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Renfrew Hydro Inc.

Exhibit 3

EB-2016-0166 - 2017 Cost of Service

Contents

1   Load and Revenue Forecast

2   **Ex.3/Tab 1/Sch.1 - Introduction**

3   The evidence presented in this exhibit provides information supporting the revenues derived from

4   activities regulated by the Ontario Energy Board. Actual operating revenues from regulated

5   operations are derived mainly from fixed and variable tariff charges as well as pass through

6   charges and specific service charges. Revenues are collected from five (5) customer classes:

7   Residential, General Service less than 50 kW, General Service greater than 50 kW, Unmetered

8   Scattered Load (USL) and Street Lighting. Renfrew Hydro does not anticipate any changes in its

9   customer classes.

10

11 This exhibit also describes Renfrew Hydro's load and customer forecasts. The load forecast

12 methodology and assumptions are described in detail at 1. Ex.3/Tab 1/Sch.5 - Load Forecast

13 Details.

14

15 The evidence herein is organized according to the following topics;

16 1)   Revenue and Load Forecast

17 2)   Accuracy of Load Forecast and Variance Analysis, and

18 3)   Other Revenues

19

20 **Ex.3/Tab 1/Sch.2 - Overview of Revenue Forecast**

21

22 Table 3.1 below shows estimated revenues from current distribution charges for 2017. Distribution

23 Revenues are derived through a combination of fixed monthly charges and volumetric charges

24 applied to the utility's proposed Load Forecast. Fixed rate revenues are determined by applying

25 the current fixed monthly charge to the number of customers or connections in each of the

26 customer classes in each month. Variable rate revenue is based on a volumetric rate applied to

27 meter readings for consumption or demand volume. Renfrew Hydro's 2017 forecasted revenues

28 recovered through its currently approved distribution rates are projected at $1,858,210 (exclusive of

29 all rate riders). The revenues at proposed distribution rates are presented at Exhibit 6.

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Table 3.1: Revenues at Current Rates

2010 Rates at 2017 Load

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
				Test Year Projected Revenue from Existing Variable Charges				
Residential	$0.0145	kWh	28929066	$419,471.46			$0.00	$419,471.46
General Service < 50 kW	$0.0137	kWh	11749297	$160,965.37			$0.00	$160,965.37
General Service > 50 to 4999 kW	$2.5331	kW	118024	$298,966.59	-0.60	69011	-$41,406.60	$257,559.99
Unmetered Scattered Load	$0.0099	kWh	149640	$1,481.43			$0.00	$1,481.43
Street Lighting	$7.2483	kW	3007	$21,798.10			$0.00	$21,798.10
Total Variable Revenue			**40,949,034**	**$902,682.95**	**-0.6**	69011	**-$41,406.60**	**$861,276.35**

2010 Rates at 2017 Load

Customer Class Name	Fixed Rate	Customers (Connections)	Fixed Charge Revenue	Variable Revenue	TOTAL	% Fixed Revenue	% Variable Revenue	% Total Revenue
			Test Year Projected Revenue from Proposed Fixed Charges					
Residential	$13.9700	3,835	$642,897.32	$419,471.46	$1,062,368.78	60.52%	39.48%	57.17%
General Service < 50 kW	$31.2500	414	$155,115.41	$160,965.37	$316,080.78	49.07%	50.93%	17.01%
General Service > 50 to 4999 kW	$189.2700	61	$138,545.64	$257,559.99	$396,105.63	34.98%	65.02%	21.32%
Unmetered Scattered Load	$43.6300	34	$17,919.97	$1,481.43	$19,401.40	92.36%	7.64%	1.04%
Street Lighting	$2.9500	1,199	$42,455.50	$21,798.10	$64,253.60	66.07%	33.93%	3.46%
Total Fixed Revenue		**5,543**	**$996,933.85**	**$861,276.35**	**$1,858,210.19**			

2

3 RHI does not foresee or plan for any changes in its class composition.

4

5 Ex.3/Tab 1/Sch.3 - Proposed Load Forecast

6 The following section of the application covers the approach taken to determine the Load Forecast.

7 This section also covers economic assumptions and data sources for customer and load forecasts.

8 It explains wholesale purchases and subsequent adjustments to the wholesale purchases. It also

9 provides the rationale behind each variable used in the regression analysis. Lastly, it presents the

10 regression results and explains how they were used to determine the forecast for the bridge and

11 test year.

12

13 Table 3.2 below presents the actual and forecast trends for customer/connection counts, kWh

14 consumption and billed kW demand. The forecast trend is what Renfrew Hydro has based its

15 proposed rates on.

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17

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Table 3.2: Customer and Volume Trend Table

	Year	2015	2016	2017
Residential	Cust/Conn	3,779	3,807	3,835
	kWh	29,589,162	29,593,740	28,929,066
General Service < 50 kW	Cust/Conn	430	422	414
	kWh	10,843,312	12,019,249	11,749,297
Unmetered Scattered Load	Cust/Conn	33	34	34
	kWh	155,364	153,078	149,640
General Service > 50 kW - 4999 kW	Cust/Conn	61	61	61
	kWh	45,095,566	44,431,933	43,433,994
	kW	113,922	120,736	118,024
Streetlighting	Cust/Conn	1,190	1,195	1,199
	kWh	1,123,682	1,107,146	1,082,279
	kW	3,117	3,076	3,007
Total	**Cust/Conn**	**5,493**	**5,518**	**5,543**
	kWh	**86,807,086**	**87,305,147**	**85,344,276**
	kW	**117,039**	**123,812**	**121,031**

2

3

1 **Ex.3/Tab 1/Sch.4 - Load Forecast Methodology and Detail**

2

3 The following section of the application covers the approach taken to determine the Load Forecast.

4 This section also covers economic assumptions and data sources for customer and load forecasts.

5 It explains wholesale purchases and subsequent adjustments to the wholesale purchases. It also

6 provides the rationale behind each variable used in the regression analysis. Lastly, it presents the

7 regression results and explains how they were used to determine the forecast for the bridge and

8 test year.

9

10 In its 2010 Cost of Service application, Renfrew Hydro used the NAC approach to determine its

11 Load Forecast. In its Decision (EB-2009-0146), after much debate from all parties, the Board

12 ultimately accepted the utility's proposed load forecast stating the following; "The Board

13 acknowledges that despite an applicant's best attempt, sometimes because of lack of data or

14 models that do not produce supportable results, the results from the multiple regression approach

15 are not always meaningful and the applicant is forced to use a less sophisticated forecasting

16 technique; such was the case".

17

18 In contrast to the 2010 approach, the load forecast presented in this application uses a multiple

19 regression model developed based on monthly wholesale purchased kWh from January 2006 to

20 December 2015 as measured at the wholesale point of delivery (exclusive of losses; i.e., not loss

21 adjusted).

22

23 RHI's load forecast is prepared in two phases. The first phase, a billed energy forecast by customer

24 class for 2017 is developed using a total purchase basis regression analysis. Then, in the second

25 phase, usage associated with the change in customers between 2015-2017 is determined and

26 added (if applicable). The methodology proposed in this application predicts wholesale

27 consumption using a multiple regression analysis that relates historical monthly wholesale kWh

28 usage to monthly historical heating degree days and cooling degree days. Heating degree-days

29 provide a measure of how much (in degrees), and for how long (in days), the outside temperature

30 was below that base temperature. The most readily available heating degree days come with a

31 base temperature of 18°C. Cooling degree-day figures also come with a base temperature, and

32 provide a measure of how much, and for how long, the outside temperature was above that base

33 temperature. For degree days, daily observations as reported in Ottawa are used. The regression

1   model also uses other variables which are tested to see their relationship and contribution to the

2   fluctuating wholesale purchases. Each variable is discussed in detail later in this section.

3

4   **Explanation of Multiple Regression Analysis**

5   Multiple regression can be utilized for forecasting purposes by analyzing how a number of variables

6   has affected a depended variable historically. From this, the relationship between these variables

7   and the depended variable can be expressed as:

8

9   **Y=A+B1X1+B2X2…+bNxN + E**

10

11   **Where:**

12   Y = Predicted depended variable value

13   A = the value of Y when all Xs are zero

14   X = the independent variable

15   B = the coefficients corresponding to the independent variables

16   n = the number of independent variables

17   E = an error term

18

19   By forecasting the independent variables, the dependent variable can be predicted. However, to

20   ascertain that the relationship is not coincidental, the utility must first assess the correlation

21   between the dependent and individual independent variables. This can be accomplished by the

22   Person Correlation Coefficient (otherwise known as "R") to each independent variable. This depicts

23   how much of the change in depended variable can be explained by the change in independent

24   variables. Those variables with a high R-squared should then be used for multiple regression. The

25   same correlation coefficient can be applied to multiple independent variables to ascertain how

26   much of the change in dependent variable can be explained by changes in all independent

27   variables.

28

29   **R Squared=(B'X'Y – nAVG(Y)^2)/Y'Y-nAVG(Y)^2)**

30

31   **Where:**

32

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

1   ^2 = Squared

2

3   The adjusted R-squared is calculated by "correcting" for the number of independent variables in a

4   multiple regression analysis. The formula: Adj RSq=(1-(1-RSq)*((n-1)/(n-k)). It is often used to

5   compare models involving different number of coefficients. The statistical significance of the

6   multiple regression can be tested with the F-test which is derived from a normal probability

7   distribution. A critical point along the distribution can be found given a degree of confidence

8   required, the number of variables and the number of observations. If the F-statistic is above this

9   point, then the analysis can be deemed statistically significant at the level of confidence.

10

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

12

13   **Where:**

14

15   K = number of independent variable

16   n = number of observations

17

18   Independent variables that are highly correlated themselves, can lead to high variances in slope

19   estimation (B). This is known as "Multicollinearity". For this reason independent variables with a

20   high level of multicollinearity to the other independent variables should consider being omitted from

21   the analysis.

1 **Ex.3/Tab 1/Sch.6 - Economic Overview**

2 The following section covers Renfrew Hydro economic status. The utility projects a small customer

3 number increase in the residential class. The utility projects a continued drop in the GS<50 class

4 and virtually no change in the Unmetered Scattered Load and Street Lighting. Overall, the trend

5 table shows a decline in Renfrew Hydro's load and a slow increase in customer numbers.

6 Projections support the Regional Economic Outlook Summary which indicates that population

7 growth is expected to remain low in 2016 and 2017.

8

9 While there are no definite plans for growth in the area there is a highway upgrade taking place in

10 the next few years between Renfrew and Arnprior. It is anticipated this may spur some residential

11 growth in the area. There is also a trend of older rural population moving to urban service areas like

12 Renfrew and buying townhomes or garden homes. It is expected this trend will continue for the

13 next few years and thus the need for the Hunters Gate subdivision development expansion.

14

15 The article at the next page summarizes the economic outlook of the Kingston-Pembroke regions

16 of which Renfrew is part of.

17

ONTARIO ECONOMIC UPDATE2016

KINGSTON-PEMBROKE
ECONOMIC REGION

Presented by the Credit Unions of Ontario and the Ontario Chamber of Commerce

1 Employment in the region, excluding Kingston, has trended lower about one percent per year since the 2008-09 recession.

2 A stronger regional housing market will drive economic growth after a disappointing 2015.

3 A lower Canadian dollar and higher U.S. economic growth will benefit the region.

Credit Unions of Ontario

ontario chamber of commerce

A mixed economic performance has played out in 2015 with varied outcomes across sectors and locations within the Kingston-Pembroke Economic Region. The Kingston-Pembroke Economic Region defined by Statistics Canada includes the Kingston metropolitan area and the Frontenac townships, the counties of Lennox and Addington, Hastings, Renfrew, and Prince Edward. Economic growth is more robust in the Kingston metropolitan area than in the more rural outlying areas.

