EXHIBIT 3 - REVENUES

2018 Cost of Service

Hydro Hawkesbury Inc.
EB-2017-0048

3.1 TABLE OF CONTENT

TABLE OF FIGURES

3.1 LOAD AND REVENUE FORECAST

3.1.1 INTRODUCTION

The evidence presented in this exhibit provides information supporting the revenues derived from activities regulated by the Ontario Energy Board. Actual operating revenues from regulated operations are derived mainly from fixed and variable tariff charges as well as pass through charges and specific service charges. Revenues are collected from five (6) customer classes: Residential, General Service less than 50 kW, General Service greater than 50 kW, Unmetered Scattered Load (USL), Sentinel and Street Lighting. HHI does not anticipate any significant changes in its customer classes.

This exhibit also describes HHI's load and customer forecasts. The load forecast methodology and assumptions are described in detail at 3.1.4 Load Forecast Methodology.

The evidence herein is organized per the following topics:

1) Revenue and Load Forecast
2) Impact and Persistence from Historical CDM Programs
3) Accuracy of Load Forecast and Variance Analysis, and
4) Other Revenues

3.1.2 OVERVIEW OF CURRENT REVENUES

Table 1 below shows revenues from current distribution charges for 2017. Distribution Revenues are derived from a combination of fixed monthly charges and volumetric charges applied to the utility's proposed Load Forecast. Fixed rate revenues are determined by applying the current fixed monthly charge to the number of customers or connections in each of the customer classes in each month. Variable rate revenue is based on a volumetric rate applied to meter readings for consumption or demand volume.

HHI's 2018 forecasted revenues recovered through its currently approved distribution rates are projected at $1,611,356 (exclusive of all rate riders). The revenues at proposed distribution rates are presented in Exhibit 6 and Exhibit 8.

Table 1 - Revenues at Current Rates

2017 Rates at 2018 Load

	Test Year Projected Revenue from Existing Variable Charges							
Customer Class Name	Variable Distribution Rate	per	Test Year Volume	Gross Variable Revenue	Transform. Allowance Rate	Transform. Allowance kW's	Transform. Allowance $'s	Net Variable Revenue
Residential	$0.0051	kWh	48,228,553	$245,965.62			$0.00	$245,965.62
General Service < 50 kW	$0.0061	kWh	18,143,532	$110,675.55			$0.00	$110,675.55
General Service > 50 to 4999 kW	$2.0470	kW	211,046	$432,011.64	-0.60	189205	-$113,523.00	$318,488.64
Unmetered Scattered Load	$0.0039	kWh	429,307	$1,674.30			$0.00	$1,674.30
Sentinel Lighting	$3.2940	kW	238	$784.98			$0.00	$784.98
Street Lighting	$5.9651	kW	1,844	$10,998.81			$0.00	$10,998.81
Total Variable Revenue			67,014,520	$802,110.89	-0.6	189205	-$113,523.00	$688,587.89
2017 Rates at 2018 Load								
	Test Year Projected Revenue from Existing Fixed Charges							
Customer Class Name	Fixed Rate	Customers (Connections)	Fixed Charge Revenue	Variable Revenue	TOTAL	% Fixed Revenue	% Variable Revenue	% Total Revenue
Residential	$11.9000	4,836	$690,573.46	$245,965.62	$936,539.08	73.74%	26.26%	58.12%
General Service < 50 kW	$15.4700	618	$114,640.36	$110,675.55	$225,315.91	50.88%	49.12%	13.98%
General Service > 50 to 4999 kW	$100.9900	89	$107,667.89	$318,488.64	$426,156.53	25.26%	74.74%	26.45%
Unmetered Scattered Load	$6.6300	10	$761.75	$1,674.30	$2,436.04	31.27%	68.73%	0.15%
Sentinel Lighting	$1.6600	57	$1,130.06	$784.98	$1,915.04	59.01%	40.99%	0.12%
Street Lighting	$0.5500	1,211	$7,995.02	$10,998.81	$18,993.83	42.09%	57.91%	1.18%
Total Fixed Revenue		6,820	$922,768.54	$688,587.89	$1,611,356.43			

A completed Appendix 2-IB Load Forecast Analysis is presented at Appendix A of this Exhibit and in Tab 10 of the RRWF.[1]

HHI does not foresee or plan for any changes in the composition of its customer classes.

3.1.3 PROPOSED LOAD FORECAST

The following section of the application covers the approach taken to determine the Load Forecast. This section also covers economic assumptions and data sources for customer and load forecasts. It explains wholesale purchases and subsequent adjustments to the wholesale purchases. It also provides the rationale behind each variable used in the regression analysis. Lastly, it presents the regression results and explains how they were used to determine the forecast for the bridge and test year.

[1] MFR - Completed Appendix 2-IB; the customer and load forecast for the test year must be entered on RRWF, Tab 10

Table 2 below presents the actual and forecast trends for customer/connection counts, kWh consumption and billed kW demand. The forecast trend is what HHI has based its proposed rates on.

Table 2 - Customer and Volume Trend Table

	Year	2014	2015	2016	2017	2018	2018 CDM Adjusted
Residential	Cust/Conn	4,901	4,859	4,824	4,830	4,836	4,836
	kWh	51,395,624	49,584,777	48,033,529	50,145,146	48,571,399	48,228,553
	kW				-	-	-
		2014	2015	2016	-	-	
General Service < 50 kW	Cust/Conn	629	623	609	613	618	618
	kWh	18,998,367	19,208,911	18,569,272	18,864,553	18,272,511	18,143,532
	kW				-	-	-
		2014	2015	2016	-	-	
General Service > 50 to 4999 kW	Cust/Conn	95	90	87	88	89	89
	kWh	71,672,278	70,137,954	73,896,610	84,241,267	81,597,452	81,021,489
	kW	189,092	186,098	188,567	188,567	212,547	211,046
		2014	2015	2016	-	-	
USL	Cust/Conn	5	5	7	8	10	10
	kWh	281,727	281,352	293,553	293,553	432,358	429,307
	kW	-	-	-	-	-	-
		2014	2015	2016	-	-	
Sentinel	Cust/Conn	72	72	60	58	57	57
	kWh	102,064	102,064	88,568	88,568	84,626	84,029
	kW	300	300	265	265	240	238
					-	-	0
Street Lighting	Cust/Conn	1,204	1,204	1,201	1,206	1,211	1,211
	kWh	1,356,160	1,040,149	643,599	643,599	646,505	641,942
	kW	3,764	2,865	1,849	1,849	1,857	1,844
Total	**Cust/Conn**	**6,905**	**6,853**	**6,787**	**6,803**	**6,820**	**6,820**
	kWh	**143,806,220**	**140,355,207**	**141,525,131**	**154,276,687**	**149,604,851**	**148,548,851**
	kW	**193,156**	**189,263**	**190,681**	**190,681**	**214,643**	**213,128**

3.1.4 LOAD FORECAST METHODOLOGY AND DETAIL[2]

HHI's load forecast methodology has not changed since its last Cost of Service in 2014. The forecast is prepared in two phases. The first phase, a billed energy forecast by customer class for 2018, is developed using a total purchase (**Wholesale**) basis regression analysis. Then, in the second phase, usage associated with the known change in customers for 2018 is determined and added (if applicable) (**Adjusted Wholesale**). The methodology proposed in this application predicts wholesale consumption (**Predicted**) using a multiple regression analysis that relates historical monthly wholesale kWh usage to carefully selected variables. The one-way analysis of variance (**ANOVA**) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups. The ANOVA compares the means between the groups you are interested in and determines whether any of those means are statistically significantly different from each other. The utility did not test the NAC method because NAC is generally seen as an alternative when sound historical data is not available. [3]

The most significant variables used in weather related regressions are monthly historical heating degree days and cooling degree days. Heating degree-days provide a measure of how much (in degrees), and for how long (in days), the outside temperature was below that base temperature. The most readily available heating degree days come with a base temperature of 18°C. Cooling degree-day figures also come with a base temperature, and provide a measure of how much, and for how long, the outside temperature was above that base temperature.

For degree days, daily observations as reported in Ottawa are used. The regression model also uses other variables which are tested to see their relationship and contribution to the fluctuating wholesale purchases. Each variable is discussed in detail later in this section.

[2] MFR - Explanation of weather normalization methodology
[3] MFR - NAC Model - rationale for choice, data supporting NAC variables, description of accounting for CDM including license conditions, discussion of weather normalization considerations

Explanation of Multiple Regression Analysis

Multiple regression can be utilized for forecasting purposes by analyzing how several variables have affected a depended variable historically. From this, the relationship between these variables and the depended variable can be expressed as:

$$Y=A+B1X1+B2X2...+bNxN + E$$

Where:

Y = Predicted depended variable value

A = the value of Y when all Xs are zero

X = the independent variable

B = the coefficients corresponding to the independent variables

n = the number of independent variables

E = an error term

By forecasting the independent variables, the dependent variable can be predicted. However, to ascertain that the relationship is not coincidental, the utility must first assess the correlation between the dependent and individual independent variables. This can be accomplished by the Person Correlation Coefficient (otherwise known as "R") to each independent variable. This depicts how much of the change in depended variable can be explained by the change in independent variables. Those variables with a high R-squared should then be used for multiple regression. The same correlation coefficient can be applied to multiple independent variables to ascertain how much of the change in a dependent variable can be explained by changes in all independent variables.

$$R\ Squared=(B'X'Y - nAVG(Y)^2)/Y'Y-nAVG(Y)^2$$

Where:

B',X',Y' = Matrixes of all combinations of B,X&Y respectively

^2 = Squared

The adjusted R-squared is calculated by "correcting" for the number of independent variables in a multiple regression analysis. The formula: Adj RSq=(1-(1-RSq)*((n-1)/(n-k)). It is often used to compare models involving a different number of coefficients. The statistical significance of the multiple regression can be tested with the F-test which is derived from a normal probability distribution. A critical point along the distribution can be found given a degree of confidence required, the number of variables and the number of observations. If the F-statistic is at this point, then the analysis can be deemed statistically significant at the level of confidence.

F-statistic = (R Squared/k-1)/(1-R Squared)/(n-k)

Where:

K = number of independent variable

n = number of observations

Independent variables that are highly correlated themselves can lead to high variances in slope estimation (B). This is known as "Multicollinearity." For this reason, independent variables with a high level of multicollinearity to the other independent variables should consider being omitted from the analysis.

The formula behind the monthly weather normalized values is as follows; (coefficient for the intercept) + (monthly HDD*coefficient for HDD) + (monthly CDD*coefficient for CDD) + (monthly Number of Days*coefficient for monthly Number of Days) + (monthly Employment Stats*coefficient for monthly Employment Stats) + (monthly Daylight Hours*coefficient for monthly Daylight Hours). When the regression line is linear (y = ax + b), the regression coefficient is the constant (a) that represents the rate of change of one variable (y) as a function of changes in the other (x); it is the slope of the regression line. The intercept is the predicted value of the dependent variable when all predictor variables are set to 0.

3.1.5 ECONOMIC OVERVIEW

Hawkesbury is a town in the Eastern portion of Southern Ontario, located on the south shore of the Ottawa River near the Quebec-Ontario border, halfway between downtown Ottawa and downtown Montreal in Prescott and Russell Counties. The Long-Sault Bridge links Hawkesbury to Grenville, Quebec to the north. Hawkesbury is touted as the third most bilingual town in Ontario, with about 70% of its inhabitants being fluent in English and French, the two official languages of Canada. (Sturgeon Falls is first with 73.4% followed by Hearst at 71%.) 89% of the population is made up of French speaking Franco-Ontarians.

Hawkesbury is part of the larger Russell Township in Prescott and Russell United Counties. In 2011 (the year of the most recent census), the population of Hawkesbury census agglomeration (CA) was 12,128, representing a percentage change of -1.1% from 2006. This compares to the national growth of 5.9% and to the average growth among all CAs of 4.2%.

In Hawkesbury, the land area is 12.27 square kilometers with a population density of 988.3 persons per square kilometer. The town was first built in 1798 mainly for its access to the Ottawa River which was used to transport lumber to places like Chicago, New York and Boston as those cities were expanding.

Demographics of Hawkesbury are show in the tables below.

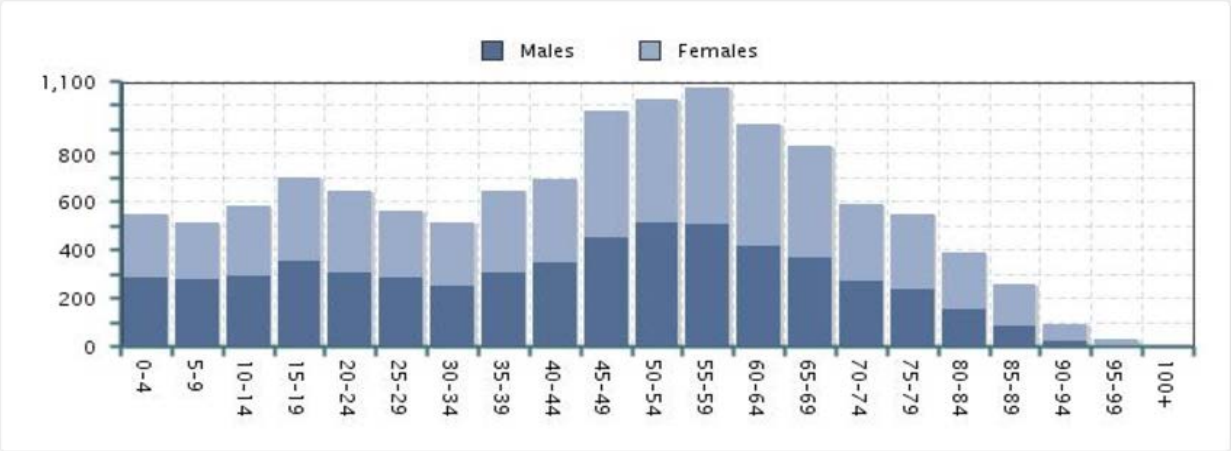
Hawkesbury – Population by broad age groups and sex

Table 4 Hawkesbury – Population by broad age groups and sex, and population change between 2006 and 2011, 2006 to 2011 censuses

Broad age groups by sex	Population			
	2011	2006	change	% change
Both sexes				
Total	12,130	12,270	-140	-1.1
0 to 14	1,640	1,880	-240	-12.8
15 to 64	7,745	7,885	-140	-1.8
65 and over	2,750	2,505	245	9.8
Males				
Total	5,725	5,825	-100	-1.7
0 to 14	850	980	-130	-13.3
15 to 64	3,740	3,845	-105	-2.7
65 and over	1,140	1,000	140	14.0
Females				
Total	6,405	6,445	-40	-0.6
0 to 14	790	900	-110	-12.2
15 to 64	4,005	4,035	-30	-0.7
65 and over	1,605	1,510	95	6.3

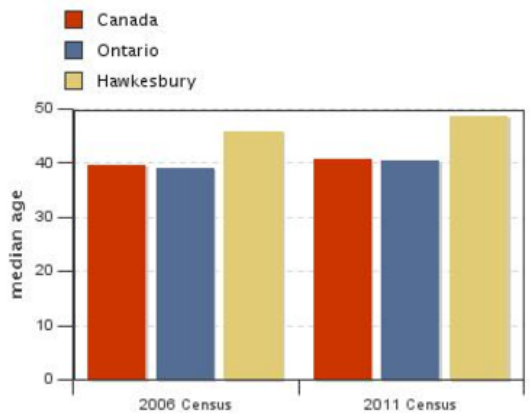
1

Hawkesbury – Population by five-year age groups and sex



2

Hawkesbury – Median age [2] of the population



The median age in Hawkesbury was 48.5 years. In comparison, the median age of Ontario was 40.4 years.

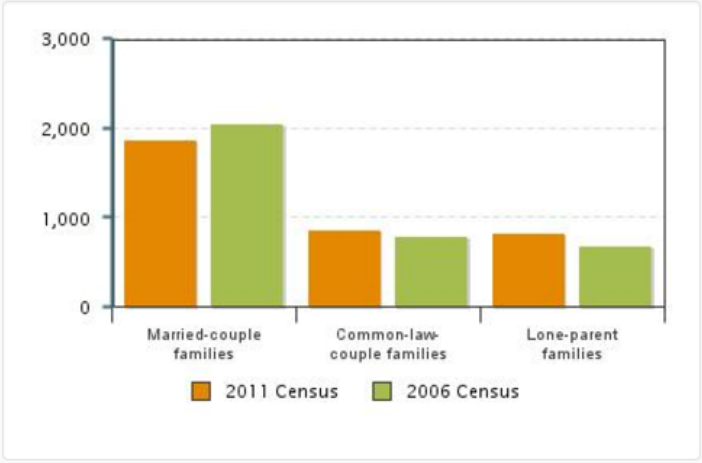
Table 6 Canada, Ontario and Hawkesbury – Median age, 2006 and 2011 censuses

	Median age	
	2006	2011
Canada	39.5	40.6
Ontario	39.0	40.4
Hawkesbury	45.7	48.5

Families and households

In 2011, the number of census families [3] in Hawkesbury was 3,500, which represents a change of 0.4% from 2006. This compares to a growth rate for Canada of 5.5% over the same period.

