UPDATED RATE BASE OVERVIEW

1. INTRODUCTION

This Schedule provides an overview of Hydro Ottawa's distribution rate base and a discussion of year-over-year variances.

In accordance with the OEB's *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and amended on July 15, 2019, the rate base used to determine the revenue requirement for the Test Years should be presented. This Schedule provides yearly information on Hydro Ottawa's rate base, including information on forecast net fixed assets, calculated on a mid-year average basis, along with working capital allowance ("WCA"). Net fixed assets are gross assets in service minus accumulated amortization and contributed capital.

The capital expenditure plan for the 2021-2025 period is outlined in UPDATED Exhibit 2-4-1: Capital Expenditure Summary, Exhibit 2-4-2: Capital Expenditure Details, and Exhibit 2-4-3: Distribution System Plan. Details regarding WCA can be found in UPDATED Exhibit 2-3-1: Working Capital Requirement.

2. SUMMARY OF 2016-2020 APPROVED AND ACTUAL RATE BASE

Table 1 below shows Hydro Ottawa's approved rate base values for 2016-2020, as per the Approved Settlement Agreement governing the utility's 2016-2020 rate term.[1] Table 1 provides the opening, closing, and average balances for gross assets and accumulated depreciation. The table further provides the closing balance for net fixed assets and Hydro Ottawa's WCA.

Amounts in Table 1 do not include fixed assets related to items that have been removed from base rates, and recorded into Regulatory Accounts, as per the Approved Settlement Agreement. These items are the following: the utility's new administrative and operations

[1] Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015).

facilities, as described in UPDATED Attachment 2-1-1(A): New Administrative Office and Operations Facilities; and Connection Cost Recovery Agreement ("CCRA") payments, as described in UPDATED Exhibit 9-1-3: Group 2 Accounts.

Table 1 – Summary of Approved 2016-2020 Rate Base With Adjustments ($'000s)

	2016	2017	2018	2019	2020
Opening Gross Assets	$810,428	$882,472	$962,598	$1,050,061	$1,111,912
Closing Gross Assets	$882,472	$962,598	$1,050,061	$1,111,912	$1,218,811
Average Gross Assets	**$846,450**	**$922,535**	**$1,006,329**	**$1,080,986**	**$1,165,362**
Opening Accumulated Depreciation	$(70,764)	$(110,130)	$(152,675)	$(198,050)	$(245,195)
Closing Accumulated Depreciation	$(110,130)	$(152,675)	$(198,050)	$(245,195)	$(293,565)
Average Accumulated Depreciation	**$(90,447)**	**$(131,402)**	**$(175,363)**	**$(221,623)**	**$(269,380)**
Opening Net Book Value	$739,664	$772,342	$809,923	$852,011	$866,717
Closing Net Book Value	$772,342	$809,923	$852,011	$866,717	$925,246
Average Net Book Value	**$756,003**	**$791,132**	**$830,967**	**$859,364**	**$895,981**
Working Capital Allowance	$77,116	$78,617	$81,882	$76,760	77,820
RATE BASE[2]	**$833,119**	**$869,749**	**$912,849**	**$936,124**	**$973,801**

To facilitate comparisons with Table 1, the updated version of Table 2 below shows Hydro Ottawa's approved 2016-2020 rate base without adjustments for the inclusion of the new administrative and operations facilities and new CCRA.

[2] Totals may not sum due to rounding.

Table 2 – AS ORIGINALLY SUBMITTED – Summary of 2016-2020 Rate Base Without Adjustments ($'000s)

	Approved	Historical Years			Bridge Years	
	2016	2016	2017	2018	2019	2020
Opening Gross Assets	$810,428	$822,731	$902,630	$992,882	$1,089,257	$1,177,108
Closing Gross Assets	$882,472	$902,630	$992,882	$1,089,257	$1,177,108	$1,257,217
Average Gross Assets	**$846,450**	**$862,681**	**$947,756**	**$1,041,070**	**$1,133,182**	**$1,217,162**
Opening Accumulated Depreciation	$(70,764)	$(71,580)	$(111,437)	$(148,273)	$(193,925)	$(232,568)
Closing Accumulated Depreciation	$(110,130)	$(111,437)	$(148,273)	$(193,925)	$(232,568)	$(279,866)
Average Accumulated Depreciation	**$(90,447)**	**$(91,509)**	**$(129,855)**	**$(171,099)**	**$(213,247)**	**$(256,217)**
Opening Net Book Value	739,664	751,151	791,193	844,609	895,332	944,540
Closing Net Book Value	$772,342	$791,193	$844,609	$895,332	$944,539	$977,351
Average Net Book Value	**$756,003**	**$771,172**	**$817,901**	**$869,971**	**$919,936**	**$960,945**
Working Capital Allowance	$77,116	$82,676	$75,590	$74,431	$76,221	$77,789
RATE BASE (net of exclusions)[3]	**$833,119**	**$853,848**	**$893,491**	**$944,402**	**$996,157**	**$1,038,734**

Table 2 – UPDATED FOR 2019 ACTUALS – Summary of 2016-2020 Rate Base Without Adjustments ($'000s)

	Approved	Historical Years				Bridge Years
	2016	2016	2017	2018	2019	2020
Opening Gross Assets	$810,428	$822,731	$902,630	$992,882	$1,089,257	$1,182,029
Closing Gross Assets	$882,472	$902,630	$992,882	$1,089,257	$1,182,029	$1,263,967
Average Gross Assets	**$846,450**	**$862,681**	**$947,756**	**$1,041,070**	**$1,135,643**	**$1,222,998**
Opening Accumulated Depreciation	$(70,764)	$(71,580)	$(111,437)	$(148,273)	$(193,925)	$(225,440)
Closing Accumulated Depreciation	$(110,130)	$(111,437)	$(148,273)	$(193,925)	$(225,440)	$(272,718)
Average Accumulated Depreciation	**$(90,447)**	**$(91,509)**	**$(129,855)**	**$(171,099)**	**$(209,682)**	**$(249,079)**
Opening Net Book Value	$739,664	$751,151	$791,193	$844,609	$895,332	$956,589
Closing Net Book Value	$772,342	$791,193	$844,609	$895,332	$956,589	$991,249
Average Net Book Value	**$756,003**	**$771,172**	**$817,901**	**$869,971**	**$925,961**	**$973,919**
Working Capital Allowance	$77,116	$82,676	$75,590	$74,431	$73,638	$77,997
RATE BASE (net of exclusions)[4]	**$833,119**	**$853,848**	**$893,491**	**$944,402**	**$999,599**	**$1,051,916**

[3] Totals may not sum due to rounding.
[4] Totals may not sum due to rounding.

The updated version of Table 3 below reconciles Hydro Ottawa's approved, Historical Year, and Bridge Year rate base for 2016-2020, adjusted to include the new administrative and operations facilities and new CCRA. UPDATED Appendix 2-BA includes the fixed assets related to items held outside base rates (see UPDATED Attachments 2-2-1(A) through (J)). The revenue requirement related to the aforementioned assets is approved to be recorded in regulatory assets during the 2016-2020 period. Hydro Ottawa is requesting to place these assets (i.e. new facilities and new CCRA) into rate base at their net book value in the 2021 Test Year.

1 **Table 3 – AS ORIGINALLY SUBMITTED – Summary of Adjustments to Rate Base**
2 **2016-2020 ($'000s)**

	Approved	Historical Years			Bridge Years	
	2016	2016	2017	2018	2019	2020
Gross Assets						
Opening Gross Assets - net of exclusions	**$810,428**	**$822,731**	**$902,630**	**$992,882**	**$1,089,257**	**$1,177,108**
Excluded Item: New Facilities	$19,493	$19,493	$19,493	$19,697	$19,693	$99,543
Excluded Item: New CCRA	$0	$0	$0	$706	$3,381	$13,258
Adjusted Opening Gross Assets[5]	**$829,921**	**$842,224**	**$922,123**	**$1,013,285**	**$1,112,335**	**$1,289,909**
Closing Gross Assets - net of exclusions	**$882,472**	**$902,630**	**$992,882**	**$1,089,257**	**$1,177,108**	**$1,257,217**
Excluded Item: New Facilities	$19,493	$19,493	$19,697	$19,697	$99,543	$99,543
Excluded Item: New CCRA	$0	$0	$706	$3,381	$13,258	$14,169
Adjusted Closing Gross Assets	**$901,965**	**$922,123**	**$1,013,285**	**$1,112,335**	**$1,289,909**	**$1,370,929**
Accumulated Depreciation						
Opening Accumulated Depreciation - net of exclusions	**$(70,764)**	**$(71,580)**	**$(111,437)**	**$(148,273)**	**$(193,925)**	**$(232,568)**
Excluded Item: New Facilities	$0	$0	$0	$0	$0	$1,792
Excluded Item: New CCRA	$0	$0	$0	$0	$36	$162
Adjusted Opening Accumulated Depreciation	**$(70,764)**	**$(71,580)**	**$(111,437)**	**$(148,273)**	**$(193,961)**	**$(234,522)**
Net Closing Accumulated Depreciation - net of exclusions	**$(110,130)**	**$(111,437)**	**$(148,273)**	**$(193,925)**	**$(232,568)**	**$(279,866)**
Excluded Item: New Facilities	$0	$0	$0	$0	$(1,792)	$(4,452)
Excluded Item: New CCRA	$0	$0	$0	$36	$(162)	$(459)
Adjusted Closing Accumulated Depreciation	**$(110,130)**	**$(111,437)**	**$(148,273)**	**$(193,961)**	**$(234,522)**	**$(284,777)**
Adjusted Net Book Value						
Adjusted Opening Net Book Value	$759,157	$770,644	$810,686	$865,012	$918,374	$1,055,387
Adjusted Closing Net Book Value	$791,835	$810,686	$865,012	$918,374	$1,055,387	$1,086,152
Adjusted Average Net Book Value	**$775,496**	**$790,665**	**$837,849**	**$891,693**	**$986,881**	**$1,070,769**
Working Capital Allowance	$77,116	$82,676	$75,590	$74,431	$76,221	$77,789
ADJUSTED RATE BASE[6]	**$852,612**	**$873,341**	**$913,439**	**$966,124**	**$1,063,102**	**$1,148,558**

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4 [5] This aligns with UPDATED Attachments 2-2-1(A) through (E): OEB Appendices 2-BA - Fixed Asset Continuity
5 Schedules for the years 2016 through 2025, and includes new facilities and new CCRA.
6 [6] Totals may not sum due to rounding.

Table 3 – UPDATED FOR 2019 ACTUALS – Summary of Adjustments to Rate Base 2016-2020 ($'000s)

	Approved	Historical Years				Bridge Years
	2016	**2016**	**2017**	**2018**	**2019**	**2020**
Gross Assets						
Opening Gross Assets - net of exclusions	**$810,428**	**$822,731**	**$902,630**	**$992,882**	**$1,089,257**	**$1,182,029**
Excluded Item: New Facilities	$19,493	$19,493	$19,493	$19,697	$19,697	$99,545
Excluded Item: New CCRA	$0	$0	$0	$706	$3,381	$12,892
Adjusted Opening Gross Assets[7]	**$829,921**	**$842,224**	**$922,123**	**$1,013,285**	**$1,112,335**	**$1,294,466**
Closing Gross Assets - net of exclusions	**$882,472**	**$902,630**	**$992,882**	**$1,089,257**	**$1,182,029**	**$1,263,967**
Excluded Item: New Facilities	$19,493	$19,493	$19,697	$19,697	$99,545	$99,545
Excluded Item: New CCRA	$0	$0	$706	$3,381	$12,892	$13,802
Adjusted Closing Gross Assets	**$901,965**	**$922,123**	**$1,013,285**	**$1,112,335**	**$1,294,466**	**$1,377,314**
Accumulated Depreciation						
Opening Accumulated Depreciation - net of exclusions	**$(70,764)**	**$(71,580)**	**$(111,437)**	**$(148,273)**	**$(193,925)**	**$(225,440)**
Excluded Item: New Facilities	$0	$0	$0	$0	$0	$(1,778)
Excluded Item: New CCRA	$0	$0	$0	$0	$36	$(216)
Adjusted Opening Accumulated Depreciation	**$(70,764)**	**$(71,580)**	**$(111,437)**	**$(148,273)**	**$(193,889)**	**$(227,434)**
Net Closing Accumulated Depreciation - net of exclusions	**$(110,130)**	**$(111,437)**	**$(148,273)**	**$(193,925)**	**$(225,440)**	**$(272,718)**
Excluded Item: New Facilities	$0	$0	$0	$0	$(1,778)	$(4,438)
Excluded Item: New CCRA	$0	$0	$0	$36	$(216)	$(513)
Adjusted Closing Accumulated Depreciation	**$(110,130)**	**$(111,437)**	**$(148,273)**	**$(193,961)**	**$(227,434)**	**$(277,670)**
Adjusted Net Book Value						
Adjusted Opening Net Book Value	$759,157	$770,644	$810,686	$865,012	$918,374	$1,067,032
Adjusted Closing Net Book Value	$791,835	$810,686	$865,012	$918,374	$1,067,032	$1,099,644
Adjusted Average Net Book Value	**$775,496**	**$790,665**	**$837,849**	**$891,693**	**$992,703**	**$1,083,338**
Working Capital Allowance	$77,116	$82,676	$75,590	$74,431	$73,638	$77,997
ADJUSTED RATE BASE[8]	**$852,612**	**$873,341**	**$913,439**	**$966,124**	**$1,066,341**	**$1,161,335**

[7] This aligns with Attachments UPDATED 2-2-1(A) through (E): OEB Appendices 2-BA - Fixed Asset Continuity Schedules for the years 2016 through 2025, and includes new facilities and new CCRA.
[8] Totals may not sum due to rounding.

The difference between the closing 2020 gross assets after accounting for 2019 actuals in the updated version of Table 2 above and the opening 2021 gross assets in Table 4, as updated below, relate to adding back into rate base assets whose revenue requirement was recorded into a Regulatory Account in 2016-2020.

AS ORIGINALLY SUBMITTED

2020 Closing Gross Assets	$1,257,217
New Administrative Office & Operations Facilities	$99,543
CCRA	$14,169
2021 Opening Gross Assets	$1,370,929

UPDATED FOR 2019 ACTUALS

2020 Closing Gross Assets	$1,263,967
New Administrative Office & Operations Facilities	$99,545
CCRA	$13,802
2021 Opening Gross Assets	$1,377,314

Similarly, after accounting for 2019 actuals, the difference between the closing 2020 accumulated depreciation in the updated version of Table 2 above and the opening 2021 accumulated depreciation in Table 4, as updated below, also relates to adding back into rate base assets whose revenue requirement was recorded into a Regulatory Account in 2016-2020.

AS ORIGINALLY SUBMITTED

2020 Closing Accumulated Depreciation	$279,866
New Administrative Office & Operations Facilities	$4,452
CCRA	$459
2021 Opening Accumulated Depreciation	$284,777

UPDATED FOR 2019 ACTUALS

2020 Closing Accumulated Depreciation	$272,719
New Administrative Office & Operations Facilities	$4,438
CCRA	$513
2021 Opening Accumulated Depreciation	$277,670

Hydro Ottawa's previously-owned facilities (Albion land and building, and Merivale land and building) were disposed of in September 2019 and November 2019, respectively. Those previously-owned facilities' net book value was therefore removed from rate base as of the applicable months.

3. SUMMARY OF PROPOSED 2021-2025 RATE BASE

Table 4, as updated below, provides a summary of Hydro Ottawa's proposed rate base for the 2021-2025 rate period.

Table 4 – AS ORIGINALLY SUBMITTED – Summary of 2021-2025 Rate Base ($’000s)[9]

	Test Years				
	2021	2022	2023	2024	2025
Opening Gross Assets	$1,370,929	$1,517,861	$1,634,839	$1,710,177	$1,790,724
Closing Gross Assets	$1,517,861	$1,634,839	$1,710,177	$1,790,724	$1,911,057
Average Gross Assets	**$1,444,395**	**$1,576,350**	**$1,672,508**	**$1,750,450**	**$1,850,891**
Opening Accumulated Depreciation	$(284,777)	$(334,623)	$(389,254)	$(446,435)	$(505,659)
Closing Accumulated Depreciation	$(334,623)	$(389,254)	$(446,435)	$(505,659)	$(568,753)
Average Accumulated Depreciation	**$(309,700)**	**$(361,938)**	**$(417,845)**	**$(476,047)**	**$(537,206)**
Opening Net Book Value	$1,086,152	$1,183,238	$1,245,585	$1,263,741	$1,285,065
Closing Net Book Value	$1,183,238	$1,245,585	$1,263,741	$1,285,065	$1,342,304
Average Net Fixed Assets	**$1,134,695**	**$1,214,412**	**$1,254,663**	**$1,274,403**	**$1,313,685**
Working Capital Allowance	$83,965	$89,510	$94,956	$102,402	$106,078
RATE BASE[10]	**$1,218,659**	**$1,303,922**	**$1,349,619**	**$1,376,805**	**$1,419,763**

Table 4 – UPDATED FOR 2019 ACTUALS – Summary of 2021-2025 Rate Base ($’000s)[11]

	Test Years				
	2021	2022	2023	2024	2025
Opening Gross Assets	$1,377,314	$1,519,485	$1,640,374	$1,715,712	$1,796,259
Closing Gross Assets	$1,519,485	$1,640,374	$1,715,712	$1,796,259	$1,916,592
Average Gross Assets	**$1,448,400**	**$1,579,930**	**$1,678,043**	**$1,755,985**	**$1,856,426**
Opening Accumulated Depreciation	$(277,670)	$(327,398)	$(381,867)	$(438,922)	$(498,020)
Closing Accumulated Depreciation	$(327,398)	$(381,867)	$(438,922)	$(498,020)	$(560,987)
Average Accumulated Depreciation	**$(302,534)**	**$(354,633)**	**$(410,395)**	**$(468,471)**	**$(529,503)**
Opening Net Book Value	$1,099,644	$1,192,087	$1,258,507	$1,276,789	$1,298,240
Closing Net Book Value	$1,192,087	$1,258,507	$1,276,789	$1,298,240	$1,355,605
Average Net Fixed Assets	**$1,145,866**	**$1,225,297**	**$1,267,648**	**$1,287,515**	**$1,326,923**
Working Capital Allowance	$84,870	$90,411	$95,934	$103,375	$107,049
RATE BASE[12]	**$1,230,736**	**$1,315,708**	**$1,363,582**	**$1,390,890**	**$1,433,972**

[9] Figures in Table 4 include Facilities and CCRA.
[10] Totals may not sum due to rounding.
[11] Figures in the updated version of Table 4 include Facilities and CCRA.
[12] Totals may not sum due to rounding.

4. 2016-2020 RATE BASE VARIANCES - APPROVED VS. ACTUALS

Table 5, as updated below, shows the variances between the OEB-approved rate base amounts (Table 1 above) and the Historical Year and Bridge Year amounts (Table 2, as updated above), without adjustments to rate base for inclusions of assets that are requested for inclusion in rate base as of January 1, 2021.

Table 5 – AS ORIGINALLY SUBMITTED – Variances in 2016-2020 Rate Base Without Adjustments - OEB-Approved vs. Historical and Bridge Year Amounts ($'000s)

	Actual			Bridge	
	2016	**2017**	**2018**	**2019**	**2020**
Opening Gross Assets	$12,303	$20,158	$30,284	$39,196	$65,196
Closing Gross Assets	$20,158	$30,284	$39,196	$65,196	$38,406
Average Gross Assets	**$16,231**	**$25,221**	**$34,740**	**$52,196**	**$51,801**
Opening Accumulated Depreciation	$(816)	$(1,307)	$4,402	$4,125	$12,627
Closing Accumulated Depreciation	$(1,307)	$4,402	$4,125	$12,627	$13,699
Average Accumulated Depreciation	**$(1,062)**	**$1,548**	**$4,264**	**$8,376**	**$13,163**
Average Net Fixed Assets	$15,169	$26,769	$39,004	$60,572	$64,964
Working Capital Allowance	$5,560	$(3,027)	$(7,452)	$(539)	$(31)
RATE BASE[13]	**$20,729**	**$23,742**	**$31,553**	**$60,033**	**$64,933**

[13] Totals may not sum due to rounding.

Table 5 – UPDATED FOR 2019 ACTUALS – Variances in 2016-2020 Rate Base Without Adjustments - OEB-Approved vs. Historical and Bridge Year Amounts ($'000s)

	Actual				Bridge
	2016	**2017**	**2018**	**2019**	**2020**
Opening Gross Assets	$12,303	$20,158	$30,284	$39,196	$70,117
Closing Gross Assets	$20,158	$30,284	$39,196	$70,117	$45,156
Average Gross Assets	**$16,231**	**$25,221**	**$34,740**	**$54,656**	**$57,636**
Opening Accumulated Depreciation	$(816)	$(1,307)	$4,402	$4,125	$19,755
Closing Accumulated Depreciation	$(1,307)	$4,402	$4,125	$19,755	$20,847
Average Accumulated Depreciation	**$(1,062)**	**$1,548**	**$4,264**	**$11,940**	**$20,301**
Average Net Fixed Assets	$15,169	$26,769	$39,004	$66,597	$77,937
Working Capital Allowance	$5,560	$(3,027)	$(7,452)	$(3,122)	$176
RATE BASE[14]	**$20,729**	**$23,742**	**$31,553**	**$63,475**	**$78,115**

The following section provides high-level rate base variance explanations. For additional details regarding capital variances, please refer to UPDATED Exhibit 2-4-1: Capital Expenditure Summary or Attachment 2-4-3(E): Material Investments. For more information on Capital Additions, please see UPDATED Exhibit 2-2-1: Assets - Property, Plant & Equipment Continuity Schedule. In addition, for details related to WCA, please see UPDATED Exhibit 2-3-1: Working Capital Requirement.

4.1. 2016 ACTUAL vs. 2016 APPROVED

- Hydro Ottawa's average net fixed assets were $15.2M higher than the OEB-approved amounts. This was largely due to increases in emergency renewal work related to severe storms, increased spending in the Corrective Renewal Program, and CCRA true-up payments to Hydro One Networks Inc. ("HONI") related to the Hinchey substation.
- An additional $5.6M in WCA was required in 2016 as a result of higher Power Supply Expenses than estimated, mainly in relation to the commodity and Global Adjustment expense. This was partially offset by a lower Wholesale cost than estimated.

[14] Totals may not sum due to rounding.

4.2. 2017 ACTUAL vs. 2017 APPROVED

- Hydro Ottawa's average net fixed assets for 2017 were $26.8M higher than approved amounts due, in part, to the previous year's balance and an increase in 2017 in customer-driven demand work related to the following: residential and commercial infills and/or subdivisions; the City of Ottawa's Light Rail Transit project; and unforecasted embedded generation nameplate credit. In addition, a new Human Resources software module was added to the enterprise resource planning system upgrade project, which increased its overall project cost.
- In 2017, $3.0M less WCA was required mainly as a result of lower Power Supply Expenses than estimated. The larger than estimated Global Adjustment expense was offset by the lower than anticipated Commodity and Wholesale expense.

4.3. 2018 ACTUAL vs. 2018 APPROVED

- Hydro Ottawa's average net fixed assets for 2018 were $39.0M higher than approved amounts due, in large part, to the previous year's balance, emergency work from three severe storms (including the September 2018 tornadoes), and a sustained increase in System Access demands, including from museums and large industrial complexes.
- In 2018, $7.4M less WCA was required as a result of a lower Power Supply Expenses than estimated. With the exception of the Transmission Connection charge, which had a negative variance, all other charges were lower than anticipated or very close to the estimate.

4.4. 2019 BRIDGE YEAR vs. 2019 APPROVED

- As submitted in the utility's original Application, Hydro Ottawa's average net fixed assets for 2019 are set to be $60.6M higher than approved amounts due, in part, to the previous year's balance and the capitalization of three large substation projects (Merivale DS, Overbrook DS, and Richmond South DS). For more details on these projects, please refer to Exhibit 2-4-3: Distribution System Plan.

- For 2019, the WCA is set to be mainly in-line with approved amounts, as Hydro Ottawa has maintained the original estimate of Power Supply Expenses from the 2016-2020 rate application for 2019. With the goal of being consistent with the working capital rate used in the Test Years, Hydro Ottawa has used 7.5% as the working capital rate percentage for the 2019 Bridge Year.

2019 ACTUAL vs. 2019 APPROVED

- Accounting for 2019 actuals, Hydro Ottawa's average net fixed assets for 2019 are $66.6M higher than the 2019 approved. The $6.0M variance from the 2019 forecast to the 2019 actual net fixed assets is mainly due to the increase in system access in residential subdivisions.
- In 2019, the main driver for $3.1M less WCA was lower Power Supply Expenses than estimated. When accounting for 2019 actuals, Hydro Ottawa used the OEB-approved 7.55% for the working capital percentage rate for 2019.

4.5. 2020 BRIDGE YEAR vs. 2020 APPROVED

- Hydro Ottawa's average net fixed assets for the 2020 Bridge Year is budgeted to be $65.0M higher than the previously approved amount for 2020, largely as a result of overages in the previous years' balances.
- For 2020, the WCA is mainly in-line with approved amounts, as Hydro Ottawa has maintained the original estimate of Power Supply Expenses from the 2016-2020 rate application for 2020. With the goal of being consistent with the working capital rate used in the Test Years, Hydro Ottawa has used 7.5% as the working capital rate percentage for 2020 in the utility's original Application. To be consistent with the Approved Settlement Agreement, Hydro Ottawa has used the OEB approved 7.52% as the working capital percentage rate for the 2020 Bridge Year.

5. 2016-2025 YEAR-OVER-YEAR RATE BASE VARIANCES

The updated version of Table 6 below provides the year-over-year change in rate base from 2016-2025. Further details for the annual changes are provided in the subsections which follow.

Table 6 – AS ORIGINALLY SUBMITTED – Year-over-Year Change in Rate Base ($'000s)

	2017 vs. 2016	2018 vs. 2017	2019 vs. 2018	2020 vs. 2019	2021 vs. 2020	2022 vs. 2021	2023 vs. 2022	2024 vs. 2023	2025 vs. 2024
Opening Gross Assets	$79,899	$90,252	$96,375	$87,851	$193,821	$146,933	$116,978	$75,337	$80,548
Closing Gross Assets	$90,252	$96,375	$87,851	$80,109	$260,645	$116,978	$75,337	$80,548	$120,333
Average Gross Assets	**$85,076**	**$93,314**	**$92,113**	**$83,980**	**$227,233**	**$131,955**	**$96,158**	**$77,943**	**$100,440**
Opening Accumulated Depreciation	$(39,857)	$(36,836)	$(45,652)	$(38,643)	$(52,209)	$(49,846)	$(54,631)	$(57,182)	$(59,224)
Closing Accumulated Depreciation	$(36,836)	$(45,652)	$(38,643)	$(47,298)	$(54,757)	$(54,631)	$(57,182)	$(59,224)	$(63,094)
Average Accumulated Depreciation	**$(38,347)**	**$(41,244)**	**$(42,148)**	**$(42,971)**	**$(53,483)**	**$(52,238)**	**$(55,906)**	**$(58,203)**	**$(61,159)**
Average Net Fixed Assets	$46,729	$52,070	$49,965	$41,009	$173,750	$79,717	$40,251	$19,740	$39,282
Working Capital Allowance	$(7,086)	$(1,159)	$1,790	$1,568	$6,176	$5,545	$5,446	$7,446	$3,676
RATE BASE[15]	**$39,643**	**$50,911**	**$51,755**	**$42,577**	**$179,926**	**$85,262**	**$45,697**	**$27,186**	**$42,958**

[15] Totals may not sum due to rounding.

Table 6 – UPDATED FOR 2019 ACTUALS – Year-over-Year Change in Rate Base ($'000s)

	2017 vs. 2016	2018 vs. 2017	2019 vs. 2018	2020 vs. 2019	2021 vs. 2020	2022 vs. 2021	2023 vs. 2022	2024 vs. 2023	2025 vs. 2024
Opening Gross Assets	$79,899	$90,252	$96,375	$92,772	$195,285	$142,172	$120,889	$75,337	$80,548
Closing Gross Assets	$90,252	$96,375	$92,772	$81,938	$255,519	$120,889	$75,337	$80,548	$120,333
Average Gross Assets	**$85,076**	**$93,314**	**$94,573**	**$87,355**	**$225,402**	**$131,530**	**$98,113**	**$77,943**	**$100,440**
Opening Accumulated Depreciation	$(39,857)	$(36,836)	$(45,652)	$(31,515)	$(52,230)	$(49,728)	$(54,469)	$(57,055)	$(59,097)
Closing Accumulated Depreciation	$(36,836)	$(45,652)	$(31,515)	$(47,279)	$(54,680)	$(54,469)	$(57,055)	$(59,097)	$(62,967)
Average Accumulated Depreciation	**$(38,347)**	**$(41,244)**	**$(38,583)**	**$(39,397)**	**$(53,455)**	**$(52,099)**	**$(55,762)**	**$(58,076)**	**$(61,032)**
Average Net Fixed Assets	$46,729	$52,070	$55,990	$47,958	$171,947	$79,432	$42,351	$19,866	$39,408
Working Capital Allowance	$(7,086)	$(1,159)	$ (793)	$ 4,358	$ 6,874	$ 5,541	$ 5,523	$ 7,441	$ 3,674
RATE BASE[16]	**$39,643**	**$50,911**	**$ 55,197**	**$ 52,317**	**$ 178,820**	**$ 84,972**	**$ 47,874**	**$ 27,308**	**$ 43,082**

5.1. 2017 ACTUAL vs. 2016 ACTUAL

- Hydro Ottawa's average net fixed assets for 2017 were $46.7M higher than 2016 due to capital additions in 2017.
- In 2017, WCA was $7.1M less than 2016 due to a decrease in Power Supply Expenses.

5.2. 2018 ACTUAL vs. 2017 ACTUAL

- Hydro Ottawa's average net fixed assets for 2018 were $52.1M higher than 2017 due to capital additions in 2018.
- In 2018, WCA was $1.2M less compared to 2017. This decrease was the result of lower Power Supply Expenses.

[16] Totals may not sum due to rounding.

5.3. 2019 BRIDGE YEAR vs. 2018 ACTUAL

- As submitted in the utility's original Application, Hydro Ottawa's average net fixed assets for 2019 are set to be $50.0M higher than 2018 due to capital additions in 2019.
- In 2019, WCA is likewise estimated to be $1.8M more than 2018 due to an increase in Power Supply Expenses, as submitted in Hydro Ottawa's original Application.

2019 ACTUAL vs. 2018 ACTUAL

- Accounting for 2019 actuals, Hydro Ottawa's average net fixed assets for 2019 were $56.0M higher than 2018 due to capital additions in 2019.
- In addition, WCA was $0.8M less than 2018 mainly as a result of a lower approved WCA percentage.

5.4. 2020 BRIDGE YEAR vs. 2019 BRIDGE YEAR

- As submitted in the utility's original Application, Hydro Ottawa's average net fixed assets for 2020 are budgeted to be $41.0M higher than 2019 due to capital additions in 2020.
- In 2020, WCA is likewise estimated to increase $1.6M over 2019 due to anticipated increases in Power Supply Expenses, as submitted in Hydro Ottawa's original Application.

2020 BRIDGE YEAR vs. 2019 ACTUAL

- Hydro Ottawa's average net fixed assets for 2020 are budgeted to be $48M higher than 2019 actual net fixed assets due to capital additions in 2020.
- In Bridge Year 2020, WCA is estimated to increase $4.4M over 2019 actuals due to anticipated increases in Power Supply Expenses and Operations, Maintenance and Administration Expenses.

5.5. 2021 TEST YEAR vs. 2020 BRIDGE YEAR

- As originally submitted, Hydro Ottawa's average net fixed assets for 2021 are budgeted to be $173.8M higher than 2020 due to capital additions in 2021. Accounting for 2019 actuals, however, the 2021 average net fixed assets are budgeted to be $171.9M higher than 2020. These include $50.0M in additions related to Cambrian Municipal Transformer Station ("MTS").[17] In addition, the inclusion of adjustments to rate base of items that were previously held outside base rates (i.e. new facilities and new CCRA for 2016-2020 - see section 2 above) is likewise planned, with these assets being added at their net book value in the 2021 Test Year.

- In 2021, the WCA (as originally submitted) is estimated to increase $6.2M over 2020 mainly due to increases in Power Supply Expenses. Based on 2019 actuals, the WCA is estimated to increase $6.9M over 2020. For more information on WCA, please refer to UPDATED Exhibit 2-3-1: Working Capital Requirement.[18]

5.6. *2022 TEST YEAR vs. 2021 TEST YEAR*

- As submitted by the utility in its original Application, Hydro Ottawa's average net fixed assets for 2022 are budgeted to be $79.7M higher than 2021 due to capital additions in 2022. Based on 2019 actual net fixed assets, Hydro Ottawa's average net fixed assets for 2022 are budgeted to be $79.4M higher than 2021. These additions include $26.9M related to Cambrian MTS.
- In 2022, the WCA is estimated to increase $5.5M over 2021 mainly due to increases in Power Supply Expenses.

5.7. *2023 TEST YEAR vs. 2022 TEST YEAR*

- As submitted in the utility's original Application, Hydro Ottawa's average net fixed assets for 2023 are budgeted to be $40.3M higher than 2022 due to capital additions in 2023. Based on 2019 actual net fixed assets, Hydro Ottawa's average net fixed assets for 2022 are budgeted to be $42.4M higher than 2021.

[17] For more information on Cambrian MTS, please see Attachment 2-4-3(E): Material Investments.
[18] Please refer to UPDATED Exhibit 2-3-1: Working Capital Requirement for details related to WCA for all of the Test Years.

- In 2023, the WCA is estimated to increase $5.4M over 2022 mainly due to increases in Power Supply Expenses. Accounting for 2019 actuals has resulted in a slight change in WCA. It is now estimated to increase $5.5M over 2022.

5.8. 2024 TEST YEAR vs. 2023 TEST YEAR

- As submitted in the utility's original Application, Hydro Ottawa's average net fixed assets for 2024 are budgeted to be $19.7M higher than 2023 due to capital additions in 2024. Based on 2019 actual net fixed assets, Hydro Ottawa's average net fixed assets for 2024 are budgeted to be $19.9M higher than 2023.
- In ~~2014~~ 2024, the WCA is estimated to increase $7.4M over 2023 due mainly to increases in Power Supply Expenses.

5.9. 2025 TEST YEAR vs. 2024 TEST YEAR

- As submitted in the utility's original Application, Hydro Ottawa's average net fixed assets for 2025 are budgeted to be $39.3M higher than 2024 due to capital additions in 2025. Based on 2019 actual net fixed assets, Hydro Ottawa's average net fixed assets for 2025 are budgeted to be $39.4M higher than 2024.
- In 2025, the WCA is estimated to increase $3.7M over 2024 mainly due to increases in Power Supply Expenses.

6. FACILITIES RENEWAL PROGRAM

Appended to this Schedule is UPDATED Attachment 2-1-1(A): New Administrative Office and Operations Facilities, which contains detailed information with respect to Hydro Ottawa's Facilities Renewal Program ("FRP"). This includes the assessment of prudence of the expenditures over $66.0M, as required in the Approved Settlement Agreement governing the utility's 2016-2020 rate term.

In UPDATED Attachment 2-1-1(A): New Administrative Office and Operations Facilities, Table 12 and the revenue requirement for the FRP have been updated. There was a small change in the final total cost of the project (under $1,000). In light of the immateriality of this change, the Attachment was not updated to reflect it.

In addition, appended to this Schedule is a copy of the formal report that was prepared by the Fairness Commissioner who was engaged by Hydro Ottawa at the outset of the FRP Request for Qualifications process. The Fairness Commissioner ultimately concluded that "the procurement process for the Facilities Renewal Program Design Build up to the completion of the evaluation process was conducted in a fair, open and transparent manner." Please see Attachment 2-1-1(B): Fairness Commissioner Report for further details.

UPDATED NEW ADMINISTRATIVE OFFICE AND OPERATIONS FACILITIES

1. EXECUTIVE SUMMARY

1.1. BACKGROUND

Hydro Ottawa was formed as a result of the amalgamation of five municipalities in the year 2000. At the time of amalgamation, the most advantageous option was to move all central functions to a new, purpose-built facility and to create distributed work centres for all construction and maintenance functions. However, due to the time constraints associated with the amalgamation and the magnitude of the capital decision to be made, all facilities were retained for the time being. As part of its distribution rate application filed in June 2011[1] (hereinafter referred to as its ”2012 Cost of Service application”), a Facilities Strategy was presented and it described the status of facilities and the need to further evaluate and identify the best development solution. At that time Hydro Ottawa requested funding to purchase land, but not did not seek funding for the overall project.

In its 2016-2020 Custom Incentive Rate-Setting (“Custom IR”) application[2] filed April 29, 2015 (hereinafter referred to as its “2016-2020 Custom IR application”), Hydro Ottawa proposed to construct new facilities on two parcels of land that were purchased in 2012 and 2013, namely the Eastern Operations and Administrative Office Building (“East Campus”) and a Southern Operations & Warehouse (“South Campus”), collectively referred to as “New Administration and Operations Facilities”. In that application, the estimated cost of the New Administration and Operations Facilities was $92.3M. This funding was for land and to construct new facilities that, amongst other objectives, would:

[1] Hydro Ottawa Limited, *2012 Cost of Service Distribution Rate Application*, EB-2011-0054 (June 17, 2011).
[2] Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015).

a) replace end of life buildings;
b) move Hydro Ottawa's operational centers out of high traffic residential districts to sites with ready access to major highways within the Ottawa area;
c) consolidate operations and administrative staff; and
d) upgrade the operational centers in order to provide better response to customers.

In its Decision and Order dated December 22, 2015[3] ("2015 Decision"), the OEB assessed and approved the need for the New Administration and Operation Facilities.

The OEB also approved provisional funding of up to $66.0M to enable Hydro Ottawa to proceed with the Request for Proposal process while ensuring that the final cost of the New Administration and Operation Facilities would be subject to a prudence review at a future date. In order for Hydro Ottawa to track actual project cost versus the provisional funding amount, the OEB established a series of deferral accounts.

Concurrent with the 2016-2020 Custom IR proceeding, in August 2015 a Request for Qualifications ("RFQ") process was initiated in order to identify potential contractors capable of providing Design Build services in support of the construction of new facilities.

In September 2015 the Strategic Initiatives Oversight Committee ("SIOC") of the Hydro Ottawa Board reviewed the project cost estimate and agreed that based on early indications of increased costs, the budget for the project would be capped at $96.5M plus interest and overhead. By January 2016 a more detailed estimate of project costs was completed, identifying estimated costs of $124.7M. This higher project cost estimate was unacceptable to Hydro Ottawa senior management and the Board of Directors and direction was provided to reduce the estimated project cost and scope. Based on this direction a revised plan and estimate was developed, re-confirming a project budget of $96.5M plus interest and overhead. A Request for

[3] Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015).

Proposals ("RFP") was then sent to the top four qualified respondents identified through the RFQ process. Competitive bids were received and evaluated and a Design-Build contractor was selected for the project.

In order to ensure that the procurement process was conducted in a fair, open and transparent manner, a Fairness Commissioner was engaged from the outset of the RFQ process to the conclusion of the RFP phase. The Commissioner was satisfied that due process was followed. The report in its entirety is included in this Application as Attachment 2-1-1(B): Fairness Commissioner Report. The project was actively managed by a project team and ongoing oversight was provided by Hydro Ottawa senior management and the Hydro Ottawa Board of Directors through the SIOC.

1.2. DESCRIPTION OF FACILITIES

The new facilities consist of two campuses, described as follows:

1. The East Campus is located at 2711 Hunt Club Rd. and is the new eastern operations centre and administration office. This facility consists of three distinct buildings comprised of:
   a) an Administrative Office Building ("EC-1"),
   b) an Operations Centre ("EC-2"), and
   c) a Paper Insulated Lead Covered ("PILC") Cable Storage Facility ("EC-3").

   There is also a solar generation net metering facility on the property.

   Hydro Ottawa moved into this property in stages over the January to May 2019 period.

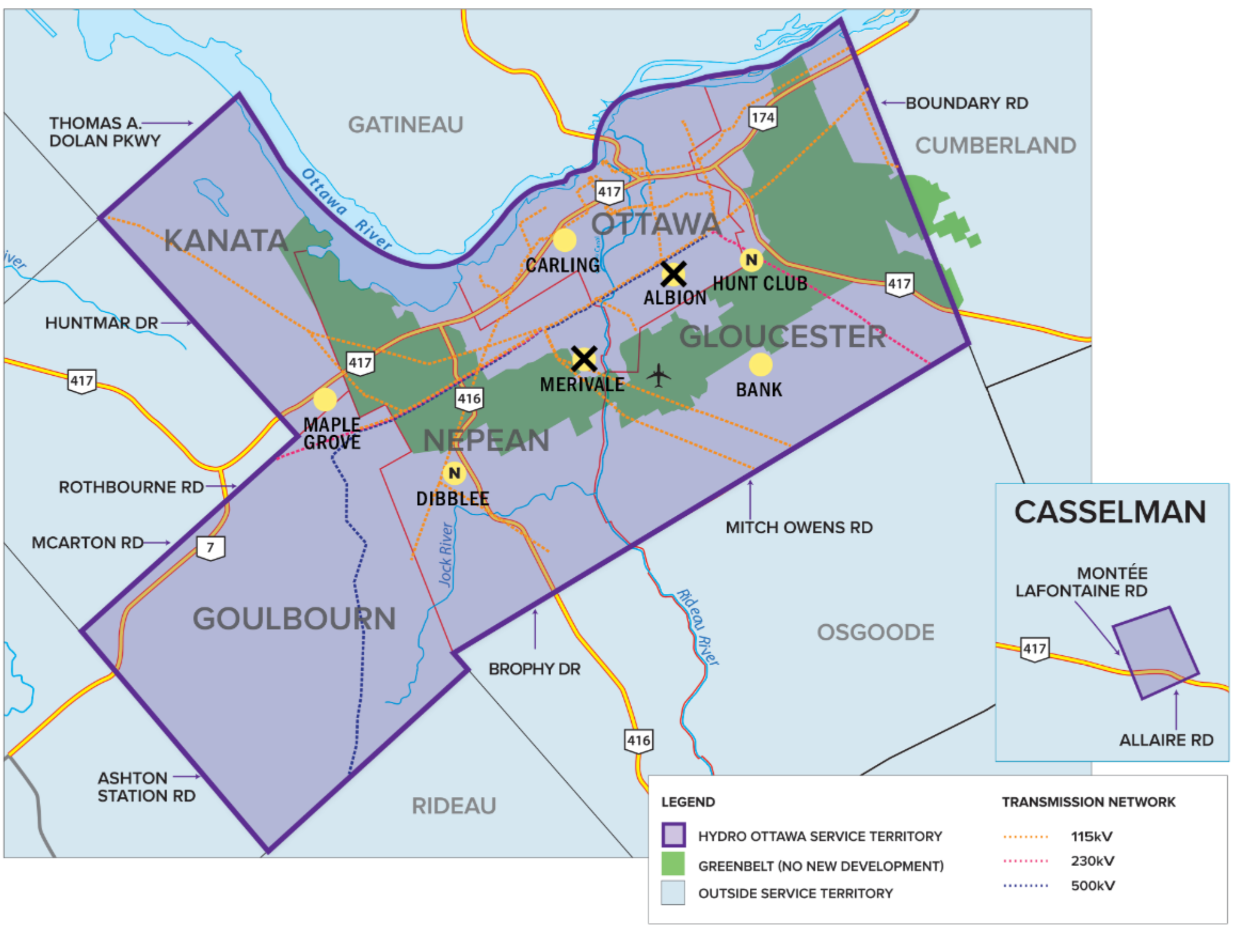
2. The South Campus is located at 201 Dibblee Rd. and is the Operations Centre for the south and western portion of Hydro Ottawa service territory. This facility is one

building ("SC-1") that includes office space, an enclosed garage, warehousing and stores, metering and transformer shops, and storage space. There is also a solar generation net metering facility on the property.

Hydro Ottawa moved into this property in May 2019.

The location of the new facilities at Hunt Club Rd. and Dibblee Rd. can be seen in Figure 1.

Figure 1 – Service Territory and Location Map



In total, 293,873 square feet of New Administration and Operations facilities space has been constructed. Table 1 provides a summary of the location, functionality and size of these new facilities.

Table 1 – Building Size (Square Feet)

	Office	Garage	Warehouse / Storage Space	Total
East Campus - Hunt Club Rd.				
EC-1 Building	127,132			127,132
EC-2 Building	10,780	46,735		57,515
EC-3 Building			10,318	10,318
Sub-Total for East Campus	**137,912**	**46,735**	**10,318**	**194,965**
South Campus - Dibblee Rd.				
SC-1 Building	22,644	42,773	33,491	98,908
TOTAL	**160,556**	**89,508**	**43,809**	**293,873**

The main buildings at the East Campus can be seen in Figures 2 and 3 below. The main building at the South Campus can be seen in Figure 4 below.

Figure 2 – East Campus 1

Figure 3 – East Campus 2 and 3

Figure 4 – South Campus 1

1.3. COST OF NEW FACILITIES

The total cost of the New Administration and Operations Facilities investment is $99.5M including land ($80.0M excluding land). This amount is included in rate base for the 2021-2025 Test Years in this Application. These costs are summarized below in Table 2 below.

Table 2 – Total Cost of New Administration and Operations Facilities

	Construction + Interest & OH	Land	Total Cost
East Campus			
EC-1 Administrative Office	$47,311,660		
EC-2 East Operations Centre	$9,682,771		
EC-3 PILC Storage	$2,524,621		
	$59,519,052	**$12,694,254**	**$72,213,306**
South Campus			
SC-1 South Operations Centre and Warehouse	$20,530,091	$6,800,443	$27,330,534
TOTAL	**$80,049,143**	**$19,494,697**	**$99,543,840**

In summary, subsequent to the $92.3M requested in its 2016-2020 Custom IR proceeding, through the detailed design, estimation, procurement phase and construction process, overall project costs came in $7.2M higher than the preliminary estimate. Table 3 provides a breakdown of the total project cost compared to the cost projections proposed in its 2016-2020 Custom IR proceeding.

Table 3 – Comparison of Final Cost to Costs filed in Previous Application

Total Project ($)	Total Cost	As Filed in 2016-2020 Custom IR Application	*Variance ($)*	*Variance (%)*
- Land	$19,494,697	$19,514,000	*$(19,303)*	*0%*
- Construction	$76,526,966	$68,902,690	*$7,624,276*	*11%*
Subtotal	**$96,021,663**	**$88,416,690**		
- Interest & O/H	$3,522,176	$3,930,289	*$(408,113)*	*-10%*
TOTAL	**$99,543,840**	**$92,346,979**	***$7,196,861***	***8%***

1.4. PROJECT BENEFITS AND PRUDENCY

The guiding principles for the project were collaboration, innovation, flexibility & adaptability, health & wellness and sustainability. Through the construction of the East Campus and South

Campus facilities the identified objectives are being met and the expected benefits are starting to be achieved. These benefits include operational efficiency in areas such as responsiveness to customer trouble calls and outages, work team collaboration, logistics and inventory management, safety and wellbeing, and reduced environmental impact.

The buildings have been “right sized” and Hydro Ottawa has reduced its workplace space standards. Office sizes are now lower than the Federal Government workplace space standards for most positions and office space per employee is lower than benchmarked LDCs. Land is fully utilized and there is room for nominal future office staff growth through the use of flexible office design and touch-down work stations. Overall, project costs compare favourably to other LDCs when escalation and land costs are taken into consideration.

The project was prudently managed throughout each phase and had an active governance, reporting and cost control structure. Potentially higher-than-anticipated costs were identified in advance and decisions made on a timely basis regarding appropriate trade-offs and changes.

Hydro Ottawa has received “value for money” from this project with the stated objectives of the project being achieved and costs comparing favourably to similar construction projects. This was a “once in a generation” capital project and the results will benefit Hydro Ottawa customers over many years to come.

The following sections provide details on the background of the project, a description of the facilities constructed, a summary of project costs and a demonstration of the various aspects of overall project prudency.

2. BACKGROUND

2.1. HISTORY OF NEW ADMINISTRATION AND OPERATIONS FACILITIES PROJECT

In its 2012 Cost of Service application, Hydro Ottawa provided evidence that discussed a strategy to address the future use of facilities acquired through the amalgamation of five municipalities. This evidence also identified the need for new facilities to meet future Administration and Operations facility needs. The facilities strategy identified and evaluated four options that would address the facility needs of Hydro Ottawa. These options were:

1. Retain Existing Facilities;
2. Consolidate all of the inside Administrative Staff at the Albion Road Facility;
3. Consolidate all of the inside Administrative Staff at the Merivale Road Facility; or
4. Construct New Facilities at Optimal Locations.

After considering the four options, it was decided that the lowest cost and best value option to pursue was Option 4 “Construct New Facilities at Optimal Locations”. At that time, approval was sought and subsequently received to include $4.0M in capital expenditures to acquire land for the new facilities. Funding for the actual construction cost was not sought in that application with the expectation being that construction would take place over the 2013-2015 period and approval for these costs would be included in a future rate application.

Subsequent to the OEB’s Decision in Hydro Ottawa’s 2012 Cost of Service application, the purchase of land and the construction of the new facilities was deferred. Over the 2012-2014 period appropriate land was identified and purchased and more detailed plans were developed for the construction of new facilities.

Over the course of Hydro Ottawa’s 2016-2020 Custom IR proceeding, the utility presented evidence in support of a request to spend $92.3M on land and buildings for New Administration and Operations Facilities at two new locations, as presented in Table 4 below.

Table 4 – 2016-2020 Custom IR Application - Facilities Project Estimate ($'000s)

	East Campus	South Campus	Total
Land	$12,716	$6,798	$19,514
Construction	$56,813	$16,020	$72,833
TOTAL	**$69,529**	**$22,818**	**$92,347**

Hydro Ottawa and intervenors participated in a settlement conference and subsequently filed a Settlement Agreement dated September 18, 2015. As part of that agreement, the parties accepted,

> *"... Hydro Ottawa's evidence that the proposed budget of $73 million (without land) for the construction of Hydro Ottawa's new operating centers and administrative facilities as set out in project description and business case contained in Exhibit B-1-2 and Exhibit B-1(A) is an appropriate spending level on the capital spending for the proposed facilities. The Parties agree that the new facilities represents a once in a generation investment."*[4]

Subsequent to filing the Settlement Agreement, the OEB convened an oral hearing on September 30, 2015 to ask questions on the proposed Settlement Agreement. At this hearing, various aspects of the agreement were discussed including the new facilities and the use of deferral accounts. In the OEB's subsequent Decision on the Settlement Proposal,[5] the OEB said:

> ***"****The OEB does not approve the settlement proposal as filed. The OEB does not find sufficient evidence to determine prudence of the following:*
>
> - *The $73 million cost estimate of the new administration and operations buildings (the New Buildings).*
> - *The need for approximately 9 acres of land in excess of the building requirements at a cost of $4 million "to expand in future, if necessary".* [6]

[4] Hydro Ottawa Limited, *Settlement Proposal*, EB-2015-0004 (September 15, 2015), page 15.
[5] Ontario Energy Board, *Decision on Settlement Proposal and Procedural Order No. 11,* EB-2015-0004 (November 23, 2015).
[6] *Ibid*, page 2.

Notwithstanding this determination, it is critical to note that the OEB also stated the following:

> *"The OEB finds that* ***Hydro Ottawa has demonstrated the need for the New Buildings****. The current buildings are at the end of their useful lives and at capacity from a staffing perspective".*[7] *(***Emphasis added***)*

With respect to funding, the OEB Findings stated that*:*

> *"The OEB is prepared to approve Y-factor treatment based on the recovery of up to $66 million combined for the proposed New Buildings and the land…. The $66 million was determined by the OEB as a reasonable amount to enable Hydro Ottawa to proceed with the Request for Proposal process while ensuring that any additional cost of the New Buildings and the land is subject to a prudence review at a future date… While Hydro Ottawa has applied for recovery of up to $92 million for the New Buildings and land in the Custom IR term, the OEB is only prepared at this point to accept up to $66 million."*

> *"The OEB expects that Hydro Ottawa will provide the evidence to support its spending above $66 million for the New Building and land and proposed rate base additions as part of its next rebasing application. The evidence would need to demonstrate prudence of the cost of the New Buildings, land and the associated benefit to customers.*[8]

The Settlement Agreement was updated accordingly and re-filed on December 7, 2015 to include the following section:

> ***"****The Parties agree, pursuant to Procedural Order No. 11 that Hydro Ottawa may proceed to issue a Request for Proposal and that Hydro Ottawa is approved to incur expenses up to $66 million for the land and buildings associated with the New Facilities as described in Hydro Ottawa's Custom IR Application. The Parties agree that this approval is based on the OEB's assessment of and concurrence with Hydro Ottawa of its need for the New Facilities. The $66 million includes $15 million for the cost of land and $51 million towards the construction of the New Facilities. The Parties acknowledge the OEB's statement that the $66 million is in no way determinative of the final amount the OEB will accept as being prudently incurred and that the OEB will assess prudence for additions above $66 million based on evidence to support spending above $66 million as supplied by Hydro*

[7] *Ibid*, page 3.
[8] *Ibid*, pages 4-5.

> *Ottawa at its next rebasing. For clarity the Parties understand that the original agreement reached on September 18, 2015 was for $93 million which comprised of $19 million for the land and $73 million for the buildings construction. In Procedural Order No. 11 the Board approved expenses up to $66 million comprising of $15 million for the land, $51 million for the New Facilities."*[9]

The OEB issued its Decision in the proceeding on December 22, 2015. With respect to the proposed new facilities the OEB said:

> "*However, the OEB did not find sufficient evidence to determine prudence of the $73 million cost estimate of the New Buildings and the $19 million cost of land. While* ***the OEB found that Hydro Ottawa had established the need for the New Buildings,*** *the excess building and land capacity was not supported by the evidence."*[10] *(***Emphasis added)**

Based on its review of the evidence, the OEB stated that it was prepared to approve Y- factor treatment based on the recovery of up to $66M combined for the proposed New Buildings and the land. The decision stated that:

> *"The $66 million was determined by the OEB as a reasonable amount to enable Hydro Ottawa to proceed with the Request for Proposal process while ensuring that any additional cost of the New Buildings and the land is subject to a prudence review at a future date."*[11]

Further to the OEB direction provided in the 2016-2020 Custom IR Decision, Hydro Ottawa is now providing information by way of this Application to support the prudency of expenditures related to land purchased and the construction of buildings for new facilities.

2.2. RECAP OF THE NEED FOR NEW FACILITIES

The need for new facilities was established in the 2016-2020 Custom IR proceeding where

[9] Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Amended September 18th, 2015 Settlement Proposal*, EB-2015-0004 (Originally filed September 18, 20015; refiled December 7, 2015), page 18.
[10] Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015), page 5.
[11] *Ibid,* page 5.

> *"The OEB finds that **Hydro Ottawa has demonstrated the need for the New Buildings**. The current buildings are at the end of their useful lives and at capacity from a staffing perspective."*[12] **(Emphasis Added)**

The following provides a summary of evidence previously submitted in support of the need for new facilities. The need for new facilities was identified 20 years ago when Hydro Ottawa amalgamated from five former municipalities namely Ottawa Hydro, Gloucester Hydro, Nepean Hydro, Kanata Hydro and Goulbourn Hydro. Due to the short timeframe given for amalgamation and the magnitude of capital required, Hydro Ottawa opted to temporarily keep the facilities that existed at that time. These facilities are now between 45 and 60 years old, not in optimal locations, were designed and built in a different era and are at the end of their useful life. These facilities are also at capacity, in need of major repair and no longer meet operational needs. Key reasons in support of the established need for the new facilities are:

Asset End of Life

Hydro Ottawa's investment in new facilities is a once in a generation investment. This investment was identified 20 years ago to better locate the operation centres within the service territory, to consolidate administrative functions, to modernize the work environment and to provide for future growth. Buildings such as the Albion Road facility are 60 years old and were designed and built in an era to meet a very different need from what is currently and prospectively served.

Public Safety

Due to commercial and residential growth in the areas surrounding Hydro Ottawa facilities, truck and employee traffic poses safety risks to the general public. At the Albion Road facility for example, school children board and debark from school buses just outside the Hydro Ottawa

[12] Ontario Energy Board, *Decision on Settlement Proposal and Procedural Order No. 11,* EB-2015-0004 (November 23, 2015), page 3.

facility. Wide turning bucket trucks must navigate heavily populated residential streets posing a risk to public safety.

Operational Efficiency

Hydro Ottawa's move to new facilities is further motivated by the need to consolidate its administrative and operational staff promoting organizational and operational synergies. Consolidating administrative, technical and operational staff will permit greater operating efficiencies by increasing opportunities for collaboration and cross-functional teamwork. In addition to providing a greater foundation for productive collaboration, the new facilities are located close to major traffic arteries in the City of Ottawa and significantly reduce travel time to work locations by work crews resulting in improved customer service and response times. The East Campus location decreases travel time to the core service area, and the South Campus improves the access to main warehousing and expanded south/west service areas and is aligned with the growth of the City.