The labour market is a key economic sector and indicator which did not perform well in 2015, according to Statistics Canada. The headline employment figure declined more than three percent compared to 2014, however, the unemployment rate dropped to nearly seven percent from above eight percent in 2014. This apparent anomaly is explained by a larger drop in the labour force participation rate.

A stark difference exists between the labour market in the Kingston metro area and the rest of the Kingston-Pembroke region. Employment in Kingston is up more than two percent this year and its unemployment rate is below seven percent, while in the rest of the region employment declined about eight percent. The details reveal a near 10 percent drop in the labour force outside of Kingston, which could

be an outlier survey result. Large swings in Statistics Canada's regional labour force estimates are common and the 2015 result should be taken in that light. It is too early to determine if 2015 saw a new downtrend shift, but based on past experience it is likely that the Statistics Canada survey will record a labour force and employment rebound in 2016.

Employment Insurance (EI) beneficiary counts provide another view of the labour market. In particular, they show a near 10 percent increase in persons receiving regular benefits in Renfrew County in 2015 and a roughly five percent increase in Prince Edward County. In contrast, Lennox and Addington County EI counts are down about 10 percent. The remaining counties in the economic region, Frontenac and Hastings, are seeing little change from last year.

Housing has been a source of economic growth in 2015 with more sales and new construction and higher prices. MLS® residential sales in the economic region are up 10 percent so far in 2015, led by a 20 percent gain in the Bancroft and Area Association and near 20 percent in the Quinte & District Association. Sales in the Kingston and Area Association are running about six percent ahead of last year, while Renfrew County Board sales are even with last year.

Housing prices track sales. The large sales gain in Bancroft is accompanied by a substantial rise in the average sale price above 15 percent. Price pressure is much less intense in other areas with prices up about five percent in Quinte & District and 4.6 percent in Kingston. Renfrew Board prices are little changed from last year.

New construction has rebounded in 2015 with a near 15 percent jump in residential building permit units. Available geographic details within the economic region are limited to the Kingston metro area, which is showing the same percentage gain as the region.

Non-residential construction dropped almost 50 percent in 2015 following the 2014 spike in public permits due to the Mental Health Services Building in Kingston. A drop off in 2015 was expected. Private non-residential permits issued continue to track at recent trend levels reflecting market conditions from commercial and industrial buildings.

Non-residential building construction investment spending for the Kingston metro area is up about 20 percent so far this year due to the new medical facility. Private sector investment is up about five percent but the quarterly trend is sliding lower. Completion of the medical facility will bring down spending in 2016.

The latest available population estimates remain as of July 1, 2014 with no updates from Statistics Canada as of this writing. To recap, population growth slowed to around 0.5 percent in Kingston metro and to no growth at the economic region level. Consequently, population declined in areas outside Kingston. It is likely that little or no change in these trends played out in the year ending July 1, 2015.

Kingston's service-based metropolitan area economy with a concentration in education, health, government, and tourism industries will continue to outperform the rest of the economic region. Employment, investment, and population growth in Kingston will outpace other areas.

The labour market will build on recent gains with employment growth around two percent annually during 2016 and 2017 with a declining unemployment rate. The housing sector is on track to post further gains in sales, prices, and new construction.

The industry makeup in the rest of the economic region is less favourable for growth than in Kingston though there are considerable differences among those areas. Pembroke is more oriented to resource extraction and processing than other centres in the region, while Quinte West and Belleville have a relatively larger manufacturing sector and well as in transportation-warehousing industries. Petawawa's economy is dominated by the Canadian Forces' Garrison Petawawa.

Employment in the region, excluding Kingston, has trended lower about one percent per year since the 2008-09 recession. The large labour force and employment decline in 2015 pulled the trend down further but it is not certain whether it is a sample outlier or actual trend downshift. This forecast assumes a reversal in the 2016 sample result and a return to trend performance.

Housing market activity in centres outside Kingston will post further gains in 2016 and 2017. Non-residential investment, though, looks to remain around current market levels unless a project-specific development occurs. Non-residential building investment will receive a boost when the 80,000 square foot medical campus by The Clermont Group proceeds.

The external economic backdrop will continue to support growth through the lower Canadian dollar and higher U.S. economic growth. Ongoing low oil prices are a positive for consumers and businesses as are low interest rates. Improved growth in Ontario's economy will also contribute to the region's growth in 2016 and 2017.

Read on to find out how the KINGSTON PEMBROKE economic region stacks up against the rest of Ontario >>>

ONTARIO ECONOMIC UPDATE2016

KINGSTON PEMBROKE

ECONOMIC REGION

	2013	2014	2015	2016	2017
Labour Force (000s)	230.2	229.3	218.0	223.0	228.0
% change	0.0	-0.4	-4.9	2.3	2.2
Total Employment (000s)	213.9	210.1	203.0	207.0	211.0
% change	0.1	-1.8	-3.4	2.0	1.9
Unemployment Rate	7.1	8.4	7.3	7.7	7.5
MLS® Residential Sales	7,272	7,095	7,700	8,200	8,500
% change	-5.4	-2.4	8.5	6.5	3.7
MLS® Residential Average Price	247,163	247,935	260,000	275,000	285,000
% change	2.8	0.3	4.9	5.8	3.6
Residential Permits (units)	2,050	1,850	2,100	2,300	2,500
% change	6.3	-9.8	13.5	9.5	8.7
Non-Residential Permits ($ millions)	238	495	270	280	300
% change	-20.5	108.3	-45.5	3.7	7.1
Private Non-Residential Building Permits ($ millions)	176	170	160	200	180
% change	1.7	-3.3	-5.9	25.0	-10.0
Public Non-Residential Building Permits ($ millions)	62	325	110	100	120
% change	-50.9	424.9	-66.2	-9.1	20.0
Population (000s)	467.7	468.7	467.2	467.1	467.2
% change	0.2	0.2	0.3	0.3	0.4
Net Migration	1143	1211	1250	1400	1700
Net International	215	97	50	100	200
Net Interprovincial	10	196	200	300	400
Net Intraprovincial	918	918	1000	1000	1200

Source: Statistics Canada, CREA, Central 1 Credit Union forecasts.
Notes: Housing sales and prices represent combined activity in real estate boards within the region.

*Approximated with data from the Kingston and Area Real Estate Association

ONTARIO ECONOMIC UPDATE2016

KINGSTON

CENSUS METROPOLITAN AREA

	2013	2014	2015	2016	2017
Total Employment (000s)	82.6	81.4	83.0	84.5	86.5
% change	*2.5*	*-1.5*	*2.0*	*1.8*	*2.4*
Unemployment Rate	6.3	6.8	6.9	6.5	6.2
MLS® Residential Sales	3,165	2,982	3,150	3,300	3,500
% change	*-4.7*	*-5.8*	*5.6*	*4.8*	*6.1*
MLS® Residential Average Price	279,339	281,980	295,000	315,000	330,000
% change	*3.4*	*0.9*	*4.6*	*6.8*	*4.8*
Residential Permits (units)	952	750	850	950	1,000
% change	*12.7*	*-21.2*	*13.3*	*11.8*	*5.3*
Non-Residential Permits ($ millions)	102	375	90	150	125
% change	*-22.0*	*268.3*	*-76.0*	*66.7*	*-16.7*
Population (000s)	167.2	168.0	168.6	169.2	170.0
% change	*0.7*	*0.5*	*0.4*	*0.4*	*0.5*

Source: Statistics Canada, CREA, Central 1 Credit Union forecasts.
Notes: Housing sales and prices represent combined activity in real estate boards within the region.

*Approximated with data from the Kingston and Area Real Estate Association

1 **Ex.3/Tab 1/Sch.7 - Overview of Wholesale Purchases**

2

3 Renfrew Hydro purchases electricity from Hydro One and embedded generation.

4 The following table outlines the unadjusted monthly wholesale purchases:

5

6 **Table 3.4: Unadjusted Wholesale Purchases 2006-2015**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jan	9,829,203	10,153,439	10,409,337	10,784,568	10,052,260	9,759,801	9,026,172	9,101,600	9,438,027	9,446,128
Feb	9,080,915	9,499,244	9,792,900	9,025,772	8,718,138	8,352,645	7,910,374	7,991,165	8,139,359	8,809,615
Mar	9,372,225	9,317,383	9,631,393	9,048,263	8,506,437	8,492,854	7,638,846	8,052,530	8,549,683	8,471,059
Apr	7,657,227	7,875,441	8,033,570	7,719,803	7,323,495	7,111,890	6,887,823	7,150,699	6,965,454	6,789,448
May	7,818,047	7,716,473	7,704,823	7,320,792	7,652,874	7,074,093	6,951,612	6,854,461	6,623,820	6,763,079
Jun	8,087,108	8,160,905	8,253,386	7,700,735	7,766,307	7,368,575	7,315,606	6,905,812	6,925,619	6,744,783
Jul	8,926,444	8,340,395	8,927,045	8,092,557	8,939,793	8,343,633	7,973,747	7,879,017	7,189,425	7,818,096
Aug	8,353,382	8,473,769	8,447,508	8,459,664	8,377,877	7,893,661	7,623,357	7,318,263	7,010,898	7,422,834
Sep	7,595,028	7,807,416	7,965,962	7,615,409	7,625,677	7,174,414	6,780,082	6,702,828	6,707,937	7,183,196
Oct	8,360,180	8,209,376	8,389,702	8,282,937	7,736,468	7,199,042	7,048,526	7,083,341	6,979,096	6,840,217
Nov	8,538,261	8,971,405	8,805,132	8,249,940	8,261,354	7,349,600	7,601,279	7,744,935	7,414,780	7,093,015
Dec	9,176,860	10,183,341	10,193,166	9,666,825	9,216,196	8,263,693	8,509,800	9,122,002	8,362,346	7,532,024
TOTAL	**102,794,880**	**104,708,587**	**106,553,924**	**101,967,265**	**100,176,876**	**94,383,901**	**91,267,224**	**91,906,653**	**90,306,444**	**90,913,494**
% of change from prior year		*1.9%*	*1.8%*	*-4.3%*	*-1.8%*	*-5.8%*	*-3.3%*	*0.7%*	*-1.7%*	*0.7%*
% of change overall										*-11.6%*

7

8 The Renfrew Hydro load has been slowly declining over the past 10 years, with wholesale

9 purchases decreasing by 11.6% from 2006 to 2015. This decline is mainly due to the loss of a

10 large manufacturing GS>50 customer in early 2011 and the loss of over 80 GS<50 customers. The

11 effects of energy efficient changes due to the implementation of conservation measures also

12 contribute to the decline.

13

14 In order to better represent the trend in wholesale purchases, Renfrew Hydro adjusted its base

15 wholesale purchases prior to running the regression analysis. The purpose of the adjustment was

16 to normalize the data as best as possible. Renfrew Hydro adjusted the wholesale purchases to

17 remove the consumption associated with a larger GS>50 customer who eventually shut down its

18 operations in early 2011. Renfrew Hydro removed approximately 58M kWh between January 2006

1   and December 2015. The table below shows the adjusted monthly wholesale purchases after

2   removal of the GS> 50 customer.

