

Energy Probe Interrogatories

EB-2019-0049

2020 Electricity Distribution Rates Application Kitchener-Wilmot Hydro Inc.

July 9, 2019



Exhibit 1

1-EP-1

Reference: Exhibit 1, Page 32, Table 1.2.6-1, Bill Impacts

Preamble: The Bill impacts for most rate classes are material, but the Impact on the embedded Distributor (Waterloo North Hydro) is 4X the Board Guideline

What is KWHI proposing to do about this situation?

KWHI communicated the change with its customer (see Appendix 7-3). The intention was to pass on the increased costs to the Embedded Distributor.

As noted in Interrogatory 7-Staff-53, Board staff have prepared an alternate version of the Cost Allocation model. Between 2014 and 2020, changes were made to the Cost Allocation model that resulted in certain costs being allocated to the Embedded Distributor that were previously directly allocated. However, the direct allocation remained in place resulting in a double counting of certain items (PILs, depreciation and interest). Board staff have therefore changed the Cost Allocation model. This can be seen in interrogatory response 7-EP-19.

The updated bill impact to WNH (as updated as a result of the interrogatories) is an increase of 15.74% in base charges and an increase of 35.87% including rate riders.



Exhibit 2

2-EP-2

Reference: Exhibit 2, Section 2.1.3, Appendix 2.3 DSP, Appendix P, CIS Page 11

Preamble: KWHI will be replacing its in-house Customer Information System (CIS) through the period 2019 and 2020. The full business case is included in the Distribution System Plan (DSP) Appendix P. The replacement of the CIS has been approved by KWHI's Board of Directors. A0

- a) Please discuss the Functionality of the AITO/OCS System and indicate if the following are Included in the Base CIS or must be added later (Phase 2) at higher capital and operating cost: e-billing, on-line bank/credit card payments, customer interactive portal, and customer site work scheduling and management. Please add additional comments on current and future functionality.

See Appendix 3-CIS Project Milestones and Deliverables in the Staff IR responses which details the items being implemented in Phase I of the project.

Phase I will include customer site work scheduling and management via service order management; however, e-billing, on-line bank/credit card payments or customer interactive portal will not be included. These items are expected to be added later in Phase II of the project.

- b) Please indicate the treatment of the CIS capital asset in the revenue requirement in 2020 in terms of expense and amortization. Point to/provide the numbers.

KWHI budgeted for the CIS implementation to be completed over the years 2019 and 2020. The full cost of the implementation was budgeted to be capitalized and left in WIP at year end 2019. The system would be amortized over five years.

The final budget for the CIS implementation differs from what was included in KWHI's Cost of Service due to timing differences in finalizing the contract.

Final budgeted capital expenditures related to CIS have been estimated to \$7.76M. These final figures have been included in the presentation to KWHI's Board of Directors (attached as Interrogatory 4-SEC-19) and in the DSP Appendix P. In calculating its bill impacts, in order to reduce adverse impacts, depreciation was calculated using a 10-year service life.



- c) Please provide a list and NBV/Net Asset value of the other KWHI Enterprise Systems and Software with dates of acquisition and replacement life(s) including Accounting, HR and Work Management.

See Appendix 1-Major Software.

- d) In making its decision on the CIS discuss if/how KWHI considered the linkage to/integration to its current and future Enterprise IT Systems.

KWHI did consider the linkage to its current and future Enterprise IT systems in its CIS decision.

The chosen Oracle CC&B platform has the flexibility to integrate to a variety of Enterprise applications and through its CIS implementation, KWHI expects the following integrations/ interfaces to be completed:

- Services DB
- MV90
- EBT Hub
- OESP
- IESO
- OEB
- Sensus
- MDM/R
- Savage ODS
- Utilismart Corp
- Telpay
- Bank of Montreal
- Paymentus
- My Account
- eBill
- ePost
- Generation Invoice
- JDEdwards
- ACS Outage Management
- GIS
- City of Kitchener
- Region of Waterloo



2-EP-3

Reference: Exhibit 2. DSP Asset Condition Assessment, Appendix L, METSCO ACA Report Sections 3.6 and 4.26.

- a) Please provide an extract showing the last Wood Pole ACA and asset profile.

See filed Excel document *"IR-2-EP-3 WoodPolesACA_extract.xlsx"*.

- b) Provide a Table with the historic Pole replacement profile, annual costs and Unit Costs.

See response to 2-Staff-19(a) interrogatory.

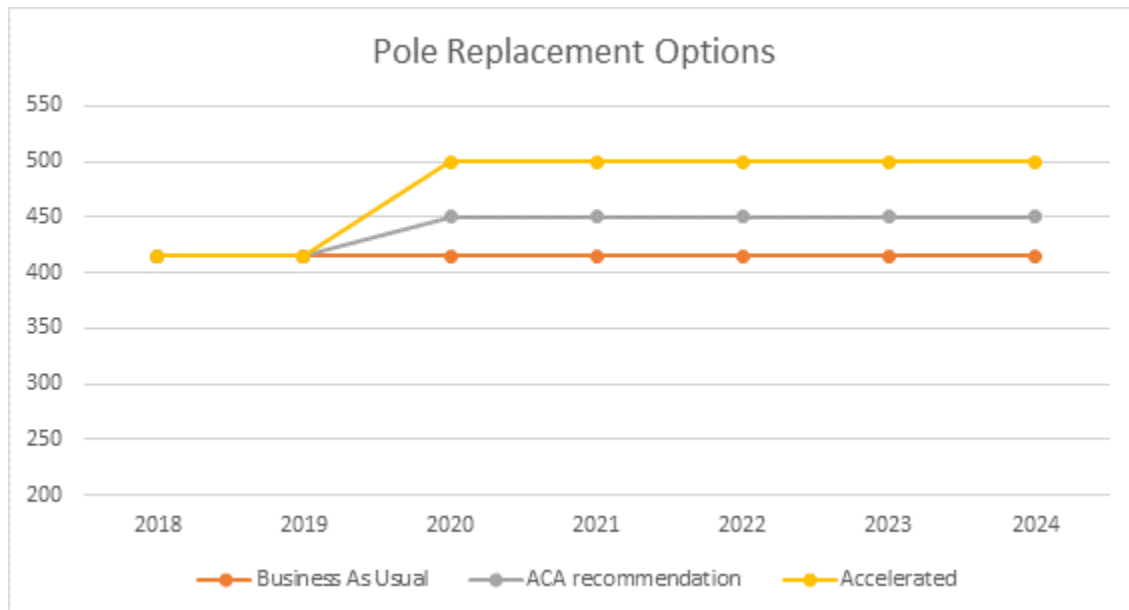
- c) Does KWH have a record of Wood Pole Failures? If so please provide a copy. Relate Pole failures to the Cause Codes for SAIFI/SAIDI.

See response to 2-Staff-19(d) interrogatory.

- d) Based on the METSCO ACA discuss what is the optimum strategy for Wood Pole replacement. Provide charts showing three scenarios: business as usual, recommended (400-425 poles per year) and accelerated; with number of units, capital costs and related risks.

The three scenarios in question are visualized in Figure 1. 'Business as usual' scenario targets poles with the oldest age with a replacement rate of 415 poles per year. The 'ACA recommended' scenario targets poles with the poorest condition with a replacement rate of 450 poles per year starting in 2020. The 'accelerated' scenario targets poles with the poorest condition with a replacement rate of 500 poles per year starting in 2020.

Figure 1 Pole replacement rate (visualized)



A comparison between these three scenarios is presented in Table 1 and Figure 2, alongside a comparison to the current state of the system. Assumptions included as part of this comparison are applied uniformly across the three scenarios, including: i) no system growth is accounted for; and ii) the forecasted rate of degradation of pole condition is constant and based on the current state of the system of poles. Table 1 highlights the average age and average health index values for the whole pole population under each of the three scenarios at the end of year 2024. Furthermore, Figure 2 visualizes the change in wood poles' condition demographics for each of the scenarios at the end of year 2024.