In Hawkesbury, 53.0% of census families were married couples in 2011, while 24.0% were common-law-couples and 22.9% were lone-parent families.



1

Hawkesbury – Types of private households

There were 5,615 private households [4] in Hawkesbury in 2011, a change of 5.1% from 2006. Of these, 15.5% of households were comprised of couples with children aged 24 and under at home, a change of -19.8% compared with five years earlier.

Table 9 Canada, Ontario, Hawkesbury – Distribution of households by household type, 2011 Census

Household type [5]	Hawkesbury		Ontario		Canada	
	number	%	number	%	number	%
Total - Private households	5,615	100.0	4,887,505	100.0	13,320,615	100.0
Couple-family households with children aged 24 and under at home [6]	870	15.5	1,402,420	28.7	3,524,915	26.5
Couple-family households without children aged 24 and under at home [7]	1,780	31.7	1,408,120	28.8	3,935,540	29.5
Lone-parent family households [8]	775	13.8	535,825	11.0	1,375,450	10.3
One-person households	1,965	35.0	1,230,980	25.2	3,673,310	27.6
Multiple-family households [9]	40	0.7	128,660	2.6	268,060	2.0
Other households [10]	185	3.3	181,500	3.7	543,340	4.1

1

Hawkesbury – Structural type of dwelling

In Hawkesbury, 38.9% of private households lived in single-detached houses and 0.0% lived in apartments in buildings that have five or more storeys. The rest lived in other types of dwelling structures.

Table 10 Canada, Ontario, Hawkesbury – Distribution of private households by structural type of dwelling, 2011 Census

Structural type of dwelling	Hawkesbury		Ontario		Canada	
	number	%	number	%	number	%
Total - Structural type of dwelling	5,615	100.0	4,887,510	100.0	13,320,615	100.0
Single-detached house	2,185	38.9	2,718,880	55.6	7,329,150	55.0
Semi-detached house	705	12.6	279,470	5.7	646,240	4.9
Row house	315	5.6	415,230	8.5	791,600	5.9
Apartment, building that has five or more storeys	0	0.0	789,975	16.2	1,234,770	9.3
Apartment, building that has fewer than five storeys	1,470	26.2	498,160	10.2	2,397,555	18.0
Apartment, duplex	895	15.9	160,460	3.3	704,485	5.3
Other single-attached house [11]	35	0.6	9,535	0.2	33,310	0.3
Movable dwelling [12]	0	0.0	15,795	0.3	183,510	1.4

2

3

The *Median Personal Gross Income* in Hawkesbury which considers residents on government assistance is $22,504.00. The *Median Employment Income* is $38,665.00. The *Median Family Income* is $54,385.00 which considers all families in Hawkesbury. The *Median Household Gross Income* is $39,981.00. The *Median Household After-Tax Income* is $36,446.00. Canadian Mortgages Inc. reported in 2012 that Hawkesbury had the lowest household incomes in the entire country, at $50, 783. The report attributed the low income to the closing of the paper plant, as well as the manufacturing plants. It also reported that that a large part of the Hawkesbury population is either retired or elderly individuals who have very little income.

With respect to climate, the average temperature for winter is -5.9 degrees celsius, and for summer its 12.25 degrees celsius. The average annual rainfall in Hawkesbury is 1417 mm.

Hawkesbury does not foresee nor plan for significant growth in its service area.The population of most western municipalities of the United Counties of Prescott and Russell has grown since 2011, while growth was generally slower in eastern municipalities in the counties.

The Nation Municipality has been growing quickly, with the population of the municipality increasing by almost 10 per cent between 2011 and 2016. Russell Township's population also jumped, increasing by 8.3 per cent since 2011.

The United Counties of Prescott and Russell, as a whole, grew in population by 4.6 per cent, compared with 2 per cent growth in Stormont, Dundas and Glengarry. Hawkesbury's population has decreased by 2.7% per cent since 2011.

These population statistics are the first data available from the 2016 census, and were published by Statistics Canada on February 8. [4]

[4] MFR - Explanation of causes, assumptions and adjustments for volume forecast. Economic assumptions and data sources for customer and load forecasts

Table 3 – Population Growth since 2011

Municipality	Population in 2016	Per cent change since 2011
Prescott and Russell	89,333	4.6
The Nation Municipality	12,808	9.8
Russell Township	16,520	8.3
City of Clarence-Rockland	24,512	5.7
Alfred-Plantagenet	9,680	5.3
Champlain Township	8,706	1.6
East Hawkesbury	3,296	-1.2
Village of Casselman	3,548	-2.2
Town of Hawkesbury	10,263	-2.7
Stormont, Dundas and Glengarry	113,429	2
North Glengarry	10,109	-1.4
Grenville, Quebec	1,711	8.5
Grenville-sur-la-Rouge, Québec	2,824	2.8
Lachute	12,862	2.5

3.1.6 OVERVIEW OF WHOLESALE PURCHASES

HHI purchases electricity from Hydro One and embedded generation and IESO as a market participant

The following table outlines the unadjusted monthly wholesale purchases:

Table 4 - Wholesale Purchases 2007-2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
January	16,852,233	16,819,638	18,711,436	17,203,978	16,854,566	16,729,278	16,715,800	16,265,085	16,200,735	14,718,343
February	16,146,860	16,106,414	16,518,823	15,040,751	15,362,389	14,846,741	15,035,988	14,503,585	15,131,999	13,897,729
March	16,075,177	15,917,303	16,686,068	14,229,105	15,540,989	13,823,698	14,510,914	15,153,300	14,042,688	13,447,833
April	13,292,923	13,249,917	12,517,025	12,112,446	12,632,683	11,932,417	12,682,109	11,874,217	11,324,367	11,838,705
May	12,531,854	12,145,403	11,130,814	12,101,753	11,748,273	11,638,145	11,493,615	10,672,438	10,317,186	10,969,881
June	12,467,928	12,078,793	11,544,725	11,911,567	12,149,693	11,877,651	10,969,083	11,106,951	10,383,339	11,150,901
July	12,374,953	12,676,710	11,659,044	12,637,313	12,845,015	12,063,416	11,644,451	10,952,793	11,052,222	11,383,386
August	13,234,020	12,733,825	13,560,103	12,028,503	12,809,412	11,905,509	11,464,057	10,644,640	11,200,611	10,410,530
September	12,246,087	12,344,575	12,318,093	11,465,896	11,903,431	10,733,049	10,456,541	10,340,743	10,713,804	9,923,443
October	12,901,675	13,017,951	13,885,376	11,927,425	12,153,966	11,493,823	11,400,660	10,827,826	10,912,279	10,634,537
November	14,405,846	14,022,435	13,123,696	13,217,791	13,063,188	13,327,753	13,236,639	12,184,736	11,545,011	11,702,648
December	15,984,980	16,262,824	15,359,391	15,412,085	14,795,610	14,788,743	15,186,623	13,681,915	12,504,379	13,690,301
Total	**168514536**	**167375788**	**167014596**	**159288613**	**161859215**	**155160223**	**154796479**	**148208227**	**145328620**	**143768237**
% change		**-0.68%**	**-0.22%**	**-4.63%**	**1.61%**	**-4.14%**	**-0.23%**	**-4.26%**	**-1.94%**	**-1.07%**
% from 2007										**-14.68%**

HHI's load has seen a decline over the past ten years with the largest total wholesale being in 2016. Wholesale purchases, on the whole, have decreased by 14.68% since 2007 2016. Since the number of customers has only moderately increased over the past five years, the assumption is that the effects of energy efficiency changes have contributed to the modest decline.

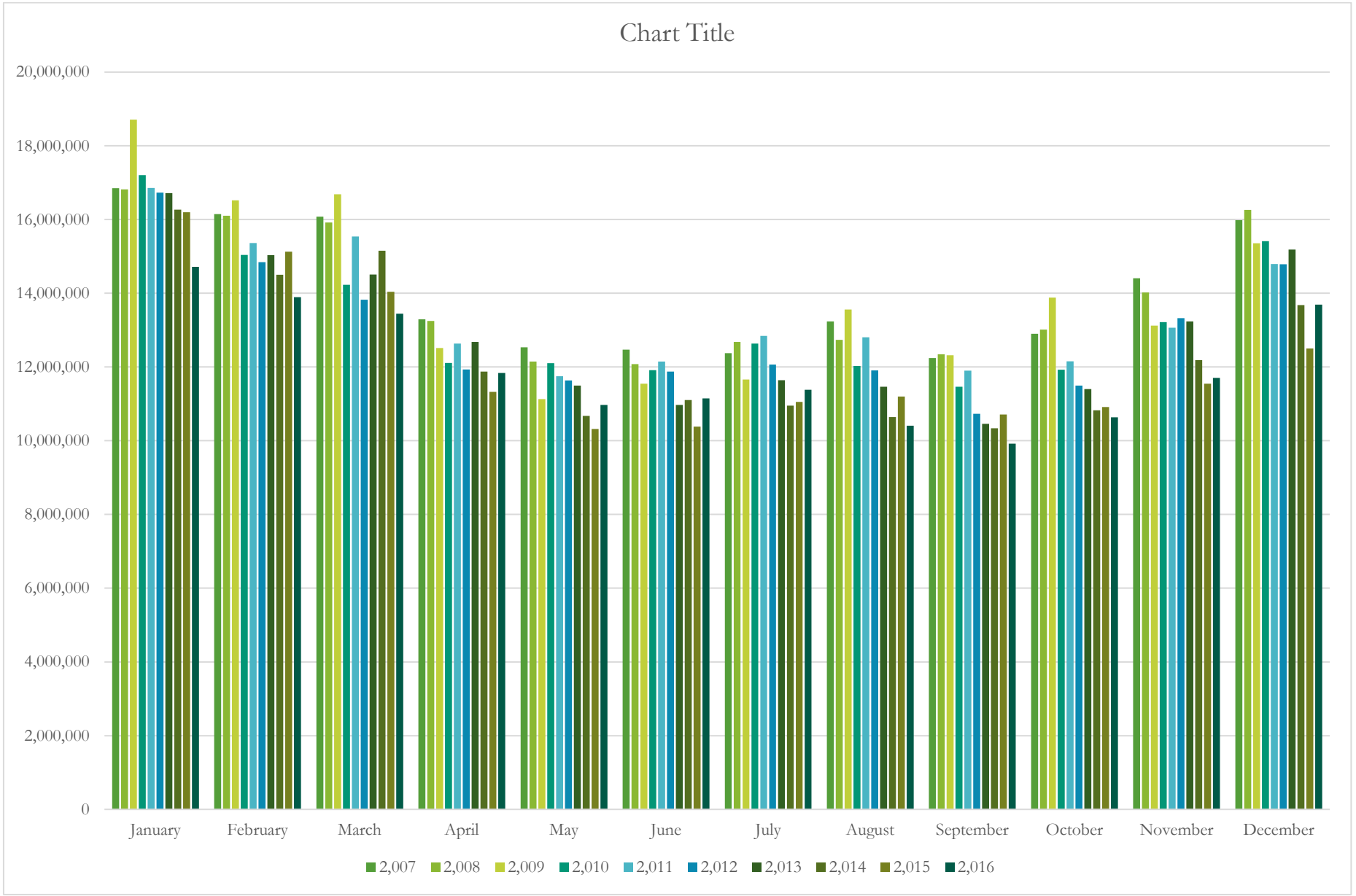


Chart Title
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
January
February
March
April
May
June
July
August
September
October
November
December
2,007
2,008
2,009
2,010
2,011
2,012
2,013
2,014
2,015
2,016

3.1.7 OVERVIEW OF VARIABLES USED[5]

In HHI's case, variation in monthly electricity consumption is influenced by three main factors – weather (e.g. heating and cooling), which is by far the most dominant effect on most systems; employment factors (increases or decreases in economic activity leads to changes in employment); and lastly the number of days per month. Specifics relating to each variable used in the regression analysis are presented in the next section.

Heating and Cooling:

To determine the relationship between observed weather and energy consumption, monthly weather observations describing the extent of heating or cooling required within the month are necessary. Environment Canada publishes monthly observations on heating degree days (HDD) and cooling degree days (CDD) for selected weather stations across Canada. Heating degree-days for a given day are the number of Celsius degrees that the mean temperature is below 18°C. Cooling degree-days for a given day are the number of Celsius degrees that the mean temperature is above 18°C. For HHI, the monthly HDD and CDD as reported at Ottawa International Airport were used.

HHI has adopted the 10-year average from 2007 to 2016 as the definition of weather normal. Our view is that a ten-year average based on the most recent ten calendar years available is a reasonable compromise that likely reflects the "average" weather experienced in recent years. Many other LDCs have also adopted this definition for the purposes of cost-of-service rebasing. The following table outlines the monthly weather data used in the regression analysis.

[5] MFR - Multivariate Regression Model - rationale for choice, regression statistics, explanation of weather normalization methodology, sources of data for endogenous and exogenous variables, any binary variables used to either account for individual data points or to account for seasonal or cyclical trends or for discontinuities in the historical data, explanation of any specific adjustments made; data used in load forecast must be provided in Excel format, including derivation of constructed variables

Table 5 - HDD and CDD as reported at Utility Location

HDD	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
January	797.10	754.20	979.50	789.20	893.20	831.00	839.90	918.30	894.30	711.00
February	820.00	774.30	711.50	655.80	729.00	671.40	728.50	793.20	957.40	673.00
March	643.00	721.10	598.30	460.70	636.00	460.30	579.60	783.60	726.40	504.00
April	361.10	299.60	334.30	258.10	347.40	363.30	285.50	384.20	345.20	351.00
May	157.30	185.40	181.60	112.30	142.80	96.00	105.70	127.30	90.90	107.00
June	34.20	22.40	50.40	37.60	18.50	0.00	54.10	20.30	40.30	31.00
July	11.80	0.30	13.10	4.50	0.00	0.00	7.70	7.70	7.70	6.00
August	20.10	14.40	26.10	14.70	2.30	8.40	13.40	21.40	7.20	4.00
September	76.00	95.40	106.50	112.00	55.40	127.30	133.20	110.30	46.30	48.00
October	227.50	321.80	355.50	311.00	259.10	243.10	235.80	257.90	311.40	217.00
November	517.00	502.80	417.40	491.60	392.90	541.70	560.80	510.60	417.50	371.00
December	787.70	796.70	759.40	731.40	415.00	680.60	858.20	696.40	490.10	638.00
Total	797.10	6497.40	6543.60	5989.90	5903.60	6036.10	6416.40	6646.20	6350.70	5677.00

CDD		2008	2009	2010	2011	2012	2013	2014	2015	2016
January	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	3.2	0	0	0	4
May	17.30	0	2.5	1.6	16.7	21	15.3	8.8	23.5	84
June	66.90	0	3.2	38.2	59.1	70.4	39.4	54.9	22.5	135
July	65.10	60.5	44.9	33.4	137.5	142.2	111.1	62.8	103.8	198
August	79.30	78.9	42.9	150.8	82.3	97.6	57.2	55.8	71.2	213
September	25.70	49.5	82.1	93	32.9	20.6	10.1	21.6	51.7	88
October	1.90	25	5	26.2	1.4	0	0.7	3.1	0	14
November	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0
Total		213.9	180.6	343.2	329.9	355	233.8	207	272.7	736

Employment Factor:

To measure the change in economic activity, a data series must be chosen which represents, as much as possible, regional economic activity. HHI used the monthly full-time employment levels for the HHI economic region, as reported in Statistics Canada's Monthly Labour Force Survey (CANSIM).

The following table outlines the full-time employment levels for the HHI economic region which were tested and ultimately included in the regression analysis.