3

4   **Table 3.5: Adjusted Wholesale Purchases 2006-2013**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jan	8,817,694	9,335,080	9,774,177	10,018,472	9,339,873	9,294,090	8,881,721	9,003,896	9,360,544	9,411,921
Feb	8,176,515	8,666,234	8,978,288	8,179,530	7,921,332	7,855,930	7,744,281	7,879,212	8,052,994	8,775,408
Mar	8,431,126	8,439,860	8,889,007	8,241,476	7,774,212	8,189,867	7,485,172	7,968,764	8,467,999	8,436,852
Apr	6,705,583	7,101,332	7,233,124	6,839,643	6,569,043	6,872,396	5,941,744	7,062,081	6,883,473	6,755,241
May	6,670,087	6,880,062	6,871,275	6,565,463	6,978,410	6,879,001	6,805,462	6,779,775	6,548,875	6,728,872
Jun	7,208,678	7,383,036	7,395,084	6,959,223	7,084,473	7,150,563	7,212,730	6,838,858	6,852,492	6,710,576
Jul	7,887,479	7,446,994	8,056,333	7,312,260	8,219,605	8,133,953	7,860,577	7,812,301	7,126,397	7,783,889
Aug	7,414,843	7,631,359	7,461,815	7,581,929	7,680,134	7,605,753	7,520,512	7,241,517	6,956,243	7,388,627
Sep	6,537,180	6,973,588	7,065,755	6,803,437	6,923,649	6,841,908	6,689,759	6,635,419	6,665,536	7,148,989
Oct	7,366,059	7,295,592	7,505,710	7,481,745	7,084,771	6,842,514	6,965,571	7,022,442	6,945,136	6,806,010
Nov	7,580,720	8,127,724	7,883,387	7,449,456	7,661,792	7,005,552	7,499,320	7,678,580	7,382,949	7,058,808
Dec	8,222,588	9,333,190	9,316,266	8,880,690	8,594,447	7,984,490	8,407,973	9,049,987	8,331,672	7,497,817
TOTAL	91,018,552	94,614,051	96,430,221	92,313,324	91,831,741	90,656,017	89,014,822	90,972,832	89,574,310	90,503,010
% of change from prior year		4.0%	1.9%	-4.3%	-0.5%	-1.3%	-1.8%	2.2%	-1.5%	1.0%
% of change overall										-0.6%

5

6

1   **Ex.3/Tab 1/Sch.8 - Overview of Variables Used**

2

3   In Renfrew Hydro's case, variation in monthly electricity consumption is influenced by five main

4   factors – weather (e.g. heating and cooling), which is by far the most dominant effect for most

5   systems; employment factors (increases or decreases in economic activity leads to changes in

6   employment); the number of days per month and lastly a Daylight hours variable. Specifics relating

7   to each variable used in the regression analysis are presented at the next section.

8

9   **Heating and Cooling:**

10   In order to determine the relationship between observed weather and energy consumption, monthly

11   weather observations describing the extent of heating or cooling required within the month are

12   necessary. Environment Canada publishes monthly observations on heating degree days (HDD)

13   and cooling degree days (CDD) for selected weather stations across Canada. Heating degree-days

14   for a given day are the number of Celsius degrees that the mean temperature is below 18°C.

15   Cooling degree-days for a given day are the number of Celsius degrees that the mean temperature

16   is above 18°C. For Renfrew Hydro, the monthly HDD and CDD as reported at Ottawa International

17   Airport were used.

18

19   Renfrew Hydro has adopted the 10 year average from 2006 to 2015 as the definition of weather

20   normal. Our view is that a ten-year average based on the most recent ten calendar years available

21   is a reasonable compromise that likely reflects the "average" weather experienced in recent years.

22   Many other LDCs have also adopted this definition for the purposes of cost-of-service rebasing.

23   The following table outlines the monthly weather data used in the regression analysis.

24

25   **Table 3.6: HDD and CDD as reported at Utility Location**

HDD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2006	736	721	597	323	129	27	-	23	126	339	416	604
2007	792	814	647	271	161	38	14	26	82	231	475	766
2008	765	782	734	301	189	23	1	17	97	325	499	804
2009	984	712	596	328	149	54	13	31	116	352	411	754
2010	780	640	452	253	112	35	7	16	110	310	478	728
2011	888	728	634	343	139	15	-	2	63	258	383	657
2012	829	674	448	352	94	29	-	6	120	253	473	703
2013	805	721	615	367	112	48	7	11	131	222	511	835
2014	918	793	777	366	121	15	8	18	103	130	499	685
2015	894	957	726	345	91	40	7	7	46	311	418	490

26

1

2

CDD	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2006	0	0	0	0	17	49	125	58	3	0	0	0
2007	0	0	0	0	15	61	54	68	22	1	0	0
2008	0	0	0	0	0	59	71	46	18	0	0	0
2009	0	0	0	3	0	43	41	76	4	0	0	0
2010	0	0	0	0	34	36	149	77	26	0	0	0
2011	0	0	0	0	16	56	131	67	31	1	0	0
2012	0	0	0	3	23	74	142	100	22	0	0	0
2013	0	0	0	0	14	43	104	60	9	2	0	0
2014	0	0	0	0	9	27	57	50	16	3	0	0
2015	0	0	0	0	24	23	104	71	52	0	0	0

3

4

5 **Employment Factor:**

6 In order to measure the change in economic activity, a data series must be chosen which

7 represents, as much as possible, regional economic activity. Renfrew Hydro used the monthly full-

8 time employment levels for the Renfrew Hydro economic region, as reported in Statistics Canada's

9 Monthly Labour Force Survey (CANSIM).

10 The following table (Table 3.7) outlines the full-time employment levels for the Renfrew Hydro

11 economic region which were tested and ultimately included in the regression analysis.

12

13 **Table 3.7: Full-Time Employment Levels for the Renfrew Hydro Economic Region**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2006	353	354	354	354	355	355	356	356	356	357	357	357
2007	357	357	357	357	358	358	358	359	359	359	360	360
2008	360	360	360	360	361	361	361	361	361	361	361	362
2009	362	362	362	362	362	362	363	363	363	363	363	364
2010	364	364	364	364	364	365	365	365	366	366	366	366
2011	366	366	366	366	366	367	367	367	367	368	368	368
2012	368	368	368	368	368	368	369	369	369	369	369	369
2013	369	369	369	370	370	370	370	371	371	371	371	371
2014	371	372	372	372	372	372	372	373	373	373	373	373
2015	373	373	373	373	373	373	373	373	374	374	374	374

14

15

1 **Daylight hours:**

2 The utility tested the regression analysis using Average Daylight Hours & Minutes/ Day. The

3 premise behind this variable is that shorter days bring higher electricity consumption. During fall

4 and winter months, the days are shorter and as such, consumers spend more time indoors, lights

5 and appliances are turned on earlier and used for longer periods of time. The utility used the

6 Average Daylight Hours & Minutes/ Day in Ottawa. The values used are shown in the table below.

7 **Table 3.8: Daylight hours**

	Hours of sunlight per day
Jan	9.09
Feb	10.19
Mar	11.51
Apr	13.28
May	14.52
June	15.35
Jul	15.15
Aug	14.03
Sept	12.29
Oct	10.51
Nov	9.28
Dec	8.47

8

9 Lastly, Renfrew Hydro also used a "Days per month" variable. Although the variables did not yield

10 particularly significant results, it did slightly improve the R-Square and therefore Renfrew Hydro

11 opted to keep it as a variable. All relevant scenarios tested by the utility can be found in the

12 regression model at tab 6.1 entitled Regression Scenarios.

13

14 Using a combination of wholesale purchases and the variables listed above, a multiple regression

15 analysis was used to develop an equation describing the relationship between monthly actual

16 wholesale kWh and the explanatory variables. Renfrew Hydro also used a correlation function to

17 examine the relationship between the variables included in the analysis. The results of the

18 correlation analysis for each scenario can also be found at tab 6.1 entitled Regression Scenarios.

19

20 To project the adjusted wholesale purchases for the bridge and test year, the model uses for the

21 most part a simple average of the last 10 years of historical data. Renfrew Hydro has applied this

22 method of prediction to all variables.

23

24

1 **Origin of variables**

2 • HDD: Stats Canada

3 • CDD :   Stats Canada

4 • Employment: Stats Canada

5 • Days per month   Computed by the utility

6 • Daylight hours   http://www.ottawa.climatemps.com/index.php

1   **Ex.3/Tab 1/Sch.9 - Regression Results**

2

3   Table 3.9 below presents the regression results used to determine the load forecast

4

5

6   **Table 3.9: Correlation/Regression Results**

7

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.944871475							
R Square	0.892782104							
Adjusted R Square	0.888037949							
Standard Error	280576.908							
Observations	119							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	5	7.40731E+13	1.48146E+13	188.1857066	4.5317E-53			
Residual	113	8.89574E+12	78723401303					
Total	118	8.29688E+13						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	9141169.292	1992633.204	4.587482168	1.16791E-05	5193403.524	13088935.06	5193403.524	13088935.06
HDD	3226.606024	160.3262445	20.1252517	3.67204E-39	2908.970818	3544.241231	2908.970818	3544.241231
CDD	16433.99413	1061.993085	15.4746715	1.10525E-29	14329.99429	18537.99398	14329.99429	18537.99398
Number of Days in Month	196321.7104	32452.78534	6.049456415	1.92829E-08	132026.8895	260616.5314	132026.8895	260616.5314
Employment Stats	-23543.14297	4606.851232	-5.110463044	1.32008E-06	-32670.14615	-14416.13979	-32670.14615	-14416.13979
Daylight hours	-30051.93067	20904.13111	-1.437607261	0.153308987	-71466.78465	11362.92332	-71466.78465	11362.92332

8

1   The resulting regression equation yields an adjusted R-squared of 0.89. When actual annual

2   wholesale values are compared to annual values predicted by the regression equation, the

3   mean absolute percentage error (MAPE) is 1.43 per cent. More detailed model statistics can be

4   found in the next section.

5

6   Once Renfrew Hydro calculated its preferred Regression Results, the Load Forecast model then

7   uses the coefficients from the regression results to adjust the wholesale purchases. Table 3.10

8   as seen below, demonstrates the results of this adjustment. The table shows a comparison of

9   the actual and adjusted wholesale purchases. Following Table 3.10, Table 3.11 provides a

10 graph showing Actual Purchases vs Adjusted.

11

12 **Table 3.10: Purchased vs Weather Adjusted**

Year	kWh Purchased	year over year	Adjusted	year over year	Purch. VS Adj.
2006	91,018,552.48		93,834,660.83		3.09%
2007	94,614,050.20	3.95%	93,363,786.46	-0.50%	-1.32%
2008	96,430,220.50	1.92%	92,931,642.38	-0.46%	-3.63%
2009	92,313,324.00	-4.27%	92,048,566.78	-0.95%	-0.29%
2010	91,831,741.00	-0.52%	91,956,572.80	-0.10%	0.14%
2011	90,656,017.00	-1.28%	91,628,943.54	-0.36%	1.07%
2012	89,014,822.00	-1.81%	91,730,059.58	0.11%	3.05%
2013	90,972,832.00	2.20%	90,628,305.25	-1.20%	-0.38%
2014	89,574,310.00	-1.54%	88,892,412.87	-1.92%	-0.76%
2015	90,503,010.00	1.04%	90,106,871.45	1.37%	-0.44%

