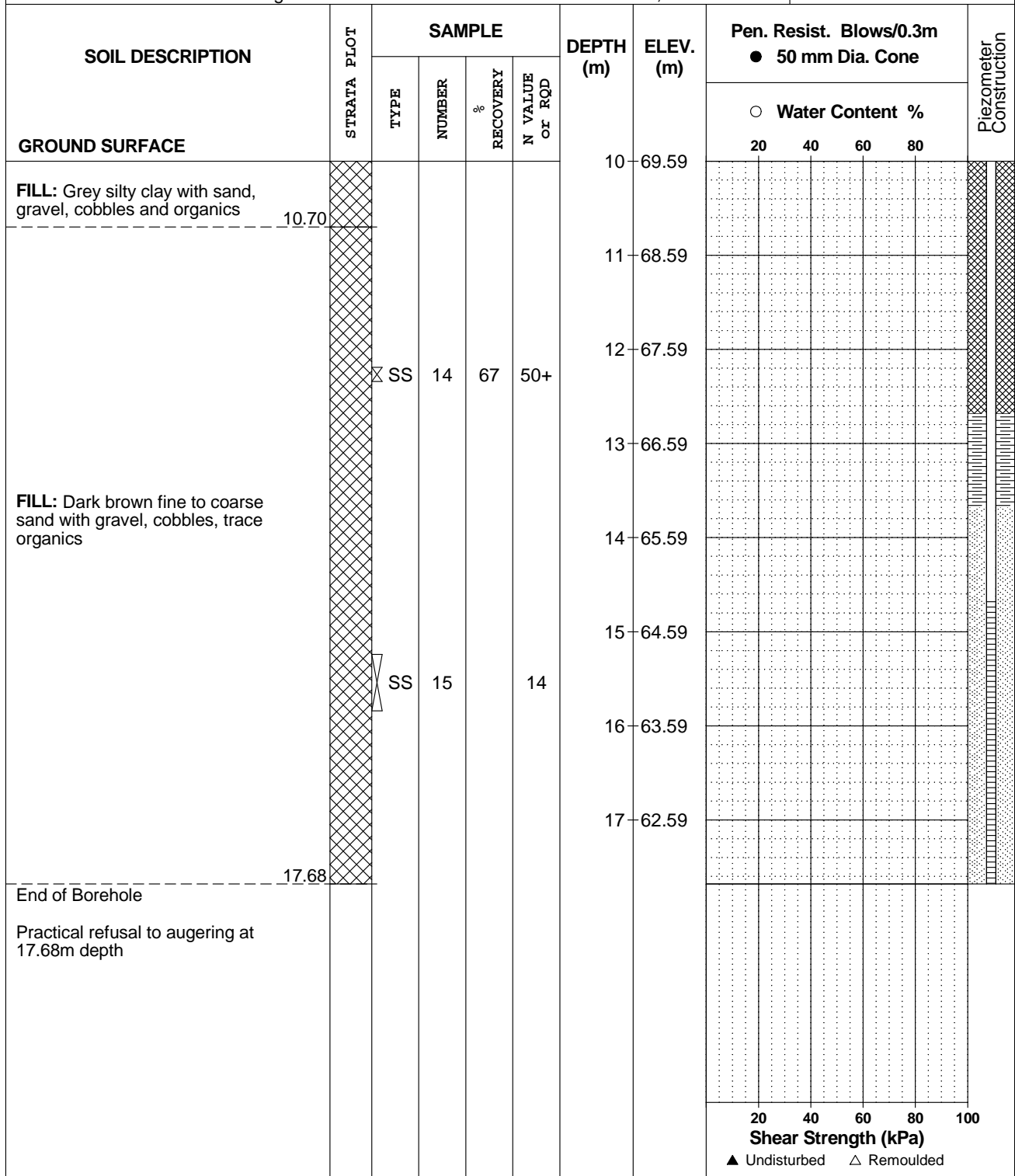
FILL: Brown silty sand with clay, gravel, cobbles, organics and trace brick

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
GROUND SURFACE								20	40	60	80	
<b>FILL:</b> Brown silty sand with clay, gravel, cobbles, organics and trace brick		SS	14	50	29	10	70.20					
						11	69.20					
						12	68.20					
						13	67.20					
						14	66.20					
						15	65.20					
						16	64.20					
				17	63.20							
End of Borehole	17.86											
Practical refusal to augering at 17.86m depth  (GWL @ 2.88m - Nov. 23, 2015)												
							20	40	60	80	100	
							Shear Strength (kPa)					
							▲ Undisturbed    △ Remoulded					



[illegible]

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
GROUND SURFACE								20	40	60	80	
<b>FILL:</b> Dark brown sandy silt, some gravel and cobbles  - brick pieces at 1.8m depth		AU	1			0	79.59					
		SS	2	100	20	1	78.59					
		SS	3	67	32	2	77.59					
		SS	4	58	20	3	76.59					
		SS	5	21	14	4	75.59					
<b>FILL:</b> Brown fine to coarse sand with gravel, some clay and organics  - decaying wood debris from 5.5 to 6.5m depth	3.80	SS	6	21	12	4	75.59					
		SS	7	8	11	5	74.59					
		SS	8	12	11	6	73.59					
		SS	9	17	6	7	72.59					
		SS	10	12	17	8	71.59					
<b>FILL:</b> Grey silty clay with sand, gravel, cobbles, organics	7.62	SS	11	4	5	8	71.59					
		SS	12	54	6	9	70.59					
		SS	13	58	10	10	69.59					
						10	69.59					



**patersongroup** Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
Proposed Buildings - East Campus - Hunt Club Road  
Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.




FILE NO.  
**PG3590**

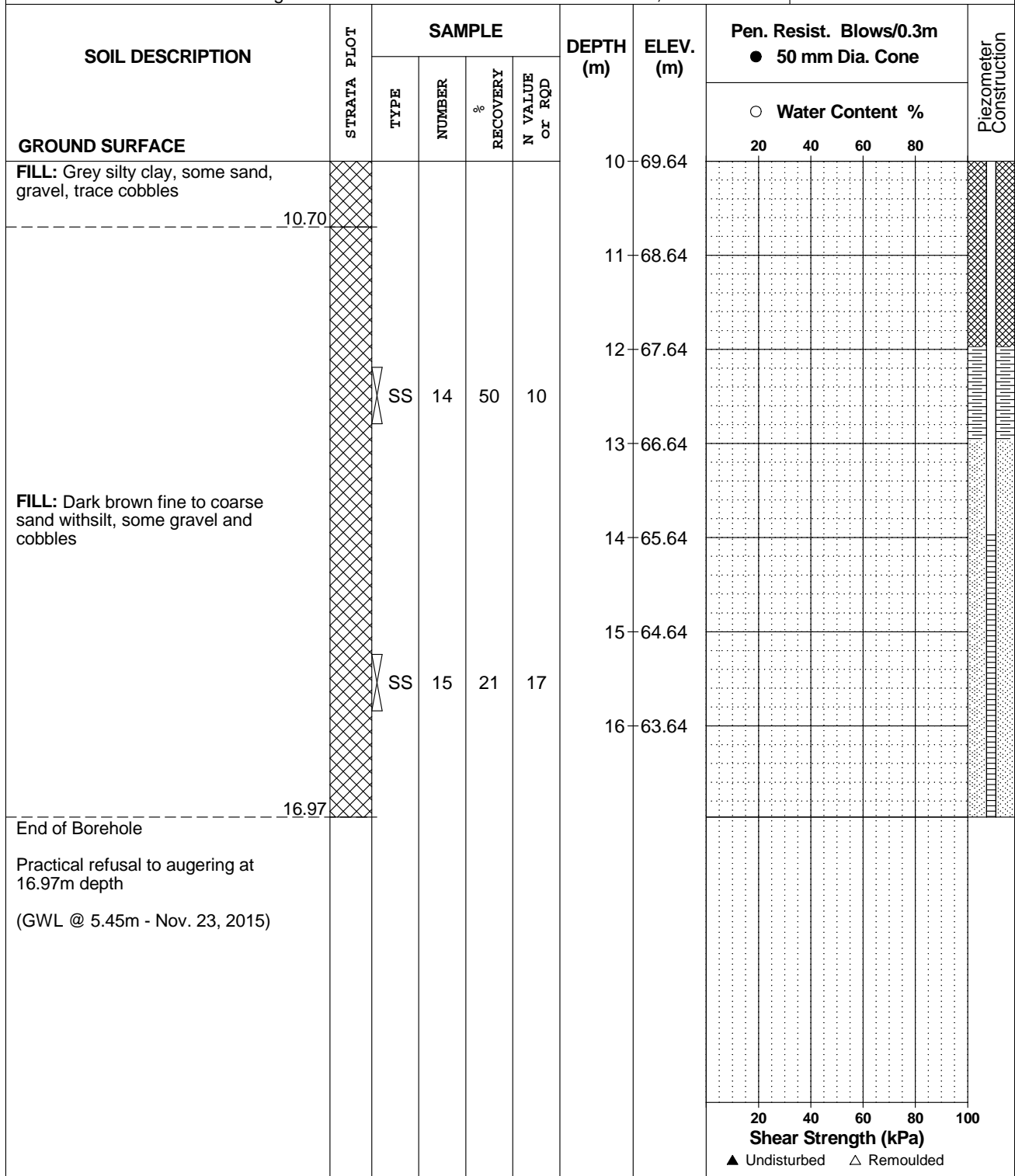
REMARKS

HOLE NO.  
**BH12**

BORINGS BY CME 55 Power Auger

DATE November 6, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE						0	79.64					
FILL: Dark brown sandy silt with gravel, some cobbles and clay		AU	1									
		SS	2	67	13	1	78.64					
		SS	3	50	45	2	77.64					
		SS	4	67	3	3	76.64					
		SS	5	33	4	4	75.64					
	3.75	SS	6	17	50+	5	74.64					
FILL: Brown fine to coarse sand with gravel, cobbles, trace boulders		SS	7	33	50+	6	73.64					
		SS	8	78	50+	7	72.64					
		SS	9	83	7	8	71.64					
	6.10	SS	10	75	60	9	70.64					
FILL: Grey silty clay, some sand, gravel, trace cobbles		SS	11	58	12	10	69.64					
		SS	12	62	5							
		SS	13	71	22							
						10	69.64					
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				



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154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