It can be seen that the overall condition metrics (average health index, average age, as well as condition demographics) improve in a favourable manner (i.e., an increase in health index and a decrease in average age being favourable). Further, the 'recommended' and 'accelerated' scenarios yield a greater improvement in condition metrics than the 'business as usual' scenario, most notably with a further decrease in the population of poles in 'Poor' condition. It is noted that poles in 'Very Poor' condition are mitigated by the end of 2024 across all three scenarios. An improvement in asset condition metrics is noted to reduce the risk of the wood pole assets.

Reducing the number of wood poles found within the 'Very Poor' and 'Poor' categories should result in the outcome of effectively managing and reducing the risk profile of wood poles in-service. Health index is an indicator of an asset's remaining life and is used as an input to a risk-based asset management program. It is used as a measure and benchmark of health and condition of in-service assets. It is calculated based on analyzing several factors such as age, historical failure,

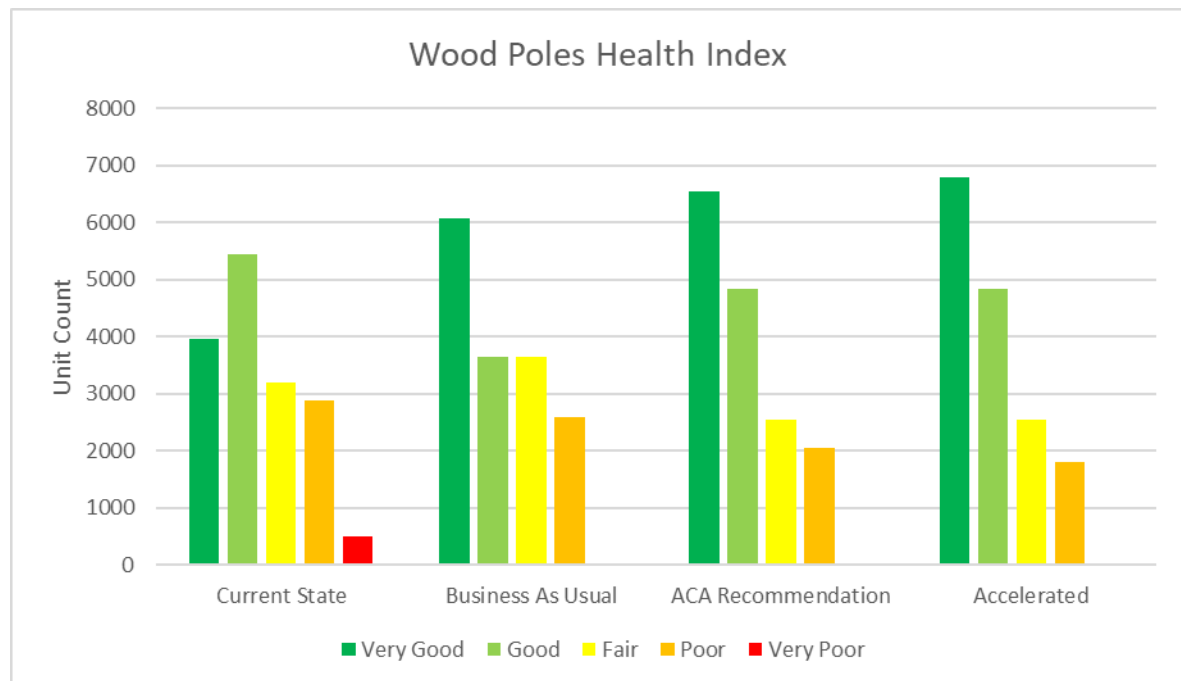
impact of failure and nature of load served. KWHI's Asset Management Strategy ensures a continual and consistent focus on delivering services in a way that balances risk and long-term costs.

Additionally, KWHI has communicated the accelerated plan to customers for feedback and results indicated that an average of 80% of respondents are in support of the proposed approach. While KWHI believes this will improve the system's health and can effectively reduce the safety risk that 'Poor' and 'Very Poor' condition poles carry, the ACA recommendation is being put forward as the optimal replacement strategy that will balance risks and costs.

Table 1 Age and Health Index averages for each scenario at year end 2024 versus the current state at the end of 2018

Scenario Analysis	Average Age	Average Health Index
Current State	31.6	69%
Business As Usual	27.0	74%
ACA Recommendation	27.4	76%
Accelerated	26.4	77%

Figure 2 Wood poles Health Index demographics change at year end 2024



e) Why is KWHI also replacing 1000 "Fair Condition" poles?

See response to 2-Staff-19(c) interrogatory.



- f) Please provide the projected unit pole replacement costs for the proposed plan and compare to the historic KWHI costs and to the benchmark costs for poles in the UMS Cost Benchmarking Study filed in EB-2018-0165 (Toronto Hydro) at Exhibit 1B, Tab 2, Schedule 1, Appendix B, summarized in Table II-1 Page 7, and in Tables C-8 to C-10.

KWHI practice for pole replacement budgeting is to prepare a high-level estimate based on the number of poles, number of circuits, location, etc. Also, KWHI historical costs for pole replacement includes the total costs to rebuild a pole line. That is; labour, materials, overheads, and engineering for poles, wires, and services. Using sample projects from 2015 to 2018, the average unit costs to replace a pole is per the table below and the current pole replacement plan is based on these average unit costs.

Unit Costs to Replace Poles
(actual project costs for various projects between 2015 and 2018)

Circuit Configuration	Costs/Pole
1-ph cct.	7,500
3-Ph single cct.	10,250
3-ph double cct.	15,700

There are a number of factors that impact the cost to rebuild a pole line such as, location, number of circuits, de-energized or not, in-house or contractor, number of service attachments, etc. KWHI did not participate in the UMS Cost Benchmark Study undertaken by Toronto Hydro. KWHI is unaware of all the cost components that were used to identify the pole replacement costs (e.g. engineering costs). KWHI is also not aware of the factors used for weightings and normalization of the data.

Assuming that the Benchmark Study used the total number of poles replaced each year and the total costs to replace poles and hardware only, the following table represents KWHI's comparative cost per pole. Over the 3-year period, 2016-2018, this cost is equivalent to \$6,388 per pole. The UMS Study has a median cost to replace pole as \$7,665 per wood pole. Based on this analysis, KWHI's pole replacement cost is comparable to the median cost in the Benchmark Study. It should be noted that KWHI costs include both wood and concrete poles.



	Unit Costs to Replace Poles Only			
	2016	2017	2018	Total
Costs/Pole	3,777,941	2,810,634	3,210,788	9,799,363
Qty	498	464	572	1,534
Unit Cost per Pole	7,586	6,057	5,613	6,388

g) Comment if Unit Costs will change with an accelerated replacement scenario.

The unit costs to replace poles will not materially change with an accelerated replacement scenario. Contract labour would be employed using a competitive bid process if an accelerated program is implemented.



2-EP-4

Reference: Exhibit 2, Pages 73/74, Table 2.12.1, Charts 2.12-1 and 2.12-2; EB-2018-0165
Toronto Hydro CIR Plan 2020-2024, Exhibit U-EP-64

Preamble: KWHI indicates its reliability statistics compare favourably to the industry as can be seen in the referenced charts.

- a) Please explain the basis of the “Industry” (Blue) lines in the charts in statistical terms

The blue line consists of the industry average as published in the OEB Yearbook.

- b) Please confirm that based on the second reference:
- i. KWHI SAIFI in 2017 was at about the 50th Percentile of Ontario Distributors
 - ii. KWHI SAIDI in 2017 was at about the 35th Percentile of Ontario Distributors

As per the OEB Yearbook, KWHI was around the 50th percentile for each measure.

- c) What is the Projection of the Reliability Indices for 2020?