13

14

15

1   **Table 3.11: Purchased VS Adjusted**

2

3
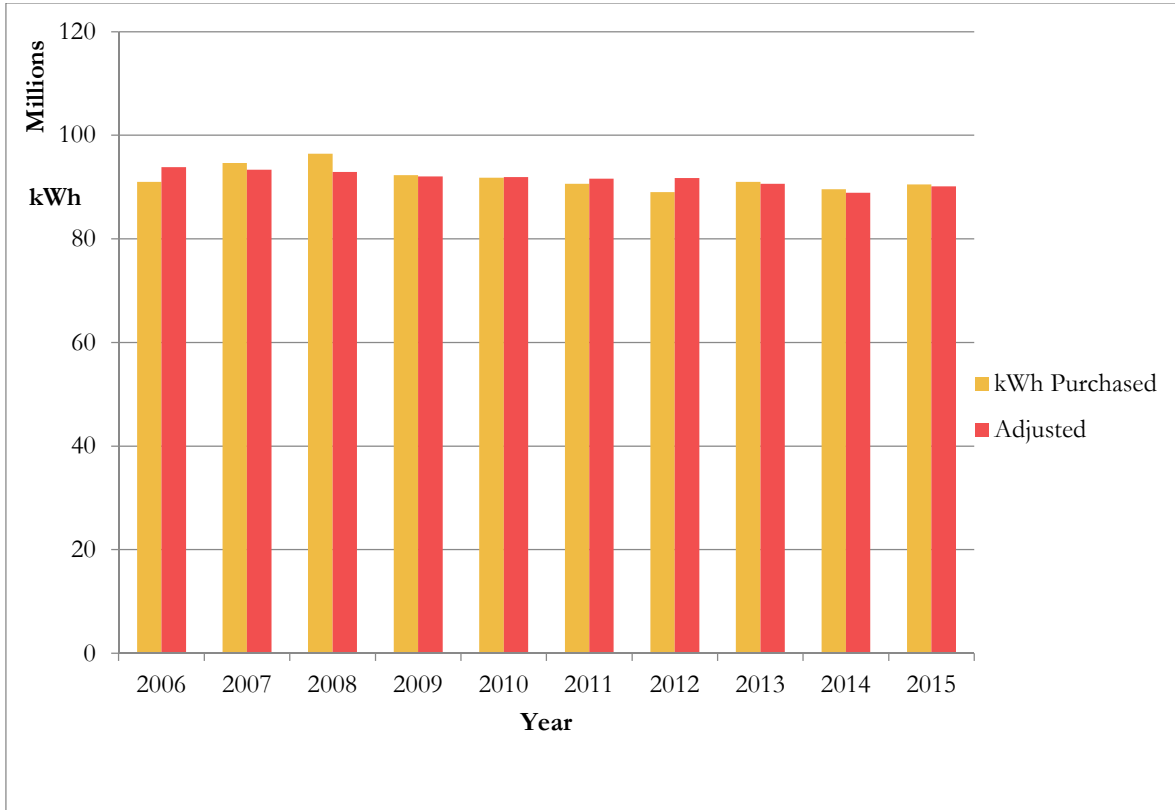
4   In accordance with the Filing Requirements, Renfrew Hydro has also provided a 2017 forecast

5   assuming twenty-year normal weather conditions. Table 3.12 below displays 20 years of

6   historical Heating Degree Days and Cooling Degree Days. The impact of using both a 10 year

7   average as well as a 20 year average to weather normalize wholesale purchases is presented

8   at Table 3.13 and Table 14 respectively.

1

Table 3.12: Forecast using a twenty year weather normalization

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	10 year avg	20 year avg
HDD																						
Jan	774	920	923	802	875	875	848	709	977	1045	921	734	797	754	980	789	893	831	840	918.3	846	860
Feb	796	783	736	610	671	728	747	669	842	750	701	721	820	774	712	656	729	671	729	793.2	731	732
Mar	537	656	678	576	646	502	652	652	675	559	669	600	643	721	598	461	636	460	580	783.6	615	614
Apr	435	418	379	286	337	391	338	359	425	378	325	322	361	300	334	258	347	363	286	384.2	328	351
May	148	188	241	44	83	152	110	228	154	166	205	128	157	185	182	112	143	96	106	127.3	144	148
Jun	19	21	12	43	20	63	26	62	39	54	16	28	34	22	50	38	19	0	54	20.3	28	32
Jul	7	2	11	3	4	12	22	5	2	2	3	0	12	0	13	5	0	0	8	7.7	5	6
Aug	9	14	14	8	15	18	5	7	13	30	8	18	20	14	26	15	2	8	13	21.4	15	14
Sep	159	84	121	82	66	138	90	57	60	67	59	121	76	95	107	112	55	127	133	110.3	100	96
Oct	238	314	334	271	322	291	266	370	337	287	270	336	228	322	356	311	259	243	236	257.9	282	292
Nov	612	575	553	453	407	489	410	535	469	484	484	417	517	503	417	492	393	542	561	510.6	484	491
Dec	851	635	755	648	692	883	602	728	722	815	762	610	788	797	759	731	415	681	858	696.4	710	721
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	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	0	0	10	0	2	0	0	0	0	3	2	0	3	0	0	1	1
May	6	8	0	29	31	3	14	7	0	4	2	17	17.3	0	3	38	17	21	15	9	14	12
Jun	86	52	79	78	100	31	76	40	55	27	112	48	66.9	61	45	33	59	70	39	55	59	61
Jul	126	68	96	89	142	59	78	121	90	87	129	131	65.1	79	43	151	138	142	111	63	105	100
Aug	79	79	41	86	58	60	128	107	106	48	115	68	79.3	50	82	93	82	98	57	56	78	79
Sep	5	34	4	12	50	14	26	51	24	11	33	5	25.7	25	5	26	33	21	10	22	21	22
Oct	1	0	0	0	0	0	0	4	0	0	6	0	1.9	0	0	0	1	0	1	3	1	1
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

2

1

Table 3.13: Forecast using a ten year weather normalization

Date	HDD	CDD	# Days	Employment	Daylight Hours	Weather Normalized	Yearly Total
2016-January	839.09	0.00	31.00	375.12	9.09	7,755,890	
2016-February	754.18	0.00	28.20	375.28	10.19	8,829,929	
2016-March	622.57	0.00	31.00	375.44	11.51	7,969,350	
2016-April	324.82	0.56	30.00	375.61	13.28	8,050,878	
2016-May	129.67	15.25	31.00	375.77	14.52	6,845,995	
2016-June	32.55	47.04	30.00	375.94	15.35	6,612,945	
2016-July	5.85	97.84	31.00	376.10	15.15	6,596,899	
2016-August	15.76	67.23	31.00	376.26	14.03	7,544,077	
2016-September	99.36	20.39	30.00	376.43	12.29	7,102,816	
2016-October	272.91	0.60	31.00	376.59	10.51	6,454,910	
2016-November	456.23	0.00	30.00	376.75	9.28	6,935,623	
2016-December	702.41	0.00	31.00	376.92	8.47	7,354,056	88,662,674
2017-January	849.41	0.00	31.00	377.08	9.09	8,365,195	
2017-February	757.47	0.00	28.22	377.24	10.19	8,817,020	
2017-March	625.18	0.00	31.00	377.41	11.51	7,937,681	
2017-April	325.04	0.62	30.00	377.57	13.28	8,013,085	
2017-May	129.70	15.07	31.00	377.73	14.52	6,801,427	
2017-June	33.07	46.86	30.00	377.90	15.35	6,563,788	
2017-July	6.44	95.13	31.00	378.06	15.15	6,549,464	
2017-August	15.07	68.18	31.00	378.23	14.03	7,455,290	
2017-September	96.66	22.11	30.00	378.39	12.29	7,070,034	
2017-October	266.31	0.66	31.00	378.55	10.51	6,428,231	
2017-November	460.30	0.00	30.00	378.72	9.28	6,869,112	
2017-December	712.30	0.00	31.00	378.88	8.47	7,320,993	88,177,028

2

3

1

Table 3.14: Forecast Using a Twenty Year Weather Normalization

Date	HDD	CDD	# Days	Employment	Daylight Hours	Weather Normalized	Yearly Total
2016-January	839.09	0.00	31.00	375.12	9.09	8,829,929	
2016-February	754.18	0.00	28.20	375.28	10.19	7,969,350	
2016-March	622.57	0.00	31.00	375.44	11.51	8,050,878	
2016-April	324.82	0.56	30.00	375.61	13.28	6,845,995	
2016-May	129.67	15.25	31.00	375.77	14.52	6,612,945	
2016-June	32.55	47.04	30.00	375.94	15.35	6,596,899	
2016-July	5.85	97.84	31.00	376.10	15.15	7,544,077	
2016-August	15.76	67.23	31.00	376.26	14.03	7,102,816	
2016-September	99.36	20.39	30.00	376.43	12.29	6,454,910	
2016-October	272.91	0.60	31.00	376.59	10.51	6,935,623	
2016-November	456.23	0.00	30.00	376.75	9.28	7,354,056	
2016-December	860.00	0.00	31.00	376.92	8.47	8,873,676	89,171,155.16
2017-January	732.00	0.00	31.00	377.08	9.09	8,438,188	
2017-February	614.00	0.00	28.22	377.24	10.19	7,474,766	
2017-March	351.00	0.00	31.00	377.41	11.51	7,128,424	
2017-April	148.00	1.00	30.00	377.57	13.28	6,236,493	
2017-May	32.00	12.00	31.00	377.73	14.52	6,198,188	
2017-June	6.00	61.00	30.00	377.90	15.35	6,694,446	
2017-July	14.00	100.00	31.00	378.06	15.15	7,559,667	
2017-August	96.00	79.00	31.00	378.23	14.03	7,508,942	
2017-September	292.00	22.00	30.00	378.39	12.29	7,056,738	
2017-October	491.00	1.00	31.00	378.55	10.51	7,599,682	
2017-November	721.00	0.00	30.00	378.72	9.28	8,162,159	
2017-December	728.06	0.00	31.00	378.88	8.47	8,401,753	88,459,446.45

2

1   **Ex.3/Tab 1/Sch.10 - Determination of Customer Forecast**

2   Renfrew Hydro has used a simple geometric mean function to determine the forecasted number

3   of customers of 2016 and 2017. The geometric mean is more appropriate to use when dealing

4   with percentages and rates of change. Although the formula is somewhat simplistic, it is

5   reasonably representative of Renfrew Hydro's natural customer growth. The geometric mean

6   results were analyzed by Renfrew Hydro and then further adjusted for known particulars.

7   Historic customer counts and projected customer counts for 2016 and 2017 are presented in

8   Table 3.15 below. A variance analysis of customer counts and projections is presented at

9   Ex.3/Tab 3/Sch.1.

1

Table 3.15: Customer Forecast

Date	Residential Customers or Connections	Growth Rate	General Service < 50 kW Customers or Connections	Growth Rate	Unmetered Scattered Load Customers or Connections	Growth Rate	General Service > 50 kW - 4999 kW Customers or Connections	Growth Rate	Streetlighting Customers or Connections	Growth Rate
2006	3,537		512		28		62		1,149	
2007	3,551	1.0040	497	0.9707	29	1.0357	65	1.0484	1,151	1.0017
2008	3,581	1.0084	494	0.9940	30	1.0345	67	1.0308	1,158	1.0061
2009	3,608	1.0075	483	0.9777	30	1.0000	66	0.9851	1,167	1.0078
2010	3,654	1.0127	442	0.9151	34	1.1333	59	0.8939	1,174	1.0060
2011	3,687	1.0090	437	0.9887	34	1.0000	59	1.0000	1,176	1.0017
2012	3,707	1.0054	435	0.9954	34	1.0000	59	1.0000	1,176	1.0000
2013	3,730	1.0062	428	0.9839	33	0.9706	62	1.0508	1,190	1.0119
2014	3,760	1.0080	428	1.0000	33	1.0000	62	1.0000	1,190	1.0000
2015	3,779	1.0051	430	1.0047	33	1.0000	61	0.9839	1,190	1.0000
Geomean		1.0074		0.9808		1.0184		0.9982		1.0039
2016	3,807		422		34		61		1,195	
2017	3,835		414		34		61		1,199	

2

1   **Ex.3/Tab 1/Sch.11 - Determination of Weather Normalized Forecast**

2   Allocation to specific weather sensitive rate classes (Residential, GS<50, GS>50) is based on

3   the share of each classes' actual retail kWh (exclusive of distribution losses) and a share of

4   actual wholesale kWh. Weather normalized wholesale kWh, for historical years, are allocated to

5   these classes based on these historical shares. Forecast values for 2016 and 2017 are

6   allocated based on the most recent year's (2015) actual share. For those rate classes that use

7   kW consumption as a billing determinant, sales for these customer classes are then converted

8   to kW based on the historical volumetric relationship between kWh and kW.