FILE NO.  
**PG3590**

REMARKS

HOLE NO.  
**BH13**

BORINGS BY CME 55 Power Auger

DATE November 6, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
FILL: Crushed stone	0.30	AU	1			0	79.65					
FILL: Brown silty sand with gravel, cobbles, boulders, trace clay		SS	2	100	27	1	78.65					
		SS	3	62	9	2	77.65					
		SS	4	75	13							
		SS	5	83	23	3	76.65					
		SS	6	100	10	4	75.65					
		SS	7	67	50+	5	74.65					
		SS	8	88	50+							
		SS	9	29	10	6	73.65					
		SS	10	21	15	7	72.65					
		SS	11	21	25	8	71.65					
		SS	12	83	5	9	70.65					
		SS	13	42	9							
							10	69.65				
								20	40	60	80	100
								Shear Strength (kPa)				
								▲ Undisturbed    △ Remoulded				

[illegible]

[illegible]



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## SOIL PROFILE AND TEST DATA

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 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

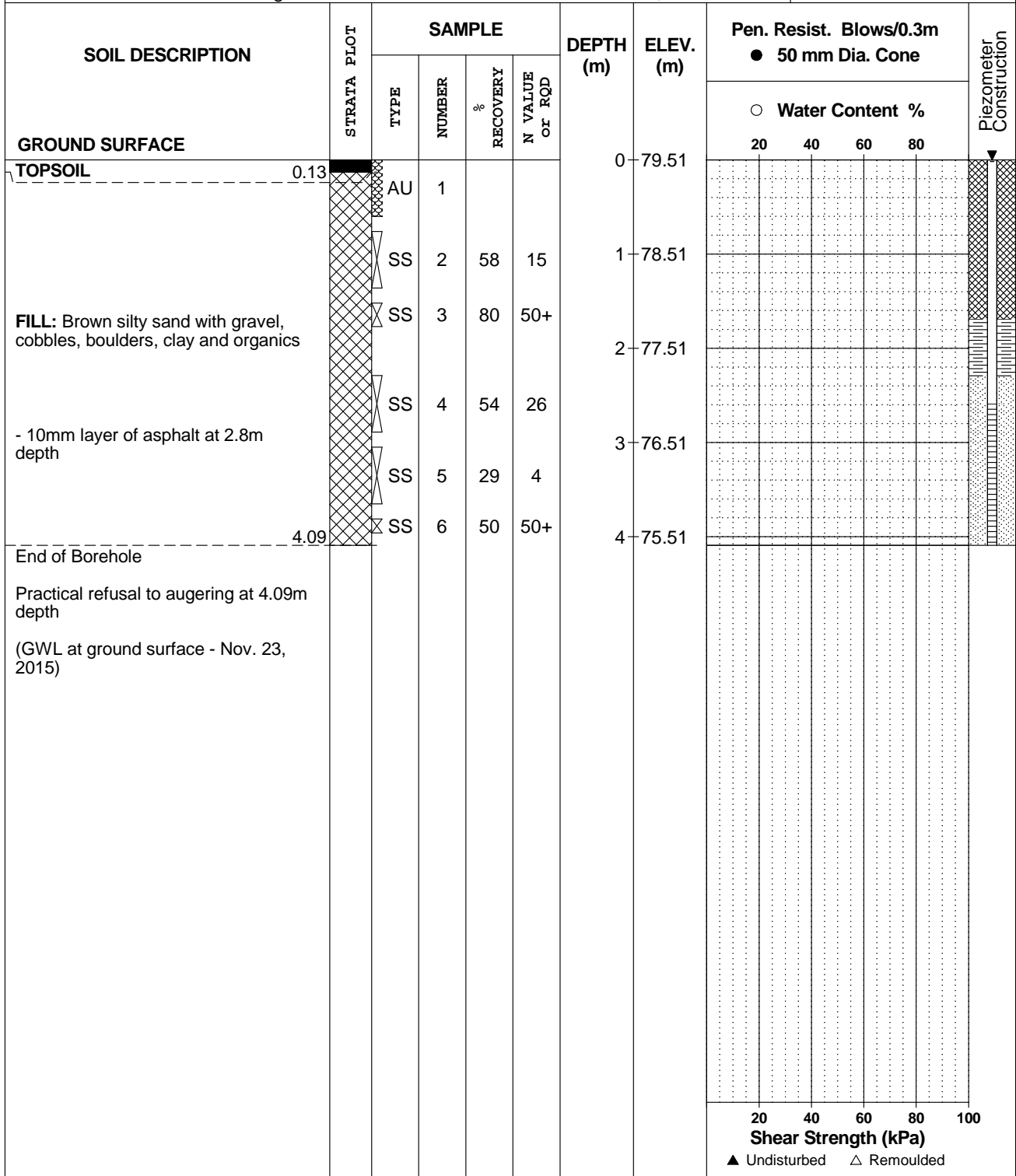
FILE NO.  
**PG3590**


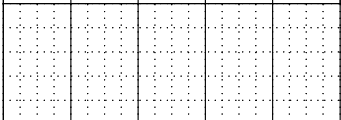

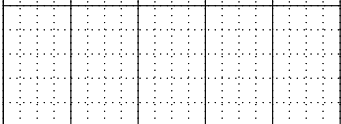
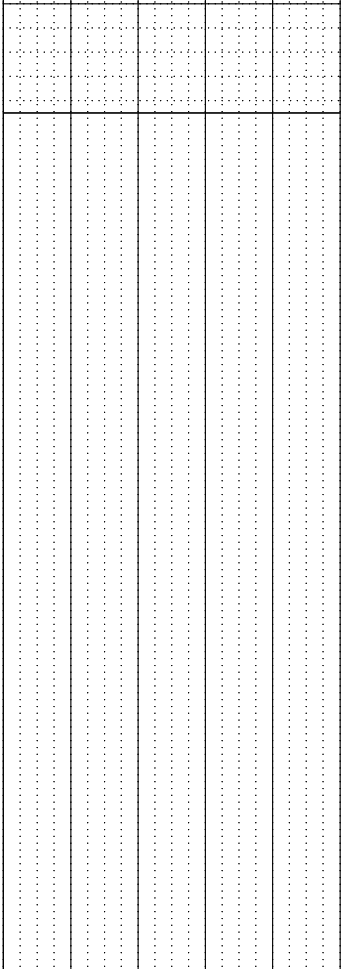
REMARKS



HOLE NO.  
**BH15**

BORINGS BY CME 55 Power Auger

DATE November 9, 2015


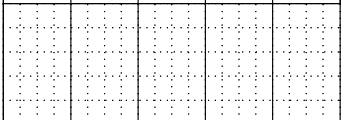
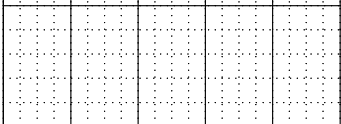
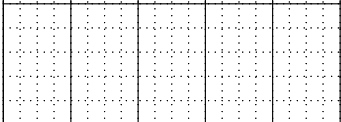

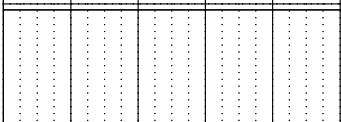
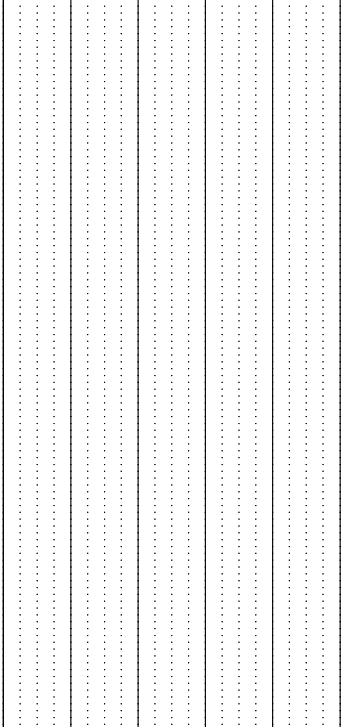


SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
GROUND SURFACE									20	40	60	80	
FILL: Brown silty sand, some gravel, cobbles, brick		AU	1			0	81.50						
		SS	2	50	12	1	80.50						
GLACIAL TILL: Dark brown sandy silt with shale		SS	3	42	7	2	79.50						
		SS	4	100	29								
End of Borehole													
Borehole terminated on inferred bedrock surface at 2.90m depth													
								20 40 60 80 100 Shear Strength (kPa) ▲ Undisturbed    △ Remoulded					

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
GROUND SURFACE								20	40	60	80	
<b>FILL:</b> Dark brown silty sand with gravel, cobbles, trace clay						0	81.49					
						1	80.49					
						2	79.49					
<b>BEDROCK:</b> Black shale						3	78.49					
						4	77.49					
End of Probehole												

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY <small>or</small>	N VALUE or RQD			○ Water Content %				
GROUND SURFACE								20	40	60	80	
<b>FILL:</b> Dark brown sandy silt with gravel, some cobbles and clay						0	81.69					
						1	80.69					
						2	79.69					
						3	78.69					
<b>BEDROCK:</b> Black shale												
End of Probehole												

[illegible]

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY or N VALUE or RQD	○ Water Content %							
GROUND SURFACE									20	40	60	
FILL: Dark brown silty sand, some gravel, clay, brick						0	81.05					
						1	80.05					
						2	79.05					
BEDROCK: Black shale						3	78.05					
End of Probehole												
								<div>20406080100</div> <div>Shear Strength (kPa)</div> <div>▲ Undisturbed    △ Remoulded</div>				

[illegible]

[illegible]



SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY % or	N VALUE RQD			○ Water Content %				
GROUND SURFACE								20	40	60	80	
FILL: Dark brown silty clay, some sand and gravel	0.15					0	81.32					
Brown SILTY CLAY	2.44					1	80.32					
GLACIAL TILL: Brown silty clay, some gravel, cobbles and shale	4.98					2	79.32					
BEDROCK: Black shale	5.39					3	78.32					
End of Probehole						4	77.32					
						5	76.32					

Shear Strength (kPa)  
 ▲ Undisturbed    △ Remoulded

**patersongroup** Consulting Engineers

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**SOIL PROFILE AND TEST DATA**

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
 Ottawa, Ontario

DATUM Ground surface elevations provided by Annis, O'Sullivan, Vollebakk Ltd.