Table 6 - Full-Time Employment Levels for the HHI Economic Region

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
January	620.00	671.20	677.30	671.80	666.30	684.20	691.20	690.20	691.90	681.70
February	623.20	669.90	668.00	669.80	663.40	685.10	686.60	683.80	685.10	681.30
March	628.70	667.80	657.00	668.50	666.00	686.90	679.30	685.10	680.30	680.80
April	638.60	668.20	652.40	669.60	668.90	695.10	676.60	686.20	683.70	681.40
May	647.50	669.80	647.10	677.10	674.90	702.50	678.60	695.20	686.30	687.70
June	657.40	676.10	655.10	688.40	684.40	709.40	682.90	700.10	692.20	692.20
July	669.30	684.20	666.00	693.80	689.90	705.40	689.00	708.20	695.40	701.10
August	673.40	688.40	678.90	687.90	694.60	699.20	691.50	708.40	694.70	699.80
September	670.90	685.70	679.50	677.70	687.80	691.60	688.20	704.70	690.10	693.50
October	669.70	681.70	677.60	673.50	681.10	687.90	684.20	701.70	690.20	695.30
November	670.60	681.70	675.20	673.80	676.80	689.30	685.20	700.60	687.80	697.60
December	673.90	683.20	673.30	671.00	679.30	692.10	687.90	701.40	690.30	703.00

Daylight hours:

The utility tested the regression analysis using Average Daylight Hours & Minutes/ Day. The premise behind this variable is that shorter days bring higher electricity consumption. During fall and winter months, the days are shorter, and as such, consumers spend more time indoors, lights and appliances are turned on earlier and used for longer periods of time. In 2008, Energy Department experts studied the impact of the extended Daylight-Saving Time on energy consumption in the U.S. and found that Daylight Savings Time saved about 0.5 percent in total electricity per day. While this might not sound like a lot, it adds up to electricity savings of 1.3 billion kilowatt-hours -- or the amount of electricity used by more than 100,000 households for an entire year. These electricity savings generally occur during a 3-5 hour period in the evening. The utility tested but ultimately determined that its use did not improve the results. Therefore, the variable was dropped from the study.

Days per month:

Lastly, HHI also tested a "Days per month" variable. Although the variables did not yield particularly significant results, it did slightly improve the R-Square, and therefore HHI opted to keep it as a variable. All relevant scenarios tested by the utility can be found in the regression model at tab 6.1 entitled Regression Scenarios.

Using a combination of wholesale purchases and variables listed above, a multiple regression analysis was used to develop an equation describing the relationship between monthly actual wholesale kWh and the explanatory variables. HHI also used a correlation function to examine the relationship between the variables included in the analysis. The results of the correlation analysis for each scenario can also be found at tab 6.1 entitled Regression Scenarios.

To project the adjusted wholesale purchases for the bridge and test year, the model uses, for the most part, a simple average of the last ten years of historical data. HHI has applied this method of prediction to all variables.

Origin of variables

- HDD: Stats Canada
- CDD: Stats Canada
- Employment: Stats Canada
- Days per month Computed by the utility
- Daylight hours http://www.ottawa.climatemps.com/index.php

Rational for including and excluding variables

During the process of testing the regression analysis, many different variables and times periods are tested to arrive at the best R-Squared. The utility's rational behind selecting or dropping certain variables involves a "no-worst" rational. In other words, if a variable is justified and does not worsen the results, it is generally kept as one of the regression variables. In this case, the Days per Month only slightly improved the R-Square. However, the utility still opted to keep them as part of the regression analysis.

3.1.8 REGRESSION RESULTS

Table 7 below presents the regression results used to determine the load forecast

Table 7 - Correlation/Regression Results

R Squared	0.8126		0.829	**Durbin-Watson Statistic**			
Adjusted R Squared	0.8044		1.63 - 1.77	**Positive autocorrelation detected**			
Standard Error	867836.8125		2.290	**Critical F-Statistic - 95% Confidence**			
F - Statistic	98.8795		89.62%	**Confidence to which analysis holds**			

Multiple Regression Equation					**Independent Analysis**			**Auto Correlation**	**Multicollinearity**	
	Coefficients	**Standard Error**	**t Stat**	**p Value**	**R Squared**	**Coefficient**	**Intercept**	**Dl=1.69 Du=1.72**	**Adjusted R-Squared against other Indep**	**Variables with RSQ at > 90%**
Intercept	20,641,991.359	5,031,670.972	4.102	0.01%				**DW-Stat**		
HDD	6,560.444	515.380	12.729	0.00%	73.43%	5519.09	11151760.00	0.35	73.44%	
CDD	9,237.789	2,456.555	3.760	0.03%	19.38%	-19898.82	13613033.00	0.63	42.42%	
NoD in Month	278,006.186	99,557.514	2.792	0.61%	0.79%	-210887.50	19512298.00	2.96	3.48%	
Unemployment	-28,630.175	5,536.683	-5.171	0.00%	18.52%	-52348.43	48740820.00	0.23	17.90%	
Daylight hours	78,297.737	62,109.669	1.261	21.00%	41.45%	-530876.55	19450208.00	0.28	70.02%	

The resulting regression equation yields an adjusted R-squared of 0.8044. When actual annual wholesale values are compared to annual values predicted by the regression equation, the mean absolute percentage error (MAPE) is 1.157 per cent. More detailed model statistics can be found in the next section.

Once HHI calculated its preferred Regression Results, the Load Forecast model then uses the coefficients from the regression results to adjust the wholesale purchases. Table 8 as seen below, demonstrates the results of this adjustment. The table shows a comparison of the actual and predicted wholesale purchases.

Table 8 - Wholesale vs. Adjusted using the coefficients from the regression results

Year	Wholesale	year over year	Predicted	year over year
2007	168,514,536		168,514,536	
2008	167,375,788	-0.68%	167,375,788	
2009	167,014,596	-0.22%	167,014,596	-0.22%
2010	159,288,613	-4.63%	159,288,613	-4.63%
2011	161,859,215	1.61%	161,859,215	1.61%
2012	155,160,223	-4.14%	155,160,223	-4.14%
2013	154,796,479	-0.23%	154,796,479	-0.23%
2014	148,208,227	-4.26%	148,208,227	-4.26%
2015	145,328,620	-1.94%	145,328,620	-1.94%
2016	143,768,237	-1.07%	143,768,237	-1.07%

Table 9 as seen below, shows the results of the mean absolute deviation (MAD), the mean square error (MSE), the root mean square (RMSE) and the mean absolute Percentage error (MAPE).

Table 9 - MAP-MSE-MAPE

Period	Actual	Forecast	Error	Absolute Value of Error	Square of Error	Absolute Values of Errors Divided by Actual Values.
t	A_t	F_t	$A_t - F_t$	$\lvert A_t - F_t \rvert$	$(A_t - F_t)^2$	$\lvert (A_t - F_t)/A_t \rvert$
1	168,514,536	167,452,064	1,062,472	1,062,472	1,128,846,559,765	0.0063
2	167,375,788	159,143,846	8,231,942	8,231,942	67,764,869,929,859	0.0492

3	167,014,596	162,860,706	4,153,890	4,153,890	17,254,800,684,668	0.0249
4	159,288,613	157,138,901	2,149,712	2,149,712	4,621,262,875,332	0.0135
5	161,859,215	155,080,556	6,778,659	6,778,659	45,950,214,613,524	0.0419
6	155,160,223	151,645,786	3,514,437	3,514,437	12,351,264,968,745	0.0227
7	154,796,479	156,370,293	-1,573,814	1,573,814	2,476,891,032,053	0.0102
8	148,208,227	153,211,546	-5,003,318	5,003,318	25,033,194,119,203	0.0338
9	145,328,620	154,667,603	-9,338,983	9,338,983	87,216,597,541,000	0.0643
10	143,768,237	153,743,233	-9,974,996	9,974,996	99,500,550,501,018	0.0694
	Totals					**0.336**

The mean absolute deviation (MAD) is the sum of absolute differences between the actual value and the forecast divided by the number of observations.

Mean square error (MSE) is probably the most commonly used error metric. It penalizes larger errors because squaring larger numbers has a greater impact than squaring smaller numbers. The MSE is the sum of the squared errors divided by the number of observations.

Mean Absolute Percentage Error (MAPE) is the average of absolute errors divided by actual observation values.

In accordance with the Filing Requirements, HHI has also provided a 2018 forecast assuming twenty-year normal weather conditions. Table 10 below displays 20 years of historical Heating Degree Days and Cooling Degree Days. The impact of using both a 10-year average as well as a 20-year average to weather normalize wholesale purchases is presented in Table 11.

Table 10 - Forecast using a twenty-year weather normalization

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	10 year avg	20 year avg
HDD																						
Jan	923	802	875	875	848	709	977	1045	921	734	797	754	980	789	893	831	840	918.3	894	711	841	855
Feb	736	610	671	728	747	669	842	750	701	721	820	774	712	656	729	671	729	793.2	957	673	751	735
Mar	678	576	646	502	652	652	675	559	669	600	643	721	598	461	636	460	580	783.6	726	504	611	616
Apr	379	286	337	391	338	359	425	378	325	322	361	300	334	258	347	363	286	384.2	34	351	302	327
May	241	44	83	152	110	228	154	166	205	128	157	185	182	112	143	96	106	127.3	90	107	131	140
Jun	12	43	20	63	26	62	39	54	16	28	34	22	50	38	19	0	54	20.3	40	31	31	33
Jul	11	3	4	12	22	5	2	2	3	0	12	0	13	5	0	0	8	7.7	7	6	6	6
Aug	14	8	15	18	5	7	13	30	8	18	20	14	26	15	2	8	13	21.4	7	4	13	13
Sep	121	82	66	138	90	57	60	67	59	121	76	95	107	112	55	127	133	110.3	46	48	91	89
Oct	334	271	322	291	266	370	337	287	270	336	228	322	356	311	259	243	236	257.9	311	217	274	290
Nov	553	453	407	489	410	535	469	484	484	417	517	503	417	492	393	542	561	510.6	417	371	472	471
Dec	755	648	692	883	602	728	722	815	762	610	788	797	759	731	415	681	858	696.4	490	638	685	703
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	10 year avg	20 year avg
CDD																						
Jan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	10	0	2	0	0	0	0	3	2	0	3	0	0	0	4	1	1
May	0	29	31	3	14	7	0	4	2	17	17.3	0	3	38	17	21	15	9	23.5	84	23	17
Jun	79	78	100	31	76	40	55	27	112	48	66.9	61	45	33	59	70	39	55	22.5	135	59	61
Jul	96	89	142	59	78	121	90	87	129	131	65.1	79	43	151	138	142	111	63	103.8	198	109	106
Aug	41	86	58	60	128	107	106	48	115	68	79.3	50	82	93	82	98	57	56	71.2	213	88	85
Sep	4	12	50	14	26	51	24	11	33	5	25.7	25	5	26	33	21	10	22	51.7	88	31	27
Oct	0	0	0	0	0	4	0	0	6	0	1.9	0	0	0	1	0	1	3	0	14	2	2
Nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 11 - Forecast using a ten year vs. twenty-year weather normalization

Date	Weather Normalized 10Year	Yearly Total 10Year	Weather Normalized 20Year	Yearly Total 210Year
2017-January	15410207.93		15410207.93	
2017-February	15104434.25		15104434.25	
2017-March	14334201.75		14334201.75	
2017-April	12435161.57		12435161.57	
2017-May	11192905.28		11192905.28	
2017-June	10629441.11		10629441.11	
2017-July	10866703.86		10866703.86	
2017-August	10802498.50		10802498.50	
2017-September	10939215.53		10939215.53	
2017-October	11701262.60		11701262.60	
2017-November	12799207.68		12799207.68	
2017-December	14072255.99	150874496	14072255.99	150874496
2018-January	15240061.31		15500301.11	
2018-February	14861560.08		14703911.50	
2018-March	14010853.79		13914082.33	
2018-April	12306996.85		12018215.45	
2018-May	11064118.44		10930080.69	
2018-June	10534774.07		10625439.55	
2018-July	10706507.97		10854871.72	
2018-August	10819132.93		10697664.94	
2018-September	10928631.98		10651330.63	
2018-October	11676391.29		11729898.86	
2018-November	12699292.71		12889727.33	
2018-December	14069857.13	148918178	14402614.04	148918138

3.1.9 DETERMINATION OF CUSTOMER FORECAST

HHI has used a simple geometric mean function to determine the forecasted number of customers of 2017 and 2018. The geometric mean is more appropriate to use when dealing with percentages and rates of change. Although the formula is somewhat simplistic, it is reasonably representative of HHI's natural customer growth. The geometric mean results were analyzed by HHI and then further adjusted for known particulars – in HHI's case the MicroFit related consumption was removed from the Wholesale Purchases. Historical customer counts and projected customer counts for 2017 and 2018 are presented in Table 12 below. A variance analysis of customer counts and projections is presented at 3.3.10.

Table 12 - Customer Forecast

	Residential		General Service < 50 kW		General Service > 50 to 4999 kW		USL		Sentinel		Street Lighting	
Date	**Customers or Connections**	**Growth Rate**	**Customers or Connections**	**Growth Rate**	**Customers or Connections**	**Growth Rate**	**Customers or Connections**	**Growth Rate**	**Customers or Connections**	**Growth Rate**	**Customers or Connections**	**Growth Rate**
2007	4712		570		79		0		72		1158	
2008	4777	1.0138	576	1.0114	80	1.0127	2	#DIV/0!	72	1.0000	1158	1.0000
2009	4780	1.0006	583	1.0113	81	1.0125	4	2.0000	72	1.0000	1158	1.0000
2010	4799	1.0041	590	1.0129	84	1.0370	5	1.1250	72	1.0000	1169	1.0095
2011	4826	1.0056	593	1.0042	91	1.0774	5	1.1111	72	1.0000	1191	1.0184
2012	4777	0.9898	575	0.9705	80	0.8840	4	0.8000	72	1.0000	1158	0.9727
2013	4884	1.0224	617	1.0730	97	1.2125	5	1.2500	72	1.0000	1204	1.0397
2014	4901	1.0034	629	1.0186	95	0.9794	5	1.0000	72	1.0000	1204	1.0000
2015	4859	0.9915	623	0.9912	90	0.9421	5	1.0000	72	1.0000	1204	1.0000
2016	4824	0.9928	609	0.9775	87	0.9721	7	1.4000	60	0.8264	1201	0.9971
Geomean		*1.0012*		*1.0070*		*1.0105*		*1.1695*		*0.9764*		*1.0045*
2017	4830		613		88		8		58		1206	
2018	4836		618		89		10		57		1211	

3.1.10 DETERMINATION OF WEATHER NORMALIZED FORECAST

Allocation to specific weather sensitive rate classes (Residential, GS<50, GS>50) is based on the share (%) of each classes' actual retail kWh (exclusive of distribution losses) and a share of actual wholesale kWh. Weather normalized wholesale kWh, for historical years, are allocated to these classes based on these historical shares. Forecast values for 2016 and 2018 are allocated based on the most recent year's (2016) actual share. For those rate classes that use kW consumption as a billing determinant, sales for these customer classes are then converted to kW based on the historical volumetric relationship between kWh and kW. The utility then forecasts a consumption per customer and adds new customer's load to the total consumption for the class.

Allocation to specific non-weather sensitive rate classes (GS>50, USL, Sentinel and Streetlights) is based on an average of demand/customer. The utility then uses an appropriate historical average to determine an average demand per customer. This average is then applied to the customer count for the bridge and test year. [6]

Explanations for material changes in the definition of or major changes over time, explanations of the bridge and test year forecasts by rate class, variance analysis between the last OEB-approved and the actual and weather-normalized actual results are presented at Section 3.3.1 Variance Analysis of Load Forecast

3.1.11 LOAD FORECAST BY CLASS.

The following section presents class specific adjusted historical and forecast values for those classes that have weather sensitive load. Historic class, specific kWh consumption is allocated

[6] MFR - For consumption and demand - explanation to support how kWh are converted to kW for applicable demand-billed classes, year-over-year variances in kWh and kW by rate class and for system consumption overall (kWh) with explanations for material changes in the definition of or major changes over time (should be done for both historical actuals against each other and historical weather-normalized actuals over time), explanations of the bridge and test year forecasts by rate class, variance analysis between the last OEB-approved and the actual and weather-normalized actual results

based on each class' share in wholesale kWh, exclusive of distribution losses. Forecast class values are allocated based on the class share for 2015.

to 17 show historical and forecasted details for each of the weather sensitive classes.