Reliability is impacted by a number of factors - some of which are outside KWHI's control. However, based on historical performance, the current spending plans, and system investments KWHI expects the trend for SAIDI and SAIFI to remain the same. As such, a reasonable estimate for 2020 is SAIDI of 1.0 and SAIFI of 1.0 excluding Major Event Days and Loss of Supply.



Exhibit 3

3-EP-5

Reference: Exhibit 3, Distribution System Plan 3.3.1.3, Vegetation Management

Preamble: Kitchener-Wilmot Hydro's 2013 strategy for VM was a 5-year cycle. The current is 6 years.

- a) What are the annual VM Cost Savings?

The asset management strategy in 2013 incorrectly stated that vegetation management was on a five-year clearing cycle. Vegetation management was on a six-year schedule in 2013 and KWHI remains on the same schedule in 2019, with no current plans to increase or decrease the clearing cycle length.

- b) Please provide the OM&A costs for VM from 2014-2020 (projected). Mark the cycle change and Show the cost effect of the change in cycle.

Table 3-EP-5

	2014 Board Approved	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Bridge	2020 Test
	CGAAP	CGAAP	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS
Total Tree trimming	840,000	743,731	842,913	758,620	679,077	720,250	789,900	805,900

There is no change in the cycle as per 3-EP-5 a)

- c) Has KWHI considered the impact on tree-related outages? Please discuss and provide more information

KWHI assumes this question refers to the impact that increasing the cycle length would have on tree-related outages. As the cycle length has not changed, there has been no impact.

- d) Please Compare KWHI VM Costs to the Benchmark in the UMS Study filed by Toronto Hydro in EB-2018-0165 at Exhibit 1B Tab 2 Schedule 1 Appendix B. summarized in Table II-1

In the referenced USM Study filed by Toronto Hydro in EB-2018-0165, the Toronto Hydro 3-year weighted average unit cost for Vegetation Management was \$2,111 per line kilometer.



While the USM Study does not provide the necessary details to calculate a corresponding 3-year weighted average, KWHI can make an estimate using the vegetation management costs shown above in Table 3-EP-5 and calculate a forecasted average annual cost over the 3 year period 2018 to 2020, divided by KWHI's overhead circuit length from 2018. The average annual cost for 2018-2020 is \$772,017 with an overhead circuit length of 1,018 kilometers. This returns KWHI a 3-year average unit cost for Vegetation Management of \$758 per line kilometer.



3-EP-6

Reference.: Exhibit 3, Table 3.1.6-3, Table 3.3.1.1-5 – 2017 Actual vs 2018 Actual

- a) Please clarify the calculation for the 2017 purchased energy change (1.0%).

Predicted purchases were 1.0% higher than the actual purchases.
1,774.7 divided by 1,757.8

- b) Please provide an explanation/reasons for the 54 GWh (3%) reduction in purchased energy in 2017.

The warmer winter weather and cooler summer weather combined with increased CDM resulted in less consumption. Ontario peak demand was also lower than 2016 by 6.1%, indicating that Ontario, as a whole, saw less energy consumption.

- c) Provide more details of the 2018 GWh and the increase to 2011 levels.

Assuming the comparison of 2018 to 2017 levels, the CDD in 2018 increased 92.94% over 2017.

Statistic	2018	2017	Degree Variance	%% Variance
Heating Degree Days	4,841.7	4,462.8	378.9	8.49%
Cooling Degree Days	262.4	136.0	126.4	92.94%
Mean Temperature	5.4	6.2	-0.8	-12.90%
Daily High (average)	10.6	11.1	-0.5	-4.50%
Daily Low (average)	0.2	1.1	-0.9	-81.82%

- d) Please discuss concerns that the 2017 and 2018 results are an anomaly and may affect the model forecast for 2019 and the 2020 Test Year. In your answer specifically address HDD and CDD values that may affect normalization, also customer/connection growth and the effects of CDM.

As can be seen in both the Residential and GS<50 kW trend line provided in 3-EP-7, both classes were fairly consistent with the trend line with the exception of 2017.

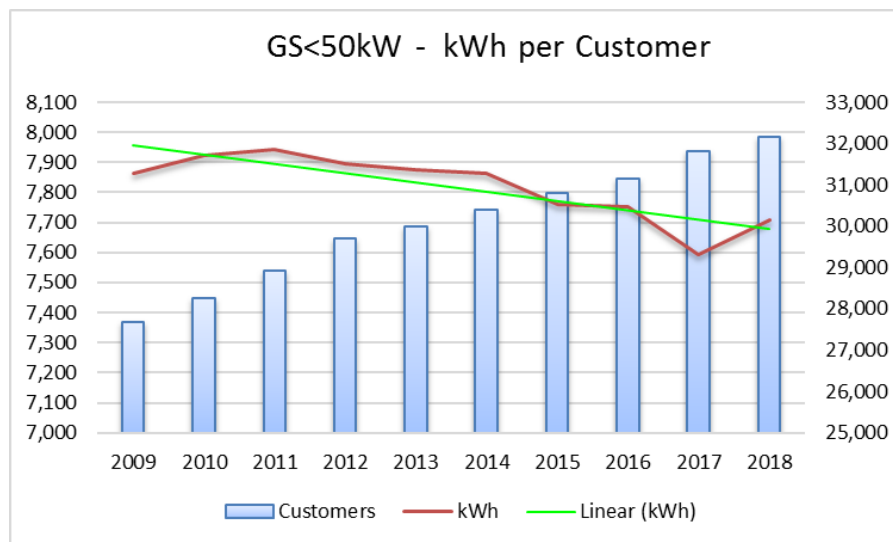
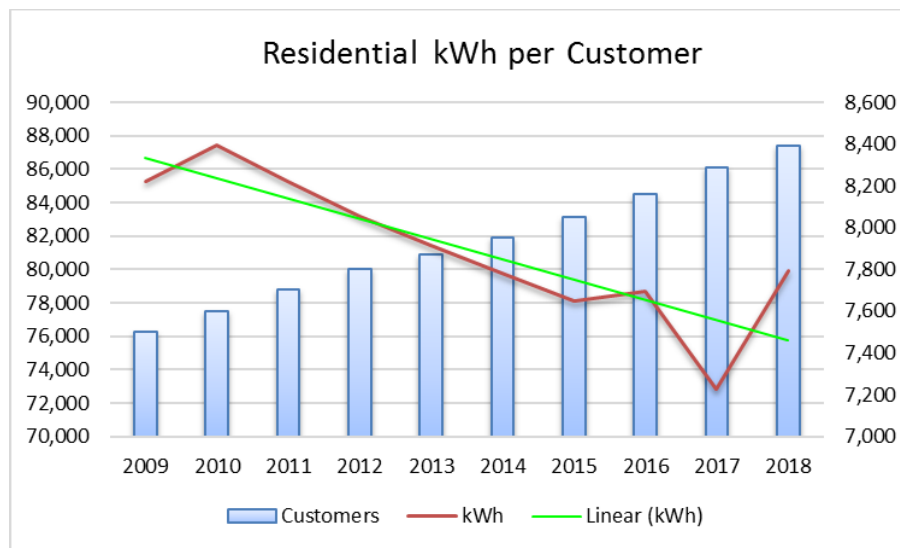


Statistic	2017	2016	Degree Variance	%% Variance
Heating Degree Days	3,892.0	3,849.0	43.0	1.12%
Cooling Degree Days	172.3	287.4	-115.1	-40.05%
Mean Temperature	7.8	8.2	-0.4	-4.88%
Daily High (average)	13.1	14.0	-0.9	-6.43%
Daily Low (average)	2.4	2.4	0.0	0.00%