FILE NO.  
**PG3590**

REMARKS

HOLE NO.  
**PH 8**

BORINGS BY CME 55 Power Auger

DATE November 19, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
FILL: Brown silty clay, trace gravel 0.10						0	81.53					
Brown SILTY CLAY						1	80.53					
						2	79.53					
						3	78.53					
GLACIAL TILL: Dark brown silty clay, some gravel, cobbles, boulders						4	77.53					
BEDROCK: Black shale						5	76.53					
						6	75.53					
End of Probehole												

20 40 60 80 100  
**Shear Strength (kPa)**  
 ▲ Undisturbed    △ Remoulded

**patersongroup** Consulting Engineers

154 Colonnade Road South, Ottawa, Ontario K2E 7J5

## SOIL PROFILE AND TEST DATA

Geotechnical Investigation  
 Proposed Buildings - East Campus - Hunt Club Road  
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FILE NO.  
**PG3590**

REMARKS

HOLE NO.  
**PH 9**

BORINGS BY CME 55 Power Auger

DATE November 19, 2015

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Piezometer Construction	
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %					
								20	40	60	80		
GROUND SURFACE						0	80.61						
Brown <b>SILTY SAND</b>						1	79.61						
	1.07					2	78.61						
Brown to grey <b>SILTY CLAY</b>						3	77.61						
	4.57					4	76.61						
<b>GLACIAL TILL:</b> Grey silty clay, some gravel, cobbles						5	75.61						
	5.69					6	74.61						
<b>BEDROCK:</b> Black shale	6.00												
End of Probehole													

20 40 60 80 100  
**Shear Strength (kPa)**  
 ▲ Undisturbed    △ Remoulded

## SYMBOLS AND TERMS

### SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the strength of cohesionless soils is the relative density, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm.

Relative Density	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory vane tests, penetrometer tests, unconfined compression tests, or occasionally by Standard Penetration Tests.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

## SYMBOLS AND TERMS (continued)

### SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their “sensitivity”. The sensitivity is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil.

Terminology used for describing soil strata based upon texture, or the proportion of individual particle sizes present is provided on the Textural Soil Classification Chart at the end of this information package.

### ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NXL size core. However, it can be used on smaller core sizes, such as BX, if the bulk of the fractures caused by drilling stresses (called “mechanical breaks”) are easily distinguishable from the normal in situ fractures.

RQD %	ROCK QUALITY
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

### SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube
PS	-	Piston sample
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size AXT, BXL, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

## SYMBOLS AND TERMS (continued)

### GRAIN SIZE DISTRIBUTION

MC%	-	Natural moisture content or water content of sample, %
LL	-	Liquid Limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic limit, % (water content above which soil behaves plastically)
PI	-	Plasticity index, % (difference between LL and PL)
Dxx	-	Grain size which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D_{30})^2 / (D_{10} \times D_{60})$
Cu	-	Uniformity coefficient = $D_{60} / D_{10}$

Cc and Cu are used to assess the grading of sands and gravels:

Well-graded gravels have:  $1 < Cc < 3$  and  $Cu > 4$

Well-graded sands have:  $1 < Cc < 3$  and  $Cu > 6$

Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.

Cc and Cu are not applicable for the description of soils with more than 10% silt and clay (more than 10% finer than 0.075 mm or the #200 sieve)

### CONSOLIDATION TEST

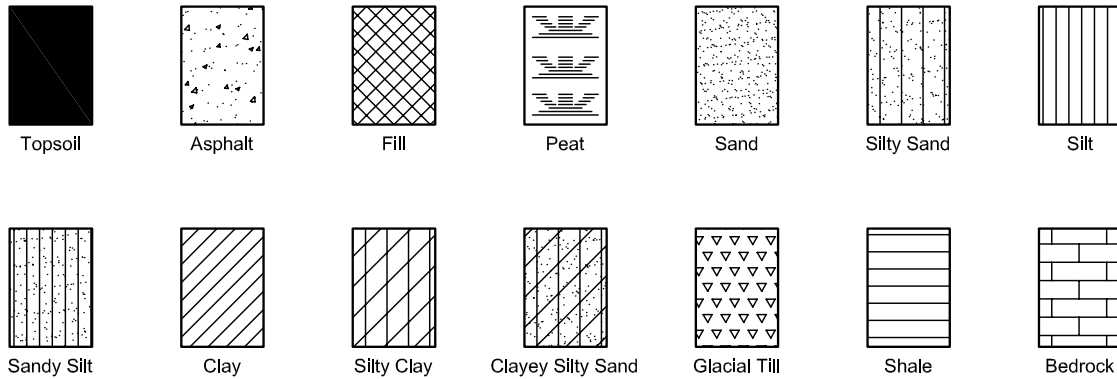
$p'_o$	-	Present effective overburden pressure at sample depth
$p'_c$	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below $p'_c$ )
Cc	-	Compression index (in effect at pressures above $p'_c$ )
OC Ratio		Overconsolidation ratio = $p'_c / p'_o$
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

### PERMEABILITY TEST

k	-	Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.
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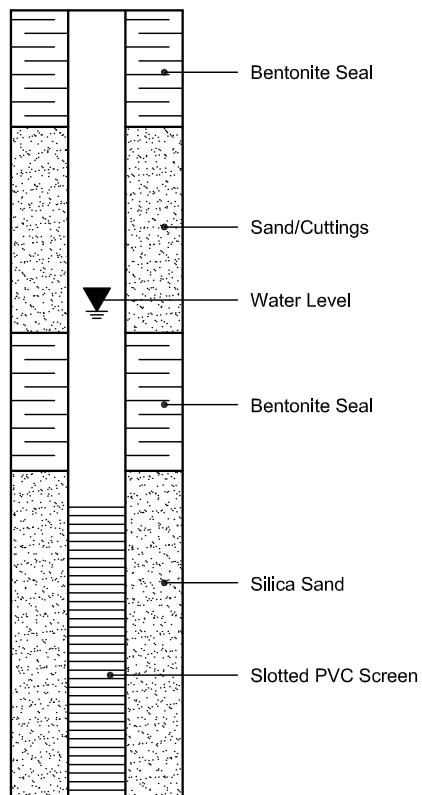
## SYMBOLS AND TERMS (continued)

### STRATA PLOT

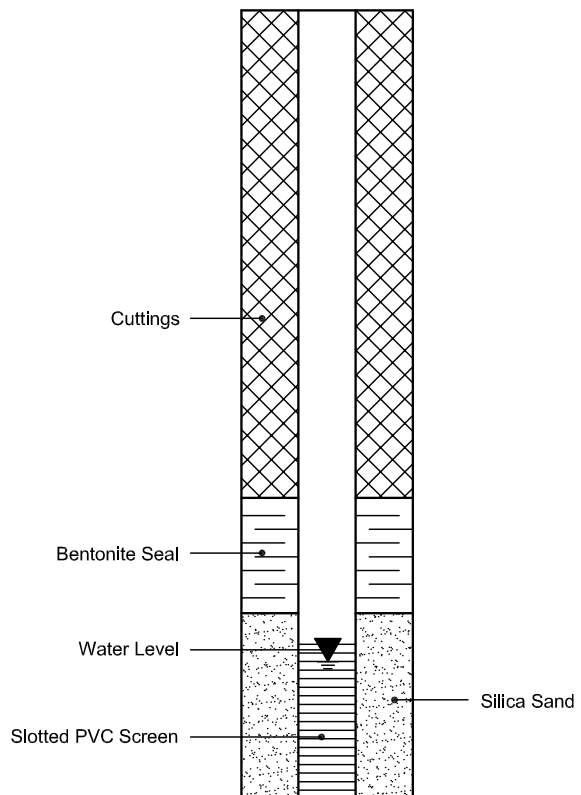


### MONITORING WELL AND PIEZOMETER CONSTRUCTION

#### MONITORING WELL CONSTRUCTION



#### PIEZOMETER CONSTRUCTION



## **APPENDIX 2**

**FIGURE 1 - KEY PLAN**

**AERIAL PHOTOGRAPH**

**DRAWING PG3590-1 - TEST HOLE LOCATION PLAN**



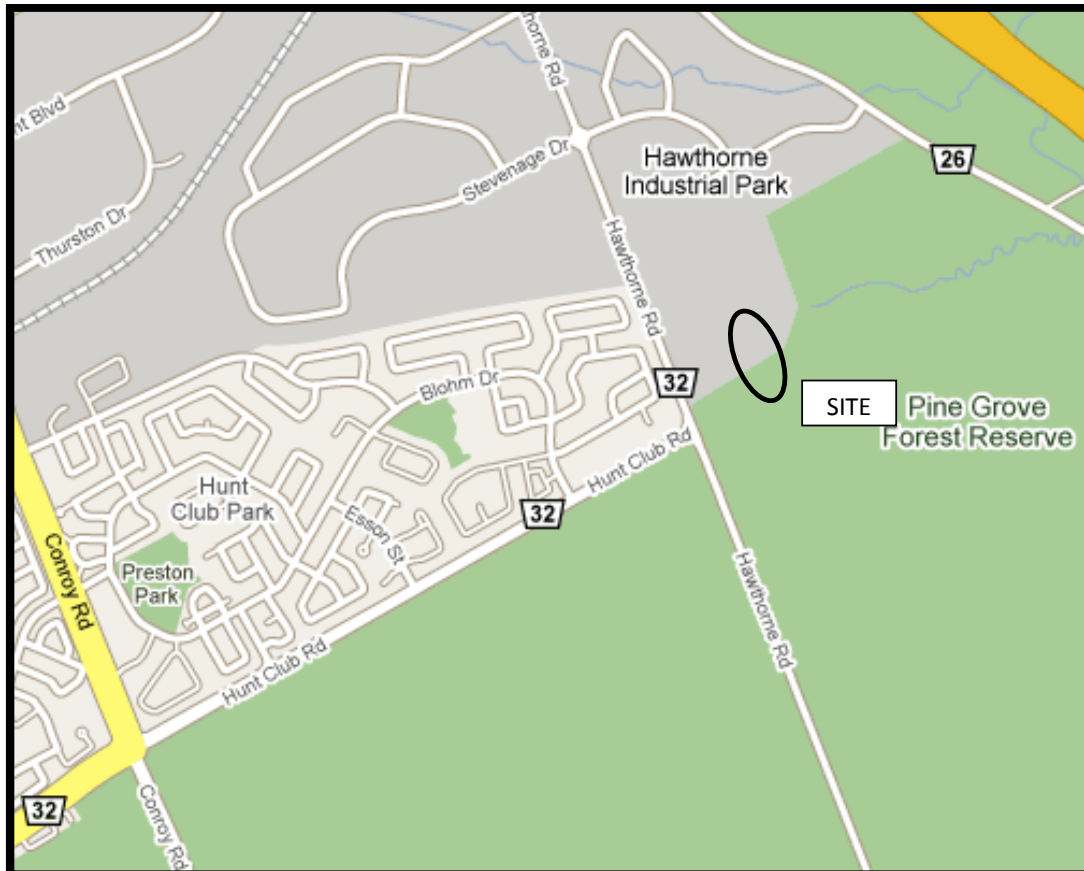
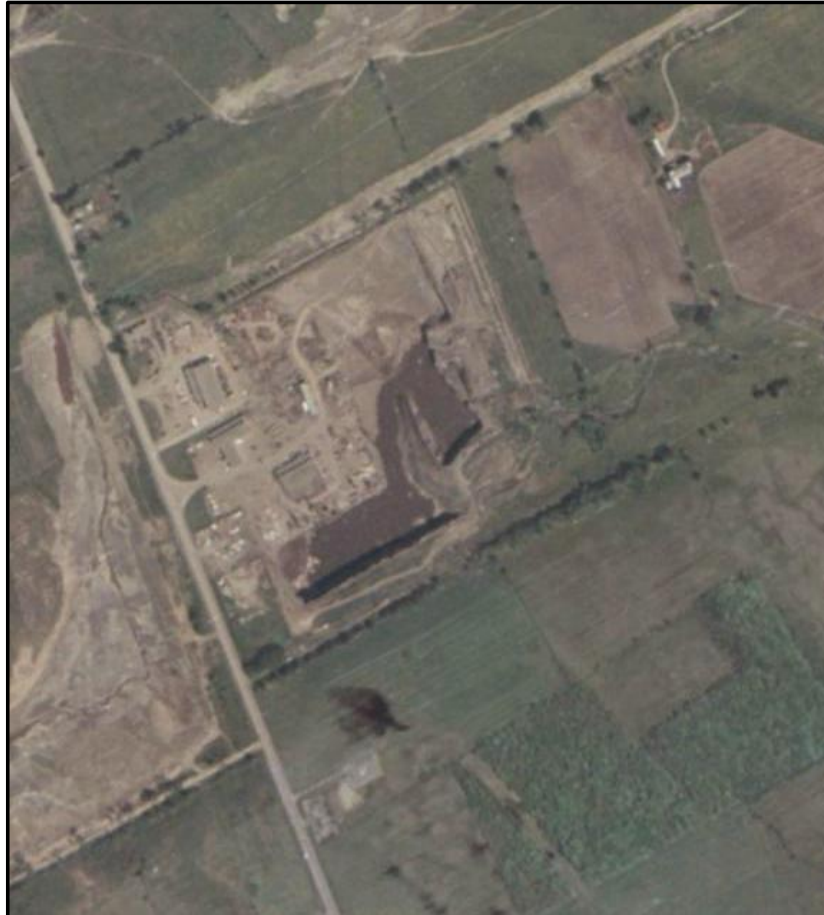