Employee Health and Safety

Hydro Ottawa's existing facilities are being extended beyond their useful lives and are unable to meet future requirements without major renovations or requiring new construction/leasing off-site facilities. The current facilities have many deficiencies several of which present possible health and safety concerns for Hydro Ottawa staff, crews and customers and/or require substantial investment to replace or repair. For example there have been elevator motor failures trapping staff, rodent infestations, poor air quality and there is uneven pavement and flooring causing a risk of slips and falls. The building also requires major investment to upgrade the building envelope (roof, windows, flooring, HVAC system) to facilitate a more favourable work environment.

2.3. KEY OBJECTIVES

Key objectives of the Facilities Renewal Program were to:

- replace end of life buildings;
- move Hydro Ottawa's operational centers out of high traffic residential districts to sites with ready access to major highways within the Ottawa area;
- consolidate operations and administrative staff;
- upgrade the operational centers in order to enhance customer service and satisfaction;
- increase overall operating efficiencies through proper location, integration and streamlining of services;
- facilitate organizational synergies by consolidating administrative and technical staff and adapting modern technologies and innovative workplace standards;
- provide leadership in energy conservation and sustainability;
- create a healthy, flexible and multi-functional work environment for Hydro Ottawa employees; and
- achieve Leadership in Energy and Environmental Design ("LEED") Gold certification for the East Campus Administrative Office building and LEED Silver for East and South Operation Buildings, and maximize energy efficiency.

2.4. TIMELINE OF KEY DATES

The following summarizes key milestones and dates culminating in the completion of the new facilities project:

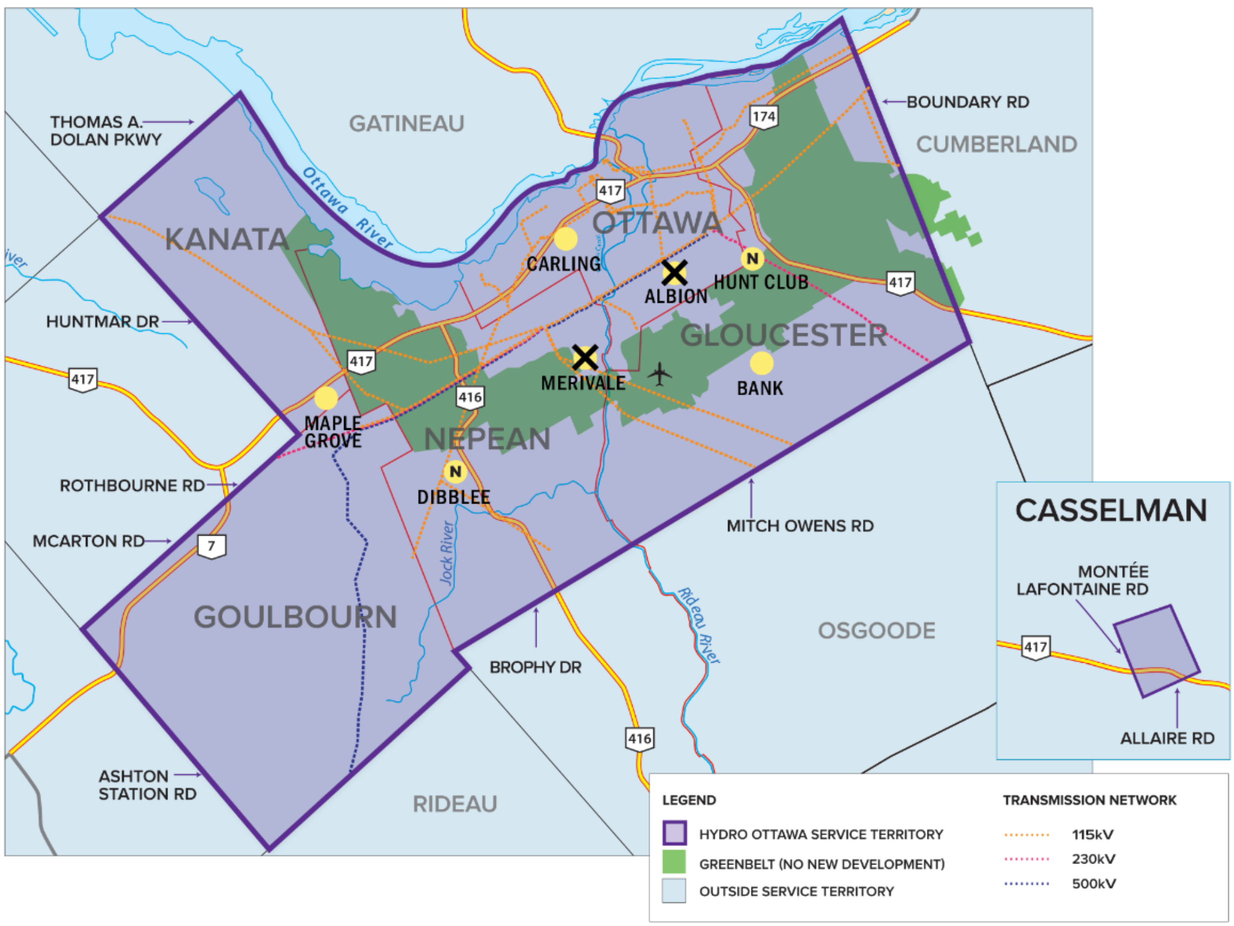
- December 28, 2011, 2012 Cost of Service proceeding: OEB Decision accepted need to proceed with development work on new facilities including land purchase.
- December 24, 2013: Initial RFQ was posted and closed on February 28, 2014
- April 2015: Retained a third party project advisor to do a peer review on the project procurement and intended Design Build contract
- April 29, 2015: Hydro Ottawa filed its 2016-2020 Custom IR application which included a request for $92.3M for the Facilities Renewal Program; The $92.3M was based on a high level (Class D) feasibility estimate

- July 30, 2015: Peer review report on design build procurement for new facilities prepared, recommending improvements in the RFQ/RFP documentation and to revise and re-initiate the process
- August 26, 2015: Updated RFQ issued
- September 22, 2015: SIOC agreed that total project cost would be capped at $96.5M plus capitalized interest and overhead
- November 23, 2015: RFQ submissions evaluated and results communicated, four qualified proponents identified
- December 22, 2015:: OEB Decision concurred with the need for new facilities and approved provisional funding of $66.0M with requirement to demonstrate prudency for any amounts in excess of that amount
- January 20, 2016: a more thorough estimate (Class C) of $124.7M plus capitalized interest and overhead was developed
- February 3, 2016: SIOC review and decision to make necessary design changes and scope reductions and re-confirm project budget at $96.5M plus capitalized interest and overhead
- May 18, 2016: Completed value engineering and revised design validation and a detailed Class B estimate prepared
- May 26, 2016: RFP issued to four qualified proponents
- October 14, 2016: Fairness Commissioner report issued, confirming fairness of RFP process
- October 18, 2016: Final results of RFP evaluation communicated; M. Sullivan & Son chosen as Design-Builder
- October 2016 – May 2019: Ongoing project construction, monitoring and cost control
- May 2019: Project completed at a cost of $80.0M ($99.5M including land, capitalized interest and overhead) and staff move to new facilities

3. DESCRIPTION OF FACILITIES

Hydro Ottawa's Facilities Renewal Program involved construction of new facilities on two parcels of land purchased in 2012 and 2013, namely the Eastern Operations and Administrative Office Campus and a Southern Operations & Warehouse. The location of the New Administration and Operations Facilities are indicated on the ~~the~~ map of Hydro Ottawa's service territory in Figure 5 below.

Figure 5 – Service Territory and Location Map



In total, 293,873 square feet of New Administration and Operations facilities space has been constructed. Table 5 below provides a summary of the location, functionality, and size of these new facilities.

3.1. THE EAST CAMPUS

The East Campus is located at 2711 Hunt Club Rd. This facility consists of three distinct buildings comprised of:

1. EC-1: The Administrative Office Building
2. EC-2: The Operations Centre for eastern sector of Hydro Ottawa service territory, and
3. EC-3: PILC Cable storage facility

The East Campus land parcel was purchased in April 2013 and is located at the corner of Hunt Club Rd. and Hawthorne Ave. near Highway 417 (see Figure 6 below). Table 5 provides site specific details of the East Campus.

Table 5 – East Campus Overview

Site Specific Information		TOTAL EAST CAMPUS	EC-1	EC-2 / EC-3
Site Size	acres	21.08	9.07	12.01
Office Area	sq. ft	137,912	127,132	10,780
Garage Area	sq. ft	46,735		46,735
Indoor Material Storage	sq. ft	10,318		10,318
Yard Space	acres	2.07		
Employee parking spaces (all outdoor)	#	439		
Outdoor fleet vehicle parking spaces	#	40		
Indoor fleet vehicle parking spaces	#	42		
Inside Staff	#	419		
Outside Staff	#	140		
Building cost excluding land	$	$59,519,052	$47,311,660	$12,207,392
Land	$	$12,694,254	$5,459,235	$7,235,019
Building cost including land	$	$72,213,306	$52,770,894	$19,442,411

Three separate buildings are part of the East Campus with a total building footprint of 194,965 Sq. Ft. The largest structure, the Administrative Office Building, is a reinforced concrete building consisting of three floors of administrative office space, a partial lower level and structural steel roof over the top level mechanical floor for a total of 127,132 Sq. Ft.

The Eastern Operation Centre is a 57,515 Sq. Ft. single-storey building with a pre-engineered garage and a conventional masonry and steel structure for the office space and material management functions, plus the necessary operational muster rooms, boot washing, lockers and shower areas. This building has an indoor garage for parking 42 heavy duty fleet vehicles, and also provides kitting bays, material kanbans, and overhead and underground tool storage rooms.

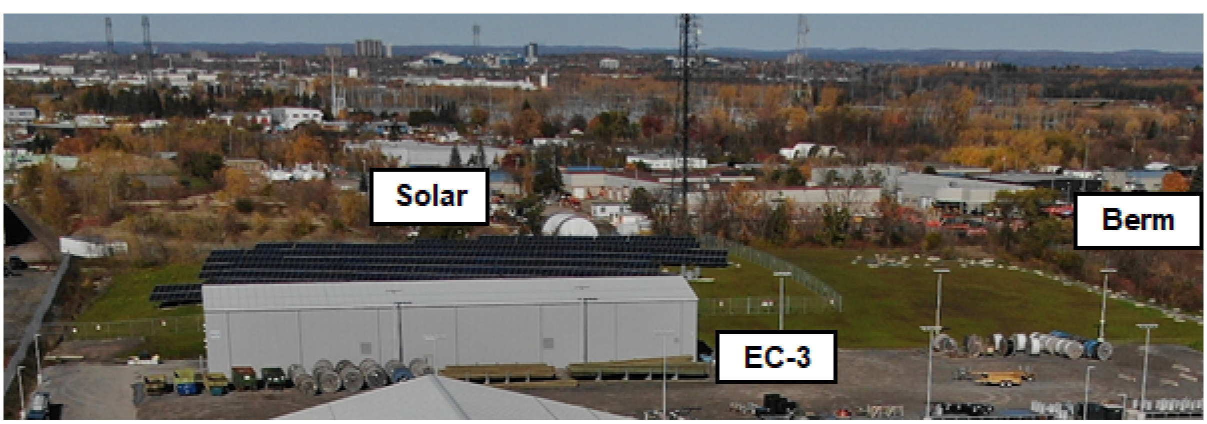
The enclosed PILC Storage Facility is a 10,318 Sq. Ft. Paper Insulated Lead Covered cable storage building with a clear span pre-engineered steel frame superstructure which is supported on a reinforced concrete foundation. This building is a warehouse to store and process overhead and underground cable and provides protection from the elements.

The East Campus also has a 2.52 acre solar yard and an exterior material storage yard.

Images of the East site and main buildings are included in Figures 6 and 7 below.

Figure 6 – EC-1 and EC-2 Buildings

Figure 7 – EC-3 Building, Solar Field and Berm



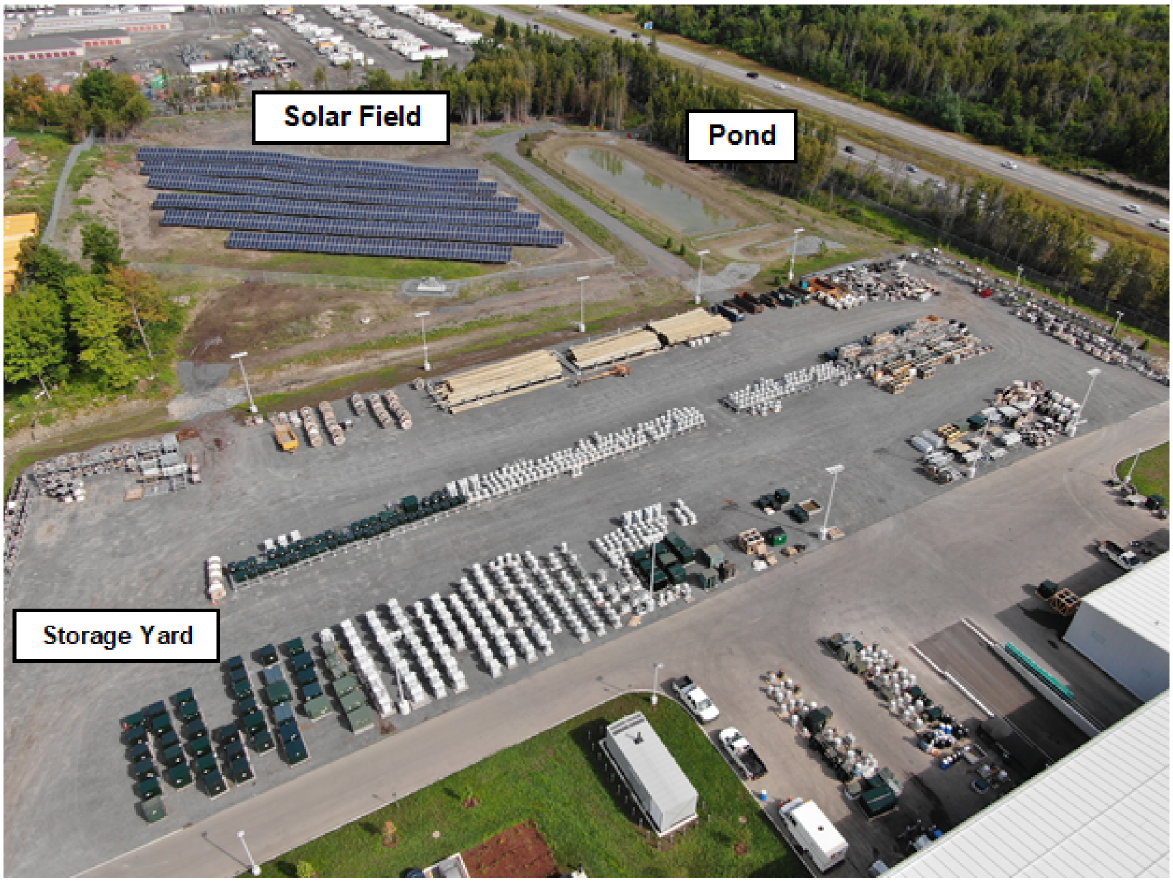
3.2. THE SOUTH CAMPUS

The South Campus is located at 201 Dibblee Rd. and is the Operations Centre for the south and western portion of Hydro Ottawa's service territory. This facility is predominantly operational and is contained in one building that includes office space, an enclosed garage and warehouse/storage space and a transformer shop. There is also a solar generation facility on the property.

The overall site plan and photographs of the constructed facilities can be seen provided in Figures 8 and 9 below.

Figure 8 – South Campus Operations Building

Figure 9 – SC Storage Yard, Solar Field and Storm Water Management Pond



Key statistics regarding the South Campus facility are provided in Table 6.

Table 6 – South Campus Overview

Site Specific Information		TOTAL SOUTH CAMPUS
Site Size	acres	20.26
Office Area	sq. ft	22,644
Garage Area	sq. ft	42,773
Indoor Material Storage	sq. ft	33,491
Yard Space	acres	2.77
Employee parking spaces (all outdoor)	#	101
Outdoor fleet vehicle parking spaces	#	36
Indoor fleet vehicle parking spaces	#	54
Inside Staff	#	18
Outside Staff	#	76
Building cost excluding land	$	$20,530,091
Land	$	$6,800,443
Building cost including land	$	$27,330,534

The South Campus consists of one 98,908 Sq.Ft. building made up of three separate components comprised of (a) a pre-engineered garage, and (b) warehouse and transformer structures, which book-end (c) a central one storey conventional reinforced masonry and steel structure with office space, muster and meeting areas, lockers and showers, and the metering calibration, repair and storage functions.

The South Campus site includes the following features:

- Indoor heavy duty fleet vehicle parking;
- Indoor kitting bays, material kanbans, tool and equipment storage areas;
- Office and operations support areas;

- Outdoor storage and equipment yard;
- Outdoor fleet parking area;
- Retention receiving area – 10-ton overhead crane;
- Warehouse;
- Metering calibration, workshop and storage; and
- Transformer shop

3.3. STAFF IN NEW FACILITIES

Where staffing numbers are presented in this document, Hydro Ottawa is using headcount not FTEs, as headcount more accurately reflects space usage needs. For example, when students are hired in the summer there is a need to have space for the whole person, not a calculated FTE amount.

The East Campus facility includes space for staff of both Hydro Ottawa and other affiliates of Hydro Ottawa Holding Inc. ("Holding Company"). Cost transfers associated with the shared use of the East Campus space are transacted consistent with the Affiliate Relationships Code as discussed in Exhibit 4-2-1: Shared Services and Corporate Cost Allocation. Given that the East Campus facility was built to accommodate both regulated and affiliate company staff, Table 7 provides staff level headcount information for Hydro Ottawa and affiliates.

Table 7 – Number of Staff at New Facilities - Hydro Ottawa and Affiliates

(Headcount - June 30, 2019)	East Campus	South Campus
Administration (Inside)	419	18
Operations (Outside)	140	76
TOTAL	**559**	**94**

The East Campus includes Hydro Ottawa staff associated with the following functions: Executive Team, Information Management and Information Technology, Human Resources, Finance, Customer Service, Communications and Public Affairs, Distribution Operations – Central & East, Distribution Asset Management, Distribution Operations Underground, System Operations, Business Performance, GIS and Records, Policies and Standards, Design & Asset, Distribution Operations Business Performance and Scheduling, Stations East and Engineering. In addition, as noted above, the East Campus includes space for staff from affiliate companies.

The South Campus includes Hydro Ottawa staff associated with the following functions: Metering, Distribution Operations - South, Stations South, Engineering, Business Planning and Scheduling and Materials Management.

3.4. PROJECT BENEFITS

Key Principles that guided the design of the buildings were:

- *Collaboration: A flexible and adaptable workplace that encourages collaboration and new ways of working and making decisions;*
- *Health & Wellbeing: Put physical and mental wellbeing, as well as sustainable living, at the forefront of your daily routine; and*
- *Innovation: A resilient workforce that embraces change and disruption through innovative ways of thinking and working.*

As discussed in section 2.1 above, the OEB agreed that Hydro Ottawa had demonstrated the need for the new facilities. Hydro Ottawa identified several factors that drove the established need, some of which include: (i) the replacement of aging buildings that are at the end of their useful lives; (ii) a relocation of operational centers out of high traffic residential districts; (iii) increase of overall operating efficiencies through proper location, integration and streamlining of services; and (iv) an upgrade of the operational centers in order to provide better operational response to customers.

Hydro Ottawa's old facilities were between 45 and 60 years old and were designed and built in a different era and according to outdated standards. In light of this, at the core of the new facilities' design was not only to address Hydro Ottawa's need for new facilities but also to take advantage of modern best building practices and to build healthy and sustainable facilities. There is research that demonstrates employers who care about the environmental impact of their buildings as well as the health and wellbeing of their staff are rewarded by improved productivity and loyalty, which can be worth more than their initial investment.[13]

Hydro Ottawa completed construction of the new facilities in May 2019. Staff moved into the facilities over a series of moves during the January to May 2019 period. By designing and building the new facilities, Hydro Ottawa addressed operational and safety needs. The utility also expects that the new facilities will improve employee workplace wellness and productivity and reduce the environmental footprint of building operations. The new facilities are sustainable, energy efficient and certified to LEED Gold standards. The resulting benefits of the new facilities are described in more detail below.

3.4.1. Operational Efficiency

One of the objectives of the new facilities was to enhance operational efficiency. This objective involves consolidating operations and administrative staff as well as upgrading operational centers in order to provide better response to customers and create better, more efficient working conditions. The resulting benefits in this regard include the following but not limited to:

- *Work team collaboration:* Consolidating administrative, technical and operational staff allows for greater operating efficiencies and opportunities. Having various work teams (e.g. Underground Lines, Overhead Lines, 24/7, Stations, Designers, Engineers) within the Operations Centers or adjacent, in the case of EC-1, allows for more efficient

[13] World Green Building Council, *Building the Business Case: Health, Wellbeing and Productivity in Green Offices* (October 2016).

collaboration amongst these work groups that improves timely information communication and reduces travel time. This, in turn, results in more effective work planning and execution as well as improved response time. Hydro Ottawa's underground and metering groups are able to allocate their resources between the East and South campuses to enable more efficient delivery of projects across the service territory and reduce overall travel time. Meeting rooms and common spaces in operations centres help to promote collaboration. For example, the use of "Ready Rooms" allows for improved tail boarding amongst teams at the beginning of the work day. Meeting room technology improves timely information communication and reduces travel time as meetings across the service territory can be conducted virtually. Also, the use of touchdown locations in operations centres allows designers, engineers and other work groups to temporarily work from various locations to better support field activities.

- *Accessibility:* The new facilities are located in close proximity to major traffic arteries in the City of Ottawa (Highway 417 in the East and Highway 416 in the South portions of Hydro Ottawa service territory). This reduces travel time to work locations by work crews resulting in better customer service and improved incident response times. Consolidated 24/7 operation located more centrally within the city, leading to better accessibility to ready access to highways 416 and 417, leads to improved incident response times.

- *Logistics*: At both the East Campus and the South Campus, there are better designed yards to load/unload and store large material and equipment (pole trailers, transformers, semi-truck deliveries, etc.). There are also multiple tool cribs providing for the separation and improved organization of material and operating equipment for individual teams within work groups and safety and accident prevention is enhanced with larger garage entrances and exits, including one-way traffic flow. The specific building for PILC cable EC-3 has space and a dedicated crane for loading and unloading reels and scrapping cable in an efficient manner. The EC-3 building also provides a facility which significantly decreases the risk of cross contamination of lead and asbestos by providing separate washing facilities and storage for designated substances.

- *Warehouse benefits*: Having a centralized warehouse reduces overall inventory administration. It provides for a more efficient layout for stock-picking and workflow. It also eliminates travel between sites, reduces potential communication gaps and standardizes site specific procedures for ease of training. Improved highway proximity also improves delivery access for third party supply chain providers.

- *Indoor vehicle parking*: The operational benefits of indoor parking for heavy duty fleet vehicles include:
    - reduced warm-up time resulting in higher productivity, and lower greenhouse emissions that would result from outside cold weather idling;
    - expected longer average service life of vehicles;
    - improved functionality of live line tools on aerial devices as these tools must be kept clean and dry in order to maintain dielectric strength and insulation levels. The former facility was severely constrained in this regard as the newer bucket trucks did not fit in the garages; and
    - keeping electronic test equipment, mobile computers, first aid supplies, rubber cover up and live line tools in an above freezing environment.

3.4.2. Safety

Another objective of the new facilities was to move Hydro Ottawa's operational centers out of high traffic residential areas to sites that have an easy access to major highways. Due to commercial and residential growth in the areas surrounding Hydro Ottawa facilities, truck and employee traffic posed safety risks to the general public. For example, at the Albion Road facility, school children boarded and debarked from school buses just outside the Hydro Ottawa facility. Wide turning trucks had to navigate heavily populated residential streets posing a risk to public safety. Through their location in commercial and light industrial areas close to main highways, the new facilities largely resolve this concern. Furthermore, the new facilities enhance safety and accident prevention for Hydro Ottawa's employees by having larger garage entrances and exits, with one-way traffic flow and separated staff vehicle parking and routes.

3.4.3. Employee Wellness and Productivity

Hydro Ottawa is committed to improving health, wellbeing and productivity of its employees. The new facilities were designed and built with the goal to create a healthy working environment that enhances the health, wellbeing and productivity of Hydro Ottawa's employees. In 2017, a multidisciplinary team of experts from Harvard University carried out a study to identify the elements and effects of healthy indoor environments as well as to understand the interaction between personal and public health, productivity, and building design (the "Study").[14] Some of the highlights of the Study include the following:

- *People work more efficiently in environments with good air quality.* Common indoor pollutants that pose risks to human health include nitrogen oxides, carbon monoxide, ozone, particulate matter, and volatile organic compounds ("VOCs") found in building materials, printer emissions, cleaning supplies, paint, glue, furniture, and other materials. Exposure has been linked to numerous health problems, such as cancer and respiratory diseases, as well as absenteeism, poor productivity, and low cognitive function.

- *Buildings constructed with low-VOC materials and finishes reduce exposure to toxic substances.* Studies show employees who work in buildings where fresh air is adequately circulated and distributed are more productive and healthier than those who work in poorly ventilated spaces. A low-VOC, high-ventilation office space with superior air quality improves cognitive function by as much as 101%.

[14] Harvard T.H. Chan School of Public Health, *The 9 Foundations of a Healthy Building* (February 2017).

- *Comfortable temperature and humidity levels are less likely to make workers feel sick or get sick.* A study on workplace thermal conditions found that workers experienced itchy and watery eyes, headaches, and throat irritation when exposed to poor ventilation, humidity, and heat. When indoor environments are too warm, occupants can experience symptoms of “sick building syndrome,” such as headaches, dizziness, fatigue, and flu-like symptoms, as well as negative moods, heart rate changes, and respiratory problems. Temperature and humidity may also influence disease transmission, as cold, dry environments are more likely to spread the flu virus, and warm, humid environments are conducive to the growth of mold and fungus.

- *Good lighting leads to better sleep at night and better productivity during the day.* Lack of natural light has been associated with physiological and sleep problems and depression. Exposure to daylight and access to windows at work have been linked to better sleep duration, an improved mood, less sleepiness, lower blood pressure, and increased physical activity. Office workers with access to natural light have a better circadian rhythm, which is important for sound sleep and cognitive function.

- *Reducing the noise level improves productivity and job satisfaction.* With about 70% of offices now having an open floor plan, more workers are susceptible to distractions from noise. A survey of more than 1,200 senior executives and nonexecutive employees found that 53% reported ambient noise reduced their work satisfaction and productivity. Exposure to environmental noise can increase accidents and impair employee performance and productivity, especially during difficult and complex tasks, and has been linked to higher blood pressure, changes in heart rate, and hypertension. Sound masking was included in the administration building to eliminate ambient noise.

Through designing and building the new facilities according to healthy and green building standards, Hydro Ottawa expects to achieve the following benefits: (i) maximize employee performance and productivity, (ii) attract and retain high-quality employees, (iii) reduce impacts of presenteeism and absenteeism and (iv) promote improved health for employees.

The new facilities are functional – not opulent. They have modern audio-visual and information technologies and amenities that help to promote employee collaboration, innovation and flexibility. The offices have been ergonomically designed and furnished in order to create a productive work environment (e.g. sit/stand desks). The office design will lead to reduced absenteeism, reduced sick time, increased staff morale and retention and recruitment success.

3.4.4. Environmental Footprint of the New Facilities

Hydro Ottawa is committed to reducing the environmental impacts of its building operations. Buildings can generate up to 35% of all greenhouse gases, 35% of landfill waste comes from construction and demolition activities, and up to 70% of municipal water is consumed in and around buildings. As such, making buildings greener can have a substantial impact on larger environmental goals. Furthermore, in recognition of the potential negative impacts associated with the design, construction and operation of the municipal building inventory, the City of Ottawa enacted a policy that requires all new municipal buildings to be designed and delivered in accordance with the Certified performance level of the LEED green building rating system.

LEED certification provides independent, third-party verification that a building has been designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: location and transportation, sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. There are four certification levels: Platinum, Gold, Silver and Certified. Regardless of the certification level achieved, all projects must meet mandated prerequisites and then choose from 110 available credit points to reach the desired certification level. The LEED Platinum level certification achieves the highest honor and the LEED Certified level achieves fundamental performance. Hydro Ottawa's new facilities have been built and certified to LEED Gold standards. The project budget called for the Operations buildings, namely EC-2 and SC-1, to be designed and built to a LEED Silver standard. However, through negotiations with the Design-Builder, these facilities were built to a LEED Gold standard at no incremental cost.

In addition to the above mentioned LEED certification, the new facilities also provide environmental benefits as they receive a portion of their electrical power through on-site solar generation. Overall, the new facilities help to reduce the environmental impact of Hydro Ottawa's building operations.

3.5 CUSTOMER ENGAGEMENT

As noted above the Facilities Renewal Program has been considered by Hydro Ottawa since amalgamation 20 years ago. As part of Hydro Ottawa's 2012 Cost of Service application, a Facilities Strategy was presented and it described the status of facilities and the need to further evaluate and identify the best development solution. At that time, Hydro Ottawa requested funding to purchase land, but did not seek funding for the overall project. The rate hearing process was a public, open and transparent process. The plans were reviewed by the OEB in that proceeding. In addition, at the proceeding intervenor groups, representing various public interests, participated in the process and reviewed Hydro Ottawa's plans.

On April 29, 2015 Hydro Ottawa submitted its 2016-2020 Custom IR application to the OEB. This application presented evidence in support of a request to spend $92.3M on land and buildings for New Administration and Operations Facilities at two new locations, and outlined the need for the facilities. During the customer consultation process that preceded the filing of the 2016-2020 Custom IR application, Hydro Ottawa engaged customers on the matter of these facilities. For example, the workbook survey utilized by the company to solicit feedback from customers included such questions as what customers' views were on Hydro Ottawa having proper facilities to house its staff, vehicles, and tools.[15] In addition, as part of the OEB proceeding to review the application, Hydro Ottawa held a public meeting on July 7, 2015, during which information about the new facilities and the plan to recover costs through a Y Factor was shared.[16]

During the hearing process information on the Facilities Renewal Program was once again scrutinized by both the OEB and the intervenor community, with the intervenor community and OEB Staff agreeing to total projected funding amount as part of the initial Settlement Agreement dated September 15, 2015.[17] In addition, as a result of this proceeding the OEB found that Hydro Ottawa had established the need for the New Buildings.

During the scoping process for the new facilities in late 2015 and early 2016, a revised estimate indicated that the cost to construct the facilities as planned would be $124.7M (see section 4.1 of this Attachment). Hydro Ottawa considered this cost to be unacceptable from a customer rates perspective and the scope of the project was re-visited to bring the budget down to $96.5M excluding interest and overhead. This consideration of customer impacts resulted in a reduction in cost of approximately $28M. The project was completed in 2019, on-time and on budget for a final total cost of $99.6M including interest and overhead. An average residential customer in Ottawa will see approximately $0.93 per month on their bill as a result of the new facilities.

Throughout this period, management of Hydro Ottawa reported to its Board of Directors and, through its shareholder the Holding Company, to the City of Ottawa on the status of the project.

[15] Innovative Research Group, *Customer Consultation Report: 2016 Rate Application Review Prepared for Hydro Ottawa Limited* (April 2015). This report can be found in Hydro Ottawa's *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015), Attachment A-3(A): Customer Engagement Report, page 135.

[16] Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-setting Application Presentation to the Ontario Energy Board*, (July 7, 2015), page 29.

[17] Hydro Ottawa Limited, *Settlement Proposal*, EB-2015-0004 (September 15, 2015), page 15.

This project has been highlighted in Hydro Ottawa's annual report every year since 2012. The annual report is part of a package that is provided by the Chair of the Hydro Ottawa Board to the Mayor of Ottawa and Ottawa City Council at their Annual General Meeting ("AGM") held in June each year.

The new facilities are also identified on Hydro Ottawa's public web site and were mentioned in the customer engagement effort associated with this Application.[18]

4. PROJECT COSTS

4.1. OVERALL COSTS

Since 2015, as the project progressed, cost estimates were refined. These cost refinements resulted in increases from the initial estimated cost as more detailed design information became available. In order to control costs to a level closer to the original budget, adjustments were made in a number of different areas such as project scope, office size and building finish. The progression of key project estimates is presented in the following table:

Table 8 – Summary of Project Costs

	EB-2015-0004 **Submitted**	SIOC Approved **Budget**	EB-2015-0004 **Approved**	Updated **Estimate**	SIOC **Re-Confirmed**	EB-2019-0261 **Final Cost**
Total Project						
- Land	$19,514	$19,514	$15,000	$19,514	$19,514	$19,495
- Construction	$68,903	$76,986	$51,000	$105,186	$76,986	$76,527
	$88,417	**$96,500**	**$66,000**	**$124,700**	**$96,500**	**$96,022**
- Interest & O/H	$3,930					$3,522
TOTAL	**$92,347**					**$99,544**
	April 29, 2015	Sept. 22, 2015	Dec. 20, 2015	Jan. 20, 2016	Feb. 3, 2016	Sept. 30, 2019

[18] See Exhibit 1-2-2: Customer Engagement on the 2021-2025 Rate Application for details.

At the time, the initial $92.3M estimate was developed for the 2016-2020 Custom IR application, minimal detailed design information had been prepared. As the project progressed and further planning and design information was prepared, it became apparent to Hydro Ottawa that the cost of the project as initially envisaged would be higher than estimated. In September 2015, the SIOC of the Hydro Ottawa Board of Directors discussed potential cost cutting measures and agreed that the budget for the project would be capped at $96.5M plus interest and overhead.

By early 2016, further detailed costing information was developed and the estimated cost of the project increased to $124.7M (plus interest and overhead). This information was presented to the SIOC at a meeting on February 3, 2016. This increase was unacceptable to Hydro Ottawa senior management and to the SIOC, and action was taken to reduce various aspects of the project costs. These reductions included reducing the size of the Administrative Office Building, reducing office workplace standards (Workplace 2.0 modified) and retaining the Bank Street facility for fleet and training. Based on the proposed cost reduction measures, the Hydro Ottawa SIOC re-confirmed the project budget to be $96.5M.

Detailed design requirements were then updated to reflect these changes and a Request for Proposals was issued on May 26, 2016 to the four proponents qualified through the RFQ process. The RFP responses were evaluated and M. Sullivan and Son was chosen to be the Design Build contractor for the project.

Upon completion of the new facilities project, the total project costs were $99.5M ($19.5M for land, $76.5M for construction and $3.5M for Allowance for Funds Used During Construction ("AFUDC") and burdens), this represents an increase of $7.2M or 7.8% over the preliminary estimate of $92.3M in the last rate application. With respect to the hard construction costs of approximately $57.5M, discussed in section 4.2, these came in below the detailed design (Class B) estimate of May 2016 by 2% or $1.2M.

The overall project cost excluding interest, AFUDC, and overhead was $96.0M ($0.5M under the Hydro Ottawa Board-approved figure of $96.5M). The contingency provided for in the Hydro Ottawa Board budget of $96.5M was used primarily to address issues encountered during construction such as:

(i) development charges and municipal requirements from the City of Ottawa;
(ii) unexpected site conditions (e.g. soil issues at the East Campus);
(iii) “protected vegetation” at field operations site; and
iv) technological security and operational improvements.

4.2. QUANTITY SURVEY REPORT

A *“Quantity Survey Report”* dated May 18, 2016 was prepared by an independent professional construction cost estimator. The purpose of the report was to provide Hydro Ottawa a realistic estimate of expected probable direct and indirect construction costs for the East Campus and South Campus new facilities. This report was based on the experience of the professional construction cost estimator, historical costing information and familiarity with the construction industry in the Ottawa area. This estimate was prepared in accordance with generally accepted principles and practices for estimating construction projects.

The methodology followed as described in the report is as follows:

> *“From the documentation and information provided, quantities of all major elements were assessed or measured from the drawings and outline specifications where possible and priced at rates considered competitive for a project of this type under a fixed price sub-contract in Ottawa, Ontario.*
>
> *Pricing shown reflects probable construction costs obtainable in the Ottawa area on the effective date of this report. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every trade.”*

Estimated project costs as per the Quantity Survey report are presented in Table 9 below. This estimate relates to “hard” construction costs and excludes costs such as land, furniture and furnishings, development fees, professional fees, overheads and financing charges. It is noted that actual costs came in $1.2M or 2.1% lower than the estimate that was prepared over three years prior. This demonstrates both the rigour of the estimate and also active cost management and control throughout the project life cycle. The hard construction costs as shown below represent 72% of the total construction costs excluding land. The higher than estimated costs on EC-1 is largely attributable to construction issues noted earlier, offset by savings largely in SC-1. Note that the functionality of initially envisioned separate SC-2 building (standalone storage) was incorporated into SC-1 thereby saving hard construction costs on this campus.

Table 9 – Final Building(s) Cost Compared to Quantity Survey Estimate

($)	Quantity Survey May 18, 2016	Final Actual Cost	Variance	Variance %
East Campus				
EC-1	$29,087,871	$32,629,279	*$3,541,408*	*12.2%*
EC-2	$9,355,861	$7,686,656	*$(1,669,205)*	*-17.8%*
EC-3	$1,828,092	$1,989,609	*$161,517*	*8.8%*
	$11,183,953	$9,676,265	*$(1,507,688)*	*-13.5%*
Sub-Total EC	**$40,271,824**	**$42,305,544**	*$2,033,720*	*5.0%*
South Campus				
SC-1	$18,122,397			
SC-2	$348,605			
Sub-Total SC	**$18,471,002**	**$15,210,734**	*$(3,260,268)*	*-17.7%*
TOTAL	**$58,742,826**	**$57,516,278**	*$(1,226,548)*	*-2.1%*

Planned building sizes that served as the basis for the costing in the Quantity Survey report are presented in Table 10 below. As compared to the Quantity Survey report, total actual building constructed square footage was 10,705 Sq. Ft (or 3.8%) greater than estimated.

Table 10 – Final Actual Building(s) Size Compared to Quantity Survey Report (Square Feet)

East Campus	Quantity Survey May 18, 2016	Final Actual	Variance	Variance %
East Campus				
EC-1	120,825	127,132	*6,307*	*5.2%*
EC-2	57,727	57,515	*(212)*	*-0.4%*
EC-3	10,361	10,318	*(43)*	*-0.4%*
	68,088	**67,833**	*(255)*	*-0.4%*
Subtotal EC	**188,913**	**194,965**	*6,052*	*3.2%*
South Campus				
SC-1	90,503			
SC-2	3,752			
Subtotal SC	**94,255**	**98,908**	*4,653*	*4.9%*
TOTAL	**283,168**	**293,873**	*10,705*	*3.8%*

In summary, with respect to the direct construction costs as estimated in the Quantity Survey report, actual project costs were 2.1% lower than estimated and actual building square footage delivered was 3.8% higher than estimated. The result is essentially more building space for a lower price than planned.

Table 11 – Other Development Costs

	Budget	Final Actual Cost	Variance	Variance %
Design Build Costs	$58,900,000	$57,516,278	*$(1,383,722)*	*-2.3%*
Other Development Costs[19]	$18,300,000	$19,010,689	*$710,689*	*3.9%*
Land	$19,300,000	$19,494,697	*$194,697*	*1.0%*
Sub-total	**$96,500,000**	**$96,021,665**	*$(478,335)*	*-0.5%*
Interest		$2,838,753		
Overhead		$683,423		
TOTAL		**$99,543,840**		

The main building structures of the new East Campus and South Campus facilities have been designed and constructed to have a service life of 75 years. Other components of the new facilities such as the roofing system, parking lot and internal furnishings and equipment have shorter service lives consistent with the Kinectrics study and engineering and operational experience.[20]

4.3. SALE OF FORMER ADMINISTRATIVE AND OPERATIONAL FACILITIES

Hydro Ottawa's New Facilities Plan included the sale of buildings that were to be vacated upon completion of the new construction.

The original New Facilities Plan called for the sale of the Bank Street location and the development of new training and fleet facilities. However, in order to help control project costs, it was decided by the Executive Management Team and SIOC to retain the Bank Street facility for training centre and fleet management purposes instead of building new facilities for these functions.

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[19] Other Development Costs include cash allowances, professional fees, furniture, equipment, and permits.
[20] Kinetrics Inc., *Asset Depreciation Study for Use by Electricity Distributors*, EB-2010-0178 (July 8, 2010).

The settlement agreement states that any gain or loss from the sale of Albion Road (A & C properties), Merivale Road and Bank Street will be given back/charged to customers. The Albion Road "A" property is one of the former Administrative Office Buildings and the Eastern Operations centre. Albion Road "B" property is being retained as there is a transformer station on that site. The Albion Road "C" property is vacant/surplus land and was used for yard storage.

The Albion Rd. Property "A" and Merivale properties have been sold to third parties. Albion Rd. Property "A" closed on November 27, 2019 and the Merivale Property closed on September 30, 2019. Albion Rd. Property "C" (surplus land) is being sold to an affiliate as of December 31, 2019. An independent valuation was performed by Altus Group to determine the sale price of Property "C". The net proceeds are accounted for in deferral accounts as per the OEB's 2015 Decision. Further detail on the deferral accounts and the values being recorded can be found in UPDATED Exhibit 9-1-1: Current Deferral and Variance Accounts.

The Merivale Rd., Albion Rd. Property "A" and Property "C" have been removed from rate base effective September 30, 2019, November 30, 2019 and December 31, 2019 respectively. A summary of the properties and the net gain/(loss) is provided in Table 12 below.The updated version of Table 12 below reflects final sale values after accounting for 2019 actuals.

Table 12 – AS ORIGINALLY SUBMITTED – Sale of Facilities

Anticipated Disposal Date	Merivale September 30, 2019	Albion (Property A) November 27, 2019	Albion (Property C) December 20, 2019
Proceeds	$9,200,000	$6,800,000	$1,827,000
Less: NBV	$(8,900,302)	$(5,895,766)	$ (4,271)
Sub-total	**$299,698**	**$904,234**	**$1,822,729**
Less:			
Legal Costs	$(16,859)	$(58,924)	$(50,000)
Environmental Costs	$0	$(650,946)	$(11,935)
Other (e.g. Prof. Fees, Survey)	$(82,876)	$(129,410)	$(0)
TOTAL OF ALL ASSOCIATED SELLING COSTS	**$(99,735)**	**$(839,280)**	**$(61,935)**
Net Gain or (Loss)	**$199,963**	**$64,953**	**$1,760,794**

Table 12 – UPDATED FOR 2019 ACTUALS – Sale of Facilities

Disposal Date	Merivale September 30, 2019	Albion (Property A) November 27, 2019	Albion (Property C) December 20, 2019
Proceeds	$9,200,000	$6,800,000	$1,827,000
Less: NBV	$(8,710,396)	$(5,838,460)	$ (2,059)
Sub-total	**$489,604**	**$961,540**	**$1,824,941**
Less:			
Legal Costs	$(29,993)	$(69,317)	$(5,657)
Environmental Costs	$0	$(664,171)	$(11,935)
Other (e.g. Prof. Fees, Survey)	$(84,604)	$(209,793)	$(48,755)
TOTAL OF ALL ASSOCIATED SELLING COSTS	**$(114,597)**	**$(943,281)**	**$(66,347)**
Net Gain or (Loss)	**$375,007**	**$18,259**	**$1,758,595**

4.4. Y-FACTOR TREATMENT

As the in-service date of the New Buildings was uncertain, in its April 29, 2015 Application, Hydro Ottawa proposed to record the revenue requirement impact of the new facilities as a Y-Factor. When the New Buildings became in-service, the new facilities revenue requirement impact would be calculated, and tracked in a deferral account. In its Decision in the 2016-2020 Custom IR proceeding, the OEB approved Y-factor treatment based on the recovery of up to $66.0M for the new facilities ($51.0M for the New Buildings and $15.0M for the land.) When one new facility was in-service, Hydro Ottawa would file an application with the OEB and propose a rate rider to clear the associated revenue requirement.

The new facilities came into service on May 1, 2019. Using the OEB-approved amount for Y-factor treatment of $66.0M, the annual revenue requirement associated with the new facilities is $3,320,514 for 2019 and $5,823,637 for 2020. After accounting for 2019 actuals, the annual revenue requirement associated with the new facilities has been updated to $3,307,44 for 2019 and $5,821,770 for 2020. On a monthly basis the revenue requirement is added to the Y-factor deferral account, no carrying charges apply to the Y-factor account. Hydro Ottawa is collecting the initial estimate of the Y-factor through a rate rider effective January 1, 2020. For further detail regarding the calculations, accounting and disposition of these Y-factor costs, please see UPDATED Exhibit 9-1-3: Group 2 Accounts. The total revenue requirement for the new facilities is $5,019,369 for 2019 and $8,758,841 for 2020, and has subsequently been updated to $4,999,624 for 2019 and $8,757,386 for 2020, after accounting for 2019 actuals. The difference between revenue requirement of the $66.0M captured in the Y-factor Account and the full cost of the new facilities is being recorded in a separate Regulatory Account, to be collected from customers after a prudencey review.

5. PRUDENCY OF THE NEW FACILITIES PROJECT

At the early stage of the new facilities project, Hydro Ottawa established a number of processes and reviews to ensure that each decision associated with the project was prudent and reasonable in light of the given circumstances. Hydro Ottawa also established checks and balances to control the project costs and ensure the project adhered to the schedule. Taken together, these actions demonstrate that Hydro Ottawa exercised prudent management in planning and execution of the new facilities project.

To demonstrate the prudency of the new facilities, this section describes the following:

- right sizing of building design and full utilization of space;
- land usage and functionality;
- prudent project planning and procurement processes;
- execution stages of the new facilities project, including ongoing project cost review and control; and
- external benchmarking review of similar projects proposed by LDCs.

5.1. SIZE OF BUILDING AND SPACE UTILIZATION

A modern, healthy workplace supports greater productivity, a more engaged workforce and better results for customers. Hydro Ottawa as an employer has a responsibility to create workplaces that support the well-being, wellness and productivity of its employees.

Given the need for new facilities, Hydro Ottawa completed an office standards review to determine the new building space requirements. As the primary guiding workplace standard and the basis for its assessment, Hydro Ottawa used the Federal Government Workplace 2.0 Fit Up Standards ("Workplace 2.0 Standards"), industry research promoting a healthy workplace and Hydro Ottawa Guiding Principles of collaboration, innovation, flexibility & adaptability, health & wellness and sustainability. The Workplace 2.0 Standards have been used by the Federal Government, regulated entities and various municipalities, including the City of Ottawa. Hydro Ottawa also used industry research to support the function of common workspace areas and the impact that these spaces can have on employees and productivity.

Hydro Ottawa then tailored the Workplace 2.0 Standard incorporating industry trends to better align with its operational requirements. Hydro Ottawa modified (i.e. reduced) the standard office space sizes during the design development to increase space allocation consistency, minimize operational costs, and increase office arrangement flexibility for any potential future growth. The resulting Hydro Ottawa workplace standards maximize real estate utilization, reducing overall building areas footprint and long term operational carrying costs. This was done by way of smaller open office workstation environments, increased touch-down work areas for highly mobile or temporary staff, more and varied types of meeting spaces including break-out or collaboration areas for staff, including areas such as a cafeteria, which can transform into a multi-purpose area. Open office environments were designed to maximize direct daylight into work areas, improving staff health and wellness and efficiency. Hydro Ottawa's design of the new facilities promotes its Guiding Principles of Collaboration, Health & Wellness and Innovation that are also in line with office design industry standards. By doing this, the overall health and wellbeing of employees improves which increases innovation, creativity and productivity, benefiting all parties involved.

Table 13 below summarizes the reduction in space standards by position coincident with the development of the new facilities.

Table 13 – Hydro Ottawa Workplace Standards (Square Feet)

Position	Original Standard	New Standard	Change
Enclosed Offices			
CEO	300	300	0
Executives	265	200	(65)
Directors	225	125	(100)
Managers	150	107	(43)
Workstations			
Supervisors	80	36	(44)
Executive Assistant	64	48	(16)
Employees	64	36	(28)
Assigned Touchdown Stn.	64	15	(49)
Unassigned Touchdown Stn.	16	15	(1)
Touchdown Stn. - Trades	16	One 15 per 5 Empl.	(1)

As completed, the new Administrative Office Building ("EC-1") building has 127,132 Sq. Ft. of space and houses 419 staff at June 30, 2019. This is approximately 303 gross square feet per employee. Hydro Ottawa notes that this is well below the International Facility Management Association ("IFMA") average of 396 gross Sq. Ft. per occupant as well as the IFMA average of 425 gross Sq. Ft. per occupant for utilities. In addition to being lower than IFMA standards, Hydro Ottawa's workplace standards are typically lower than or at the lower end of the Workplace 2.0 Standard range. A comparison of Hydro Ottawa workplace space standards with the Government of Canada Workplace 2.0 and the IFMA standards for Utilities is provided in Table 14 below.

Table 14 – Space Standard Comparison (Square Feet)

Position	Hydro Ottawa	Workplace 2.0	IFMA
Executives	200	200	332
Directors	125	150	228
Managers	107	108	158
Employees	36	48	86
Free Address	15	16	n/a

In assessing comparable workplace space allocation, Hydro Ottawa reviewed the overall Sq.Ft./Employee space allotment for other LDCs in their new facilities projects. Hydro Ottawa's office and workstation space allocations are lower than the space allocations of other utilities who have (or are proposing to construct) a dedicated administration facility. This comparison is summarized in Table 15.

Table 15 – Space Standard Comparison, LDC Administration Buildings

	Hydro Ottawa	PowerStream (Now Alectra)	Enersource (Now Alectra)	Energy + Southworks
Gross Sq.Ft./FTE	303	368	527	327

Although the main Administrative Office Building is fully utilized and "right-sized" for the current staff level, future staff growth can be accommodated within the current building footprint through re-arranging workstation configuration and making use of peripheral aisle space and common areas.

5.2. LAND USAGE AND FUNCTIONALITY

The land parcels upon which the two projects are built were purchased in 2012 and 2013. In total Hydro Ottawa purchased approximately 41 acres for a total price of $19.5M. The cost of land and acreage is summarized in Table 16 below.

Table 16 – Land Cost

Location	Purchase Price	# Acres	$/Acre
EC - Hunt Club Rd	$12,694,255	21.08	$602,194
SC - Dibblee Rd.	$6,800,443	20.26	$335,659
Total Land Cost	**$ 19,494,697**	**41.34**	

In its 2015 Decision, the OEB made findings based on information that was provided at that time. Subsequent to the proceeding the site design layout and use has changed and there is no developable surplus land at either location, as further explained below. OEB findings at the time were as follows:

> *'The OEB finds that Hydro Ottawa has not demonstrated the prudence of the $19 million cost for the 41 acres of land. The land was purchased in 2012 and 2013. The total cost of $19 million includes 9 acres of excess land valued at $4 million. The benefit to customers associated with the $4 million cost of the excess land has also not been explained."*

> *"The OEB finds the evidence to be inconclusive, suggesting that the purchased land area included a contingency over and above what is required for the New Buildings, by indicating that the "actual land acquisition provides capacity to expand in future, if necessary."*[21]

The 2015 OEB Decision to not approve a portion of the land purchased ($4M representing approximately 9 acres of land) was based on information contained in a presentation dated November 17, 2014, which was provided by Hydro Ottawa in response to School Energy Coalition interrogatory #11, Attachment B. The rationale for the Decision was that the land was excess to the current needs of Hydro Ottawa and was required to be able to expand in the future if necessary. Subsequent to the presentation produced in response to the interrogatory, both sites have been fully developed to meet current needs and there is no "surplus" land at

[21] Ontario Energy Board, *Decision on Settlement Proposal and Procedural Order No. 11*, EB-2015-0004 (November 23, 2015), pages 3-4.

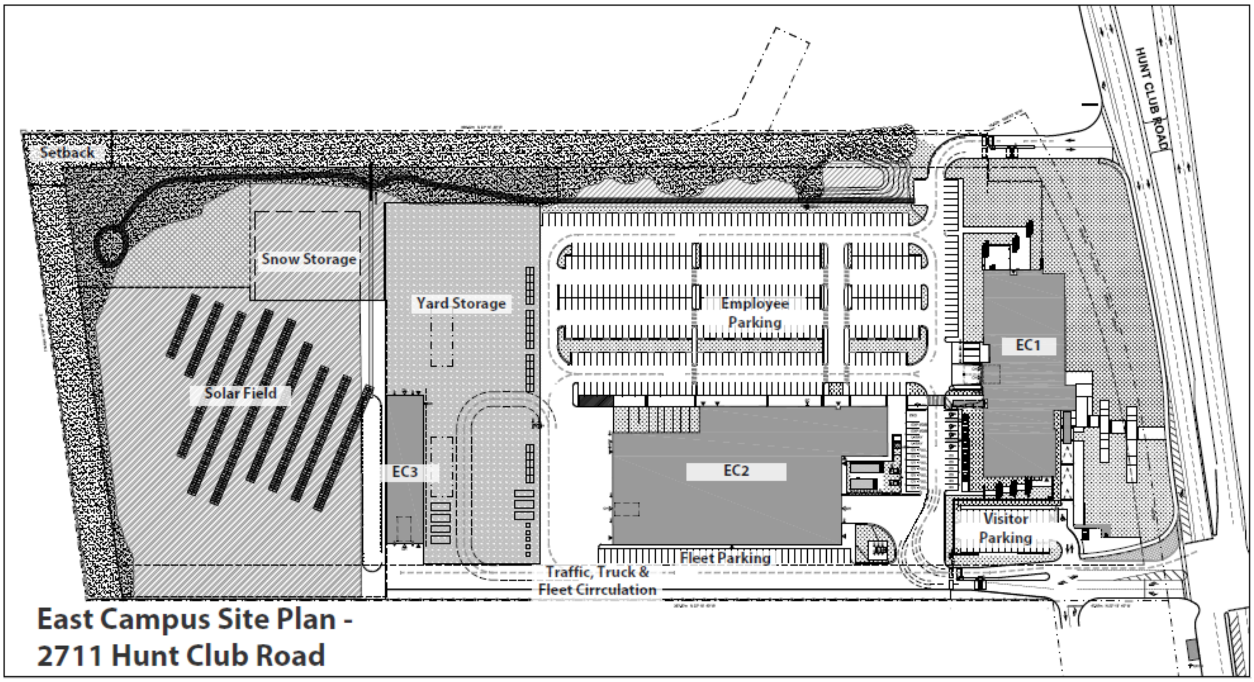
either location. The 41.34 acres purchased is all necessary and is providing value to current Hydro Ottawa customers.

The East Campus land area is 21.08 acres and consists of three buildings, parking, material storage, protected natural lands and property set-backs in respect of local planning requirements. The site includes 1.95 acres which could be considered as non-operational. However, the 1.95 acres is used to store "surplus fill" encountered during construction which was not considered clean soils per Ministry of the Environment, Conservation and Parks ("MECP") Guidelines for external off-site disposal. Hydro Ottawa saved in excess of $700K by keeping these soils on site, which is permitted by MECP guidelines. This area was shaped into a berm at the north east end of the property and there is no environmental risk as the soils were considered contaminated mostly due to the amount of debris (broken concrete, rubble, scrap metal, etc.) preventing it being disposed off-site as clean fill.

The East Campus also has a 2.52-acre Solar Field at the north-west section of the property. This 414 MWh net metering facility supplies electricity to the on-site buildings helping to reduce the consumption from the grid thereby lowering OM&A costs associated with the monthly electricity bill.

Figure 10 below shows East Campus land (21.08 acres) and the current buildings and uses of this site.

Figure 10 – Diagram Showing Use of EC Site

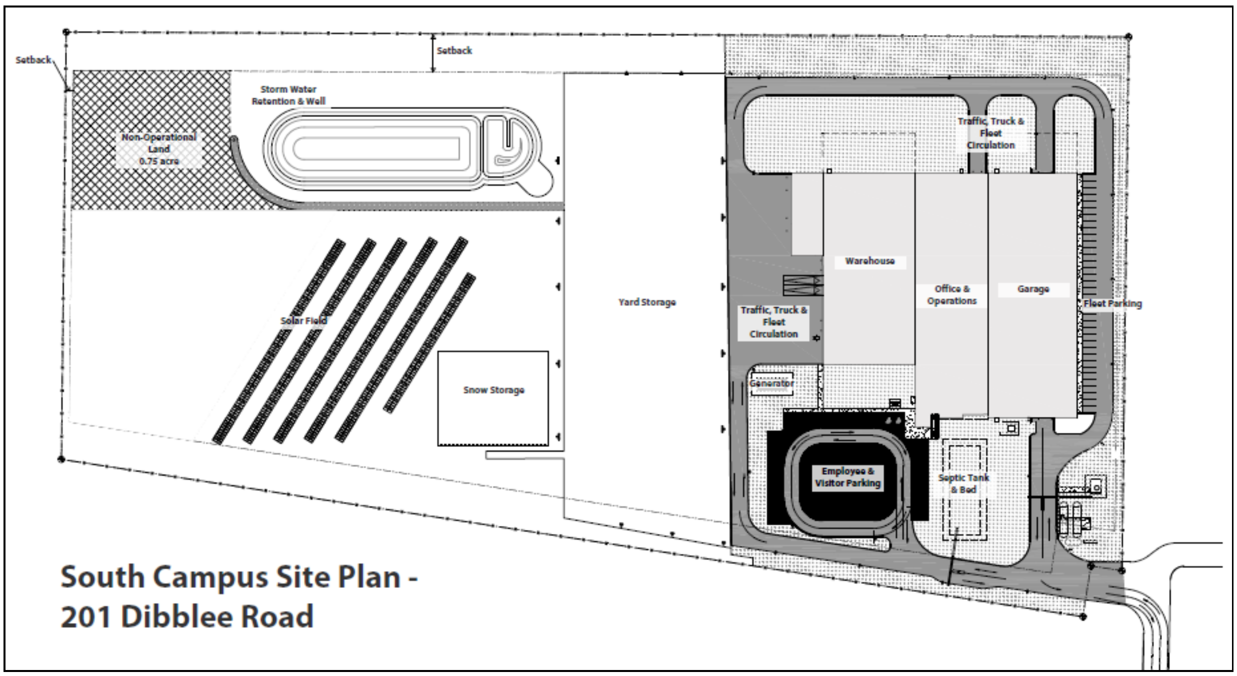


The South Campus land area is 20.26 acres and consists of one main building which houses office, garage and warehouse facilities. A condition pertaining to the South Campus site is that it is not serviced by municipal infrastructure (water and sewer) and required well water and treatment system and a septic system. The site has the main operational warehouse and equipment yard storage, and a stormwater management facility. There is a 0.76 acre non-operational portion of land at the extreme north-east end of the property. This portion has limited access and it is highly impractical to utilize this portion for future operations, or as it is “landlocked”, to sever this portion of land from the main lands.