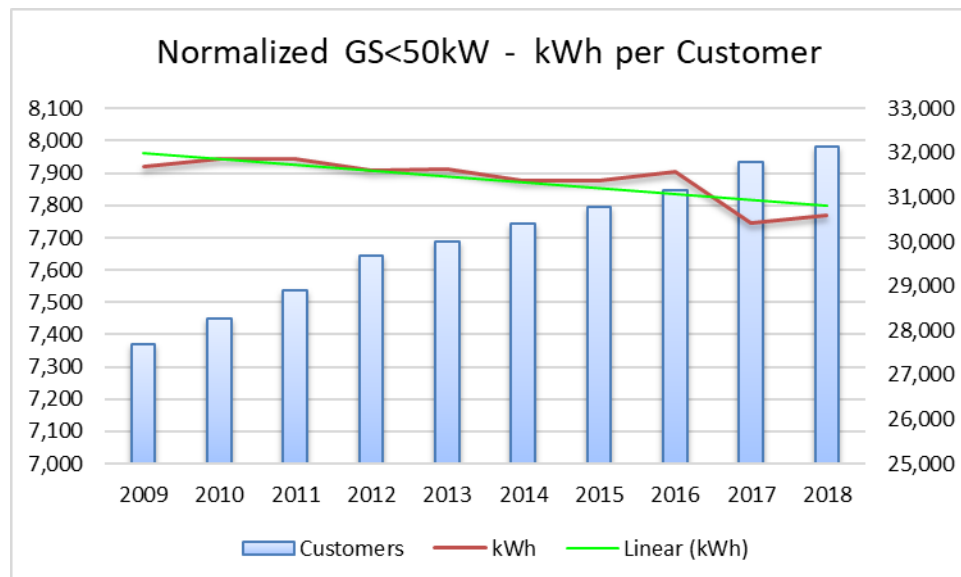
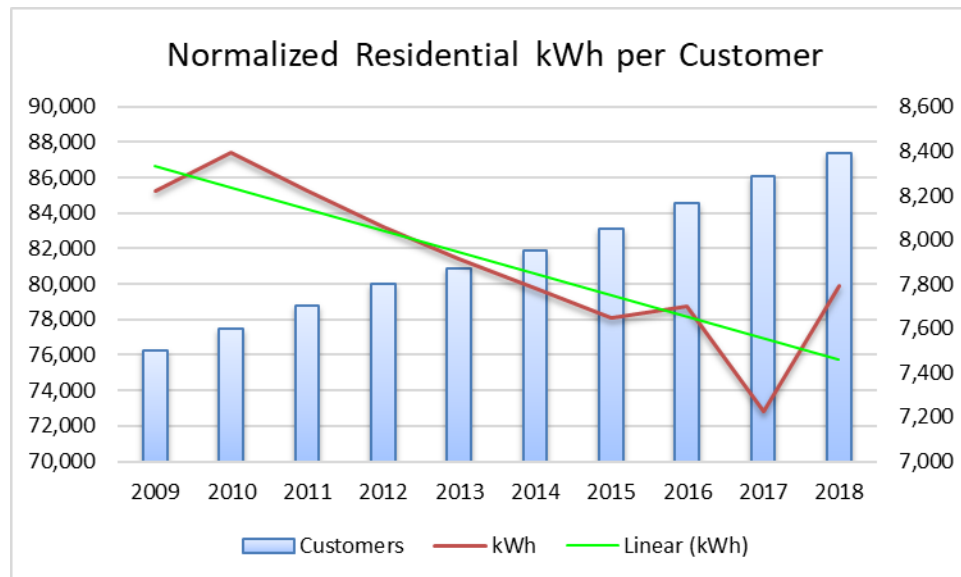
The large decrease in cooling degree days along with a very slim increase in heating degree days resulted in unusually low consumption in 2017. At the time of preparing the Application, it appeared that 2018 was unusually high. By the end of June 2019; however, energy consumption actuals are just 1.56% lower than in 2018. While KWH consumption has been declining over that last few years due to the success of the CDM programs, such large swings in consumption are not the norm.

Reference: Exhibit 3, Table 3.1.9-1 4, Annual Usage per Customer/Connection; Table 3.2.2-1, Summary of Forecast

- a) Please provide a graphical representation similar to Exhibit 3 Page 30 but with trend lines added for the Residential and GS<50 Classes.



- b) Please provide the trends and decline in normalized average use for each class. Discuss the factors in the decline in average use.



Weather plays a role in consumption but the CDM programs and the high cost of power has resulted in customers doing their best to consume less. Appliances energy ratings have improved greatly over the last decade as well.

- c) Please provide the average growth factors in customers and reduction of average use (Including CDM) and provide the net impact of these on the normalized load forecast for 2019 and 2020.



Residential			GS<50 kW		
Year	Customers	kWh	Year	Customers	kWh
2010	1.64%	2.12%	2010	1.06%	1.32%
2011	1.62%	-2.10%	2011	1.21%	0.50%
2012	1.57%	-1.97%	2012	1.42%	-1.06%
2013	1.12%	-1.74%	2013	0.55%	-0.47%
2014	1.21%	-1.68%	2014	0.74%	-0.31%
2015	1.51%	-1.72%	2015	0.67%	-2.40%
2016	1.71%	0.63%	2016	0.63%	-0.15%
2017	1.81%	-6.11%	2017	1.16%	-3.84%
2018	1.55%	7.79%	2018	0.59%	2.84%
Average	1.53%	-0.53%	Average	0.89%	-0.40%
2019	1.40%	-0.60%	2019	0.95%	-0.41%
2020	1.40%	-0.60%	2020	0.96%	-0.41%

The impact is that both classes see a continued reduction in consumption despite moderate increases in customer counts.



Exhibit 4

4-EP-8

Reference: Exhibit 4, Table 4.1.1-4, Total Actual and Forecast Spend

Preamble: KWHI presents CAPEX and OM&A together in the Total Spend. In most utilities CAPEX and OM&A are subject to different pressures and treated separately with the exception of Capitalized OM&A.

Table 4.1.1-4 provides the data and annual percentage changes for OM&A and TOTAL spend using MIFRS.

- a) Please summarize the reasons/drivers of the 2019 and 2020 forecast increases in OM&A taking into account changes in capitalized OM&A.

For the years 2018 and 2019, the table 4.1.1-4 from the original application as filed by departments affected by capitalized labour include:

- ✓ Engineering capitalized \$1.8M in 2018 and also estimates to capitalize \$1.8M in 2019. Based on the table, increases from 2018 to 2019 are \$308K. Of that increase, \$167K is increases to labour and labour overhead. This increase includes only half of the incremental salary for the asset manager and part-designer to be hired during 2019.
- ✓ Customer Service in 2019 estimated to capitalize \$479K for the CIS implementation project. Based on the table, increases from 2018 to 2019 are \$123K. \$100K is related to estimate change management consulting fees for 2019 related to the CIS implementation project.
- ✓ Information Technology in 2019 estimated to capitalize \$425K. Based on the table, increases from 2018 to 2019 are \$254K. Incremental costs for cyber security for 2019 are estimated to be \$64K. The remainder relates to IT applications service contracts increases including the new payroll/HR system of \$70K.

For the years 2019 and 2020, the table 4.1.1-4 from the original application as filed by departments affected by capitalized labour include:

- ✓ Engineering estimates to capitalize \$1.8M in 2019 and also estimates to capitalize \$1.8M in 2020. Based on the table, increases from 2019 to 2020 are \$131K. The other half of the incremental salary for the asset manager and part-time designer hired in 2019 is included here.
- ✓ Customer Service in 2020 estimated to capitalize \$120K for the CIS implementation project of which 1/5 was included in the 2020 rebase budget (\$24K). Based on the table, increases from 2019 to 2020 are \$50K which can be attributed to salaries and inflation.



- ✓ Information Technology in 2020 estimated to capitalize \$106K for the CIS implementation project of which 1/5 was included in the 2020 rebase budget (\$21K). Based on the table, increases from 2019 to 2020 are \$174K. Incremental costs for CIS software support and managed services are \$408K.

b) Which figures is KWHI asking the e Board To approve for 2019 and 2020?