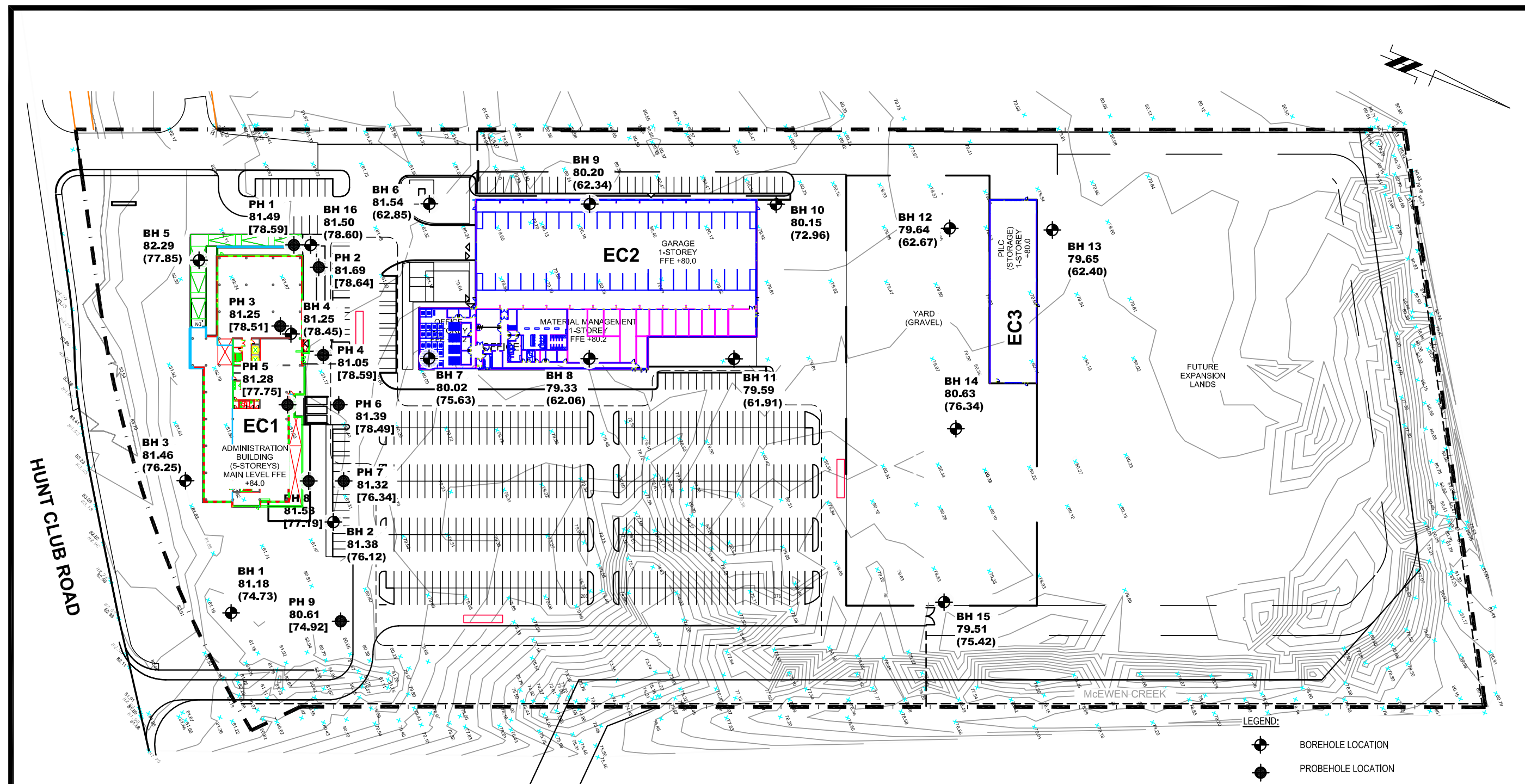
FIGURE 1  
KEY PLAN

## Historical Aerial Photograph

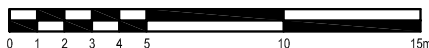
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**1976**



SCALE: 1:250



LEGEND:

- BOREHOLE LOCATION
- PROBEHOLE LOCATION
- 81.18 GROUND SURFACE ELEVATION (m)
- (74.73) PRACTICAL REFUSAL TO AUGERING ELEVATION (m)
- [78.59] BEDROCK SURFACE ELEVATION (m)

TEST HOLE LOCATIONS AND GROUND SURFACE  
ELEVATIONS AT TEST HOLE LOCATIONS PROVIDED  
BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD.

**patersongroup**  
consulting engineers

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Ottawa, Ontario K2E 7J5  
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1	BASE PLAN UPDATED	03/05/2016	DJG
NO.	REVISIONS	DATE	INITIAL

HYDRO OTTAWA LIMITED	
GEOTECHNICAL INVESTIGATION	
PROPOSED BUILDINGS - EAST CAMPUS - HUNT CLUB ROAD	
OTTAWA,	ONTARIO
Title: TEST HOLE LOCATION PLAN	

Scale:	1:1250	Date:	11/2015
Drawn by:	MPG	Report No.:	PG3590-1
Checked by:	DJG	Dwg. No.:	PG3590-1
Approved by:	DJG	Revision No.:	1

p:\autocad drawings\geotechnical\pg3590-1\hlp rev2.dwg

1                                   **TECHNICAL CONFERENCE UNDERTAKING - JT 1.17**

2

3   **JT 1.17**

4   To explain how the contingency money was used.

5   \_\_\_\_\_

6   **RESPONSE:**

7

8   The contingency provided for the Facilities Renewal Program was used primarily to address  
9   issues encountered during construction, such as the following:

10

- 11       • development charges and municipal requirements from the City of Ottawa (\$2.1M);  
12       • unexpected site conditions (e.g. soil issues at the East Campus) and protected  
13       vegetation at the field operations site (\$0.6M); and  
14       • technological, security, safety and operational improvements (\$3.5M).

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.18**

**JT 1.18**

To advise whether the Ministry was informed of contaminated soil, and if so to file a copy of the notification.

**RESPONSE:**

There was no legal requirement for Hydro Ottawa to advise the Ministry of the Environment, Conservation and Parks<sup>1</sup> ("MECP") regarding the presence of contaminated soils during the construction phase. In this context, the only requirement to advise the MECP is when there is a proposed change in land use. Hydro Ottawa was proposing no such change. The utility maintained the industrial zoning previously approved by the City of Ottawa, and for which a record of site condition ("RSC") was already issued by the MECP for the lands.

Hydro Ottawa did, however, mobilize an MECP-certified environmental firm, Paterson Group, to assess and monitor the removal of contaminated soils (in collaboration with Hydro Ottawa's project management firm and the design builder) and to certify the environmental compliance for the stockpiling/retention of contaminated soils on the lands. A memorandum from the Paterson Group outlining a recommended action plan for dealing with the environmentally impacted soil is appended as Attachment JT 1.18(A): East Campus Soil Management Memorandum.

Hydro Ottawa notes that all contaminated material removed from the affected lands was disposed of at a licensed environmental landfill site (Waste Connections of Canada, 3354 Navan Rd., Ontario) and was transported to that location by licensed haulage firms (Karson/Aecon).

---

<sup>1</sup> At the time of the construction of Hydro Ottawa's new facilities and the discovery of the contaminated soil, the Ministry was named the Ministry of the Environment and Climate Change.



consulting engineers

## memorandum

to:	Verterra Corporation - <b>Mr. James MacRae</b> - <a href="mailto:james.macrae@verterracorp.com">james.macrae@verterracorp.com</a>
to:	M. Sullivan and Son Ltd. - <b>Mr. Tim Ralph</b> - <a href="mailto:tralph@sullivan.ca">tralph@sullivan.ca</a>
re:	Management of Environmentally Impacted Soil <b>Proposed Hydro Ottawa East Operations and Training Facility</b> <b>Hunt Club Road at Hawthorne Road - Ottawa</b>
date:	September 18, 2017
file:	PE4027-MEMO.01
from:	Carlos P. Da Silva

Further to your request and authorization, Paterson Group (Paterson) reviewed the site conditions from an environmental perspective and would like to provide the following suggested plan-of-action in dealing with environmentally impacted soil encountered during the site redevelopment at the aforementioned location.

### Background Information

It was our understanding that the subject site was considered a balanced site and would not generate a significant amount of surplus soil for off-site disposal. The ground improvement program suggested for EC-2 and EC-3 would consolidate the underlying soil and would require a granular construction pad for vehicle traffic during this program.

Trenching for foundations and site grading will produce some surplus volumes that will be managed as noted below.