9

10 Annual estimates using actual weather are compared to actual values in Table 3.16 below.

11 Mean absolute percentage error (Statistically, MAPE is defined as the average of percentage

12 errors) of annual estimates for the period is 1.43%. The median is calculated at 0.91%.

13

14   **Table 3.16: Actual vs. Predicted Wholesale kWh**

Year	kWh Purchased	Adjusted	
2006	91,018,552.48	93,834,660.83	3.09%
2007	94,614,050.20	93,363,786.46	1.32%
2008	96,430,220.50	92,931,642.38	3.63%
2009	92,313,324.00	92,048,566.78	0.29%
2010	91,831,741.00	91,956,572.80	0.14%
2011	90,656,017.00	91,628,943.54	1.07%
2012	89,014,822.00	91,730,059.58	3.05%
2013	90,972,832.00	90,628,305.25	0.38%
2014	89,574,310.00	88,892,412.87	0.76%
2015	90,503,010.00	90,106,871.45	0.44%
Mean Average Percentage Error (Mape) :			**1.42%**
Median			**0.92%**

15

16

1 **Ex.3/Tab 1/Sch.12 - Load Forecast by Class.**

2 The following section presents class specific adjusted historic and forecast values for those

3 classes that have weather sensitive load. Historic class specific kWh consumption is allocated

4 based on each class' share in wholesale kWh, exclusive of distribution losses. Forecast class

5 values are allocated based on the class share for 2015.

6

7 Tables 3.17 to 3.21 show historical and forecasted details for each of the weather sensitive

8 classes.

9

10
<p align="center">Table 3.17: Residential Forecast</p>

Residential						
Year	Residential Metered kWh	Wholesale Purchases	Weather Normalized	Ratio% *	Weather Normal	Per customer
2006	30,640,106	91,018,552	93,834,661	33.66%	31,588,109	8,931
2007	31,007,901	94,614,050	93,363,786	32.77%	30,598,152	8,617
2008	31,465,398	96,430,221	92,931,642	32.63%	30,323,804	8,468
2009	30,635,928	92,313,324	92,048,567	33.19%	30,548,063	8,467
2010	30,305,144	91,831,741	91,956,573	33.00%	30,346,339	8,305
2011	30,085,520	90,656,017	91,628,944	33.19%	30,408,400	8,247
2012	29,994,156	89,014,822	91,730,060	33.70%	30,909,074	8,338
2013	30,486,731	90,972,832	90,628,305	33.51%	30,371,274	8,142
2014	30,037,011	89,574,310	88,892,413	33.53%	29,808,350	7,928
2015	29,589,162	90,503,010	90,106,871	32.69%	29,459,648	7,796
2016			89,171,155	33.19%	29,593,740	7,831
2017			88,459,446	33.19%	29,357,542	7,769

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Table 3.18: General Service <50 Forecast

Year	GS<50 Metered kWh	Wholesale Purchases	Weather Normalized	Ratio% *	Weather Normal	Per customer
2006	13,424,049	91,018,552	93,834,661	14.75%	13,839,388	27,030
2007	13,776,453	94,614,050	93,363,786	14.56%	13,594,406	27,353
2008	13,927,235	96,430,221	92,931,642	14.44%	13,421,942	27,170
2009	12,859,915	92,313,324	92,048,567	13.93%	12,823,032	26,549
2010	12,427,065	91,831,741	91,956,573	13.53%	12,443,958	28,154
2011	11,962,164	90,656,017	91,628,944	13.20%	12,090,543	27,667
2012	11,672,310	89,014,822	91,730,060	13.11%	12,028,353	27,651
2013	11,531,242	90,972,832	90,628,305	12.68%	11,487,572	26,840
2014	11,294,125	89,574,310	88,892,413	12.61%	11,208,147	26,187
2015	10,843,312	90,503,010	90,106,871	11.98%	10,795,850	25,107
2016			89,171,155	13.48%	12,019,249	27,952
2017			88,459,446	13.48%	11,923,319	27,729

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Table 3.19a: General Service >50 (kWh)

Year	GS>50 Metered kWh	Wholesale Purchases	Weather Normalized	Ratio% *	Weather Normal	Per customer
2006	51,984,380	91,018,552	93,834,661	57.11%	53,592,773	864,400
2007	53,203,197	94,614,050	93,363,786	56.23%	52,500,151	807,695
2008	55,283,988	96,430,221	92,931,642	57.33%	53,278,233	795,198
2009	52,230,300	92,313,324	92,048,567	56.58%	52,080,502	789,099
2010	51,703,213	91,831,741	91,956,573	56.30%	51,773,496	877,517
2011	46,521,147	90,656,017	91,628,944	51.32%	47,020,415	796,956
2012	44,095,781	89,014,822	91,730,060	49.54%	45,440,844	770,184
2013	44,119,354	90,972,832	90,628,305	48.50%	43,952,268	708,908
2014	43,640,624	89,574,310	88,892,413	48.72%	43,308,404	698,523
2015	45,095,566	90,503,010	90,106,871	49.83%	44,898,179	736,036
2016			89,171,155	53.15%	47,390,600	776,895
2017			88,459,446	53.15%	47,012,357	770,694

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Table 3.19b: General Service >50 Demand (kW)

Year	kWh	kWh	kW	Customer/Connection	kWh per connection	KW per connection	KW/kWh Ratio
2006	51,984,380	51,984,380	153,660	62	838,457.74	2,478.387	0.00296
2007	53,203,197	53,203,197	146,521	65	818,510.72	2,254.169	0.00275
2008	55,283,988	55,283,988	148,947	67	825,134.15	2,223.090	0.00269
2009	52,230,300	52,230,300	141,729	66	791,368.18	2,147.409	0.00271
2010	51,703,213	51,703,213	141,797	59	876,325.64	2,403.339	0.00274
2011	46,521,147	46,521,147	130,980	59	788,494.02	2,220.000	0.00282
2012	44,095,781	44,095,781	120,379	59	747,386.12	2,040.322	0.00273
2013	44,119,354	44,119,354	115,813	62	711,602.48	1,867.952	0.00262
2014	43,640,624	43,640,624	114,180	62	703,881.03	1,841.613	0.00262
2015	45,095,566	45,095,566	113,922	61	739,271.57	1,867.574	0.00253
2016	44,431,933	44,431,933	120,736	61	729,709.54	1,982.853	
2017	44,077,305	44,077,305	119,772	61	725,194.50	1,970.584	
Avg - Years =		10.00			*779,103.75*	*2,134.385*	*0.00272*

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Table 3.20: Street Lighting

Year	kWh	kWh	kW	Customer/Connection	kWh per connection	KW per connection	KW/kWh Ratio
2006	1,095,963	1,095,963	3,053	1,149	953.84	2.657	0.00279
2007	1,105,833	1,105,833	3,095	1,151	960.76	2.689	0.00280
2008	1,107,983	1,107,983	3,100	1,158	956.81	2.677	0.00280
2009	1,114,732	1,114,732	3,092	1,167	955.21	2.650	0.00277
2010	1,116,726	1,116,726	3,098	1,174	951.21	2.639	0.00277
2011	1,118,574	1,118,574	3,099	1,176	951.17	2.635	0.00277
2012	1,121,260	1,121,260	3,100	1,176	953.45	2.636	0.00276
2013	1,118,710	1,118,710	3,104	1,190	940.09	2.608	0.00277
2014	1,121,519	1,121,519	3,110	1,190	942.45	2.613	0.00277
2015	1,123,682	1,123,682	3,165	1,190	944.27	2.619	0.00277
2016	1,107,146	1,107,146	3,076	1,195	926.76	2.575	
2017	1,098,309	1,098,309	3,052	1,199	915.79	2.545	
Avg - Years =		10.00			*945.98*	*2.63*	*0.00*

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4 **Table 3.21- Unmetered Scattered Load**

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Year	kWh	kWh	kW	Customer/ Connection	kWh per connection
2006	160,045	160,045	0	28	5,715.89
2007	142,221	142,221	0	29	4,904.17
2008	140,870	140,870	0	30	4,695.67
2009	140,485	140,485	0	30	4,682.83
2010	150,176	150,176	0	34	4,416.94
2011	158,921	158,921	0	34	4,674.15
2012	158,811	158,811	0	34	4,670.91
2013	155,619	155,619	0	33	4,715.73
2014	155,019	155,019	0	33	4,697.55
2015	155,364	155,364	0	33	4,708.00
2016	153,078	153,078	0	34	4,554.80
2017	151,856	151,856	0	34	4,436.71
Avg - Years =		10.00			*4,739.45*

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1   **Ex.3/Tab 1/Sch.13 - Final Normalized Load Forecast**

2   Table 3.22 below presents historical and projected weather normalized Load Forecast by

3   customer class.

4   **Table 3.22: Final Load Forecast (not CDM adjusted)**

	Year	2010	2011	2012	2013	2014	2015	2016	2017
Residential	Cust/Conn	3,654	3,687	3,707	3,730	3,760	3,779	3,807	3,835
	kWh	30,305,144	30,085,520	29,994,156	30,486,731	30,037,011	29,589,162	29,593,740	29,357,542
	kW	-	-	-	-	-	-	-	-
GS<50	Cust/Conn	442	437	435	428	428	430	422	414
	kWh	12,427,065	11,962,164	11,672,310	11,531,242	11,294,125	10,843,312	12,019,249	11,923,319
	kW	-	-	-	-	-	-	-	-
USL	Cust/Conn	34	34	34	33	33	33	34	34
	kWh	150,176	158,921	158,811	155,619	155,019	155,364	153,078	151,856
	kW	-	-	-	-	-	-	-	-
GS>50	Cust/Conn	59	59	59	62	62	61	61	61
	kWh	51,703,213	46,521,147	44,095,781	44,119,354	43,640,624	45,095,566	44,431,933	44,077,305
	kW	141,797	130,980	120,379	115,813	114,180	113,922	120,736	119,772
Streetlighting	Cust/Conn	1,174	1,176	1,176	1,190	1,190	1,190	1,195	1,199
	kWh	1,116,726	1,118,574	1,121,260	1,118,710	1,121,519	1,123,682	1,107,146	1,098,309
	kW	3,098	3,099	3,100	3,104	3,110	3,117	3,076	3,052
Total	**Cust/Conn**	**5,363**	**5,393**	**5,411**	**5,443**	**5,473**	**5,493**	**5,518**	**5,543**
	kWh	**95,702,324**	**89,846,326**	**87,042,318**	**87,411,656**	**86,248,298**	**86,807,086**	**87,305,147**	**86,608,331**
	kW	**144,895**	**134,079**	**123,479**	**118,917**	**117,290**	**117,039**	**123,812**	**122,824**

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6

1   Impact and Persistence from Historical CDM Programs

2   Ex.3/Tab 2/Sch.1 - Load Forecast CDM Adjustment Work Form

3   While the forecast as presented in the previous section assumes some level of embedded

4   "natural conservation", it does not take into account the impacts on energy purchases arising

5   from CDM programs undertaken by Renfrew Hydro's customers. The load forecast is a

6   projection of the expected level of electricity purchases that would occur over the specified

7   period in the absence of any CDM initiatives. Therefore, in accordance with the filing

8   requirements, the forecasted energy purchases are further adjusted to reflect CDM reductions.