The South Campus also has a 4.2-acre Solar Field at the north-west section of the property. This 424 MWh net metering facility supplies electricity to the on-site buildings helping to reduce the consumption from the grid, thereby lowering OM&A costs associated with the monthly electricity bill. Further information on this solar facility can be found in Exhibit 2-4-3: Distribution System Plan - Section 8.5.1- General Plant.

Figure 11 is a site plan of the South Campus land and facilities.

Figure 11 – Diagram Showing Use of SC Site

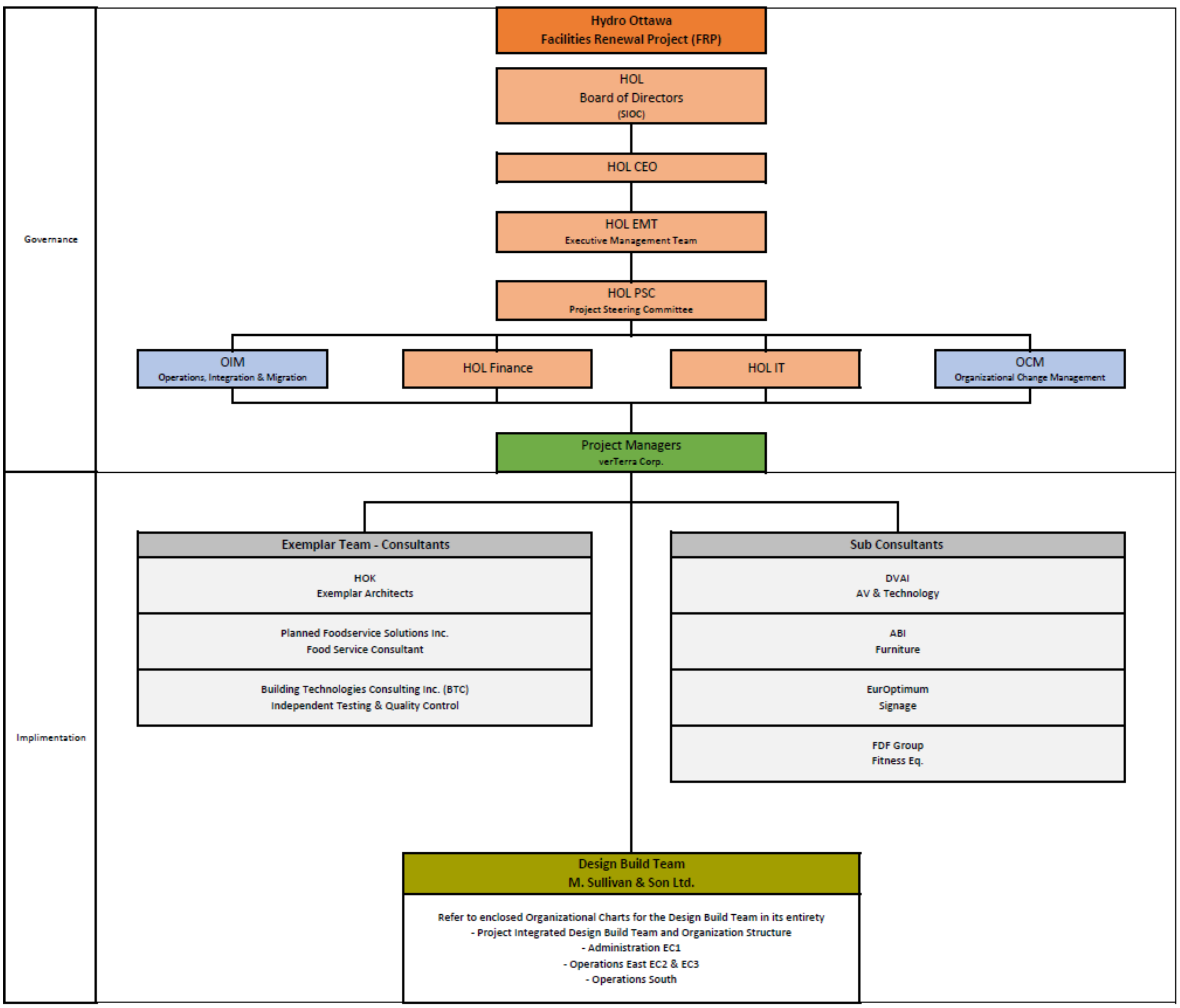


5.3. PRUDENCY DURING THE PLANNING STAGE

As part of its prudent management strategy, at the early stage of the project, Hydro Ottawa formed a Project Management Team to oversee all day-to-day aspects of the facilities renewal program. This team was comprised of Hydro Ottawa staff, an independent project management firm, verTerra Corp., and an advocate architect/interior designer, HOK Canada, to manage the life-cycle of the project.

Hydro Ottawa also created various project teams tasked with distinct responsibilities. Project teams were structured to assist Hydro Ottawa with prudent and reasonable decision-making prior and during the planning stage of the new facilities project. The planning stage involved planning and procurement process to select a successful candidate to carry out the execution stage of the project. Hydro Ottawa also retained an independent, third-party Fairness Commissioner who was tasked to oversee and monitor the fairness and transparency of Hydro Ottawa’s procurement process. The organization chart in Figure 12 below outlines the various roles and positions that comprised the management structure for the new facilities project. This structure was in place for the planning and execution phases of the project.

Figure 12 – Project Organization Chart



Effective project management and governance is critical to the success of a project. From the outset, Hydro Ottawa established a structure and a team of experts to help ensure the successful completion of the project and to ensure that prudent decisions were made throughout the project life-cycle.

5.3.1. Project Teams

In the early stage of the new facilities project, prior to initiating a public tender process, Hydro Ottawa formed a project Design Team to provide preliminary design and technical scope definitions that outline and convey Hydro Ottawa's requirements. The Design Team also participated during the tendering process as a technical adviser to Hydro Ottawa. The Design Team was comprised of the following firms:

- verTerra Corp. – Project Manager and Procurement Advisor
- HOK Architects Corporation – Advocate Architect
- R.V. Anderson – Civil Engineering
- Cunliffe & Associates – Structural Engineering
- Morrison Hershfield – Mechanical and Electrical Engineering
- HOK Canada – Landscape Architecture, Interior Layouts, Signage andWayfinding

Hydro Ottawa also formed an Evaluation Team to review, evaluate and select a successful proponent to build the new facilities project. The Evaluation Team consisted of Hydro Ottawa Executive Management members and other staff, the Project Manager, the Advocate Architect and Fairness Commissioner.

Hydro Ottawa engaged an independent procurement advisor to develop the procurement strategy for the new facilities project, this advisor also had broader scope responsibilities and served as Project Manager. Hydro Ottawa's requirement was to ensure its procurement strategy adhered to the industry best practices for publicly tendered construction projects and was consistent with the Canadian Construction Association and the Canadian Design Build Institute standards for procurement. Additionally, Hydro Ottawa requested that its design build procurement structure be based on similar scale design build procurement models successfully implemented by the City of Ottawa. The procurement strategy was reviewed and approved by the Executive Team and Hydro Ottawa's Board of Directors.

The Project Manager was verTerra Corp. ("verTerra"), an Ottawa based Project Management and Real Estate Advisory Firm, that brought Design Build, Procurement and Operational Migration expertise to the project. verTerra served as the Owner's Representative to help protect the best interests of Hydro Ottawa during the entire project cycle. Prime areas of responsibility included managing and controlling project scope, budget and schedule. Given that the day-to-day construction of the facilities project was managed by a Design Builder (Sullivan & Son), verTerra assisted with the development of Hydro Ottawa's procurement documentation for the intended Design Build contract. verTerra was part of the Hydro Ottawa Project Team. The Project Team was comprised of Hydro Ottawa staff, verTerra and HOK Canada (HOL's advocate architect and interior designer). This arrangement helped to reduce project risk and maximize project success.

5.3.2. Request for Qualifications & Request for Proposals

A two stage procurement process is standard, where the RFQ provides the technical and qualitative requirements for market respondents to structure their teams and base their responses. An RFQ also provides critical insight into the commercial structure of the opportunity and sets out the expectations for the second RFP stage. The RFQ process also thoroughly assesses the capabilities and strengths of the proposed Design Build teams with the qualifications and requirements of Hydro Ottawa's specific project needs.

Hydro Ottawa retained verTerra to help develop a procurement strategy that would adhere to the industry best practices and standards. verTerra confirmed Hydro Ottawa's desire to select a design build contractor for the new facilities project using a two-stage procurement. The first stage was an RFQ, the purpose of which was to invite interested parties to submit RFQ submissions indicating their interest and qualifications to perform and complete the new facilities project. Hydro Ottawa initiated the RFQ stage on August 26, 2015 by posting a nation-wide online public solicitation. The RFQ required interested proponents to submit their design build qualifications and expertise with respect to Hydro Ottawa's specific design criteria and to demonstrate and substantiate their design build expertise and capability to execute similar scale and like projects in order to be qualified.

Hydro Ottawa received a total of ten RFQ submissions from firms both local and external to the Ottawa market. The RFQ submissions were then evaluated by an Evaluation Team with the assistance of the Design Team. The RFQ evaluation criteria had both Mandatory requirements (e.g. capacity to bond, insurance, financial letter of good standing, etc.) and Qualitative requirements (e.g. design-builder overview and expertise, project references, design-build methodology, etc.). Proponents had to first satisfy the Mandatory requirements to be deemed compliant, and if compliant, were then evaluated against the Qualitative criteria. At the conclusion of the evaluation process, which was witnessed and assessed by the Fairness Commissioner, Hydro Ottawa short-listed the four highest ranking proponents, which were then invited to proceed to the second stage of the procurement process, the Request for Proposals.

On May 26, 2016, Hydro Ottawa issued the RFP to the four pre-qualified proponents. The purpose of the RFP was to obtain a fixed tender price for the design build components and evaluate the various design-build proposals for the new facilities project. The RFP stage was a stringent procurement process, and was overseen by the Hydro Ottawa Project Team, Hydro Ottawa Executive Management Team, Supply Chain Management and the Fairness Commissioner. Similar to the RFQ, the RFP consisted of Mandatory requirements that Proponents had to meet in order to be evaluated and also Qualitative requirements. All four pre-qualified proponents submitted responses, met the Mandatory requirements and advanced to the Qualitative evaluations.

Each member of the Evaluation Team was required to independently review and score each proponent submission based on the RFP's stipulated criteria and point distribution. Then the Evaluation Team met and developed consensus scoring for each proponent. The consensus sessions were facilitated by Hydro Ottawa's Supply Chain unit and overseen by the Fairness

Commissioner to ensure fairness and complete objectivity. At the conclusion, Hydro Ottawa selected M. Sullivan and Son ("Sullivan") based in Arnprior Ontario, as the successful proponent ("Design Builder") for the new facilities project. M. Sullivan and Son is a full service general contractor and has been in business for over 100 years. Sullivan submitted the combined best value proposal, having both the best design and the lowest cost.

Once the successful proponent was selected, Hydro Ottawa required the Design Builder, on Hydro Ottawa's behalf, to tender most of the work that was required as part of the project. This included civil, mechanical, electrical, landscaping, road/access improvement work, kitchen equipment, signage, etc. To ensure the Design Builder exercised prudent management, verTerra was tasked to oversee that the Design Builder had a minimum of three bidders for each discrete work package and that all sub-trade bidders were pre-qualified by the Design Builder to meet Hydro Ottawa's established safety and quality requirements.

Aspects of the project not managed by the Design Builder (e.g. furniture) were tendered on an industry best practice basis, i.e. a minimum of three qualified bidders had to submit their proposals, evaluation and selection by the Project Manager. The Hydro Ottawa Supply Chain unit competitively tendered the necessary technology equipment, which was then integrated into the construction work and managed by verTerra and Sullivan as the design and construction advanced.

Hydro Ottawa's procurement process was structured to provide competitiveness and a variety of options from the proponents to ensure the utility was able to make prudent and reasonable decisions. The submitted proposals were subject to a rigorous evaluation process with participation of diverse range of stakeholders tasked with various responsibilities.

5.3.3. Fairness Commissioner and Report

The Fairness Commissioner was PPI Consulting Limited. An independent third party commissioned by Hydro Ottawa to oversee and monitor each stage of the RFQ/RFP process, to ensure that the process was fair, transparent, and in compliance with stated requirements.

The Fairness Commissioner's responsibilities included the following, but were not limited to:

- providing advice on fairness issues concerning the development of the request for proposal;
- monitoring and providing advice on potential or real barriers to proponent participation;
- identifying key issues and potential risks in the procurement process;
- identifying any situation which may compromise the integrity of the evaluation process (i.e. overseeing the evaluation team and procurement processes and assessing potential bias or undue influence);
- monitoring the evaluation of all submissions to oversee the fair treatment of all proponents;
- monitoring the adherence of established government procurement practice in the planning, issue, evaluation, and
- providing a Fairness Report at the conclusion of the evaluation process.

The Fairness Commissioner's report was provided to Hydro Ottawa on October 14, 2016, and concluded that *"the procurement process for the Facilities Renewal Program Design Build up to the completion of the evaluation process was conducted in a fair, open and transparent manner."*

5.4. PRUDENCY DURING THE EXECUTION STAGE

With the selection of Sullivan as the Design Builder, Hydro Ottawa proceeded to the execution stage, to build the new facilities. Hydro Ottawa created a robust project management and governance structure, which included various levels of project oversight, detailed reporting and cost control. Hydro Ottawa also continued to retain verTerra as a third-party project management expert to provide project support and cost-control management of the new facilities project. Hydro Ottawa's Board of Directors, Strategic Initiatives Oversight Committee of the Board and the Executive Team received regular reports from the Project Team relating to, among other things, project costs and schedule and issues. The project management and governance structure helped to allow Hydro Ottawa senior management to be informed at every step of the project and make prudent decisions as the new facilities project was being constructed.

5.4.1. Effective Project Management and Governance

Hydro Ottawa structured a robust governance and reporting regime on the new facilities project which was overseen by Hydro Ottawa's Board of Directors and Executive Management Team. The project was managed by the Project Steering Committee.

The Executive Management Team provided direct executive management oversight and control on all aspects of the project, including the design build contract, all procurements and all Hydro Ottawa managed scope of work. The Board of Directors provided strategic oversight and governance. The new facilities project was a standing reporting item to Hydro Ottawa's Board of Directors, SIOC, with updates on the project status including budget, schedule, safety, key risks and mitigations.

Hydro Ottawa created a Project Steering Committee which was co-chaired by the Chief Financial Officer ("CFO") and Chief Human Resource Officer ("CHRO"). In addition to the Co-Chairs, the Steering Committee included a cross section of Hydro Ottawa staff including managers from all operation divisions, technology, finance, communications and human resources. As the project evolved the Steering Committee created two distinct sub-committees: (i) the Operational Migration Committee ("OCM") chaired by the CFO which dealt with all the operational requirements, and (ii) the Change Management committee chaired by the CHRO which led staff engagement, communications and interior workplace matters. These two sub-committees were active across the entire duration of the new facilities project ensuring compliance with the original specified requirements, and where necessary providing direction to the Project Management Team.

verTerra Corp. assigned a full team of Project Management Professionals on the project under a Project Director who had direct responsibility over the project and the Project Management and Design Build teams. The Project Director directly reported to Hydro Ottawa's CEO, CFO and CHRO and Board of Directors.

Hydro Ottawa held quarterly Executive Partnership Meetings with the Design Build Executive Management Team, Hydro Ottawa's Project Manager, and Hydro Ottawa's CEO and CFO. The purpose of these meetings was to ensure that Hydro Ottawa's Executive Team had oversight and understanding of the project status, costs, emerging issues and risks. It also created an open line of communication between Hydro Ottawa and the Design Builder.

5.4.2. Project Reporting

The Design Builder was required to provide highly structured, effective, and regular reporting to Hydro Ottawa, at both the senior management and project team levels, for the duration of the project. Senior project leadership was required on the part of the Design Builder to lead and control the reporting interfaces with Hydro Ottawa and to structure appropriate reporting formats and presentations that provide at a minimum, project status and progress on:

- project approvals
- design development
- construction progress (including photographic documentation)
- project finances
- value engineering opportunities/innovations
- schedule

- risks and mitigation strategies
- quality control
- site safety

The new facilities project was reported as follows:

- Quarterly reports and presentations made to Hydro Ottawa's Board of Directors, including status, budget, schedule, key risks and opportunities, and a next quarter look ahead.
- Monthly Executive Status reports were provided by the Project Manager, inclusive of project status, work completed last period, budget and changes, schedule, quality, key risks and opportunities, site photographs and next period look ahead.
- Monthly Design Build Reports were submitted by the Design Builder to the Project Manager, inclusive of overall status, sub-trade procurements, budget, schedule, quality, manpower and safety.
- Weekly site reports were provided by the Design Builder to the Project Manager and Hydro Ottawa Executives, including work performed, site photographs, quality and volumetric data, manpower and safety. It is noted that the project was completed without any lost time injuries.

5.4.3. Project Cost Review and Change Order Control

Once the project management and governance structure was established, it was important to constantly monitor project costs and have a stringent process for approval of any deviations from the originally quoted prices. The project total budget was managed by the Project Manager and monthly forecasts were submitted to Hydro Ottawa's CFO, and circulated to the CEO and Board of Directors. The Design Build cost reports were submitted monthly to the Project Manager by the Design Builder, complete with change order and change request forecasts/estimates. Changes to the contract were formalized by the Design Builder with detailed fixed price quotations upon direction by the Project Manager. Hydro Ottawa established a robust, stringent process to ensure that any changes to price were prudent and warranted.

Prior to a change being submitted for approval changes were first reviewed for accuracy and cost fairness by the Design Builders Design and Engineering teams. The Project Manager would then review the quotation and if deemed fair, certify the recommendation and submit it directly to Hydro Ottawa's CFO for final approval. The CFO and the Project Manager conducted regular change review meetings to review / discuss all submitted changes, review the budget forecast, and if deemed acceptable, the CFO would sign off and a change order would be issued to the Design Builder. The approval process employed by Hydro Ottawa was designed in accordance with and adhered to Project Management Institutes and Canadian Construction Association standard practices.

5.4.4. Payment Control

With respect to payment control, the Design Builder submitted monthly progress payment requests with a complete breakdown of expenditures for the period, including all relevant sub-trade, supply and change order invoices to Hydro Ottawa's Project Manager. All monthly progress payment submissions included a Statutory Declaration from the Design Builder certifying supply payments for the previous period had been made and also included a budget and schedule update. Hydro Ottawa's Project Manager reviewed for compliance with the contract and accuracy to work performed on site, and if acceptable, issued a written recommendation to Hydro Ottawa for payment. This process was compliant with the terms of the contract and adhered to PMI and industry best practices.

Billing and payment recommendation on all other contracts, outside of the Design Builder contract responsibility, were managed by the Project Manager who acted as payment certifier, verifying payment accuracy and fairness on all other related contracts.

5.4.5. Project Schedule Control

Another important aspect of the prudent management included project schedule control. The project schedule was managed by the Project Manager with a master critical path schedule set as the baseline, inclusive of all project scope of work. The Design Builder also developed a critical path schedule for the design and construction works, which was linked to the Master Project Schedule. The project schedule was reviewed every two weeks in a Project Team meeting and updated monthly. Short term look ahead schedules were provided every two weeks and verified by the Project Manager on site.

5.5. EXTERNAL BENCHMARKING

5.5.1. Benchmarking Other LDCs

Hydro Ottawa is aware that benchmarking can be a useful measure of project cost performance. The associated comparative information on building size, cost and staff levels can be informative, however it is not precise. There can be differences in the nature of the projects (e.g. new build or refurbishment), location (e.g. urban or rural), land costs (e.g. serviced, un-serviced, nominal value) and year built (e.g. inflation) that all have an influence on project cost and unitized comparisons.

Attempts have been made in previous OEB rate-regulated utility Cost of Service proceedings to present and compare both administrative office and operations building costs. For example, Table 17 summarizes administrative office and operations comparison information in pages 8 and 9 of the OEB Staff Submission dated March 29, 2019 from the EB-2018-0028 Energy+ proceeding (with the exception of the last column which has been added to reflect final project information for Hydro Ottawa new facilities).

Table 17 – Head Office Cost Comparison

	Power Stream EB-2008-0244	Waterloo North EB-2010-0144	Enersource EB-2012-0033	InnPower EB-2014-0086	Milton Hydro EB-2015-0004	PUC Distribution EB-2012-0162	Energy+ EB-2019-0180	Hydro Ottawa EB-2019-0261
Year In Service	2008	2011	2012	2015	2015	2012	2022	2019
Function	Admin.	Admin /Ops	Admin.	Admin/ Ops.	Admin/ Ops.	Admin./Ops.	Admin.	Admin./ Ops.
Type of Project	New Build	Custom Build	Purch./ Refurb	Custom Build.	Purch./ Refurb.	New Build	Purch./ Refurb.	New Build
Capital Cost	$27,700,000	$26,682,000	$18,000,000	$10,896,704	$12,524,798	$23,000,000	$8,100,000	$99,543,840
Sq ft	92,000	105,000	79,000	36,172	91,872	110,382	21,892	293,873
FTEs	250	125	150	41	62	87	67	653
Sq.Ft./FTE	368	840	527	882	1,494	1,269	327	450
Cost/FTE	$110,800	$213,456	$120,000	$265,773	$203,655	$264,368	$120,896	$152,441
Cost/Sq.Ft.	$301	$254	$228	$301	$136	$208	$370	$339

These comparisons are not necessarily made on an "apples to apples" basis or with full information (e.g. being able to isolate land costs and similar building functions). For example, Operations, Warehouse and Storage construction typically costs less than Administrative Office space costs, yet the total square footage in the above table is aggregated. Land costs vary across comparator LDCs and some are at a nominal value (e.g. Energy +). If land costs are removed from Hydro Ottawa, the Cost/Sq.Ft is $272 which compares favourably to other LDCs as shown in Table 18 below.

Table 18 – Head Office Cost Comparison, Excluding Hydro Ottawa Land

	Power Stream EB-2008-0244	Waterloo North EB-2010-0144	Enersource EB-2012-0033	InnPower EB-2014-0086	Milton Hydro EB-2015-0004	PUC Distribution EB-2012-0162	Energy+ EB-2019-0180	Hydro Ottawa EB-2019-0261
Year In Service	2008	2011	2012	2015	2015	2012	2022	2019- Excl. Land
Function	Admin.	Admin /Ops	Admin.	Admin/ Ops.	Admin/ Ops.	Admin./Ops.	Admin.	Admin./ Ops.
Type of Project	New Build	Custom Build	Purch./ Refurb	Custom Build.	Purch./ Refurb.	New Build	Purch./ Refurb.	New Build.
Capital Cost	$27,700,000	$26,682,000	$18,000,000	$10,896,704	$12,524,798	$23,000,000	$8,100,000	$80,049,143
Sq ft	92,000	105,000	79,000	36,172	91,872	110,382	21,892	293,873
FTEs	250	125	150	41	62	87	67	653
Sq.Ft./FTE	368	840	527	882	1,494	1,269	327	450
Cost/FTE	$110,800	$213,456	$120,000	$265,773	$203,655	$264,368	$120,896	$122,587
Cost/Sq.Ft.	$301	$254	$228	$301	$136	$208	$370	$272

In order to help benchmark facilities on a comparable basis, information from Table 19 below identifies facilities that are strictly Administration and then capital costs are escalated to 2019 dollars. These results are then compared with Hydro Ottawa's Administrative Office Building. This comparison, which reflects escalation for PowerStream and Enersource capital cost is presented in Table 19 below.

Table 19 – Head Office Admin. Building Costs, PowerStream & Enersource Escalated

	Energy+ (Southworks)	PowerStream	Enersource	Hydro Ottawa
OEB Docket	EB-2018-0028	EB-2008-0244	EB-2012-0033	EB-2019-0261
Functions	Admin.	Admin	Admin.	Admin. (EC-1)
In-Service Year	2022	2008	2012	2019
Total Cost	$8,100,000	$37,588,900	$21,114,000	$52,770,894
Total Sq. Ft.	21,892	92,000	79,000	127,132
FTEs	67	250	150	419
Sq.Ft./FTE	327	368	527	303
Cost/FTE	$120,896	$150,356	$140,760	$125,945
Cost/Sq.Ft.	$370	$409	$267	$415

Costs for PowerStream and Enersource were escalated/normalized using the Statistics Canada Building Construction Price Index. Cost escalation results from this Statistics Canada information are summarized in Table 20.

Table 20 – Statistics Canada Building Construction Price Index

	Q1 2008	Q1 2012	Q2 2019	Q2'2019/Q1'2008	Q2'2019/Q1'2012
Toronto	83.0	90.4	108.3	30.5%	19.8%
Ottawa/Gatineau	81.0	93.7	109.9	35.7%	17.3%

The 2008 cost of the PowerStream Admin. Building ($27,700,000) was escalated by 35.7% and the 2012 cost of the Enersource Admin. Building ($18,000,000) was escalated by 17.3%. The Building Construction Price Index for Ottawa-Gatineau was used to enable a closer comparison to the vintage of a building had it been constructed in the Ottawa area. It is noted that non-residential construction cost escalation in the Ottawa-Gatineau area has been higher than in Toronto over the 2008 to 2019 period (35.7% compared to 30.5%) but lower in the 2012 to 2019 period. The most direct comparison to Hydro Ottawa's building is the PowerStream building as it is similar in nature in that it is a new build, primarily administration and does not include operations, garage and warehousing facilities. The PowerStream escalated cost of $409 sq./ft. is close to the Hydro Ottawa cost of $415 sq./ft.. Further differences between the PowerStream and Hydro Ottawa cost per sq./ft. would be the price of land but Hydro Ottawa does not have the information needed to remove the land costs from the comparator LDCs. Hydro Ottawa recognizes that while attempting to normalize data through escalation could be helpful in some cases, it does not necessarily result in a meaningful comparisons as there are other factors that create unit cost differences the nature of the project (new build vs. refurbishment, the cost of land and the mix of space (e.g. office / warehouse / garage / operations / storage).

With respect to other unitized measures that are not impacted by escalation, it is noted that the Hydro Ottawa Administrative Office Building, when compared to the other administrative office buildings in Table 19 above, has the lowest number of Sq. Ft,/FTE (303 Sq.Ft/FTE), reflecting efficient use of space. Hydro Ottawa also has the lowest Cost/FTE when compared to PowerStream and Enersource ($125,945/FTE). The Energy+ Southworks Cost/FTE, while lower than Hydro Ottawa's, is not directly comparable with Hydro Ottawa Administrative Office Building as the nature of the Energy+ project is a refurbishment/renovation and the building was purchased for $1.[22]

Removing the cost of Hydro Ottawa land from Table 19, results in a Cost of $372 per Sq. Ft. as shown in Table 21 below.

[22] Update to Evidence, EB-2018-0028 (December 13, 2018), page 10.

Table 21 – Head Office Admin Building Costs, PowerStream & Enersource Escalated – Excluding Hydro Ottawa EC Land

	Energy+ (Southworks)	PowerStream	Enersource	Hydro Ottawa
OEB Docket	EB-2018-0028	EB-2008-0244	EB-2012-0033	EB-2019-0261
Functions	Admin.	Admin	Admin.	Admin. (EC-1)
In-Service Year	2022	2008	2012	2019
Total Cost	$8,100,000	$37,588,900	$21,114,000	$47,311,660
Total Sq. Ft.	21,892	92,000	79,000	127,132
FTEs	67	250	150	419
Sq.Ft./FTE	327	368	527	303
Cost/FTE	$120,896	$150,356	$140,760	$112,916
Cost/Sq.Ft.	$370	$409	$267	$372

Table 22 below compares the East Campus Administration & Operations buildings (EC-2 & EC-3) to other Administration & Operations buildings identified in Table 18 above. In order to compare on a current cost basis, costs have been escalated using the Statistics Canada Building Construction Price Index for the relevant In-Service year as per Table 23.[23]

[23] Update to Evidence, EB-2018-0028 (December 13, 2018), page 10.

Table 22 – Comparison of Administration & Operations Buildings (Escalated $) to East Campus (EC-2 & EC-3)

East Campus (EC-2/EC-3) - Operations, Office, Garage, Warehouse						
	Waterloo North Hydro Inc.	InnPower	Milton Hydro Distribution Inc.	PUC Distribution Inc.	Hydro Ottawa EC-2 & EC-3 Scenario 1: Incl. Land	Hydro Ottawa EC-2 & EC-3 Scenario 2: Excl. Land
Functions	Admin & Ops	Admin & Ops	Admin & Ops	Admin & Ops	Admin & Ops	Admin & Ops
In-service Year	2011	2015	2015	2012	2019	2019
Total Cost	$32,578,722	$12,487,623	$14,353,419	$26,979,000	$19,442,411	$12,207,392
Total Sq. Ft.	105,000	36,172	91,872	110,382	67,833	67,833
FTEs	125	41	61.5	87	140	140
Sq. Ft./FTE	840	882	1,494	1,269	485	485
Cost/FTE	$260,630	$304,576	$233,389	$310,103	$138,874	$87,196
Cost/Sq. Ft.	$310	$345	$156	$244	$287	$180

It is noted that when costs are escalated, Hydro Ottawa's EC-2/EC-3 facilities have the lowest Cost/FTE ($138,874) and is in the midrange of Cost/Sq.Ft. ($287). The EC-2/EC-3 facility has the lowest Sq.Ft./FTE result (485) which is significantly lower than all other comparative results – this result is not impacted by escalation. As land prices vary across the Province, Scenario 2 removes the cost of land from the Hydro Ottawa Total Cost to provide a clear picture of construction costs, resulting in a Cost/Sq. Ft of $180. Hydro Ottawa does not have the information needed to remove land costs from the comparator LDCs.

In order to compare on a current cost basis, costs have been escalated using the Statistics Canada Building Construction Price Index for the relevant In-Service year as per Table 23 below.[24]

[24] Update to Evidence, EB-2018-0028 (December 13, 2018), page 10.

Table 23 – Statistics Canada Building Construction Price Index

	Q1 2011	Q1 2012	Q1 2015	Q2 2019	Q2'2019 / Q1'2011	Q2'2019 / Q1'2012	Q2'2019 / Q1'2015
Toronto	87.5	90.4	93.7	108.3	23.8%	19.8%	15.6%
Ottawa/Gatineau	90	93.7	95.9	109.9	22.1%	17.3%	14.6%

Table 24 below compares the South Campus Administration & Operations building to other Administration & Operations buildings identified in Table 18 above.

It is noted on Table 24 below, that when costs are escalated, Hydro Ottawa's SC-1 facility costs as measured by Cost/FTE and Cost/Sq. Ft. are in the middle of the comparator LDCs. The number of Sq. Ft/FTE is also in the middle of the range. Hydro Ottawa acknowledges that there are a variety of configurations to the mix of Administration and Operations space and also differences in cost between a refurbished facility (e.g. Milton Hydro) and a new build. Also, differences in land values and size will have an impact on comparator costs. As such, a Scenario 2 has been provided which removes the land cost from the SC-1 building in order to provide an indication of direct construction costs.

Table 24 – Comparison of Administration & Operations Buildings (Escalated $) to South Campus (SC-1)

South Campus (SC) - Operations, Office, Garage, Warehouse						
	Waterloo North Hydro Inc.	InnPower	Milton Hydro Distribution Inc.	PUC Distribution Inc.	Hydro Ottawa SC-1 Scenario 1: Incl. Land	Hydro Ottawa SC-1 Scenario 2: Excl. Land
Functions	Admin & Ops	Admin & Ops	Admin & Ops	Admin & Ops	Admin & Ops	Admin & Ops
In-service Year	2011	2015	2015	2012	2019	2019
Total Cost	$32,578,722	$12,487,623	$14,353,419	$26,979,000	$27,330,534	$20,530,091
Total Sq. Ft.	105,000	36,172	91,872	110,382	98,908	98,908
FTEs	125	41	61.5	87	94	94
Sq. Ft./FTE	840	882	1,494	1,269	1,052	1,052
Cost/FTE	$260,630	$304,576	$233,389	$310,103	$290,750	$218,405
Cost/Sq. Ft.	$310	$345	$156	$244	$276	$208

UPDATED ASSETS – PROPERTY PLANT & EQUIPMENT CONTINUITY SCHEDULE

1. INTRODUCTION

This Schedule provides information as required under section 2.2.1.2 of the *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019 ("Filing Requirements"). In addition, the amounts for construction work-in-progress ("CWIP") have also been provided. In accordance with the Filing Requirements, appended to this Schedule are the following:

- Attachment 2-2-1(A): OEB Appendix 2-BA - 2016 Fixed Asset Continuity Schedule
- Attachment 2-2-1(B): OEB Appendix 2-BA - 2017 Fixed Asset Continuity Schedule
- Attachment 2-2-1(C): OEB Appendix 2-BA - 2018 Fixed Asset Continuity Schedule
- UPDATED Attachment 2-2-1(D): OEB Appendix 2-BA - 2019 Fixed Asset Continuity Schedule
- UPDATED Attachment 2-2-1(E): OEB Appendix 2-BA - 2020 Fixed Asset Continuity Schedule
- UPDATED Attachment 2-2-1(F): OEB Appendix 2-BA - 2021 Fixed Asset Continuity Schedule
- UPDATED Attachment 2-2-1(G): OEB Appendix 2-BA - 2022 Fixed Asset Continuity Schedule
- UPDATED Attachment 2-2-1(H): OEB Appendix 2-BA - 2023 Fixed Asset Continuity Schedule
- UPDATED Attachment 2-2-1(I): OEB Appendix 2-BA - 2024 Fixed Asset Continuity Schedule
- UPDATED Attachment 2-2-1(J): OEB Appendix 2-BA - 2025 Fixed Asset Continuity Schedule

2. GROSS ASSETS BY FUNCTION

Tables 1 and 2 below provide Hydro Ottawa's Gross Assets balance by function for the Historical Years 2016-2018, Bridge Years 2019 and 2020, and Test Years 2021-2025. After accounting for 2019 actuals, Tables 1 and 2 have been updated for the Historical Years 2016-2019, Bridge Year 2020, and Test Years 2021-2025.

Table 1 – AS ORIGINALLY SUBMITTED – 2016-2020 Gross Assets Breakdown by Function ($'000s)

Gross Assets	Historical Years			Bridge Years	
	2016	2017	2018	2019	2020
Transmission Plant	$86,743	$86,787	$87,116	$111,468	$114,617
Distribution Plant	$677,307	$748,804	$835,567	$902,780	$962,291
General Plant	$158,074	$177,694	$189,652	$275,660	$294,021
Gross Fixed Assets Before CWIP and Accumulated Depreciation[1]	**$922,124**	**$1,013,285**	**$1,112,335**	**$1,289,908**	**$1,370,929**
Accumulated Depreciation	**$(111,437)**	**$(148,273)**	**$(193,957)**	**$(234,522)**	**$(284,777)**
CWIP	$41,389	$63,853	$129,242	$37,227	$80,744
TOTAL INCLUDING CWIP[2]	**$852,076**	**$928,862**	**$1,047,620**	**$1,092,613**	**$1,166,896**

Table 1 – UPDATED FOR 2019 ACTUALS – 2016-2020 Gross Assets Breakdown by Function ($'000s)

Gross Assets	Historical Years				Bridge Year
	2016	2017	2018	2019	2020
Transmission Plant	$86,743	$86,787	$87,116	$115,600	$118,748
Distribution Plant	$677,307	$748,804	$835,567	$908,399	$970,352
General Plant	$158,074	$177,694	$189,652	$270,467	$288,212
Gross Fixed Assets Before CWIP and Accumulated Depreciation[3]	**$922,124**	**$1,013,285**	**$1,112,335**	**$1,294,466**	**$1,377,314**
Accumulated Depreciation	**$(111,437)**	**$(148,273)**	**$(193,957)**	**$(227,434)**	**$(277,670)**
CWIP	$41,389	$63,853	$129,242	$30,588	$71,970
TOTAL INCLUDING CWIP[4]	**$852,076**	**$928,862**	**$1,047,620**	**$1,097,620**	**$1,171,612**

[1] Variances may exist due to rounding.
[2] Variances may exist due to rounding.
[3] Variances may exist due to rounding.
[4] Variances may exist due to rounding.

Table 2 – AS ORIGINALLY SUBMITTED – 2021-2025 Gross Assets Breakdown by Function ($'000s)

Gross Assets	Test Years				
	2021	2022	2023	2024	2025
Transmission Plant	$122,864	$148,476	$152,078	$157,508	$166,731
Distribution Plant	$1,025,910	$1,102,457	$1,166,737	$1,233,617	$1,315,811
General Plant	$369,087	$383,907	$391,361	$399,599	$428,514
Gross Fixed Assets Before CWIP and Accumulated Depreciation[5]	**$1,517,861**	**$1,634,840**	**$1,710,176**	**$1,790,724**	**$1,911,056**
Accumulated Depreciation	**$(334,623)**	**$(389,254)**	**$(446,435)**	**$(505,659)**	**$(568,753)**
CWIP	$51,388	$29,536	$40,457	$54,289	$27,763
TOTAL INCLUDING CWIP[6]	**$1,234,626**	**$1,275,123**	**$1,304,198**	**$1,339,356**	**$1,370,066**

Table 2 – UPDATED FOR 2019 ACTUALS – 2021-2025 Gross Assets Breakdown by Function ($'000s)

Gross Assets	Test Years				
	2021	2022	2023	2024	2025
Transmission Plant	$126,996	$152,608	$156,210	$161,639	$170,862
Distribution Plant	$1,035,800	$1,114,852	$1,179,131	$1,246,012	$1,328,205
General Plant	$356,689	$372,915	$380,370	$388,607	$417,523
Gross Fixed Assets Before CWIP and Accumulated Depreciation[7]	**$1,519,485**	**$1,640,374**	**$1,715,712**	**$1,796,259**	**$1,916,592**
Accumulated Depreciation	**$(327,398)**	**$(381,867)**	**$(438,922)**	**$(498,020)**	**$(560,987)**
CWIP	$45,054	$21,918	$32,839	$46,671	$20,144
TOTAL INCLUDING CWIP[8]	**$1,237,141**	**$1,280,426**	**$1,309,628**	**$1,344,909**	**$1,375,747**

For detailed Fixed Asset Continuity Schedules for the years 2016-2025, please see Attachments 2-2-1:(A) through (J). These Schedules have been updated for the years 2019-2025 to account for 2019 actuals, and can be found in UPDATED Attachments 2-2-1:(D) through (J), respectively.

[5] Variances may exist due to rounding.
[6] Variances may exist due to rounding.
[7] Variances may exist due to rounding.
[8] Variances may exist due to rounding.

3. GROSS ASSETS BY MAJOR PLANT ACCOUNT

In accordance with section 2.2.1.2 of the Filing Requirements, Table 3 provides Gross Assets balance by major plant account for each functionalized plant item, for Historical Years 2016-2018 and for Bridge Years 2019 and 2020. Table 3 has been updated to account for 2019 actuals and includes Historical Years 2016-2019 and Bridge Year 2020.

Table 3 – AS ORIGINALLY SUBMITTED – 2016-2020 Gross Assets Breakdown by Major Plant Account

Organized by Uniform System of Account ($'000s)

USofA	Description	Historical Years			Bridge Years	
		2016	2017	2018	2019	2020
1815	Transformer Station Equipment >50 kV	$86,743	$86,786	$87,116	$111,468	$114,617
Subtotal Transmission Plant		**$86,743**	**$86,786**	**$87,116**	**$111,468**	**$114,617**
1612	Land Rights	$2,283	$2,294	$2,288	$2,288	$2,297
1805	Land	$4,645	$4,649	$4,652	$4,653	$4,654
1808	Buildings	$27,727	$28,802	$29,663	$30,189	$30,897
1820	Distribution Station Equipment <50 kV	$90,031	$105,595	$116,484	$136,392	$142,155
1830	Poles, Towers & Fixtures	$107,430	$117,400	$128,239	$135,443	$144,524
1835	Overhead Conductors & Devices	$99,986	$108,617	$121,174	$130,158	$146,838
1840	Underground Conduit	$123,465	$144,674	$183,207	$209,553	$232,720
1845	Underground Conductors & Devices	$121,891	$143,156	$158,562	$174,458	$198,932
1850	Line Transformers	$70,722	$79,264	$87,689	$92,878	$100,712
1855	Services (Overhead & Underground)	$53,864	$61,034	$67,353	$69,941	$74,510
1860	Meters	$38,426	$40,578	$42,379	$47,112	$51,769
1970	Load Management Controls Customer Premises	$134	$134	$134	$0	$147
1975	Load Management Controls Utility Premises	$18	$18	$0	$0	$90
1980	System Supervisor Equipment	$6,817	$7,718	$11,472	$13,759	$14,773
2440	Deferred Revenue	$(70,132)	$(95,130)	$(117,729)	$(144,044)	$(182,727)
Subtotal Distribution Plant		**$677,307**	**$748,803**	**$835,567**	**$902,780**	**$962,291**
1609	Capital Contributions Paid	$20,089	$20,776	$22,976	$35,051	$35,961
1611	Computer Software	$51,958	$64,972	$66,629	$67,874	$80,905
1905	Land	$20,356	$20,560	$20,560	$19,942	$19,942
1908	Buildings & Fixtures	$32,327	$32,433	$35,197	$94,603	$95,284
1915	Office Furniture and Equipment	$1,330	$1,407	$1,616	$4,778	$4,879
1920	Computer Equipment - Hardware	$7,346	$6,804	$8,600	$13,652	$15,255

USofA (Cont'd)	Description (Cont'd)	Historical Years (Cont'd)			Bridge Years (Cont'd)	
		2016	2017	2018	2019	2020
1930	Transportation Equipment	$13,566	$17,351	$17,504	$18,464	$18,617
1935	Stores Equipment	$6	$0	$0	$562	$562
1940	Tools, Shop & Garage Equipment	$4,064	$3,543	$4,196	$4,681	$5,131
1945	Measurement & Testing Equipment	$229	$215	$215	$252	$252
1950	Power Operated Equipment	$3,252	$1,064	$914	$1,098	$1,369
1955	Communications Equipment	$3,302	$8,318	$10,990	$14,447	$15,462
1960	Miscellaneous Equipment	$249	$250	$255	$256	$402
Subtotal General Plant		**$158,074**	**$177,693**	**$189,652**	**$275,660**	**$294,021**
Accumulated Depreciation		**$(111,437)**	**$(148,273)**	**$(193,957)**	**$(234,522)**	**$(284,777)**
	GROSS FIXED ASSETS BEFORE CWIP	**$810,687**	**$865,009**	**$918,378**	**$1,055,386**	**$1,086,152**
2055	Construction Work-in-Progress	$41,389	$63,853	$129,242	$37,227	$80,744
	TOTAL INCLUDING CWIP	**$852,076**	**$928,862**	**$1,047,620**	**$1,092,613**	**$1,166,896**

Table 3 – UPDATED FOR 2019 ACTUALS – 2016-2020 Gross Assets Breakdown by Major Plant Account

Organized by Uniform System of Account ($'000s)

USofA	Description	Historical Years				Bridge Year
		2016	2017	2018	2019	2020
1815	Transformer Station Equipment >50 kV	$86,743	$86,786	$87,116	$115,600	$118,748
Subtotal Transmission Plant		**$86,743**	**$86,786**	**$87,116**	**$115,600**	**$118,748**
1612	Land Rights	$2,283	$2,294	$2,288	$2,525	$2,533
1805	Land	$4,645	$4,649	$4,652	$4,660	$4,661
1808	Buildings	$27,727	$28,802	$29,663	$29,687	$30,395
1820	Distribution Station Equipment <50 kV	$90,031	$105,595	$116,484	$129,195	$134,959
1830	Poles, Towers & Fixtures	$107,430	$117,400	$128,239	$137,470	$146,551
1835	Overhead Conductors & Devices	$99,986	$108,617	$121,174	$128,553	$145,233
1840	Underground Conduit	$123,465	$144,674	$183,207	$216,884	$240,051
1845	Underground Conductors & Devices	$121,891	$143,156	$158,562	$175,231	$199,704
1850	Line Transformers	$70,722	$79,264	$87,689	$94,891	$102,726
1855	Services (Overhead & Underground)	$53,864	$61,034	$67,353	$71,087	$75,656
1860	Meters	$38,426	$40,578	$42,379	$47,199	$51,856
1970	Load Management Controls Customer Premises	$134	$134	$134	$0	$0
1975	Load Management Controls Utility Premises	$18	$18	$0	$0	$0
1980	System Supervisor Equipment	$6,817	$7,718	$11,472	$13,736	$14,750
2440	Deferred Revenue	$(70,132)	$(95,130)	$(117,729)	$(142,719)	$(178,723)
Subtotal Distribution Plant		**$677,307**	**$748,803**	**$835,567**	**$908,399**	**$970,352**
1609	Capital Contributions Paid	$20,089	$20,776	$22,976	$34,685	$35,595
1611	Computer Software	$51,958	$64,972	$66,629	$66,604	$79,634
1905	Land	$20,356	$20,560	$20,560	$19,942	$19,942
1908	Buildings & Fixtures	$32,327	$32,433	$35,197	$94,651	$95,004
1915	Office Furniture and Equipment	$1,330	$1,407	$1,616	$4,345	$4,445
1920	Computer Equipment - Hardware	$7,346	$6,804	$8,600	$10,046	$11,506

USofA (Cont'd)	Description (Cont'd)	Historical Years (Cont'd)			Bridge Years (Cont'd)	
		2016	2017	2018	2019	2020
1930	Transportation Equipment	$13,566	$17,351	$17,504	$18,839	$18,992
1935	Stores Equipment	$6	$0	$0	$561	$561
1940	Tools, Shop & Garage Equipment	$4,064	$3,543	$4,196	$3,998	$4,447
1945	Measurement & Testing Equipment	$229	$215	$215	$209	$209
1950	Power Operated Equipment	$3,252	$1,064	$914	$1,122	$1,393
1955	Communications Equipment	$3,302	$8,318	$10,990	$15,266	$16,279
1960	Miscellaneous Equipment	$249	$250	$255	$199	$205
Subtotal General Plant		**$158,074**	**$177,693**	**$189,652**	**$270,467**	**$288,212**
Accumulated Depreciation		**$(111,437)**	**$(148,273)**	**$(193,957)**	**$(227,434)**	**$(277,670)**
	GROSS FIXED ASSETS BEFORE CWIP	**$810,687**	**$865,009**	**$918,378**	**$1,067,032**	**$1,099,642**
2055	Construction Work-in-Progress	$41,389	$63,853	$129,242	$30,588	$71,970
	TOTAL INCLUDING CWIP	**$852,076**	**$928,862**	**$1,047,620**	**$1,097,620**	**$1,171,613**

In accordance with section 2.2.1.2 of the Filing Requirements, Table 4 below provides Gross Assets balance by major plant account for each functionalized plant item for Test Years 2021-2025. The table has been updated to account for 2019 actuals.

Table 4 – AS ORIGINALLY SUBMITTED – 2021-2025 Gross Assets Breakdown by Major Plant Account

Organized by Uniform System of Account ($'000s)

USofA	Description	Test Years				
		2021	2022	2023	2024	2025
1815	Transformer Station Equipment >50 kV	$122,864	$148,476	$152,078	$157,508	$166,731
Subtotal Transmission Plant		**$122,864**	**$148,476**	**$152,078**	**$157,508**	**$166,731**
1612	Land Rights	$2,310	$2,323	$2,335	$2,348	$2,360
1805	Land	$4,655	$4,818	$4,818	$4,818	$5,597
1808	Buildings	$31,622	$39,988	$40,522	$41,453	$42,869
1820	Distribution Station Equipment <50 kV	$155,798	$165,707	$169,737	$181,635	$208,287
1830	Poles, Towers & Fixtures	$152,926	$161,774	$171,336	$179,209	$186,899
1835	Overhead Conductors & Devices	$158,007	$171,112	$184,464	$196,200	$207,644
1840	Underground Conduit	$258,416	$280,641	$301,045	$319,592	$338,120
1845	Underground Conductors & Devices	$224,573	$245,221	$263,683	$280,969	$298,142
1850	Line Transformers	$108,857	$116,780	$124,383	$131,512	$138,655
1855	Services (Overhead & Underground)	$78,914	$83,478	$88,074	$92,510	$96,939
1860	Meters	$58,145	$63,944	$69,662	$75,920	$81,661
1970	Load Management Controls Customer Premises	$855	$919	$919	$919	$919
1975	Load Management Controls Utility Premises	$484	$533	$533	$533	$533
1980	System Supervisor Equipment	$16,350	$18,052	$19,044	$20,139	$21,672
2440	Deferred Revenue	$(226,002)	$(252,833)	$(273,818)	$(294,138)	$(314,486)
Subtotal Distribution Plant		**$1,025,910**	**$1,102,457**	**$1,166,737**	**$1,233,619**	**$1,315,811**
1609	Capital Contributions Paid	$87,185	$87,395	$87,495	$89,625	$96,925
1611	Computer Software	$91,850	$98,172	$101,762	$104,435	$121,290
1905	Land	$19,942	$19,942	$19,942	$19,942	$19,942
1908	Buildings & Fixtures	$97,627	$98,054	$98,407	$98,760	$99,112
1915	Office Furniture and Equipment	$4,954	$5,030	$5,080	$5,131	$5,181

USofA (Cont'd)	Description (Cont'd)	Test Years (Cont'd)				
		2021	2022	2023	2024	2025
1920	Computer Equipment - Hardware	$16,837	$19,455	$20,616	$21,504	$23,077
1930	Transportation Equipment	$22,920	$26,097	$26,829	$27,726	$27,825
1935	Stores Equipment	$562	$562	$562	$562	$562
1940	Tools, Shop & Garage Equipment	$5,604	$6,079	$6,540	$7,005	$7,474
1945	Measurement & Testing Equipment	$252	$252	$252	$252	$252
1950	Power Operated Equipment	$1,482	$1,482	$1,597	$1,597	$2,055
1955	Communications Equipment	$18,972	$20,443	$21,318	$22,099	$23,833
1960	Miscellaneous Equipment	$900	$944	$961	$961	$986
Subtotal General Plant		**$369,087**	**$383,907**	**$391,361**	**$399,599**	**$428,514**
Accumulated Depreciation		**$(334,623)**	**$(389,254)**	**$(446,435)**	**$(505,659)**	**$(568,753)**
GROSS FIXED ASSETS BEFORE CWIP		**$1,183,238**	**$1,245,586**	**$1,263,741**	**$1,285,067**	**$1,342,303**
2055	Construction Work-in-Progress	$51,388	$29,536	$40,457	$54,289	$27,763
TOTAL INCLUDING CWIP		**$1,234,626**	**$1,275,123**	**$1,304,198**	**$1,339,356**	**$1,370,066**

Table 4 – UPDATED FOR 2019 ACTUALS – 2021-2025 Gross Assets Breakdown by Major Plant Account

Organized by Uniform System of Account ($'000s)

USofA	Description	Test Years				
		2021	2022	2023	2024	2025
1815	Transformer Station Equipment >50 kV	$126,966	$152,608	$156,210	$161,639	$170,862
Subtotal Transmission Plant		**$126,966**	**$152,608**	**$156,210**	**$161,639**	**$170,862**
1612	Land Rights	$2,546	$2,560	$2,572	$2,584	$2,597
1805	Land	$4,662	$4,825	$4,825	$4,825	$5,604
1808	Buildings	$31,120	$39,486	$40,020	$40,951	$42,367
1820	Distribution Station Equipment <50 kV	$148,602	$158,511	$162,541	$174,439	$201,091
1830	Poles, Towers & Fixtures	$154,953	$163,801	$173,363	$181,236	$188,926
1835	Overhead Conductors & Devices	$156,403	$169,507	$182,859	$194,596	$206,039
1840	Underground Conduit	$265,747	$287,972	$308,375	$326,922	$345,451
1845	Underground Conductors & Devices	$225,346	$245,994	$264,456	$281,741	$298,915
1850	Line Transformers	$110,871	$118,794	$126,397	$133,525	$140,668
1855	Services (Overhead & Underground)	80,060	$84,624	$89,220	$93,656	$98,085
1860	Meters	$58,081	$63,967	$69,685	$75,943	$81,684
1970	Load Management Controls Customer Premises	$0	$351	$351	$351	$351
1975	Load Management Controls Utility Premises	$0	$203	$203	$203	$203
1980	System Supervisor Equipment	$16,327	$18,028	$19,021	$20,116	$21,649
2440	Deferred Revenue	$(218,918)	$(243,771)	$(264,757)	$(285,076)	$(305,425)
Subtotal Distribution Plant		**$1,035,800**	**$1,114,852**	**$1,179,131**	**$1,246,012**	**$1,328,205**
1609	Capital Contributions Paid	$86,819	$87,029	$87,129	$89,259	$96,559
1611	Computer Software	$86,623	$93,009	$96,594	$99,267	$116,121
1905	Land	$19,942	$19,942	$19,942	$19,942	$19,942
1908	Buildings & Fixtures	$95,356	$96,951	$97,304	$97,656	$98,009
1915	Office Furniture and Equipment	$4,521	$4,597	$4,647	$4,697	$4,748

USofA (Cont'd)	Description (Cont'd)	Test Years (Cont'd)				
		2021	2022	2023	2024	2025
1920	Computer Equipment - Hardware	$12,970	$15,488	$16,648	$17,536	$19,110
1930	Transportation Equipment	$23,295	$26,472	$27,204	$28,101	$28,200
1935	Stores Equipment	$561	$561	$561	$561	$561
1940	Tools, Shop & Garage Equipment	$4,921	$5,395	$5,857	$6,322	$6,791
1945	Measurement & Testing Equipment	$209	$209	$209	$209	$209
1950	Power Operated Equipment	$1,505	$1,505	$1,621	$1,621	$2,078
1955	Communications Equipment	$19,755	$21,243	$22,117	$22,899	$24,633
1960	Miscellaneous Equipment	$212	$520	$537	$537	$562
Subtotal General Plant		**$356,689**	**$372,915**	**$380,370**	**$388,607**	**$417,523**
Accumulated Depreciation		**$(327,398)**	**$(381,867)**	**$(438,922)**	**$(498,020)**	**$(560,987)**
GROSS FIXED ASSETS BEFORE CWIP		**$1,192,087**	**$1,258,508**	**$1,276,789**	**$1,298,238**	**$1,355,603**
2055	Construction Work-in-Progress	$45,054	$21,918	$32,839	$46,671	$20,144
TOTAL INCLUDING CWIP		**$1,237,141**	**$1,280,426**	**$1,309,627**	**$1,344,909**	**$1,375,747**

4. SIGNIFICANT IN-SERVICE ADDITIONS

4.1. HISTORICAL YEARS 2016-2018 AND BRIDGE YEARS 2019-2020 (UPDATED: HISTORICAL YEARS 2016-2019 AND BRIDGE YEAR 2020)

The major capital projects that were executed, or are set to be executed, during this period are outlined below in Table 5, which has been updated to account for 2019 actuals. Background information on these projects can be found in Attachment 2-4-3(E): Material Investments.

Table 5 – AS ORIGINALLY SUBMITTED – 2016-2020 Overview of Significant In-Service Additions ($'000,000s)

Description/Type	Project	Cost
Station growth driven by capacity constraints	Merivale MTS Station Renewal	$15.9
	Richmond South Station Upgrade	$13.4
Other distribution system expansions/upgrades to provide basic levels of service and supply growing communities	Residential, Commercial, System Expansion, and Infill & Upgrade Capital Programs	$68.7
	Plant Relocation	$13.6
Ongoing replacement of existing aging distribution system to minimize failure risk	Pole Renewal	$44.8
	Cable Replacement and Renewal	$29.9
	Emergency Renewal	$34.2
	Critical Renewal	$11.7
Station protection and control renewal projects	Fibre Optic Network	$18.9
	Overbrook SO Station Switchgear Replacement	$13.3
	System Voltage Conversion	$13.0
	Woodroffe Station Switchgear Replacement	$11.1
Other	New Administrative Office and Operations Facilities[9]	$79.9
	Enterprise Resource Planning System Upgrade	$11.3
	Customer Care and Billing System Upgrades	$8.1
	Fleet Replacement[10]	$6.3

[9] Land is excluded. For additional information on this project, please see Attachment 2-1-1(A): New Administrative Office and Operations Facilities.
[10] For additional information, please see Attachment 2-4-3(F): Fleet Replacement Program.