### Impacted Soil Exceeding MOECC Table 3 Standards

Any impacted surplus material exceeding MOECC Table 3 standards for commercial land use will be segregated and stockpiled on the northern portion of the site which is not being developed. It's our understanding that this impacted material will be left in place for several years and may be disposed off-site at an approved waste disposal facility.

Since the subject does not require a Record of Site Condition, consideration could also be given to re-using this material for raising parking and access road areas where select subgrade material is required.

### Impacted Soil Meeting MOECC Table 3 Standards

Any impacted surplus material meeting MOECC Table 3 standards for commercial land use can be re-used on site as backfill material for foundations and parking areas as select subgrade material.



Mr. James MacRae  
Page 2  
File: PE4027-MEMO.01

As a further option, consideration can be given to disposing of this material off-site at the Dibblee Road facility provided it meets MOECC Table 3 standards.

## Disposal of Clean Soil

Any surplus material meeting MOECC Table 1 background standards is considered clean and can be disposed as such at any site including the Lafarge site nearby. Slight impacts associated with naturally occurring heavy metals (such as barium, boron and vanadium) can also be considered clean and will require an opinion letter from the Qualified Person (QP) before transferring the material as clean material.

It is suggested that, if surplus material is generated, the priority should be to dispose of clean soil first to an off-site location prior to hauling any impacted soil. Managing impacted soil on site should be the priority.

Furthermore, clean excavated soil will be distributed within the subject site as noted in the enclosed drawing. These areas will consist of, but not limited to, the infill area on the eastern perimeter, raising of the grades over the gravel areas and along the back areas.

We trust that this information satisfies your requirements.

Best Regards,

**Paterson Group Inc.**



Carlos P. Da Silva, P.Eng., ing., QP<sub>ESA</sub>

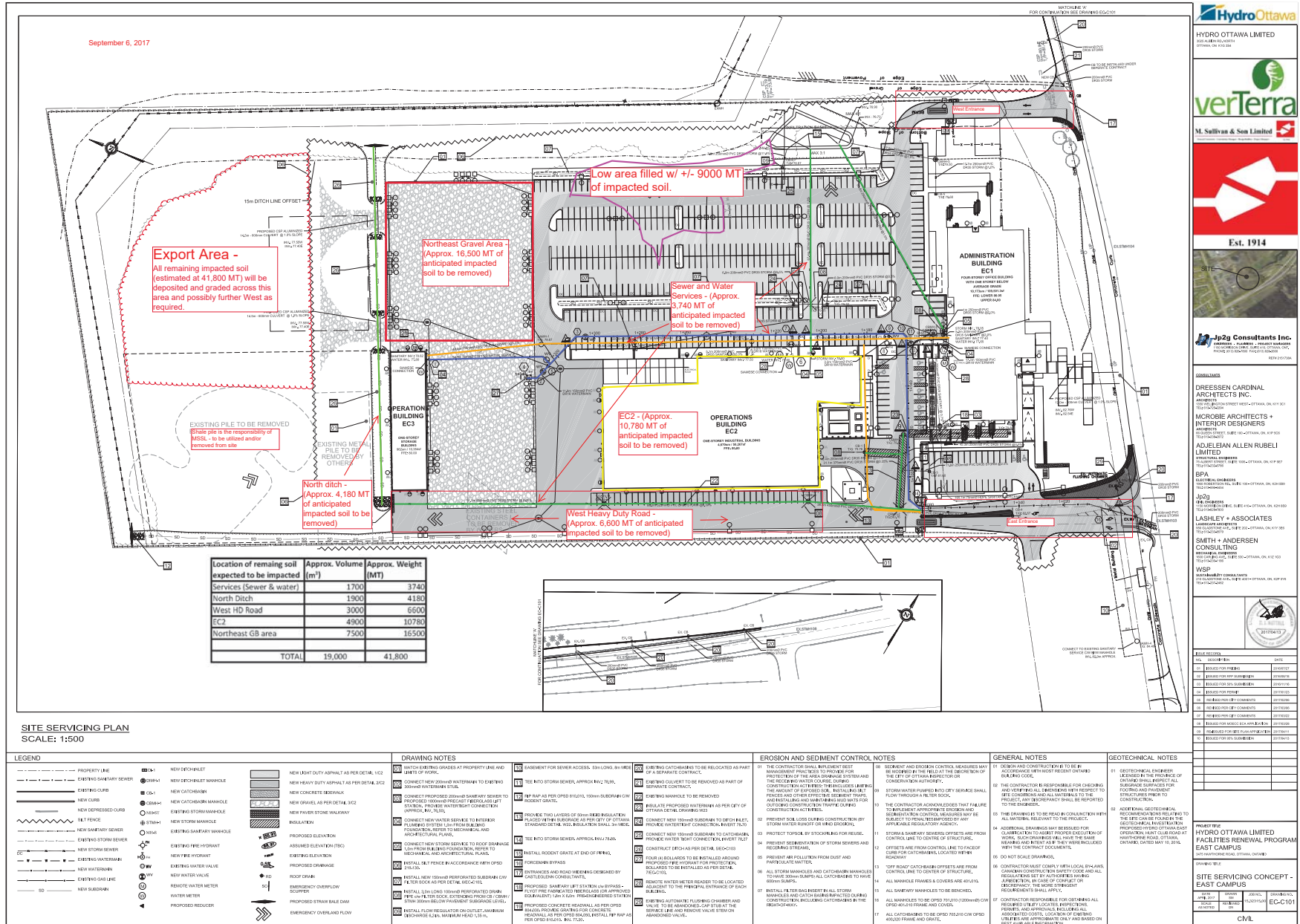


## Paterson Group Inc.

**Head Office and Laboratory**  
154 Colonnade Road South  
Ottawa - Ontario - K2E 7J5  
Tel: (613) 226-7381 Fax: (613) 226-6344

**Northern Office and Laboratory**  
63 Gibson Street  
North Bay - Ontario - P1B 8Z4  
Tel: (705) 472-5331 Fax: (705) 472-2334

**St. Lawrence Office**  
993 Princess Street  
Kingston - Ontario - K7L 1H3  
Tel: (613) 542-7381





## TECHNICAL CONFERENCE UNDERTAKING - JT 1.19

### JT 1.19

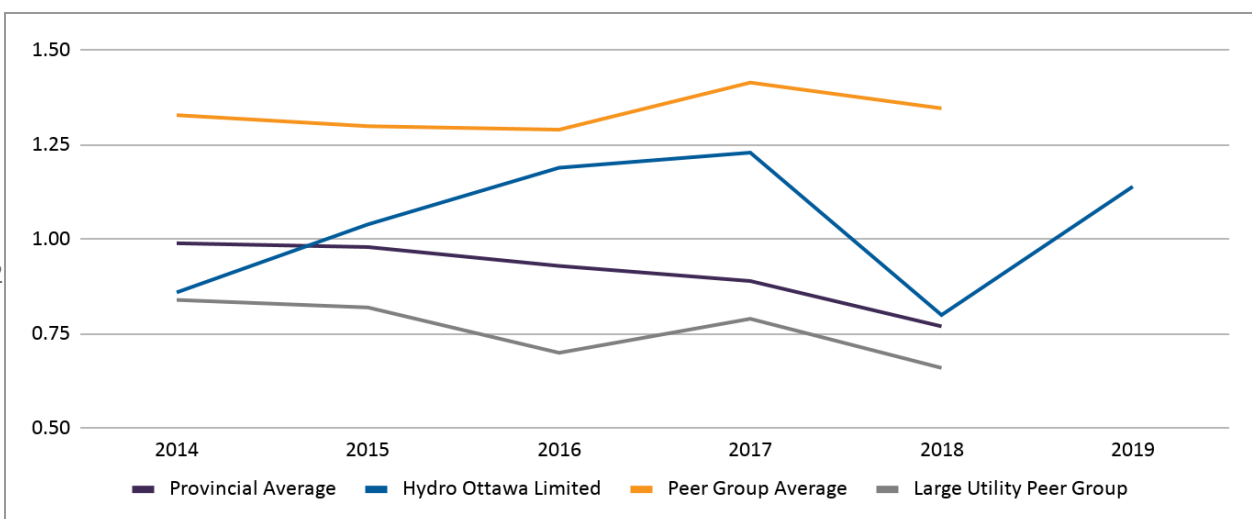
To update charts and data for the debt/equity ratio, interest coverage ratio, and current ratio.

### RESPONSE:

Hydro Ottawa has updated Figures 2 through 5 of Attachment 1-1-12(D): Ontario Energy Board Electricity Distributor Yearbook and Performance Dashboard with 2019 data, as per the graphs below. Please note that peer group or provincial averages could not be updated for 2019 data, as the OEB's 2019 Yearbook of Electricity Distributors had not yet been published at the time of responding to this undertaking.

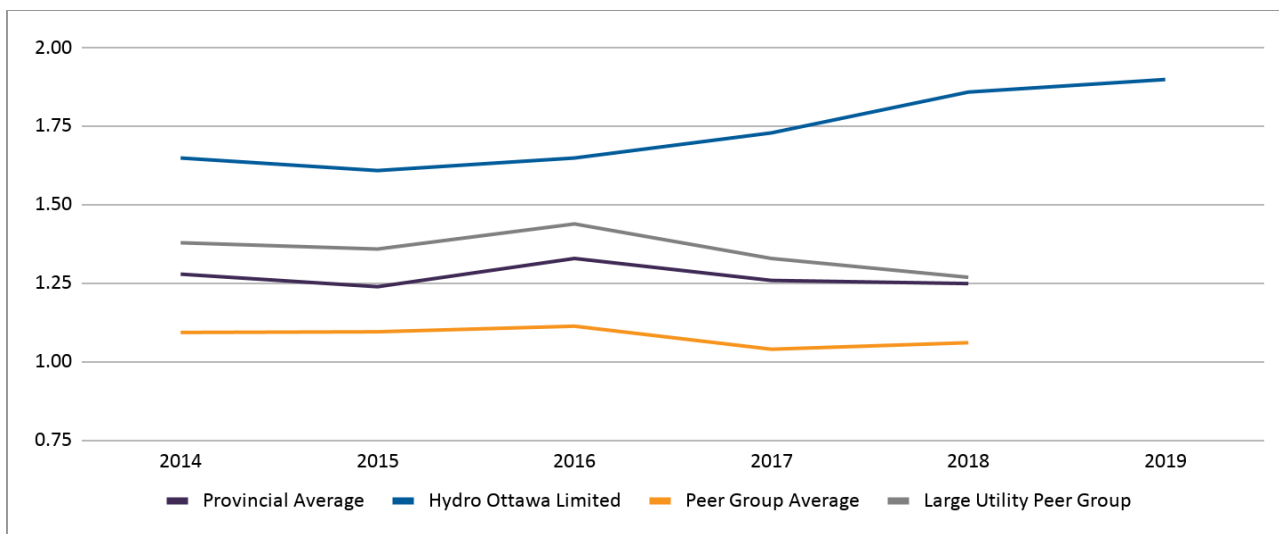
A Large Utility Peer Group comprised of Hydro One Networks Inc., Toronto Hydro-Electric System Limited, and Alectra Utilities Corporation has also been added (in grey) to refine the peer comparison with Hydro Ottawa. This peer group represents the four largest electricity distributors in Ontario.