9

10   The schedule to achieve CDM targets are presented at Table 3.23 below:

11

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Table 3.23: Appendix 2-I
Load Forecast CDM Adjustment Work Form (2017)

4 Year (2011-2014) kWh Target:						Persistence of 2014 CDM Program into 2015 and 2016	
4,860,000							
	2011	2012	2013	2014	Total	2015	2016
2011 CDM Programs	11.15%	11.15%	11.15%	11.15%	44.61%		
2012 CDM Programs		9.57%	9.55%	9.55%	28.66%		
2013 CDM Programs			5.47%	5.45%	10.91%		
2014 CDM Programs				13.58%	13.58%		
Total in Year	**11.15%**	**20.72%**	**26.17%**	**39.73%**	**97.77%**		
kWh							
2011 CDM Programs	514,000.00	514,000.00	514,000.00	514,000.00	2,056,000.00		
2012 CDM Programs	- 90,000.00	441,000.00	440,000.00	440,000.00	1,231,000.00		
2013 CDM Programs		10,000.00	252,000.00	251,000.00	513,000.00		
2014 CDM Programs			183,000.00	626,000.00	809,000.00	619,740.00	550,880.00
Total in Year	**424,000.00**	**965,000.00**	**1,389,000.00**	**1,831,000.00**	**4,609,000.00**		

	Persistence Factor			
2011		**1.00**	**1.00**	**1.00**
2012			**1.00**	**1.00**
2013				**1.00**

2015-2020 CDM Program - 2016, second year of the current CDM plan

6 Year (2015-2020) kWh Target:							
4,170,000							
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
%							
2015 CDM Programs	16.67%						16.67%
2016 CDM Programs		16.67%					16.67%
2017 CDM Programs			16.67%				16.67%
2018 CDM Programs				16.67%			16.67%
2019 CDM Programs					16.67%		16.67%
2020 CDM Programs						16.67%	16.67%
Total in Year	**16.67%**	**16.67%**	**16.67%**	**16.67%**	**16.67%**	**16.67%**	**100.00%**
kWh							
2015 CDM Programs	695,000.00	695,000.00					1,390,000.00
2016 CDM Programs		695,000.00					695,000.00
2017 CDM Programs			695,000.00				695,000.00
2018 CDM Programs				695,000.00			695,000.00
2019 CDM Programs					695,000.00		695,000.00
2020 CDM Programs						695,000.00	695,000.00
Total in Year	**695,000.00**	**1,390,000.00**	**695,000.00**	**695,000.00**	**695,000.00**	**695,000.00**	**4,170,000.00**

Determination of 2017 Load Forecast Adjustment

Net-to-Gross Conversion				
Is CDM adjustment being done on a "net" or "gross" basis?				**net**
Persistence of Historical CDM programs to 2014	**"Gross"** **kWh**	**"Net"** **kWh**	**Difference** **kWh**	**"Net-to-Gross" Conversion Factor** **('g')**
2006-2010 CDM programs				
2011 CDM program	**787087**	**514073**		
2012 CDM program	**487911**	**440648**		
2013 CDM program	**352175**	**252369**		
2014 CDM program	**814978**	**626488**		
2006 to 2014 OPA CDM programs: **Persistence to 2016**	2442151	1833578	608573	0.00%

The default values represent the factor that each year's CDM program is factored into the manual CDM adjustment. Distributors can choose alternative weights of "0", "0.5" or "1" from the drop-down menu for each cell, but must support its alternatives.

These factors do not mean that CDM programs are excluded, but the assumption that impacts of previous year CDM programs are already implicitly reflected in the actual data for the historical years that are the basis for the load forecast prior to any manual CDM adjustment for the 2016 test year.

Weight Factor for Inclusion in CDM Adjustment to 2014 Load Forecast

	2011	2012	2013	2014	2015	2016	
Weight Factor for each year's CDM program impact on Test Year load forecast	0	0	0	0.5	1	0.5	Distributor can select "0", "0.5", or "1" from drop-down list
Default Value selection rationale.	*Full year persistence of 2011 CDM programs on 2015 load forecast. Full impact assumed because of 50% impact in 2011 (first year) but full year persistence impact on 2012 and 2013, and thus reflected in base forecast before the CDM adjustment.*	*Full year persistence of 2012 CDM programs on 2015 load forecast. Full impact assumed because of 50% impact in 2012 (first year) but full year persistence impact on 2013, and thus reflected in base forecast before the CDM adjustment.*	*Default is 0, but one option is for full year impact of persistence of 2013 CDM programs on 2015 load forecast, but 50% impact in base forecast (first year impact of 2013 CDM programs on 2013 load forecast, which is part of the data for the load forecast.*	*Default is 0, but one option is for full year impact of persistence of 2014 CDM programs on 2014 load forecast, but 50% impact in base forecast (first year impact of 2014 CDM programs on 2014 actuals, which is part of the data for the load forecast.*	*Full year impact of persistence of 2015 programs on 2015 load forecast. 2015 CDM program impacts are not in the base forecast.*	*Only 50% of 2016 CDM programs are assumed to impact the 2016 load forecast based on the "half-year" rule.*	

2011-2014 and 2015-2020 LRAMVA and 2015 CDM adjustment to Load Forecast

	2011 kWh	2012	2013	2014	2015	2016	Total for 2016
Amount used for CDM threshold for LRAMVA (2017)	514,000.00	440,000.00	251,000.00	443,111.01*			
CDM adjustment for test year forecast (per Board Decision in distributor's most recent Cost of Service Application) (enter as negative)	-	-	-	-			
'* from LRAMVA model							
Amount used for CDM threshold for LRAMVA (2017)				-	695,000.00	695,000.00	1,390,000.00
Manual Adjustment for 2016 Load Forecast (billed basis)	-	-	-	221,555.51	695,000.00	347,500.00	1,264,055.51
Proposed Loss Factor (TLF)	8.10%	Format: X.XX%					
Manual Adjustment for 2016 Load Forecast (system purchased basis)	-	-	-	239,501.50	751,295.00	375,647.50	1,366,444.00

1

1   The values entered in the 2011-2014 report originate from the OPA issued report; 2006-2010

2   Final OPA CDM Results. The report provides a portfolio-level summary of the annual resource

3   savings (demand and energy, net and gross for each) for the 2006–2010 program portfolios for

4   RHI. RHI used the Q4 report from the OPA. The most recent annual results of OPA CDM

5   programs and the Q4 results are presented as an appendix to this Exhibit.

6

7   The values entered in the 2015-2020 originate from RHI's approved CDM plan which shows

8   RHI's targets to be 4.17 GWh.

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Ex.3/Tab 2/Sch.2 – Allocation of CDM Results

The overall CDM adjustment for 2015, as calculated above, is allocated on pro-rata basis (using kWh forecast) per class. Table 3.24 below presents the method behind RHI's allocation of CDM reduction in consumption.

Table 3.24: CDM adjustments to Load Forecast

kWh	Year	2017	Share	Target	Adjusted (kWh)	Final Adjusted (kWh)
Residential	kWh	29,357,542	33.90%	428,476	28,929,066	28,929,066
General Service < 50 kW	kWh	11,923,319	13.77%	174,022	11,749,297	11,749,297
Unmetered Scattered Load	kWh	151,856	0.18%	2,216	149,640	149,640
General Service > 50 kW - 4999 kW	kWh	44,077,305	50.89%	643,312	43,433,994	43,433,994
Streetlighting	kWh	1,098,309	1.27%	16,030	1,082,279	1,082,279
Total		86,608,331	100.00%	1,264,055.51	85,344,276	85,344,276

	Year	2017		Adjusted (kWh)	Final Adjusted (kWh)
Residential	kW	-		0	0
General Service < 50 kW	kW	-		0	0
Unmetered Scattered Load	kW	-		0	0
General Service > 50 kW - 4999 kW	kW	119,772		118,024	118,024
Streetlighting	kW	3,052		3,007	3,007
Total		122,824		121,031	121,031

The following table shows the per class allocation of amount used for CDM threshold for LRAMVA (2017).

1

Table 4.20 - allocation of amount used for CDM threshold for LRAMVA

kWh		Year	2017		Share	Target
Residential		kWh	29,357,542		33.90%	471,167
General Service < 50 kW		kWh	11,923,319		13.77%	191,361
Unmetered Scattered Load		kWh	151,856		0.18%	2,437
General Service > 50 kW - 4999 kW		kWh	44,077,305		50.89%	707,408
Streetlighting		kWh	1,098,309		1.27%	17,627
0.00		kWh	-		0.00%	0
0.00		kWh	-		0.00%	0
Total			86,608,331		100.00%	1,390,000.00

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1 **Ex.3/Tab 2/Sch.3 - Final Weather Adjusted Load Forecast**

2

3 Table 3.25 below provides details of the Final Customer and Volume Load Forecast for each of

4 the years. This summary of the billing determinants by rate class will be used to develop RHI's

5 proposed rates.

1

Table 3.25: Final Customer and Volume Load Forecast

	Year	2010	2011	2012	2013	2014	2015	2016	2017
Residential	Cust/Conn	3,654	3,687	3,707	3,730	3,760	3,779	3,807	3,835
	kWh	30,305,144	30,085,520	29,994,156	30,486,731	30,037,011	29,589,162	29,593,740	28,929,066
General Service < 50 kW	Cust/Conn	442	437	435	428	428	430	422	414
	kWh	12,427,065	11,962,164	11,672,310	11,531,242	11,294,125	10,843,312	12,019,249	11,749,297
Unmetered Scattered Load	Cust/Conn	34	34	34	33	33	33	34	34
	kWh	150,176	158,921	158,811	155,619	155,019	155,364	153,078	149,640
General Service > 50 kW - 4999 kW	Cust/Conn	59	59	59	62	62	61	61	61
	kWh	51,703,213	46,521,147	44,095,781	44,119,354	43,640,624	45,095,566	44,431,933	43,433,994
	kW	141,797	130,980	120,379	115,813	114,180	113,922	120,736	118,024
Streetlighting	Cust/Conn	1,174	1,176	1,176	1,190	1,190	1,190	1,195	1,199
	kWh	1,116,726	1,118,574	1,121,260	1,118,710	1,121,519	1,123,682	1,107,146	1,082,279
	kW	3,098	3,099	3,100	3,104	3,110	3,165	3,076	3,007
Total	**Cust/Conn**	**5,363**	**5,393**	**5,411**	**5,443**	**5,473**	**5,493**	**5,518**	**5,543**
	kWh	**95,702,324**	**89,846,326**	**87,042,318**	**87,411,656**	**86,248,298**	**86,807,086**	**87,305,147**	**85,344,276**
	kW	**144,895**	**134,079**	**123,479**	**118,917**	**117,290**	**117,039**	**123,812**	**121,031**

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4

1   Accuracy of Load Forecast and Variance Analysis

2   **Ex.3/Tab 3/Sch.1 - Variance Analysis of Load Forecast**

3

4   Table 3.26 below shows the yearly change in consumption for the Residential class.

5

6   **Table 3.26: Residential Variance**

Year	Cust	#chg	%chg	kWh	%chg
2006	3,537			30,640,106	
2007	3,551	14	0.40%	31,007,901	1.20%
2008	3,581	30	0.84%	31,465,398	1.48%
2009	3,608	27	0.75%	30,635,928	-2.64%
2010	3,654	46	1.27%	30,305,144	-1.08%
2011	3,687	33	0.90%	30,085,520	-0.72%
2012	3,707	20	0.54%	29,994,156	-0.30%
2013	3,730	23	0.62%	30,486,731	1.64%
2014	3,760	30	0.80%	30,037,011	-1.48%
2015	3,779	19	0.51%	29,589,162	-1.49%
2016	3,807	28	0.74%	29,593,740	0.02%
2017	3,835	28	0.74%	28,929,066	-2.25%

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10   The residential customer class has been growing slowly but steadily since 2006. The class has

11   grown every year since 2006. This reflects a trend of older rural citizens moving to urban areas

12   to be closer to services such as hospitals, clinics, shopping, etc. Renfrew is the major service

13   area for many small towns and farms in the area and is fortunate to have a major hospital, long

14   term care facility, and seniors home in addition to other amenities typically found in larger

15   centres. Residential counts are expected to grow by 28 in 2016 and 28 in 2017.