Table 13 - Residential Forecast (Weather Sensitive)

Year	Residential Metered kWh	Wholesale Purchases	Weather Normalized	*Ratio%* *	Weather Normal	Per customer
2007	53,035,556	168,514,536	31.47%	167,452,064	52,701,171	11,033
2008	53,471,410	167,375,788	31.95%	159,143,846	50,841,558	10,637
2009	52,558,954	167,014,596	31.47%	162,860,706	51,251,738	10,680
2010	50,277,839	159,288,613	31.56%	157,138,901	49,599,304	10,278
2011	51,273,093	161,859,215	31.68%	155,080,556	49,125,778	10,284
2012	51,132,834	155,160,223	32.95%	151,645,786	49,974,656	10,232
2013	52,109,144	154,796,479	33.66%	156,370,293	52,638,937	10,742
2014	51,395,624	148,208,227	34.68%	153,211,546	53,130,674	10,934
2015	49,584,777	145,328,620	34.12%	154,667,603	52,771,152	10,939
2016	48,033,529	143,768,237	32.62%	153,743,233	50,145,146	10,382
2017			32.62%	150,287,496	49,018,017	10,149
2018		Avg	32.62%	148,918,179	48,571,399	10,044

Residential Year	New Customer	Per Customer Weather Normalized (based on 2012 cust count)	Added Load	Total
2018	-6	10,044	-60,042	**48,511,357**

Table 14 - General Service <50 Forecast (Weather Sensitive)

Year	GS<50 Metered kWh	Wholesale Purchases	Weather Normalized	*Ratio%* *	Weather Normal	Per customer
2007	20,965,147	168,514,536	12.44%	167,452,064	20,832,963	36,168
2009	20,649,618	167,375,788	12.34%	159,143,846	19,634,020	33,706
2009	19,616,748	167,014,596	11.75%	162,860,706	19,128,852	32,422
2010	19,562,613	159,288,613	12.28%	157,138,901	19,298,602	32,571
2011	18,457,375	161,859,215	11.40%	155,080,556	17,684,381	30,755
2012	18,531,354	155,160,223	11.94%	151,645,786	18,111,612	29,354
2013	18,952,242	154,796,479	12.24%	156,370,293	19,144,930	30,461
2014	18,998,367	148,208,227	12.82%	153,211,546	19,639,727	31,524
2015	19,208,911	145,328,620	13.22%	154,667,603	20,443,297	33,569
2016	18,569,272	143,768,237	12.27%	153,743,233	18,864,553	30,761
2017			12.27%	150,287,496	18,440,528	30,070
2018		Avg	12.27%	148,918,179	18,272,511	29,589

Load corrected based on utility input						
GS<50						
Year	New Customer	Per Customer Weather Normalized	Added Load			Total
-4	29,589	-126,805			18,145,706	-4

Table 15 - General Service >50 (kWh) (Weather Sensitive)

Year	GS>50 Metered kWh	Wholesale Purchases	Weather Normalized	*Ratio%* *	Weather Normal	Per customer
2007	117,345,908	168,514,536	69.64%	167,452,064	116,606,051	1,457,576
2009	112,845,011	167,375,788	67.42%	159,143,846	107,295,023	1,324,630
2009	96,007,524	167,014,596	57.48%	162,860,706	93,619,681	1,114,520
2010	80,745,583	159,288,613	50.69%	157,138,901	79,655,864	880,175
2011	82,739,387	161,859,215	51.12%	155,080,556	79,274,264	990,928
2012	77,875,019	155,160,223	50.19%	151,645,786	76,111,121	784,651
2013	77,368,540	154,796,479	49.98%	156,370,293	78,155,145	822,686
2014	71,672,278	148,208,227	48.36%	153,211,546	74,091,842	827,842
2015	70,137,954	145,328,620	48.26%	154,667,603	74,645,099	857,990
2016	73,896,610	143,768,237	54.79%	153,743,233	84,241,267	958,191
2017			54.79%	150,287,496	82,347,749	936,653
2018		Avg	54.79%	148,918,179	81,597,452	918,438

Load corrected based on utility input						
GS>50						
Year	New Customer	Per Customer Weather Normalized	Added Load			Total
2017	-1	918,438	-851,095			80,746,357

Table 16 - General Service >50 Demand (kW) (Non-Weather Sensitive)

Year	kWh	kWh	kW
2007	117,345,908	290,290	0.00247
2008	112,845,011	304,147	0.00270
2009	96,007,524	253,516	0.00264
2010	80,745,583	209,711	0.00260
2011	82,739,387	211,681	0.00256
2012	77,875,019	206,655	0.00265
2013	77,368,540	200,068	0.00259
2014	71,672,278	189,092	0.00264
2015	70,137,954	186,098	0.00265
2016	73,896,610	188,567	0.00255
2017	82,347,749	214,501	0.00260
2018	81,597,452	212,547	0.00260
Avg			0.00260

Table 17 - Street Lighting (Non-Weather Sensitive)

Year	kWh	kW	Connection	kWh per connection	KW per connection	KW/kWh Ratio
2007	972,414	2,874	1158	840	2.4819	0.00296
2008	1,208,366	3,098	1158	1,043	2.6753	0.00256
2009	1,151,305	3,198	1169	985	2.7357	0.00278
2010	1,156,978	3,194	1191	972	2.6829	0.00276
2011	1,343,667	3,724	1158	1,160	3.2159	0.00277
2012	1,355,855	3,748	1204	1,126	3.1130	0.00276
2013	1,356,161	3,764	1204	1,126	3.1265	0.00278
2014	1,356,160	3,764	1204	1,126	3.1265	0.00278
2015	1,040,149	2,865	1201	866	2.3869	0.00275
2016	643,599	1,849	1206	534	1.5330	0.00287
2017	643,599	1,849	1206	534	1.5330	0.00287
2018	646,505	1,857	1211	534	1.5330	0.00287
Avg				534	1.5330	0.0029

Table 18 - Unmetered Scattered Load (Non-Weather Sensitive)

Year	kWh	Customer/ Connection	kWh per connection
2007	88,330	18	4,907
2009	93,536	20	4,677
2009	92,676	19	4,878
2010	89,786	19	4,726
2011	89,208	19	4,695
2012	89,208	19	4,695
2013	89,208	19	4,695
2014	89,075	19	4,688
2015	94,284	19	5,096
2016	94,284	18	5,388
2017	92,045	19	4,844
2018	92,045	19	4,844
Avg -		*19*	*4,844*

Table 19 - Sentinel (Non-Weather Sensitive)

Year	kWh	kW	Connection	kWh per connection	KW per connection	KW/kWh Ratio
2007	108,699	300	72	1,510	4.1667	0.00276
2008	108,472	300	72	1,507	4.1667	0.00277
2009	108,855	300	72	1,512	4.1667	0.00276
2010	105,383	297	72	1,464	4.1250	0.00282
2011	102,889	280	72	1,429	3.8889	0.00272
2012	102,354	284	72	1,422	3.9444	0.00277
2013	102,064	296	72	1,418	4.1111	0.00290
2014	102,064	300	72	1,418	4.1667	0.00294
2015	102,064	300	60	1,715	5.0420	0.00294
2016	88,568	265	58	1,524	4.5612	0.00299
2017	86,667	246	58	1,492	4.2342	0.00284
2018	84,626	240	57	1,492	4.2306	0.00284
Avg				1,492	4.2339	0.00284

3.1.12 FINAL NORMALIZED LOAD FORECAST

Table 20 below presents historical and projected weather normalized Load Forecast by customer class.

Table 20 - Final Load Forecast (not CDM adjusted)

	Year	2017	2018	2018 CDM Adjusted
Residential	Cust/Conn	4,830	4,836	4,836
	kWh	50,145,146	48,571,399	48,228,553
General Service < 50 kW	Cust/Conn	613	618	618
	kWh	18,864,553	18,272,511	18,143,532
General Service > 50 to 4999 kW	Cust/Conn	88	89	89
	kWh	84,241,267	81,597,452	81,021,489
	kW	188,567	212,547	211,046
USL	Cust/Conn	8	10	10
	kWh	293,553	432,358	429,307
Sentinel	Cust/Conn	58	57	57
	kWh	88,568	84,626	84,029
	kW	265	240	238
		-	-	0
Street Lighting	Cust/Conn	1,206	1,211	1,211
	kWh	643,599	646,505	641,942
	kW	1,849	1,857	1,844
Total	**Cust/Conn**	**6,803**	**6,820**	**6,820**
	kWh	**154,276,687**	**149,604,851**	**148,548,851**
	kW	**190,681**	**214,643**	**213,128**

3.2 IMPACT AND PERSISTENCE FROM HISTORICAL CDM PROGRAMS[7]

3.2.1 LOAD FORECAST CDM ADJUSTMENT WORK FORM

While the forecast as presented in the previous section assumes some level of embedded "natural conservation," it does not consider the impacts on energy purchases arising from CDM programs undertaken by HHI's customers. The load forecast is a projection of the expected level of electricity purchases that would occur over the specified period in the absence of any CDM initiatives. Therefore, in accordance with the filing requirements, the forecasted energy purchases are further adjusted to reflect CDM reductions.

The schedule to achieve CDM targets are presented in Table 21 below:

[7] MFR - Quantification of any impacts arising from the persistence of historical CDM programs as well as the forecasted impacts arising from new programs in the bridge and test years through the current 6-year CDM framework.

Table 21 – OEB Appendix 2-I [8]

2011-2014 CDM Program - 2014, last year of the current CDM plan					
4 Year (2011-2014) kWh Target:					
9,280,000					
	2011	**2012**	**2013**	**2014**	**Total**
2011 CDM Programs	9.42%	9.42%	9.42%	8.72%	36.97%
2012 CDM Programs		8.98%	8.98%	8.92%	26.88%
2013 CDM Programs			7.71%	7.71%	15.42%
2014 CDM Programs				16.42%	16.42%
Total in Year	**9.42%**	**18.40%**	**26.11%**	**41.77%**	**95.69%**
kWh					
2011 CDM Programs	718,000	718,000	718,000	665,000	2819000
2012 CDM Programs	9,000	685,000	685,000	680,000	2059000
2013 CDM Programs	-	80,000	588,000	588,000	1256000
2014 CDM Programs	-	54,000	186,000	1,252,000	1492000
Total in Year	**727,000.00**	**1,537,000.00**	**2,177,000.00**	**3,185,000.00**	**7,626,000.00**

[8] MFR - Completed Appendix 2-I

6 Year (2015-2020) kWh Target:							
7,920,000							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
%							
2015 CDM Programs	14.68%	14.68%	14.68%	14.68%	14.68%	14.68%	88.06%
2016 CDM Programs		6.67%	6.67%	6.67%	6.67%	6.67%	33.33%
2017 CDM Programs			6.67%	6.67%	6.67%	6.67%	26.67%
2018 CDM Programs				6.67%	6.67%	6.67%	20.00%
2019 CDM Programs					6.67%	6.67%	13.33%
2020 CDM Programs						6.67%	6.67%
Total in Year	**14.68%**	**21.34%**	**28.01%**	**34.68%**	**41.34%**	**48.01%**	**188.06%**
kWh							
2015 CDM Programs	1,162,440.00	1,162,440.00	1,162,440.00	1,162,440.00	1,162,440.00	1,162,440.00	
2016 CDM Programs		528,000.00	528,000.00	528,000.00	528,000.00	528,000.00	2,640,000.00
2017 CDM Programs			528,000.00	528,000.00	528,000.00	528,000.00	2,112,000.00
2018 CDM Programs				528,000.00	528,000.00	528,000.00	1,584,000.00
2019 CDM Programs					528,000.00	528,000.00	1,056,000.00
2020 CDM Programs						528,000.00	528,000.00
Total in Year	**1,162,440.00**	**1,690,440.00**	**2,218,440.00**	**2,746,440.00**	**3,274,440.00**	**3,802,440.00**	**7,920,000.00**

1

Weight Factor for Inclusion in CDM Adjustment to 2014 Load Forecast

	2011	2012	2013	2014	2015	2016	2017	2018	
Weight Factor for each year's CDM program impact on 2014 load forecast	**0**	**0**	**0**	**0**	**0**	**0.5**	**1**	**0.5**	Distributor can select "0", "0.5", or "1" from drop-down list
Default Value selection rationale.									

2011-2014 and 2015-2020 LRAMVA and 2015 CDM adjustment to Load Forecast									
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total for 2018**
	kWh								
Amount used for CDM threshold for LRAMVA (2014)	-	-	588,000.00	1,252,000.00	1,162,440.00				3,002,440.00
2011 CDM adjustment (per Board Decision in 2011 Cost of Service Application)	-	-	-	-		-			
Amount used for CDM threshold for LRAMVA (2015)						528,000.00	528,000.00	528,000.00	1,584,000.00
Manual Adjustment for 2015 Load Forecast (billed basis)	-				-	264,000.00	528,000.00	264,000.00	**1,056,000.00**

2

The values entered in the 2011-2014 report originate from the OPA issued report; 2006-2010 Final OPA CDM Results. The report provides a portfolio-level summary of the annual resource savings (demand and energy, net and gross for each) for the 2006–2010 program portfolios for HHI. HHI used the Q4 report from the OPA. The most recent annual results of OPA CDM programs and the Q4 results are presented as an appendix to this Exhibit.[9]

The values entered in the 2015-2020 originate from HHI's approved CDM plan which shows HHI's targets to be 4.17 GWh.

[9] MFR - CDM Adjustment - account for CDM in 2017 load forecast. Consider impact of persistence of historical CDM and impact of new programs. Adjustments may be required for IESO reported results which are full year impacts

3.2.2 ALLOCATION OF CDM RESULTS

The overall CDM adjustment for 2015, as calculated above, is allocated on a pro-rata basis (using kWh forecast) per class. Table 22 below presents the method behind HHI's allocation of CDM reduction in consumption.

Table 22 - CDM adjustments to Load Forecast

	Year	2017	2018		Share	Target	Final Adjusted (kWh)
Residential	Cust/Conn	4,830	4,836				
	kWh	50,145,146	48,571,399		32.47%	342,846	48,228,553
General Service < 50 kW	Cust/Conn	613	618				
	kWh	18,864,553	18,272,511		12.21%	128,978	18,143,532
General Service > 50 to 4999 kW	Cust/Conn	88	89				
	kWh	84,241,267	81,597,452		54.54%	575,963	81,021,489
	kW	188,567	212,547				211,046
USL	Cust/Conn	8	10				
	kWh	293,553	432,358		0.29%	3,052	429,307
Sentinel	Cust/Conn	58	57				
	kWh	88,568	84,626		0.06%	597	84,029
	kW	265	240				238
Street Lighting	Cust/Conn	1,206	1,211				
	kWh	643,599	646,505		0.43%	4,563	641,942
	kW	1,849	1,857				1,844
Total	**Cust/Conn**	**6,803**	**6,820**				**-**
	kWh	**154,276,687**	**149,604,851**				**148,548,851**
	kW	**190,681**	**214,643**				**213,128**

The following table shows the per class allocation of the amount used for CDM threshold for LRAMVA (2018).

Table 23 - Allocation of amount used for CDM threshold for LRAMVA[10]

Weather Adjusted Load Forecast Results				Weather Adjusted Load Forecast Results	
	Year	2018		Share	Target
Residential	Cust/Conn	4,836			
	kWh	48,571,399		32.47%	514,269
	kW				
General Service < 50 kW	Cust/Conn	618			
	kWh	18,272,511		12.21%	193,467
	kW				
General Service > 50 to 4999 kW	Cust/Conn	89			
	kWh	81,597,452		54.54%	863,945
	kW	212,547			
USL	Cust/Conn	10			
	kWh	432,358		0.29%	4,578
	kW	-			
Sentinel	Cust/Conn	57			
	kWh	84,626		0.06%	896
	kW	240			
Street Lighting	Cust/Conn	1,211			
	kWh	646,505		0.43%	6,845
	kW	1,857			
Total	**Cust/Conn**	**6,820**			
	kWh	**149,604,851**			
	kW	**214,643**			**1,584,000.00**

[10] MFR - CDM savings for 2017 LRAMVA balance and adjustment to 2017 load forecast; data by customer class and for both kWh and, as applicable, kW. Provide rationale for level of CDM reductions in 2017 load forecast

3.2.3 FINAL CDM ADJUSTED LOAD FORECAST

The table below provides details of the Final Customer and Volume Load Forecast for each of the years. This summary of the billing determinants by rate class will be used to develop HHI's proposed rates.