**Figure 2 – 2014-2019 Current Ratio (*Current Assets/Current Liabilities*)**



1

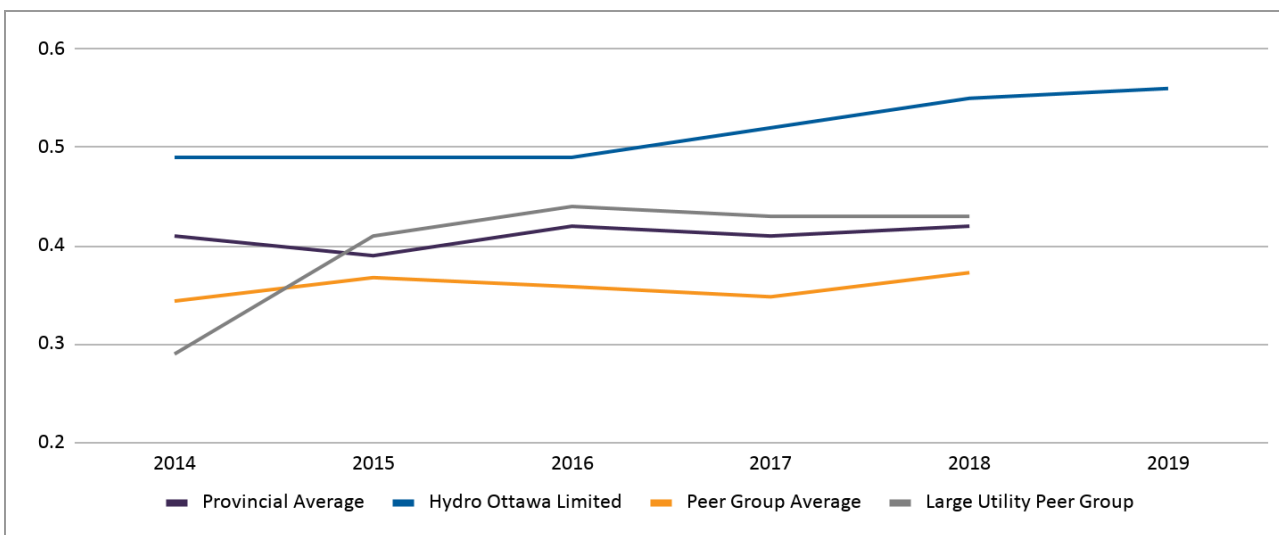
**Figure 3 – 2014-2019 Debt to Equity Ratio (*Debt/Total Equity*)**



2

3

**Figure 4 – 2014-2019 Debt Ratio (*Debt/Total Assets*)**

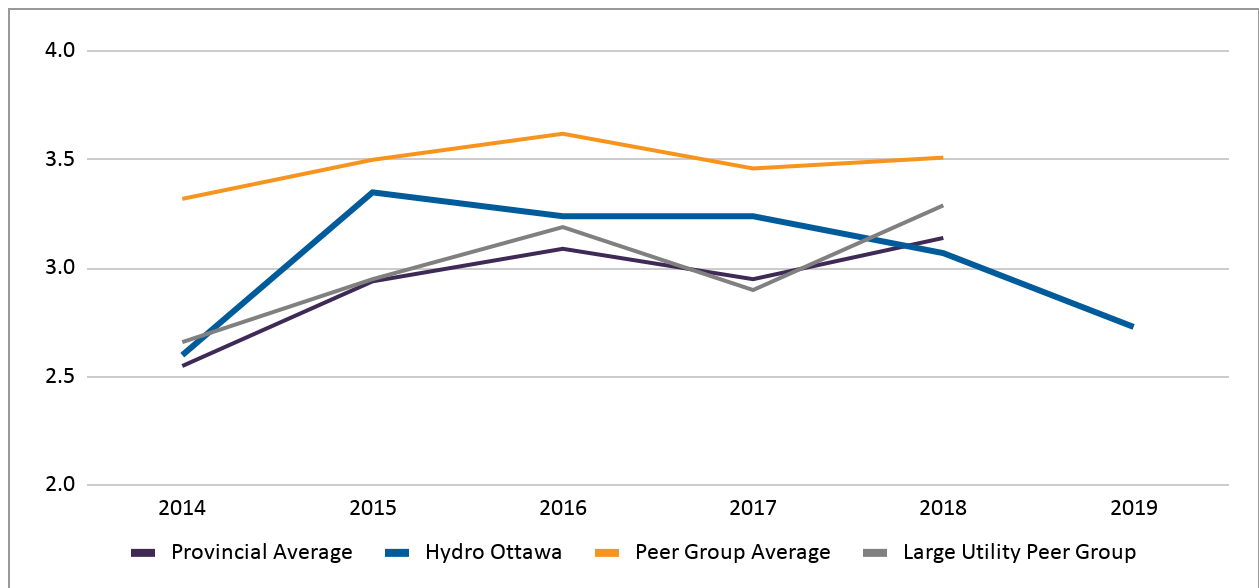


4

1

**Figure 5 – 2014-2019 Interest Coverage (*EBIT/Interest Charges*)**

2



3

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.20

### JT 1.20

To advise of the percentage of dividends as a percentage of the actual ROE, the earned ROE. also to provide a copy of or reference for the actual Hydro Ottawa Limited and/or, if it is relevant, the holding company, the dividend policy for the utility.

### RESPONSE:

#### 1. DIVIDEND PAYOUT RATIO

Table A provides a calculation of dividends paid by Hydro Ottawa during the 2015-2019 period, expressed as percentage of net income (commonly referred to as "payout ratio"):

**Table A – Dividends Paid by Hydro Ottawa as a Percentage of Net Income<sup>1</sup>**

	(A) Dividend Paid <sup>2</sup> (\$ millions)	(B) Net Income <sup>2</sup> (\$ millions)	(A/B) Payout Ratio
2015	15.0	35.5	42%
2016	17.5	34.3	51%
2017	20.6	36.5	57%
2018	11.9	37.2	32%
2019	18.3	37.7	49%
<b>TOTAL</b>	<b>83.3</b>	<b>181.2</b>	<b>46%</b>

#### 2. DIVIDEND POLICY

Please refer to Attachment JT 1.20(A): Hydro Ottawa Dividend Policy for a copy of the dividend policy adopted by the City of Ottawa in 2016, in its capacity as Shareholder of the Holding Company. In addition, Attachment JT 1.20(B): Ottawa City Council - June 22, 2016 Meeting Minutes is a copy of the City Council's approval of the amended dividend policy for the Holding

<sup>1</sup> To confirm, this table shows dividends paid by Hydro Ottawa to Hydro Ottawa Holding Inc. ("Holding Company").

<sup>2</sup> Amounts are consistent with Hydro Ottawa's audited financial statements.



- 1 Company. The dividends paid by the regulated distribution utility to the Holding Company are
- 2 based upon this City of Ottawa policy.

**Document 3****Resolution of the Board of Directors of Hydro Ottawa Holding Inc.**

**WHEREAS**, the City of Ottawa is the sole shareholder of Hydro Ottawa Holding Inc. (or the "Corporation");

**AND WHEREAS**, the *Business Corporations Act* of Ontario permits the Board of Directors of the Corporation to declare and the Corporation to pay dividends to the shareholder, subject to certain financial restrictions;

**AND WHEREAS**, on June 25, 2008, the Council of the City of Ottawa, passed a dividend policy which directs the Corporation to target dividends at the greater of 60% of the net income of the Corporation or \$14 million provided that the Corporation is in compliance with the *Business Corporations Act* of Ontario, relevant Ontario Energy Board guidelines, is not in breach of any covenants on its bond or credit facility obligations and does not negatively impact its credit rating;

**AND WHEREAS**, since the passing of dividend policy, the Corporation has undergone significant growth of its unregulated lines of business which, while adding to the value of the enterprise to the benefit of its shareholder, has led to an increase of debt levels, downward pressure on its credit rating and a downgrade of its credit rating by Standard & Poor's Rating Services;

**AND WHEREAS**, the Corporation requires future cash flows emanating from its unregulated lines of business in order to continue future growth of its unregulated businesses;

**AND WHEREAS**, the returns from the regulated business activities undertaken by Hydro Ottawa Limited are forecast to provide levels of net income which will enable the Corporation to pay dividends to the City of Ottawa which meet or exceed the range of dividends paid to the City of Ottawa in recent years;

**NOW THEREFORE, BE IT RESOLVED THAT:**

**The Board of Directors recommend that the City of Ottawa, as Shareholder, revise the dividend policy and direct Hydro Ottawa Holding Inc. to ‘target dividends at the greater of 60% of the annual net income of Hydro Ottawa Limited or \$20 million provided that the Corporation and Hydro Ottawa Limited are in compliance with the *Business Corporations Act* of Ontario, relevant guidelines of the Ontario Energy Board and covenants in its bond or credit facility obligations and does not negatively impact its credit rating as a result of the dividend payment’.**



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**OTTAWA CITY COUNCIL**

**Wednesday, 22 June 2016**

**Andrew S. Haydon Hall, 110 Laurier Avenue West**

**10:00 AM**

**DISPOSITION 34**

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*Note: Please note that the recorded votes and dissents contained in this Disposition are to be considered DRAFT until the Minutes of the meeting are confirmed by Council.*

**HYDRO OTTAWA HOLDING INC**

- |  |
|--|
| 1. <u>HYDRO OTTAWA HOLDING INC. – 2015 ANNUAL REPORT</u> |
|--|

**REPORT RECOMMENDATIONS**

**That Council:**

1. **Receive the Audited Consolidated Financial Statements of Hydro Ottawa Holding Inc. for the year 2015 as set out in the Annual Report at Document 1 (issued separately and held on file with the City Clerk);**
2. **Receive the 2016-2020 Strategic Direction for Hydro Ottawa Holding Inc. (HOHI) as adopted by the Board of Directors of HOHI (Document 2 – issued separately and held on file with the City Clerk);**



3. Approve the recommendation of the Board of Directors of Hydro Ottawa Holding Inc. as set out at Document 3 (immediately follows the report), specifically, that the City of Ottawa, as shareholder, amend the dividend policy applicable to Hydro Ottawa Holding Inc.;
4. Appoint KPMG LLP as the auditor for Hydro Ottawa Holding Inc. for the Year 2016;
5. Approve the recommendation of the Nominating Committee of the Board of Directors of Hydro Ottawa Holding Inc., specifically, that Council re-appoint the persons identified at Document 5 (immediately follows the report) to serve as members of the Board of Hydro Ottawa Holding Inc. for the corresponding terms as specified; and
6. Authorize the Mayor and the City Clerk to sign a written resolution on behalf of the City of Ottawa as shareholder of Hydro Ottawa Holding Inc. setting out the resolutions approved by the City Council.