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1   Table 3.27 below shows the yearly change in consumption for the GS<50 kW class.

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Table 3.27: GS <50 kW Variance

Year	Cust	#chg	%chg	kWh	%chg
2006	512			13,424,049	
2007	497	-15	-2.93%	13,776,453	2.63%
2008	494	-3	-0.60%	13,927,235	1.09%
2009	483	-11	-2.23%	12,859,915	-7.66%
2010	442	-41	-8.49%	12,427,065	-3.37%
2011	437	-5	-1.13%	11,962,164	-3.74%
2012	435	-2	-0.46%	11,672,310	-2.42%
2013	428	-7	-1.61%	11,531,242	-1.21%
2014	428	0	0.00%	11,294,125	-2.06%
2015	430	2	0.47%	10,843,312	-3.99%
2016	422	-8	-1.92%	12,019,249	10.84%
2017	414	-8	-1.92%	11,749,297	-2.25%

4

5

6   The number of customers in the GS<50 kW class have been steadily declining over the past 10

7   years. The ten empty store fronts on the main street along with the 7 empty strip mall storefronts

8   are indicative of this trend. RHI anticipates this trend to continue. The primary reason is due to

9   the struggling manufacturing sector. As explained in the economic outlook, the region's

10   manufacturing and retail footprint has shrunk over the past decade, reflecting the challenges

11   faced in most parts of rural Ontario and Canada with its relatively narrow economic base and

12   concentration in slow growing or declining industries. With stagnant employment levels, people

13   tend to spend less and businesses, as a result, struggle to survive. RHI anticipates a loss of 8

14   GS<50 customer for 2016 and another 8 customers in 2017. The methodology behind the

15   projections for 2016 and 2017 are explained at Ex.3/Tab 1/Sch.3. With a declining Canadian

16   dollar it is hoped this will provide a boost to manufacturing in the area, especially when the

17   American economy improves and our exports rise. However it is difficult to predict the exact

18   impact on this class of customers and when it might occur.

19

20

1   Table 3.28 below shows the yearly change in consumption for the GS>50kW class.

2

3   **Table 3.28: GS>50 Variance**

4

Year	Cust	#chg	%chg	kWh	%chg	kW	%chg
2006	62			51,984,380		153,660	
2007	65	3	4.84%	53,203,197	2.34%	146,521	-4.65%
2008	67	2	3.08%	55,283,988	3.91%	148,947	1.66%
2009	66	-1	-1.49%	52,230,300	-5.52%	141,729	-4.85%
2010	59	-7	-10.61%	51,703,213	-1.01%	141,797	0.05%
2011	59	0	0.00%	46,521,147	-10.02%	130,980	-7.63%
2012	59	0	0.00%	44,095,781	-5.21%	120,379	-8.09%
2013	62	3	5.08%	44,119,354	0.05%	115,813	-3.79%
2014	62	0	0.00%	43,640,624	-1.09%	114,180	-1.41%
2015	61	-1	-1.61%	45,095,566	3.33%	113,922	-0.23%
2016	61	0	-0.18%	44,431,933	-1.47%	120,736	5.98%
2017	61	0	-0.18%	43,433,994	-2.25%	118,024	-2.25%

5

6

7

8   The customer count for the GS>50 kW class has seen little change over the last 10 years. The

9   reasons for the slow growth are the same as indicated in the GS<50 section above. RHI

10   projects no increases in customer counts for 2016 and 2017. Even though the customer counts

11   show little change, the consumption in this rate class has seen the most change, decreasing by

12   6,888,814 kWh or 13.3% from 2006 to 2015. The demand has decreased by 39,738 kW's or

13   25.8% from 2006 to 2015. The methodology behind the projections for 2016 and 2017 are also

14   explained at Ex.3/Tab 3/Sch.1

1 Table 3.29 below shows the yearly change in consumption for the Streetlight class.

2

3   **Table 3.29: Street Lights Variance**

Year	Cust		%chg	kWh	%chg	kW	%chg
2006	1,149			1,095,963		3,053	
2007	1,151	2	0.17%	1,105,833	0.90%	3,095	1.38%
2008	1,158	7	0.61%	1,107,983	0.19%	3,100	0.16%
2009	1,167	9	0.78%	1,114,732	0.61%	3,092	-0.26%
2010	1,174	7	0.60%	1,116,726	0.18%	3,098	0.19%
2011	1,176	2	0.17%	1,118,574	0.17%	3,099	0.03%
2012	1,176	0	0.00%	1,121,260	0.24%	3,100	0.03%
2013	1,190	14	1.19%	1,118,710	-0.23%	3,104	0.13%
2014	1,190	0	0.00%	1,121,519	0.25%	3,110	0.19%
2015	1,190	0	0.00%	1,123,682	0.19%	3,165	0.23%
2016	1,195	5	0.39%	1,107,146	-1.47%	3,076	-1.30%
2017	1,199	4	0.39%	1,082,279	-2.25%	3,007	-2.25%

4

5 RHI projects an increase of 9 connections to a total of 1,199 in its Streetlights for the 2017 test

6 year. These street light connections will be added to the next phase of Hunter Gate subdivision.

7 The Town together with RHI have discussed a streetlight LED retrofit program but there is no

8 indication that the Town will commit to this conversion in the near future.

9

10 The Load Forecast model uses an average to determine the projections. Again, the

11 methodology behind the projections for 2016 and 2017 are explained in detailed at Ex.3/Tab

12 3/Sch.1. Table 3.30 below shows the yearly change in consumption for the Unmetered

13 Scattered load class.

14

1

Table 3.30: USL Variance

Year	Cust	#chg	%chg	kWh	%chg
2006	28			160,045	
2007	29	1	3.57%	142,221	-11.14%
2008	30	1	3.45%	140,870	-0.95%
2009	30	0	0.00%	140,485	-0.27%
2010	34	4	13.33%	150,176	6.90%
2011	34	0	0.00%	158,921	5.82%
2012	34	0	0.00%	158,811	-0.07%
2013	33	-1	-2.94%	155,619	-2.01%
2014	33	0	0.00%	155,019	-0.39%
2015	33	0	0.00%	155,364	0.22%
2016	34	1	1.84%	153,078	-1.47%
2017	34	1	1.84%	149,640	-2.25%

2

3

4   RHI anticipates a small increase of one addition in USL connections for a total of 34 in the 2017

5   Test year.

6

7   In summary, for customer counts RHI expects slight increases in the Residential, Street light,

8   and USL classes, and small decreases in the GS<50 category, and no change to GS>50 Class.

9   RHI is expecting reduced consumption in each of the classes with the exception of a small

10   increase in the GS<50 category. Secondly, additional energy consumption that does not depend

11   on the weather (often referred to as "baseload" energy consumption) is often offset by the

12   additional transitioning to energy efficient lighting, appliances and other energy efficient

13   changes. Table 3.31 below provides details of the variances by rate class.

14

Appendix 2-IA

Summary and Variances of Actual and Forecast Data

	Board Approved	2010	2011	2012	2013	2014	2015	2016	2017
Residential									
# of Customers	3,635	3,654	3,687	3,707	3,730	3,760	3,779	3,807	3,835
kWh	31,881,465	30,305,144	30,085,520	29,994,156	30,486,731	30,037,011	29,589,162	29,593,740	28,929,066
kW									
Variance Analysis									
# of Customers				1.98%	2.61%	3.44%	3.96%	4.73%	5.50%
kWh				-5.92%	-4.37%	-5.79%	-7.19%	-7.18%	-9.26%
kW				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
General Service < 50 kW									
# of Customers	447	442	437	435	428	428	430	422	414
kWh	12,958,689	12,427,065	11,962,164	11,672,310	11,531,242	11,294,125	10,843,312	12,019,249	11,749,297
kW									
Variance Analysis									
# of Customers				-2.68%	-4.25%	-4.25%	-3.80%	-5.65%	-7.46%
kWh				-9.93%	-11.02%	-12.85%	-16.32%	-7.25%	-9.33%
kW				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Unmetered Scattered Load									
# of Customers	30	34	34	34	33	33	33	34	34
kWh	142,827	150,176	158,921	158,811	155,619	155,019	155,364	153,078	149,640
kW									
Variance Analysis									
# of Customers				13.33%	10.00%	10.00%	10.00%	12.03%	14.09%
kWh				11.19%	8.96%	8.54%	8.78%	7.18%	4.77%
kW				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

General Service > 50 kW - 4999 kW								
# of Customers	64	59	59	59	62	62	61	61	61
kWh	52,616,773	51,703,213	46,521,147	44,095,781	44,119,354	43,640,624	45,095,566	44,431,933	43,433,994
kW	142,778	141,797	130,980	120,379	115,813	114,180	113,922	120,736	118,024
Variance Analysis									
# of Customers				-7.81%	-3.13%	-3.13%	-4.69%	-4.86%	-5.03%
kWh				-16.19%	-16.15%	-17.06%	-14.29%	-15.56%	-17.45%
kW				-15.69%	-18.89%	-20.03%	-20.21%	-15.44%	-17.34%

Streetlighting								
# of Customers	1,173	1,174	1,176	1,176	1,190	1,190	1,190	1,195	1,199
kWh	1,121,141	1,116,726	1,118,574	1,121,260	1,118,710	1,121,519	1,123,682	1,107,146	1,082,279
kW	3,110	3,098	3,099	3,100	3,104	3,110	3,117	3,076	3,007
Variance Analysis									
# of Customers				0.26%	1.45%	1.45%	1.45%	1.85%	2.24%
kWh				0.01%	-0.22%	0.03%	0.23%	-1.25%	-3.47%
kW				-0.32%	-0.19%	0.00%	0.23%	-1.08%	-3.30%

Totals								
Customers / Connections	5,349	5,363	5,393	5,411	5,443	5,473	5,493	5,518	5,543
kWh	98,720,895	95,702,324	89,846,326	87,042,318	87,411,656	86,248,298	86,807,086	87,305,147	85,344,276
kW from applicable classes	145,888	144,895	134,079	123,479	118,917	117,290	117,039	123,812	121,031

Totals - Variance								
Customers / Connections				1.16%	1.76%	2.32%	2.69%	3.16%	3.63%
kWh				-11.83%	-11.46%	-12.63%	-12.07%	-11.56%	-13.55%
kW from applicable classes				-15.36%	-18.49%	-19.60%	-19.77%	-15.13%	-17.04%

1

1   Table 3.32 below presents the actual average use per customer, by customer class, and

2   historical and adjusted forecast average use per customer generated using the load forecast. As

3   can be seen from the results below, the predicted use per customer follows the trend created

4   from its historical usage per customer.