Table 24 - Final Customer and Volume Load Forecast

Customers or Connections							
Customer Class Name	**Last Board Appr**	**2014**	**2015**	**2016**	**2017**	**2018**	
Residential	4,950	4,901	4,859	4,824	4,830	4,836	
General Service < 50 kW	634	629	623	609	613	618	
General Service > 50 to 4999 kW	98	95	90	87	88	89	
Unmetered Scattered Load	5	5	5	7	8	10	
Sentinel Lighting	21	72	72	60	58	57	
Street Lighting	1,215	1,204	1,204	1,201	1,206	1,211	
TOTAL	**6,923**	**6,905**	**6,853**	**6,787**	**6,803**	**6,820**	

Consumption (kWh)							
Customer Class Name	**Last Board Appr**	**2014**	**2015**	**2016**	**2017**	**2018**	**2018 (CDM Adjusted)**
Residential	54,009,078	51,395,624	49,584,777	48,033,529	50,145,146	48,571,399	48,228,553
General Service < 50 kW	19,278,522	18,998,367	19,208,911	18,569,272	18,864,553	18,272,511	18,143,532
General Service > 50 to 4999 kW	80,885,161	71,672,278	70,137,954	73,896,610	84,241,267	81,597,452	81,021,489
Unmetered Scattered Load	221,145	281,727	281,352	293,553	293,553	432,358	429,307
Sentinel Lighting	104,882	102,064	102,064	88,568	88,568	84,626	84,029
Street Lighting	1,139,294	1,356,160	1,040,149	643,599	643,599	646,505	641,942
TOTAL	**155,638,082**	**143,806,220**	**140,355,207**	**141,525,131**	**154,276,687**	**149,604,851**	**148,548,851**

1

Consumption (kW)							
Customer Class Name	**Last Board Appr**	**2014**	**2015**	**2016**	**2017**	**2018**	**2018 (CDM Adjusted)**
Residential	0	0	0	0	0	0	0
General Service < 50 kW	0	0	0	0	0	0	0
General Service > 50 to 4999 kW	201,575	189,092	186,098	188,567	188,567	212,547	211,046
Unmetered Scattered Load	0	0	1	2	3	4	0
Sentinel Lighting	293	300	300	265	265	240	238
Street Lighting	3,218	3,764	2,865	1,849	1,849	1,857	1,844
TOTAL	**205,086**	**193,156**	**189,264**	**190,683**	**190,684**	**214,647**	**213,128**

2

3.3 ACCURACY OF LOAD FORECAST AND VARIANCE ANALYSIS

3.3.1 VARIANCE ANALYSIS OF LOAD FORECAST[11]

Table 25 below shows the yearly change in consumption for the Residential class.

Table 25 - Residential Variance

Year	Cust	%chg.	kWh	%chg.
2007	4,712		53,035,556	
2008	4,777	1.38%	53,471,410	0.82%
2009	4,780	0.06%	52,558,954	-1.71%
2010	4,799	0.41%	50,277,839	-4.34%
2011	4,826	0.56%	51,273,093	1.98%
2012	4,777	-1.02%	51,132,834	-0.27%
2013	4,884	2.24%	52,109,144	1.91%
2014	4,901	0.34%	51,395,624	-1.37%
2015	4,859	-0.85%	49,584,777	-3.52%
2016	4,824	-0.72%	50,145,146	1.13%
2017	4,830	0.12%	49,018,017	-2.25%
2018	4,836	0.12%	48,511,357	-1.03%

The number of residential customer has grown slightly since 2007 however the consumption has remained unchanged in contrast to the increase in customer count indicating that reduction is offsetting the growth in customer count due to the adoption of conservation measures. The projected consumption for 2018 factors in the reduction in CDM targets. The Load Forecast model uses a 10-year average to determine the projections.

The increase in customer count from 2016 to 2017 is of 6 and the increase from 2017 to 2018 is 6. As explained in Section 3.1.9 Determination of Customer Forecast, HHI has used a simple 10-year (2007-2016) geometric mean function to determine the forecasted number of customers of

[11] MFR - For customer/connection counts - identification as to whether customer/connection count is shown in year-end or average format, year-over-year variances in changes of customer/connection counts with explanation of major changes, explanations of bridge and test year forecasts by rate class, for last rebasing variance analysis between last OEB-approved and actuals with explanations for material differences

2017 and 2018. The methodology behind the projections for 2017 and 2018 are explained in detailed at Section 3.3.1.

Table 26 below shows the yearly change in consumption for the GS<50 kW class.

Table 26 - GS <50 kW Variance

Year	Cust	%chg.	kWh	%chg.
2007	570		20,965,147	
2008	576	1.14%	20,649,618	-1.51%
2009	583	1.13%	19,616,748	-5.00%
2010	590	1.29%	19,562,613	-0.28%
2011	593	0.42%	18,457,375	-5.65%
2012	575	-2.95%	18,531,354	0.40%
2013	617	7.30%	18,952,242	2.27%
2014	629	1.86%	18,998,367	0.24%
2015	623	-0.88%	19,208,911	1.11%
2016	609	-2.25%	18,864,553	-1.79%
2017	613	0.70%	18,440,528	-2.25%
2018	618	0.70%	18,145,706	-1.60%

The number of customers in the GS<50 kW class have remained relatively steady over the past ten years. The region's manufacturing and retail footprint has struggled over the past decade, reflecting the challenges faced in most parts of rural Ontario and Canada with its relatively narrow economic base and concentration in slow growing or declining industries. The projected consumption for 2018 factors is lower than any historical years due to the reduction attributed to CDM targets. The Load Forecast model uses a 10-year average to determine the projections.

The increase in customer count from 2016 to 2017 is of 4 and the increase from 2017 to 2018 is 5.

As explained in Section 3.1.9 Determination of Customer Forecast, HHI has used a simple 10-year (2007-2016) geometric mean function to determine the forecasted number of customers of 2017 and 2018. The methodology behind the projections for 2017 and 2018 are explained in detailed at Section 3.3.1.

Table 27 below shows the yearly change in consumption for the GS>50kW class.

Table 27 - GS>50 Variance

Year	Cust	%chg.	kWh	%chg.	kW	%chg.
2007	79		117,345,908		290,290	
2008	80	1.27%	112,845,011	-3.84%	304,147	4.77%
2009	81	1.25%	96,007,524	-14.92%	253,516	-16.65%
2010	84	3.70%	80,745,583	-15.90%	209,711	-17.28%
2011	91	7.74%	82,739,387	2.47%	211,681	0.94%
2012	80	-11.60%	77,875,019	-5.88%	206,655	-2.37%
2013	97	21.25%	77,368,540	-0.65%	200,068	-3.19%
2014	95	-2.06%	71,672,278	-7.36%	189,092	-5.49%
2015	90	-5.79%	70,137,954	-2.14%	186,098	-1.58%
2016	87	-2.79%	73,896,610	5.36%	188,567	1.33%
2017	88	1.05%	82,347,749	11.44%	214,501	13.75%
2018	89	1.05%	81,597,452	-0.91%	212,547	-0.91%

Similar to the GS<50kW, the number of customers in the GS>50 kW class have also remained relatively steady over the past 10 years. The region's manufacturing and retail footprint has struggled over the past decade, reflecting the challenges faced in most parts of rural Ontario and Canada with its relatively narrow economic base and concentration in slow growing or declining industries. HHI notes that the three losses in 2016 were due to a reclassification from GS>50 to GS<50. The projected consumption for 2018 factors is lower than any historical years due to the reduction attributed to CDM targets. The Load Forecast model uses a 10-year average to determine the projections.

The increase in customer count from 2016 to 2017 is of 1 and the increase from 2017 to 2018 is 1.

As explained in Section 3.1.9 Determination of Customer Forecast, HHI has used a simple 10-year (2007-2016) geometric mean function to determine the forecasted number of customers of 2017 and 2018. The methodology behind the projections for 2017 and 2018 are explained in detailed at Section 3.3.1.

Table 30 below shows the yearly change in consumption for the Streetlight class.

Table 30 - Streetlights Variance

Year	Cust	%chg.	kWh	%chg.	kW	%chg.
2007	1,158		972,414		2,874	
2008	1,158	0.00%	1,208,366	24.26%	3,098	7.79%
2009	1,158	0.00%	1,151,305	-4.72%	3,198	3.23%
2010	1,169	0.95%	1,156,978	0.49%	3,194	-0.13%
2011	1,191	1.84%	1,343,667	16.14%	3,724	16.59%
2012	1,158	-2.73%	1,355,855	0.91%	3,748	0.64%
2013	1,204	3.97%	1,356,161	0.02%	3,764	0.43%
2014	1,204	0.00%	1,356,160	0.00%	3,764	0.00%
2015	1,204	0.00%	1,040,149	-23.30%	2,865	-23.88%
2016	1,201	-0.29%	643,599	-38.12%	1,849	-35.49%
2017	1,206	0.45%	643,599	0.00%	1,849	0.00%
2018	1,211	0.45%	646,505	0.45%	1,857	0.45%

Connection count and consumption for the Streetlight class was consistent from 2008 to 2015 but decreased significantly from 2016 to 2018 coinciding with the conversion to LED lights. The Load Forecast model uses a 2-year (2016-2017) average to determine the projections.

The decrease in customer count from 2016 to 2017 is of 9 and the increase from 2017 to 2018 is 9.

As explained in Section 3.1.9 Determination of Customer Forecast, HHI has used a simple 10-year (2007-2016) geometric mean function to determine the forecasted number of customers of 2017 and 2018. The methodology behind the projections for 2017 and 2018 are explained in detailed at Section 3.3.1.

Table 30 below shows the yearly change in consumption for the Sentinel Lighting class.

Table 30 - Sentinel Lights Variance

Year	Cust	%chg.	kWh	%chg.	kW	%chg.
2007	72		108,699		300	
2008	72	0.00%	108,472	-0.21%	300	0.00%
2009	72	0.00%	108,855	0.35%	300	0.00%
2010	72	0.00%	105,383	-3.19%	297	-1.00%
2011	72	0.00%	102,889	-2.37%	280	-5.72%
2012	72	0.00%	102,354	-0.52%	284	1.43%
2013	72	0.00%	102,064	-0.28%	296	4.23%
2014	72	0.00%	102,064	0.00%	300	1.35%
2015	72	0.00%	102,064	0.00%	300	0.00%
2016	60	-17.36%	88,568	-13.22%	265	-11.67%
2017	58	-2.36%	86,667	-2.15%	246	-7.17%
2018	57	-2.36%	84,626	-2.36%	240	-2.44%

HHI projects a decrease in both connections and consumption of the Sentinel Lights class. This is due to the Ministry of transportation who recently converted all their lights on bridge to Quebec to metered consumption

The decrease in customer count from 2016 to 2017 is of 2 and the increase from 2017 to 2018 is 3. As explained in Section 3.1.9 Determination of Customer Forecast, HHI has used a simple 10-year (2007-2016) geometric mean function to determine the forecasted number of customers of 2017 and 2018. The methodology behind the projections for 2017 and 2018 are explained in detailed at Section 3.3.1.

Table 30 below shows the yearly change in consumption for the Unmetered Scattered load class.

Table 28 below shows the yearly change in consumption for the USL class.

Table 28 - USL Variance

Year	Cust	%chg.	kWh	%chg.
2007	2		0	
2008	4	100.00%	86,849	#DIV/0!
2009	5	12.50%	181,221	108.66%
2010	5	11.11%	242,514	33.82%
2011	4	-20.00%	215,299	-11.22%
2012	5	25.00%	214,901	-0.18%
2013	5	0.00%	242,993	13.07%
2014	5	0.00%	281,727	15.94%
2015	7	40.00%	281,352	-0.13%
2016	9	28.57%	293,553	4.34%
2017	8	-9.04%	345,887	17.83%
2018	10	16.95%	432,358	25.00%

HHI anticipates a modest increase in USL connection for 2017 and the 2018 Test year. The Load Forecast model uses a 10-year average to determine the projections. The methodology behind the projections for 2017 and 2018 are explained in detailed at Section 3.3.1.

In summary, for customer counts HHI expects slight increases in the Residential and USL classes only. HHI projects a small or no material change in the GS<50 category, GS>50 Class and a decrease in Streetlights and Sentinel Lights. HHI is expecting reduced consumption in each of the classes except a small increase in the USL class. Secondly, additional energy consumption that does not depend on the weather (often referred to as "baseload" energy consumption) is often offset by the additional transitioning to energy efficient lighting, appliances and other energy efficient changes.

Table 29 below shows the difference between the 2014 Board Approved Load Forecast and the 2018 Load Forecast. Table 30 below shows the 2014 Board Approved Forecast vs the 2018 Test Year Forecast (CDM Adjusted). HHI notes that has little control over its Board Approved Load Forecast as the OEB dictates the manner in which the forecast is determined (i.e. using a multivariate regression analysis based on multi-year historical values.) In other words, the Load Forecasting process is formulaic in natures and year over year variances are outside of the utility's control. That said HHI notes that all classes have remained relatively unchanged since the utility's Board Approved 2014 Load Forecast.

The overall consumption has declined can be explained by change in weather patterns or effects of energy efficiencies

Table 29 – 2014 Board Approved VS 2018 Load Forecast

	Customers or Connections		
	Actual	Projected	Variance
Customer Class Name	2014 Board Appr.	2018	
Residential	4,950	4,836	-114
General Service < 50 kW	634	618	-16
General Service > 50 to 4999 kW	98	89	-9
Unmetered Scattered Load	5	10	5
Sentinel Lighting	72	57	-15
Street Lighting	1,215	1211	-4
TOTAL	6,923	5,764	-103
	Consumption (kWh)		
	Actual	Projected	Variance
Customer Class Name	Last Board Appr.	2018	
Residential	54,009,078	48,228,465	-5,780,525
General Service < 50 kW	19,278,522	18,143,499	-1,134,990
General Service > 50 to 4999 kW	80,885,161	81,021,342	136,328
Unmetered Scattered Load	221,145	429,306	208,162
Sentinel Lighting	104,882	84,029	-20,853
Street Lighting	1,139,294	603,985	-497,352
TOTAL	155,638,082	148,510,626	-7,089,231
	Consumption (kW)		
	Actual	Projected	Variance
Customer Class Name	2014 Board Appr.	2018	0
Residential	-	-	0
General Service < 50 kW	-	-	9,471
General Service > 50 to 4999 kW	201,575	211,046	0
Unmetered Scattered Load	-	-	-55
Sentinel Lighting	293	238	-1,374
Street Lighting	3,218	1,735	0
TOTAL	205,086	213,019	8,042

Table 30 below, presents variances between actuals and 2014 Board Approved. As shown in the table below, the trend in Residential customer count declined between the last Board Approved and 2016 only to end at a similar count as the 2014 BA. The overall consumption has declined

due to energy conservation. Most classes saw a moderate increase in consumption in 2017 only to be offset by CDM target reductions in 2018.

With respect to consumption, as explained in section 3.1.6, the assumption is that the effects of energy efficient changes have contributed to the modest decline in consumption vs the increase in customer count. The customer/connection count for all other classes has remained relatively unchanged.

Table 30 - Yearly Variances from Last Board Approved

Customer Class Name	Last Board Appr.	2014	2015	2016	2017	2018
Residential	4,950	-50	-42	-35	6	6
General Service < 50 kW	634	-6	-6	-14	4	4
General Service > 50 to 4999 kW	98	-3	-6	-3	1	1
Unmetered Scattered Load	5	-	-	2	1	1
Sentinel Lighting	72	-	-	-13	-1	-1
Street Lighting	1,215	-11	-	-4	5	5
TOTAL	6,974	-69	-53	-66	16	17

Customer Class Name	Last Board Appr.	2014	2015	2016	2017	2018
Residential	54,009,078	-2,613,454	-1,810,847	-1,551,248	2,111,617	-1,916,594
General Service < 50 kW	19,278,522	-280,155	210,544	-639,638	295,280	-721,021
General Service > 50 to 4999 kW	80,885,161	-9,212,883	-1,534,324	3,758,656	10,344,658	-3,219,779
Unmetered Scattered Load	221,145	60,582	-375	12,201	-	135,754
Sentinel Lighting	104,882	-2,818	-	-13,496	-	-4,539
Street Lighting	1,139,294	216,866	-316,012	-396,550	-	-1,657
TOTAL	155,638,082	-11,831,862	-3,451,013	1,169,924	12,751,555	-5,727,836

Customer Class Name	Last Board Appr.	2014	2015	2016	2017	2018
Residential	-	-	-	-	-	-
General Service < 50 kW	-	-	-	-	-	-
General Service > 50 to 4999 kW	201,575	-12,483	-2,994	2,469	-	22,479
Unmetered Scattered Load	-	-	1	1	1	-3
Sentinel Lighting	293	7	-	-35	-	-27
Street Lighting	3,218	546	-899	-1,017	-	-5
TOTAL	205,086	-11,930	-3,892	1,418	1	22,445

Table 31 – OEB Appendix 2-IA

	Calendar Year		Customers / Connections			Consumption (kWh) [3]				Demand (kW or kVA)				Revenues	
	(for 2017 Cost of Service)					Weather-actual	Weather-normalized			Weather-actual	Weather-normalized			Weather-actual	Weather-normalized
Historical	2012		5537			155,160,223	151,645,786			210711	206,655				
Historical	2013		5459			154,796,479	156,370,293			204152	200,068				
Historical	2014		4973	Board-approved [2]		155,638,082	155,638,082	Board-approved [2]		201,575	201,575	Board-approved [2]		$1,574,050	
Historical	2015		5652			145,328,620	154,667,603			189287	186,098			$1,539,695	
Historical	2016		5600			143,768,237	153,743,233			190705	188,567			$1,563,222	
Bridge Year (Forecast)	2017		5562				150,287,496				214,501				$1,576,210
Test Year (Forecast)	2018		5575				148,918,179				212,547				$1,774,699

Due to its length when printed, HHI has filed the OEB Appendix 2-IB at Appendix A of this Exhibit.[12]

[12] MFR - Completed Appendix 2-IB; the customer and load forecast for the test year must be entered on RRWF, Tab 10

Table 3.32 below presents the actual average use per customer, by customer class, and historical and adjusted forecast average use per customer generated using the load forecast. As can be seen from the results below, the predicted use per customer follows the trend created from its historical usage per customer.[13]

Table 32 - Average per customer use

	Residential	GS<50	GS>50		USL		Sentinel		Streetlights	
Year	kWh/Cust	kWh/Cust	kWh/Cust	kW/Cust	kWh/Cust	kW/Cust	kWh/conn	kW/conn	kWh/conn	kW/conn
2007	11,033	36,168	1,457,576	3,629	0	0	1,510	4	840	2
2008	10,637	33,706	1,324,630	3,755	21,712	0	1,507	4	1,043	3
2009	10,680	32,422	1,114,520	3,018	40,271	0	1,512	4	985	3
2010	10,278	32,571	880,175	2,317	48,503	0	1,464	4	972	3
2011	10,284	30,755	990,928	2,646	53,825	0	1,429	4	1,160	3
2012	10,232	29,354	784,651	2,130	42,980	0	1,422	4	1,126	3
2013	10,742	30,461	822,686	2,106	48,599	0	1,418	4	1,126	3
2014	10,934	31,524	827,842	2,113	56,345	0	1,418	4	1,126	3
2015	10,939	33,569	857,990	2,139	40,193	0	1,715	5	866	2
2016	10,382	30,761	958,191	2,145	35,857	0	1,524	5	534	2
2017	10,149	30,070	936,653	2,414	36,126	0	1,492	4	534	2
2018	10,044	29,589	918,438	#DIV/0!	#DIV/0!	0	1,492	4	534	2

The next section details a variance analysis of the utility's past and projected revenues.