Table 5 – UPDATED FOR 2019 ACTUALS – 2016-2020 Overview of Significant In-Service Additions ($'000,000s)

Description/Type	Project	Cost
Station growth driven by capacity constraints	Merivale MTS Station Renewal	$16.0
	Richmond South Station Upgrade	$13.1
Other distribution system expansions/upgrades to provide basic levels of service and supply growing communities	Residential, Commercial, System Expansion, and Infill & Upgrade Capital Programs	$75.9
	Plant Relocation	$15.5
Ongoing replacement of existing aging distribution system to minimize failure risk	Pole Renewal	$43.3
	Cable Replacement and Renewal	$31.1
	Emergency Renewal	$38.0
	Critical Renewal	$13.2
Station protection and control renewal projects	Fibre Optic Network	$18.7
	Overbrook SO Station Switchgear Replacement	$13.3
	System Voltage Conversion	$11.9
	Woodroffe Station Switchgear Replacement	$11.1
Other	New Administrative Office and Operations Facilities[11]	$79.9
	Enterprise Resource Planning System Upgrade	$11.3
	Customer Care and Billing System Upgrades	$8.1
	Fleet Replacement[12]	$6.7

For 2016-2020, Hydro Ottawa is projecting Capital Additions to exceed the overall envelope by $54.1M. After accounting for 2019 actual Capital Additions, Hydro Ottawa is projecting Capital Additions to exceed the overall envelope by $70.4M. Additional details, including a variance analysis, are available in UPDATED Exhibit 2-4-1: Capital Expenditure Summary.

[11] Land is excluded. For additional information on this project, please see UPDATED Attachment 2-1-1(A): New Administrative Office and Operations Facilities.
[12] For additional information, please see Attachment 2-4-3(F): Fleet Replacement Program.

4.2. TEST YEARS 2021-2025

The major capital projects planned for the 2021-2025 period are outlined below in Table 6. Background information on these projects can be found in Attachment 2-4-3(E): Material Investments.

Table 6 – 2021-2025 Overview of Significant In-Service Additions ($'000,000s)

Description/Type	Project	Cost
Station growth driven by capacity constraints	Cambrian MTS	$82.4[13]
	New East Station	$30.7[14]
Other distribution system expansion/upgrade to provide basic levels of service and supply growing communities	Residential, Commercial, System Expansion, and Infill & Upgrade Capital Programs	$67.6
	Plant Relocation	$11.0
Ongoing replacement of existing aging distribution system to minimize failure risk	Pole Renewal	$33.7
	Cable Replacement and Renewal	$40.7
	Emergency Renewal	$22.4
	Critical Renewal	$21.5
Station protection and control renewal projects	Riverdale TS Station Switchgear Upgrade	$14.2[15]
	Fisher Station Rebuild	$9.6
	Bells Corners Rebuild	$10.3
	Overbrook TO Station Switchgear Replacement	$7.1[16]
	Dagmar Station Rebuild	$6.0
Other	Fleet Replacement[17]	$16.6
	Enterprise Resource Planning System Upgrade	$12.0

[13] Cost includes Connection Cost Recovery Agreement ("CCRA") payments to Hydro One Networks Inc. ("HONI").
[14] *Ibid.*
[15] Cost includes CCRA payments to HONI.
[16] *Ibid.*
[17] For additional information, please see Attachment 2-4-3(F): Fleet Replacement Program.

UPDATED - Appendix 2-BA
Fixed Asset Continuity Schedule 1

Accounting Standard	MIFRS
Year	**2020**

			Cost				Accumulated Depreciation				
CCA Class 2	**OEB Account 3**	**Description 3**	**Opening Balance**	**Additions 4**	**Disposals 6**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals 6**	**Closing Balance**	**Net Book Value**
	1609	Capital Contributions Paid	$ 34,685,433	$ 910,000	$ -	$ 35,595,433	-$ 2,183,096	-$ 790,975	$ -	-$ 2,974,071	$ 32,621,362
12	1611	Computer Software (Formally known as Account 1925)	$ 66,603,570	$ 13,030,880	$ -	$ 79,634,450	-$ 39,260,350	-$ 6,468,113	$ -	-$ 45,728,463	$ 33,905,987
CEC	1612	Land Rights (Formally known as Account 1906)	$ 2,524,895	$ 8,306	$ -	$ 2,533,201	-$ 337,574	-$ 59,409	$ -	-$ 396,983	$ 2,136,218
N/A	1805	Land	$ 4,659,565	$ 1,047	$ -	$ 4,660,612	$ -		$ -	$ -	$ 4,660,612
47	1808	Buildings	$ 29,686,977	$ 707,754	$ -	$ 30,394,731	-$ 4,719,737	-$ 802,687	$ -	-$ 5,522,424	$ 24,872,307
13	1810	Leasehold Improvements	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ 115,599,760	$ 3,148,680	$ -	$ 118,748,440	-$ 17,872,695	-$ 3,669,308	$ -	-$ 21,542,003	$ 97,206,437
47	1820	Distribution Station Equipment <50 kV	$ 129,195,408	$ 5,860,007	-$ 96,181	$ 134,959,234	-$ 21,858,595	-$ 4,450,661	$ 55,028	-$ 26,254,228	$ 108,705,006
47	1825	Storage Battery Equipment	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 137,470,488	$ 9,394,503	-$ 313,703	$ 146,551,288	-$ 16,106,354	-$ 3,480,842	$ 30,864	-$ 19,556,332	$ 126,994,956
47	1835	Overhead Conductors & Devices	$ 128,553,082	$ 16,910,513	-$ 230,544	$ 145,233,051	-$ 15,458,979	-$ 3,592,858	$ 26,635	-$ 19,025,202	$ 126,207,849
47	1840	Underground Conduit	$ 216,883,550	$ 23,166,955	$ -	$ 240,050,505	-$ 23,169,374	-$ 6,137,186	$ -	-$ 29,306,560	$ 210,743,945
47	1845	Underground Conductors & Devices	$ 175,230,833	$ 24,832,592	-$ 359,069	$ 199,704,356	-$ 25,110,445	-$ 5,978,466	$ 64,812	-$ 31,024,099	$ 168,680,257
47	1850	Line Transformers	$ 94,890,921	$ 8,055,161	-$ 220,567	$ 102,725,515	-$ 13,957,006	-$ 3,187,549	$ 40,727	-$ 17,103,828	$ 85,621,687
47	1855	Services (Overhead & Underground)	$ 71,087,401	$ 4,568,833	$ -	$ 75,656,234	-$ 9,073,460	-$ 1,911,293	$ -	-$ 10,984,753	$ 64,671,481
47	1860	Meters	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1860	Meters (Smart Meters)	$ 47,198,912	$ 5,077,444	-$ 420,692	$ 51,855,664	-$ 21,786,673	-$ 5,049,583	$ 156,744	-$ 26,679,512	$ 25,176,152
N/A	1905	Land	$ 19,942,005		$ -	$ 19,942,005	-$ 2,707	-$ 4,047	$ -	-$ 6,754	$ 19,935,251
47	1908	Buildings & Fixtures	$ 94,650,962	$ 352,679	$ -	$ 95,003,641	-$ 5,048,771	-$ 3,025,591	$ -	-$ 8,074,362	$ 86,929,279
13	1910	Leasehold Improvements	$ -		$ -	$ -	$ -		$ -	$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 4,344,722	$ 100,766	$ -	$ 4,445,488	-$ 713,786	-$ 425,555	$ -	-$ 1,139,341	$ 3,306,147
8	1915	Office Furniture & Equipment (5 years)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
10	1920	Computer Equipment - Hardware	$ -		$ -	$ -	$ -		$ -	$ -	$ -
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
50	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ 10,046,414	$ 1,459,982	$ -	$ 11,506,396	-$ 3,432,714	-$ 1,762,186	$ -	-$ 5,194,900	$ 6,311,496
10	1930	Transportation Equipment	$ 18,838,678	$ 180,773	-$ 27,765	$ 18,991,686	-$ 8,085,916	-$ 1,560,773	$ 22,058	-$ 9,624,631	$ 9,367,055
8	1935	Stores Equipment	$ 560,703		$ -	$ 560,703	-$ 28,035	-$ 56,225	$ -	-$ 84,260	$ 476,443
8	1940	Tools, Shop & Garage Equipment	$ 3,997,781	$ 449,596	$ -	$ 4,447,377	-$ 1,864,054	-$ 446,365	$ -	-$ 2,310,419	$ 2,136,958
8	1945	Measurement & Testing Equipment	$ 209,467		$ -	$ 209,467	-$ 140,362	-$ 23,512	$ -	-$ 163,874	$ 45,593
8	1950	Power Operated Equipment	$ 1,122,129	$ 354,695	-$ 83,875	$ 1,392,949	-$ 415,103	-$ 89,524	$ 71,355	-$ 433,272	$ 959,677
8	1955	Communications Equipment	$ 15,266,072	$ 1,012,516	$ -	$ 16,278,588	-$ 3,801,116	-$ 1,560,031	$ -	-$ 5,361,147	$ 10,917,441

8	1955	Communication Equipment (Smart Meters)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
8	1960	Miscellaneous Equipment	$ 198,958	$ 6,099	$ -	$ 205,057	-$ 134,735	-$ 25,019	$ -	-$ 159,754	$ 45,303
47	1970	Load Management Controls Customer Premises	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	1980	System Supervisor Equipment	$ 13,736,173	$ 1,013,957	$ -	$ 14,750,130	-$ 4,769,538	-$ 1,235,550	$ -	-$ 6,005,088	$ 8,745,042
47	1985	Miscellaneous Fixed Assets	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1990	Other Tangible Property	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1995	Contributions & Grants	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	2440	Deferred Revenue5	-$ 142,719,366	-$ 36,003,198	$ -	-$ 178,722,564	$ 11,897,528	$ 5,089,115	$ -	$ 16,986,643	-$ 161,735,921
						$ -				$ -	$ -
		Sub-Total	**$ 1,294,465,493**	**$ 84,600,540**	**-$ 1,752,397**	**$ 1,377,313,637**	**-$ 227,433,647**	**-$ 50,704,193**	**$ 468,224**	**-$ 277,669,616**	**$ 1,099,644,020**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 1,294,465,493**	**$ 84,600,540**	**-$ 1,752,397**	**$ 1,377,313,637**	**-$ 227,433,647**	**-$ 50,704,193**	**$ 468,224**	**-$ 277,669,616**	**$ 1,099,644,020**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets), if applicable6									
		Total						**-$ 50,704,193**			

Less: *Fully Allocated Depreciation*

10		Transportation	Transportation	
8		Stores Equipment	Stores Equipment	
			Net Depreciation	-$ 50,704,193

Notes:

1 Tables in the format outlined above covering all fixed asset accounts should be submitted for the Test Year, Bridge Year and all relevant historical years. At a minimum , the applicant must provide data for the earlier of: 1) all historical years back to its last rebasing; or 2) at least three years of historical actuals, in addition to Bridge Year and Test Year forecasts.

2 The "CCA Class" for fixed assets should generally agree with the CCA Class used for tax purposes in Tax Returns. Fixed Assets sub-components may be used where the underlying asset components are classified under multiple CCA Classes for tax purposes. If an applicant uses any different classes from those shown in the table, an explanation should be provided. (also see note 3).

3 The table may need to be customized for a utility's asset categories or for any new asset accounts announced or authorized by the OEB.

4 The additions in column (E) must not include construction work in progress (CWIP).

5 Effective on the date of IFRS adoption, customer contributions will no longer be recorded in Account 1995 Contributions & Grants, but will be recorded in Account 2440, Deferred Revenues.

6 The applicant must ensure that all asset disposals have been clearly identified in the Chapter 2 Appendices for all historic, bridge and test years. Where a distributor for general financial reporting purposes under IFRS has accounted for the amount of gain or loss on the retirement of assets in a pool of like assets as a charge or credit to income, for reporting and rate application filings, the distributor shall reclassify such gains and losses as depreciation expense, and disclose the amount separately.

UPDATED - Appendix 2-BA
Fixed Asset Continuity Schedule 1

Accounting Standard MIFRS
Year 2020

			Cost				Accumulated Depreciation				
CCA Class 2	**OEB Account 3**	**Description 3**	**Opening Balance**	**Additions 4**	**Disposals 6**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals 6**	**Closing Balance**	**Net Book Value**
	1609	Capital Contributions Paid	$ 34,685,433	$ 910,000	$ -	$ 35,595,433	-$ 2,183,096	-$ 790,975	$ -	-$ 2,974,071	$ 32,621,362
12	1611	Computer Software (Formally known as Account 1925)	$ 66,603,570	$ 13,030,880	$ -	$ 79,634,450	-$ 39,260,350	-$ 6,468,113	$ -	-$ 45,728,463	$ 33,905,987
CEC	1612	Land Rights (Formally known as Account 1906)	$ 2,524,895	$ 8,306	$ -	$ 2,533,201	-$ 337,574	-$ 59,409	$ -	-$ 396,983	$ 2,136,218
N/A	1805	Land	$ 4,659,565	$ 1,047	$ -	$ 4,660,612	$ -		$ -	$ -	$ 4,660,612
47	1808	Buildings	$ 29,686,977	$ 707,754	$ -	$ 30,394,731	-$ 4,719,737	-$ 802,687	$ -	-$ 5,522,424	$ 24,872,307
13	1810	Leasehold Improvements	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ 115,599,760	$ 3,148,680	$ -	$ 118,748,440	-$ 17,872,695	-$ 3,669,308	$ -	-$ 21,542,003	$ 97,206,437
47	1820	Distribution Station Equipment <50 kV	$ 129,195,408	$ 5,860,007	-$ 96,181	$ 134,959,234	-$ 21,858,595	-$ 4,450,661	$ 55,028	-$ 26,254,228	$ 108,705,006
47	1825	Storage Battery Equipment	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 137,470,488	$ 9,394,503	-$ 313,703	$ 146,551,288	-$ 16,106,354	-$ 3,480,842	$ 30,864	-$ 19,556,332	$ 126,994,956
47	1835	Overhead Conductors & Devices	$ 128,553,082	$ 16,910,513	-$ 230,544	$ 145,233,051	-$ 15,458,979	-$ 3,592,858	$ 26,635	-$ 19,025,202	$ 126,207,849
47	1840	Underground Conduit	$ 216,883,550	$ 23,166,955	$ -	$ 240,050,505	-$ 23,169,374	-$ 6,137,186	$ -	-$ 29,306,560	$ 210,743,945
47	1845	Underground Conductors & Devices	$ 175,230,833	$ 24,832,592	-$ 359,069	$ 199,704,356	-$ 25,110,445	-$ 5,978,466	$ 64,812	-$ 31,024,099	$ 168,680,257
47	1850	Line Transformers	$ 94,890,921	$ 8,055,161	-$ 220,567	$ 102,725,515	-$ 13,957,006	-$ 3,187,549	$ 40,727	-$ 17,103,828	$ 85,621,687
47	1855	Services (Overhead & Underground)	$ 71,087,401	$ 4,568,833	$ -	$ 75,656,234	-$ 9,073,460	-$ 1,911,293	$ -	-$ 10,984,753	$ 64,671,481
47	1860	Meters	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1860	Meters (Smart Meters)	$ 47,198,912	$ 5,077,444	-$ 420,692	$ 51,855,664	-$ 21,786,673	-$ 5,049,583	$ 156,744	-$ 26,679,512	$ 25,176,152
N/A	1905	Land	$ 19,942,005		$ -	$ 19,942,005	-$ 2,707	-$ 4,047	$ -	-$ 6,754	$ 19,935,251
47	1908	Buildings & Fixtures	$ 94,650,962	$ 352,679	$ -	$ 95,003,641	-$ 5,048,771	-$ 3,025,591	$ -	-$ 8,074,362	$ 86,929,279
13	1910	Leasehold Improvements	$ -		$ -	$ -	$ -		$ -	$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 4,344,722	$ 100,766	$ -	$ 4,445,488	-$ 713,786	-$ 425,555	$ -	-$ 1,139,341	$ 3,306,147
8	1915	Office Furniture & Equipment (5 years)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
10	1920	Computer Equipment - Hardware	$ -		$ -	$ -	$ -		$ -	$ -	$ -
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
50	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ 10,046,414	$ 1,459,982	$ -	$ 11,506,396	-$ 3,432,714	-$ 1,762,186	$ -	-$ 5,194,900	$ 6,311,496
10	1930	Transportation Equipment	$ 18,838,678	$ 180,773	-$ 27,765	$ 18,991,686	-$ 8,085,916	-$ 1,560,773	$ 22,058	-$ 9,624,631	$ 9,367,055
8	1935	Stores Equipment	$ 560,703		$ -	$ 560,703	-$ 28,035	-$ 56,225	$ -	-$ 84,260	$ 476,443
8	1940	Tools, Shop & Garage Equipment	$ 3,997,781	$ 449,596	$ -	$ 4,447,377	-$ 1,864,054	-$ 446,365	$ -	-$ 2,310,419	$ 2,136,958
8	1945	Measurement & Testing Equipment	$ 209,467		$ -	$ 209,467	-$ 140,362	-$ 23,512	$ -	-$ 163,874	$ 45,593
8	1950	Power Operated Equipment	$ 1,122,129	$ 354,695	-$ 83,875	$ 1,392,949	-$ 415,103	-$ 89,524	$ 71,355	-$ 433,272	$ 959,677
8	1955	Communications Equipment	$ 15,266,072	$ 1,012,516	$ -	$ 16,278,588	-$ 3,801,116	-$ 1,560,031	$ -	-$ 5,361,147	$ 10,917,441

8	1955	Communication Equipment (Smart Meters)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
8	1960	Miscellaneous Equipment	$ 198,958	$ 6,099	$ -	$ 205,057	-$ 134,735	-$ 25,019	$ -	-$ 159,754	$ 45,303
47	1970	Load Management Controls Customer Premises	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	1980	System Supervisor Equipment	$ 13,736,173	$ 1,013,957	$ -	$ 14,750,130	-$ 4,769,538	-$ 1,235,550	$ -	-$ 6,005,088	$ 8,745,042
47	1985	Miscellaneous Fixed Assets	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1990	Other Tangible Property	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1995	Contributions & Grants	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	2440	Deferred Revenue5	-$ 142,719,366	-$ 36,003,198	$ -	-$ 178,722,564	$ 11,897,528	$ 5,089,115	$ -	$ 16,986,643	-$ 161,735,921
						$ -				$ -	$ -
		Sub-Total	**$ 1,294,465,493**	**$ 84,600,540**	**-$ 1,752,397**	**$ 1,377,313,637**	**-$ 227,433,647**	**-$ 50,704,193**	**$ 468,224**	**-$ 277,669,616**	**$ 1,099,644,020**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 1,294,465,493**	**$ 84,600,540**	**-$ 1,752,397**	**$ 1,377,313,637**	**-$ 227,433,647**	**-$ 50,704,193**	**$ 468,224**	**-$ 277,669,616**	**$ 1,099,644,020**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets), if applicable6									
		Total						**-$ 50,704,193**			

			Less: *Fully Allocated Depreciation*	
10		Transportation	Transportation	
8		Stores Equipment	Stores Equipment	
			Net Depreciation	-$ 50,704,193

Notes:

1 Tables in the format outlined above covering all fixed asset accounts should be submitted for the Test Year, Bridge Year and all relevant historical years. At a minimum , the applicant must provide data for the earlier of: 1) all historical years back to its last rebasing; or 2) at least three years of historical actuals, in addition to Bridge Year and Test Year forecasts.

2 The "CCA Class" for fixed assets should generally agree with the CCA Class used for tax purposes in Tax Returns. Fixed Assets sub-components may be used where the underlying asset components are classified under multiple CCA Classes for tax purposes. If an applicant uses any different classes from those shown in the table, an explanation should be provided. (also see note 3).

3 The table may need to be customized for a utility's asset categories or for any new asset accounts announced or authorized by the OEB.

4 The additions in column (E) must not include construction work in progress (CWIP).

5 Effective on the date of IFRS adoption, customer contributions will no longer be recorded in Account 1995 Contributions & Grants, but will be recorded in Account 2440, Deferred Revenues.

6 The applicant must ensure that all asset disposals have been clearly identified in the Chapter 2 Appendices for all historic, bridge and test years. Where a distributor for general financial reporting purposes under IFRS has accounted for the amount of gain or loss on the retirement of assets in a pool of like assets as a charge or credit to income, for reporting and rate application filings, the distributor shall reclassify such gains and losses as depreciation expense, and disclose the amount separately.

UPDATED - Appendix 2-BA
Fixed Asset Continuity Schedule 1

Accounting Standard MIFRS
Year 2021

			Cost				Accumulated Depreciation				
CCA Class 2	OEB Account 3	Description 3	Opening Balance	Additions 4	Disposals 6	Closing Balance	Opening Balance	Additions	Disposals 6	Closing Balance	Net Book Value
	1609	Capital Contributions Paid	$ 35,595,433	$ 51,223,891	$ -	$ 86,819,324	-$ 2,974,071	-$ 1,088,293	$ -	-$ 4,062,364	$ 82,756,960
12	1611	Computer Software (Formally known as Account 1925)	$ 79,634,450	$ 6,988,497	$ -	$ 86,622,947	-$ 45,728,463	-$ 7,305,676	$ -	-$ 53,034,139	$ 33,588,808
CEC	1612	Land Rights (Formally known as Account 1906)	$ 2,533,201	$ 13,268	$ -	$ 2,546,469	-$ 396,983	-$ 59,497	$ -	-$ 456,480	$ 2,089,989
N/A	1805	Land	$ 4,660,612	$ 1,569	$ -	$ 4,662,181	$ -		$ -	$ -	$ 4,662,181
47	1808	Buildings	$ 30,394,731	$ 724,819	$ -	$ 31,119,550	-$ 5,522,424	-$ 818,992	$ -	-$ 6,341,416	$ 24,778,134
13	1810	Leasehold Improvements	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ 118,748,440	$ 8,247,498	$ -	$ 126,995,938	-$ 21,542,003	-$ 3,757,680	$ -	-$ 25,299,683	$ 101,696,255
47	1820	Distribution Station Equipment <50 kV	$ 134,959,234	$ 13,738,471	-$ 96,181	$ 148,601,524	-$ 26,254,228	-$ 4,462,581	$ 55,028	-$ 30,661,781	$ 117,939,743
47	1825	Storage Battery Equipment	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 146,551,288	$ 8,715,471	-$ 313,703	$ 154,953,056	-$ 19,556,332	-$ 3,673,027	$ 30,864	-$ 23,198,495	$ 131,754,561
47	1835	Overhead Conductors & Devices	$ 145,233,051	$ 11,400,338	-$ 230,544	$ 156,402,845	-$ 19,025,202	-$ 3,938,401	$ 26,635	-$ 22,936,968	$ 133,465,877
47	1840	Underground Conduit	$ 240,050,505	$ 25,696,125	$ -	$ 265,746,630	-$ 29,306,560	-$ 6,713,783	$ -	-$ 36,020,343	$ 229,726,287
47	1845	Underground Conductors & Devices	$ 199,704,356	$ 26,000,462	-$ 359,069	$ 225,345,749	-$ 31,024,099	-$ 6,661,033	$ 64,812	-$ 37,620,320	$ 187,725,429
47	1850	Line Transformers	$ 102,725,515	$ 8,365,754	-$ 220,567	$ 110,870,702	-$ 17,103,828	-$ 3,405,578	$ 40,727	-$ 20,468,679	$ 90,402,023
47	1855	Services (Overhead & Underground)	$ 75,656,234	$ 4,404,116	$ -	$ 80,060,350	-$ 10,984,753	-$ 2,006,006	$ -	-$ 12,990,759	$ 67,069,591
47	1860	Meters	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1860	Meters (Smart Meters)	$ 51,855,664	$ 7,339,435	-$ 1,113,668	$ 58,081,431	-$ 26,679,512	-$ 4,812,311	$ 762,440	-$ 30,729,383	$ 27,352,048
N/A	1905	Land	$ 19,942,005		$ -	$ 19,942,005	-$ 6,754	-$ 4,047	$ -	-$ 10,801	$ 19,931,204
47	1908	Buildings & Fixtures	$ 95,003,641	$ 352,679	$ -	$ 95,356,320	-$ 8,074,362	-$ 3,116,870	$ -	-$ 11,191,232	$ 84,165,088
13	1910	Leasehold Improvements	$ -		$ -	$ -	$ -		$ -	$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 4,445,488	$ 75,574	$ -	$ 4,521,062	-$ 1,139,341	-$ 416,853	$ -	-$ 1,556,194	$ 2,964,868
8	1915	Office Furniture & Equipment (5 years)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
10	1920	Computer Equipment - Hardware	$ -		$ -	$ -	$ -		$ -	$ -	$ -
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
50	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ 11,506,396	$ 1,463,823	$ -	$ 12,970,219	-$ 5,194,900	-$ 1,884,900	$ -	-$ 7,079,800	$ 5,890,419
10	1930	Transportation Equipment	$ 18,991,686	$ 6,124,426	-$ 1,821,564	$ 23,294,547	-$ 9,624,631	-$ 1,220,734	$ 1,578,341	-$ 9,267,024	$ 14,027,523
8	1935	Stores Equipment	$ 560,703		$ -	$ 560,703	-$ 84,260	-$ 56,224	$ -	-$ 140,484	$ 420,219
8	1940	Tools, Shop & Garage Equipment	$ 4,447,377	$ 473,651	$ -	$ 4,921,028	-$ 2,310,419	-$ 440,309	$ -	-$ 2,750,728	$ 2,170,300
8	1945	Measurement & Testing Equipment	$ 209,467		$ -	$ 209,467	-$ 163,874	-$ 23,447	$ -	-$ 187,321	$ 22,146
8	1950	Power Operated Equipment	$ 1,392,949	$ 163,845	-$ 51,487	$ 1,505,307	-$ 433,272	-$ 99,140	$ 45,489	-$ 486,923	$ 1,018,384
8	1955	Communications Equipment	$ 16,278,588	$ 3,476,464	$ -	$ 19,755,052	-$ 5,361,147	-$ 1,786,969	$ -	-$ 7,148,116	$ 12,606,936
8	1955	Communication Equipment (Smart Meters)	$ -		$ -	$ -	$ -		$ -	$ -	$ -
8	1960	Miscellaneous Equipment	$ 205,057	$ 7,305	$ -	$ 212,362	-$ 159,754	-$ 19,031	$ -	-$ 178,785	$ 33,577

47	1970	Load Management Controls Customer Premises	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	1975	Load Management Controls Utility Premises	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	1980	System Supervisor Equipment	$ 14,750,130	$ 1,576,567	$ -	$ 16,326,697	-$ 6,005,088	-$ 1,261,664	$ -	-$ 7,266,752	$ 9,059,945
47	1985	Miscellaneous Fixed Assets	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1990	Other Tangible Property	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	1995	Contributions & Grants	$ -		$ -	$ -	$ -		$ -	$ -	$ -
47	2440	Deferred Revenue5	-$ 178,722,564	-$ 40,195,489	$ -	-$ 218,918,053	$ 16,986,643	$ 6,700,322	$ -	$ 23,686,965	-$ 195,231,088
						$ -				$ -	$ -
		Sub-Total	**$ 1,377,313,637**	**$ 146,378,559**	**-$ 4,206,783**	**$ 1,519,485,413**	**-$ 277,669,616**	**-$ 52,332,724**	**$ 2,604,336**	**-$ 327,398,005**	**$ 1,192,087,408**
		Less Socialized Renewable Energy Generation Investments **(input as negative)**				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets ***(input as negative)***				$ -				$ -	$ -
		Total PP&E	**$ 1,377,313,637**	**$ 146,378,559**	**-$ 4,206,783**	**$ 1,519,485,413**	**-$ 277,669,616**	**-$ 52,332,724**	**$ 2,604,336**	**-$ 327,398,005**	**$ 1,192,087,408**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets), if applicable6									
		Total						**-$ 52,332,724**			

			Less: *Fully Allocated Depreciation*	
10		Transportation	Transportation	
8		Stores Equipment	Stores Equipment	
			Net Depreciation	-$ 52,332,724

Notes:

1 Tables in the format outlined above covering all fixed asset accounts should be submitted for the Test Year, Bridge Year and all relevant historical years. At a minimum , the applicant must provide data for the earlier of: 1) all historical years back to its last rebasing; or 2) at least three years of historical actuals, in addition to Bridge Year and Test Year forecasts.

2 The "CCA Class" for fixed assets should generally agree with the CCA Class used for tax purposes in Tax Returns. Fixed Assets sub-components may be used where the underlying asset components are classified under multiple CCA Classes for tax purposes. If an applicant uses any different classes from those shown in the table, an explanation should be provided. (also see note 3).

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5 Effective on the date of IFRS adoption, customer contributions will no longer be recorded in Account 1995 Contributions & Grants, but will be recorded in Account 2440, Deferred Revenues.

6 The applicant must ensure that all asset disposals have been clearly identified in the Chapter 2 Appendices for all historic, bridge and test years. Where a distributor for general financial reporting purposes under IFRS has accounted for the amount of gain or loss on the retirement of assets in a pool of like assets as a charge or credit to income, for reporting and rate application filings, the distributor shall reclassify such gains and losses as depreciation expense, and disclose the amount separately.

UPDATED - Appendix 2-BA

Fixed Asset Continuity Schedule 1

Accounting Standard	MIFRS
Year	**2022**

			Cost				Accumulated Depreciation				
CCA Class 2	**OEB Account 3**	**Description 3**	**Opening Balance**	**Additions 4**	**Disposals 6**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals 6**	**Closing Balance**	**Net Book Value**
	1609	Capital Contributions Paid	$ 86,819,324	$ 210,000		$ 87,029,324	-$ 4,062,364	-$ 1,946,433		-$ 6,008,797	$ 81,020,527
12	1611	Computer Software (Formally known as Account 1925)	$ 86,622,947	$ 6,380,278		$ 93,003,225	-$ 53,034,139	-$ 8,607,321		-$ 61,641,460	$ 31,361,765
CEC	1612	Land Rights (Formally known as Account 1906)	$ 2,546,469	$ 13,040		$ 2,559,509	-$ 456,480	-$ 59,760		-$ 516,240	$ 2,043,269
N/A	1805	Land	$ 4,662,181	$ 162,462		$ 4,824,643	$ -			$ -	$ 4,824,643
47	1808	Buildings	$ 31,119,550	$ 8,365,966		$ 39,485,516	-$ 6,341,416	-$ 934,231		-$ 7,275,647	$ 32,209,869
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ 126,995,938	$ 25,611,949		$ 152,607,887	-$ 25,299,683	-$ 4,359,904		-$ 29,659,587	$ 122,948,300
47	1820	Distribution Station Equipment <50 kV	$ 148,601,524	$ 10,005,389	-$ 96,181	$ 158,510,732	-$ 30,661,781	-$ 4,699,714	$ 55,028	-$ 35,306,467	$ 123,204,265
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 154,953,056	$ 9,161,771	-$ 313,703	$ 163,801,124	-$ 23,198,495	-$ 3,870,235	$ 30,864	-$ 27,037,866	$ 136,763,258
47	1835	Overhead Conductors & Devices	$ 156,402,845	$ 13,334,739	-$ 230,544	$ 169,507,040	-$ 22,936,968	-$ 4,247,939	$ 26,635	-$ 27,158,272	$ 142,348,768
47	1840	Underground Conduit	$ 265,746,630	$ 22,225,040		$ 287,971,670	-$ 36,020,343	-$ 7,282,382		-$ 43,302,725	$ 244,668,945
47	1845	Underground Conductors & Devices	$ 225,345,749	$ 21,007,287	-$ 359,069	$ 245,993,967	-$ 37,620,320	-$ 7,322,791	$ 64,812	-$ 44,878,299	$ 201,115,668
47	1850	Line Transformers	$ 110,870,702	$ 8,143,668	-$ 220,567	$ 118,793,803	-$ 20,468,679	-$ 3,638,351	$ 40,727	-$ 24,066,303	$ 94,727,500
47	1855	Services (Overhead & Underground)	$ 80,060,350	$ 4,563,872		$ 84,624,222	-$ 12,990,759	-$ 2,105,656		-$ 15,096,415	$ 69,527,807
47	1860	Meters	$ -			$ -	$ -			$ -	$ -
47	1860	Meters (Smart Meters)	$ 58,081,431	$ 7,014,822	-$ 1,129,168	$ 63,967,085	-$ 30,729,383	-$ 4,261,148	$ 776,310	-$ 34,214,221	$ 29,752,864
N/A	1905	Land	$ 19,942,005			$ 19,942,005	-$ 10,801	-$ 4,047		-$ 14,848	$ 19,927,157
47	1908	Buildings & Fixtures	$ 95,356,320	$ 1,594,802		$ 96,951,122	-$ 11,191,232	-$ 3,185,739		-$ 14,376,971	$ 82,574,151
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 4,521,062	$ 75,574		$ 4,596,636	-$ 1,556,194	-$ 407,568		-$ 1,963,762	$ 2,632,874
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ -			$ -	$ -			$ -	$ -
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
50	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ 12,970,219	$ 2,517,544		$ 15,487,763	-$ 7,079,800	-$ 2,172,161		-$ 9,251,961	$ 6,235,802
10	1930	Transportation Equipment	$ 23,294,547	$ 5,223,986	-$ 2,047,008	$ 26,471,525	-$ 9,267,024	-$ 1,577,489	$ 1,834,846	-$ 9,009,667	$ 17,461,858
8	1935	Stores Equipment	$ 560,703			$ 560,703	-$ 140,484	-$ 56,224		-$ 196,708	$ 363,995
8	1940	Tools, Shop & Garage Equipment	$ 4,921,028	$ 474,390		$ 5,395,418	-$ 2,750,728	-$ 441,144		-$ 3,191,872	$ 2,203,546
8	1945	Measurement & Testing Equipment	$ 209,467			$ 209,467	-$ 187,321	-$ 16,697		-$ 204,018	$ 5,449

8	1950	Power Operated Equipment	$ 1,505,307			$ 1,505,307	-$ 486,923	-$ 102,206		-$ 589,129	$ 916,178
8	1955	Communications Equipment	$ 19,755,052	$ 1,487,510		$ 21,242,562	-$ 7,148,116	-$ 2,060,745		-$ 9,208,861	$ 12,033,701
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ 212,362	$ 307,972		$ 520,334	-$ 178,785	-$ 30,554		-$ 209,339	$ 310,995
47	1970	Load Management Controls Customer Premises	$ -	$ 350,910		$ 350,910	$ -	-$ 17,545		-$ 17,545	$ 333,365
47	1975	Load Management Controls Utility Premises	$ -	$ 203,443		$ 203,443	$ -	-$ 10,172		-$ 10,172	$ 193,271
47	1980	System Supervisor Equipment	$ 16,326,697	$ 1,701,727		$ 18,028,424	-$ 7,266,752	-$ 1,292,876		-$ 8,559,628	$ 9,468,796
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ -			$ -	$ -			$ -	$ -
47	1995	Contributions & Grants	$ -			$ -	$ -			$ -	$ -
47	2440	Deferred Revenue5	-$ 218,918,053	-$ 25,452,767	$ 599,738	-$ 243,771,082	$ 23,686,965	$ 8,012,479	-$ 599,738	$ 31,099,706	-$ 212,671,376
						$ -				$ -	$ -
		Sub-Total	**$ 1,519,485,413**	**$ 124,685,374**	**-$ 3,796,502**	**$ 1,640,374,285**	**-$ 327,398,005**	**-$ 56,698,553**	**$ 2,229,484**	**-$ 381,867,074**	**$ 1,258,507,211**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 1,519,485,413**	**$ 124,685,374**	**-$ 3,796,502**	**$ 1,640,374,285**	**-$ 327,398,005**	**-$ 56,698,553**	**$ 2,229,484**	**-$ 381,867,074**	**$ 1,258,507,211**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets), if applicable6									
		Total						**-$ 56,698,553**			

			Less: *Fully Allocated Depreciation*	
10		Transportation	Transportation	
8		Stores Equipment	Stores Equipment	
			Net Depreciation	-$ 56,698,553

Notes:

1 Tables in the format outlined above covering all fixed asset accounts should be submitted for the Test Year, Bridge Year and all relevant historical years. At a minimum , the applicant must provide data for the earlier of: 1) all historical years back to its last rebasing; or 2) at least three years of historical actuals, in addition to Bridge Year and Test Year forecasts.

2 The "CCA Class" for fixed assets should generally agree with the CCA Class used for tax purposes in Tax Returns. Fixed Assets sub-components may be used where the underlying asset components are classified under multiple CCA Classes for tax purposes. If an applicant uses any different classes from those shown in the table, an explanation should be provided. (also see note 3).

3 The table may need to be customized for a utility's asset categories or for any new asset accounts announced or authorized by the OEB.

4 The additions in column (E) must not include construction work in progress (CWIP).

5 Effective on the date of IFRS adoption, customer contributions will no longer be recorded in Account 1995 Contributions & Grants, but will be recorded in Account 2440, Deferred Revenues.

6 The applicant must ensure that all asset disposals have been clearly identified in the Chapter 2 Appendices for all historic, bridge and test years. Where a distributor for general financial reporting purposes under IFRS has accounted for the amount of gain or loss on the retirement of assets in a pool of like assets as a charge or credit to income, for reporting and rate application filings, the distributor shall reclassify such gains and losses as depreciation expense, and disclose the amount separately.

UPDATED - Appendix 2-BA
Fixed Asset Continuity Schedule 1

Accounting Standard	MIFRS
Year	**2023**

			Cost				Accumulated Depreciation				
CCA Class 2	**OEB Account 3**	**Description 3**	**Opening Balance**	**Additions 4**	**Disposals 6**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals 6**	**Closing Balance**	**Net Book Value**
	1609	Capital Contributions Paid	$ 87,029,324	$ 100,000		$ 87,129,324	-$ 6,008,797	-$ 1,950,895		-$ 7,959,692	$ 79,169,632
12	1611	Computer Software (Formally known as Account 1925)	$ 93,003,225	$ 3,590,513		$ 96,593,738	-$ 61,641,460	-$ 9,194,054		-$ 70,835,514	$ 25,758,224
CEC	1612	Land Rights (Formally known as Account 1906)	$ 2,559,509	$ 12,296		$ 2,571,805	-$ 516,240	-$ 60,014		-$ 576,254	$ 1,995,551
N/A	1805	Land	$ 4,824,643			$ 4,824,643	$ -			$ -	$ 4,824,643
47	1808	Buildings	$ 39,485,516	$ 534,656		$ 40,020,172	-$ 7,275,647	-$ 994,934		-$ 8,270,581	$ 31,749,591
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ 152,607,887	$ 3,602,046		$ 156,209,933	-$ 29,659,587	-$ 4,672,709		-$ 34,332,296	$ 121,877,637
47	1820	Distribution Station Equipment <50 kV	$ 158,510,732	$ 4,126,157	-$ 96,181	$ 162,540,708	-$ 35,306,467	-$ 4,863,301	$ 55,028	-$ 40,114,740	$ 122,425,968
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 163,801,124	$ 9,876,018	-$ 313,703	$ 173,363,439	-$ 27,037,866	-$ 4,081,762	$ 30,864	-$ 31,088,764	$ 142,274,675
47	1835	Overhead Conductors & Devices	$ 169,507,040	$ 13,582,445	-$ 230,544	$ 182,858,941	-$ 27,158,272	-$ 4,586,713	$ 26,635	-$ 31,718,350	$ 151,140,591
47	1840	Underground Conduit	$ 287,971,670	$ 20,403,122		$ 308,374,792	-$ 43,302,725	-$ 7,783,016		-$ 51,085,741	$ 257,289,051
47	1845	Underground Conductors & Devices	$ 245,993,967	$ 18,820,790	-$ 359,069	$ 264,455,688	-$ 44,878,299	-$ 7,871,614	$ 64,812	-$ 52,685,101	$ 211,770,587
47	1850	Line Transformers	$ 118,793,803	$ 7,823,557	-$ 220,567	$ 126,396,793	-$ 24,066,303	-$ 3,854,763	$ 40,727	-$ 27,880,339	$ 98,516,454
47	1855	Services (Overhead & Underground)	$ 84,624,222	$ 4,595,931		$ 89,220,153	-$ 15,096,415	-$ 2,207,425		-$ 17,303,840	$ 71,916,313
47	1860	Meters	$ -			$ -	$ -			$ -	$ -
47	1860	Meters (Smart Meters)	$ 63,967,085	$ 6,673,267	-$ 955,308	$ 69,685,044	-$ 34,214,221	-$ 3,930,943	$ 688,888	-$ 37,456,276	$ 32,228,768
N/A	1905	Land	$ 19,942,005			$ 19,942,005	-$ 14,848	-$ 4,047		-$ 18,895	$ 19,923,110
47	1908	Buildings & Fixtures	$ 96,951,122	$ 352,679		$ 97,303,801	-$ 14,376,971	-$ 3,197,517		-$ 17,574,488	$ 79,729,313
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 4,596,636	$ 50,383		$ 4,647,019	-$ 1,963,762	-$ 400,102		-$ 2,363,864	$ 2,283,155
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ -			$ -	$ -			$ -	$ -
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
50	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ 15,487,763	$ 1,160,674		$ 16,648,437	-$ 9,251,961	-$ 2,042,539		-$ 11,294,500	$ 5,353,937
10	1930	Transportation Equipment	$ 26,471,525	$ 2,233,064	-$ 1,501,028	$ 27,203,561	-$ 9,009,667	-$ 1,991,963	$ 1,413,150	-$ 9,588,480	$ 17,615,081
8	1935	Stores Equipment	$ 560,703			$ 560,703	-$ 196,708	-$ 56,224		-$ 252,932	$ 307,771
8	1940	Tools, Shop & Garage Equipment	$ 5,395,418	$ 461,809		$ 5,857,227	-$ 3,191,872	-$ 442,658		-$ 3,634,530	$ 2,222,697
8	1945	Measurement & Testing Equipment	$ 209,467			$ 209,467	-$ 204,018	-$ 5,066		-$ 209,084	$ 383
8	1950	Power Operated Equipment	$ 1,505,307	$ 115,377		$ 1,620,684	-$ 589,129	-$ 82,798		-$ 671,927	$ 948,757

8	1955	Communications Equipment	$ 21,242,562	$ 874,903		$ 22,117,465	-$ 9,208,861	-$ 2,173,813		-$ 11,382,674	$ 10,734,791
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ 520,334	$ 16,787		$ 537,121	-$ 209,339	-$ 43,258		-$ 252,597	$ 284,524
47	1970	Load Management Controls Customer Premises	$ 350,910			$ 350,910	-$ 17,545	-$ 35,091		-$ 52,636	$ 298,274
47	1975	Load Management Controls Utility Premises	$ 203,443			$ 203,443	-$ 10,172	-$ 20,344		-$ 30,516	$ 172,927
47	1980	System Supervisor Equipment	$ 18,028,424	$ 992,743		$ 19,021,167	-$ 8,559,628	-$ 1,274,267		-$ 9,833,895	$ 9,187,272
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ -			$ -	$ -			$ -	$ -
47	1995	Contributions & Grants	$ -			$ -	$ -			$ -	$ -
47	2440	Deferred Revenue5	-$ 243,771,082	-$ 21,345,516	$ 360,000	-$ 264,756,598	$ 31,099,706	$ 8,806,490	-$ 360,000	$ 39,546,196	-$ 225,210,402
						$ -				$ -	$ -
		Sub-Total	**$ 1,640,374,285**	**$ 78,653,701**	**-$ 3,316,400**	**$ 1,715,711,586**	**-$ 381,867,074**	**-$ 59,015,340**	**$ 1,960,104**	**-$ 438,922,310**	**$ 1,276,789,276**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 1,640,374,285**	**$ 78,653,701**	**-$ 3,316,400**	**$ 1,715,711,586**	**-$ 381,867,074**	**-$ 59,015,340**	**$ 1,960,104**	**-$ 438,922,310**	**$ 1,276,789,276**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets), if applicable6									
		Total						**-$ 59,015,340**			

			Less: *Fully Allocated Depreciation*	
10		Transportation	Transportation	
8		Stores Equipment	Stores Equipment	
			Net Depreciation	-$ 59,015,340

Notes:

1. Tables in the format outlined above covering all fixed asset accounts should be submitted for the Test Year, Bridge Year and all relevant historical years. At a minimum , the applicant must provide data for the earlier of: 1) all historical years back to its last rebasing; or 2) at least three years of historical actuals, in addition to Bridge Year and Test Year forecasts.

2. The "CCA Class" for fixed assets should generally agree with the CCA Class used for tax purposes in Tax Returns. Fixed Assets sub-components may be used where the underlying asset components are classified under multiple CCA Classes for tax purposes. If an applicant uses any different classes from those shown in the table, an explanation should be provided. (also see note 3).

3. The table may need to be customized for a utility's asset categories or for any new asset accounts announced or authorized by the OEB.

4. The additions in column (E) must not include construction work in progress (CWIP).

5. Effective on the date of IFRS adoption, customer contributions will no longer be recorded in Account 1995 Contributions & Grants, but will be recorded in Account 2440, Deferred Revenues.

6. The applicant must ensure that all asset disposals have been clearly identified in the Chapter 2 Appendices for all historic, bridge and test years. Where a distributor for general financial reporting purposes under IFRS has accounted for the amount of gain or loss on the retirement of assets in a pool of like assets as a charge or credit to income, for reporting and rate application filings, the distributor shall reclassify such gains and losses as depreciation expense, and disclose the amount separately.

UPDATED - Appendix 2-BA
Fixed Asset Continuity Schedule 1

Accounting Standard	MIFRS
Year	**2024**

			Cost				Accumulated Depreciation				
CCA Class 2	**OEB Account 3**	**Description 3**	**Opening Balance**	**Additions 4**	**Disposals 6**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals 6**	**Closing Balance**	**Net Book Value**
	1609	Capital Contributions Paid	$ 87,129,324	$ 2,130,000		$ 89,259,324	-$ 7,959,692	-$ 1,958,654		-$ 9,918,346	$ 79,340,978
12	1611	Computer Software (Formally known as Account 1925)	$ 96,593,738	$ 2,672,828		$ 99,266,566	-$ 70,835,514	-$ 9,617,635		-$ 80,453,149	$ 18,813,417
CEC	1612	Land Rights (Formally known as Account 1906)	$ 2,571,805	$ 12,370		$ 2,584,175	-$ 576,254	-$ 60,424		-$ 636,678	$ 1,947,497
N/A	1805	Land	$ 4,824,643			$ 4,824,643	$ -			$ -	$ 4,824,643
47	1808	Buildings	$ 40,020,172	$ 930,941		$ 40,951,113	-$ 8,270,581	-$ 1,019,266		-$ 9,289,847	$ 31,661,266
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ 156,209,933	$ 5,429,195		$ 161,639,128	-$ 34,332,296	-$ 4,810,909		-$ 39,143,205	$ 122,495,923
47	1820	Distribution Station Equipment <50 kV	$ 162,540,708	$ 11,994,416	-$ 96,181	$ 174,438,943	-$ 40,114,740	-$ 5,000,717	$ 55,028	-$ 45,060,429	$ 129,378,514
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 173,363,439	$ 8,186,322	-$ 313,703	$ 181,236,058	-$ 31,088,764	-$ 4,291,482	$ 30,864	-$ 35,349,382	$ 145,886,676
47	1835	Overhead Conductors & Devices	$ 182,858,941	$ 11,967,313	-$ 230,544	$ 194,595,710	-$ 31,718,350	-$ 4,917,860	$ 26,635	-$ 36,609,575	$ 157,986,135
47	1840	Underground Conduit	$ 308,374,792	$ 18,547,382		$ 326,922,174	-$ 51,085,741	-$ 8,246,543		-$ 59,332,284	$ 267,589,890
47	1845	Underground Conductors & Devices	$ 264,455,688	$ 17,644,613	-$ 359,069	$ 281,741,232	-$ 52,685,101	-$ 8,377,879	$ 64,812	-$ 60,998,168	$ 220,743,064
47	1850	Line Transformers	$ 126,396,793	$ 7,349,154	-$ 220,567	$ 133,525,380	-$ 27,880,339	-$ 4,055,629	$ 40,727	-$ 31,895,241	$ 101,630,139
47	1855	Services (Overhead & Underground)	$ 89,220,153	$ 4,435,769		$ 93,655,922	-$ 17,303,840	-$ 2,312,462		-$ 19,616,302	$ 74,039,620
47	1860	Meters	$ -			$ -	$ -			$ -	$ -
47	1860	Meters (Smart Meters)	$ 69,685,044	$ 7,261,510	-$ 1,003,515	$ 75,943,039	-$ 37,456,276	-$ 3,798,330	$ 737,520	-$ 40,517,086	$ 35,425,953
N/A	1905	Land	$ 19,942,005			$ 19,942,005	-$ 18,895	-$ 4,047		-$ 22,942	$ 19,919,063
47	1908	Buildings & Fixtures	$ 97,303,801	$ 352,679		$ 97,656,480	-$ 17,574,488	-$ 3,216,137		-$ 20,790,625	$ 76,865,855
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 4,647,019	$ 50,383		$ 4,697,402	-$ 2,363,864	-$ 394,788		-$ 2,758,652	$ 1,938,750
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ -			$ -	$ -			$ -	$ -
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
50	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ 16,648,437	$ 887,744		$ 17,536,181	-$ 11,294,500	-$ 1,973,655		-$ 13,268,155	$ 4,268,026
10	1930	Transportation Equipment	$ 27,203,561	$ 1,844,412	-$ 946,992	$ 28,100,981	-$ 9,588,480	-$ 2,033,557	$ 901,989	-$ 10,720,048	$ 17,380,933
8	1935	Stores Equipment	$ 560,703			$ 560,703	-$ 252,932	-$ 56,225		-$ 309,157	$ 251,546
8	1940	Tools, Shop & Garage Equipment	$ 5,857,227	$ 464,863		$ 6,322,090	-$ 3,634,530	-$ 452,760		-$ 4,087,290	$ 2,234,800
8	1945	Measurement & Testing Equipment	$ 209,467			$ 209,467	-$ 209,084	-$ 130		-$ 209,214	$ 253
8	1950	Power Operated Equipment	$ 1,620,684			$ 1,620,684	-$ 671,927	-$ 87,380		-$ 759,307	$ 861,377

8	1955	Communications Equipment	$ 22,117,465	$ 781,255		$ 22,898,720	-$ 11,382,674	-$ 2,136,078		-$ 13,518,752	$ 9,379,968
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ 537,121			$ 537,121	-$ 252,597	-$ 41,268		-$ 293,865	$ 243,256
47	1970	Load Management Controls Customer Premises	$ 350,910			$ 350,910	-$ 52,636	-$ 35,091		-$ 87,727	$ 263,183
47	1975	Load Management Controls Utility Premises	$ 203,443			$ 203,443	-$ 30,516	-$ 20,344		-$ 50,860	$ 152,583
47	1980	System Supervisor Equipment	$ 19,021,167	$ 1,094,855		$ 20,116,022	-$ 9,833,895	-$ 1,082,628		-$ 10,916,523	$ 9,199,499
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ -			$ -	$ -			$ -	$ -
47	1995	Contributions & Grants	$ -			$ -	$ -			$ -	$ -
47	2440	Deferred Revenue5	-$ 264,756,598	-$ 20,689,619	$ 370,000	-$ 285,076,217	$ 39,546,196	$ 9,416,952	-$ 370,000	$ 48,593,148	-$ 236,483,069
						$ -				$ -	$ -
		Sub-Total	**$ 1,715,711,586**	**$ 83,348,385**	**-$ 2,800,571**	**$ 1,796,259,400**	**-$ 438,922,310**	**-$ 60,584,926**	**$ 1,487,575**	**-$ 498,019,661**	**$ 1,298,239,739**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets *(input as negative)*				$ -				$ -	$ -
		Total PP&E	**$ 1,715,711,586**	**$ 83,348,385**	**-$ 2,800,571**	**$ 1,796,259,400**	**-$ 438,922,310**	**-$ 60,584,926**	**$ 1,487,575**	**-$ 498,019,661**	**$ 1,298,239,739**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets), if applicable6									
		Total						**-$ 60,584,926**			

			Less: *Fully Allocated Depreciation*	
10		Transportation	Transportation	
8		Stores Equipment	Stores Equipment	
			Net Depreciation	-$ 60,584,926

Notes:

1 Tables in the format outlined above covering all fixed asset accounts should be submitted for the Test Year, Bridge Year and all relevant historical years. At a minimum , the applicant must provide data for the earlier of: 1) all historical years back to its last rebasing; or 2) at least three years of historical actuals, in addition to Bridge Year and Test Year forecasts.

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UPDATED - Appendix 2-BA
Fixed Asset Continuity Schedule 1

Accounting Standard MIFRS
Year **2025**

			Cost				Accumulated Depreciation				
CCA Class 2	**OEB Account 3**	**Description 3**	**Opening Balance**	**Additions 4**	**Disposals 6**	**Closing Balance**	**Opening Balance**	**Additions**	**Disposals 6**	**Closing Balance**	**Net Book Value**
	1609	Capital Contributions Paid	$ 89,259,324	$ 7,300,000		$ 96,559,324	-$ 9,918,346	-$ 2,013,783		-$ 11,932,129	$ 84,627,195
12	1611	Computer Software (Formally known as Account 1925)	$ 99,266,566	$ 16,854,811		$ 116,121,377	-$ 80,453,149	-$ 11,048,698		-$ 91,501,847	$ 24,619,530
CEC	1612	Land Rights (Formally known as Account 1906)	$ 2,584,175	$ 12,376		$ 2,596,551	-$ 636,678	-$ 60,507		-$ 697,185	$ 1,899,366
N/A	1805	Land	$ 4,824,643	$ 779,683		$ 5,604,326	$ -			$ -	$ 5,604,326
47	1808	Buildings	$ 40,951,113	$ 1,416,046		$ 42,367,159	-$ 9,289,847	-$ 1,046,267		-$ 10,336,114	$ 32,031,045
13	1810	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
47	1815	Transformer Station Equipment >50 kV	$ 161,639,128	$ 9,223,210		$ 170,862,338	-$ 39,143,205	-$ 5,003,121		-$ 44,146,326	$ 126,716,012
47	1820	Distribution Station Equipment <50 kV	$ 174,438,943	$ 26,747,897	-$ 96,181	$ 201,090,659	-$ 45,060,429	-$ 5,417,445	$ 55,028	-$ 50,422,846	$ 150,667,813
47	1825	Storage Battery Equipment	$ -			$ -	$ -			$ -	$ -
47	1830	Poles, Towers & Fixtures	$ 181,236,058	$ 8,003,940	-$ 313,703	$ 188,926,295	-$ 35,349,382	-$ 4,462,353	$ 30,864	-$ 39,780,871	$ 149,145,424
47	1835	Overhead Conductors & Devices	$ 194,595,710	$ 11,674,276	-$ 230,544	$ 206,039,442	-$ 36,609,575	-$ 5,217,477	$ 26,635	-$ 41,800,417	$ 164,239,025
47	1840	Underground Conduit	$ 326,922,174	$ 18,528,470		$ 345,450,644	-$ 59,332,284	-$ 8,650,400		-$ 67,982,684	$ 277,467,960
47	1845	Underground Conductors & Devices	$ 281,741,232	$ 17,532,469	-$ 359,069	$ 298,914,632	-$ 60,998,168	-$ 8,839,416	$ 64,812	-$ 69,772,772	$ 229,141,860
47	1850	Line Transformers	$ 133,525,380	$ 7,363,590	-$ 220,567	$ 140,668,403	-$ 31,895,241	-$ 4,226,186	$ 40,727	-$ 36,080,700	$ 104,587,703
47	1855	Services (Overhead & Underground)	$ 93,655,922	$ 4,429,274		$ 98,085,196	-$ 19,616,302	-$ 2,357,841		-$ 21,974,143	$ 76,111,053
47	1860	Meters	$ -			$ -	$ -			$ -	$ -
47	1860	Meters (Smart Meters)	$ 75,943,039	$ 6,783,965	-$ 1,042,534	$ 81,684,470	-$ 40,517,086	-$ 3,974,133	$ 774,834	-$ 43,716,385	$ 37,968,085
N/A	1905	Land	$ 19,942,005			$ 19,942,005	-$ 22,942	-$ 4,047		-$ 26,989	$ 19,915,016
47	1908	Buildings & Fixtures	$ 97,656,480	$ 352,679		$ 98,009,159	-$ 20,790,625	-$ 3,204,028		-$ 23,994,653	$ 74,014,506
13	1910	Leasehold Improvements	$ -			$ -	$ -			$ -	$ -
8	1915	Office Furniture & Equipment (10 years)	$ 4,697,402	$ 50,383		$ 4,747,785	-$ 2,758,652	-$ 392,323		-$ 3,150,975	$ 1,596,810
8	1915	Office Furniture & Equipment (5 years)	$ -			$ -	$ -			$ -	$ -
10	1920	Computer Equipment - Hardware	$ -			$ -	$ -			$ -	$ -
45	1920	Computer Equip.-Hardware(Post Mar. 22/04)	$ -			$ -	$ -			$ -	$ -
50	1920	Computer Equip.-Hardware(Post Mar. 19/07)	$ 17,536,181	$ 1,573,599		$ 19,109,780	-$ 13,268,155	-$ 1,958,576		-$ 15,226,731	$ 3,883,049
10	1930	Transportation Equipment	$ 28,100,981	$ 467,753	-$ 368,933	$ 28,199,801	-$ 10,720,048	-$ 2,158,407	$ 346,202	-$ 12,532,253	$ 15,667,548
8	1935	Stores Equipment	$ 560,703			$ 560,703	-$ 309,157	-$ 56,224		-$ 365,381	$ 195,322
8	1940	Tools, Shop & Garage Equipment	$ 6,322,090	$ 468,679		$ 6,790,769	-$ 4,087,290	-$ 461,217		-$ 4,548,507	$ 2,242,262
8	1945	Measurement & Testing Equipment	$ 209,467			$ 209,467	-$ 209,214	-$ 103		-$ 209,317	$ 150
8	1950	Power Operated Equipment	$ 1,620,684	$ 461,909	-$ 4,356	$ 2,078,237	-$ 759,307	-$ 89,388	$ 3,904	-$ 844,791	$ 1,233,446

8	1955	Communications Equipment	$ 22,898,720	$ 1,733,822		$ 24,632,542	-$ 13,518,752	-$ 1,885,121		-$ 15,403,873	$ 9,228,669
8	1955	Communication Equipment (Smart Meters)	$ -			$ -	$ -			$ -	$ -
8	1960	Miscellaneous Equipment	$ 537,121	$ 24,987		$ 562,108	-$ 293,865	-$ 41,830		-$ 335,695	$ 226,413
47	1970	Load Management Controls Customer Premises	$ 350,910			$ 350,910	-$ 87,727	-$ 35,091		-$ 122,818	$ 228,092
47	1975	Load Management Controls Utility Premises	$ 203,443			$ 203,443	-$ 50,860	-$ 20,344		-$ 71,204	$ 132,239
47	1980	System Supervisor Equipment	$ 20,116,022	$ 1,533,324		$ 21,649,346	-$ 10,916,523	-$ 1,081,462		-$ 11,997,985	$ 9,651,361
47	1985	Miscellaneous Fixed Assets	$ -			$ -	$ -			$ -	$ -
47	1990	Other Tangible Property	$ -			$ -	$ -			$ -	$ -
47	1995	Contributions & Grants	$ -			$ -	$ -			$ -	$ -
47	2440	Deferred Revenue5	-$ 285,076,217	-$ 20,758,380	$ 410,000	-$ 305,424,597	$ 48,593,148	$ 9,805,553	-$ 410,000	$ 57,988,701	-$ 247,435,896
						$ -				$ -	$ -
		Sub-Total	**$ 1,796,259,400**	**$ 122,558,762**	**-$ 2,225,887**	**$ 1,916,592,275**	**-$ 498,019,661**	**-$ 63,900,235**	**$ 933,006**	**-$ 560,986,890**	**$ 1,355,605,385**
		Less Socialized Renewable Energy Generation Investments (input as negative)				$ -				$ -	$ -
		Less Other Non Rate-Regulated Utility Assets (input as negative)				$ -				$ -	$ -
		Total PP&E	**$ 1,796,259,400**	**$ 122,558,762**	**-$ 2,225,887**	**$ 1,916,592,275**	**-$ 498,019,661**	**-$ 63,900,235**	**$ 933,006**	**-$ 560,986,890**	**$ 1,355,605,385**
		Depreciation Expense adj. from gain or loss on the retirement of assets (pool of like assets), if applicable6									
		Total						**-$ 63,900,235**			

			Less: *Fully Allocated Depreciation*	
10		Transportation	Transportation	
8		Stores Equipment	Stores Equipment	
			Net Depreciation	-$ 63,900,235

Notes:

1 Tables in the format outlined above covering all fixed asset accounts should be submitted for the Test Year, Bridge Year and all relevant historical years. At a minimum , the applicant must provide data for the earlier of: 1) all historical years back to its last rebasing; or 2) at least three years of historical actuals, in addition to Bridge Year and Test Year forecasts.