The amounts that KWHI asked the Board to approve in its original application for 2019 and 2020 are \$20.2M and \$22.0M respectively as shown in Table 4.1-3.

Table 4.1.1-4 shows the movement of transfers between OM&A and capital and is being used to demonstrate the Totex approach used by KWHI and how it tries to balance its total spend envelope through movements between capital and OM&A.

c) Please summarize the reasons/drivers of the 2019 and 2020 forecast increases in Capex, (taking into account of the end of the non-discretionary LRT Project).

A summary of the drivers for the material increase for the 5-year forecast period relates to three major initiatives that will be undertaking and are not able to be completely offset by deferring other investments. These initiatives are:

1. Replacement of the 35-year-old legacy CIS – \$7.76M (2019 and 2020)
2. Construction of new underground distribution feeder to downtown Kitchener to supply an increase in new developments (15 high rise buildings, 3,000-4,000 residential units) - \$2.5M (2020-2022)
3. Replacement of two power transformers that are at end of life at KWHI's #5 Transformer Station - \$6.4M (2023-2024)

All three initiatives were part of KWHI's capital plan that was included in its recently conducted customer engagement survey.

Some capital work was deferred due to the large expenditures required for the LRT project. These deferred capital projects include pole line rebuilds and transformer stations renewal projects.

d) Which figures is KWHI asking the Board to approve for 2019 and 2020?

The amounts that KWHI asked the Board to approve in its original application for 2019 and 2020 are \$25.2M and \$24.6M respectively as shown in Table 4.1-3.



Table 4.1.1-4 shows the movement of transfers between OM&A and capital and is being used to demonstrate the Totex approach used by KWHI and how it tries to balance its total spend envelope through movements between capital and OM&A.



4-EP-9

Reference: Exhibit 4, Page 4, Table 4.1.2, OM&A per customer; Appendix 5A Metrics

- a) Please Update the Table to show more recent year 2018 data (if available).

The table is based on the OEB Yearbooks. 2018 data is not yet available

- b) Please provide the other EDS Scorecard Cost Control Metrics for KWHI and its cohort (cost/Km line).

As per the PEG report, 2017

	Cost per Customer	Cost per km of line
Kitchener Wilmot Hydro Inc	\$487	\$23,707
Burlington Hydro Inc	\$608	\$26,606
Energy + Inc	\$640	\$27,874
Guelph Hydro Systems Inc	\$624	\$30,163
London Hydro Inc	\$516	\$28,106
Oakville Hydro Electricity Distribution Inc	\$695	\$25,630
Waterloo North Hydro Inc	\$773	\$26,800

- c) Please discuss the trends in these measures and position KWHI in 2015 and 2018 (or 2017 if 2018 is not available)

	Cost per Customer		
	2017	2016	2015
Kitchener-Wilmot Hydro Inc.	487	494	481
Burlington Hydro Inc.	608	620	616
Energy + Inc.	640	639	646
Guelph Hydro Systems Inc.	624	624	632
London Hydro Inc.	516	521	505
Oakville Hydro Electricity Distribution Inc.	695	720	732
Waterloo North Hydro Inc.	773	809	762
Average	643	656	649
Amount below Average	156	162	168
% below average	24.2%	24.6%	25.9%



As can be seen by the above table, KWHI is below the average of its peers in terms of cost per customer as measured by PEG. KWHI has experienced an average annual growth of 0.6% cost per customer in the period 2015 – 2017. Exhibit 1, Section 1.7.5 discusses the PEG efficiency model and KWHI is expecting to continue to below the average cost per customer relative to its peers in 2019 and 2020.

	Cost per km of Line		
	2017	2016	2015
Kitchener-Wilmot Hydro Inc.	23,707	23,866	23,150
Burlington Hydro Inc.	26,606	27,518	26,730
Energy + Inc.	27,874	23,739	29,524
Guelph Hydro Systems Inc.	30,163	30,014	29,993
London Hydro Inc.	28,106	28,281	27,149
Oakville Hydro Electricity Distribution Inc.	25,630	26,324	26,730
Waterloo North Hydro Inc.	26,800	28,094	26,109
Average	27,530	27,328	27,706
Amount below Average	3,823	3,462	4,556
% below average	13.9%	12.7%	16.4%

As can be seen by the above table, KWHI is below the average of its peers in terms of cost per km of line as measured by PEG. KWHI has experienced an average annual growth of 1.2% per km of line in the period 2015 – 2017.



4-EP-10

Reference: Exhibit 4, Table 4.2.2-2 and Table 4.1.2

Preamble: The 2020 Test Year OM&A per customer is projected to increase from \$200.54 in 2018 to \$222.27. \$4.12 of the increase is due to the required investment in a Customer Information system, \$4.70 is due to the requirement to switch to monthly billing and \$2.67 is due to increased regulatory expenses.

- a) Confirm that according to the 2017 OEB Yearbook, \$222.27 would now place KWHI as the third lowest OM&A per customer, rather than first in 2014.

Confirmed.

As per the OEB 2017 Yearbook, KWHI in 2017 has the lowest OM&A per customer at \$191.43 (OM&A reported in the Yearbook includes property tax). If this value were changed to \$222.27, KWHI would be third, behind Hydro Hawkesbury at \$211.18 and E.L.K. Energy at \$215.93. It's important to note that Table 4.2.2-2 shows OM&A per customer slightly lower for 2017 (\$187.18) due to the exclusion of property tax in Table 4.2.2-2.

- b) Please provide the latest cost/customer and cost per Km of line for the cohort group.

As per the 2017 PEG rankings:

	Cost per Customer	Cost per km of line
Kitchener Wilmot Hydro Inc	\$487	\$23,707
Burlington Hydro Inc	\$608	\$26,606
Energy + Inc	\$640	\$27,874
Guelph Hydro Systems Inc	\$624	\$30,163
London Hydro Inc	\$516	\$28,106
Oakville Hydro Electricity Distribution Inc	\$695	\$25,630
Waterloo North Hydro Inc	\$773	\$26,800

- c) KWHI was the lowest cost performer from 2015-2017 explain what cost pressures causing the increases were unique to KWHI.

KWHI continues to deliver high reliability and customer value while being one of the lowest cost utilities in the province. KWHI has always prided itself on being efficient and cost conscious. From market opening, KWHI has always been one of the top utilities in the province and this fact does make KWHI unique in the industry. In fact, the year prior to market opening, KWHI had applied for and received a rate decrease.



The IRM regime does cause some challenges for KWHI as the years roll forward as it has fewer places in which to find efficiencies than most other LDCs. This fact is one of the issues that is particularly relevant to KWHI's current situation and places KWHI in a challenging position to absorb additional cost pressures such as OEB cost assessments, increasing regulatory requirements, conversion to monthly billing, cyber security, and customer engagement.

Through the last IRM period, KWHI has worked within its cost envelope (the Total Spend Approach) but now it requires to reset its envelope to accommodate its increasing capital and operating requirements.

In addition, KWHI has had to establish new departments to keep up with increased requirements: Communication and Human Resources departments existed in a very limited capacity when KWHI last reset its rates in 2014 and the costs were minimal. Given the increasing job responsibilities of the management of KWHI, the status quo of everyone trying to do everything themselves was completely unsustainable. The Safety and Wellness department also has growing job duties.

The CIS used by KWHI was entirely developed in-house and now requires a complete replacement attracting annual license fees and management services not previously incurred. The use of KWHI's home-grown system has saved KWHI's customers a great deal of money over the years but the trade-off has been that KWHI's other Enterprise Systems have been underdeveloped and its CIS has become obsolete and programmers very hard to find. In short, the existing CIS must be replaced.