[13] MFR - With respect to average consumption, for each rate class, distributors are to provide weather-actual and weather-normalized average annual consumption or demand per customer as applicable for last OEB approved and historical, weather normalized average annual consumption or demand per customer for the bridge and test years, explanation of the net change in average consumption from last OEB-approved and actuals from historical, bridge and test years based on year-over-year variances and any apparent trends in data

3.3.2 VARIANCE ANALYSIS OF DISTRIBUTION REVENUES[14]

The tables below provide details of the Final Customer and Volume Load Forecast for each of the years. This summary of the billing determinants by rate class will be used to develop HHI's proposed rates.

[14] MFR - For revenues - calculation of bridge year forecast of revenues at existing rates, calculation of test year forecasted revenues at existing and proposed rates, year-over-year variances in revenues comparing historical actuals and bridge and test year forecasts

Table 33 - Variance Analysis of Revenues

The table below shows year over year of HHI's revenues. A detailed analysis follows.

	Year	2014 Board Approved	2014	Variances	2015	Variances	2016	Variances	2017	Variances	2018 Predicted	Variances	2018 CDM Adjusted	Variances
Residential	Fixed	$7.06	$7.06	$0.00	$7.17	$0.11	$9.60	$2.43	$11.90	$2.30	$15.39	$3.49	$15.39	$0.00
	Variable	$0.0096	$0.0096	$0.0000	$0.0098	$0.0002	$0.0076	-$0.0022	$0.0051	-$0.0025	$0.0028	-$0.0023	$0.0028	$0.0000
	Cust/Conn	4,950	4,901	-50	4,859	-42	4,824	-35	4,830	6	4,836	6	4,836	0
	kWh	54,009,078	51,395,624	-2,613,454	49,584,777	-1,810,847	48,033,529	-1,551,248	50,145,146	2,111,617	48,571,399	-1,573,748	48,228,553	-342,846
	Revenues from Fixed	$419,364	$415,170	-$4,194	$418,068	$2,898	$555,725	$137,656	$689,720	$133,995	$893,103	$203,383	$893,103	$0
	Revenues from Variable	$518,487	$493,398	-$25,089	$485,931	-$7,467	$365,055	-$120,876	$255,740	-$109,315	$135,694	-$120,047	$134,736	-$958
General Service < 50 kW	Fixed	$14.91	$14.91	$0.00	$15.15	$0.24	$15.47	$0.32	$15.47	$0.00	$15.47	$0.00	$15.47	$0.00
	Variable	$0.0059	$0.0059	$0.0000	$0.0060	$0.0001	$0.0061	$0.0001	$0.0061	$0.0000	$0.0073	$0.0012	$0.0073	$0.0000
	Cust/Conn	634	629	-6	623	-6	609	-14	613	4	618	4	618	0
	kWh	19,278,522	18,998,367	-280,155	19,208,911	210,544	18,569,272	-639,638	18,864,553	295,280	18,272,511	-592,042	18,143,532	-128,978
	Revenues from Fixed	$113,435	$112,451	-$984	$113,261	$810	$113,055	-$207	$113,845	$790	$114,640	$796	$114,640	$0
	Revenues from Variable	$113,743	$112,090	-$1,653	$115,253	$3,163	$113,273	-$1,981	$115,074	$1,801	$134,196	$19,122	$133,249	-$947
General Service > 50 kW - 4999 kW	Fixed	$97.35	$97.35	$0.00	$98.91	$1.56	$100.99	$2.08	$100.99	$0.00	$100.99	$0.00	$100.99	$0.00
	Variable	$1.9733	$1.9733	$0.0000	$2.0049	$0.0316	$2.0470	$0.0421	$2.0470	$0.0000	$2.2602	$0.2132	$2.2602	$0.0000
	Cust/Conn	98	95	-3	90	-6	87	-3	88	1	89	1	89	0
	kWh	80,885,161	71,672,278	-9,212,883	70,137,954	-1,534,324	73,896,610	3,758,656	84,241,267	10,344,658	81,597,452	-2,643,815	81,021,489	-575,963

	kW	201,575	189,092	-12,483	186,098	-2,994	188,567	2,469	188,567	0	212,547	23,980	211,046	-1,500
Transformer Allowance	kW	189,205	172,155		167,556		163,375		189,205		189,205		189,205	
	$	$0.60	$0.60		$0.60		$0.60		$0.60		$0.60		$0.60	
	Revenues from Fixed	$114,484	$110,979	-$3,505	$106,229	-$4,750	$105,434	-$796	$106,545	$1,111	$107,668	$1,123	$107,668	$0
	Revenues from Variable	$284,245	$269,843	-$14,402	$272,574	$2,731	$287,972	$15,398	$272,474	-$15,498	$366,866	$94,393	$363,476	-$3,391
Unmetered Scattered Load	Fixed	$6.39	$6.39	$0.00	$6.49	$0.10	$6.63	$0.14	$6.63	$0.00	$7.29	$0.66	$7.29	$0.00
	Variable	$0.0037	$0.0037	$0.0000	$0.0038	$0.0001	$0.0039	$0.0001	$0.0039	$0.0000	$0.0043	$0.0004	$0.0043	$0.0000
	Cust/Conn	5	5	0	5	0	7	2	8	1	10	1	10	0
	kWh	221,145	281,727	60,582	281,352	-375	293,553	12,201	293,553	0	432,358	138,805	429,307	-3,052
	Revenues from Fixed	$383	$383	$0	$389	$6	$557	$168	$651	$94	$838	$186	$838	$0
	Revenues from Variable	$818	$1,042	$0	$1,069	$27	$1,145	$76	$1,145	$0	$1,853	$708	$1,840	-$13
Sentinel Lighting	Fixed	$1.60	$1.60	$0.00	$1.63	$0.03	$1.66	$0.03	$1.66	$0.00	$1.83	$0.17	$1.83	$0.00
	Variable	$3.1754	$3.1754	$0.0000	$3.2262	$0.0508	$3.2940	$0.0678	$3.2940	$0.0000	$3.6222	$0.3282	$3.6222	$0.0000
	Cust/Conn	71	72	1	72	0	60	-13	58	-1	57	-1	57	0
	kWh	104,882	102,064	-2,818	102,064	0	88,568	-13,496	88,568	0	84,626	-3,942	84,029	-597
	kW		300	300	300	0	265	-35	265	0	240	-25	238	-2
	Revenues from Fixed	$1,363	$1,382	$19	$1,408	$26	$1,185	-$223	$1,157	-$28	$1,243	$85	$1,243	$0
	Revenues from Variable	$0	$953	$953	$968	$15	$873	-$95	$873	$0	$869	-$4	$863	-$6
Streetlighting	Fixed	$0.53	$0.53	$0.00	$0.54	$0.01	$0.55	$0.01	$0.55	$0.00	$0.67	$0.12	$0.67	$0.00
	Variable	$5.7504	$5.7504	$0.0000	$5.8424	$0.0920	$5.9651	$0.1227	$5.9651	$0.0000	$7.2372	$1.2721	$7.2372	$0.0000
	Cust/Conn	1,215	1,204	-11	1,204	0	1,201	-4	1,206	5	1,211	5	1,211	0

kWh	1,139,294	1,356,160	216,866	1,040,149	-316,012	643,599	-396,550	643,599	0	646,505	2,906	641,942	-4,563
kW		3,764	3,764	2,865	-899	1,849	-1,017	1,849	0	1,857	8	1,844	-13
Revenues from Fixed	$7,727	$7,657	-$70	$7,802	$144	$7,923	$121	$7,959	$36	$9,700	$1,741	$9,700	$0
Revenues from Variable	$0	$21,646	$21,646	$16,741	-$4,905	$11,027	-$5,714	$11,027	$0	$13,439	$2,412	$13,344	-$95

Total

Cust/Conn	6,973	6,905	-68	6,853	-53	6,787	-66	6,803	16	6,820	17	6,820	0
kWh	155,638,082	143,806,220	-11,831,862	140,355,207	-3,451,013	141,525,131	1,169,924	154,276,687	12,751,555	149,604,851	-4,671,836	148,548,851	-1,056,000
kW	734,758	721,161	-13,596	720,982	-179	860,017	139,035	994,896	134,879	1,223,224	228,328	1,221,709	-1,515
Revenues from Fixed	$656,757	$648,024	-$8,733	$647,159	-$865	$783,879	$136,720	$919,877	$135,999	$1,127,191	$207,314	$1,127,191	$0
Revenues from Variable	$917,294	$898,972	-$18,546	$892,536	-$6,436	$779,344	-$113,192	$656,333	-$123,011	$652,917	-$3,415	$647,507	-$5,410
Total	*$1,574,050*	*$1,546,996*	*-$27,279*	*$1,539,695*	*-$7,301*	*$1,563,222*	*$23,528*	*$1,576,210*	*$12,987*	*$1,780,109*	*$203,899*	*$1,774,699*	*-$5,410*

1

2014 Board Approved VS 2014 Actual

The total distribution revenue in 2014 of $1,546,996 was -$27,279 lower than the 2014 Board Approved the reason being that the regression analysis used in Cost of Service applications overestimate the Load Forecast compared to actuals.

2014 Actual VS 2015 Actual

The total distribution revenue in 2015 of $1,539,695 was a marginal -$7,301 less than the 2014 Actual therefore no explanation is required.

2015 Actual VS 2016 Actual

The total distribution revenue in 2016 of $1,563,222 was $23,528 greater than the 2015 Actual. The main reason for the overall increase in distribution revenues was an increase in the Residential MFC and the increase in the revenues from variable charges related to the Streetlights. The overall increase in revenues from fixed rates of $135,720 is offset by a decrease of 113,192 in revenues from variable charge.

2016 Actual VS 2017 Actual

The total distribution revenue in 2017 of $1,576,210 was a marginal $12,987 more than the 2016 Actual therefore no explanation is required.

2017 Actual VS 2018 Predicted

The total distribution revenue in 2018 of $1,780,109 is projected to be $203,899 greater than 2017. The main reason for the overall increase in distribution revenues was an increase in the Residential MFC and the increase in the revenues from variable charges related to the Streetlights.

2018 Predicted VS 2018 CDM Adjusted

The total distribution revenue in 2018 CDM adjusted of $1,774,699 is 5,410 less than the 2018 Predicted (pre-CDM adjusted) $1,780,109. The majority of the variance is attributed to revenues from variable charges.

Table 34 - Revenues at proposed rates

2018 Rates at 2018 Load

	Test Year Projected Revenue from Proposed Variable Charges							
Customer Class Name	Variable Distribution Rate	per	Test Year Volume	Gross Variable Revenue	Transform. Allowance Rate	Transform. Allowance kW's	Transform. Allowance $'s	Net Variable Revenue
Residential	$0.0028	kWh	48,228,553	$134,735.85			$0.00	$134,735.85
General Service < 50 kW	$0.0073	kWh	18,143,532	$133,248.77			$0.00	$133,248.77
General Service > 50 to 4999 kW	$2.2602	kW	211,046	$476,998.51	-0.60	189205	-$113,523.00	$363,475.51
Unmetered Scattered Load	$0.0043	kWh	429,307	$1,839.70			$0.00	$1,839.70
Sentinel Lighting	$3.6222	kW	238	$863.20			$0.00	$863.20
Street Lighting	$7.2372	kW	1,844	$13,344.36			$0.00	$13,344.36
Total Variable Revenue			**67,014,520**	**$761,030.39**	**-0.6**	189205	-$113,523.00	$647,507.39

2018 Rates at 2018 Load

	Test Year Projected Revenue from Proposed Fixed Charges							
Customer Class Name	Fixed Rate	Customers (Connections)	Fixed Charge Revenue	Variable Revenue	TOTAL	% Fixed Revenue	% Variable Revenue	% Total Revenue
Residential	$15.3900	4,836	$893,102.99	$134,735.85	$1,027,838.84	67.19%	23.93%	52.77%
General Service < 50 kW	$15.4700	618	$114,640.36	$133,248.77	$247,889.13	46.25%	44.65%	12.70%
General Service > 50 to 4999 kW	$100.9900	89	$107,667.89	$363,475.51	$471,143.40	22.85%	67.60%	24.01%
Unmetered Scattered Load	$7.2900	10	$837.58	$1,839.70	$2,677.27	28.45%	62.54%	0.14%
Sentinel Lighting	$1.8254	57	$1,242.67	$863.20	$2,105.87	53.66%	37.28%	0.11%
Street Lighting	$0.6673	1,211	$9,700.00	$13,344.36	$23,044.36	34.69%	47.73%	1.07%
Total Fixed Revenue		**6,820**	**$1,127,191.48**	**$647,507.39**	**$1,774,698.87**			

3.4 OTHER REVENUES

3.4.1 OVERVIEW OF OTHER REVENUE

Other Distribution Revenues are revenues that are distribution related but are sourced from means other than distribution rates. For this reason, other revenues are deducted from HHI's proposed revenue requirement. Further details on the derivation of the Revenue Requirement is presented in Exhibit 6.

Other Distribution Revenues includes items such as:

- Specific Service Charges
- Late Payment Charges
- Other Distribution Revenues
- Other Income and Expenses

HHI is proposing one change to the MicroFit Service Charges as explained in 3.4.3

OEB APPENDIX 2-H OTHER OPERATING REVENUES

A detailed breakdown by USoA account is shown in Table 32 - OEB Appendix 2-H presented on the next page. Year over year variance analysis follow at Section 3.4.2 - Other Revenue Variance Analysis.