2 The "CCA Class" for fixed assets should generally agree with the CCA Class used for tax purposes in Tax Returns. Fixed Assets sub-components may be used where the underlying asset components are classified under multiple CCA Classes for tax purposes. If an applicant uses any different classes from those shown in the table, an explanation should be provided. (also see note 3).

3 The table may need to be customized for a utility's asset categories or for any new asset accounts announced or authorized by the OEB.

4 The additions in column (E) must not include construction work in progress (CWIP).

5 Effective on the date of IFRS adoption, customer contributions will no longer be recorded in Account 1995 Contributions & Grants, but will be recorded in Account 2440, Deferred Revenues.

6 The applicant must ensure that all asset disposals have been clearly identified in the Chapter 2 Appendices for all historic, bridge and test years. Where a distributor for general financial reporting purposes under IFRS has accounted for the amount of gain or loss on the retirement of assets in a pool of like assets as a charge or credit to income, for reporting and rate application filings, the distributor shall reclassify such gains and losses as depreciation expense, and disclose the amount separately.

UPDATED WORKING CAPITAL REQUIREMENT

1. INTRODUCTION

This Schedule provides a summary of the Working Capital Requirement for the Bridge Year 2020 and the Test Years 2021-2025.

Table 1 summarizes the 2016-2020 approved working capital allowance ("WCA"), as per the Approved Settlement Agreement governing Hydro Ottawa's 2016-2020 rate term.[1]

Table 1 – OEB-Approved Working Capital Allowance 2016-2020 ($'000s)

	2016	2017	2018	2019	2020
Power Supply Expenses	$894,825	$911,714	$947,559	$928,734	$945,199
OM&A Expenses	$83,106	$84,693	$86,311	$87,959[2]	$89,639[3]
Total Expenses for Working Capital[4]	$977,391	$966,407	$1,033,869	$1,016,693	$1,034,838
Working Capital %	7.89%	7.89%	7.92%	7.55%	7.52%
TOTAL WCA	**$77,166**	**$78,617**	**$81,882**	**$76,760**	**$77,820**

Table 2 below provides the Historical and Bridge Year WCA amounts for 2016-2020.

[1] Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015), Schedule A, page 15.
[2] Figure does not reflect mid-term operations, maintenance and administration ("OM&A") adjustment.
[3] Figure does not reflect mid-term OM&A adjustment.
[4] Totals may not sum due to rounding.

Table 2 – AS ORIGINALLY SUBMITTED – Working Capital Allowance 2016-2020 ($'000s)

	Historical			Bridge	
	2016	2017	2018	2019	2020
Power Supply Expenses	$965,239	$875,802	$852,917	$928,734	$945,199
OM&A Expenses	$82,621	$82,245	$86,863	$87,545	$91,990
Total Expenses for Working Capital	$1,047,860	$958,047	$939,780	$1,016,279	$1,037,189
Working Capital %	7.89%	7.89%	7.92%	7.50%	7.50%
TOTAL WCA	**$82,676**	**$75,590**	**$74,431**	**$76,221**	**$77,789**

Table 2 – UPDATED FOR 2019 ACTUALS – Working Capital Allowance 2016-2020 ($'000s)

	Historical				Bridge
	2016	2017	2018	2019	2020
Power Supply Expenses	$965,239	$875,802	$852,917	$892,224	$945,199
OM&A Expenses	$82,621	$82,245	$86,863	$83,113	$91,990
Total Expenses for Working Capital	$1,047,860	$958,047	$939,780	$975,337	$1,037,189
Working Capital %	7.89%	7.89%	7.92%	7.55%	7.52%
TOTAL WCA	**$82,676**	**$75,590**	**$74,431**	**$73,638**	**$77,997**

Table 3 below provides a summary of Hydro Ottawa's proposed WCA for 2021-2025.

Table 3 – AS ORIGINALLY SUBMITTED – Proposed Working Capital Allowance 2021-2025 ($'000s)

	2021	2022	2023	2024	2025
Power Supply Expenses	$1,025,613	$1,097,187	$1,167,387	$1,264,188	$1,310,655
OM&A Expenses	$93,923	$96,280	$98,697	$101,174	$103,714
Total Expenses for Working Capital[5]	$1,119,535	$1,193,467	$1,266,084	$1,365,362	$1,414,39
Working Capital %	7.50%	7.50%	7.50%	7.50%	7.50%
TOTAL WCA	**$83,865**	**$89,510**	**$94,956**	**$102,402**	**$106,078**

Table 3 – UPDATED FOR 2019 ACTUALS – Proposed Working Capital Allowance 2021-2025 ($'000s)

	2021	2022	2023	2024	2025
Power Supply Expenses	$1,037,684	$1,109,199	$1,180,417	$1,277,162	$1,323,611
OM&A Expenses	$93,923	$96,280	$98,697	$101,174	$103,714
Total Expenses for Working Capital[6]	$1,131,607	$1,205,479	$1,279,114	$1,378,336	$1,427,324
Working Capital %	7.50%	7.50%	7.50%	7.50%	7.50%
TOTAL WCA	**$84,870**	**$90,411**	**$95,934**	**$103,375**	**$107,049**

2. WORKING CAPITAL PERCENTAGE

As part of Hydro Ottawa's 2016-2020 rate application, the OEB approved a yearly WCA percentage. The utility's approved 2016-2020 WCA percentages are shown in Table 1 above.

UPDATED Exhibit 2-1-1: Rate Base Overview incorporates the OEB's default WCA percentage of 7.5%, as outlined in the updated version of Table 3 above, for 2021-2025 working capital requirement included in Hydro Ottawa's 2021-2025 rate base.

[5] Totals may not sum due to rounding.
[6] Totals may not sum due to rounding.

3. OPERATIONS, MAINTENANCE AND ADMINISTRATION

For more details on the OM&A expenses used in Table 1 above, please see UPDATED Exhibit 4-1-1: Operations, Maintenance and Administration Summary.

4. CALCULATION OF POWER SUPPLY EXPENSE

The billing determinants underpinning the estimated Power Supply Expense use the forecasted monthly purchased kWh and peak kW produced by the load forecast described in UPDATED Exhibit 3-1-1: Load Forecast. The forecast calculation for commodity expense is detailed in Appendix 2-Z, in the following attachments:

- UPDATED Attachment 2-3-1(A): OEB Appendix 2-Z - 2021 Commodity Expense
- UPDATED Attachment 2-3-1(B): OEB Appendix 2-Z - 2022 Commodity Expense
- UPDATED Attachment 2-3-1(C): OEB Appendix 2-Z - 2023 Commodity Expense
- UPDATED Attachment 2-3-1(D): OEB Appendix 2-Z - 2024 Commodity Expense
- UPDATED Attachment 2-3-1(E): OEB Appendix 2-Z - 2025 Commodity Expense

UPDATED Attachment 2-3-1(F): 2021-2025 Cost of Power provides the complete Power Supply Expenses for the 2021-2025 period, as described within this Schedule. There are ~~slight~~ no variances in the annual commodity expense in UPDATED Attachments (A) through (E) and UPDATED Attachment (F) ~~due to rounding differences~~. Table 4, as updated below, outlines the estimate of annual cost of power expenditures for 2021-2025.

Table 4 – AS ORIGINALLY SUBMITTED – Summary of Estimated Annual Cost of Power Expenses ($'000s)

	2021	2022	2023	2024	2025
Commodity	$903,076	$972,245	$1,040,983	$1,135,265	$1,179,158
Wholesale Market	$28,423	$28,514	$28,628	$28,823	$28,881
Transmission Network	$55,056	$56,367	$57,032	$58,347	$59,772
Transmission Connection	$36,335	$37,308	$37,962	$38,943	$40,007
Smart Meter Entity Charge	$2,304	$2,328	$2,351	$2,372	$2,393
Low Voltage	$419	$426	$432	$439	$446
TOTAL[7]	**$1,025,613**	**$1,097,187**	**$1,167,387**	**$1,264,188**	**$1,310,655**

Table 4 – AS REVISED – Summary of Estimated Annual Cost of Power Expenses ($'000s)

	2021	2022	2023	2024	2025
Commodity	$903,076	$972,245	$1,040,983	$1,135,265	$1,179,158
Wholesale Market	$28,423	$28,514	$28,628	$28,823	$28,881
Transmission Network	$54,430	$55,706	$57,032	$58,347	$59,772
Transmission Connection	$36,017	$36,971	$37,962	$38,943	$40,007
Smart Meter Entity Charge	$2,304	$2,328	$2,351	$2,372	$2,393
Low Voltage	$419	$426	$432	$439	$446
TOTAL[8]	**$1,024,670**	**$1,096,190**	**$1,167,387**	**$1,264,188**	**$1,310,655**

[7] Totals may not sum due to rounding.
[8] Totals may not sum due to rounding.

Table 4 – UPDATED FOR 2019 ACTUALS – Summary of Estimated Annual Cost of Power Expenses ($'000s)

	2021	2022	2023	2024	2025
Commodity	$921,604	$990,892	$1,059,793	$1,154,128	$1,198,186
Wholesale Market	$28,414	$28,504	$28,617	$28,810	$28,868
Transmission Network	$51,439	$52,652	$53,903	$55,164	$56,492
Transmission Connection	$33,504	$34,398	$35,321	$36,249	$37,226
Smart Meter Entity Charge	$2,304	$2,328	$2,351	$2,372	$2,393
Low Voltage	$419	$426	$432	$439	$446
TOTAL[9]	**$1,037,684**	**$1,109,199**	**$1,180,417**	**$1,277,162**	**$1,323,611**

Figure 1 below, as originally submitted, illustrates Hydro Ottawa's annual cost of power expense from 2015-2025. Annual amounts from 2015-2018 are Historical, 2019-2020 are Bridge Years, and 2021-2025 have been forecasted as described in the subsections of this Schedule. The decrease in annual power supply expenditures from 2016-2019 can be attributed to the impacts from the *Ontario Fair Hydro Plan Act, 2017* ("Fair Hydro Plan").

The updated version of Figure 1 below illustrates Hydro Ottawa's annual cost of power expense from 2015-2025. Annual amounts from 2015-2019 are Historical, 2020 is Bridge Year, and 2021-2025 have been forecasted as described in the subsections of this Schedule. The decrease in annual power supply expenditures from 2016-2019 can be attributed to the impacts from the Fair Hydro Plan.

[9] Totals may not sum due to rounding.

Figure 1 – AS ORIGINALLY SUBMITTED – Cost of Power Expense 2015-2025 ($’000,000s)

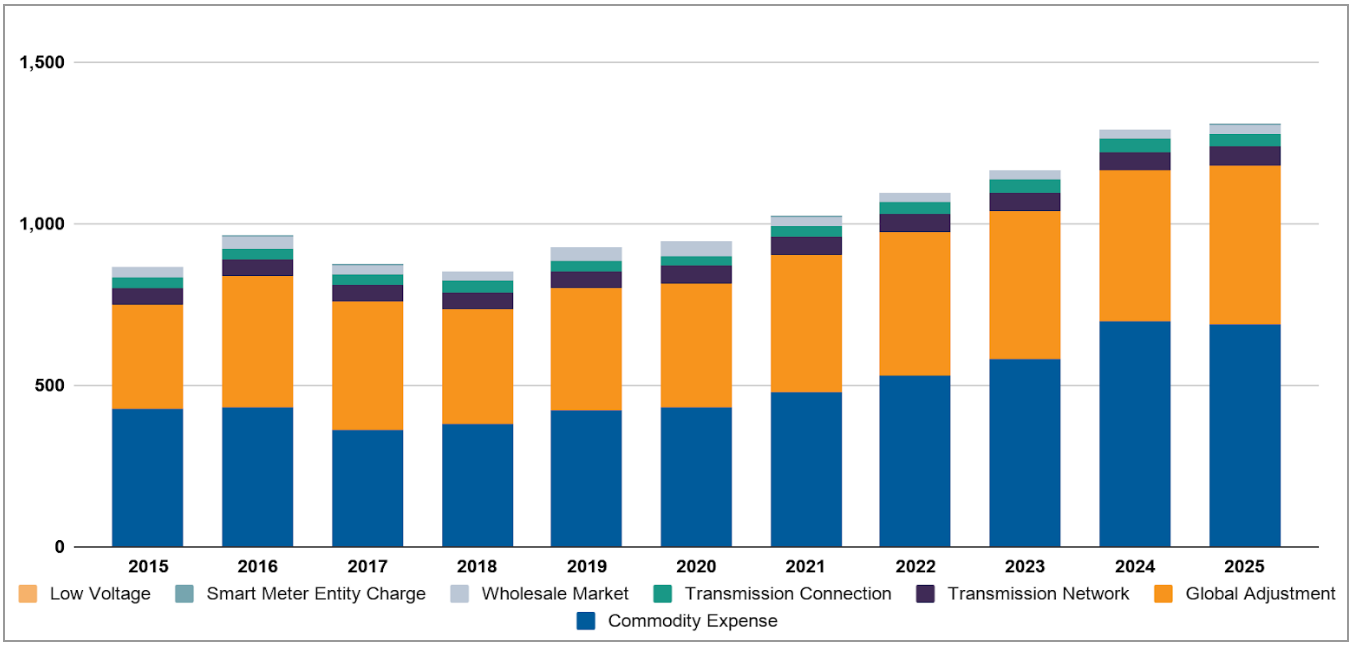
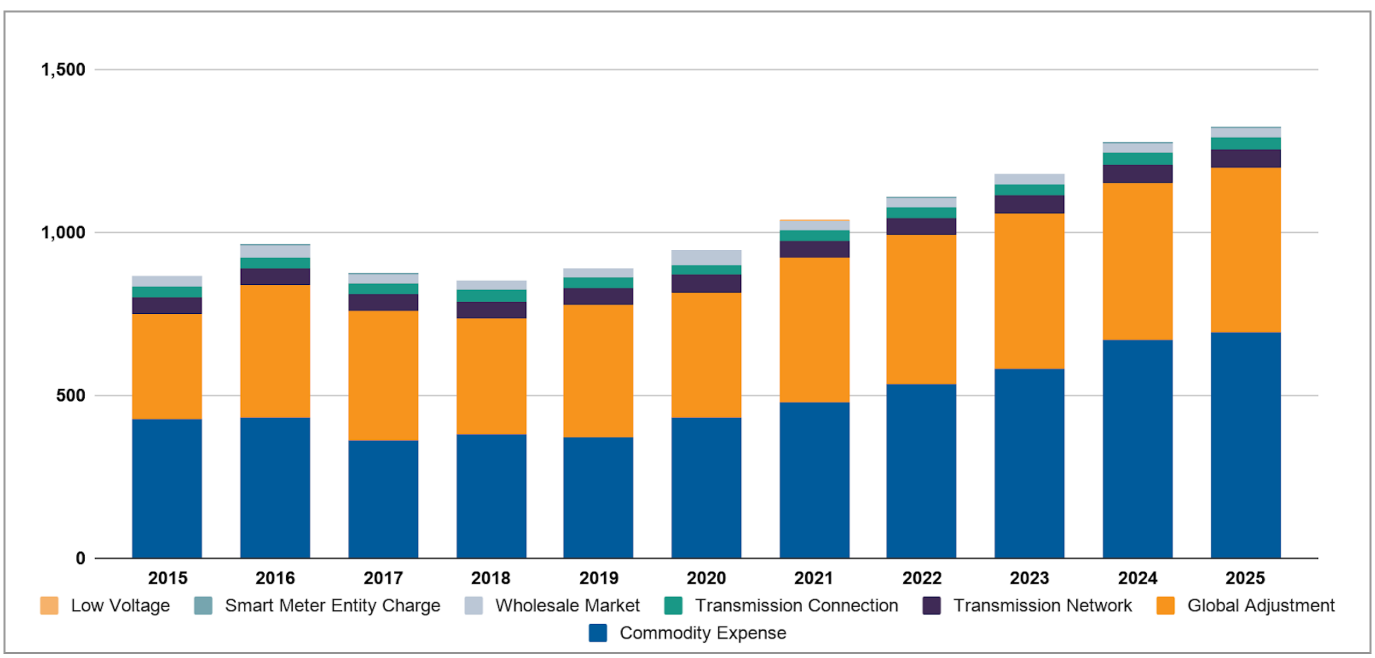


Figure 1 – UPDATED FOR 2019 ACTUALS – Cost of Power Expense 2015-2025 ($’000,000s)



4.1. COMMODITY EXPENSE AND GLOBAL ADJUSTMENT

As per the OEB's *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019, Hydro Ottawa has completed Appendix 2-Z: Commodity Expense for 2021-2025.

Effective November 1, 2019, the provisions of the Fair Hydro Plan under which the OEB had been setting Regulated Price Plan ("RPP") prices was repealed.[10] The OEB has since set RPP prices which more closely reflect the actual cost of supply. Hydro Ottawa has followed the direction OEB staff provided to Kingston Hydro Corporation in the follow-up questions for its 2020 Custom Incentive Rate-Setting ("Custom IR") Annual Update (EB-2019-0048). On November 1, 2019, OEB staff updated Appendix 2-Z to accommodate the changes to the supply cost calculation.[11] These changes consist of the following: the amount for the Global Adjustment Modifier has been removed from the calculation; the non-RPP Actual kWh have not been split between customers eligible for the Global Adjustment modifier and non-eligible customers; and the adjustment to address bias towards unfavourable variance has only been applied to RPP price forecast.

As originally submitted, Hydro Ottawa ~~has~~ used 2018 Actual kWh and split each class by RPP and non-RPP and Class A and Class B customers to determine the percentage shares for the calculation of weighted average forecasted commodity expense. In accounting for 2019 actuals, the utility has subsequently updated its calculations to incorporate 2019 Actual kWh. The kWh for Class A customers who opted-in July 2019 have been annualized and the number of customers kept consistent. The RPP Supply Cost Summary from the OEB's most recent Regulated Price Plan Report has been used to determine the 2020 forecast commodity price.[12] For 2021-2025, Hydro Ottawa has used residential and commercial factors derived from

[10] Ontario Energy Board, *Regulated Price Plan: Price Report November 1, 2019 to October 31, 2020* (October 22, 2019), page 1.
[11] Kingston Hydro Corporation, *Responses to OEB Staff follow-up Questions*, EB-2019-0048 (November 1, 2019), page 4.
[12] Ontario Energy Board, *Regulated Price Plan: Price Report November 1, 2019 to October 31, 2020* (October 22, 2019), page 2.

Ontario's *2017 Long Term-Energy Plan*[13] ("LTEP") to estimate the RPP, Global Adjustment, and Hourly Ontario Energy Price ("HOEP"), as described below.

4.1.1. Estimated RPP Price

The commodity price for RPP customers was calculated by using the OEB's Regulated Price Plan Report. The RPP rate of $128.03/MWh was multiplied by a yearly residential factor derived from the LTEP to arrive at a yearly RPP commodity rate for 2021-2025. Table 5 provides the estimated RPP price for 2020-2025.

Table 5 – Estimated RPP Price (kWh)

2020	2021	2022	2023	2024	2025
$0.12803	$0.13203	$0.14203	$0.15204	$0.16404	$0.17104

4.1.2. Estimated Global Adjustment

The most recent Global Adjustment rate of $106.94/MWh from the Regulated Price Plan Report was multiplied by a commercial factor derived from the LTEP to arrive at a yearly Global Adjustment rate for 2021-2025. Please see Table 6 below for the yearly rates.

Table 6 – Estimated Global Adjustment (kWh)

2020	2021	2022	2023	2024	2025
$0.10694	$0.10949	$0.11458	$0.12094	$0.12222	$0.12986

4.1.3. Estimated HOEP

For 2021-2025, the estimated HOEP rate has been calculated by taking the estimated annual Average Supply Cost for RPP customers and subtracting the annual estimated Global Adjustment and adjustment to address bias towards unfavourable variance. Table 7 identifies the estimated HOEP prices for 2021-2025.

[13] Ministry of Energy, *Ontario's Long-Term Energy Plan 2017: Delivering Fairness and Choice* (2017), pages 28-30.

Table 7 – Estimated HOEP (kWh)

2020	2021	2022	2023	2024	2025
$0.02009	$0.02154	$0.02645	$0.03009	$0.04082	$0.04018

4.1.4. Estimated Weighted Average Commodity Price

As originally submitted, Hydro Ottawa calculated the weighted average commodity price from the percentage shares of RPP and non-RPP derived from the allocation of the non-loss-adjusted 2018 Actual kWh for 2021-2025. In accounting for 2019 actuals, the utility has subsequently updated its calculations to incorporate 2019 Actual kWh. The annual forecasted loss-adjusted kWh purchases by class were multiplied by the annual weighted average forecasted commodity price. Table 8 shows the estimated weighted average commodity price for 2021-2025.

Table 8 – Estimated Weighted Average Commodity Price (kWh)

2020	2021	2022	2023	2024	2025
$0.1235	$0.13160	$0.1416	$0.1516	$0.1636	$0.1706

4.2. WHOLESALE EXPENSE

The Wholesale Market Charge is calculated by multiplying the total kWh purchased by the 2019 approved rate of $0.0039/kWh for all years.

4.3. TRANSMISSION EXPENSE

The forecasted kW monthly coincident peak is multiplied by historic percentages for each transmission charge to establish the kWs for those charges. These calculations have been updated to incorporate 2019 Actual percentages. Table 9 below outlines the yearly rates calculated for Hydro One Networks Inc. ("HONI") Retail Transmission Service Rates ("RTSRs") and Uniform Transmission Rates ("UTRs").

Table 9 – Retail Transmission Service & Uniform Transmission Rates ($/kW)

	2020	2021	2022	2023	2024	2025
RTSR - Network Service	$3.3980	$3.3980	$3.4507	$3.5042	$3.5585	$3.6137
RTSR - Line Connection Rate	$0.8045	$0.8045	$0.8170	$0.8297	$0.8426	$0.8557
RTSR - Transformation Connection Service Rate	$2.0194	$2.0194	$2.0507	$2.0825	$2.1148	$2.1476
UTRs - Network	$3.92	$3.92	$4.00	$4.08	$4.16	$4.24
UTRs - Line Connection	$0.97	$0.97	$0.99	$1.01	$1.03	$1.05
UTRs - Transformation Connection	$2.33	$2.33	$2.38	$2.43	$2.48	$2.53

4.3.1. HONI Transmission Rates

For 2021, the kWs have been multiplied by the 2020 OEB-approved HONI RTSRs.[14] Hydro Ottawa has increased the transmission rates for 2022-2025 based on the inflationary method as described in the proceeding before the OEB involving HONI's most recent Custom IR Distribution Rate Application.[15] RTSR rates for 2021 and 2022 have been revised in UPDATED Attachment 2-3-1(F): Cost of Power 2021-2025.

4.3.2. Uniform Transmission Rates

For 2021, the kWs have been multiplied by the 2020 Interim UTRs.[16] Hydro Ottawa has increased the transmission rates for 2022-2025 based on the 2020 OEB-approved inflationary factor.

4.4. LOW VOLTAGE CHARGES

To estimate the expense for 2021, historical kW values for Low Voltage and Common Sub Transmission Line ("Common ST Lines") have been multiplied by the 2020 OEB-approved

[14] Ontario Energy Board, *Decision and Order*, EB-2019-0043 (December 17, 2019), Schedule A, page 8.
[15] Hydro One Networks Inc., *2018-2022 Custom Incentive Rate-setting Distribution Rate Application,* EB-2017-0049 (March 31, 2017), Exhibit A-3-2, page 3.
[16] Ontario Energy Board, *Decision and Order*, EB-2019-0296 (December 19, 2019), Schedule A.

HONI rates.[17] Hydro Ottawa has used the historical kW amounts for 2022-2025 and has adjusted the annual rates by the inflationary method as described in HONI's most recent Custom IR Distribution Rate Application. The yearly rates calculated are outlined in Table 10.

Table 10 – Low Voltage Charges ($/kWh)

	2020	2021	2022	2023	2024	2025
Connection to Common ST Lines	$1.4854	$1.4854	$1.5084	$1.5318	$1.5555	$1.5797
Connection to low-voltage delivery*	$3.8047	$3.8047	$3.8637	$3.9236	$3.9844	$4.0461

*High Voltage Distribution Station

4.5. SMART METERING ENTITY CHARGE

On March 1, 2018, the OEB approved a Smart Metering Entity charge of $0.57 per Residential and General Service <50 kW customer for the period January 1, 2018 to December 31, 2022.[18] This rate has been used for 2021-2025, without adjustment for inflation. As per the OEB decision, Hydro Ottawa has used the most recent OEB Yearbook count for Residential and General Service <50 kW customers to calculate the annual expense. The revenue has been derived based on the monthly load forecast.

4.6. LOW VOLTAGE SWITCHGEAR CREDIT

Power Supply Expenses were adjusted to reflect the Low Voltage Switchgear credit which Hydro Ottawa receives as a result of owning the low voltage switchgear at certain stations.

[17] Ontario Energy Board, *Decision and Order*, EB-2019-0043 (December 17, 2019), Schedule A, page 8.
[18] Ontario Energy Board, *Decision and Order*, EB-2017-0290 (March 1, 2018), page 5.

In the green shaded cell (row 18-26) enter the most recent 12-month actual data. If there is a material difference between actual and forecasted consumption data, use forecasted data and provide an explanation

UPDATED - 2021 Commodity Expense

Step 1: **Allocation of Commodity**

Customer Class Name		Last Actual kWh's	Class A kWh	Class B kWh	2019 Historical Actuals: non-RPP	non-RPP	non-RPP Total	RPP	Proportions (by Class): non-RPP %	Proportions (by Class): RPP %	
Residential		2,263,214,648		2,263,214,648	42,764,069		42,764,069	2,220,450,579	*1.89%*	*98.11%*	
General Service < 50 kW		724,761,279		724,761,279	111,717,613		111,717,613	613,043,666	*15.41%*	*84.59%*	
General Service 50 to 1,499 kW		2,881,554,111	270,037,598	2,611,516,513	2,264,281,812		2,264,281,812	347,234,701	*78.58%*	*12.05%*	
General Service 1,500-4999 kW		723,017,994	523,851,645	199,166,349	198,751,269		198,751,269	415,080	*100.00%*	*0.06%*	
Large Use		602,082,783	602,082,783	-			-	0	*100.00%*	*0.00%*	
Unmetered Scattered Load		14,549,690		14,549,690			-	14,549,690	*0.00%*	*100.00%*	
Sentinel Lighting		47,813		47,813			-	47,813	*0.00%*	*100.00%*	
Street Lighting		26,730,515		26,730,515	26,730,515		26,730,515	0			
				-				0			
TOTAL		**7,235,958,833**	**1,395,972,026**	**5,839,986,807**	**2,644,245,278**	**0**	**2,644,245,278**	**3,195,741,529**			
%		*100.00%*		*100.00%*	*45.28%*	*0.00%*		*54.72%*	*45.28%*	*54.72%*	*100.00%*

Step 2: **2021 Forecasted Commodity Prices**

Step 2a: **GA Modifier** ($/MWh) — non-RPP: — Source: Table 1: RPP Prices and GA Modifier: May 1, 2019 to October 31, 2019*

Step 2b: **Forecasted Commodity Prices** Table 1: Average RPP Supply Cost Summary**

			non-RPP	non-RPP	RPP
HOEP ($/MWh)	Load-Weighted Price for RPP Consumers		$21.54	$21.54	
Global Adjustment ($/MWh)	Impact of the Global Adjustment		$109.49	$109.49	
Adjustments ($/MWh)					$1.00
TOTAL ($/MWh)	Average Supply Cost for RPP Consumers		**$131.03**	**$131.03**	**$132.03**
$/kWh			***$0.13103***	***$0.13103***	***$0.13203***
Percentage shares (%)	non-RPP (GA mod/non-GA mod), RPP		45.28%	0.00%	54.72%
WEIGHTED AVERAGE PRICE ($/kWh)	**(Sum of I43, J43 and L43)**	$ 0.1316	**$0.0593**	**$0.0000**	**$0.0722**

Step 3: **Commodity Expense**

(volumes for the bridge and test year are loss adjusted)

Class A

				2020					2021				
Customer		**Revenue**	**Expense**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**
General Service 50 to 1,499 kW		4035	4705	274,888,999	562,912	0.02154	42.12	$29,631,241	272,979,363	558,698	0.02154	42.12	$29,412,613
General Service 1,500-4999 kW		4010	4705	525,469,818	1,074,232	0.02154	42.12	$56,565,808	511,522,721	1,050,314	0.02154	42.12	$55,257,939
Large Use				592,478,734	1,075,011	0.02154	42.12	$58,042,305	577,220,889	1,052,901	0.02154	42.12	$56,782,346
				1,392,837,551	2,712,155			$144,239,354	1,361,722,973	2,661,913			$141,452,898

Class B

				2020					2021				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	rate ($/kWh):			Amount	Volume	rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,329,947,204	0.1235			$287,748,480	2,329,086,271	$0.1316			$306,456,786
General Service < 50 kW	kWh	4010	4705	731,267,394	0.1235			$90,311,523	723,526,640	$0.1316			$95,200,273
General Service 50 to 1,499 kW	kWh	4035	4705	2,658,434,108	0.1235			$328,316,612	2,639,966,134	$0.1316			$347,361,774
General Service 1,500-4999 kW	kWh	4010	4705	199,781,573	0.1235			$24,673,024	194,478,941	$0.1316			$25,589,173
Large Use	kWh	4025	4705	0	0.1235			$0	0	$0.1316			$0
Unmetered Scattered Load	kWh	4025	4705	14,578,551	0.1235			$1,800,451	14,061,748	$0.1316			$1,850,218
Sentinel Lighting	kWh	4025	4705	48,575	0.1235			$5,999	48,589	$0.1316			$6,393
Street Lighting	kWh	4025	4705	24,870,144	0.1235			$3,071,463	22,854,217	$0.1316			$3,007,115
Drycore	kWh	4025	4705	5,159,232	0.1235			$637,165	5,160,730	$0.1316			$679,039
TOTAL				**5,964,086,781**				**$736,564,717**	**5,929,183,270**				**$780,150,771**

Total

				2020					2021				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	avg rate ($/kWh):			Amount	Volume	avg rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,329,947,204	0.12350			$287,748,480	2,329,086,271	0.1316			$306,456,786
General Service < 50 kW	kWh	4010	4705	731,267,394	0.12350			$90,311,523	723,526,640	0.1316			$95,200,273
General Service 50 to 1,499 kW	kWh	4035	4705	2,933,323,107	0.12203			$357,947,853	2,912,945,497	0.1293			$376,774,387
General Service 1,500-4999 kW	kWh	4010	4705	725,251,391	0.11201			$81,238,832	706,001,662	0.1145			$80,847,112
Large Use	kWh	4025	4705	592,478,734	0.09797			$58,042,305	577,220,889	0.0984			$56,782,346
Unmetered Scattered Load	kWh	4025	4705	14,578,551	0.12350			$1,800,451	14,061,748	0.1316			$1,850,218
Sentinel Lighting	kWh	4025	4705	48,575	0.12350			$5,999	48,589	0.1316			$6,393
Street Lighting	kWh	4025	4705	24,870,144	0.12350			$3,071,463	22,854,217	0.1316			$3,007,115
Drycore	kWh	4025	4705	5,159,232	0.12350			$637,165	5,160,730	0.1316			$679,039
TOTAL				**7,356,924,332**				**$880,804,071**	**7,290,906,243**				**$921,603,669**

**Regulated Price Plan Prices and the Global Adjustment Modifier for the Period May 1, 2019 – April 30, 2020*

*** Regulated Price Plan Cost Suppy Report May 1, 2019 - April 30, 2020*

In the green shaded cell (row 18-26) enter the most recent 12-month actual data. If there is a material difference between actual and forecasted consumption data, use forecasted data and provide an explanation

UPDATED - 2022 Commodity Expense

Step 1: **Allocation of Commodity**

					2019 Historical Actuals						
					non-RPP			RPP	Proportions (by Class)		
							Total		non-RPP	RPP	
Customer Class Name		**Last Actual kWh's**	**Class A kWh**	**Class B kWh**					%	%	
Residential		2,263,214,648		2,263,214,648	42,764,069		42,764,069	2,220,450,579	*1.89%*	*98.11%*	
General Service < 50 kW		724,761,279		724,761,279	111,717,613		111,717,613	613,043,666	*15.41%*	*84.59%*	
General Service 50 to 1,499 kW		2,881,554,111	270,037,598	2,611,516,513	2,264,281,812		2,264,281,812	347,234,701	*78.58%*	*12.05%*	
General Service 1,500-4999 kW		723,017,994	523,851,645	199,166,349	198,751,269		198,751,269	415,080	*100.00%*	*0.06%*	
Large Use		602,082,783	602,082,783	-			-	0	*100.00%*	*0.00%*	
Unmetered Scattered Load		14,549,690		14,549,690			-	14,549,690	*0.00%*	*100.00%*	
Sentinel Lighting		47,813		47,813			-	47,813	*0.00%*	*100.00%*	
Street Lighting		26,730,515		26,730,515	26,730,515			0			
				-				0			
TOTAL		**7,235,958,833**	**1,395,972,026**	**5,839,986,807**	**2,644,245,278**	**0**	**2,617,514,763**	**3,195,741,529**			
%		*100.00%*		*100.00%*	*45.28%*	*0.00%*		*54.72%*	*45.28%*	*54.72%*	*100.00%*

Step 2: **2021 Forecasted Commodity Prices**

Step 2a:

GA Modifier	($/MWh)	non-RPP

Source: Table 1: RPP Prices and GA Modifier: May 1, 2019 to October 31, 2019*

Step 2b: **Forecasted Commodity Prices** Table 1: Average RPP Supply Cost Summary**

			non-RPP			RPP
HOEP ($/MWh)	Load-Weighted Price for RPP Consumers		$26.45	$26.45		
Global Adjustment ($/MWh)	Impact of the Global Adjustment		$114.58	$114.58		
Adjustments ($/MWh)						$1.00
TOTAL ($/MWh)	Average Supply Cost for RPP Consumers		**$141.03**	**$141.03**		**$142.03**
$/kWh			***$0.14103***	***$0.14103***		***$0.14203***
Percentage shares (%)	non-RPP (GA mod/non-GA mod), RPP		45.28%	0.00%		54.72%
WEIGHTED AVERAGE PRICE ($/kWh)	**(Sum of I43, J43 and L43)**	$ 0.1416	**$0.0639**	**$0.0000**		**$0.0777**

Step 3: **Commodity Expense**

(volumes for the bridge and test year are loss adjusted)

Class A

				2021					2022				
Customer		**Revenue**	**Expense**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**
General Service 50 to 1,499 kW		4035	4705	272,979,363	558,698	0.02154	42.12	$29,412,613	273,505,808	558,888	0.02645	42.12	$30,774,871
General Service 1,500-4999 kW		4010	4705	511,522,721	1,050,314	0.02154	42.12	$55,257,939	511,059,825	1,049,527	0.02645	42.12	$57,724,122
Large Use				577,220,889	1,052,901	0.02154	42.12	$56,782,346	575,810,734	1,050,767	0.02645	42.12	$59,489,315
				1,361,722,973	2,661,913			$141,452,898	1,360,376,367	2,659,182			$147,988,308
								$0					

Class B

									2022				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	rate ($/kWh):			Amount	Volume	rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,329,086,271	0.1316			$306,456,786	2,350,676,150	$0.1416			$332,809,945
General Service < 50 kW	kWh	4010	4705	723,526,640	0.1316			$95,200,273	722,764,729	$0.1416			$102,329,404
General Service 50 to 1,499 kW	kWh	4035	4705	2,639,966,134	0.1316			$347,361,774	2,645,057,358	$0.1416			$374,488,589
General Service 1,500-4999 kW	kWh	4010	4705	194,478,941	0.1316			$25,589,173	194,302,949	$0.1416			$27,509,512
Large Use	kWh	4025	4705	0	0.1316			$0	0	$0.1416			$0
Unmetered Scattered Load	kWh	4025	4705	14,061,748	0.1316			$1,850,218	13,573,794	$0.1416			$1,921,785
Sentinel Lighting	kWh	4025	4705	48,589	0.1316			$6,393	48,589	$0.1416			$6,879
Street Lighting	kWh	4025	4705	22,854,217	0.1316			$3,007,115	21,942,405	$0.1416			$3,106,617
Drycore	kW	4025	4705	5,160,730	0.1316			$679,039	5,160,730	$0.1416			$730,659
TOTAL				**5,929,183,270**				**$780,150,771**	**5,953,526,704**				**$842,903,390**

Total

									2022				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	avg rate ($/kWh):			Amount	Volume	avg rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,329,086,271	0.13158			$306,456,786	2,350,676,150	0.1416			$332,809,945
General Service < 50 kW	kWh	4010	4705	723,526,640	0.13158			$95,200,273	722,764,729	0.1416			$102,329,404
General Service 50 to 1,499 kW	kWh	4035	4705	2,912,945,497	0.12934			$376,774,387	2,918,563,166	0.1389			$405,263,460
General Service 1,500-4999 kW	kWh	4010	4705	706,001,662	0.11451			$80,847,112	705,362,774	0.1208			$85,233,634
Large Use	kWh	4025	4705	577,220,889	0.09837			$56,782,346	575,810,734	0.1033			$59,489,315
Unmetered Scattered Load	kWh	4025	4705	14,061,748	0.13158			$1,850,218	13,573,794	0.1416			$1,921,785
Sentinel Lighting	kWh	4025	4705	48,589	0.13157			$6,393	48,589	0.1416			$6,879
Street Lighting	kWh	4025	4705	22,854,217	0.13158			$3,007,115	21,942,405	0.1416			$3,106,617
Drycore	kWh	4025	4705	5,160,730	0.13158			$679,039	5,160,730	0.1416			$730,659
TOTAL				**7,290,906,243**				**$921,603,669**	**7,313,903,071**				**$990,891,698**

**Regulated Price Plan Prices and the Global Adjustment Modifier for the Period May 1, 2019 – April 30, 2020*

*** Regulated Price Plan Cost Suppy Report May 1, 2019 - April 30, 2020*

In the green shaded cell (row 18-26) enter the most recent 12-month actual data. If there is a material difference between actual and forecasted consumption data, use forecasted data and provide an explanation

UPDATED - 2023 Commodity Expense

Step 1: **Allocation of Commodity**

2019 Historical Actuals

Customer Class Name		Last Actual kWh's	Class A kWh	Class B kWh	non-RPP		non-RPP Total	RPP	Proportions (by Class) non-RPP %	Proportions (by Class) RPP %	
Residential		2,263,214,648		2,263,214,648	42,764,069		42,764,069	2,220,450,579	*1.89%*	*98.11%*	
General Service < 50 kW		724,761,279		724,761,279	111,717,613		111,717,613	613,043,666	*15.41%*	*84.59%*	
General Service 50 to 1,499 kW		2,881,554,111	270,037,598	2,611,516,513	2,264,281,812		2,264,281,812	347,234,701	*78.58%*	*12.05%*	
General Service 1,500-4999 kW		723,017,994	523,851,645	199,166,349	198,751,269		198,751,269	415,080	*100.00%*	*0.06%*	
Large Use		602,082,783	602,082,783	-			-	0	*100.00%*	*0.00%*	
Unmetered Scattered Load		14,549,690		14,549,690			-	14,549,690	*0.00%*	*100.00%*	
Sentinel Lighting		47,813		47,813			-	47,813	*0.00%*	*100.00%*	
Street Lighting		26,730,515		26,730,515	26,730,515		26,730,515	0			
				-				0			
TOTAL		**7,235,958,833**	**1,395,972,026**	**5,839,986,807**	**2,644,245,278**	**0**	**2,644,245,278**	**3,195,741,529**			
%		*100.00%*		*100.00%*	*45.28%*	*0.00%*		*54.72%*	*45.28%*	*54.72%*	*100.00%*

Step 2: **2021 Forecasted Commodity Prices**

Step 2a: **GA Modifier** ($/MWh) — non-RPP: — Source: Table 1: RPP Prices and GA Modifier: May 1, 2019 to October 31, 2019*

Step 2b: **Forecasted Commodity Prices** Table 1: Average RPP Supply Cost Summary**

			non-RPP			RPP
HOEP ($/MWh)	Load-Weighted Price for RPP Consumers		$30.09	$30.09		
Global Adjustment ($/MWh)	Impact of the Global Adjustment		$120.94	$120.94		
Adjustments ($/MWh)						$1.00
TOTAL ($/MWh)	Average Supply Cost for RPP Consumers		**$151.04**	**$151.04**		**$152.04**
$/kWh			***$0.15104***	***$0.15104***		***$0.15204***
Percentage shares (%)	non-RPP (GA mod/non-GA mod), RPP		45.28%	0.00%		54.72%
WEIGHTED AVERAGE PRICE ($/kWh)	**(Sum of I43, J43 and L43)**	$ 0.1516	**$0.0684**	**$0.0000**		**$0.0832**

Step 3: **Commodity Expense**

(volumes for the bridge and test year are loss adjusted)

Class A

Customer		Revenue	Expense	2022 kWh Volume	2022 kW Volume	2022 HOEP Rate/kWh	2022 Avg GA/kW	2022 Amount	2023 kWh Volume	2023 kW Volume	2023 HOEP Rate/kWh	2023 Avg GA/kW	2023 Amount
General Service 50 to 1,499 kW		4035	4705	273,505,808	558,888	0.02645	42.12	$30,774,871	274,094,742	559,184	0.03009	42.12	$31,799,773
General Service 1,500-4999 kW		4010	4705	511,059,825	1,049,527	0.02645	42.12	$57,724,122	511,212,626	1,049,785	0.03009	42.12	$59,598,260
Large Use				575,810,734	1,050,767	0.02645	42.12	$59,489,315	574,950,368	1,049,467	0.03009	42.12	$61,502,837
				1,360,376,367	2,659,182			$147,988,308	1,360,257,736	2,658,436			$152,900,870

Class B

Customer		Revenue	Expense	2022					2023				
Class Name	UoM	USA #	USA #	Volume	rate ($/kWh):			Amount	Volume	rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,350,676,150	0.1416			$332,809,945	2,377,084,571	$0.1516			$360,325,176
General Service < 50 kW	kWh	4010	4705	722,764,729	0.1416			$102,329,404	721,216,097	$0.1516			$109,323,968
General Service 50 to 1,499 kW	kWh	4035	4705	2,645,057,358	0.1416			$374,488,589	2,650,752,894	$0.1516			$401,808,592
General Service 1,500-4999 kW	kWh	4010	4705	194,302,949	0.1416			$27,509,512	194,361,043	$0.1516			$29,461,794
Large Use	kWh	4025	4705	0	0.1416			$0	0	$0.1516			$0
Unmetered Scattered Load	kWh	4025	4705	13,573,794	0.1416			$1,921,785	13,091,009	$0.1516			$1,984,372
Sentinel Lighting	kWh	4025	4705	48,589	0.1416			$6,879	48,589	$0.1516			$7,365
Street Lighting	kWh	4025	4705	21,942,405	0.1416			$3,106,617	21,102,959	$0.1516			$3,198,846
Drycore	kW	4025	4705	5,160,730	0.1416			$730,659	5,160,730	$0.1516			$782,278
TOTAL				**5,953,526,704**				**$842,903,390**	**5,982,817,892**				**$906,892,391**

Total

Customer		Revenue	Expense	2022					2023				
Class Name	UoM	USA #	USA #	Volume	avg rate ($/kWh):			Amount	Volume	avg rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,350,676,150	0.14158			$332,809,945	2,377,084,571	0.1516			$360,325,176
General Service < 50 kW	kWh	4010	4705	722,764,729	0.14158			$102,329,404	721,216,097	0.1516			$109,323,968
General Service 50 to 1,499 kW	kWh	4035	4705	2,918,563,166	0.13886			$405,263,460	2,924,847,636	0.1482			$433,608,365
General Service 1,500-4999 kW	kWh	4010	4705	705,362,774	0.12084			$85,233,634	705,573,669	0.1262			$89,060,054
Large Use	kWh	4025	4705	575,810,734	0.10331			$59,489,315	574,950,368	0.1070			$61,502,837
Unmetered Scattered Load	kWh	4025	4705	13,573,794	0.14158			$1,921,785	13,091,009	0.1516			$1,984,372
Sentinel Lighting	kWh	4025	4705	48,589	0.14158			$6,879	48,589	0.1516			$7,365
Street Lighting	kWh	4025	4705	21,942,405	0.14158			$3,106,617	21,102,959	0.1516			$3,198,846
Drycore	kWh	4025	4705	5,160,730	0.14158			$730,659	5,160,730	0.1516			$782,278
TOTAL				**7,313,903,071**				**$990,891,698**	**7,343,075,628**				**$1,059,793,261**

**Regulated Price Plan Prices and the Global Adjustment Modifier for the Period May 1, 2019 – April 30, 2020*

*** Regulated Price Plan Cost Suppy Report May 1, 2019 - April 30, 2020*

In the green shaded cell (row 18-26) enter the most recent 12-month actual data. If there is a material difference between actual and forecasted consumption data, use forecasted data and provide an explanation

UPDATED - 2024 Commodity Expense

Step 1: **Allocation of Commodity**

					2019 Historical Actuals						
					non-RPP			RPP	Proportions (by Class)		
							Total		non-RPP	RPP	
Customer Class Name		**Last Actual kWh's**	**Class A kWh**	**Class B kWh**					%	%	
Residential		2,263,214,648		2,263,214,648	42,764,069		42,764,069	2,220,450,579	*1.89%*	*98.11%*	
General Service < 50 kW		724,761,279		724,761,279	111,717,613		111,717,613	613,043,666	*15.41%*	*84.59%*	
General Service 50 to 1,499 kW		2,881,554,111	270,037,598	2,611,516,513	2,264,281,812		2,264,281,812	347,234,701	*78.58%*	*12.05%*	
General Service 1,500-4999 kW		723,017,994	523,851,645	199,166,349	198,751,269		198,751,269	415,080	*100.00%*	*0.06%*	
Large Use		602,082,783	602,082,783	-			-	0	*100.00%*	*0.00%*	
Unmetered Scattered Load		14,549,690		14,549,690			-	14,549,690	*0.00%*	*100.00%*	
Sentinel Lighting		47,813		47,813			-	47,813	*0.00%*	*100.00%*	
Street Lighting		26,730,515		26,730,515	26,730,515			0			
				-				0			
TOTAL		**7,235,958,833**	**1,395,972,026**	**5,839,986,807**	**2,644,245,278**	**0**	**2,617,514,763**	**3,195,741,529**			
%		*100.00%*		*100.00%*	*45.28%*	*0.00%*		*54.72%*	*45.28%*	*54.72%*	*100.00%*

Step 2: **2021 Forecasted Commodity Prices**

		non-RPP
Step 2a: **GA Modifier**	($/MWh)	

Source: Table 1: RPP Prices and GA Modifier: May 1, 2019 to October 31, 2019

Step 2b: **Forecasted Commodity Prices** Table 1: Average RPP Supply Cost Summary**

			non-RPP			RPP
HOEP ($/MWh)	Load-Weighted Price for RPP Consumers		$40.82	$40.82		
Global Adjustment ($/MWh)	Impact of the Global Adjustment		$122.22	$122.22		
Adjustments ($/MWh)						$1.00
TOTAL ($/MWh)	Average Supply Cost for RPP Consumers		**$163.04**	**$163.04**		**$164.04**
$/kWh			***$0.16304***	***$0.16304***		***$0.16404***
Percentage shares (%)	non-RPP (GA mod/non-GA mod), RPP		45.28%	0.00%		54.72%
WEIGHTED AVERAGE PRICE ($/kWh)	**(Sum of I43, J43 and L43)**	$ 0.1636	**$0.0738**	**$0.0000**		**$0.0898**

Step 3: **Commodity Expense**

(volumes for the bridge and test year are loss adjusted)

Class A

				2023					2024				
Customer		**Revenue**	**Expense**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**
General Service 50 to 1,499 kW		4035	4705	274,094,742	559,184	0.03009	42.12	$31,799,773	275,331,705	560,607	0.04082	42.12	$34,851,156
General Service 1,500-4999 kW		4010	4705	511,212,626	1,049,785	0.03009	42.12	$59,598,260	512,638,767	1,052,205	0.04082	42.12	$65,243,562
Large Use				574,950,368	1,049,467	0.03009	42.12	$61,502,837	575,755,453	1,050,683	0.04082	42.12	$67,755,963
				1,360,257,736	2,658,436			$152,900,870	1,363,725,925	2,663,495			$167,850,681

Class B

				2023					2024				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	rate ($/kWh):			Amount	Volume	rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,377,084,571	0.1516			$360,325,176	2,412,060,092	$0.1636			$394,578,339
General Service < 50 kW	kWh	4010	4705	721,216,097	0.1516			$109,323,968	721,358,761	$0.1636			$118,003,918
General Service 50 to 1,499 kW	kWh	4035	4705	2,650,752,894	0.1516			$401,808,592	2,662,715,489	$0.1636			$435,581,957
General Service 1,500-4999 kW	kWh	4010	4705	194,361,043	0.1516			$29,461,794	194,903,257	$0.1636			$31,883,370
Large Use	kWh	4025	4705	0	0.1516			$0	0	$0.1636			$0
Unmetered Scattered Load	kWh	4025	4705	13,091,009	0.1516			$1,984,372	12,607,191	$0.1636			$2,062,355
Sentinel Lighting	kWh	4025	4705	48,589	0.1516			$7,365	48,589	$0.1636			$7,948
Street Lighting	kWh	4025	4705	21,102,959	0.1516			$3,198,846	20,265,581	$0.1636			$3,315,158
Drycore	kW	4025	4705	5,160,730	0.1516			$782,278	5,160,730	$0.1636			$844,221
TOTAL				**5,982,817,892**				**$906,892,391**	**6,029,119,690**				**$986,277,266**

Total

				2023					2024				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	avg rate ($/kWh):			Amount	Volume	avg rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,377,084,571	0.15158			$360,325,176	2,412,060,092	0.1636			$394,578,339
General Service < 50 kW	kWh	4010	4705	721,216,097	0.15158			$109,323,968	721,358,761	0.1636			$118,003,918
General Service 50 to 1,499 kW	kWh	4035	4705	2,924,847,636	0.14825			$433,608,365	2,938,047,194	0.1601			$470,433,113
General Service 1,500-4999 kW	kWh	4010	4705	705,573,669	0.12622			$89,060,054	707,542,024	0.1373			$97,126,932
Large Use	kWh	4025	4705	574,950,368	0.10697			$61,502,837	575,755,453	0.1177			$67,755,963
Unmetered Scattered Load	kWh	4025	4705	13,091,009	0.15158			$1,984,372	12,607,191	0.1636			$2,062,355
Sentinel Lighting	kWh	4025	4705	48,589	0.15158			$7,365	48,589	0.1636			$7,948
Street Lighting	kWh	4025	4705	21,102,959	0.15158			$3,198,846	20,265,581	0.1636			$3,315,158
Drycore	kWh	4025	4705	5,160,730	0.15158			$782,278	5,160,730	0.1636			$844,221
TOTAL				**7,343,075,628**				**$1,059,793,261**	**7,392,845,615**				**$1,154,127,947**

**Regulated Price Plan Prices and the Global Adjustment Modifier for the Period May 1, 2019 – April 30, 2020*

*** Regulated Price Plan Cost Suppy Report May 1, 2019 - April 30, 2020*

In the green shaded cell (row 18-26) enter the most recent 12-month actual data. If there is a material difference between actual and forecasted consumption data, use forecasted data and provide an explanation

UPDATED - 2025 Commodity Expense

Step 1: **Allocation of Commodity**

					2019 Historical Actuals						
					non-RPP			RPP	Proportions (by Class)		
							Total		non-RPP	RPP	
Customer Class Name		**Last Actual kWh's**	**Class A kWh**	**Class B kWh**					%	%	
Residential		2,263,214,648		2,263,214,648	42,764,069		42,764,069	2,220,450,579	*1.89%*	*98.11%*	
General Service < 50 kW		724,761,279		724,761,279	111,717,613		111,717,613	613,043,666	*15.41%*	*84.59%*	
General Service 50 to 1,499 kW		2,881,554,111	270,037,598	2,611,516,513	2,264,281,812		2,264,281,812	347,234,701	*78.58%*	*12.05%*	
General Service 1,500-4999 kW		723,017,994	523,851,645	199,166,349	198,751,269		198,751,269	415,080	*100.00%*	*0.06%*	
Large Use		602,082,783	602,082,783	-			-	0	*100.00%*	*0.00%*	
Unmetered Scattered Load		14,549,690		14,549,690			-	14,549,690	*0.00%*	*100.00%*	
Sentinel Lighting		47,813		47,813			-	47,813	*0.00%*	*100.00%*	
Street Lighting		26,730,515		26,730,515	26,730,515			0			
				-				0			
TOTAL		**7,235,958,833**	**1,395,972,026**	**5,839,986,807**	**2,644,245,278**	**0**	**2,617,514,763**	**3,195,741,529**			
%		*100.00%*		*100.00%*	*45.28%*	*0.00%*		*54.72%*	*45.28%*	*54.72%*	*100.00%*

Step 2: **2021 Forecasted Commodity Prices**

Step 2a: **GA Modifier** ($/MWh) — non-RPP — Source: Table 1: RPP Prices and GA Modifier: May 1, 2019 to October 31, 2019*