CARRIED

## COMMITTEE REPORTS

### COMMUNITY AND PROTECTIVE SERVICES COMMITTEE REPORT 15

2. <u>2016 ABORIGINAL WORKING COMMITTEE UPDATE</u>
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## COMMITTEE RECOMMENDATION

That Council receive this report for information and direct Community and Social Services Staff to work with Aboriginal partners to review the Truth and Reconciliation Commission's

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.21**

1

2

**3 JT 1.21**

4 To provide the employer versus the employee pension contribution ratio for the four categories,  
5 executive management, non-union, union, for all of the years in the table, including the  
6 projection for bridge and test.

7

**8 RESPONSE:**

9

10 Eligible employees at Hydro Ottawa are members of the Ontario Municipal Employees  
11 Retirement System ("OMERS"). OMERS is a multi-employer pension plan. Eligible employees  
12 contribute a percentage of their earnings to the pension plan and employers, including Hydro  
13 Ottawa, contribute an amount that is equal to the amount contributed by the employees. That is,  
14 the OMERS pension plan operates on a one-to-one ratio of employee and employer  
15 contributions for all categories of employees, including executives.

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.22**

1

2

**3 JT 1.22**

4 To provide the dividend payments as a percentage of the actual in millions.

5

**6 RESPONSE:**

7

8 Please see the response to undertaking JT 1.20 for a calculation of dividends paid by Hydro  
9 Ottawa, expressed as a percentage of net income, by year, for the 2015-2019 period.

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.23

### JT 1.23

To provide actual overtime cost data and how it drives towards forecasts for the test year.

### RESPONSE:

Please refer to the response to interrogatory EPRF-101, as well as Attachment EPRF-101(A): Appendix 2-K Employee Costs - Overtime, for details on overtime for 2016-2021 for management, non-union, and union categories. Total overtime by year is outlined in Table A.

**Table A – 2016-2021 Employee Overtime Costs**

	2016 Historical	2017 Historical	2018 Historical	2019 Historical	2020 Bridge Year	2021 Test Year
<b>Overtime</b>	\$2,515,678	\$3,406,317	\$4,580,781	\$2,924,964	\$3,276,371	\$3,380,212

The average overtime on an annual basis for the 2016-2019 period was \$3.4M, which is likewise the amount anticipated for the 2021 Test Year. (Of note, this analysis includes both a high water mark for overtime in 2018, as well as a low water mark in 2019). The Test Year does assume a slightly lower number of overtime hours than the average number during the 2016-2019 period. However, this is not reflected in the total dollars due to the annual escalation of base salaries.

Looking ahead, Hydro Ottawa believes that it must continue to plan for a certain level of storm-related overtime work every year. As shown in Exhibit 2-4-3: Distribution System Plan, Table 4.24 - List of Major Event Days, there were Major Event Days in each year of the 2014-2018 period. What's more, Figure 4.10 in the same Exhibit shows that adverse weather has been on an upward trajectory over the last five years. Hence the need to anticipate a need for overtime work associated with Major Events on an ongoing basis.

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.24**

**JT 1.24**

To provide an updated version of Appendix 2JC, OM&A, to include, column 1, 2020 year-to-date actuals; column 2, 2019 actuals at the same period; column 3, revised 2020 forecast as appropriate.

---

**RESPONSE:**

A response to this undertaking will be provided in full on August 5, 2020.

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.25

### JT 1.25

To provide year-to-date incremental costs incurred as a result of COVID-19 separated into categories.

### RESPONSE:

Hydro Ottawa has been tracking various costs incurred as a result of the COVID-19 pandemic. However, none of these items has been booked to the new deferral accounts established by the OEB<sup>1</sup>, as further guidance is needed to determine what is eligible for these accounts and the calculations thereof.

The year-to-date June 30, 2020 incremental costs incurred as a result of COVID-19 are as follows:

- Billing and system changes as a result of the Government of Ontario's emergency order regarding Time-of-Use Pricing - \$14K<sup>2</sup>;
- Purchase of personal protective equipment, such as face masks and hand sanitizers, and extra cleaning costs throughout the utility's facilities, including substations - \$228K;
- Bad debt expense as of June 30, 2020 was \$2.3M, which exceeded budget by \$1.5M<sup>3</sup>;
- Reduced capital allocation by \$2.0M due to a temporary schedule (ended on June 24) implemented for crews to support social distancing. The reduction in capital allocation resulted in increased OM&A<sup>4</sup>; and
- Standby fees of \$119K from an additional credit facility to cover potential liquidity issues.

<sup>1</sup> <https://www.oeb.ca/sites/default/files/OEBLtr-Accounting-Order-COVID-19-Emergency-20200325.pdf>.

<sup>2</sup> These costs are all related to internal labour, therefore the incremental portion would be a subset of this for overtime only.

<sup>3</sup> A portion of this is allowance for doubtful accounts. Actual write-offs only occur after collection efforts.

<sup>4</sup> This is incremental OM&A, but not incremental compensation.

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.26

### JT 1.26

Using OEB Staff 142, the breakout into executive and management, and for each of the union, management, non-union, to provide for the total salary and wage, including overtime and incentive pay totals, what percentage of those amounts in each year are reflective of categories of costs that are included in the mercer study.

### RESPONSE:

As noted in the response to interrogatory SEC-24, the elements of compensation included in Mercer's 2019 benchmarking study were base salary and incentive, with incentive applying to Senior Managers only. Table A below reflects the base salary and incentive as a percentage of total salary and wages (as filed in Attachment OEB-142(A): Updated Appendix 2K - Management & Non-Management<sup>1</sup>) for each employee category for the years 2016-2019. The other elements of compensation – such as overtime, shift differential, on call, responsibility pay, and acting pay – form a smaller portion of total compensation, with overtime being the largest of these other elements which fluctuate with the demand for emergency work.

**Table A – Percentage of Total Salary and Wages Covered by Mercer's 2019 Compensation Benchmarking Study**

	2016	2017	2018	2019
<b>Total Base Salary and Incentive</b>				
<b>Executive<sup>2</sup></b>	99.8%	98.5%	99.6%	98.6%
<b>Management</b>	97.7%	96.6%	96.1%	96.1%
<b>Non-Union</b>	97.8%	97.2%	96.5%	96.5%
<b>Union</b>	90.7%	88.3%	82.4%	87.7%
<b>TOTAL</b>	<b>93.3%</b>	<b>91.5%</b>	<b>87.2%</b>	<b>90.7%</b>

<sup>1</sup> As per Attachment OEB-142(A), total salary and wages includes overtime and incentive pay.

<sup>2</sup> "Executive" for this purpose includes the only executive position in Hydro Ottawa, as well as the director-level positions in the utility. However, these positions were not included in the scope of Mercer's 2019 benchmarking study.

## TECHNICAL CONFERENCE UNDERTAKING - JT 1.27

### JT 1.27

To provide a citation in the guidelines that supports the following statement or question in BOMA-2: "Is the proposal to rate base from conservation and demand management for all class of customers with a focus on commercial customers consistent with the OEB's policy document for electricity CDM?"

### RESPONSE:

The OEB guidelines that are referenced in interrogatory BOMA-2, as well as in this undertaking, are the *Conservation and Demand Management Requirement Guidelines for Electricity Distributors* ("2015 CDM Guidelines").<sup>1</sup> This OEB policy document "sets out the Board's guidance with respect to the relevant areas of electricity conservation applicable for all CDM and related initiatives beginning in 2015."<sup>2</sup>

Table A below identifies the applicable provisions in the 2015 CDM Guidelines that support Hydro Ottawa's proposal to fund CDM activities during the 2021-2025 rate term through distribution rates. For more information on the utility's proposal, please see Exhibit 4-1-6: Conservation and Demand Management as well as the response to interrogatory OEB-134.

As an initial matter, Hydro Ottawa observes that the 2015 CDM Guidelines have not been updated to reflect the changes to the provincial framework for CDM that were enacted by way of two Ministerial Directives in March 2019. These directives changed the way energy efficiency programs were delivered by refocusing and centralizing CDM program administration, discontinuing the Conservation First Framework ("CFF"), and establishing an Interim Framework which is set to expire at the end of 2020.<sup>3</sup> This has significantly changed how distributors deliver

<sup>1</sup> Ontario Energy Board, *Conservation and Demand Management Requirement Guidelines for Electricity Distributors*, EB-2014-0278 (December 19, 2014; Updated August 11, 2016).

<sup>2</sup> *Ibid*, page 2.

<sup>3</sup> In a separate Ministerial Directive issued on July 22, 2020, the in-service deadlines for CDM/energy efficiency projects that were previously approved and initiated under the CFF were extended until June 30, 2021, in light of the disruptions caused by the COVID-19 pandemic.



1 conservation programming in Ontario and the current guidelines require updates to reflect this.  
2 Consequently, Hydro Ottawa has not crafted its proposal strictly through the lens of the 2015  
3 CDM Guidelines. Rather, through its proposal Hydro Ottawa is looking for opportunities to  
4 continue supporting customers' CDM objectives and strategies, while creating efficient solutions  
5 for the utility's distribution system. Hydro Ottawa has structured its proposed approach for the  
6 upcoming Custom IR term such that its CDM programming and service offerings will be  
7 delivered in an environment that does not rely on any provincial CDM framework, but is  
8 nevertheless complementary to any subsequent province-wide framework or incentive programs  
9 which may emerge.<sup>4</sup>

---

10 <sup>4</sup> With respect to the matter of subsequent CDM frameworks, Hydro Ottawa acknowledges the regulatory proposal  
11 issued by the Ministry of Energy, Northern Development and Mines ("ENDM") on July 23, 2020  
12 (<https://ero.ontario.ca/notice/019-2132>). This proposal contemplates the establishment of a new CDM framework that  
13 would launch on January 1, 2021, following the expiration of the Interim Framework. This new framework would have  
14 a four-year term (2021-2024) and would be centrally delivered by the Independent Electricity System Operator  
15 ("IESO"). In addition, the proposal signals that opportunities will be made available under the new framework for  
16 customers, electricity distributors, and program delivery companies to propose cost-effective programs or projects  
17 that meet local or regional system needs. Notwithstanding this provision, and in light of the fact that this proposal has  
18 not yet been finalized and is subject to amendment or withdrawal, there remains no assurance at the time of writing  
19 that Hydro Ottawa will have the necessary means to be able to assist customers with CDM programs and service  
20 offerings, and to support the 2021-2024 framework's objectives to address system needs once the CFF expires in  
21 June 2021.