4-EP-11

Reference: Exhibit 4, Table 4.3.4, Variance Analysis Programs Pages 42-53

- a) Please list/ provide a breakout of Total Compensation costs for non-core departments (IT for example) for 2018, 2019 and 2020 show percentage changes.

Table 4-EP-11

Non-Core Departments Compensation	2018 Actual MIFRS	2019 Bridge MIFRS	% Change	2020 Test MIFRS	% Change
Information Technology	1,033,473	1,035,700	0.2%	1,094,000	5.6%
Human Resources & Safety	367,652	369,700	0.6%	380,800	3.0%
Warehouse	666,402	685,800	2.9%	707,000	3.1%
Total Non-Core	2,067,527	2,091,200	1.1%	2,181,800	4.3%

- b) Provide the main drivers for the increases e.g. headcount, compensation increases and increased workload/activity. Provide relevant references to the evidence.

The drivers for the increases in the non-core departments' compensation between 2018 to 2020 relates to the following:

- KWHI's compensation program follows a stepping progression that equates to 5% annually, explained in Exhibit 4 Section 4.4.2.2 "Executive/Management/non-Union Employees", depending on the level of experience coming into a role and subsequent performance reviews.
- Employees are also entitled to receive negotiated wage increases based on the Collective Agreement as per Exhibit 4 Table 4.4.2.1-1 "Annual Percentage Adjustment for all Employees".
- Headcount – there have been no changes to headcount for these three departments per Exhibit 4 Table 4.4.3.1-1 "Headcount at Year End".
- Currently KWHI capitalizes work completed by programmers on the legacy CIS if appropriate. The expectation for 2019 was that this would be reduced significantly (to \$60K annually), for the most part, as the implementation of the new CIS would commence and further development of the legacy would only be performed if absolutely necessary (i.e. regulatory requirements). The capitalization of IT labour directly reduced



OM&A prior to 2018 and that is why there is a marked increase related to IT labour costs in 2019.

IT Labour Credits	Actual 2014	Actual 2015	Actual 2016	Actual 2017	Actual 2018
Labour Credit - Current CIS	(98,261)	(202,328)	(151,978)	(153,868)	(111,143)

- Overtime varies depending on the year. With IT, overtime is dependent on the projects being worked on. With the warehouse, overtime levels vary based on the number of off-hours call-ins that occur.

c) Indicate how these departmental costs are allocated to capital and operating in 2020.

Prior to 2019, IT included compensation which was partially offset by labour credits from capital work performed on the legacy CIS. These labour credits varied each year and was the amount that was capitalized. KWHI determined the amount to be capitalized on a project by project basis and applied a labour credit directly to the IT business unit to reduce OM&A and allocate appropriate costs to capital initiatives.

For 2019 and 2020, some IT labour costs have been capitalized due to the implementation of the new CIS. For 2019, the estimated capital labour for the year has been credited against the IT department. For 2020, the estimated capital labour has also been credited against the IT department but only 1/5 of the amount to smooth the amount for the CoS Application.

Generally, Human Resources is a 100% operating cost with no capitalization of labour.

For the Warehouse department, the equivalent of the salaries of two and a half stock keepers is charged out as a material overhead charge. All inventory issues from the Warehouse department are work order driven. The work order determines whether the inventory issue is to be charged to capital, OM&A, or burdened. The material overhead charge is equal to 6% of the value of the inventory being issued. For fully recoverable work orders (with no capitalization), the percentage of material overhead charged is 15% of the inventory issued. If the inventory issues are charged to burden the split between capital and OM&A is 40% and 60% respectively.



- d) What steps are management taking to control these costs in the Budgeting Process. Please use HR and IT as examples.

During the budgeting process, for all departments, KWHI generally uses the following guidelines:

- Labour estimates to be inflated using the rates negotiated in the collective agreements with the two unions.
- Non-labour components to be budgeted using the current year OEB deemed inflation rate less the stretch factor.

All incremental expenses over and above these two inflationary rates must be approved. If an item was not budgeted for in the current year, it cannot be budgeted for next year without an explanation.

In terms of controlling costs into the near and long-term future, there are no plans to increase the headcount currently in the HR or IT departments.

When new initiatives/needs are identified, the first decision made by management is whether to do it in-house or to outsource it. If it is less expensive to do something in-house, KWHI will typically do so.

If the decision is to procure an item or a service, KWHI follows a competitive bidding process. Decisions are made generally based on lowest costs but not always as there are often other qualitative factors that also need to be weighed.

KWHI's IT needs continue to grow and it has become difficult to build software in-house anymore. As the need for additional and more power software becomes the norm, KWHI is redefining and repurposing the IT roles to accommodate its needs. KWHI's attention to cost control in IT assets is best seen through its two-year process to purchase and implement its new CIS, Oracle CC&B – first through a consortium and finally on its own. KWHI has also had its Enterprise financial software, JD Edwards, for 20 years, choosing to upgrade its versions rather than replacing the software which would be much more costly.

Human Resources is a growing area within KWHI and in 2018, once a need was identified for additional staff, an administrative position was eliminated and repurposed for the Human Resources department. While this move did not reduce costs with the Human Resources group, it did reduce costs elsewhere at KWHI. Human Resources also works with the GridSmart City Cooperative to



increase efficiencies of scale and in identifying synergies to share resources and insights to improve cost efficiencies (Exhibit 4 Section 4.4.3.2.1 “On-Going Efficiency Projects” and Section 4.4 “Workforce Planning and Employee Compensation”).

Additionally, costs are being controlled through KWHI’s purchasing processes for all departments by use of competitive quoting, analysis, negotiation and working with supply partners. The purchasing group at KWHI work very closely with the Engineering and Operations departments to source products that provide the best total cost of ownership.



4-EP-12

Reference: Exhibit 4, Depreciation Expense, Table 4.9.1-1

- a) Please provide the Calculations supporting the Increases in Depreciation in 2020 related to the new CIS. Please include explanatory notes related to the tax treatment.

The new CIS is expected to be in service in 2020. The total capital cost will be \$7.76M with \$7.4M being capitalized in 2020. The remainder will be capitalized in 2021 (relating to post-go-live activities).

The CIS will be amortized over 10 years using the half-year rule in 2020. The amortization in 2020 will be \$370K and in the following years, the amortization will be \$740K.

Accelerated CCA will be recorded for income tax purposes in 2020 on the \$7.4M and on the remaining amount in 2021. See 4-Staff-47.

- b) Will the accelerated Depreciation continue into 2021 and beyond?

Yes, in 2021 only. See a) above.

- c) Please provide the basis of the increased Transportation Equipment Depreciation Expense in 2020. Please relate this to changes to the Fleet.

The standard lag time from the placement of vehicle orders to time of delivery, can takes months. As a result, these types of capital purchases are ordered well in advance to ensure the vehicles are available to be placed into service when needed. Sometimes this requires the newly purchased vehicles to be temporarily held in "assets not in service" account, pending decommissioning or trade-in of vehicles being replaced.

The increase in depreciation in 2020 reflects the following additions to the fleet in 2020:

- Full year's depreciation (compared to six months in 2019) on two trucks purchased in 2018 that were brought into service in 2019.
- Full year's depreciation (compared to six months in 2019) on the three trucks included in the 2019 capital budget to replace a 2007 dump truck, 2006 construction service truck and a 2005 crane. In addition, a 2006 stations service van is being replaced along with the replacement of smaller vehicles, trailers and equipment.
- Half year's depreciation (compared to nil in 2019) on the purchase of three trucks planned for 2020 to replace a 2007 Posi Plus single bucket vehicle,



2009 Tree Trimming Ranger and a 2008 dump truck plus replacement of smaller vehicles, trailers and equipment.



4-EP-13

Reference: EB-2019-0049_KWHI_Appl_LRAMVA_Workform_20190430; Exhibit 4, Tables 4.11.2 -1 and Table 4.11.2 -1; Appendix 4-4

Preamble: The Conservation First Program has terminated and the IESO now delivers CDM Programs.