Step 2b: **Forecasted Commodity Prices** Table 1: Average RPP Supply Cost Summary**

			non-RPP		RPP
HOEP ($/MWh)	Load-Weighted Price for RPP Consumers		$40.18	$40.18	
Global Adjustment ($/MWh)	Impact of the Global Adjustment		$129.86	$129.86	
Adjustments ($/MWh)					$1.00
TOTAL ($/MWh)	Average Supply Cost for RPP Consumers		**$170.04**	**$170.04**	**$171.04**
$/kWh			***$0.17004***	***$0.17004***	***$0.17104***
Percentage shares (%)	non-RPP (GA mod/non-GA mod), RPP		45.28%	0.00%	54.72%
WEIGHTED AVERAGE PRICE ($/kWh)	**(Sum of I43, J43 and L43)**	$ 0.1706	**$0.0770**	**$0.0000**	**$0.0936**

Step 3: **Commodity Expense**

(volumes for the bridge and test year are loss adjusted)

Class A

				2024					2025				
Customer		**Revenue**	**Expense**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**	**kWh Volume**	**kW Volume**	**HOEP Rate/kWh**	**Avg GA/kW**	**Amount**
General Service 50 to 1,499 kW		4035	4705	275,331,705	560,607	0.04082	42.12	$34,851,156	275,418,219	560,021	0.04018	42.12	$34,654,592
General Service 1,500-4999 kW		4010	4705	512,638,767	1,052,205	0.04082	42.12	$65,243,562	511,981,873	1,051,094	0.04018	42.12	$64,843,872
Large Use				575,755,453	1,050,683	0.04082	42.12	$67,755,963	573,298,989	1,046,964	0.04018	42.12	$67,133,915
				1,363,725,925	2,663,495			$167,850,681	1,360,699,081	2,658,079			$166,632,379

Class B

				2024					2025				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	rate ($/kWh):			Amount	Volume	rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,412,060,092	0.1636			$394,578,339	2,432,685,436	$0.1706			$414,985,282
General Service < 50 kW	kWh	4010	4705	721,358,761	0.1636			$118,003,918	719,356,291	$0.1706			$122,713,060
General Service 50 to 1,499 kW	kWh	4035	4705	2,662,715,489	0.1636			$435,581,957	2,663,552,159	$0.1706			$454,368,217
General Service 1,500-4999 kW	kWh	4010	4705	194,903,257	0.1636			$31,883,370	194,653,509	$0.1706			$33,205,420
Large Use	kWh	4025	4705	0	0.1636			$0	0	$0.1706			$0
Unmetered Scattered Load	kWh	4025	4705	12,607,191	0.1636			$2,062,355	12,124,406	$0.1706			$2,068,270
Sentinel Lighting	kWh	4025	4705	48,589	0.1636			$7,948	48,589	$0.1706			$8,289
Street Lighting	kWh	4025	4705	20,265,581	0.1636			$3,315,158	19,491,265	$0.1706			$3,324,963
Drycore	kW	4025	4705	5,160,730	0.1636			$844,221	5,160,730	$0.1706			$880,355
TOTAL				**6,029,119,690**				**$986,277,266**	**6,047,072,385**				**$1,031,553,856**

Total

				2024					2025				
Customer		**Revenue**	**Expense**										
Class Name	UoM	USA #	USA #	Volume	avg rate ($/kWh):			Amount	Volume	avg rate ($/kWh):			Amount
Residential	kWh	4006	4705	2,412,060,092	0.16359			$394,578,339	2,432,685,436	0.1706			$414,985,282
General Service < 50 kW	kWh	4010	4705	721,358,761	0.16359			$118,003,918	719,356,291	0.1706			$122,713,060
General Service 50 to 1,499 kW	kWh	4035	4705	2,938,047,194	0.16012			$470,433,113	2,938,970,378	0.1664			$489,022,809
General Service 1,500-4999 kW	kWh	4010	4705	707,542,024	0.13727			$97,126,932	706,635,382	0.1388			$98,049,292
Large Use	kWh	4025	4705	575,755,453	0.11768			$67,755,963	573,298,989	0.1171			$67,133,915
Unmetered Scattered Load	kWh	4025	4705	12,607,191	0.16359			$2,062,355	12,124,406	0.1706			$2,068,270
Sentinel Lighting	kWh	4025	4705	48,589	0.16358			$7,948	48,589	0.1706			$8,289
Street Lighting	kWh	4025	4705	20,265,581	0.16359			$3,315,158	19,491,265	0.1706			$3,324,963
Drycore	kWh	4025	4705	5,160,730	0.16359			$844,221	5,160,730	0.1706			$880,355
TOTAL				**7,392,845,615**				**$1,154,127,947**	**7,407,771,466**				**$1,198,186,235**

**Regulated Price Plan Prices and the Global Adjustment Modifier for the Period May 1, 2019 – April 30, 2020*

*** Regulated Price Plan Cost Suppy Report May 1, 2019 - April 30, 2020*

2021 Cost of Power

Loss Factors	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
LOSS FACTOR-every class but LU	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338
LOSS FACTOR-LARGE USERS	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051

SALES

UNADJUSTED SALES (KWH)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
RESIDENTIAL	222,036,000	194,335,000	188,420,000	158,765,000	154,321,000	186,705,000	226,524,000	207,661,000	164,634,000	165,818,000	172,468,000	211,250,000	**2,252,937,000**
GENERAL SERVICE <50KW	67,428,000	61,219,000	61,603,000	54,109,000	52,456,000	54,971,000	61,520,000	58,755,000	52,104,000	53,840,000	57,201,000	64,665,000	**699,871,000**
DRYCORE	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	**4,992,000**
GENERAL SERVICE 50-1000KW NONI	109,844,000	99,030,000	98,590,000	84,848,000	78,845,000	81,587,000	91,905,000	88,235,000	77,708,000	80,326,000	88,289,000	101,319,000	**1,080,526,000**
GENERAL SERVICE 50-1000KW INT	120,952,000	110,304,000	114,103,000	103,775,000	105,616,000	110,820,000	122,618,000	117,284,000	105,441,000	108,564,000	110,435,000	121,515,000	**1,351,427,000**
GENERAL SERVICE 1000-1500KW	33,284,000	30,679,000	32,369,000	30,649,000	31,265,000	32,109,000	34,867,000	33,868,000	31,036,000	31,280,000	31,283,000	33,065,000	**385,754,000**
GENERAL SERVICE 1500-5000 KW	58,413,000	53,122,000	56,806,000	53,713,000	55,456,000	57,670,000	63,883,000	61,536,000	55,052,000	54,979,000	54,568,000	57,721,000	**682,919,000**
LARGE USER	47,874,000	42,822,000	47,722,000	46,055,000	48,373,000	48,727,000	52,777,000	51,545,000	47,265,000	47,632,000	45,925,000	47,575,000	**574,292,000**
STREETLIGHTING	2,840,000	2,280,000	2,008,000	1,586,000	1,101,000	975,000	1,096,000	1,347,000	1,684,000	2,178,000	2,387,000	2,625,000	**22,107,000**
SENTINEL	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	**47,000**
UNMETERED	1,174,000	1,172,000	1,059,000	1,162,000	1,125,000	1,157,000	1,143,000	1,131,000	1,116,000	1,125,000	1,106,000	1,132,000	**13,602,000**
TOTAL KWH-SALES	**664,264,917**	**595,382,917**	**603,099,917**	**535,081,917**	**528,977,917**	**575,140,917**	**656,752,917**	**621,781,917**	**536,459,917**	**546,161,917**	**564,081,917**	**641,286,917**	**7,068,474,000**

PURCHASES

Power Purchases (kWh)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Total Load Forecast kWh	685,674,000	612,751,000	622,993,000	550,224,000	547,531,000	592,615,000	677,618,000	638,432,000	552,510,000	562,312,000	582,671,000	660,384,000	**7,285,715,000**

Power Purchased (kW)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Power Purchases - coincident peak (kW)	1,183,000	1,167,000	1,087,000	942,000	1,108,000	1,237,000	1,452,000	1,325,000	1,128,000	928,000	1,070,000	1,140,000	**13,767,000**

DEMAND CHARGES

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Coincident System Peak	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Transmission Network Charge IESO	90.8%	89.4%	93.3%	99.8%	94.5%	88.5%	91.8%	92.6%	85.5%	93.2%	94.7%	96.0%
Transmission Transformation Charge IESO	68.7%	71.3%	74.2%	101.1%	73.4%	67.2%	67.9%	70.5%	71.4%	76.7%	73.2%	73.6%
Transmission Line Charge IESO	86.3%	90.2%	90.4%	112.6%	90.4%	88.1%	90.4%	90.0%	90.6%	94.9%	90.7%	89.1%
Transmission Network Charge HONI	3.7%	3.5%	3.4%	3.4%	3.8%	3.6%	3.7%	3.5%	3.3%	2.9%	2.9%	3.5%
Transmission Transformation Charge HONI	3.7%	3.4%	3.3%	3.4%	3.7%	3.6%	3.7%	3.4%	3.4%	3.0%	2.9%	3.4%
Transmission Line Charge HONI	0.4%	0.4%	0.4%	0.5%	0.5%	0.3%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%

kW Breakdown by Type	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Transmission Network Charge IESO	1,074,444.21	1,043,154	1,014,525	939,898	1,047,556	1,094,366	1,333,048	1,226,516	964,644	864,938	1,013,633	1,094,012	**12,710,733**
Transmission Transformation Charge IESO	812,766	831,800	806,303	952,002	813,158	830,796	985,592	934,102	805,181	711,481	782,790	839,046	**10,105,017**
Transmission Line Charge IESO	1,020,582	1,052,587	982,807	1,060,715	1,002,056	1,089,624	1,312,270	1,192,513	1,022,158	880,586	970,217	1,015,764	**12,601,881**
Transmission Network Charge HONI	43,508	40,363	36,678	31,691	41,717	44,594	54,399	45,949	37,657	27,357	31,357	39,365	**474,635**
Transmission Transformation Charge HONI	43,392	39,575	36,137	32,257	41,172	44,720	53,598	45,207	38,423	28,068	31,269	39,192	**473,010**
Transmission Line Charge HONI	4,173	4,308	4,305	4,252	5,550	4,315	5,913	3,995	3,485	3,283	3,829	4,296	**51,703**

RATES

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Commodity Charge - Appendix 2Z	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316	$0.1316
Transmission Network Charge IESO	$3.92	$3.92	$3.92	$3.92	$3.92	$3.92	$3.92	$3.92	$3.92	$3.92	$3.92	$3.92
Transmission Transformation Charge IESO	$2.33	$2.33	$2.33	$2.33	$2.33	$2.33	$2.33	$2.33	$2.33	$2.33	$2.33	$2.33
Transmission Line Charge IESO	$0.97	$0.97	$0.97	$0.97	$0.97	$0.97	$0.97	$0.97	$0.97	$0.97	$0.97	$0.97
Transmission Network Charge HONI	$3.40	$3.40	$3.40	$3.40	$3.40	$3.40	$3.40	$3.40	$3.40	$3.40	$3.40	$3.40
Transmission Transformation Charge HONI	$2.02	$2.02	$2.02	$2.02	$2.02	$2.02	$2.02	$2.02	$2.02	$2.02	$2.02	$2.02
Transmission Line Charge HONI	$0.80	$0.80	$0.80	$0.80	$0.80	$0.80	$0.80	$0.80	$0.80	$0.80	$0.80	$0.80
Wholesale Market Charge	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390
Smart Metering Entity Charge	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570

2021 Cost of Power

COST OF POWER

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	**$921,603,669**
Transmission Network Charge IESO	$4,211,821.29	$4,089,163.19	$3,976,938.65	$3,684,398.96	$4,106,419.73	$4,289,914.54	$5,225,547.37	$4,807,941.37	$3,781,404.68	$3,390,557.75	$3,973,439.69	$4,288,527.89	**$49,826,075**
Transmission Transformation Charge IESO	$1,893,745.14	$1,938,095.04	$1,878,684.92	$2,218,163.81	$1,894,659.24	$1,935,754.81	$2,296,430.25	$2,176,457.22	$1,876,072.24	$1,657,749.94	$1,823,900.76	$1,954,976.92	**$23,544,690**
Transmission Line Charge IESO	$989,964.82	$1,021,009.83	$953,323.05	$1,028,893.35	$971,994.78	$1,056,935.36	$1,272,901.91	$1,156,737.21	$991,493.62	$854,168.30	$941,110.86	$985,291.20	**$12,223,824**
Transmission Network Charge HONI	$147,840.77	$137,153.70	$124,633.16	$107,686.69	$141,755.75	$151,530.38	$184,849.37	$156,133.06	$127,957.71	$92,958.12	$106,549.49	$133,761.75	**$1,612,810**
Transmission Transformation Charge HONI	$87,625.77	$79,918.40	$72,974.83	$65,139.47	$83,142.89	$90,308.18	$108,235.44	$91,290.95	$77,591.86	$56,681.39	$63,143.65	$79,144.36	**$955,197**
Transmission Line Charge HONI	$3,357.18	$3,465.74	$3,463.03	$3,420.42	$4,465.01	$3,471.20	$4,757.01	$3,214.25	$2,803.86	$2,641.24	$3,080.23	$3,455.91	**$41,595**
Wholesale Market Charge	$2,674,128.60	$2,389,728.90	$2,429,672.70	$2,145,873.60	$2,135,370.90	$2,311,198.50	$2,642,710.20	$2,489,884.80	$2,154,789.00	$2,193,016.80	$2,272,416.90	$2,575,497.60	**$28,414,289**
Smart Meter Entity Charge	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$191,830.08	$193,856.43	**$2,303,987**
LV Charges	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	$34,923.69	**$419,084**
Total	**$87,035,543**	**$86,685,594**	**$86,466,750**	**$86,280,636**	**$86,364,868**	**$86,866,172**	**$88,762,491**	**$87,908,718**	**$86,039,172**	**$85,274,833**	**$86,210,701**	**$87,049,742**	**$1,040,945,221**

Switchgear Credit	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	**-$3,261,312**

Cost of Power Summary	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	$76,800,306	**$921,603,669**
Transmission Network	$4,359,662	$4,226,317	$4,101,572	$3,792,086	$4,248,175	$4,441,445	$5,410,397	$4,964,074	$3,909,362	$3,483,516	$4,079,989	$4,422,290	**$51,438,885**
Transmission Connection	$2,702,917	$2,770,713	$2,636,670	$3,043,841	$2,682,486	$2,814,694	$3,410,549	$3,155,924	$2,676,186	$2,299,465	$2,559,460	$2,751,092	**$33,503,995**
Wholesale Market	$2,674,129	$2,389,729	$2,429,673	$2,145,874	$2,135,371	$2,311,199	$2,642,710	$2,489,885	$2,154,789	$2,193,017	$2,272,417	$2,575,498	**$28,414,289**
Smart Metering Entity Charge	$191,830	$191,830	$191,830	$191,830	$191,830	$191,830	$191,830	$191,830	$191,830	$191,830	$191,830	$193,856	**$2,303,987**
LV Charges	$34,924	$34,924	$34,924	$34,924	$34,924	$34,924	$34,924	$34,924	$34,924	$34,924	$34,924	$34,924	**$419,084**
TOTAL COST of POWER EXPENSE	**$86,763,767**	**$86,413,818**	**$86,194,974**	**$86,008,860**	**$86,093,092**	**$86,594,396**	**$88,490,715**	**$87,636,942**	**$85,767,396**	**$85,003,057**	**$85,938,925**	**$86,777,966**	**$1,037,683,909**

2022 Cost of Power

Loss Factors	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
LOSS FACTOR-every class but LU	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338
LOSS FACTOR-LARGE USERS	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051

SALES

UNADJUSTED SALES (KWH)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
RESIDENTIAL	223,479,000	195,655,000	189,755,000	159,997,000	155,765,000	188,927,000	229,642,000	210,372,000	166,398,000	167,228,000	173,808,000	212,795,000	2,273,821,000
GENERAL SERVICE <50KW	67,286,000	61,089,000	61,520,000	54,035,000	52,413,000	54,961,000	61,561,000	58,773,000	52,062,000	53,772,000	57,108,000	64,554,000	699,134,000
DRYCORE	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	4,992,000
GENERAL SERVICE 50-1000KW NONI	106,031,000	95,582,000	95,168,000	81,819,000	75,922,000	78,579,000	88,615,000	85,062,000	74,817,000	77,330,000	85,133,000	97,795,000	1,041,853,000
GENERAL SERVICE 50-1000KW INT	124,817,000	113,823,000	117,780,000	107,051,000	108,889,000	114,296,000	126,580,000	121,049,000	108,709,000	111,914,000	113,936,000	125,451,000	1,394,295,000
GENERAL SERVICE 1000-1500KW	33,367,000	30,756,000	32,471,000	30,748,000	31,377,000	32,229,000	35,008,000	33,997,000	31,136,000	31,375,000	31,371,000	33,158,000	386,993,000
GENERAL SERVICE 1500-5000 KW	58,074,000	52,862,000	56,674,000	53,633,000	55,445,000	57,704,000	63,974,000	61,606,000	55,063,000	54,982,000	54,559,000	57,725,000	682,301,000
LARGE USER	47,569,000	42,595,000	47,557,000	45,937,000	48,287,000	48,656,000	52,705,000	51,474,000	47,193,000	47,560,000	45,853,000	47,503,000	572,889,000
STREETLIGHTING	2,741,000	2,191,000	1,928,000	1,513,000	1,031,000	907,000	1,029,000	1,279,000	1,617,000	2,111,000	2,320,000	2,558,000	21,225,000
SENTINEL	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	47,000
UNMETERED	1,133,000	1,132,000	1,023,000	1,122,000	1,086,000	1,117,000	1,103,000	1,092,000	1,077,000	1,086,000	1,067,000	1,092,000	13,130,000
TOTAL KWH-SALES	**664,916,917**	**596,104,917**	**604,295,917**	**536,274,917**	**530,634,917**	**577,795,917**	**660,636,917**	**625,123,917**	**538,491,917**	**547,777,917**	**565,574,917**	**643,050,917**	**7,090,680,000**

PURCHASES

Power Purchases (kWh)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Total Load Forecast kWh	686,347,000	613,494,000	624,227,000	551,450,000	549,245,000	595,351,000	681,626,000	641,863,000	554,604,000	563,976,000	584,214,000	662,200,000	**7,308,597,000**

Power Purchased (kW)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Power Purchases - coincident peak (kW)	1,185,000	1,170,000	1,090,000	944,000	1,111,000	1,242,000	1,460,000	1,332,000	1,132,000	930,000	1,073,000	1,143,000	**13,812,000**

DEMAND CHARGES

kW Breakdown by Type	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Coincident System Peak	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Transmission Network Charge IESO	90.8%	89.4%	93.3%	99.8%	94.5%	88.5%	91.8%	92.6%	85.5%	93.2%	94.7%	96.0%
Transmission Transformation Charge IESO	68.7%	71.3%	74.2%	101.1%	73.4%	67.2%	67.9%	70.5%	71.4%	76.7%	73.2%	73.6%
Transmission Line Charge IESO	86.3%	90.2%	90.4%	112.6%	90.4%	88.1%	90.4%	90.0%	90.6%	94.9%	90.7%	89.1%
Transmission Network Charge HONI	3.7%	3.5%	3.4%	3.4%	3.8%	3.6%	3.7%	3.5%	3.3%	2.9%	2.9%	3.5%
Transmission Transformation Charge HONI	3.7%	3.4%	3.3%	3.4%	3.7%	3.6%	3.7%	3.4%	3.4%	3.0%	2.9%	3.4%
Transmission Line Charge HONI	0.4%	0.4%	0.4%	0.5%	0.5%	0.3%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Transmission Network Charge IESO	1,076,260.68	1,045,836	1,017,325	941,893	1,050,392	1,098,789	1,340,392	1,232,995	968,065	866,802	1,016,475	1,096,891	**12,752,117**
Transmission Transformation Charge IESO	814,140	833,939	808,528	954,023	815,360	834,154	991,023	939,037	808,036	713,014	784,985	841,254	**10,137,493**
Transmission Line Charge IESO	1,022,308	1,055,293	985,520	1,062,967	1,004,770	1,094,028	1,319,500	1,198,813	1,025,783	882,484	972,938	1,018,437	**12,642,840**
Transmission Network Charge HONI	43,582	40,467	36,780	31,758	41,830	44,774	54,699	46,191	37,790	27,416	31,444	39,468	**476,201**
Transmission Transformation Charge HONI	43,465	39,677	36,237	32,325	41,284	44,901	53,893	45,446	38,559	28,129	31,356	39,295	**474,568**
Transmission Line Charge HONI	4,180	4,319	4,316	4,261	5,565	4,332	5,946	4,016	3,498	3,290	3,839	4,307	**51,870**

RATES

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Commodity Charge	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416	$0.1416
Transmission Network Charge IESO	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00
Transmission Transformation Charge IESO	$2.38	$2.38	$2.38	$2.38	$2.38	$2.38	$2.38	$2.38	$2.38	$2.38	$2.38	$2.38
Transmission Line Charge IESO	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99	$0.99
Transmission Network Charge HONI	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45	$3.45
Transmission Transformation Charge HONI	$2.05	$2.05	$2.05	$2.05	$2.05	$2.05	$2.05	$2.05	$2.05	$2.05	$2.05	$2.05
Transmission Line Charge HONI	$0.82	$0.82	$0.82	$0.82	$0.82	$0.82	$0.82	$0.82	$0.82	$0.82	$0.82	$0.82
Wholesale Market Charge	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390
Smart Metering Entity Charge	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570

2022 Cost of Power

Cost of Power

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	**$990,891,698**
Transmission Network Charge IESO	$4,305,043	$4,183,342	$4,069,301	$3,767,573	$4,201,570	$4,395,158	$5,361,570	$4,931,981	$3,872,259	$3,467,209	$4,065,898	$4,387,565	**$51,008,468**
Transmission Transformation Charge IESO	$1,937,654	$1,984,774	$1,924,296	$2,270,574	$1,940,557	$1,985,287	$2,358,634	$2,234,907	$1,923,127	$1,696,973	$1,868,264	$2,002,184	**$24,127,232**
Transmission Line Charge IESO	$1,012,085	$1,044,740	$975,665	$1,052,337	$994,722	$1,083,088	$1,306,305	$1,186,825	$1,015,525	$873,659	$963,208	$1,008,253	**$12,516,412**
Transmission Network Charge HONI	$150,387	$139,639	$126,915	$109,589	$144,344	$154,502	$188,750	$159,392	$130,403	$94,603	$108,505	$136,194	**$1,643,225**
Transmission Transformation Charge HONI	$89,134	$81,366	$74,310	$66,290	$84,660	$92,079	$110,519	$93,196	$79,074	$57,684	$64,302	$80,583	**$973,196**
Transmission Line Charge HONI	$3,415	$3,529	$3,527	$3,481	$4,547	$3,539	$4,858	$3,281	$2,858	$2,688	$3,137	$3,519	**$42,378**
Wholesale Market Charge	$2,676,753	$2,392,627	$2,434,485	$2,150,655	$2,142,056	$2,321,869	$2,658,341	$2,503,266	$2,162,956	$2,199,506	$2,278,435	$2,582,580	**$28,503,528**
Smart Meter Entity	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$195,736	**$2,328,157**
LV Charges	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	**$425,580**
Total	**$92,978,101**	**$92,633,646**	**$92,412,129**	**$92,224,129**	**$92,316,085**	**$92,839,152**	**$94,792,606**	**$93,916,478**	**$91,989,831**	**$91,195,953**	**$92,155,379**	**$93,006,387**	**$1,112,459,874**

Switchgear Credit	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	**-$3,261,312**

Cost of Power Summary	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	$82,574,308	**$990,891,698**
Transmission Network	$4,455,430	$4,322,981	$4,196,216	$3,877,162	$4,345,914	$4,549,660	$5,550,320	$5,091,374	$4,002,662	$3,561,812	$4,174,403	$4,523,759	**$52,651,693**
Transmission Connection	$2,770,512	$2,842,633	$2,706,022	$3,120,906	$2,752,710	$2,892,217	$3,508,539	$3,246,433	$2,748,807	$2,359,228	$2,627,135	$2,822,763	**$34,397,905**
Wholesale Market	$2,676,753	$2,392,627	$2,434,485	$2,150,655	$2,142,056	$2,321,869	$2,658,341	$2,503,266	$2,162,956	$2,199,506	$2,278,435	$2,582,580	**$28,503,528**
Smart Metering Entity Charge	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$193,856	$195,736	**$2,328,157**
LV Charges	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	$35,465	**$425,580**
TOTAL COST of POWER EXPENSE	**$92,706,325**	**$92,361,870**	**$92,140,353**	**$91,952,353**	**$92,044,309**	**$92,567,376**	**$94,520,830**	**$93,644,702**	**$91,718,055**	**$90,924,177**	**$91,883,603**	**$92,734,611**	**$1,109,198,562**

2023 Cost of Power

Loss Factors	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
LOSS FACTOR-every class but LU	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338
LOSS FACTOR-LARGE USERS	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051

SALES

UNADJUSTED SALES (KWH)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
RESIDENTIAL	225,646,000	197,583,000	191,720,000	161,805,000	157,667,000	191,266,000	232,553,000	213,034,000	168,457,000	169,137,000	175,658,000	214,840,000	**2,299,366,000**
GENERAL SERVICE <50KW	67,162,000	60,936,000	61,389,000	53,893,000	52,288,000	54,854,000	61,493,000	58,687,000	51,933,000	53,632,000	56,957,000	64,412,000	**697,636,000**
DRYCORE	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	**4,992,000**
GENERAL SERVICE 50-1000KW NONI	102,399,000	92,239,000	91,801,000	78,812,000	72,994,000	75,543,000	85,278,000	81,847,000	71,901,000	74,311,000	81,948,000	94,242,000	**1,003,315,000**
GENERAL SERVICE 50-1000KW INT	128,914,000	117,480,000	121,549,000	110,378,000	112,184,000	117,769,000	130,526,000	124,797,000	111,970,000	115,256,000	117,424,000	129,379,000	**1,437,626,000**
GENERAL SERVICE 1000-1500KW	33,485,000	30,849,000	32,581,000	30,847,000	31,484,000	32,341,000	35,141,000	34,121,000	31,236,000	31,473,000	31,463,000	33,258,000	**388,279,000**
GENERAL SERVICE 1500-5000 KW	58,099,000	52,840,000	56,689,000	53,630,000	55,462,000	57,736,000	64,055,000	61,666,000	55,069,000	54,983,000	54,546,000	57,730,000	**682,505,000**
LARGE USER	47,497,000	42,524,000	47,485,000	45,866,000	48,215,000	48,584,000	52,634,000	51,403,000	47,122,000	47,489,000	45,782,000	47,432,000	**572,033,000**
STREETLIGHTING	2,673,000	2,124,000	1,860,000	1,445,000	964,000	840,000	961,000	1,212,000	1,549,000	2,043,000	2,252,000	2,490,000	**20,413,000**
SENTINEL	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	**47,000**
UNMETERED	1,093,000	1,092,000	987,000	1,082,000	1,047,000	1,078,000	1,064,000	1,053,000	1,038,000	1,047,000	1,029,000	1,053,000	**12,663,000**
TOTAL KWH-SALES	**667,387,917**	**598,086,917**	**606,480,917**	**538,177,917**	**532,724,917**	**580,430,917**	**664,124,917**	**628,239,917**	**540,694,917**	**549,790,917**	**567,478,917**	**645,255,917**	**7,118,875,000**

PURCHASES

Power Purchases (kWh)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Total Load Forecast kWh	688,899,000	615,531,000	626,486,000	553,408,000	551,409,000	598,067,000	685,223,000	645,062,000	556,872,000	566,048,000	586,180,000	664,470,000	**7,337,655,000**

Power Purchased (kW)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Power Purchases - coincident peak (kW)	1,189,000	1,174,000	1,093,000	948,000	1,115,000	1,247,000	1,468,000	1,338,000	1,136,000	934,000	1,076,000	1,147,000	**13,865,000**

DEMAND CHARGES

kW Breakdown by Type	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Coincident System Peak	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Transmission Network Charge IESO	90.8%	89.4%	93.3%	99.8%	94.5%	88.5%	91.8%	92.6%	85.5%	93.2%	94.7%	96.0%
Transmission Transformation Charge IESO	68.7%	71.3%	74.2%	101.1%	73.4%	67.2%	67.9%	70.5%	71.4%	76.7%	73.2%	73.6%
Transmission Line Charge IESO	86.3%	90.2%	90.4%	112.6%	90.4%	88.1%	90.4%	90.0%	90.6%	94.9%	90.7%	89.1%
Transmission Network Charge HONI	3.7%	3.5%	3.4%	3.4%	3.8%	3.6%	3.7%	3.5%	3.3%	2.9%	2.9%	3.5%
Transmission Transformation Charge HONI	3.7%	3.4%	3.3%	3.4%	3.7%	3.6%	3.7%	3.4%	3.4%	3.0%	2.9%	3.4%
Transmission Line Charge HONI	0.4%	0.4%	0.4%	0.5%	0.5%	0.3%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Transmission Network Charge IESO	1,079,893.63	1,049,411	1,020,125	945,884	1,054,174	1,103,213	1,347,737	1,238,549	971,485	870,530	1,019,316	1,100,730	**12,801,050**
Transmission Transformation Charge IESO	816,888	836,790	810,753	958,065	818,296	837,512	996,453	943,267	810,892	716,081	787,180	844,198	**10,176,374**
Transmission Line Charge IESO	1,025,759	1,058,901	988,232	1,067,471	1,008,387	1,098,433	1,326,730	1,204,213	1,029,408	886,279	975,658	1,022,001	**12,691,472**
Transmission Network Charge HONI	43,729	40,605	36,881	31,893	41,981	44,954	54,999	46,399	37,924	27,534	31,532	39,607	**478,038**
Transmission Transformation Charge HONI	43,612	39,813	36,336	32,462	41,432	45,082	54,188	45,651	38,696	28,250	31,444	39,433	**476,399**
Transmission Line Charge HONI	4,194	4,334	4,328	4,279	5,585	4,350	5,978	4,035	3,510	3,304	3,850	4,322	**52,069**

RATES

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Commodity Charge	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213	$0.0213
Transmission Network Charge IESO	$4.08	$4.08	$4.08	$4.08	$4.08	$4.08	$4.08	$4.08	$4.08	$4.08	$4.08	$4.08
Transmission Transformation Charge IESO	$2.43	$2.43	$2.43	$2.43	$2.43	$2.43	$2.43	$2.43	$2.43	$2.43	$2.43	$2.43
Transmission Line Charge IESO	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01	$1.01
Transmission Network Charge HONI	$3.50	$3.50	$3.50	$3.50	$3.50	$3.50	$3.50	$3.50	$3.50	$3.50	$3.50	$3.50
Transmission Transformation Charge HONI	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08
Transmission Line Charge HONI	$0.83	$0.83	$0.83	$0.83	$0.83	$0.83	$0.83	$0.83	$0.83	$0.83	$0.83	$0.83
Wholesale Market Charge	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390
Smart Metering Entity Charge	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570

2023 Cost of Power

Cost of Power	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	**$1,059,793,261**
Transmission Network Charge IESO	$4,405,966	$4,281,597	$4,162,110	$3,859,208	$4,301,031	$4,501,109	$5,498,767	$5,053,282	$3,963,661	$3,551,764	$4,158,811	$4,490,978	**$52,228,283**
Transmission Transformation Charge IESO	$1,985,039	$2,033,399	$1,970,130	$2,328,099	$1,988,459	$2,035,155	$2,421,381	$2,292,138	$1,970,467	$1,740,076	$1,912,846	$2,051,401	**$24,728,589**
Transmission Line Charge IESO	$1,036,016	$1,069,490	$998,114	$1,078,146	$1,018,471	$1,109,417	$1,339,998	$1,216,255	$1,039,702	$895,142	$985,414	$1,032,221	**$12,818,387**
Transmission Network Charge HONI	$153,235	$142,289	$129,238	$111,760	$147,110	$157,530	$192,727	$162,593	$132,893	$96,483	$110,496	$138,789	**$1,675,141**
Transmission Transformation Charge HONI	$90,822	$82,910	$75,670	$67,603	$86,283	$93,883	$112,847	$95,067	$80,584	$58,830	$65,482	$82,119	**$992,100**
Transmission Line Charge HONI	$3,480	$3,596	$3,591	$3,550	$4,634	$3,609	$4,960	$3,347	$2,912	$2,742	$3,195	$3,586	**$43,202**
Wholesale Market Charge	$2,686,706	$2,400,571	$2,443,295	$2,158,291	$2,150,495	$2,332,461	$2,672,370	$2,515,742	$2,171,801	$2,207,587	$2,286,102	$2,591,433	**$28,616,855**
Smart Meter Entity	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$197,522	**$2,350,621**
LV Charges	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	**$432,177**
Total	**$98,909,120**	**$98,561,708**	**$98,330,006**	**$98,154,512**	**$98,244,338**	**$98,781,019**	**$100,790,906**	**$99,886,279**	**$97,909,875**	**$97,100,481**	**$98,070,202**	**$98,940,168**	**$1,183,678,614**

Switchgear Credit	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	**-$3,261,312**

Cost of Power Summary	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	$88,316,105	**$1,059,793,261**
Transmission Network	$4,559,201	$4,423,886	$4,291,348	$3,970,968	$4,448,140	$4,658,638	$5,691,494	$5,215,874	$4,096,554	$3,648,248	$4,269,307	$4,629,767	**$53,903,424**
Transmission Connection	$2,843,581	$2,917,619	$2,775,730	$3,205,621	$2,826,070	$2,970,288	$3,607,410	$3,335,031	$2,821,889	$2,425,014	$2,695,161	$2,897,551	**$35,320,965**
Wholesale Market	$2,686,706	$2,400,571	$2,443,295	$2,158,291	$2,150,495	$2,332,461	$2,672,370	$2,515,742	$2,171,801	$2,207,587	$2,286,102	$2,591,433	**$28,616,855**
Smart Metering Entity Charge	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$195,736	$197,522	**$2,350,621**
LV Charges	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	$36,015	**$432,177**
TOTAL COST of POWER EXPENSE	**$98,637,344**	**$98,289,932**	**$98,058,230**	**$97,882,736**	**$97,972,562**	**$98,509,243**	**$100,519,130**	**$99,614,503**	**$97,638,099**	**$96,828,705**	**$97,798,426**	**$98,668,392**	**$1,180,417,302**

2024 Cost of Power

Loss Factors	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
LOSS FACTOR-every class but LU	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338
LOSS FACTOR-LARGE USERS	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051

SALES

UNADJUSTED SALES (KWH)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
RESIDENTIAL	227,773,000	206,833,000	193,639,000	163,582,000	159,603,000	193,804,000	235,864,000	216,004,000	170,614,000	171,046,000	177,514,000	216,922,000	**2,333,198,000**
GENERAL SERVICE <50KW	67,017,000	62,393,000	61,247,000	53,746,000	52,160,000	54,749,000	61,433,000	58,611,000	51,811,000	53,502,000	56,821,000	64,284,000	**697,774,000**
DRYCORE	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	**4,992,000**
GENERAL SERVICE 50-1000KW NONI	98,708,000	91,320,000	88,396,000	75,779,000	70,045,000	72,490,000	81,927,000	78,623,000	68,980,000	71,291,000	78,769,000	90,696,000	**967,024,000**
GENERAL SERVICE 50-1000KW INT	132,968,000	124,466,000	125,298,000	113,691,000	115,475,000	121,252,000	134,502,000	128,578,000	115,255,000	118,627,000	120,948,000	133,351,000	**1,484,411,000**
GENERAL SERVICE 1000-1500KW	33,600,000	31,762,000	32,696,000	30,955,000	31,603,000	32,468,000	35,292,000	34,265,000	31,357,000	31,593,000	31,579,000	33,383,000	**390,553,000**
GENERAL SERVICE 1500-5000 KW	58,102,000	54,463,000	56,692,000	53,620,000	55,477,000	57,772,000	64,145,000	61,740,000	55,089,000	55,000,000	54,554,000	57,755,000	**684,409,000**
LARGE USER	47,426,000	44,108,000	47,414,000	45,794,000	48,144,000	48,513,000	52,563,000	51,331,000	47,051,000	47,418,000	45,711,000	47,361,000	**572,834,000**
STREETLIGHTING	2,606,000	2,056,000	1,793,000	1,377,000	896,000	772,000	894,000	1,144,000	1,482,000	1,976,000	2,184,000	2,423,000	**19,603,000**
SENTINEL	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	**47,000**
UNMETERED	1,054,000	1,052,000	950,000	1,043,000	1,009,000	1,038,000	1,025,000	1,014,000	999,000	1,008,000	990,000	1,013,000	**12,195,000**
TOTAL KWH-SALES	**669,673,917**	**618,872,917**	**608,544,917**	**540,006,917**	**534,831,917**	**583,277,917**	**668,064,917**	**631,729,917**	**543,057,917**	**551,880,917**	**569,489,917**	**647,607,917**	**7,167,040,000**

PURCHASES

Power Purchases (kWh)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Total Load Forecast kWh	691,257,000	636,926,000	628,619,000	555,289,000	553,588,000	601,001,000	689,289,000	648,646,000	559,306,000	568,199,000	588,257,000	666,893,000	**7,387,270,000**

Power Purchased (kW)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Power Purchases - coincident peak (kW)	1,196,000	1,145,000	1,099,000	954,000	1,121,000	1,256,000	1,480,000	1,348,000	1,143,000	940,000	1,082,000	1,153,000	**13,917,000**

DEMAND CHARGES

kW Breakdown by Type	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Coincident System Peak	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Transmission Network Charge IESO	90.8%	89.4%	93.3%	99.8%	94.5%	88.5%	91.8%	92.6%	85.5%	93.2%	94.7%	96.0%
Transmission Transformation Charge IESO	68.7%	71.3%	74.2%	101.1%	73.4%	67.2%	67.9%	70.5%	71.4%	76.7%	73.2%	73.6%
Transmission Line Charge IESO	86.3%	90.2%	90.4%	112.6%	90.4%	88.1%	90.4%	90.0%	90.6%	94.9%	90.7%	89.1%
Transmission Network Charge HONI	3.7%	3.5%	3.4%	3.4%	3.8%	3.6%	3.7%	3.5%	3.3%	2.9%	2.9%	3.5%
Transmission Transformation Charge HONI	3.7%	3.4%	3.3%	3.4%	3.7%	3.6%	3.7%	3.4%	3.4%	3.0%	2.9%	3.4%
Transmission Line Charge HONI	0.4%	0.4%	0.4%	0.5%	0.5%	0.3%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Transmission Network Charge IESO	1,086,251.29	1,023,489	1,025,725	951,871	1,059,847	1,111,175	1,358,754	1,247,806	977,472	876,123	1,025,000	1,106,488	**12,850,001**
Transmission Transformation Charge IESO	821,698	816,120	815,204	964,129	822,699	843,557	1,004,598	950,316	815,888	720,681	791,569	848,614	**10,215,073**
Transmission Line Charge IESO	1,031,797	1,032,744	993,657	1,074,227	1,013,813	1,106,360	1,337,575	1,213,213	1,035,751	891,973	981,098	1,027,347	**12,739,557**
Transmission Network Charge HONI	43,986	39,602	37,083	32,095	42,207	45,279	55,448	46,746	38,158	27,710	31,708	39,814	**479,837**
Transmission Transformation Charge HONI	43,869	38,829	36,536	32,668	41,655	45,407	54,631	45,992	38,934	28,431	31,619	39,639	**478,211**
Transmission Line Charge HONI	4,219	4,227	4,352	4,306	5,615	4,381	6,027	4,065	3,532	3,326	3,872	4,345	**52,265**

RATES

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Commodity Charge	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636	$0.1636
Transmission Network Charge IESO	$4.16	$4.16	$4.16	$4.16	$4.16	$4.16	$4.16	$4.16	$4.16	$4.16	$4.16	$4.16
Transmission Transformation Charge IESO	$2.48	$2.48	$2.48	$2.48	$2.48	$2.48	$2.48	$2.48	$2.48	$2.48	$2.48	$2.48
Transmission Line Charge IESO	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03
Transmission Network Charge HONI	$3.56	$3.56	$3.56	$3.56	$3.56	$3.56	$3.56	$3.56	$3.56	$3.56	$3.56	$3.56
Transmission Transformation Charge HONI	$2.11	$2.11	$2.11	$2.11	$2.11	$2.11	$2.11	$2.11	$2.11	$2.11	$2.11	$2.11
Transmission Line Charge HONI	$0.84	$0.84	$0.84	$0.84	$0.84	$0.84	$0.84	$0.84	$0.84	$0.84	$0.84	$0.84
Wholesale Market Charge	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390
Smart Metering Entity Charge	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570

2024 Cost of Power

Cost of Power

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	**$1,154,127,947**
Transmission Network Charge IESO	$4,518,805	$4,257,713	$4,267,016	$3,959,783	$4,408,963	$4,622,489	$5,652,416	$5,190,873	$4,066,283	$3,644,671	$4,264,002	$4,602,989	**$53,456,003**
Transmission Transformation Charge IESO	$2,037,810	$2,023,976	$2,021,705	$2,391,040	$2,040,294	$2,092,021	$2,491,404	$2,356,785	$2,023,403	$1,787,288	$1,963,091	$2,104,563	**$25,333,381**
Transmission Line Charge IESO	$1,062,751	$1,063,727	$1,023,467	$1,106,454	$1,044,228	$1,139,551	$1,377,703	$1,249,609	$1,066,823	$918,732	$1,010,531	$1,058,168	**$13,121,744**
Transmission Network Charge HONI	$156,525	$140,924	$131,961	$114,210	$150,193	$161,125	$197,313	$166,346	$135,784	$98,608	$112,834	$141,677	**$1,707,500**
Transmission Transformation Charge HONI	$92,774	$82,116	$77,266	$69,086	$88,092	$96,027	$115,534	$97,263	$82,338	$60,127	$66,868	$83,828	**$1,011,320**
Transmission Line Charge HONI	$3,555	$3,561	$3,667	$3,628	$4,731	$3,691	$5,078	$3,425	$2,976	$2,802	$3,262	$3,661	**$44,038**
Wholesale Market Charge	$2,695,902	$2,484,011	$2,451,614	$2,165,627	$2,158,993	$2,343,904	$2,688,227	$2,529,719	$2,181,293	$2,215,976	$2,294,202	$2,600,883	**$28,810,353**
Smart Meter Entity	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$199,244	**$2,371,980**
LV Charges	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	**$438,875**
Total	**$106,979,546**	**$106,467,452**	**$106,388,120**	**$106,221,251**	**$106,306,918**	**$106,870,232**	**$108,939,100**	**$108,005,444**	**$105,970,323**	**$105,139,627**	**$106,126,214**	**$107,008,914**	**$1,280,423,142**

Switchgear Credit	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	**-$3,261,312**

Cost of Power Summary	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	$96,177,329	**$1,154,127,947**
Transmission Network	$4,675,331	$4,398,637	$4,398,977	$4,073,993	$4,559,156	$4,783,614	$5,849,730	$5,357,219	$4,202,066	$3,743,278	$4,376,835	$4,744,666	**$55,163,503**
Transmission Connection	$2,925,114	$2,901,605	$2,854,329	$3,298,432	$2,905,569	$3,059,515	$3,717,943	$3,435,306	$2,903,764	$2,497,173	$2,771,977	$2,978,444	**$36,249,172**
Wholesale Market	$2,695,902	$2,484,011	$2,451,614	$2,165,627	$2,158,993	$2,343,904	$2,688,227	$2,529,719	$2,181,293	$2,215,976	$2,294,202	$2,600,883	**$28,810,353**
Smart Metering Entity Charge	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$197,522	$199,244	**$2,371,980**
LV Charges	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	$36,573	**$438,875**
TOTAL COST of POWER EXPENSE	**$106,707,770**	**$106,195,676**	**$106,116,344**	**$105,949,475**	**$106,035,142**	**$106,598,456**	**$108,667,324**	**$107,733,668**	**$105,698,547**	**$104,867,851**	**$105,854,438**	**$106,737,138**	**$1,277,161,830**

2025 Cost of Power

Loss Factors	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
LOSS FACTOR-every class but LU	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338	1.0338
LOSS FACTOR-LARGE USERS	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051	1.0051

SALES

UNADJUSTED SALES (KWH)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
RESIDENTIAL	229,970,000	201,408,000	195,637,000	165,418,000	161,599,000	196,430,000	239,304,000	219,080,000	172,830,000	172,997,000	179,416,000	219,060,000	**2,353,149,000**
GENERAL SERVICE <50KW	66,888,000	60,631,000	61,150,000	53,657,000	52,106,000	54,737,000	61,484,000	58,658,000	51,825,000	53,520,000	56,846,000	64,335,000	**695,837,000**
DRYCORE	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	416,000	**4,992,000**
GENERAL SERVICE 50-1000KW NONI	95,025,000	85,478,000	84,994,000	72,746,000	67,092,000	69,433,000	78,581,000	75,415,000	66,089,000	68,311,000	75,645,000	87,219,000	**926,028,000**
GENERAL SERVICE 50-1000KW INT	137,063,000	124,763,000	129,079,000	117,029,000	118,793,000	124,767,000	138,545,000	132,439,000	118,626,000	122,101,000	124,591,000	137,465,000	**1,525,261,000**
GENERAL SERVICE 1000-1500KW	33,741,000	31,066,000	32,836,000	31,087,000	31,746,000	32,620,000	35,475,000	34,444,000	31,516,000	31,757,000	31,743,000	33,561,000	**391,592,000**
GENERAL SERVICE 1500-5000 KW	58,124,000	52,783,000	56,713,000	53,625,000	55,506,000	57,823,000	64,272,000	61,864,000	55,173,000	55,097,000	54,657,000	57,895,000	**683,532,000**
LARGE USER	47,355,000	42,381,000	47,343,000	45,723,000	48,073,000	48,442,000	52,495,000	51,266,000	46,989,000	47,359,000	45,655,000	47,309,000	**570,390,000**
STREETLIGHTING	2,538,000	1,989,000	1,725,000	1,310,000	828,000	704,000	829,000	1,083,000	1,423,000	1,920,000	2,132,000	2,373,000	**18,854,000**
SENTINEL	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	3,917	**47,000**
UNMETERED	1,014,000	1,013,000	914,000	1,003,000	970,000	998,000	985,000	975,000	961,000	969,000	952,000	974,000	**11,728,000**
TOTAL KWH-SALES	**672,137,917**	**601,931,917**	**610,810,917**	**542,017,917**	**537,132,917**	**586,373,917**	**672,389,917**	**635,643,917**	**545,851,917**	**554,450,917**	**572,056,917**	**650,610,917**	**7,181,410,000**

PURCHASES

Power Purchases (kWh)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Total Load Forecast kWh	693,802,000	619,488,000	630,959,000	557,357,000	555,971,000	604,191,000	693,751,000	652,667,000	562,184,000	570,845,000	590,910,000	669,985,000	**7,402,110,000**

Power Purchased (kW)	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total
Power Purchases - coincident peak (kW)	1,198,000	1,182,000	1,101,000	955,000	1,123,000	1,260,000	1,487,000	1,354,000	1,146,000	941,000	1,084,000	1,155,000	**13,986,000**

DEMAND CHARGES

kW Breakdown by Type	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Coincident System Peak	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Transmission Network Charge IESO	90.8%	89.4%	93.3%	99.8%	94.5%	88.5%	91.8%	92.6%	85.5%	93.2%	94.7%	96.0%
Transmission Transformation Charge IESO	68.7%	71.3%	74.2%	101.1%	73.4%	67.2%	67.9%	70.5%	71.4%	76.7%	73.2%	73.6%
Transmission Line Charge IESO	86.3%	90.2%	90.4%	112.6%	90.4%	88.1%	90.4%	90.0%	90.6%	94.9%	90.7%	89.1%
Transmission Network Charge HONI	3.7%	3.5%	3.4%	3.4%	3.8%	3.6%	3.7%	3.5%	3.3%	2.9%	2.9%	3.5%
Transmission Transformation Charge HONI	3.7%	3.4%	3.3%	3.4%	3.7%	3.6%	3.7%	3.4%	3.4%	3.0%	2.9%	3.4%
Transmission Line Charge HONI	0.4%	0.4%	0.4%	0.5%	0.5%	0.3%	0.4%	0.3%	0.3%	0.4%	0.4%	0.4%

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Transmission Network Charge IESO	1,088,067.76	1,056,562	1,027,592	952,869	1,061,738	1,114,714	1,365,180	1,253,360	980,037	877,055	1,026,895	1,108,407	**12,912,477**
Transmission Transformation Charge IESO	823,072	842,492	816,687	965,140	824,167	846,243	1,009,350	954,546	818,030	721,448	793,032	850,086	**10,264,293**
Transmission Line Charge IESO	1,033,523	1,066,117	995,465	1,075,353	1,015,622	1,109,884	1,343,902	1,218,613	1,038,469	892,922	982,912	1,029,129	**12,801,911**
Transmission Network Charge HONI	44,060	40,882	37,151	32,129	42,282	45,423	55,711	46,954	38,258	27,740	31,767	39,883	**482,239**
Transmission Transformation Charge HONI	43,942	40,084	36,602	32,702	41,729	45,552	54,890	46,196	39,036	28,462	31,678	39,708	**480,581**
Transmission Line Charge HONI	4,226	4,363	4,360	4,310	5,625	4,395	6,056	4,083	3,541	3,329	3,879	4,352	**52,519**

RATES

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
Commodity Charge	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706	$0.1706
Transmission Network Charge IESO	$4.24	$4.24	$4.24	$4.24	$4.24	$4.24	$4.24	$4.24	$4.24	$4.24	$4.24	$4.24
Transmission Transformation Charge IESO	$2.53	$2.53	$2.53	$2.53	$2.53	$2.53	$2.53	$2.53	$2.53	$2.53	$2.53	$2.53
Transmission Line Charge IESO	$1.05	$1.05	$1.05	$1.05	$1.05	$1.05	$1.05	$1.05	$1.05	$1.05	$1.05	$1.05
Transmission Network Charge HONI	$3.61	$3.61	$3.61	$3.61	$3.61	$3.61	$3.61	$3.61	$3.61	$3.61	$3.61	$3.61
Transmission Transformation Charge HONI	$2.15	$2.15	$2.15	$2.15	$2.15	$2.15	$2.15	$2.15	$2.15	$2.15	$2.15	$2.15
Transmission Line Charge HONI	$0.86	$0.86	$0.86	$0.86	$0.86	$0.86	$0.86	$0.86	$0.86	$0.86	$0.86	$0.86
Wholesale Market Charge	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390	$0.00390
Smart Metering Entity Charge	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570	$0.570

2025 Cost of Power

Cost of Power

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	**$1,198,186,235**
Transmission Network Charge IESO	$4,613,407	$4,479,823	$4,356,989	$4,040,163	$4,501,768	$4,726,387	$5,788,365	$5,314,247	$4,155,358	$3,718,712	$4,354,035	$4,699,646	**$54,748,902**
Transmission Transformation Charge IESO	$2,082,371	$2,131,505	$2,066,219	$2,441,803	$2,085,142	$2,140,996	$2,553,655	$2,415,002	$2,069,616	$1,825,262	$2,006,371	$2,150,717	**$25,968,660**
Transmission Line Charge IESO	$1,085,199	$1,119,423	$1,045,239	$1,129,121	$1,066,403	$1,165,378	$1,411,097	$1,279,544	$1,090,393	$937,568	$1,032,057	$1,080,586	**$13,442,007**
Transmission Network Charge HONI	$159,219	$147,735	$134,252	$116,103	$152,795	$164,146	$201,322	$169,678	$138,252	$100,244	$114,796	$144,124	**$1,742,665**
Transmission Transformation Charge HONI	$94,370	$86,084	$78,607	$70,231	$89,618	$97,827	$117,881	$99,211	$83,834	$61,124	$68,031	$85,276	**$1,032,096**
Transmission Line Charge HONI	$3,616	$3,734	$3,731	$3,688	$4,813	$3,761	$5,182	$3,494	$3,030	$2,849	$3,319	$3,724	**$44,940**
Wholesale Market Charge	$2,705,828	$2,416,003	$2,460,740	$2,173,692	$2,168,287	$2,356,345	$2,705,629	$2,545,401	$2,192,518	$2,226,296	$2,304,549	$2,612,942	**$28,868,229**
Smart Meter Entity	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$200,937	**$2,392,615**
LV Charges	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	**$445,678**
Total	**$110,829,247**	**$110,469,543**	**$110,231,013**	**$110,060,038**	**$110,154,064**	**$110,740,075**	**$112,868,367**	**$111,911,814**	**$109,818,237**	**$108,957,291**	**$109,968,395**	**$110,863,946**	**$1,326,872,028**

Switchgear Credit	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	-$271,776.00	**-$3,261,312**

Cost of Power Summary	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
Commodity Charge Including Global Adjustment	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	$99,848,853	**$1,198,186,235**
Transmission Network	$4,772,626	$4,627,558	$4,491,241	$4,156,266	$4,654,563	$4,890,533	$5,989,687	$5,483,925	$4,293,610	$3,818,956	$4,468,831	$4,843,771	**$56,491,567**
Transmission Connection	$2,993,781	$3,068,969	$2,922,019	$3,373,067	$2,974,201	$3,136,186	$3,816,039	$3,525,475	$2,975,097	$2,555,027	$2,838,003	$3,048,528	**$37,226,392**
Wholesale Market	$2,705,828	$2,416,003	$2,460,740	$2,173,692	$2,168,287	$2,356,345	$2,705,629	$2,545,401	$2,192,518	$2,226,296	$2,304,549	$2,612,942	**$28,868,229**
Smart Metering Entity Charge	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$199,244	$200,937	**$2,392,615**
LV Charges	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	$37,140	**$445,678**
TOTAL COST of POWER EXPENSE	**$110,557,471**	**$110,197,767**	**$109,959,237**	**$109,788,262**	**$109,882,288**	**$110,468,299**	**$112,596,591**	**$111,640,038**	**$109,546,461**	**$108,685,515**	**$109,696,619**	**$110,592,170**	**$1,323,610,716**

UPDATED CAPITAL EXPENDITURE SUMMARY

1. INTRODUCTION

The capital expenditure plan for the 2021-2025 period details the system investments planned by Hydro Ottawa utilizing the asset management and capital expenditure planning process outlined in Exhibit 2-4-3: Distribution System Plan. Expenditures are planned in the following OEB-defined categories: System Access, System Renewal, System Service, and General Plant. Table 1 provides a summary of these expenditures for 2021-2025. Updates to capital expenditures in 2021 and 2022 are the result of the updated MiGen project, as described in the updates to section 2.3.3 of Attachment 2-4-3(E): Material Investments.

Table 1 – AS ORIGINALLY SUBMITTED – Summary of 2021-2025 Capital Expenditures ($'000,000s)

Investment Category	2021	2022	2023	2024	2025	Average 2021-2025
System Access	$56.7	$41.0	$37.4	$34.5	$34.0	$40.7
System Renewal	$43.3	$44.0	$40.2	$39.4	$40.5	$41.5
System Service	$31.0	$27.4	$24.3	$25.2	$23.9	$26.4
General Plant	$32.0	$11.7	$7.6	$17.4	$16.9	$17.1
Capital Contributions	$(41.3)	$(25.2)	$(19.9)	$(19.2)	$(19.3)	$(25.0)
TOTAL	**$121.8**	**$98.9**	**$89.6**	**$97.2**	**$96.0**	**$100.7**

Table 1 – UPDATED FOR 2019 ACTUALS – Summary of 2021-2025 Capital Expenditures ($'000,000s)

Investment Category	2021	2022	2023	2024	2025	Average 2021-2025
System Access	$56.7	$41.0	$37.4	$34.5	$34.0	$40.7
System Renewal	$43.3	$44.0	$40.2	$39.4	$40.5	$41.5
System Service	$26.7	$28.3	$24.3	$25.2	$23.9	$25.7
General Plant	$32.0	$11.7	$7.6	$17.4	$16.9	$17.1
Capital Contributions	$(39.2)	$(23.5)	$(19.9)	$(19.2)	$(19.3)	$(24.2)
TOTAL	**$119.5**	**$101.5**	**$89.6**	**$97.2**	**$96.0**	**$100.8**

UPDATED Attachment 2-4-3(A): OEB Appendix 2-AA - Capital Programs Table and UPDATED Attachment 2-4-3(B): OEB Appendix 2-AB - Capital Expenditure Summary provide an overview of Hydro Ottawa's capital programs and expenditures, respectively. For comprehensive explanatory notes and variance analyses of Hydro Ottawa's capital expenditures, please refer to section 8 of Exhibit 2-4-3: Distribution System Plan.

The utility's 2016-2020 capital plan represented the highest level of average annual capital expenditures in any multi-year rate term in Hydro Ottawa's history. Capital spending during this period has focused on the enhancement of system capacity to keep pace with growth and shifts in loads within the service territory, as well as renewal of the aged and aging infrastructure at risk of failure. Key accomplishments have included the following: extensive replacements and enhancements of core infrastructure, such as overhead power lines and underground cables; upgrades to fibre optic networks; acquisition of a new Supervisory Control and Data Acquisition System ("SCADA"); and asset relocations and expansions to support major local infrastructure projects, such as the City of Ottawa's Light Rail Transit and renewal of north-south arteries in the downtown core. These and other initiatives have translated into improved system reliability and performance, with the utility having consistently met or exceeded its reliability targets over the 2016-2019 timeframe. Hydro Ottawa is on track to successfully complete its plan for 2016-2020, with adjustments for typical changes and evolving circumstances.