Table 35 – OEB Appendix 2-H[15]

		2014	2014	2015	2016	2017	2018
	USoA Description	**Board Approved**					
4235	**4235-Miscellaneous Service Revenues**	$70,000	-$64,182	-$68,254	-$64,303	-$64,625	-$64,948
4225	**4225-Late Payment Charges**	$30,000	-$36,576	-$29,928	-$29,445	-$29,592	-$29,740
4082	4082-Retail Services Revenues	$0	$0	$0	$0	-$6,349	-$6,381
4084	4084-Service Transaction Requests (STR) Revenues	$0	$0	$0	$0	-$110	-$111
4086	4086-SSS Administration Revenue	$0	$0	$0	$0	$0	$0
4205	4205-Interdepartmental Rents	$0	$0	$0	$0	$0	$0
4210	4210-Rent from Electric Property	-$16,739	-$17,377	-$25,479	-$26,791	-$24,164	-$24,285
4215	4215-Other Utility Operating Income	$0	$0	$0	$0	$0	$0
4220	4220-Other Electric Revenues	$0	$0	$0	$0	$0	$0
4240	4240-Provision for Rate Refunds	$0	$0	$0	$0	$0	$0
4245	4245-Government Assistance Directly Credited to Income	$0	$0	$0	$0	$0	$0
4305	4305-Regulatory Debits	$0	$0	$0	$0	$0	$0
4310	4310-Regulatory Credits	$0	$0	$0	$0	$0	$0
4315	4315-Revenues from Electric Plant Leased to Others	$0	$0	$0	$0	$0	$0
4320	4320-Expenses of Electric Plant Leased to Others	$0	$0	$0	$0	$0	$0
4324	4324-Special Purpose Charge Recovery	$0	$0	$0	$0	$0	$0
4325	4325-Revenues from Merchandise Jobbing, Etc.	-$20,000	-$4,939	-$23,399	-$33,007	-$26,200	-$26,331
4330	4330-Costs and Expenses of Merchandising Jobbing, Etc.	$15,000	$3,828	$16,039	$26,810	$21,555	$21,663
4335	4335-Profits and Losses from Financial Instrument Hedges	$0	$0	$0	$0	$0	$0
4340	4340-Profits and Losses from Financial Instrument Investments	$0	$0	$0	$0	$0	$0
4345	4345-Gains from Disposition of Future Use Utility Plant	$0	$0	$0	$0	$0	$0
4350	4350-Losses from Disposition of Future Use Utility Plant	$0	$0	$0	$0	$0	$0
4355	4355-Gain on Disposition of Utility and Other Property	$0	$0	$0	$6,187	$0	$0

[15] MFR - Completed Appendix 2-H

4360	4360-Loss on Disposition of Utility and Other Property	$0	$0	$7,705	$0	$0	$0
4365	4365-Gains from Disposition of Allowances for Emission	$0	$0	$0	$0	$0	$0
4370	4370-Losses from Disposition of Allowances for Emission	$0	$0	$0	$0	$0	$0
4375	4375-Revenues from Non-Utility Operations	$0	$0	-$183,522	-$307,342	-$293,315	-$294,781
4375	4375-Sub-account Generation Facility Revenues	$0	$0	$0	$0	$0	$0
4380	4380-Expenses of Non-Utility Operations	$0	$41	$182,628	$223,798	$222,555	$223,667
4380	4380-Sub-account Generation Facility Expenses	$0	$0	$0	$0	$0	$0
4385	4385-Non-Utility Rental Income	$0	$0	$0	$0	$0	$0
4390	4390-Miscellaneous Non-Operating Income	$0	-$395	-$2,790	-$1,269	$0	$0
4395	4395-Rate-Payer Benefit Including Interest	$0	$0	$0	$0	$0	$0
4398	4398-Foreign Exchange Gains and Losses, Including Amortization	$0	$0	$0	$0	$0	$0
4405	4405-Interest and Dividend Income	-$20,000	-$13,148	-$7,567	-$8,175	-$6,614	-$6,647
4415	4415-Equity in Earnings of Subsidiary Companies	$0	$0	$0	$0	$0	$0
	Total	$58,261	-$132,749	-$134,567	-$213,537	-$206,859	-$207,894
	Specific Service Charges	$70,000	-$64,182	-$68,254	-$64,303	-$64,625	-$64,948
	Late Payment Charges	$30,000	-$36,576	-$29,928	-$29,445	-$29,592	-$29,740
	Other Distribution/Operating Revenues	-$16,739	-$17,377	-$25,479	-$26,791	-$30,623	-$30,777
	Other Income or Deductions	-$25,000	-$14,613	-$10,906	-$92,999	-$82,019	-$82,429
	Total	$58,261	-$132,749	-$134,567	-$213,537	-$206,859	-$207,894

Account 4405 - Interest and Dividend Income

	2014 Actual	2015 Actual	2016 Actual[2]	Actual Year[2]	Bridge Year[2]	Test Year
				2016	2017	2018
Reporting Basis						
Interest and Dividend Income	-$3,800.37	-$2,592.86	-$2,544.12	-$2,544.12		
Interest and Dividend Income - Carrying Charges	-$9,347.75	-$4,974.45	-$5,631.18	-$5,631.18		
Total	-$13,148	-$7,567	-$8,175	-$8,175	$-	$-

3.4.2 OTHER REVENUE VARIANCE ANALYSIS[16]

Table 33 to 37 below presents year over year variances of other operating revenues:

Table 36 - Variance Analysis of Other Operating Revenues

2014 BA – 2014

	Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
		2014	**2014**	**$**	**%**
	USoA Description	**Board Approved**			
4235	**4235-Miscellaneous Service Revenues**	-$70,000	-$64,182	5,818	8.31%
4225	**4225-Late Payment Charges**	-$30,000	-$36,576	-6,576	21.92%
4210	4210-Rent from Electric Property	-$16,739	-$17,377	-$638	3.81%
4325	4325-Revenues from Merchandise Jobbing, Etc.	-$20,000	-$4,939	$15,061	75.30%
4330	4330-Costs and Expenses of Merchandising Jobbing, Etc.	$15,000	$3,828	-$11,172	74.48%
4380	4380-Expenses of Non-Utility Operations	$0	$41	$41	
4390	4390-Miscellaneous Non-Operating Income	$0	-$395	-$395	
4405	4405-Interest and Dividend Income	-$20,000	-$13,148	$6,852	34.26%
	Total	$58,261	-$132,749	-$191,010	$3
	Specific Service Charges	-$70,000	-$64,182	$5,818	8.31%
	Late Payment Charges	-$30,000	-$36,576	-$6,576	21.92%
	Other Distribution/Operating Revenues	-$16,739	-$17,377	-$638	3.81%
	Other Income or Deductions	-$25,000	-$14,613	$10,387	41.55%
	Total	-$141,739	-$132,749	$8,990	6.34%

2014 Actual over 2014 Board Approved - The Other Revenues variance reflects a marginal decrease of $8,990 over 2014 BA therefore no explanation is required.

[16] MFR - Variance analysis - year over year, historical, bridge and test

Table 37 - Variance Analysis of Other Operating Revenues

2014-2015

	Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
		2014	**2015**	**$**	**%**
	USoA Description				
4235	**4235-Miscellaneous Service Revenues**	-$64,182	-$68,254	-$4,071	6.34%
4225	**4225-Late Payment Charges**	-$36,576	-$29,928	$6,648	18.18%
4210	4210-Rent from Electric Property	-$17,377	-$25,479	-$8,102	46.62%
4325	4325-Revenues from Merchandise Jobbing, Etc.	-$4,939	-$23,399	-$18,460	373.75%
4330	4330-Costs and Expenses of Merchandising Jobbing, Etc.	$3,828	$16,039	$12,212	319.04%
4360	4360-Loss on Disposition of Utility and Other Property	$0	$7,705	$7,705	
4375	4375-Revenues from Non-Utility Operations	$0	-$183,522	-$183,522	
4380	4380-Expenses of Non-Utility Operations	$41	$182,628	$182,587	441884.49%
4390	4390-Miscellaneous Non-Operating Income	-$395	-$2,790	-$2,395	606.41%
4405	4405-Interest and Dividend Income	-$13,148	-$7,567	$5,581	42.45%
	Total	-$132,749	-$134,567	-$1,818	$0
	Specific Service Charges	-$64,182	-$68,254	-$4,071	6.34%
	Late Payment Charges	-$36,576	-$29,928	$6,648	18.18%
	Other Distribution/Operating Revenues	-$17,377	-$25,479	-$8,102	46.62%
	Other Income or Deductions	-$14,613	-$10,906	$3,707	25.37%
	Total	-$132,749	-$134,567	-$1,818	1.37%

The Other Revenues variance reflects a marginal decrease of $1,818 over 2014 therefore no explanation is required.

Table 38 - Variance Analysis of Other Operating Revenues

2015 – 2016

	Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
		2015	**2016**	**$**	**%**
	USoA Description				
4235	**4235-Miscellaneous Service Revenues**	-$68,254	-$64,303	$3,951	5.79%
4225	**4225-Late Payment Charges**	-$29,928	-$29,445	$483	1.61%
4210	4210-Rent from Electric Property	-$25,479	-$26,791	-$1,312	5.15%
4325	4325-Revenues from Merchandise Jobbing, Etc.	-$23,399	-$33,007	-$9,608	41.06%
4330	4330-Costs and Expenses of Merchandising Jobbing, Etc.	$16,039	$26,810	$10,770	67.15%
4355	4355-Gain on Disposition of Utility and Other Property	$0	$6,187	$6,187	
4360	4360-Loss on Disposition of Utility and Other Property	$7,705	$0	-$7,705	100.00%
4375	4375-Revenues from Non-Utility Operations	-$183,522	-$307,342	-$123,820	67.47%
4380	4380-Expenses of Non-Utility Operations	$182,628	$223,798	$41,170	22.54%
4390	4390-Miscellaneous Non-Operating Income	-$2,790	-$1,269	$1,521	54.51%
4405	4405-Interest and Dividend Income	-$7,567	-$8,175	-$608	8.03%
	Total	-$134,567	-$213,537	-$78,971	$1
	Specific Service Charges	-$68,254	-$64,303	$3,951	5.79%
	Late Payment Charges	-$29,928	-$29,445	$483	1.61%

Other Distribution/Operating Revenues	-$25,479	-$26,791	-$1,312	5.15%
Other Income or Deductions	-$10,906	-$92,999	-$82,093	752.72%
Total	-$134,567	-$213,537	-$78,971	58.69%

The forecast for the 2016 shows an increase of $78,791 over the previous year. The main reason for the increase is can be attributed to CDM activities. (account 4375)

Table 40 - Variance Analysis of Other Operating Revenues

2016 – 2017

	Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
		2016	**2017**	**$**	**%**
	USoA Description				
4235	**4235-Miscellaneous Service Revenues**	-$64,303	-$64,625	-$322	0.50%
4225	**4225-Late Payment Charges**	-$29,445	-$29,592	-$147	0.50%
4082	4082-Retail Services Revenues	$0	-$6,349	-$6,349	
4084	4084-Service Transaction Requests (STR) Revenues	$0	-$110	-$110	
4210	4210-Rent from Electric Property	-$26,791	-$24,164	$2,627	9.80%
4325	4325-Revenues from Merchandise Jobbing, Etc.	-$33,007	-$26,200	$6,807	20.62%
4330	4330-Costs and Expenses of Merchandising Jobbing, Etc.	$26,810	$21,555	-$5,255	19.60%
4355	4355-Gain on Disposition of Utility and Other Property	$6,187	$0	-$6,187	100.00%
4375	4375-Revenues from Non-Utility Operations	-$307,342	-$293,315	$14,027	4.56%
4380	4380-Expenses of Non-Utility Operations	$223,798	$222,555	-$1,243	0.56%
4390	4390-Miscellaneous Non-Operating Income	-$1,269	$0	$1,269	100.00%
4405	4405-Interest and Dividend Income	-$8,175	-$6,614	$1,561	19.10%
	Total	-$213,537	-$206,859	$6,678	$0
	Specific Service Charges	-$64,303	-$64,625	-$322	0.50%
	Late Payment Charges	-$29,445	-$29,592	-$147	0.50%
	Other Distribution/Operating Revenues	-$26,791	-$30,623	-$3,832	14.30%
	Other Income or Deductions	-$92,999	-$82,019	$10,980	11.81%
	Total	-$213,537	-$206,859	$6,678	3.13%

The Other Revenues variance for 2017 over 2016 reflects a marginal decrease of $6,678 therefore no explanation is required.

Table 41 - Variance Analysis of Other Operating Revenues

2017 – 2018

	Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
		2017	**2018**	**$**	**%**
	USoA Description				
4235	**4235-Miscellaneous Service Revenues**	-$64,625	-$64,948	-$323	0.50%
4225	**4225-Late Payment Charges**	-$29,592	-$29,740	-$148	0.50%
4082	4082-Retail Services Revenues	-$6,349	-$6,381	-$32	0.50%
4084	4084-Service Transaction Requests (STR) Revenues	-$110	-$111	-$1	0.91%
4210	4210-Rent from Electric Property	-$24,164	-$24,285	-$121	0.50%
4325	4325-Revenues from Merchandise Jobbing, Etc.	-$26,200	-$26,331	-$131	0.50%
4330	4330-Costs and Expenses of Merchandising Jobbing, Etc.	$21,555	$21,663	$108	0.50%
4375	4375-Revenues from Non-Utility Operations	-$293,315	-$294,781	-$1,466	0.50%
4380	4380-Expenses of Non-Utility Operations	$222,555	$223,667	$1,112	0.50%
4405	4405-Interest and Dividend Income	-$6,614	-$6,647	-$33	0.50%
	Total	-$206,859	-$207,894	-$1,035	$0
	Specific Service Charges	-$64,625	-$64,948	-$323	0.50%
	Late Payment Charges	-$29,592	-$29,740	-$148	0.50%
	Other Distribution/Operating Revenues	-$30,623	-$30,777	-$154	0.50%
	Other Income or Deductions	-$82,019	-$82,429	-$410	0.50%
	Total	-$206,859	-$207,894	-$1,035	0.50%

The Other Revenues variance for 2018 over 2017 reflects a marginal increase of -$1,035 therefore no explanation is required.

3.4.3 PROPOSED SPECIFIC SERVICE CHARGES[17]

HHI is proposing no changes to the current specific services charges except for the MicroFit service charge. HHI incurs a $10.00 monthly fee per MicroFit meter point from HHI's vendor Utilismart and would like to pass this charge onto its MicroFit customers. This increase in the customer charge from $5.40 to $10.00 was also agreed to in St. Thomas Energy Inc. (EB-2014-0113) Cost of Service Application as well as Renfrew Hydro Inc.

Other than the MicroFit class, no other class or discrete customer groups that may be materially impacted by changes to other rates and charges.[18]

3.4.4 REVENUE FROM AFFILIATE TRANSACTIONS, SHARED SERVICES, CORPORATE COST ALLOCATION.

HHI does not have any affiliates and as such does not have any affiliate transactions, shared services and corporate cost allocation.[19]

[17] MFR – Any new proposed specific service charges
[18] MFR - Distributors must identify any discrete customer groups that may be materially impacted by changes to other rates and charges
[19] MFR - Revenue from affiliate transactions, shared services, corporate cost allocation

APPENDICES

Appendix A	OEB Appendix 2-IB

File Number:	EB-2017-0048
Exhibit:	
Tab:	
Schedule:	
Page:	
Date:	

Appendix 2-IB
Customer, Connections, Load Forecast and Revenues Data and Analysis

This sheet is to be filled in accordance with the instructions documented in section 2.3.2 of Chapter 2 of the Filing Requirements for Distribution Rate Applications, in terms of one set of tables per customer class.