1

**Table A – Applicable Provisions in the 2015 CDM Guidelines**

2015 CDM Guideline Provision	Hydro Ottawa's Proposal
<p>"Section 3(ii) of the Conservation Directive defines CDM as follows: 'CDM shall be considered to be inclusive of activities aimed at reducing electricity consumption and reducing the draw from the electricity grid...' The Board adopts this definition of CDM for the purpose of distributors meeting their CDM requirement pursuant to the Conservation Directive."<sup>5</sup> (pages 3-4)</p>	<ul style="list-style-type: none"> <li>Aligns with the guidelines' definition of CDM<sup>6</sup></li> </ul>
<p>"While it is expected that the majority of CDM programs funded through the IESO will alleviate and assist with system constraints, the Board understands there may be some unique circumstances that will require distributors to apply for approval for distribution rate funded CDM programs and other initiatives to address local distribution system constraints." (page 4)</p>	<ul style="list-style-type: none"> <li>Provides evidence that the current CDM landscape in Ontario serves as a unique circumstance in which the utility's proposal is warranted (i.e. it is unknown what opportunities will exist for distributors under any subsequent framework, and if such framework (if approved) will address this unique circumstance)</li> </ul>
<p>"Distributors may apply to the Board for funding through distribution rates to pursue various activities such as CDM programs, demand response programs, energy storage programs and programs reducing distribution losses for the purpose of deferring the capital investment for specific distribution infrastructure." (page 4)</p>	<ul style="list-style-type: none"> <li>Contemplates and seeks cost recovery for these types of CDM programs and activities</li> </ul>
<p>"The Board expects that as part of its long-term planning processes, a distributor will consider applications for CDM programs to defer distribution infrastructure. The distributor should explain the proposed program in the context of the distributor's five-year Distribution System Plan ("DSP") or explain any changes to its system plans that are pertinent to the program. The infrastructure to be deferred must be for those areas of the distribution system where growth is anticipated and potential constraints have been identified." (page 4)</p>	<ul style="list-style-type: none"> <li>Proposes a continuation of CDM programs and activities that will help enable the utility to defer new distribution infrastructure in constrained areas (e.g. the utility's current programs and plans for the Kanata North area of its service territory)</li> </ul>

<sup>2</sup> <sup>5</sup> "Conservation Directive" in this context refers to a Ministerial Directive from March 2014 that required the OEB to take steps to promote CDM, including through the amendment of electricity distributor licences.

<sup>3</sup> <sup>6</sup> Section B of the 2019 Ministerial Directive establishing the 2019-2020 Interim Framework includes a similar definition of CDM – i.e. inclusive of activities aimed at reducing electricity consumption and/or decreasing demand from the electricity grid, and exclusive of measures promoted through a different program or initiative undertaken by the Government of Ontario or the IESO. Hydro Ottawa's proposal for 2021-2025 CDM activity is likewise consistent with this definition of CDM under the Interim Framework.

<p>“The distributor’s CDM plans and commitments to deliver CDM related reductions are integral to the distribution [system] plan, impacting the need for some asset investments, and mitigating other growth factors. These forecasts not only inform the distributor’s plans, but are integrated into the regional planning process discussed above, where potential upstream impacts are assessed. A distributor’s distribution system plan may be modified as a result of the outcome of a regional planning process. For example, in the IESO led IRRP process, it may be determined that enhanced CDM by regional distributors is the preferred solution to avoid or delay upstream capital investments and, as a consequence, the related rate impacts. Thus, a distribution system plan may incorporate additional CDM initiatives that address regional as well as the local CDM plans and commitments of the distributor.” (pages 7-8)</p>	<ul style="list-style-type: none"> <li>• Anticipates and embraces the use of CDM initiatives to address (i) needs that have been identified in the 2020 Integrated Regional Resource Plan (“IRRP”) for the Ottawa region, and (ii) specific needs that are set to be assessed through an addendum study examining the potential for non-wires alternatives to manage demand growth at heavily loaded stations supplied by the 115 kV transmission system</li> </ul>
<p>“In order to provide customers with a better overall program experience, the Board expects electricity distributors, where appropriate, will work closely with natural gas distributors and the IESO in coordinating and integrating electricity conservation and natural gas demand side management (“DSM”) programs. By doing so, the Board expects program efficiencies to be achieved in design, delivery, marketing, and education areas, amongst others. An integrated approach is expected to reduce costs and be more effective for consumers.” (pages 8-9)</p>	<ul style="list-style-type: none"> <li>• Contemplates a continuation of the utility’s past collaboration with the IESO and Enbridge Gas Distribution in leveraging the existing delivery infrastructure for province-wide natural gas demand side management (“DSM”) programs (for example, through the Kanata North programs discussed above); educating customers on potential eligibility for DSM programs; partnering with Enbridge on customer engagements for energy efficiency upgrades; and identifying opportunities to propose cost-effective programs to the IESO that meet local or regional electricity needs</li> </ul>

1

2 Notwithstanding the consistency between Hydro Ottawa’s proposal for seeking CDM funding  
3 through rates and certain provisions within the 2015 CDM Guidelines, the utility still wishes to  
4 qualify the information outlined in Table A with an important caveat – namely, that Hydro Ottawa  
5 believes that the 2015 CDM Guidelines need to be updated to reflect the change in the overall  
6 funding approach to CDM, to comport with the new policy environment, and to provide  
7 additional opportunities for distributors to support customers’ CDM activities and goals.

1 As discussed in detail in Exhibit 4-1-6: Conservation and Demand Management and the  
2 response to interrogatory OEB-134, it is imperative to recognize that the conservation  
3 environment in Ontario has evolved significantly since the 2015 CDM Guidelines were issued.  
4 The March 2019 Ministerial Directives overhauled the manner in which energy efficiency  
5 programs are delivered to electricity customers by discontinuing the CFF, and by largely  
6 refocusing and centralizing CDM efforts within the IESO through a new Interim Framework.<sup>7</sup>  
7 What's more, the CDM landscape continues to evolve, as the ENDM regulatory proposal  
8 referenced in footnote 4 above illustrates. As a result, distributors who have recently reset rates  
9 had limited time to contemplate how CDM should be integrated into distribution activities and  
10 base rates. Hydro Ottawa may therefore be the first distributor to have formulated and  
11 introduced such a proposal following the announcement of the wind-down of the CFF.

12

13 As a complement to the foregoing discussion, Hydro Ottawa wishes to emphasize evidence that  
14 has been submitted as part of the record for this proceeding (i.e. through Exhibit 4-1-6 and the  
15 responses to interrogatories OEB-134, ED-12, and PP-12). Hydro Ottawa strongly believes that  
16 maintaining the utility's position as the "go-to" resource for electricity optimization services and  
17 programs is a critical service that is fundamental to customer well-being and outcomes, and by  
18 extension, to the success of the utility. The level of customer engagement offered by Hydro  
19 Ottawa's existing CDM team has resulted in the utility establishing a good reputation as a  
20 trusted energy advisor, providing personalized energy conservation expertise to customers. The  
21 absence of CDM resources at Hydro Ottawa in recent years would have entailed such adverse  
22 impacts as the inability to design, develop, and deliver such programs as those which are  
23 currently being implemented in Kanata North and which are supporting system planning by  
24 helping to defer the need for new station infrastructure.

25

26 Looking ahead to the 2021-2025 rate term, the sustained availability of CDM resources  
27 (including four full-time equivalents) within the utility will help inform the regional, system, and  
28 asset planning processes (including the identification of non-wires alternatives to help manage  
29 demand growth on the 115 kV system), reduce demand in areas of accelerating growth,

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<sup>7</sup> Pursuant to one of these directives, the OEB also removed the condition in electricity distributors' licences which obligated distributors to fulfill their respective requirements under the CFF.

1 educate customers about energy efficiency, energy-saving equipment, and technologies such as  
2 non-wire solutions, and support the implementation of the City of Ottawa's Energy Evolution  
3 initiative, for which conservation and energy efficiency will be paramount priorities. Providing  
4 assistance with CDM and investigating cost-saving opportunities (whether at the customer's  
5 request or proactively) is strongly desired by customers and remains a priority for Hydro Ottawa.  
6 It is the utility's firm view that customers deserve to continue benefiting from the availability of  
7 this option and service. And as the foregoing discussion illustrates, Hydro Ottawa's proposed  
8 approach for CDM programs and activities for 2021-2025 is structured such that it will yield  
9 value and benefits to customers in its own right, or as a complement to any successor  
10 framework which may be established at the province-wide level.

**TECHNICAL CONFERENCE UNDERTAKING - JT 1.28**

**JT 1.28**

To update the table in OEB 86 with 2019 figures.

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**RESPONSE:**

This undertaking was taken by Panel 1 at the Technical Conference. This panel did not have responsibility for subject matter related to the utility's Distribution System Plan and historical reliability performance. Accordingly, this panel was not able to verify that Hydro Ottawa had already updated the table in the response to interrogatory OEB-86 with 2019 figures, as part of the utility's response to part (d) of interrogatory SEC-34.

However, in preparing responses to the Technical Conference undertakings, Hydro Ottawa discovered incorrect data in the information included in part (d) of interrogatory SEC-34. These data errors were attributable to incorrect values that were included in the original source data upon which that interrogatory response relied (i.e. Table 4.11 in Exhibit 2-4-3: Distribution System Plan). As per the response to undertaking JT 2.5, Hydro Ottawa has corrected these errors and has provided an UPDATED response to interrogatory SEC-34.

For convenience and for purposes of responsiveness to this undertaking, Hydro Ottawa has copied Table C from the response to undertaking JT 2.5 and inserted it below.

1 **Table C – AS REVISED – Defective Equipment SAIFI per 100 Customers<sup>1</sup>**

Asset – SAIFI x 100	Target	2014	2015	2016	2017	2018	2019
Overhead System Assets	10.12	12.73	7.89	6.70	13.69	9.59	5.27
Station System Assets	1.67	0.33	2.28	1.88	0.20	3.65	0.36
Underground System Assets	11.16	13.28	14.90	9.26	5.09	13.25	13.53

2

3 <sup>1</sup> To confirm, as per the original description of Table 4.11 in Exhibit 2-4-3: Distribution System Plan (page 67), this  
4 table is inclusive of Major Event Days.