- a) Please provide KWHI's interpretation the Board's policy on LRAM post 2018.

The most recent correspondence issued by the OEB with respect to the LRAM dated June 20, 2019 states that the OEB believes LDCs should continue to have access to a lost revenue adjustment mechanism.

KWHI is applying for lost revenue for the years 2015 and 2016 and has access to the final verified results for programs that KWHI delivered in those years.

- b) Is the recovery of amounts in 2020 from prior years due solely to persistence? Please discuss.

The recovery is based on lost revenues on programs delivered in 2015 and 2016, less the LRAMVA amount from EB-2013-0147 and persistence of programs delivered 2013 – 2016.

- c) Please provide a table that breaks out the contributors to the amounts to be recovered for each of the years.

	Residential	GS<50 kW	GS>50 kW
2015 Results			
Lost Revenue in 2015 from 2013 programs	26,906	20,242	56,436
Lost Revenue in 2015 from 2014 programs	62,921	21,744	44,556
Lost Revenue in 2015 from 2015 programs	68,666	47,015	167,435
2016 Results			
Lost Revenue in 2016 from 2013 programs	18,941	20,011	57,178
Lost Revenue in 2016 from 2014 programs	45,396	21,777	45,424
Lost Revenue in 2016 from 2015 programs	51,695	47,761	170,698
Lost Revenue in 2016 from 2016 programs	116,875	18,837	119,529
	391,400	197,388	661,256
Less LRAMVA from EB-2013-0147			
2015 Forecast	(54,909)	(41,337)	(140,469)
2016 Forecast	(41,851)	(41,993)	(143,207)
	294,640	114,057	377,580
Carrying Charges	18,875	7,390	24,135
	<u>313,514</u>	<u>121,448</u>	<u>401,716</u>



4-EP-14

Reference: Exhibit 4, Appendix 4-7, Customer Service Outsourcing EARTH Business Case

- a) Please Provide the following Billing information from 2015-2020 and add explanatory notes and any other relevant information:
- number of customers,
 - number on re-authorized payment customers,
 - number of bills paid by customers at the KWHI office,
 - number of paper bills issued,
 - mailing costs,
 - cost of paper bills and unit costs,
 - and number of e-bills.

	Inquiry	2015	2016	2017	2018	2019	2020
a) i	number of customers	94,204	94,058	97,757	96,827	97,623	98,935
a) ii	number of pre-authorized payment customers	19,612	20,620	21,161	21,820	22,571	23,280
a) iii	number of bills paid by customers at the KWHI office	38,343	47,747	36,560	31,292	17,244	5,239
a) iv	number of paper bills issued	605,612	1,004,746	985,287	984,548	990,987	980,728
a) v	mailing costs	0.7205	0.7406	0.7603	0.7804	0.8101	0.8305
a) vi	cost of paper bills and unit costs	436,329	744,076	749,130	768,343	802,843	814,472
a) vii	number of e-bills	70,035	123,271	163,483	183,213	211,989	238,316

- b) Please summarize the cost/benefit of outsourcing per The Memo.

Three scenarios were evaluated: status quo (IT resources dedicated to bill print and mailing functions at 85% of one FTE); hire a dedicated mailing clerk internally; and outsource to the most affordable third-party proposal. A five-year

cost horizon was examined and the option to outsource the function proved to be the least costly.

In addition, prior to the implementation of monthly billing, the running of the mail machine was a part-time job and the IT clerk that performed the work worked the other half of their time in the IT department. After monthly billing was implemented, the IT clerk was, for the most part, unable to complete their duties in the IT department that still needed to be done. This created hardship of the remaining IT staff and was unsustainable.

The mailing machine was also costly to purchase and maintain.

As per the memo, the costs for each scenario are as follows:

Scenario	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Scenario A	158,342	161,509	164,739	168,034	171,394	824,018
Scenario B	216,342	220,669	225,082	229,584	234,176	1,125,852
Scenario C	161,690	164,924	168,222	150,947	153,966	799,748

c) Has the contract commenced?

Yes, in August of 2017.

d) What is the duration of the Outsource Contract?

The contract runs until December 31, 2020.

e) What performance measures are included (on time etc.)

The contract stipulates that "KWH will generate files and upload to ERT's SFTP site for processing by 1:00 p.m. for delivery to Canada Post on the next business day." Issues affecting this performance are classified and managed as follows:

Severity	Description	Resolution Time
Critical	A critical service in production is unavailable or very seriously impaired by a problem. The impact on business is severe with users having no readily available alternative way of performing their normal work. These issues would involve inability to issue bills.	within 24 hours



Severity	Description	Resolution Time
High	A non-critical service is unavailable or impaired by a problem. There is a minor impact on business. The users are having difficulty performing part of their normal work or can undertake other work while the problem is rectified. An example may be the issuance of bills without audit reports or bill inserts.	<36 hours
Medium	A non-critical service is unavailable or impaired by a problem. There is no direct immediate impact on business. The users are inconvenienced by the problem but have alternative ways of performing normal work available.	<5 days
Low / Develop ment	Client requires additional services or technical support that is non-critical in nature.	As Agreed



Exhibit 5

5-EP-15

Reference: Exhibit 5, Section 5.1.3, Return on Equity

- a) Please provide a Table showing the Board-Authorized and Actual realized ROE 2014-2018.

	2014	2015	2016	2017	2018
Board Authorized ROE	9.36%	9.36%	9.36%	9.36%	9.36%
Actual ROE	10.87%	11.47%	10.18%	9.59%	9.06%

- b) How were the returns disposed of in each year e.g. dividends to the Municipalities retained earnings etc.?

KWHI's Board mandate is to provide Shareholders a reasonable rate of return as permitted by the OEB. KWHI returns are split between dividends and retained earnings.



5-EP-16

Reference: Exhibit 5, Section 5.1.4, Notional Debt; Table 5.1.1-1; Appendix 2-OB,

Preamble: KWHI's deemed and actual long-term debt are different. For the 2020 Test year, the actual amount of Long-Term debt is \$76,692,142 and the deemed long-term debt is \$134,045,953. KWHI has positive notional debt. KWHI is requesting the weighted average cost of actual long-term debt on its notional debt rather than the current long-term debt rate issued by the Board. KWHI has \$57,353,811 in notional debt for the 2020 Test Year.

- a) What is the current Long-Term Debt rate issued by the Board?

The 2019 deemed long-term debt rate is 4.13%.

- b) What Rate has KWHI used for cost of LT Debt for 2020?

The 2020 deemed long-term debt rate has not yet been released by the OEB. KWHI has used the 2019 long-term rate as a proxy and will use this rate until the 2020 Cost of Capital parameters are released.

- c) What is the Impact of KWHI's LT Debt proposal on 2020 Cost of Debt, assuming the Board Rate rather than the WAC of LT Debt?

The OEB has stated in its Filing Requirements that the notional debt should attract the weighted average cost of actual long-term debt rather than the current deemed long-term debt rate issued by the OEB and that has been upheld in several recent decisions. KWHI has followed Board Policy.

The weighted average cost of long-term debt is 4.15% compared to the Board rate on long-term debt of 4.13%. The difference is \$12,987.



5-EP-17

Reference: Exhibit 5, Appendix 5-3, Infrastructure Ontario Loan

- a) Please confirm KWHI is paying 4.28 % on the IO 10-year loan

Confirmed.

- b) Why is the IO Loan not included in the 2020 Cost of LT Debt Table 5.1.1-1, given its maturity in 2020?

The debt is fully paid in May of 2020. The table would be as at year end.

- c) Confirm KWHI has projected cash balances and forecasts that it will not need to borrow additional cash to replace the IO Loan?

KWHI is not forecasting a need to borrow additional funds prior to end of 2020.