Notwithstanding this progress, however, renewing Hydro Ottawa's aged and aging infrastructure in deteriorating condition (i.e. stations, and underground and overhead systems) at an appropriate pace remains a priority for both near-term performance and long-term sustainability of the distribution system. Hydro Ottawa's service territory continues to be characterized by both a growing and a shifting customer base. In terms of growth, expanding suburban areas and load intensification in established communities are driving a need for investments to maintain reliability, increase supply capacity, and reduce the frequency and duration of outages. At the same time, as customer priorities and needs evolve with the advancement of technology and innovation, they are triggering discernible shifts: in patterns of supply and demand, in preferences with regards to the availability of information on the services received by customers, and in expectations for how quickly and effectively Hydro Ottawa can restore service when an outage occurs.

These pressures and priorities are reflected in the top four drivers of the utility's planned expenditures for 2021-2025: Customer Service Requests, Failure Risk, System Capital Investment Support, and Capacity Constraints. Many programs under the System Access investment category are driven by Customer Service Requests, including expansion of the distribution system, residential connections, commercial connections, and generation connections. Assets that are being replaced due to Failure Risk in the System Renewal investment category include the following: station transformers, station switchgear, protection and control ("P&C") equipment, batteries, poles, overhead ("OH") switches, cables, civil structures, and underground ("UG") switchgear. Projects driven by System Capital Investment Support include capital contributions to intangible assets purchased from Hydro One Networks Inc. ("HONI") in conjunction with Hydro Ottawa's major station projects, especially the new Cambrian Municipal Transformer Station ("MTS") and the New East Station.[1] (Additional information on Cambrian MTS is presented in section 3 below). Projects driven by Capacity Constraints likewise include construction of the aforementioned stations as well as associated distribution work to bring additional capacity to growth pockets.

The updated version of Figure 1 shows annual capital expenditures for both the 2016-2020 and 2021-2025 periods.

[1] The previous project name for Cambrian MTS was South Nepean MTS.

Figure 1 – AS ORIGINALLY SUBMITTED – Summary of 2016-2025 Annual Capital Expenditures ($’000,000s)

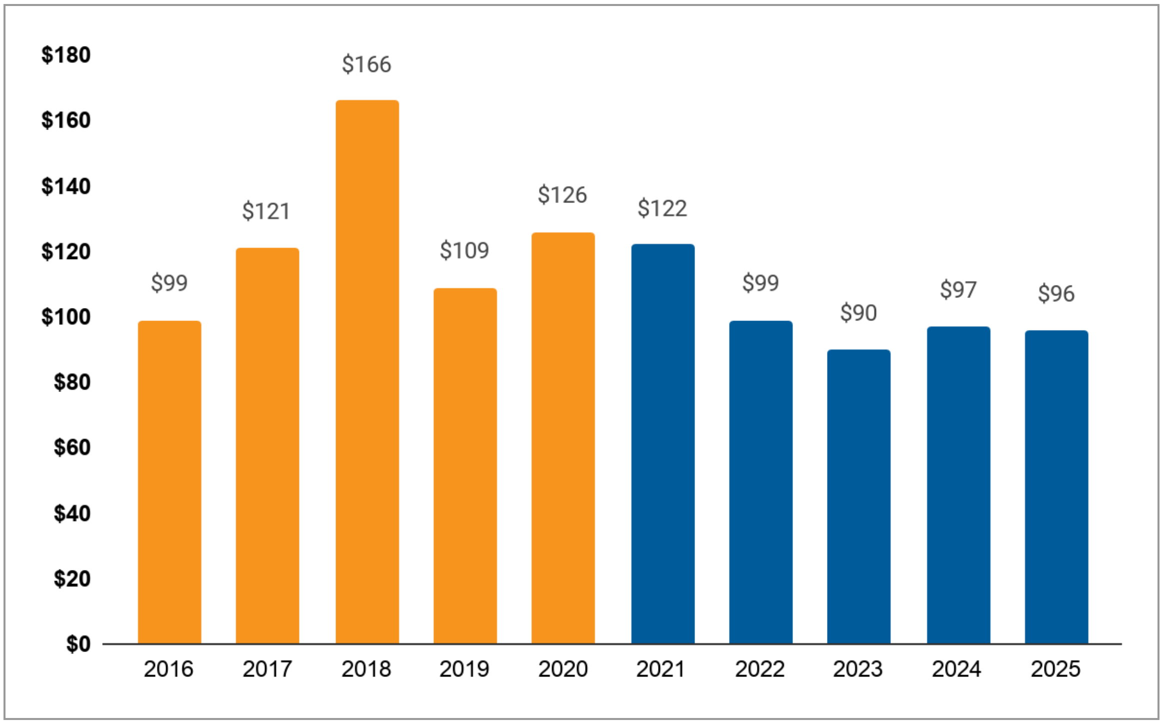


Figure 1 – UPDATED FOR 2019 ACTUALS – Summary of 2016-2025 Annual Capital Expenditures ($'000,000s)

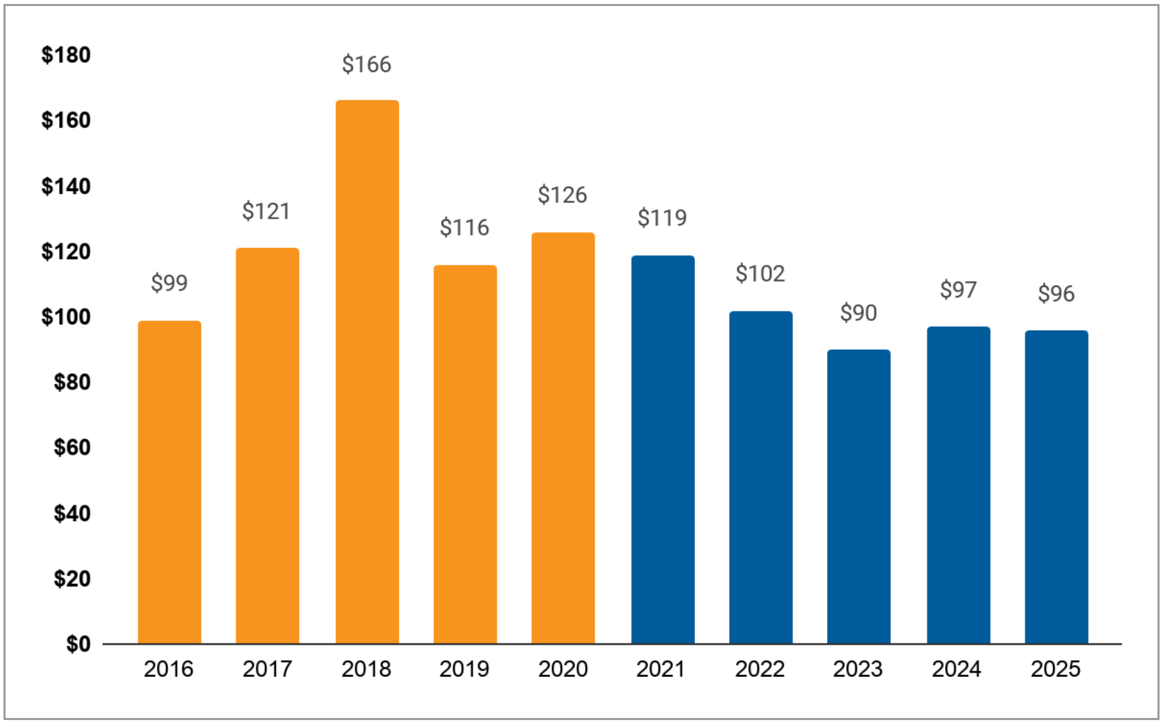


Figure 1 corroborates the expectation signalled in Hydro Ottawa's previous rebasing application that a historically high level of annual capital expenditures "will be sustained, if not increased, through the decade from 2020-2030."[2]

Both the 2016-2020 and the 2021-2025 periods contain large generational projects – most notably, the Facilities Renewal Program in the 2016-2025 period and the Cambrian MTS project in the 2021-2025 period.[3] The updated version of Figure 2 below shows a summary of capital expenditures excluding these two projects. Of note, the spike in expenditures in 2018 was due, in part, to three major severe weather events, not the least of which were the six tornadoes that

[2] Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015), Exhibit A-2-1, page 10.
[3] For additional information on the Facilities Renewal Program, please see UPDATED Attachment 2-1-1(A): New Administrative Office and Operations Facilities; for Cambrian MTS, please see Attachment 2-4-3(E): Material Investments.

touched down in the Ottawa area in September of that year. Additional contributing factors for the 2018 increase included the acceleration of dark fibre installation and increased System Access demands, including those associated with projects at the Canada Science and Technology Museum and a new fulfillment centre constructed by Amazon in the eastern outskirts of Ottawa.

Figure 2 – AS ORIGINALLY SUBMITTED – Summary of 2016-2025 Capital Expenditures Excluding Facilities Renewal Program and Cambrian MTS ($'000,000s)

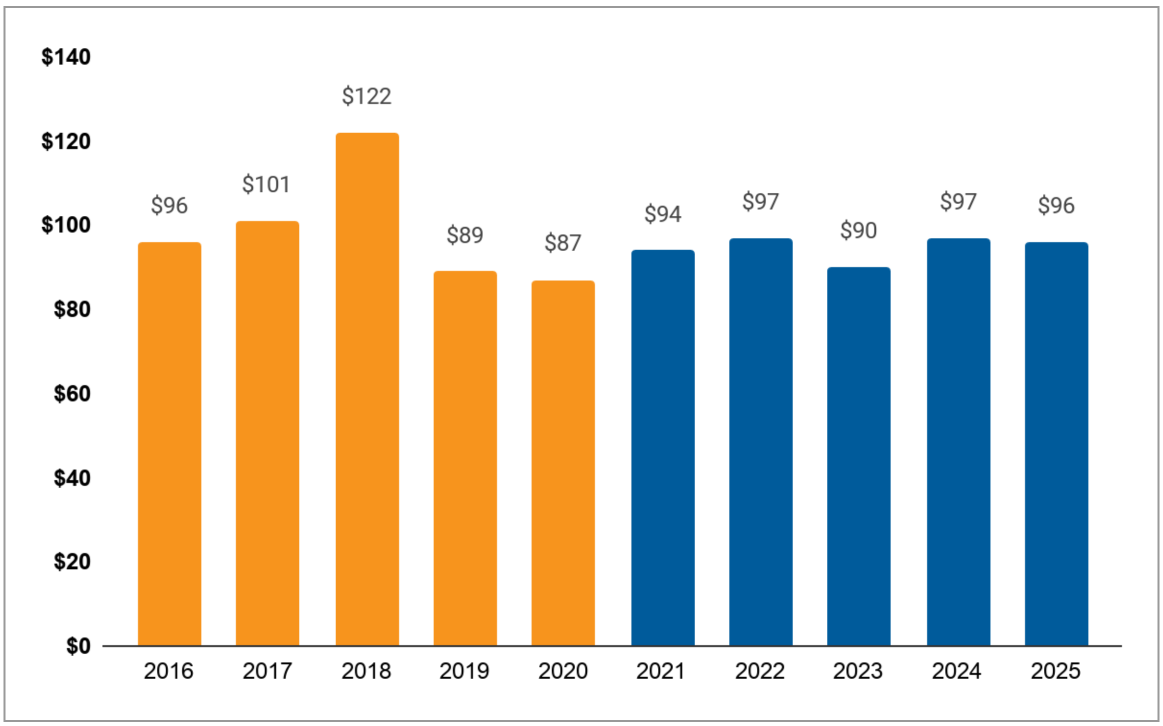
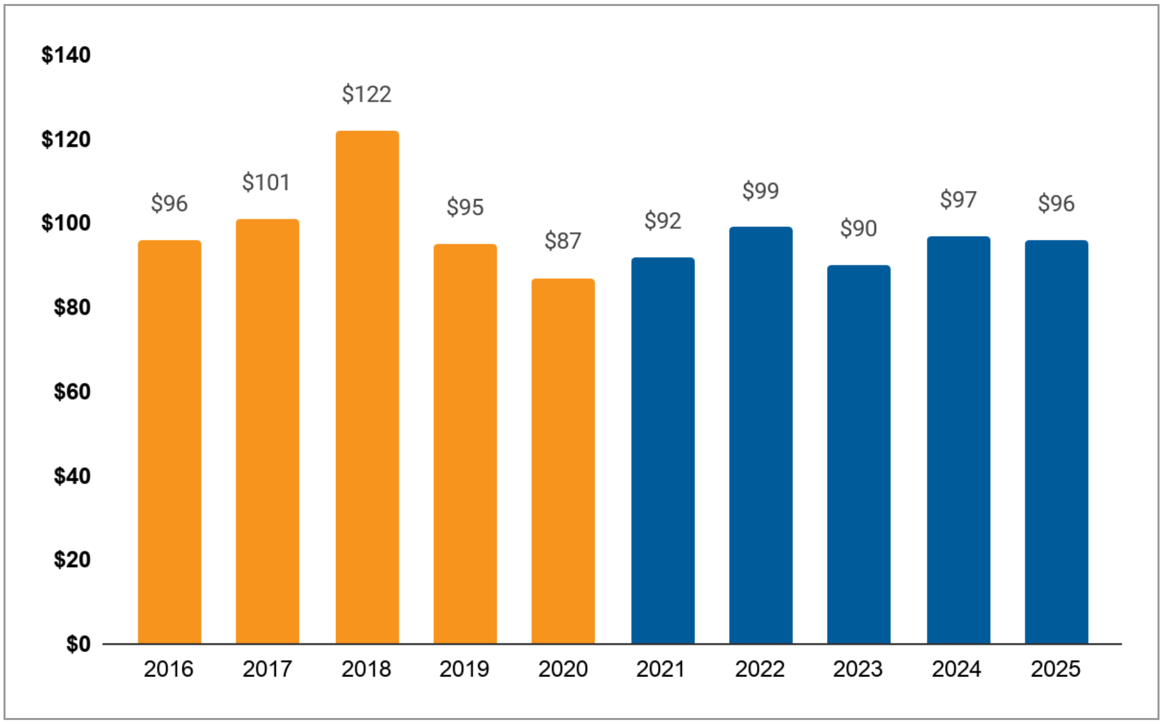


Figure 2 – UPDATED FOR 2019 ACTUALS – Summary of 2016-2025 Capital Expenditures Excluding Facilities Renewal Program and Cambrian MTS ($'000,000s)



2. RATIONALIZATION PROCESS

Hydro Ottawa undertook an extensive rationalization process as a prerequisite to formulating the 2021-2025 capital expenditure levels that are summarized in this Schedule.

The first step in this process was the development of an asset needs forecast. This forecast identified investment levels that were deemed to be necessary from an engineering point of view, taking into account asset age, safety, and reliability considerations.

Thereafter, a more comprehensive review was performed that assessed the following factors: asset needs; safety; reliability; customer growth; resource constraints; expected rate impacts; customer input; financial considerations; and resourcing considerations.

This review resulted in a reduction in the capital expenditure forecast of approximately $50M per year. The expenditure levels presented in this Application represent the end product of this assessment and rationalization process, and are consistent with OEB-approved levels from the 2016-2020 period. The resulting "average run rate" of approximately $100.7M per year represents the expenditure levels required to ensure the safety and reliability of the system, and to address challenges associated with aging infrastructure and customer growth. After adjusting for 2019 actual capital expenditures and updates to the MiGen project as described in the updated version of section 2.3.3 of Attachment 2-4-3(E): Material Investments, the resulting "average run rate" has been updated to $100.8M per year.

3. 2021-2025 CAPITAL EXPENDITURES SUMMARY

Detailed justification for the projects and programs that comprise Hydro Ottawa's overall capital investment plan for 2021-2025 are outlined in Exhibit 2-4-2: Capital Expenditure Details and Exhibit 2-4-3: Distribution System Plan.

As mentioned above, capital expenditures in this period include the construction of Cambrian MTS. This project consists of two distinct components: (1) the new MTS set to be constructed by Hydro Ottawa; and (2) upgrades to existing transmission facilities, as well as construction of a segment of new transmission line, by HONI. These facilities are required to accommodate customer load growth and increase supply capacity in the South Nepean area of Ottawa, which has already reached the limits of local transformation capacity. Seeing as this project is driven by the needs of Hydro Ottawa and its customers, the bulk of the costs are being apportioned to Hydro Ottawa. In October 2019, the OEB granted formal approval to HONI and Hydro Ottawa to proceed with construction of their respective segments of this project. The utilities had applied for leave to construct ("LTC") authorization, pursuant to Section 92 of the *Ontario Energy Board Act, 1998* in May 2019.[4] The project is set to be energized in Q2 2022.

[4] The case number of the proceeding in which the OEB adjudicated HONI and Hydro Ottawa's joint application is EB-2019-0077.

The sizeable Connection Cost Recovery Agreement ("CCRA") payments associated with this project will exert significant influence on the overall capital spending envelope for 2021-2025. Projects of this magnitude are not undertaken on a regular basis, and as such, the larger capital expenditures in the 2021-2022 period are something of an anomaly.

Similar to Figure 2 above, Table 2 shows the planned capital expenditures for 2021-2025 with and without the Cambrian MTS project. In the absence of this project, annual average expenditures for the five-year rate term are $94.7M. This figure is more representative of typical capital expenditure requirements for a period of this length. After adjusting for 2019 actual capital expenditures and updates to the MiGen project as described in updates to section 2.3.3 of Attachment 2-4-3(E): Material Investments, the annual average expenditures for the five-year rate term is determined to be $94.8M.

Table 2 – AS ORIGINALLY SUBMITTED – 2021-2025 Capital Expenditures without Cambrian MTS ($'000,000s)

Capital Expenditures (Net)	Forecast					Average 2021-2025
	2021	2022	2023	2024	2025	
Total (Table 1)	$121.8	$98.9	$89.6	$97.2	$96.0	$100.7
Cambrian MTS	$27.9	$2.2	$0.0	$0.0	$0.0	$6.0
TOTAL WITHOUT CAMBRIAN	**$93.8**	**$96.7**	**$89.6**	**$97.2**	**$96.0**	**$94.7**

Table 2 – UPDATED FOR 2019 ACTUALS – 2021-2025 Capital Expenditures without Cambrian MTS ($'000,000s)

Capital Expenditures (Net)	Forecast					Average 2021-2025
	2021	2022	2023	2024	2025	
Total (Table 1)	$119.5	$101.6	$89.6	$97.2	$96.0	$100.8
Cambrian MTS	$27.9	$2.2	$0.0	$0.0	$0.0	$6.0
TOTAL WITHOUT CAMBRIAN	**$91.6**	**$99.3**	**$89.6**	**$97.2**	**$96.0**	**$94.8**

With regards to productivity and continuous improvement, it should be noted that these remain firmly embedded in Hydro Ottawa's capital expenditure program. As an example, the utility has committed to adopt the ISO 55000 Asset Management Standard as part of continual improvement in asset management practices. This asset management framework strengthens the strategic asset decision-making processes by striving to do the following: balance the weighting of cost, risk, and asset performance that meet or exceed service level expectations of customers; comply with the terms of applicable acts, licences, and codes; improve asset value and resource efficiency; and minimize health, safety, and environmental impacts. Other planned productivity initiatives for the 2021-2025 period include performing detailed analysis of field crew wrench time and identifying opportunities for further optimization, implementing seasonal construction shifts, and rationalizing fleet assets. Additional information on these and other activities is available in Exhibit 1-1-13: Productivity and Continuous Improvement Initiatives.

4. 2021-2025 CAPITAL ADDITIONS SUMMARY

Hydro Ottawa's Capital Additions over the 2021-2025 period are summarized in Table 3 below. Consistent with the arrangement set forth in the Approved Settlement Agreement governing the utility's 2016-2020 rate plan, Hydro Ottawa proposes to track capital additions in the following three categories: System Access; System Renewal and System Service, and General Plant.[5]

In addition, Hydro Ottawa is requesting to continue the separate deferral account for the revenue requirement related to CCRA payments. This account would include both new facilities as well as true-up payments required by HONI for existing facilities. Hydro Ottawa is also requesting to maintain the variance account (with some modifications) to record the revenue requirement impact associated with any underspending between actual and forecasted cumulative capital additions. For more information on these accounts, please see Exhibit 9-2-1: New Deferral and Variance Accounts. The updated version of Table 3 below reflects 2019 actuals and updates to the MiGen project, as described in the updated version of section 2.3.3

[5] The System Renewal and System Service categories have been merged into one category to reflect Hydro Ottawa's standard operating practice to shift funds between the two categories, as warranted by customer and operational requirements.

of Attachment 2-4-3(E): Material Investments. In addition, revisions have been made to Table 3 to correspond with the originally submitted versions of 2021-2025 Appendix 2-BA: Fixed Asset Continuity Schedule, filed as Attachments 2-2-1(F)-(J), respectively.

Table 3 – AS ORIGINALLY SUBMITTED – 2021-2025 Summary of Capital Additions ($'000s)

Category	2021	2022	2023	2024	2025
System Access (net of contribution)	$17,820	$17,879	$17,720	$15,626	$15,255
System Renewal and Service	$71,138	$92,858	$50,671	$59,601	$82,071
General Plant excluding CCRAs	$14,198	$12,343	$6,513	$5,822	$18,043
TOTAL CAPITAL ADDITIONS	**$103,156**	**$123,080**	**$74,905**	**$81,049**	**$115,369**

Table 3 – AS REVISED – 2021-2025 Summary of Capital Additions ($'000s)

Category	2021	2022	2023	2024	2025
System Access (net of contribution)	$17,952	$17,922	$17,620	$15,630	$15,312
System Renewal and Service	$67,766	$90,299	$54,420	$59,767	$81,904
General Plant excluding CCRAs	$14,198	$12,343	$6,513	$5,822	$18,043
TOTAL CAPITAL ADDITIONS	**$99,916**	**$120,564**	**$78,554**	**$81,218**	**$115,259**

Table 3 – UPDATED FOR 2019 ACTUALS – 2021-2025 Summary of Capital Additions ($'000s)

Category	2021	2022	2023	2024	2025
System Access (net of contribution)	$17,952	$17,922	$17,620	$15,630	$15,312
System Renewal and Service	$63,004	$94,210	$54,420	$59,767	$81,904
General Plant excluding CCRAs	$14,198	$12,343	$6,513	$5,822	$18,043
TOTAL CAPITAL ADDITIONS	**$95,155**	**$124,475**	**$78,554**	**$81,218**	**$115,259**

5. 2016-2020 CAPITAL ADDITIONS SUMMARY

For the 2016-2020 period, Hydro Ottawa is set to maintain in-service addition levels somewhat above the levels approved by the OEB. As shown in Table 4 below, the in-service additions in all three investment categories are set to exceed approved amounts. For 2016-2020, Hydro Ottawa is projecting Capital Additions to exceed the overall envelope by $54.1M. After adjusting for 2019 actual Capital Additions, the utility is projecting Capital Additions to exceed the overall envelope by $70.4M.

Table 4 – AS ORIGINALLY SUBMITTED – 2016-2020 Capital Additions vs. OEB-Approved Amounts ($'000s)

CATEGORY	2016	2017	2018	2019	2020	Total	% Variance
OEB-Approved (Net of Contribution)							
System Access	$12,628	$11,798	$12,034	$12,274	$12,520	$61,254	
System Renewal and System Service	$52,744	$53,389	$70,133	$43,710	$81,123	$301,099	
General Plant[6]	$8,434	$16,703	$7,059	$7,630	$15,019	$54,845	
TOTAL OEB-APPROVED CAPITAL ADDITIONS	**$73,806**	**$81,889**	**$89,226**	**$63,614**	**$108,662**	**$417,198**	
Historical / Bridge (Net of Contribution)							
System Access	$14,065	$18,051	$23,084	$14,295	$20,970	$90,464	
System Renewal and System Service	$55,336	$60,632	$67,867	$84,738	$45,956	$314,529	
General Plant[7]	$12,229	$18,295	$6,510	$13,420	$15,845	$66,300	
TOTAL HISTORICAL / BRIDGE CAPITAL ADDITIONS	**$81,630**	**$96,977**	**$97,462**	**$112,453**	**$82,771**	**$471,293**	
Variance							
System Access (Net)	$1,437	$6,253	$11,050	$2,020	$8,450	$29,210	48%
System Renewal and System Service	$2,592	$7,243	$(2,266)	$41,028	$(35,167)	$13,430	4%
General Plant[8]	$3,795	$1,592	$(549)	$5,790	$826	$11,455	21%
TOTAL CAPITAL ADDITIONS VARIANCE	**$7,824**	**$15,088**	**$8,236**	**$48,838**	**$(25,890)**	**$54,095**	

[6] The Facilities Renewal Program and new CCRAs are excluded, as per the Approved Settlement Agreement, EB-2015-0004 (December 7, 2015).
[7] *Ibid*.
[8] *Ibid*.

Table 4 – UPDATED FOR 2019 ACTUALS – 2016-2020 Capital Additions vs. OEB-Approved Amounts ($'000s)

CATEGORY	2016	2017	2018	2019	2020	Total	% Variance
OEB-Approved (Net of Contribution)							
System Access	$12,628	$11,798	$12,034	$12,274	$12,520	$61,254	
System Renewal and System Service	$52,744	$53,389	$70,133	$43,710	$81,123	$301,099	
General Plant[9]	$8,434	$16,703	$7,059	$7,630	$15,019	$54,845	
TOTAL OEB-APPROVED CAPITAL ADDITIONS	**$73,806**	**$81,889**	**$89,226**	**$63,614**	**$108,662**	**$417,198**	
Historical / Bridge (Net of Contribution)							
System Access	$14,065	$18,051	$23,084	$24,285	$20,970	$100,455	
System Renewal and System Service	$55,336	$60,632	$67,867	$86,603	$47,785	$318,223	
General Plant[10]	$12,229	$18,295	$6,510	$15,682	$15,845	$68,968	
TOTAL HISTORICAL / BRIDGE CAPITAL ADDITIONS	**$81,630**	**$96,977**	**$97,462**	**$126,570**	**$84,601**	**$487,646**	
Variance							
System Access (Net)	$1,437	$6,253	$11,050	$12,011	$8,450	$39,201	64%
System Renewal and System Service	$2,592	$7,243	$(2,266)	$42,893	$(33,338)	$17,124	6%
General Plant[11]	$3,795	$1,592	$(549)	$8,052	$826	$14,123	26%
TOTAL CAPITAL ADDITIONS VARIANCE	**$7,824**	**$15,088**	**$8,236**	**$62,956**	**$(24,061)**	**$70,448**	

System Access has the largest variance, with the level of third-party demand exceeding projections, including from such projects as the City of Ottawa's Light Rail Transit, the Canada Science and Technology Museum, Elgin Street Renewal, and construction of an Amazon

[9] The Facilities Renewal Program and new CCRAs are excluded, as per the Approved Settlement Agreement, EB-2015-0004 (December 7, 2015).
[10] *Ibid.*
[11] *Ibid.*

distribution warehouse. The mix of the programs also changed from the original forecast. System Expansion and Infill, which in general have lower contributions, exceeded the budget expectation. This explains the capital contributions which were lower than budgeted. All of these projects were third-party driven and were therefore ones which Hydro Ottawa had an obligation to complete.

As submitted in the utility's original Application, System Renewal and System Service are set to exceed approved levels by 4% mainly on account of Emergency Renewal spending (both emergency and storm restoration capital and critical renewals). After adjusting for 2019 actual spending, System Renewal and System Service are set to exceed approved levels by 6%. The Ottawa area experienced multiple extreme weather events of significance during the 2016-2020 timeframe, especially in 2018 which featured an ice storm in April, a wind storm in May, and six tornadoes in September. All of these events resulted in the utility incurring a large amount of unbudgeted capital replacement costs.

With respect to critical renewals, over the past few years Hydro Ottawa has increased asset inspections as part of its reliability improvement program. Increased inspections have led to more assets being identified as being in a "critical state." "Critical state" means that the assets have been identified as having "functionally" failed, but have not yet caused an outage (e.g. poles that have been deemed to have deteriorated to a point where they no longer meet their designed strength requirements). Critical renewal is more cost-effective than emergency renewal when there is a power outage, as critical renewals can be performed in a planned manner with no accompanying need to incur overtime costs.

The amount for General Plant Capital Additions, as shown in Table 4 above, is in accordance with the Approved Settlement Agreement governing Hydro Ottawa's 2016-2020 rate plan. Both the Facilities Renewal Program and new CCRAs are removed for purposes of the Capital Variance Account, as they are recorded in separate Deferral and Variance Accounts. General Plant is set to exceed approved levels largely on account of the following: (i) true-up CCRA payments to HONI[12]; and (ii) scope change in several projects, including the Enterprise Resource Planning ("ERP") upgrade. A new Human Resources software module (Workday) was added to the ERP JDE 9.2 upgrade project. This module has helped lead to reduced processes, increased employee self-service capabilities, and enhanced productivity.

6. 2016-2020 CAPITAL EXPENDITURES SUMMARY

Similar to section 5 above, for the 2016-2020 period Hydro Ottawa's capital expenditures in all three investment categories are set to exceed the budget plan. As submitted in the utility's original Application, as shown in Table 5, the utility is projecting an overall variance of $83.4M. After adjusting for 2019 actual capital expenditures, Hydro Ottawa is projecting an overall variance of $89.6M.

[12] As per the Approved Settlement Agreement, the separate deferral account for CCRA payments is intended to facilitate recovery of costs from customers for the annual revenue requirement impact of CCRA payments paid to HONI, commencing in the year in which the facilities to which each CCRA payment relates provide services to Hydro Ottawa customers.

Table 5 – AS ORIGINALLY SUBMITTED – 2016-2020 Capital Expenditures vs. Approved ($'000s)

CATEGORY	2016	2017	2018	2019	2020	Total	% Variance
Approved[13] (Net of Contribution)							
System Access	$15,300	$11,966	$12,205	$12,450	$12,699	$64,620	
System Renewal and System Service	$60,594	$65,780	$66,010	$66,452	$69,032	$327,868	
General Plant	$45,899	$48,138	$18,276	$18,695	$13,954	$144,962	
TOTAL CAPITAL EXPENDITURES	**$121,794**	**$125,883**	**$96,491**	**$97,597**	**$95,685**	**$537,450**	
Historical / Bridge (Net of Contribution)							
System Access	$18,316	$13,597	$24,147	$18,847	$20,387	$95,294	
System Renewal and System Service	$60,320	$68,655	$84,702	$56,955	$63,731	$334,363	
General Plant	$20,423	$38,300	$56,738	$33,586	$42,170	$191,217	
TOTAL HISTORICAL / BRIDGE CAPITAL EXPENDITURES	**$99,058**	**$120,552**	**$165,587**	**$109,388**	**$126,288**	**$620,874**	
Variance							
System Access (Net)	$3,015	$1,631	$11,942	$6,397	$7,688	$30,674	47%
System Renewal and System Service	$(274)	$2,876	$18,692	$(9,498)	$(5,301)	$6,796	2%
General Plant	$(25,476)	$(9,838)	$38,462	$14,892	$28,216	$46,255	32%
TOTAL CAPITAL EXPENDITURES VARIANCE	**$(22,735)**	**$(5,331)**	**$69,096**	**$11,792**	**$30,603**	**$83,425**	

[13] Approved capital expenditures for 2016-2020 equate to those submitted, the $10M settlement reduction was applied to capital assets only

Table 5 – UPDATED FOR 2019 ACTUALS – 2016-2020 Capital Expenditures vs. Approved ($'000s)

CATEGORY	2016	2017	2018	2019	2020	Total	% Variance
Approved[14] (Net of Contribution)							
System Access	$15,300	$11,966	$12,205	$12,450	$12,699	$64,620	
System Renewal and System Service	$60,594	$65,780	$66,010	$66,452	$69,032	$327,868	
General Plant	$45,899	$48,138	$18,276	$18,695	$13,954	$144,962	
TOTAL CAPITAL EXPENDITURES	**$121,794**	**$125,883**	**$96,491**	**$97,597**	**$95,685**	**$537,450**	
Historical / Bridge (Net of Contribution)							
System Access	$18,316	$13,597	$24,147	$25,368	$20,387	$101,815	
System Renewal and System Service	$60,320	$68,655	$84,702	$56,328	$63,426	$333,432	
General Plant	$20,423	$38,300	$56,738	$34,158	$42,170	$191,789	
TOTAL HISTORICAL / BRIDGE CAPITAL EXPENDITURES	**$99,058**	**$120,552**	**$165,587**	**$115,854**	**$125,983**	**$627,035**	
Variance							
System Access (Net)	$3,015	$1,631	$11,942	$12,919	$7,688	$37,195	58%
System Renewal and System Service	$(274)	$2,876	$18,692	$(10,124)	$(5,606)	$5,564	2%
General Plant	$(25,476)	$(9,838)	$38,462	$15,463	$28,216	$46,827	32%
TOTAL CAPITAL EXPENDITURES VARIANCE	**$(22,735)**	**$(5,331)**	**$69,096**	**$18,257**	**$30,298**	**$89,585**	

The projected System Access capital expenditure variance (as submitted in the utility's original Application) of $30.7M over the five years is in line with the capital additions variance of $29.2M under section 5 above. After adjusting for 2019 actual System Access capital expenditures, the variance of $37.2M over the five years is in line with the capital additions variance of $39.2M under section 5 above. The variance is explained by increased third-party demand and lower capital contributions due to the mix of projects.

[14] Approved capital expenditures for 2016-2020 equate to those submitted, the $10M settlement reduction was applied to capital assets only

System Renewal and System Service capital expenditures are projected to only exceed budget by 2%, largely on account of higher Emergency Renewal than planned and historical levels associated with the 2018 extreme weather events.

The projected variance for General Plant capital expenditures is $46.3M. After adjusting for 2019 actual General Plant capital expenditures, this variance has been updated to $46.8M. This is larger than the capital addition variance of $11.5M (updated to $14.1M for 2019 actual capital additions) in Table 4 above primarily because the Facilities Renewal Program and HONI CCRA payments are not displayed in Table 4, in accordance with the Capital Variance Account that was approved for use as per the Decision rendered by the OEB on Hydro Ottawa's 2016-2020 rate application.[15] Total CCRAs for new service and true-up payments are projecting $50.4M over 2016-2020, as originally submitted. After adjusting for 2019 actuals, total CCRAs for new service and true-up payments are projected to be $49.7M over 2016-2020. The projection includes a $34.2M payment associated with Cambrian MTS. The CCRAs are significantly higher than historical spending and are set to exceed the budget of $24.6M by $25.8M. After accounting for 2019 actuals, CCRAs are set to exceed the budget of $24.6M by $25.1M.

The projects that led to these overages were carefully monitored by Hydro Ottawa. It was determined that proceeding with these projects was a sound business decision and was in the best interests of customers. Other projects in the utility's portfolio were delayed in an attempt to ameliorate these overages and lessen their impact. For example, some work at Riverdale TS, Overbrook TS, Bayswater DS, and Bells Corners DS was delayed.

Hydro Ottawa's new operations and administrative facilities were completed in 2019. As part of its Decision and Order on Hydro Ottawa's 2016-2020 rate application, the OEB concluded that the need for the facilities had been established.[16] During the settlement process for that application, all intervenors and OEB staff accepted the proposed project cost of $92.5M identified by Hydro Ottawa. Ultimately, the OEB approved $66.0M in "provisional funding" for the

[15] Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015).
[16] *Ibid,* page 5.

facilities, with any additional amounts being subject to a prudency review at the utility's next rebasing.[17] Hydro Ottawa has filed evidence in this Application to support its expenditures on these new facilities (UPDATED Attachment 2-1-1(A): New Administrative Office and Operations Facilities).

7. APPENDICES AND SPECIAL STUDIES

Attached to Exhibit 2-4-3: Distribution System Plan are the capital expenditure-related appendices that electricity distributors must submit, pursuant to the *Chapter 2* and *Chapter 5 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019. In addition, a number of special studies to support Hydro Ottawa's proposed capital expenditure plan and rate base levels for the 2021-2025 period are likewise attached.

These appendices and special studies are as follows:

- UPDATED Attachment 2-4-3(A): OEB Appendix 2-AA - Capital Programs Table
- UPDATED Attachment 2-4-3(B): OEB Appendix 2-AB - Capital Expenditure Summary
- Attachment 2-4-3(C): OEB Appendix 5-A: Chapter 5 Appendix
- Attachment 2-4-3(D): Independent Assessment of Hydro Ottawa's Distribution System Plan
- Attachment 2-4-3(E): Material Investments (section 2.3.3 of which has been updated)
- Attachment 2-4-3(F): Fleet Replacement Program
- Attachment 2-4-3(G): Strategic Asset Management Plan
- Attachment 2-4-3(H): Distribution System Climate Risk and Vulnerability Assessment
- Attachment 2-4-3(I): Hydro Ottawa Climate Change Adaptation Plan
- Attachment 2-4-3(J): ISO 55000 Gap Analysis
- Attachment 2-4-3(K): Local Achievable Potential Study
- Attachment 2-4-3(L): Metering Roadmap

[17] *Ibid,* page 6.

- Attachment 2-4-3(M): Asset Condition Assessment - Third Party Review

UPDATED DISTRIBUTION SYSTEM PLAN ATTACHMENTS

Hydro Ottawa's 2021-2025 Distribution System Plan ("DSP") is included in this Application as Exhibit 2-4-3. While the updates being made to this Application for purposes of incorporating 2019 actuals include certain updates to Exhibit 2-4-3, Hydro Ottawa is opting to forego re-filing of the Exhibit in its entirety for a few reasons.

First, the updates are very limited in their scope and number. What's more, both the length and electronic file size of Exhibit 2-4-3 are significant. Hydro Ottawa is therefore of the view that wholesale re-filing of the Exhibit would frustrate, rather than facilitate, efficient review of the updated Application materials.

In lieu of re-filing, Hydro Ottawa is including this cover sheet, which provides a summary of the modest set of updates to select Attachments of the Exhibit, as follows:

- UPDATED Attachment 2-4-3(A): OEB Appendix 2-AA - Capital Programs Table and UPDATED Attachment 2-4-3(B): OEB Appendix 2-AB - Capital Expenditure Summary – these appendices provide an overview of Hydro Ottawa's capital programs and expenditures, respectively. Both of these appendices have been updated to incorporate 2019 actuals.

- Attachment 2-4-3(E): Material Investments – the only updates to this Attachment are for the utility's Distribution Enhancements program within the System Service category. More specifically, the updates are in relation to the Smart Grid project known as "MiGen" described in section 2.3.3.

As originally submitted, section 2.3.3 of Attachment 2-4-3(E): Material Investments provides a full description of the MiGen project, including external partners engaged in project development and deployment. Among the key partners is Natural Resources Canada ("NRCan"). In identifying NRCan as a participant, Hydro Ottawa also states the following:

> *[NRCan] is a critical partner for this project. At the time of writing, in response to expressions of interest from NRCan itself, Hydro Ottawa is engaged in detailed discussions with NRCan regarding the lessons learned from the initial phase of the project and how these lessons can be incorporated into the next phase. Through this engagement, NRCan has signalled openness to adjusting the parameters of the project, if it can be demonstrated that such adjustments will add value and ensure that the broader objectives of both the project and NRCan's funding program will be met. Depending upon the outcome of further discussions with NRCan, Hydro Ottawa may subsequently submit updates to the project information included in this Application.*[1]

In step with the foregoing, and with the outcomes of Hydro Ottawa's recent engagement with NRCan on this matter, the utility is hereby submitting updates to the project information for MiGen. Please see the updated version of section 2.3.3 in Attachment 2-4-3(E): Material Investments for additional information.

[1] Attachment 2-4-3(E): Material Investments, page 357.

UPDATED - Appendix 2-AA
Capital Programs Table

Projects	2016	2017	2018	2019	2020 Bridge Year	2021 Test Year	2022 Test Year	2023 Test Year	2024 Test Year	2025 Test Year
Reporting Basis	**MIFRS**	**MIFRS**	**MIFRS**	**MIFRS**	**MIFRS**	**MIFRS**	**MIFRS**	**MIFRS**	**MIFRS**	**MIFRS**
System Access										
Plant Relocation	7,129	5,183	4,737	10,376	12,012	10,135	8,418	8,474	5,451	5,427
Residential	4,350	4,945	6,179	11,473	4,681	4,893	4,999	5,006	5,010	4,980
Commercial	11,880	10,990	19,519	9,176	11,023	16,078	13,465	11,639	11,806	11,914
System Expansion	8,726	3,833	5,984	11,703	19,128	20,116	8,685	6,960	6,769	6,289
Stations Embedded Generation	678	291	89	165	338	360	296	297	306	319
Infill & Upgrade	3,844	4,787	3,046	3,016	4,087	4,164	4,221	4,099	4,164	4,151
Damage to Plant	1,122	851	1,126	2,160	986	-	-	-	-	-
Metering	77	26	169	1,190	1,075	947	947	958	957	959
Sub-Total	37,805	30,908	40,849	49,259	53,331	56,693	41,032	37,434	34,462	34,039
System Renewal										
Stations Asset Renewal	13,346	13,991	20,478	7,683	6,970	9,938	12,071	8,444	7,437	9,316
OH Distribution Assets Renewal	11,801	11,099	10,846	5,879	8,011	7,999	8,795	8,795	8,841	8,044
UG Distribution Assets Renewal	9,677	9,421	9,023	4,927	8,327	11,082	10,780	11,164	11,079	11,077
Corrective Renewal	7,815	9,304	14,595	11,989	8,739	9,822	9,805	9,838	9,812	9,817
Metering Renewal	-	-	-	-	-	4,455	2,561	1,950	2,266	2,219
Sub-Total	42,639	43,816	54,942	30,478	32,048	43,296	44,012	40,191	39,436	40,474
System Service										
Capacity Upgrades	3,186	6,050	14,423	13,070	22,140	19,791	9,717	14,577	17,799	13,964
Stations Enhancements	219	1	14	3	21	905	459	459	459	459
Distribution Enhancements	12,715	11,805	6,108	5,931	6,165	2,614	13,636	5,981	4,597	4,796
Grid Technology	1,306	6,098	8,243	5,907	2,021	2,847	4,006	2,819	1,799	4,179
Metering	357	890	1,013	939	1,031	501	501	501	501	501
Sub-Total	17,783	24,844	29,801	25,850	31,378	26,658	28,318	24,337	25,155	23,899
General Plant										
Buildings - Facilities	3,904	18,207	46,658	19,017	453	428	428	403	403	403
Customer Service	1,296	2,275	38	4,676	5,099	2,539	1,616	846	826	1,188
ERP System	3,721	7,309	104	186	679	756	896	1,245	6,554	5,588
Fleet Replacement	2,619	1,584	1,195	562	1,632	6,345	4,526	2,220	1,681	2,008
IT New Initiatives	1,658	651	2,839	1,514	1,115	924	549	609	333	887
IT Life Cycle & Ongoing Enhancer	1,152	858	2,059	871	1,458	1,981	1,411	1,250	1,035	1,664
Operations Initiatives	937	1,327	199	1,227	1,624	1,681	1,572	321	928	477
Tools Replacement	390	442	503	933	450	474	474	462	465	469
Hydro One Payments	4,647	5,647	3,143	6,094	30,070	16,918	210	200	5,130	4,200
Sub-Total	20,323	38,300	56,738	35,080	42,580	32,047	11,681	7,556	17,354	16,884
Miscellaneous										
Total	**118,550**	**137,867**	**182,330**	**140,667**	**159,337**	**158,694**	**125,044**	**109,518**	**116,407**	**115,296**
Less Renewable Generation Facility Assets and Other Non-Rate-Regulated Utility Assets ***(input as negative)***										
Total	**118,550**	**137,867**	**182,330**	**140,667**	**159,337**	**158,694**	**125,044**	**109,518**	**116,407**	**115,296**

Notes:

1 Please provide a breakdown of the major components of each capital project undertaken in each year. Please ensure that all projects below the materiality threshold are included in the miscellaneous line. Add more projects as required.

2 The applicant should group projects appropriately and avoid presentations that result in classification of significant components of the capital budget in the miscellaneous category.

TO BE UPDATED AT THE DRAFT RATE ORDER STAGE

UPDATED - Appendix 2-AB

Table 2 - Capital Expenditure Summary from Chapter 5 Consolidated Distribution System Plan Filing Requirements

First year of Forecast Period:

2021

CATEGORY	Historical Period (previous plan1 & actual)															Test Years Forecast Period (planned)				
	2016			2017			2018			2019			2020			2021	2022	2023	2024	2025
	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Actual	Var	Plan	Bridge	Var					
	$ '000		%	$ '000		%	$ '000		%	$ '000		%	$ '000		%	$ '000				
System Access	38,936	37,805	-2.9%	35,156	30,908	-12.1%	35,132	40,849	16.3%	35,835	49,259	37.5%	36,551	53,331	45.9%	56,693	41,032	37,434	34,462	34,039
System Renewal	38,008	42,639	12.2%	30,047	43,816	45.8%	34,580	54,942	58.9%	34,100	30,478	-10.6%	33,769	32,048	-5.1%	43,296	44,012	40,191	39,436	40,474
System Service	22,585	17,783	-21.3%	35,733	24,844	-30.5%	31,430	29,801	-5.2%	32,353	25,850	-20.1%	35,263	31,378	-11.0%	26,659	28,318	24,337	25,155	23,899
General Plant	45,899	20,323	-55.7%	48,138	38,300	-20.4%	18,276	56,738	210.5%	18,695	35,080	87.6%	13,954	42,580	205.1%	32,047	11,681	7,556	17,354	16,884
TOTAL EXPENDITURE	145,428	118,550	-18.5%	149,074	137,868	-7.5%	119,418	182,330	52.7%	120,983	140,667	16.3%	119,537	159,337	33.3%	158,695	125,043	109,518	116,407	115,296
Capital Contributions	- 23,636	- 19,491	-17.5%	- 23,190	- 17,315	-25.3%	- 22,926	- 16,742	-27.0%	- 23,385	- 24,816	6.1%	- 23,853	- 33,354	39.8%	- 39,232	- 23,493	- 19,943	- 19,226	- 19,264
Net Capital Expenditures	121,794	99,058	-18.7%	125,883	120,552	-4.2%	96,491	165,588	71.6%	97,597	115,851	18.7%	95,685	125,983	31.7%	119,463	101,550	89,575	97,181	96,032
System O&M		$ 28,137	--		$ 29,158	--		$ 30,002	--		$ 28,556	--		$ 33,591	--	$ 32,779				

Notes to the Table:

1. Historical "previous plan" data is not required unless a plan has previously been filed. However, use the last OEB-approved, at least on a Total (Capital) Expenditure basis for the last cost of service rebasing year, and the applicant should include their planned budget in each subsequent historical year up to and including the Bridge Year.

2. Indicate the number of months of 'actual' data included in the last year of the Historical Period (normally a 'bridge' year):

Explanatory Notes on Variances (complete only if applicable)
Notes on shifts in forecast vs. historical budgets by category
See Section 8.1 of Exhibit 2-4-3: Distribution System Plan
Notes on year over year Plan vs. Actual variances for Total Expenditures
See Section 8.1 of Exhibit 2-4-3: Distribution System Plan
Notes on Plan vs. Actual variance trends for individual expenditure categories
See Section 8.1 of Exhibit 2-4-3: Distribution System Plan

(By way of this enclosure, Hydro Ottawa is updating the information in section 2.3.3 of Attachment 2-4-3(E): Material Investments, pertaining to the utility's Smart Grid project known as MiGen.

As noted in the cover letter addressed to the OEB Secretary that accompanies the updates to Hydro Ottawa's Application for 2019 actuals, the utility has utilized a specific convention to identify updated evidence. Any updates to Application evidence which incorporate 2019 actuals are marked with a yellow highlight. Any revisions to the original evidence (i.e. corrections) are marked with a highlight as well as ~~strikethrough~~.

The ensuing updates to section 2.3.3 of Attachment 2-4-3(E): Material Investments represent a lone exception to Hydro Ottawa's use of the strikethrough convention. ***Herein the use of strikethrough denotes an update.*** *Hydro Ottawa believes that use of this exceptional approach is warranted in this singular instance, in light of the number of updates to the project summary and the need to ensure efficient review of the updated information by parties to this proceeding).*

2.3.3. DISTRIBUTION ENHANCEMENT

The Distribution Enhancements Budget Program includes two main programs - The Smart Grid Fund Initiatives and the MiGen Program (formerly known as The GREAT DR V2), as well as other minor Distribution Enhancements projects.

Through this program, Hydro Ottawa's total investment over the 2021-2025 period is ~~$12.1M~~ $12.4M. In Historical Years, Hydro Ottawa has invested ~~$8.9M~~ $7.2M in the 2016-2020 period. Projects covered under this program are discussed in further detail in the following sections.

2.3.3.1. Smart Grid Fund Initiatives

2.3.3.1.1. Project Summary

The Smart Grid Fund Initiatives program is designed to provide a funding stream for a portfolio of innovation initiatives. These innovation initiatives will provide for the enhancement of tools, technologies, training, or processes in a system operating context that are core to Hydro Ottawa operations and effectiveness. In addition to having a continued internal funding mechanism, Hydro Ottawa will pursue external innovation funding sources such as provincial and federal governments and non-government organizations (e.g Natural Resources Canada, Ontario Ministry of Energy or Independent Electricity System Operator of Ontario). Having a planned investment level and timing will enhance the planning and execution of innovation projects as staff across the organization will be able to provide input towards a known timeline and funding envelope.

2.3.3.1.2. Project Description

Current Issues

The Smart Grid Fund Initiatives project includes innovative initiatives which are part of Hydro Ottawa's Smart Energy Roadmap - a comprehensive plan developed by a cross-functional team of employees forming Hydro Ottawa's Smart Energy Steering Committee. This committee is primarily a combination of management staff from the Information Technology and Distribution Engineering and Operations divisions. With this cross sectional nature and the active participation from the executive management team, the committee is an effective driver for innovation and improvement.

The Smart Energy Roadmap, is the integrated "whole of company" plan to achieve Hydro Ottawa's Smart Energy vision. This vision is articulated in the company's Strategic Direction 2016-2020, which also offers the following definition of "smart energy": "an energy system that makes effective use of available technologies to maximize consumer, community and environmental benefit. It is sustainable, customer-centric, reliable, cost-effective, secure, and constantly evolving. It is responsive to evolving needs and opportunities, and focused on tangible benefit." The projects under the Smart Grid Fund Initiatives program represent only a subset of the Smart Energy Roadmap initiatives, other initiatives are being undertaken as their own program, or integrated augmentation to existing activities. Some of the initiatives being undertaken as their own program include: Self Healing Grids (Section 4.2.1), AMI outage management Integration (Section 4.1.4) and ~~The GREAT-DR v2~~ the MiGen program (Section 3.3.2).

Project Scope

Projects planned for the 2021-2025 window include:

- Outage Intelligence. The development of the ability to automatically locate and identify the root cause of distribution system faults.
- Outage Analytics. The development of custom reporting and analytics to be available to any and all Hydro Ottawa staff.
- Smart System Planning: Expand and augment the tools and techniques to provide system information to key decision makers in order to support decisions that align to the real condition of the grid.
- Outage Prediction. Machine learning and Artificial intelligence to identify and prevent incipient faults.

Main and Secondary Drivers

The primary drivers of the Smart Grid Fund Initiatives are:

- Reliability: The primary strategic outcome sought by the Smart Energy Roadmap is the target of developing enhanced grid reliability, and service offerings to enable the provision of 100% reliable electrical service.
- Other Performance/Functionality: The second strategic outcome sought by the Smart Energy Roadmap is to Position Hydro Ottawa to provide its customers with proactive and innovative energy solutions which align with our customers' needs, preferences, and objectives. Leveraging innovation and technology to align Hydro Ottawa with both current and future market trends
- System Efficiency: One of the key pillars of the Smart Energy strategy as defined in the roadmap is to leverage existing infrastructure and personnel by seeking opportunities

that leverage staff's existing knowledge, key competencies, and Hydro Ottawa's physical infrastructure

Performance Targets and Objectives

In selecting specific projects or initiatives to support under the Smart Grid Fund program, the Smart Energy Steering Committee will apply the following criteria:

- Innovation and Technology – Initiatives that leverage technology to align with both current and future markets and position Hydro Ottawa to be Best in Class will be supported.
- Reliability and System Resilience – Initiatives that assist Hydro Ottawa in moving closer to 100% reliability, by improving customer service continuity measures will be supported.
- Environmental Sustainability – Initiatives that serve to reduce environmental impact, supporting Hydro Ottawa and its customer's transitional goal to achieve a net zero carbon future will be supported.
- Revenue Growth and Diversification – Initiatives that have the potential to expand current value and revenue streams, while increasing efficiency of Hydro Ottawa's grid will be supported.
- Leveraging Infrastructure and People – Initiatives that provide opportunities to leverage existing knowledge, key competencies, and physical infrastructure will be supported.

2.3.3.1.3. Project Justification

Alternatives Evaluation

Alternatives Considered

Alternatives considered for the Smart Grid Fund Portfolio:

- Proceed with proposed Smart Grid Fund investments
- Proceed with a different or curtailed portfolio of investment or
- The 'do-nothing' alternative which would ultimately result in a reduced capacity for

innovation

Evaluation Criteria

The investment alternatives were evaluated for alignment with the performance objectives listed in Section 3.3.1.2.4. Further evaluation was completed considering support of the System Service criterion of:

- Safety
- Reliability
- Power quality
- System efficiency
- Other performance/functionality

Preferred Alternative

As described in Section 3.3.1.2.3 above, the strategic direction of the Smart Energy Roadmap and the processes that will be used by the Smart Energy Steering Committee to evaluate and specific initiatives to support under the Smart Grid Fund Portfolio align very well to 3 of the above 5 criteria, and the investment portfolio has been prioritized through its impact to performance objectives. It is therefore preferred to proceed with the selected project portfolio.

Given the ongoing initiatives in the 2018 through 2021 time frame (as described under the ~~The GREAT-DR project 9202014255~~ MiGen program) and the other technology investment projects in flight through the 2021 through 2025 time frame it was decided to create a funding envelope that met the following criteria:

- Timing: The years 2022-2025 contained the least number of complex innovation/technology investment projects therefore these years were chosen for the innovation investments

- Funding Levels: The years 2022-2025 contained a reduced level of innovation/technology investment, therefore the following investment levels were selected

Table 2.53 - Historical and Future Smart Grid Fund Program ($’000,000s)

	Historical			Bridge		Test				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Expenditure							$0.50	$1.01	$1.05	$0.93

Benefits

While the benefits of the individual project initiatives within the program are yet to be completely defined, the process by which the initiatives are selected for funding does take into account the benefits in the following categories.

Table 2.54 - Project Benefit

Benefits	Description
System Operation Efficiency and Cost Effectiveness	As stated above, one of the key pillars of the Smart Energy strategy as defined in the roadmap is to leverage existing infrastructure and personnel by seeking opportunities that leverage staff's existing knowledge, key competencies, and Hydro Ottawa's physical infrastructure. This leveraging will result in direct improvements to the System Operation efficiency and cost effectiveness. Furthermore, one of the key criteria used to evaluate projects for support is Innovation and Technology.
Customer	The primary strategic outcome sought by the Smart Energy Roadmap is the target of developing enhanced grid reliability, and service offerings to enable the provision of 100% reliable electrical service. The second strategic outcome sought by the Smart Energy Roadmap is to Position Hydro Ottawa as the provider of proactive and innovative energy solutions which are driven by our customers' needs, preferences, and objectives.
Safety	While safety is not a specific criterion that has been called out by the Smart Energy Roadmap, it is expected that safety remains at the core of all Hydro Ottawa projects and as such initiatives the further enhance the safety of customers and staff will be given priority.
Cyber-Security, Privacy	While cyber-security is not a specific criterion that has been called out by the Smart Energy Roadmap, it is expected to be a factor in the evaluation of the initiatives alignment to the Innovation and Technology criteria.
Coordination, Interoperability	N/A
Economic Development	Initiatives that have the potential to expand current value and revenue streams, while increasing efficiency of Hydro Ottawa's grid will be supported, therefore there is a significant potential for the development of new business within the Hydro Ottawa group of companies or through partnerships with other utilities and 3rd parties.
Environment	Initiatives that serve to reduce environmental impact, supporting Hydro Ottawa and its customer's transition to a net zero carbon future will be supported

2.3.3.1.4. Prioritization

Consequence of Deferral

The Smart Grid Fund Program is intended to foster and support innovation and improvement within Hydro Ottawa. Deferral of the creation of the Smart Grid Fund program could result in missed or delayed opportunities for innovation, improvement, or 3rd party funding support.

Priority

Based upon the issues described in section 2.1, and potential benefits described in section 3.3; this program is considered a Medium priority.