Color coding for Cells: Data input | Drop-down List | No data entry required | Blank or calculated value

Distribution System (Total)

	Calendar Year (for 2018 Cost of Service		Consumption (kWh) [3]				
				Actual (Weather actual)	Weather-normalized		Weather-normalized
Historical	*2012*		Actual	155,160,223	151,645,786		
Historical	*2013*		Actual	154,796,479	156,370,293		
Historical	*2014*		Actual	148,208,227	153,211,546	Board-approved	163411598.2
Historical	*2015*		Actual	145,328,620	154,667,603		
Historical	*2016*		Actual	143,768,237	153,743,233		
Bridge Year	*2017*		Forecast		150,287,496		
Test Year	*2018*		Forecast		148,918,179		

Variance Analysis	Year	Year-over-year		Versus Board-approved
	2012			
	2013	-0.2%	3.1%	
	2014	-4.3%	-2.0%	
	2015	-1.9%	1.0%	
	2016	-1.1%	-0.6%	
	2017		-2.2%	
	2018		-0.9%	-8.9%
	Geometric Mean		101.5%	-3.0%

Customer Class Analysis (one for each Customer Class, excluding MicroFIT and Standby)

1 **Customer Class:** Residential Is the customer class billed on consumption (kWh) or demand (kW or kVA)? kWh

	Calendar Year (for 2018 Cost of Service)	Customers				Consumption (kWh) [3]				Consumption (kWh) per Customer			
							Actual (Weather actual)	Weather-normalized			Actual (Weather actual)	Weather-normalized	
Historical	*2012*	Actual	4,777			Actual	51,132,834	49,974,656			10703.964	10461.5148	
Historical	*2013*	Actual	4,884			Actual	52,109,144	52,638,937			10669.358	10777.8332	
Historical	*2014*	Actual	4,901	Board-approved	4950	Actual	51,395,624	53,130,674	Board-approved	54009078	10487.833	10841.8884 Board-approved	10910.92485
Historical	*2015*	Actual	4,859			Actual	49,584,777	52,771,152			10204.729	10860.4963	
Historical	*2016*	Actual	4,824			Actual	48,033,529	50,145,146			9957.1992	10394.9309	
Bridge Year	*2017*	Forecast	4,830			Forecast		49,018,017			0	10148.7196	
Test Year	*2018*	Forecast	4,836			Forecast		48,571,399			0	10043.8202	

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year	Test Year Versus Board-approved
	2012			*2012*			*2012*		
	2013	2.2%		*2013*	1.9% 5.3%		*2013*	-0.3% 3.0%	
	2014	0.3%		*2014*	-1.4% 0.9%		*2014*	-1.7% 0.6%	
	2015	-0.8%		*2015*	-3.5% -0.7%		*2015*	-2.7% 0.2%	
	2016	-0.7%		*2016*	-3.1% -5.0%		*2016*	-2.4% -4.3%	
	2017	0.1%		*2017*	-2.2%		*2017*	-2.4%	
	2018	0.1%	-2.3%	*2018*	-0.9%	-10.1%	*2018*	-1.0%	-7.9%
	Geometric Mean	#NUM!	-0.8%	Geometric Mean	102.3%	-3.5%	Geometric Mean	103.3%	-2.7%

	Calendar Year (for 2018 Cost of Service)	Revenues			
Historical	*2012*	Actual			
Historical	*2013*	Actual			
Historical	*2014*	Actual	$ 908,568	Board-approved	$ 939,851.00
Historical	*2015*	Actual	$ 903,999		
Historical	*2016*	Actual	$ 920,780		
Bridge Year (Foreca	*2017*	Forecast	$ 945,460		
Test Year (Forecast	*2018*	Forecast	$ 1,027,839		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved
	2012		
	2013		
	2014		
	2015	-0.5%	
	2016	1.9%	
	2017	2.7%	
	2018	8.7%	9.4%
	Geometric Mean		3.0%

2 **Customer Class:** GS < 50 kW Is the customer class billed on consumption (kWh) or demand (kW or kVA)? kWh

	Calendar Year (for 2018 Cost of Service)	Customers				Consumption (kWh) [3]				Consumption (kWh) per Customer			
							Actual (Weather actual)	Weather-normalized			Actual (Weather actual)	Weather-normalized	
Historical	*2012*	Actual	575			Actual	18,531,354	18,111,612			Actual	32228.442	31498.4556	
Historical	*2013*	Actual	617			Actual	18,952,242	19,144,930			Actual	30716.762	31029.0593	
Historical	*2014*	Actual	629	Board-approved	634	Actual	18,998,367	19,639,727	Board-approved	19278522	Actual	30228.109	31248.5711 Board-approved	30407.76341
Historical	*2015*	Actual	623			Actual	19,208,911	20,443,297			Actual	30832.923	32814.2813	
Historical	*2016*	Actual	609			Actual	18,569,272	18,864,553			Actual	30491.416	30976.2773	
Bridge Year	*2017*	Forecast	613			Forecast		18,440,528			Forecast	0	30069.8811	
Test Year	*2018*	Forecast	618			Forecast		18,272,511			Forecast	0	29589.1321	

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved
	2012			*2012*				*2012*			
	2013	7.3%		*2013*	2.3%	5.7%		*2013*	-4.7%	-1.5%	
	2014	1.9%		*2014*	0.2%	2.6%		*2014*	-1.6%	0.7%	
	2015	-0.9%		*2015*	1.1%	4.1%		*2015*	2.0%	5.0%	
	2016	-2.2%		*2016*	-3.3%	-7.7%		*2016*	-1.1%	-5.6%	
	2017	0.7%		*2017*		-2.2%		*2017*		-2.9%	
	2018	0.7%	-2.6%	*2018*		-0.9%	-5.2%	*2018*		-1.6%	-2.7%
	Geometric Mean	#NUM!	-0.9%	Geometric Mean		99.3%	-1.8%	Geometric Mean		105.1%	-0.9%

	Calendar Year (for 2018 Cost of Service)	Revenues			
Historical	*2012*	Actual			
Historical	*2013*	Actual			
Historical	*2014*	Actual	$ 224,542	Board-approved	$ 227,179.00
Historical	*2015*	Actual	$ 228,515		
Historical	*2016*	Actual	$ 226,327		
Bridge Year (Foreca	*2017*	Forecast	$ 228,919		
Test Year (Forecast	*2018*	Forecast	$ 247,889		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved
	2012		
	2013		
	2014		
	2015	1.8%	
	2016	-1.0%	
	2017	1.1%	
	2018	8.3%	9.1%
	Geometric Mean		3.0%

3 **Customer Class:** GS > 50 kW Is the customer class billed on consumption (kWh) or demand (kW or kVA)? kW

	Calendar Year (for 2018 Cost of Service)	Customers				Consumption (kWh) [3]				Consumption (kWh) per Customer				
							Actual (Weather actual)	Weather-normalized		Weather-normalized		Actual (Weather actual)	Weather-normalized		Weather-normalized
Historical	*2012*	Actual	80			Actual	77,875,019	76,111,121			Actual	973437.74	951389.011		
Historical	*2013*	Actual	97			Actual	77,368,540	78,155,145			Actual	797613.81	805723.146		
Historical	*2014*	Actual	95	Board-approved	98	Actual	71,672,278	74,091,842	Board-approved	80885161	Actual	754445.04	779914.125	Board-approved	825358.7857
Historical	*2015*	Actual	90			Actual	70,137,954	74,645,099			Actual	783664.29	834023.454		
Historical	*2016*	Actual	87			Actual	73,896,610	84,241,267			Actual	849386.32	968290.431		
Bridge Year	*2017*	Forecast	88			Forecast		82,347,749			Forecast	0	936653.198		
Test Year	*2018*	Forecast	89			Forecast		81,597,452			Forecast	0	918438.391		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved
	2012			*2012*				*2012*			
	2013	21.3%		*2013*	-0.7%	2.7%		*2013*	-18.1%	-15.3%	
	2014	-2.1%		*2014*	-7.4%	-5.2%		*2014*	-5.4%	-3.2%	
	2015	-5.8%		*2015*	-2.1%	0.7%		*2015*	3.9%	6.9%	
	2016	-2.8%		*2016*	5.4%	12.9%		*2016*	8.4%	16.1%	
	2017	1.1%		*2017*		-2.2%		*2017*		-3.3%	
	2018	1.1%	-9.3%	*2018*		-0.9%	0.9%	*2018*		-1.9%	11.3%
	Geometric Mean	#NUM!	-3.2%	Geometric Mean		94.6%	0.3%	Geometric Mean		102.9%	3.6%

	Calendar Year (for 2018 Cost of Service)	Revenues				Demand (kW)				Demand (kW) per Customer				
							Actual (Weather actual)	Weather-normalized		Weather-normalized		Actual (Weather actual)	Weather-normalized		Weather-normalized
Historical	*2012*	Actual				Actual	206,655	206,655			Actual				
Historical	*2013*	Actual				Actual	200,068	200,068			Actual				
Historical	*2014*	Actual	$ 380,882	Board-approved	$ 398,729.00	Actual	189,092	189,092	Board-approved	201575	Actual	0.4964586	0.49645856	Board-approved	0.505543866
Historical	*2015*	Actual	$ 378,803			Actual	186,098	186,098			Actual	0.4912782	0.49127821		
Historical	*2016*	Actual	$ 393,405			Actual	188,567	188,567			Actual	0.4793201	0.47932014		
Bridge Year (Foreca	*2017*	Forecast	$ 379,018			Forecast		214,501			Forecast	0	0.56593856		
Test Year (Forecast	*2018*	Forecast	$ 471,143			Forecast		212,547			Forecast	0	0.45112952		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved
	2012			*2012*				*2012*			
	2013			*2013*	-3.2%	-3.2%		*2013*			
	2014			*2014*	-5.5%	-5.5%		*2014*			
	2015	-0.5%		*2015*	-1.6%	-1.6%		*2015*	-1.0%	-1.0%	
	2016	3.9%		*2016*	1.3%	1.3%		*2016*	-2.4%	-2.4%	
	2017	-3.7%		*2017*		13.8%		*2017*		18.1%	
	2018	24.3%	18.2%	*2018*		-0.9%	5.4%	*2018*		-20.3%	-10.8%
	Geometric Mean		5.7%	Geometric Mean		#NUM!	1.8%	Geometric Mean			-3.7%

4 **Customer Class:** Streetlighting Is the customer class billed on consumption (kWh) or demand (kW or kVA)? kWh

	Calendar Year (for 2018 Cost of Service)	Customers				Consumption (kWh) [3]				Consumption (kWh) per Customer			
							Actual (Weather actual)	Weather-normalized			Actual (Weather actual)	Weather-normalized	Weather-normalized
Historical	*2012*	Actual	1,158			Actual	1,355,855	1,355,855			Actual	1170.8592	1170.85924	
Historical	*2013*	Actual	1,204			Actual	1,356,161	1,356,161			Actual	1126.3792	1126.37923	
Historical	*2014*	Actual	1,204	Board-approved		Actual	1,356,160	1,356,160	Board-approved	1139294	Actual	1126.3788	1126.37882	Board-approved
Historical	*2015*	Actual	1,204			Actual	1,040,149	1,040,149			Actual	863.91072	863.910723	
Historical	*2016*	Actual	1,201			Actual	643,599	643,599			Actual	536.10889	536.108893	
Bridge Year	*2017*	Forecast	1,206			Forecast		643,599			Forecast	0	533.698904	
Test Year	*2018*	Forecast	1,211			Forecast		646,505			Forecast	0	533.698904	

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved
	2012			*2012*				*2012*			
	2013	4.0%		*2013*	0.0%	0.0%		*2013*	-3.8%	-3.8%	
	2014	0.0%		*2014*	0.0%	0.0%		*2014*	0.0%	0.0%	
	2015	0.0%		*2015*	-23.3%	-23.3%		*2015*	-23.3%	-23.3%	
	2016	-0.3%		*2016*	-38.1%	-38.1%		*2016*	-37.9%	-37.9%	
	2017	0.5%		*2017*		0.0%		*2017*		-0.4%	
	2018	0.5%		*2018*		0.5%	-43.3%	*2018*		0.0%	
	Geometric Mean	#NUM!		Geometric Mean		180.8%	-17.2%	Geometric Mean		187.5%	

	Calendar Year (for 2018 Cost of Service)	Revenues			
Historical	*2012*	Actual			
Historical	*2013*	Actual			
Historical	*2014*	Actual	$ 29,304	Board-approved	$ 18,505.00
Historical	*2015*	Actual	$ 24,543		
Historical	*2016*	Actual	$ 18,951		
Bridge Year (Foreca	*2017*	Forecast	$ 18,986		
Test Year (Forecast	*2018*	Forecast	$ 23,044		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved
	2012		
	2013		
	2014		
	2015	-16.2%	
	2016	-22.8%	
	2017	0.2%	
	2018	21.4%	24.5%
	Geometric Mean		7.6%

5 **Customer Class:** Unmetered Scattered Load Is the customer class billed on consumption (kWh) or demand (kW or kVA)? kWh

	Calendar Year (for 2018 Cost of Service)	Customers				Consumption (kWh) [3]				Consumption (kWh) per Customer			
							Actual (Weather actual)	Weather-normalized			Actual (Weather actual)	Weather-normalized	Weather-normalized
Historical	*2012*	Actual	4			Actual	214,901	214,901			Actual	53725.25	53725.25	
Historical	*2013*	Actual	5			Actual	242,993	242,993			Actual	48598.6	48598.6	
Historical	*2014*	Actual	5	Board-approved		Actual	281,727	281,727	Board-approved		Actual	56345.4	56345.4 Board-approved	
Historical	*2015*	Actual	5			Actual	281,352	281,352			Actual	56270.4	56270.4	
Historical	*2016*	Actual	7			Actual	293,553	293,553			Actual	41936.143	41936.1429	
Bridge Year	*2017*	Forecast	8			Forecast		345,887			Forecast	0	43235.8446	
Test Year	*2018*	Forecast	10			Forecast		432,358			Forecast	0	43235.8446	

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved
	2012			*2012*				*2012*			
	2013	25.0%		*2013*	13.1%	13.1%		*2013*	-9.5%	-9.5%	
	2014	0.0%		*2014*	15.9%	15.9%		*2014*	15.9%	15.9%	
	2015	0.0%		*2015*	-0.1%	-0.1%		*2015*	-0.1%	-0.1%	
	2016	40.0%		*2016*	4.3%	4.3%		*2016*	-25.5%	-25.5%	
	2017	14.3%		*2017*		17.8%		*2017*		3.1%	
	2018	25.0%		*2018*		25.0%		*2018*		0.0%	
	Geometric Mean	#NUM!		Geometric Mean		57.2%		Geometric Mean		119.0%	

	Calendar Year (for 2018 Cost of Service)	Revenues			
Historical	*2012*	Actual			
Historical	*2013*	Actual			
Historical	*2014*	Actual	$ 1,426	Board-approved	$ 1,202.00
Historical	*2015*	Actual	$ 1,459		
Historical	*2016*	Actual	$ 1,702		
Bridge Year (Foreca	*2017*	Forecast	$ 1,796		
Test Year (Forecast	*2018*	Forecast	$ 2,677		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved
	2012		
	2013		
	2014		
	2015	2.3%	
	2016	16.7%	
	2017	5.5%	
	2018	49.1%	122.7%
	Geometric Mean		30.6%

6 **Customer Class:** Sentinel Is the customer class billed on consumption (kWh) or demand (kW or kVA)? kW

	Calendar Year (for 2018 Cost of Service)	Customers				Consumption (kWh) [3]				Consumption (kWh) per Customer				
							Actual (Weather actual)	Weather-normalized		Weather-normalized		Actual (Weather actual)	Weather-normalized		Weather-normalized
Historical	*2012*	Actual	72			Actual	102,354	102,354			Actual	1421.5833	1421.58333		
Historical	*2013*	Actual	72			Actual	102,064	102,064			Actual	1417.56	1417.56		
Historical	*2014*	Actual	72	Board-approved		Actual	102,064	102,064	Board-approved		Actual	1417.56	1417.56	Board-approved	
Historical	*2015*	Actual	72			Actual	102,064	102,064			Actual	1417.56	1417.56		
Historical	*2016*	Actual	60			Actual	88,568	88,568			Actual	1488.5402	1488.54017		
Bridge Year	*2017*	Forecast	58			Forecast		86,667			Forecast	0	1494.26605		
Test Year	*2018*	Forecast	57			Forecast		84,626			Forecast	0	1484.66724		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved
	2012			*2012*				*2012*			
	2013	0.0%		*2013*	-0.3%	-0.3%		*2013*	-0.3%	-0.3%	
	2014	0.0%		*2014*	0.0%	0.0%		*2014*	0.0%	0.0%	
	2015	0.0%		*2015*	0.0%	0.0%		*2015*	0.0%	0.0%	
	2016	-17.4%		*2016*	-13.2%	-13.2%		*2016*	5.0%	5.0%	
	2017	-2.5%		*2017*		-2.1%		*2017*		0.4%	
	2018	-1.7%		*2018*		-2.4%		*2018*		-0.6%	
	Geometric Mean	#NUM!		Geometric Mean		116.4%		Geometric Mean		96.6%	

	Calendar Year (for 2018 Cost of Service)	Revenues				Demand (kW)				Demand (kW) per Customer				
							Actual (Weather actual)	Weather-normalized		Weather-normalized		Actual (Weather actual)	Weather-normalized		Weather-normalized
Historical	*2012*	Actual				Actual	284	284			Actual				
Historical	*2013*	Actual				Actual	296	296			Actual				
Historical	*2014*	Actual	$ 2,335	Board-approved	$ 1,363.00	Actual	300	300	Board-approved	293	Actual	0.1284797	0.12847966	Board-approved	0.214966985
Historical	*2015*	Actual	$ 2,376			Actual	300	300			Actual	0.1262626	0.12626263		
Historical	*2016*	Actual	$ 2,058			Actual	265	265			Actual	0.1287658	0.12876579		
Bridge Year (Foreca	*2017*	Forecast	$ 2,030			Forecast		246			Forecast	0	0.12118227		
Test Year (Forecast	*2018*	Forecast	$ 2,106			Forecast		240			Forecast	0	0.11396011		

Variance Analysis	Year	Year-over-year	Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved	Year	Year-over-year		Test Year Versus Board-approved
	2012			*2012*				*2012*			
	2013			*2013*	4.2%	4.2%		*2013*			
	2014			*2014*	1.4%	1.4%		*2014*			
	2015	1.8%		*2015*	0.0%	0.0%		*2015*	-1.7%	-1.7%	
	2016	-13.4%		*2016*	-11.7%	-11.7%		*2016*	2.0%	2.0%	
	2017	-1.4%		*2017*		-7.2%		*2017*		-5.9%	
	2018	3.7%	54.5%	*2018*		-2.4%	-18.1%	*2018*		-6.0%	-47.0%
	Geometric Mean		15.6%	Geometric Mean		#NUM!	-6.4%	Geometric Mean			-19.1%