5-EP-18

Reference: Exhibit 5, Section 5.1.2, Short Term Debt

Preamble: KWHI is requesting a Short-Term Debt rate of 2.82% for the 2020 Test Year in accordance with the Cost of Capital Parameter Updates for 2019 Cost of Service Applications

Please confirm KWHI will update both the ST debt rate and Deemed LT rate when the 2020 Rate Order is prepared.

Confirmed.



Exhibit 7

7-EP-19

Reference: Exhibit 7, Section 7.1.4, Embedded Distributor

Preamble: KWHI received feedback from WNHI they do not like the large increase, but they understand the methodology. The 2019 Cost Allocation model used for this Application is different from the Cost Allocation model used in the 2014 Cost of Service Application.

- a) Please provide a copy of the correspondence with Waterloo North Hydro

See Appendix 7-3 of the Cost of Service application.

- b) Please breakout the ED allocation change 2014-2020 into its components, showing the amounts % increases and Total.

As per 1-EP-1, the OEB Cost Allocation model has changed. The numbers reflected below are both before and after the model change.

		2014 Board Approved	2020 As Filed	2020 With new model	2020 (new)- 2014 \$	2020 (new)- 2014 %
Rate Base Assets						
crev	Distribution Revenue at Existing Rates	\$71,836	\$102,603	\$102,603	\$30,767	43%
mi	Miscellaneous Revenue (mi)	-	7,961.0	6,650.0	\$6,650	0%
Total Revenue at Existing Rates		\$71,836	\$110,564	\$109,253	\$37,417	52%
Factor required to recover deficiency (1 + D)						
Distribution Revenue at Status Quo Rates		\$71,888	\$111,076	\$110,876	\$38,988	54%
Miscellaneous Revenue (mi)		\$0	\$7,961	\$6,650	\$6,650	0%
Total Revenue at Status Quo Rates		\$71,888	\$119,037	\$117,526	\$45,638	63%
Expenses						
di	Distribution Costs (di)	\$0	\$0	\$0	\$0	0%
cu	Customer Related Costs (cu)	\$0	\$0	\$0	\$0	0%
ad	General and Administration (ad)	\$0	\$8,946	\$7,361	\$7,361	0%
dep	Depreciation and Amortization (dep)	\$0	\$11,819	\$6,232	\$6,232	0%
INPUT PILs (INPUT)		\$0	\$3,289	\$3,189	\$3,189	0%
INT	Interest	\$0	\$20,627	\$20,298	\$20,298	0%
Total Expenses		\$0	\$44,681	\$37,080	\$37,080	0%
Direct Allocation		\$98,174	\$118,676	\$58,260	(\$39,914)	-41%
NI	Allocated Net Income (NI)	\$0	\$30,546	\$30,059	\$30,059	0%
Revenue Requirement (includes NI)		\$98,174	\$193,903	\$125,400	\$27,225	28%



c) Given the small number of WNHI Customers what is the impact per customer?

As per the 2017 OEB Yearbook, WNHI has 57,041 customers. The increased cost allocation from 2014 is \$27,225. This amounts to \$0.48/customer.



File Number: EB-2019-0049

Interrogatory Response

Page 41 of 41

Filed: July 31, 2019

Appendix 1 – Major Software

<Blank Page>

Kitchener-Wilmot Hydro Inc.
Major Software
As at December 31, 2018

Software Description	Year Acquired	Service Life	Original Cost	Accumulated Depreciation	Net Book Value
Scada Software Licenses	1998	5	33,372	(33,372)	
SCADA Software Upgrade	2010	5	123,593	(123,593)	
SCADA GUI Upgrade	2017		41,000	(15,951)	25,049
			197,965	(172,916)	25,049
JD Edwards Licenses	1997	5	106,440	(106,440)	
JD Edwards Financial Software	1998	5	175,332	(175,332)	
JD Edwards Financial Software	1999	5	153,870	(153,870)	
JD Edwards Upgrade to ERP 8 - 2003	2003	5	56,750	(56,750)	
JD Edwards Improvements 2004	2004	5	21,000	(21,000)	
JD Edwards Improvements 2005	2005	5	80	(80)	
JD Edwards Upgrade to ERP 9	2011	5	216,618	(216,618)	
JDE Upgrade to ERP 9-2012	2012	4	11,187	(11,187)	
JD Edwards Improvements 2014	2014	3	18,248	(8,544)	9,704
JD Edwards Improvements 2016	2016	3	36,671	(32,634)	4,037
JDE Enhancements 2018	2018	3	55,506	(391)	55,115
JDE Upgrade to ERP 9.2 (not in service)	2018	5	150,000		150,000
			1,001,702	(782,846)	218,856
FieldView/RIS-Locates Use	2004	5	7,968	(7,968)	
Field Worker Workforce SW	2007	5	57,237	(57,237)	
2008 FieldWorker Workforce SW	2008	5	30,773	(30,773)	
			95,978	(95,978)	0
Outage Logging Application	2015	3	15,363	(15,363)	
Outage Management System	2015	5	265,388	(137,117)	128,270
2016 Outage Management System	2016	5	163,273	(139,575)	23,698
Outage Management System	2016	3	123,023	(52,277)	70,746
Outage Management System	2017	3	(892)	198	(694)
			566,155	(344,134)	222,021
Intergraph Geomedia Software	2002	5	6,585	(6,585)	
Intergraph GIS Upgrade	2011	5	41,079	(41,079)	
Intergraph Upgrade-Mobile Lin	2014	3	30,122	(30,122)	
2018 GIS Upgrade-Intergraph (not in service)	2018	3	69,182		69,182
			146,967	(77,786)	69,182
Insight Software-JDE Reporting	2011	5	69,046	(69,046)	
Insight Software-2012 Costs	2012	5	61,302	(61,302)	
Insight-DX & Job Cost	2014	4	2,424	(1,515)	909
Insight Upgrade	2018	3	1,787	(50)	1,737
			134,559	(131,912)	2,647
Office 365 Implementation	2018	3	33,612	(2,423)	31,189
Payroll System Enhancements 2009	2009	3	9,155	(9,155)	
Payroll System Enhancements 2010	2010	3	54,636	(54,636)	
Payroll System Enhancements 2011	2011	3	30,100	(30,100)	
Payroll System Enhancements 2012	2012	3	83,036	(83,036)	
Payroll System Enhancements 2013	2013	3	51,806	(51,806)	
Payroll System Enhancements 2014	2014	3	56,045	(56,045)	
Payroll System Enhancements 2015	2015	3	45,967	(45,967)	
Payroll System Enhancements 2016	2016	3	8,489	(7,167)	1,322
Payroll System Enhancements 2017	2017	3	6,265	(4,177)	2,088
Payroll System Enhancements 2018	2018	3	18,597	(6,199)	12,398
Payroll/HR Replacement-UltiPro (not in service)	2018	3	36,000		36,000
			400,095	(348,287)	51,809
Sharepoint 2016	2016	4	98,863	(28,846)	70,016
Sharepoint 2017	2017	4	75,632	(23,198)	52,434
			174,494	(52,044)	122,450
2008 Smart Meter/AMI Programming & Application	2008	5	65,180	(65,180)	
2009 Smart Meter/AMI Programming & Application	2009	5	188,000	(188,000)	
2010 Smart Meter/AMI Programming & Application	2010	5	58,623	(58,623)	
2011 Smart Meter/AMI Programming & Application	2011	5	142,968	(142,968)	
2012 Smart Meter/AMI Programming & Application	2012	5	51,270	(51,270)	
2013 Smart Meter/AMI Programming & Application	2013	5	4,324	(4,324)	
2014 Smart Meter/AMI Programming & Application	2014	3	6,791	(6,791)	
Sensus AMI RNI Upgr SW	2014	3	47,019	(47,019)	
2016 Smart Meter/AMI Programming & Application	2016	3	25,561	(10,224)	15,337
			589,737	(574,399)	15,337
Grand Total			3,307,653	(2,580,302)	727,350