2.3.3.1.5. Execution Path

Implementation Plan

The implementation plan for the Smart Grid Fund program is based on a governance model as provided by the Smart Energy Steering Committee. This includes an intake process for innovation ideas and proposals and evaluation criteria that is articulated in the Smart Energy Roadmap document. Through the 2021-2025 window Hydro Ottawa will undertake to:

- Outage Intelligence. The development of the ability to automatically locate and identify the root cause of distribution system faults. Investing in models to leverage existing, and newly available data to respond to system outages.
- Outage Analytics. The development of custom reporting and analytics to be available to any and all Hydro Ottawa staff.
- Smart System Planning: Tools and techniques to provide system information to key decision makers in order to support decisions that align to the real condition of the grid. Dissemination of asset data in real time, and forecasting system loads in local neighborhood levels.
- Outage Prediction. Machine learning and Artificial intelligence to identify and prevent incipient faults.

The individual projects will be evaluated and prioritized according to impact, timing, and budget.

Risks to Completion and Risk Mitigation Strategies

As the Smart Grid Fund program contains many initiatives, there is little risk to execution of the overall program. Projects and initiatives can be exchanged or re-prioritized based on the issues or constraints discovered.

Timing Factors

There are essentially two elements that could affect the timing of the investments under the Smart Grid Fund Program.

- Availability of external funding: There is a potential that the funding available requires the adjustment of the internal investment profile.
- Availability of staff: As with any project execution, internal resources are critical in order to ensure success. Innovation projects have the potential of being deferred in order to support programs and projects that are considered essential to Hydro Ottawa.

Cost Factors

As with any innovation portfolio, there is a possibility that the technology aspects of the initiative proeve to be more complex and therefore costly than originally anticipated. The mitigation strategy is to secure external funding so that the risk is shared across multiple sources of funds.

Other Factors

As with any innovation portfolio there is the potential of new technology developments or regulatory constraints that could affect the overall execution of the program. However, as there are several candidate initiatives under the Smart Grid Fund Program, the potential of failure is significantly reduced.

2.3.3.1.6. Renewable Energy Generation (if applicable)

N/A

2.3.3.1.7. Leave-To-Construct (if applicable)

N/A

3.3.1.8. Project Details and Justification

Table 2.55 - Project Benefit

Project Name:	Smart Grid Fund Initiatives
Capital Cost:	$3.49M
O&M:	TBD
Start Date:	1-Jan-2022
In-Service Date:	Multiple
Investment Category:	System Service
Main Driver:	Reliability
Secondary Driver(s):	System Efficiency and Other Performance objectives
Customer/Load Attachment	All customers
Project Scope	
The scope of initiatives that will be supported under this portfolio will be determined according to Hydro Ottawa's Smart Energy Roadmap that has been prepared by a cross-functional team of employees known as the Smart Energy Steering Committee. This committee is focused on developing a strategy for innovation and process improvement within the utility operations in order to improve both efficiency and effectiveness	
Work Plan	
The planned initiatives will be executed in the windows listed below. ● Outage Intelligence (2022-2023) ● Outage Analytics (2021-2022) ● Smart System Planning(2023-2025) ● Outage Prediction (2025)	
Customer Impact	
The primary strategic outcome sought by the Smart Energy Roadmap is the target of developing enhanced grid reliability, and service offerings to enable the provision of 100% reliable electrical service. The second strategic outcome sought by the Smart Energy Roadmap is to position Hydro Ottawa as the provider of proactive and innovative energy solutions which are driven by our customers' needs, preferences, and objectives.	

2.3.3.2. MiGen Program (formerly known as The Grid Edge Active Transactional Demand Response 2.0)~~ (The GREAT-DR v2, currently known as "MiGen")~~

2.3.3.2.1. Project Summary

MiGen was formerly known as The Grid Edge Active Transactional Demand Response 2.0 project *(abbreviated as The GREAT-DR v2, or TGDR2).* This program consists of projects that enable and empower customers to participate in a smart transactive energy future. These projects will focus on resolving the ~~There are~~ many stressors on the electricity grid including cost, grid management, climate change, and electrification, while delivering customer centric solutions with behind the meter technologies. Projects may be initiated by Hydro Ottawa or third parties with which Hydro Ottawa is a collaborator.~~ and meeting increasing customer expectations for more autonomy.~~

To evolve and enhance the electricity system, the MiGen program ~~The GREAT-DR v2 (TGDR2) project~~ was created to address these stressors for the stakeholders. A previous project under MiGen was The GREAT-DR. The GREAT-DR sought to optimize existing distribution, transmission and centralized generation infrastructure by managing supply-demand locally and trickle the benefit upstream.~~ with an open source, worldwide royalty free interoperable solution platform in place of the standard costly one outcome wires solution. This end-to-end interoperable platform and by design adheres to Privacy-by-Design, best cybersecurity practices and interoperability. The architecture is hierarchical to serve from the market operator to the prosumer at the edge, and is largely decentralized in grid management for visibility, autonomy, resiliency and scalability. The GREAT-DR largely consists of smart software solutions with physical hardware for monitoring, computing and communicating.~~

The Lessons Learned from this early project will be used to guide future MiGen projects with the goals of:

1) Focusing on behind the meter technology

2) Developing partnerships, collaborations with vendors and stakeholders

3) Supporting the adoption of technology by the utility and its customers

~~The GREAT-DR effect on the grid is to optimize existing distribution, transmission and centralized generation infrastructure by managing supply-demand locally. This will thus enable:~~

~~(1) Customer loads to follow supply of GHG-free electricity sources and minimize need for new fossil generation;~~
~~(2) Grids to optimize utilization to their dynamic capacity (not just the lower set planning limit), minimizing need for costly infrastructure upgrades;~~
~~(3) DERs to effectively integrate to the grid; and~~
~~(4) Markets that encourage prosumers to automatically bid their DERs into the grid and trade with others.~~

~~This will be done by establishing premise, local, zonal and grid level DER management while providing a Transactive Energy Market (TEM) that compensates participating prosumers.~~

~~The project will establish DERs at community housing complexes and private residences in the Ottawa-area and demonstrate the solution through 2020 at approximately 200 customer premises.~~

2.3.3.2.2. Project Description

Overall, the MiGen program will help evolve the grid from being load-following to supply-following. The projects may also manage the balance across prosumers to support and help enable Net Zero Carbon Communities, and accelerate electrification (transportation and heating) required to meet economic and climate change goals by ensuring existing grid infrastructure can accommodate load growth.

Current Issues

There are several stakeholders in the electric utility industry, and each has issues that are unique, yet while also sharing some ~~and also~~ similar issues. The current major issues are:

1) Grid Management Constraints

Ability for the ~~Factors affecting~~ market operator and local distribution company to optimize ~~optimization of~~ grid management (planning, investing and operating) is limited by the ~~are~~ level of grid visibility, control, and ability to act (personnel plus systems resources). ~~Spinning reserve, lower asset loading, and single contingency are examples of costly idle buffer capacity to cover for comfortable margins of error. Also, provincial demand response has addressed the provincial peak for reasons largely to balance supply to demand. However, peak loading of any distribution system asset is very much likely not coincident to another asset or the provincial peak.~~

~~Another constraint is that~~ In addition, many utility grid management tools are not interoperable and that can lead to increased cost pressure and stranding of assets if the asset cannot keep up to the required functionality.

~~The GREAT-DR will provide grid edge level very near real time visibility to the utility and market operator for optimal planning and operation, plus control of loads and sources that can aggregate to meaningfully benefit grid loading, quality and stability.~~

2) Social

Customers are seeking more autonomy, personalized service, or more control of their usage and thus the amount of their bill. Time-of-Use rates have helped move off the traditional provincial peak, but the peak has shifted because of more dispersed generation and change in customer behaviour. However, the system peak is not the same across the transmission planning zones, the utilities within these zones, or neighbourhoods within a utility service area, so the challenge is in socializing customers to local constraints too without confusing or overburdening them. Also, customers vary in their want (behaviour) or ability (demographic, tool or premise constraints) to participate in energy reduction or load offset activities.

MiGen will seek to support the deployment of technologies and tools to the customer premise in order to help the customer and utility collaborate in the effective management of their electrical and utility loads. ~~The GREAT-DR democratizes the grid and provides benefits to all stakeholders, including those living in community housing. By managing at the edge and scaling to hundreds of thousands of customers, shoring of the grid can be shared across all prosumer types and amongst more variety of meaningful loads and energy sources at the edge. Transactive Demand Response over a larger prosumer base would reduce the reliance, or burden, on few participants and increase probability of achieving grid shoring targets. By actively managing the loads and sources to the dynamic asset capacity rating, the~~ The customer benefits with greater ability to electrify more, connect more green energy sources, and storage, plus will benefit from the increased utilization of their and the utility's existing assets. ~~Added social benefit is the fact that The GREAT-DR is built on the three pillars of Privacy-by-Design, cybersecurity, and Interoperability.~~

3) Economic:

~~Economically, the bottom line~~ An important consideration for a customer is their electricity bill and fees imposed to meet interconnection requirements when adding more load or energy sources within their premise, including service entrance upgrades if needed.

Present rate structures are not conducive to non-incented introduction of dispersed generation or energy storage. However, tools for the customer to manage their bill under a fixed load contract or critical peak pricing structure, or even to have or take advantage of a Transactive Energy Market are not mature. Grossly breaking down the rate structure into the commodity and delivery components, it is the latter that the utility can influence through its investment and management of the grid.

Under the MiGen program, projects~~ The GREAT-DR, as a tool,~~ will help create optional rate structures for prosumers, similar to mortgage structure options, which are suitable for the type of participation they want in the grid. Also, by providing a more feasible non-wires solution, the projects~~ The GREAT-DR~~ can help utilities reduce spending on bulking up the grid assets and save money or refocus on under met reliability needs.~~ Because of the interoperability requirements of the GREAT-DR, there is a higher likelihood of not-stranding grid-supporting assets.~~ Other economic benefits come from: the ability to allow higher penetrations of electrified loads and sources.~~; greater competitiveness in provision of The GREAT-DR shore supporting devices because of the open source, worldwide royalty free platform, and it will allow; compensation of prosumers for helping shore the grid, through establishing a Transactive energy market that also allows prosumers to trade energy amongst themselves; lower commodity prices since The GREAT-DR machine learning will allow the market operator to forecast and predict better, and rely on other methods of providing least cost of service; provision of ability to improve reliability by autonomously managing energy source interconnection set-points adhering to the IEEE 1547-2018 generation interconnection standard i.e., ride through transient aberrations in the grid, plus help in restoring service quicker by allowing generation to offset load and provide for more than an N-1 contingence, including sustainment of an isolated micro-grid.~~

4) Environmental

The environmental issues reflect physical, social and economic implications. Climate change can radically change the asset dynamic loading capacity, and can create transient aberrations or longer term disruptions to electrical service. Customers are increasingly concerned about their impact on the environment and policy makers are following suit to transition, for example, to net-zero carbon (NZC) buildings and homes.

~~Overall, The GREAT-DR will help evolve the grid from being load-following to supply-following. The GREAT-DR, by dynamically managing loads and energy sources at the grid edge, will help reduce reliance on fossil fuel peaking plants to mitigate intermittence of green sources or a bit~~

~~longer peaking periods. It can also manage the balance across prosumers to achieve Net Zero Carbon Communities, and accelerate electrification (transportation and heating) required to meet climate change goals by ensuring existing grid infrastructure can accommodate load growth.~~

~~Project Scope~~

~~This is a project that will demonstrate an alternative to the wires and centralized generation solution for growing electrical load, plus a least-cost-of-service option for shoring the grid.~~

~~The GREAT-DR v2 (which has more recently been re-branded as “MiGen”) will span approximately three years from Nov. 20/’18, to Mar. 31/’22 under the NRCan Smart Grid Fund, and will extend an additional five years for monitoring performance.[4] Hydro Ottawa will own the assets and be responsible for such for the duration of its useful life. These assets include a mix of solar PV, smart inverter types, battery energy or thermal storage systems, air-source heat pumps, smart thermostats and load control modules, plus The GREAT-DR elements and subscribed requisite software supporting systems, such as the software for machine learning, Transactive Energy Market, Back Office System, customer loyalty and settlement, and user GUI.~~

~~The GREAT-DR solution platform will be standards based and remain an open source, worldwide royalty free platform is pillared by Privacy-by-Design, best cybersecurity practices, and interoperability principles. The IEEE 2030.5 standard is the foundation for interoperability. Through IEEE, not-for-profit worldwide organisation that advanced technology for the benefit of humanity, Hydro Ottawa and its partners will inform the standard roadmap and certification assessment program. IEEE will host and protect The GREAT-DR within its Open Source Community.~~

~~[4] Natural Resources Canada (“NRCan”) is a critical partner for this project. At the time of writing, in response to expressions of interest from NRCan itself, Hydro Ottawa is engaged in detailed discussions with NRCan regarding the lessons learned from the initial phase of the project and how these lessons can be incorporated into the next phase. Through this engagement, NRCan has signalled openness to adjusting the parameters of the project, if it can be demonstrated that such adjustments will add value and ensure that the broader objectives of both the project and NRCan’s funding program will be met. Depending upon the outcome of further discussions with NRCan, Hydro Ottawa may subsequently submit updates to the project information included in this Application.~~

~~An outcome of The GREAT-DR platform will be a template strategy for achieving a Net-Zero Carbon Community (NZCC) community overlaid with market-driven Transactive Demand Response (TDR) solution that optimizes energy sources and loads in real-time for an overall smart energy network (TGDR2) and encourages prosumer behaviour change. Thus, it will be used to:~~

~~i) engage and educate participating customers and others towards becoming prosumers,~~

~~ii) directly connect prosumers with the system and market operator through a Transactive Energy [shadow] Market (TEM) and compensate them for savings they provide the utility and bulk system, and~~

~~iii) engage the regulator, market operator, and governments for informing policy and program development.~~

~~TGDR2 will manage DERs in real-time within the grid's dynamic operating limits through automatic and active negotiation between devices that use or produce electricity at the customer-level. This is through:~~

~~i) at the premise-level, a home energy management system controller (HEMS-C) and customer agent (CA),~~

~~ii) at the local (i.e., neighbourhood) and zonal-level through transactive / transformer agents (TA), and~~

~~iii) at the grid-level, a back office system (BOS).~~

~~The second version of The GREAT-DR platform will be enhanced beyond Technology Readiness Level Five (TRL5) – Demonstration and thus much closer to providing sustained grid benefit. It will be deployed to the participants in the first version, and the 200+ participants in the second version. The participant demographic varies include a variety of age groups, income levels, states of employment, load types and sources, plus personalities.~~

~~Main and Secondary Drivers~~

~~The main and secondary drivers for The GREAT-DR (currently known as "MiGen") follow.~~

~~**Proprietary and Non-interoperable Grid Solutions:**~~

~~There are many solutions for Demand Response and though they may have some interoperability features, they are not truly interoperable because of selectivity from within a standard and proprietary additional layers. This situation handcuffs the adopting utility to, for example, a specific product development roadmap, vendor's service or product line, and ongoing fees. Also, few solutions have been developed with the utility full spectrum need in mind. The utility should demand systems used in the management of the grid to be interoperable, but can only do so if there is a common rule book to follow i.e., IEEE2030.5, and platform to plug into i.e., The GREAT-DR.~~

~~**Poor Resiliency from Centralized Systems:**~~

~~There are other parties attempting a Transactive Demand Response platform, however, development is in infancy and not gaining interest for three reasons: relying on a centralized architecture, being proprietary, and lax on customer privacy. A data heavy, centralized system is inherently costly in infrastructure, more latent, plus lower in performance and wider in affected service area when parts of the central system fail.~~

~~**Sole Purpose Solutions:**~~

~~The many behind-the-meter technology management devices serve a single purpose, like thermostats for temperature, load controllers for on/off of medium or large loads, solar inverters for generation output, and battery systems for absorbing or sourcing energy. For a utility to interact with each of these devices individually is impractical, and non-optimal. An intelligent device that can manage each and be the contact to the grid is ideal. The GREAT-DR Home Energy Management System Controller element would be the interface that smartly coordinates management of these technologies.~~

~~**Fear of Overwhelming Data Management and Communications:**~~

~~Data from behind-the-meter devices have been seen as a treasure, and the overhead, security and privacy concerns of funnelling all that data to a centralized location for processing and storing has typically been ignored. True, the speed and cost of managing big data is improving, but the other problems remain. A data governance model for defining the necessary data, handling and storage in a hierarchical, decentralized system can overcome these problems. TGDR ensures an efficient, secure and open-format data management. As a result, the project right-sizes data exchange (2-4kB files), ensures privacy, and establishes a cyber-secure firewall between prosumers and the grid (both in terms of its depth and breadth). Predictive analytics forecasts when DER support is needed.~~

~~Supervision-Intense:~~

~~The system operator, grid planner and prosumers are overtaxed with tasks and data. For the utility, it's becoming increasingly complex to decipher, forecast or predict the load profile, prepare work plans, restore power, and determine infrastructure needs because of the radical dynamics in the grid caused by intermittent or dispersed generation, micro-grids, mobile loads, and energy storage. For the customer, it's becoming increasingly complex to adapt to changing messaging regarding grid needs (energy conservation or demand reduction), and stay diligent in complying so they can reduce their bill. These issues will become increasingly difficult with higher penetrations and introduction of Transactive Demand Response, unless the data is streamlined, and the activities more automated, as is being done with The GREAT-DR. As an example, without automation and machine learning of The GREAT-DR, the utility's management of the set-points per the new generation interconnection standard IEEE 1547-2018 as the grid feeder connection (normally open point) changes, and a planner's ability to know an asset's real loading becomes intensely laborious, prone to error and nevertheless costly.~~

~~Complex Integration & Management of New Technologies:~~

~~Utility and prosumer integration and management of new technologies is complex to assess and because of lack of good tools and skill, penetration levels are constrained, interconnections costly, and management complex as explained herein.~~

~~Microgrids: TGDR negotiates to optimize load-source-infrastructure balance where renewables, storage and load control exists in reasonable proportion. It will control fuel-source optimization, for example between a fossil fuel and electricity. It can be used to interact with ant tertiary controllers for a microgrid.~~

~~Energy Storage: TGDR2 will strategically use TRL5+ battery and thermal storage technology to increase power and other energy system flexibility as an integrated solution, and will prove stacked value.~~

~~Distributed Energy Resource Management (DERM): our approach will integrate behind-the-meter customer energy loads and sources into the grid. Optimization decisions dispatch, storage, and on best fuel source will be made at the customer level using system-level information. The back office system contemplated as part of this project is an innovative DERMS.~~

~~EV integration: TGDR2 treats EVs as watts and nega-watts for Vehicle-on-Grid (VoG) management. Thus, the intent is to manage EV charging within electrical service constraints to avoid service upgrades still providing for customer-centric charging.~~

~~Forgetting the Customer:~~

~~Customers are no longer just complaining about their electricity bill or concerned about the environment, they want to act. When they purchase an EV, generation or storage system they expect simple, non-costly interconnection service from the utility, and the best return. Also, when Demand Response strategies are adopted, they want their comfort, privacy and no complexity, and final say. Customers in effect are becoming prosumers, and their satisfaction can be improved by involving them to the extent they wish, in helping reduce their bill with minimal effort on their part. TGDR includes a novel approach to engage them and encourage participation in shoring the grid through an automated approach that considers their~~

~~preferences, keeps their activity private and secure, provides feedback, and is powered by voice assistance. The prosumers will be rewarded for their contribution to shoring the grid. Using a tier prosumer classification approach, different awareness strategies can be used to educate or encourage prosumers in their energy use.~~

~~**Performance Targets and Objectives**~~

~~The targets to achieve with TGDR are:~~

1. ~~To have 90%+ participant satisfaction.~~
2. ~~To demonstrate the economic benefit to the ISO, DSO and prosumer in helping shore the grid using The GREAT-DR.~~
3. ~~To be able to offset at least on average of 2kW of coincident load on a neighbourhood transformer for each participating premise.~~
4. ~~To have a Transactive Demand Response activity issued and acted upon, in non-emergency cases, and targets achieved within five minutes; in emergency cases, to do so within 30 sec.~~
5. ~~To demonstrate how generation can help restoration efforts and not remain off until five minutes have passed after restoration.~~

2.3.3.2.3. Project Justification

Alternatives Evaluation

Alternatives Considered

Alternatives considered for the MiGen program:

~~Purchase of DERMS system: these are centralized back-office systems that can indirectly control dispersed generation assets. However, they are complex, highly dependent on accurate grid modeling and data mapping, plus costly to implement and maintain. Also, they do not~~

~~involve the customer as a prosumer and add-on equipment, modules or services are likely restricted to OEM-only options.~~

Increasing grid asset capacity: commonly referred to as “the wires solution,” this is a relatively simple, traditional though costly solution. Decisions on increasing grid infrastructure capacity are typically made when peaking is just even a few hours a season because of poor grid visibility, data analytics, or alternative tools for mitigating relatively short loading periods. The ramifications of increasing distribution transformer size at the edge trickles upstream and translates to requirement for increasing capacity of cabling, wiring, duct bank sizes, pole classes, switching equipment, station transformation, and so on. ~~Money saved could better be left as saved if not spent to address reliability.~~

Adopt proprietary non-interoperable interfaces: there are vendors that offer demand or energy management systems, and if they have an interface for utility oversight or management, their solutions require their own proprietary - and largely non-interoperable or transparent -- interfaces with the utility. These systems only work with certain consumer behind-the-meter devices sold from or aligned with the same OEM. It would be costly and complex for a utility to manage an interface per OEM or even align to one OEM; customers will want choice and not accept imposition of what to procure and from whom. The goal of the MiGen program is to work towards~~The concept behind TGDR is to have~~ one interface for the utility and customer, and same rules for the OEMs to follow if they want their products or services to interact with the grid.

Do-Nothing: potentially costly – to the customer -- generation, storage or electrified load interconnection, and costly accommodation for the utility. Doing nothing can prematurely age assets and lead to worsening reliability. It will also reduce penetration of electrified loads, generation or storage. Also, there won’t be a feasible way to manage inverter connected generation under IEEE 1547-2018.

Preferred option: To invest in technologies and initiatives that enhance the collaboration between the utility and customer.~~other than TGDR, it is increasing grid asset capacity, though costlier it provides for customer choice and simplicity for the utility.~~

Evaluation Criteria

A detailed quantitative evaluation criteria of the following factors will be used to assess each of the projects undertaken by the MiGen program:

- Performance
- Benefits
- Economic
- Environmental

The evaluation criteria will be used for comparing alternatives during front-end engineering evaluations and, more importantly, during the demonstration phase of the project.

~~Provide a description of evaluation criteria that were used to compare alternatives.~~

~~The evaluation criterion for comparing alternatives at this project demonstration phase is qualitative. During the third year of the three-year demonstration project, a qualitative assessment will be more meaningful.~~

Preferred Alternative

The preferred alternative is for Hydro Ottawa to invest in technologies and interfaces to devices (loads and sources) behind the meter so that as a utility we can attempt to bridge the gap between the utility companies and the customer.

~~The preferred alternative to The GREAT-DR solution is simply defaulting to increasing grid asset capacity. Assessment of this project using traditional asset management investment tools are not suitable as The GREAT-DR project is a novel demonstration project at this time to learn and provide the industry an alternative to other non-ideal solutions, including an alternative to the "preferred alternative" selected here. The strong potential upside benefit to all the stakeholders~~

~~should justify this trial. The lessons learned will provide the necessary information for traditional asset investment evaluation methods.~~

Project Timing & Expenditure

Hydro Ottawa has cultivated prior experience and success in supporting this type of innovation. Hydro Ottawa team would be deploying an updated methodology, one that has been tuned for higher performance by the lessons learned from previous projects.

As one can see from the investment profile that is included below in the table, the initiatives will begin in the year 2021 where we will be gathering the team and collaborators, as well as planning for the next upcoming years. The execution year will be 2022, during which the utility will be deploying, gathering data and adjusting prior to full release of a potential platform. Maintenance costs and service licensing of $750,000 are spread evenly across for 2023-2025. ~~Despite many challenges, for the first version of The GREAT-DR, Hydro Ottawa recruited 13 participants, plus kept its expenditure commitment to within 2% of budget. The first TGDR platform was partially funded by the Ontario Smart Grid Fund (OSGF) and the LDC Tomorrow Fund. Hydro Ottawa's proposal was to demonstrate the platform using five computers mimicking five different customers. Instead the OSGF asked if Hydro Ottawa could demonstrate with up to 30 real participants. Without additional funding to cover behind-the-meter installations, Hydro Ottawa was able to secure partners that provided greatly discounted products and services, and provided the discounted package for Participants. Prospective participant interest was high and oversubscribed; however, project conditions (e.g., roof condition & orientation; electrical service; interest of others connected to the same distribution transformer, load variety, etc.) ruled any out, and political climate leading up to the provincial elections complicated and hindered recruitment.~~

~~In the second year of this three-year demonstration project, additional to the technical assessment for TGDR, Hydro Ottawa will conduct a comprehensive economic and social assessment versus alternative solutions.~~

Cost on MiGen ~~TGDR2~~ is being mitigated by:

- Applying for funding from other sources.
- Requiring collaborating partners to "have skin in the game" by: providing products and services at or below most preferred customer pricing; agreeing, where reasonable, to fixed paid budget; providing in-kind support to cover risk that may arise during execution of their role.
- Planning heavily upfront in the project execution process and managing the project professionally throughout the timeline.

Table 2.56 - AS ORIGINALLY SUBMITTED - Historical and Future Expenditure Levels ($'000,000s)

	Historical			Bridge		Test				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Expenditure (Gross)				$1.07	$1.48	$4.65	$1.01			
Capital Contribution					$(2.68)	$(3.08)	$(1.98)			
Contributed Plant					$1.50	$1.06	$0.25			
Expenditure (Net)				$1.07	$0.31	$2.63	$(0.71)			
Total Expenditure				$1.07	$0.31	$2.63	$(0.71)			

Table 2.56 - UPDATED FOR 2019 ACTUALS - Historical and Future Expenditure Levels ($'000,000s)

	Historical			Bridge		Test				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Expenditure						$0.31	$1.91			

Table 2.57- Program Benefits

Benefits	Description
System Operation Efficiency and Cost Effectiveness	Since MiGen~~TGDR (currently known as "MiGen")~~ provides benefits to the Prosumer, utility and market operator, the cost is also spread across these stakeholders and makes it more affordable to each. Unlike traditional solutions, MiGen~~TGDR~~ offsets costs for each stakeholder. System Operating Efficiency: helping restoration by semi-autonomously staggering large load pick-up versus having the system operator concerned with avoiding cold or hot load pick-up; allowing energy sources to reduce load whereby in the past sources were kept off until five minutes after the grid was stable; providing better visibility into the grid and, through machine learning, better forecasting and predicting of load shape so better dispatching of central generation. Cost-effectiveness: providing decentralized management solution that is flexible to the feeder reconfiguration.~~; providing a field proven interoperable platform that is open source, worldwide royalty free to encourage competitive offering of more choice products and services that encourages competitiveness and prosumer adoption; providing an alternative to service upgrades for customers who electrify more or introduce generation, and thus avoid trickle up grid upgrade costs that get socialized.~~ ~~Set targets for key performance: the ultimate objective is to support the five-minute market as a preferred method for providing least cost of service. This means that a Transactive Demand Response (TDR) request needs to be acted upon by a prosumer device within five minutes in non-grid emergencies, and within 30seconds in a grid emergency; TDR requests are met 75% of the time in the first call. Other efficiencies come from utilities being able to use TGDR as a cost effective tool for managing inverters per IEEE1547-2018.~~
Customer	MiGen~~TGDR2~~ offers many values to a prosumer, namely by: 1. Focusing on behind the meter technology 2. Developing partnerships, collaborations with vendors and stakeholders 3. Supporting the adoption of technology by the utility and its customers for the customer ~~4. Sharing in the value from helping shore the grid. So, when prosumers help the grid, they receive benefit through a loyalty program and settlement program that's tied to a Transactive Energy Market. The activity is conducted automatically with minimal prosumer involvement beyond setting preferences on how their assets can be used.~~ ~~5. Deferring or avoiding service entrance upgrades when adding more electrified loads or sources.~~ ~~6. Containing or reducing energy source interconnection costs related to monitoring and protection & control.~~ ~~7. Trading opportunity, though utility or aggregator mediation, to trade energy with others.~~ ~~8. Improving more timely visibility and analysis of their energy use and production.~~ ~~9. Increasing autonomy with how and when they can meet grid needs so comfort is maintained.~~ ~~10. Increased reliability as energy sources can help more quickly restore service and sources that are IEEE1547-2018 complaint can be used to avoid outages stemming from transient aberrations in the grid.~~ MiGen~~TGDR2~~ also helps the customer rate base monetarily or through improved reliability when respectively used to defer investment in increasing grid capacity, or shifting that investment to reliability improvement projects.

Benefits (Cont'd)	Description (Cont'd)
Safety	A practical assessment on how MiGen~~TGDR~~ may help health and safety protections and performance will be completed in the third year of the demonstration. ~~Anecdotally, TGDR should help prescribe when energy sources can generate while crews are working on the grid.~~
Cyber-Security, Privacy	MiGen~~TGDR~~ follows Privacy-by-Design principles and will follow or exceed best cyber-security standards, period. ~~TGDR is based on the IEEE 2030.5 interoperability standard, and the inverter based generation shall comply with IEEE1547-2018 interconnection standard. Communications will employ a WiFi mesh based on IEEE standards. The lessons learned through the TGDR demonstration project have been, and will continue to be, used for informing the standards roadmaps and updates. Members of TGDR are on the DOE sponsored IEEE2030.5 roadmap, and the IEEE Conformity and Assessment Program (for certifying against the standard) committees.~~ ~~The TGDR hardware elements are certified before installation: the Transformer/Transactive Agent (TA) is utility O.Reg. 22/04 compliant; the Customer Agent (CA) and the Home Energy Management System Controller (HEMSC) are both field certified by ESAFE to be CSA approved.~~
Coordination, Interoperability	MiGen would be looking at all of the following standards in order to ensure proper interoperability. Ie. IEEE2030.5, DNP3, OpenADR, OpenFMB, or Sunspec. ~~If applicable, please explain how the investment applies recognized standards, referencing co-ordination with utilities, regional planning, and/or links with 3rd party providers and/or industry.~~ ~~In addition to the commentary under "Cyber-Security, Privacy," the IEEE2030.5 is a standard that applies from the Market System Operator to the Prosumer. Other interoperability standards like DNP3, OpenADR, OpenFMB, or Sunspec are specific to the utility, customer or a product and not broadly i.e., end-to-end, applicable as IEEE2030.5 and not nearly as comprehensive either.~~ ~~The essentials of TGDR will be available to the public as an open source, worldwide royalty free platform. This is to encourage adoption by all stakeholder groups, and through this demonstration, the partners will be the pioneers. Hydro Ottawa is gaining interest in the platform from other vendors, the IESO, and other utilities. Part of its mandate under the funding agreement is to disseminate information on TGDR and build the ecosystem for it to succeed.~~
Economic Development	~~If applicable, please describe the effect of the investment on Ontario economic growth and job creation.~~ The demonstration is taking place in Ontario and many of the partners are from Ontario. The benefits with operating MiGen~~TGDR~~ will remain in Ontario.
Environment	~~If applicable, please describe the effect of the investment on the use of clean technology, conservation and more efficient use of existing technologies.~~ The MiGen program~~TGDR demonstration~~ will show how smart management of green generation, battery and thermal storage, increase in electrified loads and load control can help communities achieve Net-Zero Carbon status and maintain it through changes on the prosumer side. MiGen~~TGDR~~ will also demonstrate how it can provide "least cost of service" for the market operator and help offset costly – environmentally and monetarily -- fossil fuel peaking plants.

2.3.3.2.4. Prioritization

~~**Consequences of Deferral**~~

~~Deferral of this project first and foremost jeopardises funding from NRCan. Secondly, deferral will place the utility in a precarious position with generators complying with IEEE 1547-2018. The utility will be able to request set-points in the inverter, however, will not have the appropriate tools for confirming continued compliance, or changing the set-points dynamically to changing feeder conditions.~~

~~The demonstration project will provide data for addressing the consequences / risks in the remaining categories.~~

Priority

MiGen~~TGDR~~ is a high priority in context to other grid modernization demonstration projects. Funding and resourcing for projects in the DSP are constantly under pressure and a remedy is needed that breaks traditional approach to solving grid growth and reliability, plus management of the grid by system operations and asset planning. MiGen~~TGDR~~ is for~~a~~ demonstration and not an immediate replacement solution to a project in the DSP; however, it has the great potential to be, and this demonstration must be undertaken to provide the results, knowledge and experience for application.

2.3.3.2.5. Execution Path

Implementation Plan

The project, where possible, work with partners such as developers, Ottawa-area community housing authorities, and individual residents~~ will work with Ottawa-area community housing authorities (who this consortium considers to be ideal benefactors of this funded project),~~ to embed Distributed Energy Resources (DERs) into their premises and bring them towards Net-Zero Carbon Community (NZCC) status and maintaining such. For the utility systems, this project will work with device and technology manufactures in developing or adapting technologies for use in the behind the meter applications.

~~To enhance and scale TGDR responsibly, the project will be managed in three overlapping phases:~~

- ~~Phase-I: starting in Q2-2019, begin retrofitting a community with CA+HEMS-C, solar PV, smart inverter, battery energy storage, air-source heat-pump with thermal storage, and HEMS (smart thermostat, load controllers). If funding becomes available through other sources, we would propose adding smart lighting, and smart appliances (i.e., fridge and dryer). TGDR1 and TGDR2 will be demonstrated here, when proven with existing participants in TGDR1.~~
- ~~Phase-II: starting Q2-2020, the software modules interfacing with TGDR will begin stand-alone testing in the lab. By Q2-2021, the software modules would have been interfaced with TGDR and tested before full deployment in the test communities.~~
- ~~Phase-III: starting Q3-2021, after having designed and installed DERs into a second community, TGDR2 will be ready for full scale demonstration, strategizing use for achieving and maintaining a near-NZCC, running use cases, monitoring results, tweaking for enhancement, reporting and closing out the project.~~

Risks to Completion and Risk Mitigation Strategies

Table 2.58 - Risk to Completion & Risk Mitigation Strategies

Type of Risk (Choose an item.[2])		Mitigating Measures / Estimate Likelihood (Choose an item.[3])		Residual Risk to Project
Large complex project with many partners that may go over budget or be delayed.	Financial	Establish rigorous utility project governance with a steering committee and a dedicated project manager along with a Project Management Office to manage the partners and their individual workstream. Create fixed budget with developers, devote great effort in the SOW, Gantt, and collaboration agreements with the partners	Medium	While project risk will be reduced with an established project management office ~~established~~, there will still be some residual project risk due to unforeseen circumstances from factors not in our control (i.e., regulatory, political, economic, trial site owner issues).
~~As there are many elements in the TGDR2, full interoperability amongst project elements may not be achieved.~~	~~Market, Technical~~	~~TGDR2 has selected a well-defined industry standard as the interoperability approach (IEEE 2030.5). As this is well-defined, the partners will be including this in the product development.~~	~~Low~~	~~Product partners are committed to IEEE2030.5 to ensure interoperability. The standards expert on the project is engaging with others to identify the critical elements for interoperable interfaces.~~
~~Customers may be uninterested in participating in the TEM.~~	~~Market~~	~~Project includes professional resources to engage and educate participants in the TGDR2 and TEM. These resources will develop materials to inform customers upfront. The TEM will be made attractive for participants by stacking the value from all sources (i.e. utility, market, carbon, other participants). There will also be ongoing engagement through Algonquin College in communications, real-time monitoring and satisfaction survey tracking.~~	~~Medium~~	~~The Loyalty program is intended to help increase prosumer participation. Also, autonomous operation of TGDR once prosumer preferences are set should improve their acceptance of TGDR as a non-burdensome and rewarding system. The TGDR Team will also engage with the prosumers in the trial to inform and motivate them.~~

[2] Financial – e.g. project funding issues; Market – e.g. market environment, product entry; Technical – e.g. equipment failure; Regulatory – e.g. environmental approvals, permitting issues; Personnel.
[3] Likelihood – Low – unlikely to occur <5%; Medium – moderately likely to occur ~25%; High – very likely to occur > 50%.

Type of Risk (Choose an item.[4]) (CONT'D)		Mitigating Measures / Estimate Likelihood (Choose an item.[5]) (CONT'D)		Residual Risk to Project (CONT'D)
Many concurrent partner work streams are dependent on each others' milestones.	Technical	The established Project Management Office will manage and track the partner milestones. ~~There are technology milestones associated with establishing the TGDR2 and the TEM, and there are construction milestone associated with installing the DERs at the customer sites The technology milestones and construction milestones can be partially decoupled.~~	Medium	Should the need arise, if a technology milestone is not ~~be~~met by a partner, an emulation for the partner segment can be used until ready.
~~Key resources may change within the partners (e.g. retirement, organizational restructuring).~~	~~Personnel~~	~~The project has engaged with partners at the highest level and have received commitment from the organization. Should individual resources change, the organization will still be able to retain the knowledge to follow through on their contributions.~~	~~Low~~	~~There are no planned retirements in the next four years. Documentation and assessment of this risk will be on going.~~
Other government funding sources may fall through.	Regulatory	There are many funding sources available from federal, provincial and municipal sources along with government agencies and academic grants. Should any one source fall through, the Project Management Office will seek alternative sourcing from another funder.	Medium	Negotiating de-scoping with the primary funder, and any other funder, is an option, though non-ideal.
~~Engineering challenges and technical issues may arise with components of the TGDR2, TEM and DERs.~~	~~Technical~~	~~The project will establish a robust solution architecture upfront to ensure the engineered solution is sound and built in an interoperable manner. Once the system is launched, the project will have dedicated resources to monitor the system and respond immediately to any break-fix issues.~~	~~Low~~	~~Lessons learned from TGDR1 will be very helpful.~~

[4] Financial – e.g. project funding issues; Market – e.g. market environment, product entry; Technical – e.g. equipment failure; Regulatory – e.g. environmental approvals, permitting issues; Personnel.
[5] Likelihood – Low – unlikely to occur <5%; Medium – moderately likely to occur ~25%; High – very likely to occur > 50%.

Type of Risk (Choose an item.[6]) (CONT'D)		Mitigating Measures / Estimate Likelihood (Choose an item.[7]) (CONT'D)		Residual Risk to Project (CONT'D)
~~Prices of some of the components of the TGDR2 may increase (i.e. cost of lithium rises, cost of silicone for solar panels rises)~~	~~Market~~	~~While the prices of project components are expected to decrease over the course of the project, should there be any temporary sharp rise in the cost of any individual component, the Project Management Office will examine pivoting scope to a lower-cost solution.~~	~~Medium~~	~~De-scoping on quantity is an option. Some products are in USD, and the CDN is forecasted to drop over the project life.~~
Integration of new software components with existing Hydro Ottawa's Business Support Systems	Technical	Any project outcome may need to connect to existing Hydro-Ottawa systems. Intermediary interfaces may be needed. HOL is already working with interfacing tools already. ~~The TEM, Customer Loyalty, eWallet, BluWave, and Back-Office-System components may need to connect to existing Hydro-Ottawa systems. Some partners have done such integration in other projects. However, TGDR will be designed to rely on field generated information and not secondary handled data, so ties to Hydro Ottawa's systems may be limited or avoided.~~	Medium	Offline file transfer for seeding machine learning can be done. Emulation may be needed in the worst cases.

Timing Factors

The priority for innovation projects such as MiGen is high due to the potential for future savings and improved performance. However, as with any innovation project involving new technologies and interfaces, the complexity will ultimately dictate how quickly the new technology can be effectively deployed.~~The priority of this project will remain high unless during development there becomes a serious lack of progress, funding, or achievement of intended outcomes.~~

[6] Financial – e.g. project funding issues; Market – e.g. market environment, product entry; Technical – e.g. equipment failure; Regulatory – e.g. environmental approvals, permitting issues; Personnel.
[7] Likelihood – Low – unlikely to occur <5%; Medium – moderately likely to occur ~25%; High – very likely to occur > 50%.

Project phase timing may be adjusted depending on material availability, site readiness, technical readiness, cashflow, regulatory or political changes.

Cost Factors

CRA is not a factor in this project because the generation capacity is below the threshold of concern (less than 250kW of solarPV on any High Voltage Distribution Station).

~~Include any capital contributions made or forecast to be made to a transmitter with respect to a Connection and Cost Recovery Agreement. Details to be provided include: initial forecast used to calculate contribution, amount of contribution (if any), true-up dates and potential true-up payments.~~

~~CRA is not a factor in this project because the generation capacity is below the threshold of concern (less than 250kW of solarPV on any High Voltage Distribution Station).~~

Factors that may change the project cost are: unforeseen site conditions that would affect installation cost; increase in material costs due to USD exchange rate; change in permitting and approval costs; unexpected increase in labour costs.

Other Factors

Success of this demonstration project will depend on customer/prosumer acceptance; however, that factor is under test in this project. Hydro Ottawa will work closely with partners and participants to identify the challenges ahead of a wider scale deployment of behind the meter technology. ~~So, through the automation of TGDR and use of the Loyalty and eWallet components, the chance of success is anticipated to increase.~~

Behind-the-meter product discontinuance may be a concern, though continued support is anticipated through the collaboration agreement with the participating partners.

2.3.3.2.6. Renewable Energy Generation (if applicable)

The inverters used will be IEEE1547-2018 compliant, and this standard by nature should allow higher REG penetration levels, especially when managed through MiGen~~TGDR~~. No impact on the grid is anticipated by introducing the behind-the-meter REG devices as this would be~~was~~ assessed when selecting the sites. Nonetheless, a MiGen~~TGDR~~ use case will be testing how MiGen~~TGDR~~ can be used to avoid accommodation of REGs on the grid.

2.3.3.2.7. Leave-To-Construct (if applicable)

N/A

2.3.3.2.8. Project Details and Justification

Table 2.59 - The MiGenOverview

Project Name:	MiGen (previously known as The GREAT-DR)~~The GREAT-DR (currently known as "MiGen")~~
Capital Cost:	~$2,2M~~$3.3M~~ Hydro Ottawa cost (2021~~19~~-2022)
O&M:	$0.75M (2023-2025)
Start Date:	2021~~2018-11-20~~ (anticipated)
In-Service Date:	2022~~2021-03-31~~ (anticipated)
Investment Category:	System Service~~Enter Investment Category~~
Main Driver:	Customer and Utility Centric Non-wires solution
Secondary Driver(s):	Improved grid management (planning & operation)
Customer/Load Attachment	~~Site#1: ~39; Site#2: ~152~~
Project Scope	
This project will support the customer engagement and empowerment initiatives as discussed above. ~~is an evolution from the first version and augments enhanced security, intelligence in forecasting and prediction of load profile and customer behaviour, advanced functions, shadow Transactive Energy Market, plus customer loyalty and settlement.~~	
Work Plan	
The planned initiatives will be executed in the windows listed below. ● Focusing on behind the meter technology (2021-2023) ● Developing partnerships, collaborations with vendors and stakeholders (2020-2025) ● Supporting the adoption of technology by the utility and its customers (2020-2025) ~~Nov./'18 – May/'19: planning; development of the requirements & system architecture document; contracting~~ ~~May/'19 – Mar./'21: installation, development, integration & testing~~ ~~Mar./'21 – Mar./'22: field trial, tweaking, monitoring, reporting and project close-out~~	
Customer Impact	
Immediate prosumer benefit is reduced electricity bills from self-generation, and the use of more efficient heating from air source heat pump versus electric baseboard. Longer term benefit to a larger customer base comes from deferral or re-direction of grid growth investment that impacts largely the delivery fee. The funds can either be not-invested or redirected to reliability improvement, which is also a benefit to beyond the self-generating customer. Should Ontario provide a Transactive Energy Market, the prosumer would receive more benefit than simply HOEP for offering their assets for shoring the grid. Intangible benefits are: empowerment of the customer to be part of the industry transformation, and move to become a prosumer; ability to introduce more electric loads as new, replacement or supplement to other fuels; potential for choice in rate structure (eg., tiered, critical peak pricing, contracted demand, etc.).	

2.3.3.3. Other Distribution Enhancements Projects

2.3.3.3.1. Program Summary

This program contains projects which make modifications to the existing distribution system in order to improve system operation efficiency and reliability. In general this involves smaller distribution system enhancements such as minor circuit reconfigurations and increasing system automation. Through this program, Hydro Ottawa's total investment over the 2021-2025 period is $6.73M. Projects covered under this program are discussed in further detail in the following sections.

2.3.3.3.2. Program Description

Current Issues

The projects planned under the Distribution Enhancements program for the upcoming 2021-2025 rate period are primarily focused on circuit automation projects. The current issues for each category are summarized below.

The South Nepean 28kV supply will be undergoing significant upgrades in capacity to accommodate the forecasted rapid load growth over the next decade. To make available the 100 MVA of new station capacity from the New South, six feeders are planned to be extended from the new station. These feeders will be integrated to the existing South Nepean 28kV distribution system and will require means for effectively reducing outage durations by making use of redundancies and ties.

Program Scope

The overall program scope includes projects which are smaller in scale such as minor circuit reconfigurations, and adding automation to the system. Projects within the scope of the Distribution Enhancement Program are purposed to achieve network stability, increase operational efficiency, and better reliability. Outside of the program scope are larger scale modifications where the main driver is improving problematic areas with reliability issues or projects driven by capacity needs.

In the period of 2021-2025, the two main project types are planned to be executed citywide under this program. Other similar needs which fall under the Distribution Enhancements category are identified through annual system reviews and will also be included in this program.

To address the need to usefully integrate the New South feeders into the rest of the South Nepean 28kV distribution system, automation will be added to strategically chosen normally open points in the region. The automated open points are selected to effectively maintain or increase feeder redundancy, reduce outage duration.

Main and Secondary Drivers

The main driver for Distribution Enhancement projects is operational effectiveness. The projects described above increase operational efficiency in a number of ways. Increasing the availability of circuit interconnections in the South Nepean 8kV region helps with operational effectiveness by utilizing the existing station capacity at Borden Farms and bringing feeders below their N-1 rating.

Secondary drivers under the Distribution Enhancement program are reliability and capacity constraints. Reconfiguring the circuits in targeted regions will ultimately improve reliability by bringing feeders under their N-1 contingency rating and make available the station capacity. Circuit automation will enhance reliability by reducing outage duration that would otherwise be longer from manual switching operations.

Performance Targets and Objectives

The System Voltage Conversion Program’s Key Performance Indicator (KPI) Targets by Category are shown in Table 2.60.

Table 2.60 - Key Performance Indicator Target by Category

Category	Asset Management Objective	Sub-Category	Target
Customer Oriented Performance	Levels of Service	System Reliability	Improve System Average Interruption Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI), Customer Average Interruption Duration Index (CAIDI)
Cost Efficiency & Effectiveness	Resource Efficiency	Labour Utilization	Reduce Labour Allocation to Outage Restoration
Asset Performance	Asset Value Health, Safety & Environment	Defective Equipment Contribution to SAIFI	Reduce end-of-life equipment with high probability of failure
System Operations Performance	Levels of Service	Feeder Capacity	Increase usable feeder capacity

2.3.3.3.3. Program Justification

Alternatives Evaluation

Alternatives Considered

The following two alternatives were considered under the Distribution Enhancements Program.

Do Nothing

This alternative involves no implementation of the above discussed projects.

The New South station will be inefficiently integrated to the greater 28kV South Nepean system if no automation is added to strategically placed normally open points. SAIDI metrics will not be improved and there will be an ongoing labour cost associated with manual switching operations.

Distribution Enhancement Projects

This alternative involves implementing the circuit reconfiguration and automation projects. The South Nepean 8kV system will properly and efficiently integrate the new capacity provided by Borden Farms and bring feeder loading levels up to their N-1 planning ratings. Grid automation will be strategically added to the South Nepean 28kV system to also properly and efficiently integrate the New South station, reduce outage durations, reduce operation costs and ultimately improve SAIDI metrics.

A summary of this alternative's expenditure is shown in the table below.

Table 2.61 - Expenditures ($'000,000s)

	Test				
	2021	2022	2023	2024	2025
Total Expenditure	$1.31	$2.50	$1.26	$0.81	$0.85

The New South Station and the additional load it provides to the South Nepean 28kV system will require automation to be properly integrated. Automation will be added to strategically selected normally open points with the goal of reducing outage durations, accommodating forecasted load growth, and maximizing the use of redundancies and ties.

Evaluation Criteria

The two alternatives are evaluated in regards to system reliability, cost efficiency, and feeder capacity.

Preferred Alternative

Alternative 2 is the preferred alternative as it complements other Capacity Upgrades projects that have been completed or are currently ongoing increasing the value obtained from those projects.

Program Timing & Expenditure

From 2016-2020, historical spending had been dedicated to switch automation, VBM's, adding fusing or permanent switches, and minor circuit reconfigurations similar to those discussed in this business case. Smaller scale enhancement projects were also completed with the same goals and objectives of the above discussed projects.

Future spending in the 2021-2025 period will entail the projects discussed in this report.

Table 2.62 - AS ORIGINALLY SUBMITTED - Other Distribution Enhancement Program Expenditure ($'000,000s)

	Historical			Bridge		Test				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Expenditure	$0.92	$1.25	$1.27	$1.69	$2.41	$1.31	$2.50	$1.26	$0.81	$0.85

Table 2.62 - UPDATED FOR 2019 ACTUALS - Other Distribution Enhancement Program Expenditure ($'000,000s)

	Historical				Bridge	Test				
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Expenditure	$0.92	$1.25	$1.27	$1.33	$2.40	$1.31	$2.50	$1.26	$0.81	$0.85

Benefits

The benefits of the Distribution Enhancements program are described in Table 3.16 Program Benefits below.

Table 2.63 - Program Benefits

Benefits	Description
System Operation Efficiency and Cost Effectiveness	The number of circuits and station transformers operating above planning rating will either be eliminated or significantly reduced. Switching operations to restore outages will be reduced in time. Costs for future station decommissioning or operating and maintenance costs will be eliminated.
Customer	The customer is benefitted by faster restoration times from the circuit reconfigurations and added system automation. Reconfiguring downtown circuits and preparing a dedicated backup for the Rideau Centre will benefit the customer and ultimately improve SAIDI and CAIDI.
Safety	N/A
Cyber-Security, Privacy	N/A
Co-ordination, Interoperability	N/A
Economic Development	The circuit reconfigurations are configured to make use of available feeder capacity and allow for future connections to the system, ultimately inviting economic development in the region.
Environment	N/A

2.3.3.3.4. Prioritization

Consequences of Deferral

Deferring the discussed Distribution Enhancement projects have various impacts on reliability, capacity, and system operational efficiency.

Inefficient integration will occur if automated open points are withheld when adding the New South into the greater 28kV South Nepean system. KPI metrics such as SAIDI will not be improved and labour costs associated with manual switching operations will continue.

Priority

Distribution Enhancements at the program level are ranked to be of high priority. This is due to the need for operational efficiency, requirement for increased or maintained reliability, constraints on capacity, consequential effects on the customer, and opportunities for improved interoperability, economic development, and environmental impacts.

2.3.3.3.5. Execution Path

Implementation Plan

Project implementation will be executed as discussed in the program timing and expenditure section. Annual system studies will be factored into this program; if any projects under this category are of higher urgency, projects may be switched, deferred, added, or removed.

Risks to Completion and Risk Mitigation Strategies

N/A

Timing Factors

The yearly asset management cycle throughout the year where areas for distribution enhancements are identified. This process may cause a change in ranking on the list of planned projects as projects are added or removed.

Cost Factors

N/A

Other Factors

N/A

2.3.3.3.6. Renewable Energy Generation (if applicable)

N/A

2.3.3.3.7. Leave-To-Construct (if applicable)

N/A

2.3.3.3.8. Project Details and Justification

Table 2.64 - Distribution Enhancements

Project Name:	Distribution Enhancements
Capital Cost:	$6,727,914
O&M:	TBD
Start Date:	1-Jan-2021
In-Service Date:	2021-2025
Investment Category:	System Service
Main Driver:	Operational Effectiveness
Secondary Driver(s):	Reliability, Capacity Constraints
Customer/Load Attachment	All customers
Project Scope	
The Distribution Enhancements program contains projects which make modifications to the existing distribution system and is intended to improve system operation efficiency and reliability, and address capacity constraints. In general this involves smaller distribution system enhancements such as circuit reconfigurations and increasing system automation	
Work Plan	
Annual system studies will also be factored into this program; if any projects under this category are of higher urgency, projects may be switched, deferred, added, or removed.	
Customer Impact	
The customer benefits by faster restoration times from the circuit reconfigurations and added system automation. Reconfiguring downtown circuits and preparing a dedicated backup will benefit the customer and ultimately improve SAIFI and SAIDI	

UPDATED CAPITALIZATION OF OVERHEAD

Effective January 1, 2012, Hydro Ottawa revised its capitalization methodology used to apply overhead costs to property, plant, and equipment and intangible assets to be in accordance with International Financial Reporting Standards ("IFRS"). Under IFRS, International Accounting Standard 16 – *Property, Plant and Equipment* ("IAS 16") and International Accounting Standard 38 – *Intangible Assets* ("IAS 38") prohibit the capitalization of administration and other general overhead costs. As a result, the amount of capitalized overhead was significantly reduced as many of the costs that were capitalized prior to the revision of the policy were considered administrative or other general overhead. There have been no changes to Hydro Ottawa's capitalization of overhead since January 1, 2012 (and thus there have likewise been no changes since the utility's last rebasing application).

Hydro Ottawa applies overhead costs to capital through three separate burden rates: Supervision burden, Engineering burden, and Supply Chain burden. The use of multiple burden rates allows overhead costs to be applied more precisely to the particular projects that are associated with the various types of overhead costs. Please refer to Attachment 2-4-4(A): Capitalization Policy for Hydro Ottawa's capitalization policy.

As shown in UPDATED Attachment 2-4-5(A): OEB Appendix 2-D - Overhead Expenses, the overhead costs capitalized (including labour and fleet) from 2017-2021 are in the range of 26% to 29%.

UPDATED - Appendix 2-D
Overhead Expense

Applicants are to provide a breakdown of OM&A before capitalization in the below table. OM&A before capitalization may be broken down by cost center, program, drivers or another format best suited to focus on capitalized vs. uncapitalized OM&A.

OM&A Before Capitalization	2017 Historical Year	2018 Historical Year	2019 Historical Year	2020 Bridge Year	2021 Test Year
Distribution Operations	$ 42,072,595	$ 42,985,534	$ 40,399,152	$ 44,455,558	$ 45,958,946
Engineering & Design	$ 12,437,569	$ 13,398,062	$ 12,507,395	$ 13,977,990	$ 14,167,879
Customer Billing	$ 8,936,703	$ 8,912,271	$ 9,120,268	$ 9,274,258	$ 9,619,556
Customer & Community Relations	$ 7,300,361	$ 7,010,829	$ 6,477,554	$ 8,003,925	$ 8,617,580
Collections, Acct & Activities	$ 3,781,614	$ 2,948,863	$ 2,371,317	$ 3,278,626	$ 3,377,588
Facilities	$ 6,443,441	$ 7,127,723	$ 9,919,789	$ 7,338,521	$ 7,475,608
Finance	$ 3,847,245	$ 3,963,955	$ 3,303,451	$ 3,340,269	$ 3,441,938
Human Resources & Training	$ 3,889,418	$ 4,056,098	$ 3,316,757	$ 3,853,861	$ 3,939,877
Information Mgt & Technology	$ 10,722,068	$ 10,884,225	$ 10,101,028	$ 11,952,687	$ 10,310,302
Metering	$ 2,856,917	$ 2,621,587	$ 2,454,821	$ 2,967,981	$ 3,074,131
Regulatory Affairs	$ 2,037,050	$ 2,157,111	$ 2,019,155	$ 2,248,403	$ 2,998,222
Safety, Environment & Bus Cont	$ 2,261,796	$ 3,434,261	$ 4,228,570	$ 3,662,418	$ 3,719,278
Supply Chain	$ 2,632,039	$ 2,465,807	$ 2,489,293	$ 2,267,583	$ 2,321,330
Corporate Costs	$ 5,854,631	$ 6,385,206	$ 5,041,203	$ 7,070,979	$ 7,625,461
Total OM&A Before Capitalization (B)	$ 115,073,447	$ 118,351,532	$ 113,749,753	$ 123,693,059	$ 126,647,696

Applicants are to provide a breakdown of capitalized OM&A in the below table. Capitalized OM&A may be broken down using the categories listed in the table below if possible. Otherwise, applicants are to provide its own break down of capitalized OM&A.

Capitalized OM&A	2017 Historical Year	2018 Historical Year	2019 Historical Year	2020 Bridge Year	2021 Test Year	Directly Attributable? (Yes/No)	Explanation for Change in Overhead Capitalized
Supply Chain	$ 1,160,695	$ 1,213,508	$ 1,200,746	$ 1,205,476	$ 1,231,474	Yes	
Supervision	$ 2,365,426	$ 2,539,391	$ 2,315,815	$ 2,287,211	$ 2,530,939	Yes	
Engineering	$ 3,020,405	$ 3,235,342	$ 3,153,225	$ 2,910,979	$ 3,184,311	Yes	
Fleet	$ 2,954,501	$ 3,101,160	$ 3,010,871	$ 3,333,470	$ 3,317,225	Yes	
Labour	$ 23,327,587	$ 21,398,793	$ 20,956,236	$ 21,965,502	$ 22,461,088	Yes	
Total Capitalized OM&A (A)	$ 32,828,614	$ 31,488,194	$ 30,636,893	$ 31,702,638	$ 32,725,037		

% of Capitalized OM&A (=A/B)	29%	27%	27%	26%	26%		