5

6   **Table 3.32: Average per customer use**

7

Year	Residential		General Service < 50 kW		Unmetered Scattered Load		General Service > 50 kW - 4999 kW		Streetlighting	
	per cust kWh	per cust kW	per cust kWh	per cust kW	per cust kWh	per cust kW	per cust kWh	per cust kW	per cust kWh	per cust kW
2006	8,663	0	26,219	0	5,716	0	838,458	2,478	954	3
2007	8,732	0	27,719	0	4,904	0	818,511	2,254	961	3
2008	8,787	0	28,193	0	4,696	0	825,134	2,223	957	3
2009	8,491	0	26,625	0	4,683	0	791,368	2,147	955	3
2010	8,294	0	28,116	0	4,417	0	876,326	2,403	951	3
2011	8,160	0	27,373	0	4,674	0	788,494	2,220	951	3
2012	8,091	0	26,833	0	4,671	0	747,386	2,040	953	3
2013	8,173	0	26,942	0	4,716	0	711,602	1,868	940	3
2014	7,989	0	26,388	0	4,698	0	703,881	1,842	942	3
2015	7,830	0	25,217	0	4,708	0	739,272	1,868	944	3
2016	7,774	0	28,499	0	4,555	0	729,710	1,983	927	3
2017	7,543	0	28,405	0	4,372	0	714,610	1,942	902	3

8

9

10

11 Table 3.33 at the next page shows the revenues at current rates vs revenues at proposed rates.

1 **Table 3.33:   Revenues at current and proposed rates**

2 **Projected Revenues at Current Rates**

2010 Rates at 2017 Load

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
				Test Year Projected Revenue from Existing Variable Charges				
Residential	$0.0145	kWh	28929066	$419,471.46			$0.00	$419,471.46
General Service < 50 kW	$0.0137	kWh	11749297	$160,965.37			$0.00	$160,965.37
General Service > 50 to 4999 kW	$2.5331	kW	118024	$298,966.59	-0.60	69011	-$41,406.60	$257,559.99
Unmetered Scattered Load	$0.0099	kWh	149640	$1,481.43			$0.00	$1,481.43
Street Lighting	$7.2483	kW	3007	$21,798.10			$0.00	$21,798.10
Total Variable Revenue			**40,949,034**	**$902,682.95**	**-0.6**	69011	-$41,406.60	$861,276.35

2010 Rates at 2017 Load

Customer Class Name	Fixed Rate	Customers (Connections)	Fixed Charge Revenue	Variable Revenue	TOTAL	% Fixed Revenue	% Variable Revenue	% Total Revenue
			Test Year Projected Revenue from Proposed Fixed Charges					
Residential	$13.9700	3,835	$642,897.32	$419,471.46	$1,062,368.78	60.52%	39.48%	57.17%
General Service < 50 kW	$31.2500	414	$155,115.41	$160,965.37	$316,080.78	49.07%	50.93%	17.01%
General Service > 50 to 4999 kW	$189.2700	61	$138,545.64	$257,559.99	$396,105.63	34.98%	65.02%	21.32%
Unmetered Scattered Load	$43.6300	34	$17,919.97	$1,481.43	$19,401.40	92.36%	7.64%	1.04%
Street Lighting	$2.9500	1,199	$42,455.50	$21,798.10	$64,253.60	66.07%	33.93%	3.46%
Total Fixed Revenue		**5,543**	**$996,933.85**	**$861,276.35**	**$1,858,210.19**			

Projected Revenues at Proposed Rates

2017 Rates at 2017 Load

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
				Test Year Projected Revenue from Existing Variable Charges				
Residential	$0.0140	kWh	28929066	$404,332.56			$0.00	$404,332.56
General Service < 50 kW	$0.0180	kWh	11749297	$211,960.16			$0.00	$211,960.16
General Service > 50 to 4999 kW	$3.1921	kW	118024	$376,745.59	-0.60	69011	-$41,406.60	$335,338.99
Unmetered Scattered Load	$0.0089	kWh	149640	$1,327.16			$0.00	$1,327.16
Street Lighting	$6.9248	kW	3007	$20,825.11			$0.00	$20,825.11
Total Variable Revenue			**40,949,034**	**$1,015,190.59**	**-0.6**	69011	-$41,406.60	$973,783.99

2017 Rates at 2017 Load

Customer Class Name	Fixed Rate	Customers (Connections)	Fixed Charge Revenue	Variable Revenue	TOTAL	% Fixed Revenue	% Variable Revenue	% Total Revenue
			Test Year Projected Revenue from Proposed Fixed Charges					
Residential	$17.9100	3,835	$824,215.54	$404,332.56	$1,228,548.10	67.09%	32.91%	57.18%
General Service < 50 kW	$31.2500	414	$155,115.41	$211,960.16	$367,075.57	42.26%	57.74%	17.09%
General Service > 50 to 4999 kW	$189.2700	61	$138,545.64	$335,338.99	$473,884.63	29.24%	70.76%	22.06%
Unmetered Scattered Load	$39.6200	34	$16,272.96	$1,327.16	$17,600.12	92.46%	7.54%	0.82%
Street Lighting	$2.8200	1,199	$40,584.58	$20,825.11	$61,409.69	66.09%	33.91%	2.86%
Total Fixed Revenue		**5,543**	**$1,174,734.13**	**$973,783.99**	**$2,148,518.12**			

1 Other Revenues

2 **Ex 3/Tab 4/Sch.1 - Overview of Other Revenue**

3

4 Other Distribution Revenues are revenues that are distribution related but are sourced from

5 means other than distribution rates. For this reason, other revenues are deducted from RHI's

6 proposed revenue requirement. Further details on the derivation of the Revenue Requirement is

7 presented at Exhibit 6.

8

9 Other Distribution Revenues includes items such as:

10 • Specific Service Charges

11 • Late Payment Charges

12 • Other Distribution Revenues

13 • Other Income and Expenses

14 RHI is proposing one change to the Microfit Service Charges as explained in Ex. 3/Tab 4/Sch. 3.

15 **OEB Appendix 2-H Other Operating Revenues**

16 A detailed breakdown by USoA account is shown in Table 3.34 - OEB Appendix 2-H presented

17 at the next page. Year over year variance analysis follow at Ex.3/Tab 4/Sch.2 - Other Revenue

18 Variance Analysis.

19

	Reporting Basis	CGAAP	CGAAP	CGAAP	CGAAP	CGAAP	CGAAP	MIFRS	CGAAP	CGAAP
		2010	2010	2011	2012	2013	2014	2015	2016	2017
	USoA Description	**Board Approved**								
4235	**4235-Miscellaneous Service Revenues**	-$20,325	-$15,945	-$26,323	-$24,522	-$19,080	-$18,017	-$18,198	-$18,199	-$18,500
4225	**4225-Late Payment Charges**	-$31,200	-$24,841	-$28,301	-$20,988	-$21,437	-$21,456	-$18,986	-$18,991	-$20,000
4082	4082-Retail Services Revenues	$0	$0	$0	-$4,446	-$4,300	-$4,592	-$4,733	-$4,732	-$5,000
4084	4084-Service Transaction Requests (STR) Revenues	$0	$0	$0	-$58	-$58	-$39	-$45	-$45	-$50
4086	4086-SSS Administration Revenue	-$12,500	-$11,610	-$11,707	-$12,040	-$12,191	-$12,322	-$12,352	-$12,374	-$12,500
4205	4205-Interdepartmental Rents	$0	$0	$0	$0	$0	$0	$0	$0	$0
4210	4210-Rent from Electric Property	-$38,402	-$35,033	-$35,033	-$38,033	-$35,033	-$38,709	-$37,492	-$37,494	-$38,000
4245	4245-Government Assistance Directly Credited to Income	$0	$0	$0	$0	-$278	-$556	-$818	-$800	-$800
4305	4305-Regulatory Debits	$0	$0	$0	$0	$183,938	$163,528	$172,388	$172,500	$0
4324	4324-Special Purpose Charge Recovery	$0	-$3,928	$0	$0	$0	$0	$0	$0	$0
4325	4325-Revenues from Merchandise Jobbing, Etc.	-$11,500	-$6,785	-$8,599	-$7,569	-$6,726	-$13,639	-$5,195	-$6,177	-$7,000
4355	4355-Gain on Disposition of Utility and Other Property	-$3,500	$0	$0	$0	$0	$0	-$398	-$67,674	$0
4360	4360-Loss on Disposition of Utility and Other Property	$0	$0	$0	$0	$6,455	$12,269	$11,107	$10,000	$10,000
4375	4375-Revenues from Non-Utility Operations	-$10,600	-$11,527	-$10,380	-$7,673	-$10,539	-$7,123	-$23,280	-$6,909	-$8,000
4390	4390-Miscellaneous Non-Operating Income	-$3,500	-$14,117	-$4,990	-$3,685	-$3,336	-$3,500	-$3,615	-$3,600	-$3,700
4405	4405-Interest and Dividend Income	-$10,000	-$19,380	-$35,113	-$33,722	-$29,067	-$23,489	-$16,348	-$11,820	-$4,000
	Total	-$141,527	-$143,166	-$160,446	-$152,737	$48,347	$32,353	$42,036	-$6,315	-$107,550
	Specific Service Charges	-$20,325	-$15,945	-$26,323	-$24,522	-$19,080	-$18,017	-$18,198	-$18,199	-$18,500
	Late Payment Charges	-$31,200	-$24,841	-$28,301	-$20,988	-$21,437	-$21,456	-$18,986	-$18,991	-$20,000
	Other Distribution/Operating Revenues	-$50,902	-$46,643	-$46,740	-$54,577	-$51,861	-$56,219	-$55,439	-$55,445	-$56,350
	Other Income or Deductions	-$39,100	-$55,737	-$59,082	-$52,650	$140,725	$128,044	$134,659	$86,320	-$12,700
	Total	-$141,527	-$143,166	-$160,446	-$152,737	$48,347	$32,353	$42,036	-$6,315	-$107,550

4405 4405-Interest and Dividend Income

Account 4405 - Interest and Dividend Income	2010 BA	2010	2011	2012	2013	2014	2015	2016	2017
		Actual	**Actual**	**Actual**	**Actual**	**Actual**	**Actual**	**Bridge**	**Test**
Reporting Basis		**CGAAP**	**CGAAP**	**CGAAP**	**CGAAP**	**CGAAP**	**MIFRS**	**CGAAP**	**CGAAP**
Regulatory Interest Income		$ 5,285	$ 14,130	$ 16,210	$ 17,117	$ 17,457	$ 11,457	$ 7,860	
Interest on investments									
Interest on Bank Balances		$14,096	$20,984	$17,512	$11,950	$6,032	$4,891	$3,960	$4,000
Total		$19,380	$35,113	$33,722	$29,067	$23,489	$16,348	$11,820	$4,000
Per T/B		19,380	35,113	33,722	29,067	23,489	16,348	11,820	4,000
In Balance		0	0	0	0	0	- 0	-	-

1   **Ex.3/Tab 4/Sch.2 - Other Revenue Variance Analysis**

2

3   Table 3.35 to 3.39 below presents year over year variances of other operating revenues:

4

5   **Table 3.35: Variance Analysis of Other Operating Revenues**

6   **2010 BA - 2010**

7

Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
	2010	2010	$	%
USoA Description	Board Approved			
4235-Miscellaneous Service Revenues	-$20,325	-$15,945	$4,380	21.55%
4225-Late Payment Charges	-$31,200	-$24,841	$6,359	20.38%
4082-Retail Services Revenues	$0	$0	$0	
4084-Service Transaction Requests (STR) Revenues	$0	$0	$0	
4086-SSS Administration Revenue	-$12,500	-$11,610	$890	7.12%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$38,402	-$35,033	$3,369	8.77%
4245-Government Assistance Directly Credited to Income	$0	$0	$0	
4305-Regulatory Debits	$0	$0	$0	
4324-Special Purpose Charge Recovery	$0	-$3,928	-$3,928	
4325-Revenues from Merchandise Jobbing, Etc.	-$11,500	-$6,785	$4,715	41.00%
4355-Gain on Disposition of Utility and Other Property	-$3,500	$0	$3,500	100.00%
4360-Loss on Disposition of Utility and Other Property	$0	$0	$0	
4375-Revenues from Non-Utility Operations	-$10,600	-$11,527	-$927	8.74%
4390-Miscellaneous Non-Operating Income	-$3,500	-$14,117	-$10,617	303.35%
4405-Interest and Dividend Income	-$10,000	-$19,380	-$9,380	93.80%
Total	-$141,527	-$143,166	-$1,639	$0

Specific Service Charges	-$20,325	-$15,945	$4,380	21.55%
Late Payment Charges	-$31,200	-$24,841	$6,359	20.38%
Other Distribution/Operating Revenues	-$50,902	-$46,643	$4,259	8.37%
Other Income or Deductions	-$39,100	-$55,737	-$16,637	42.55%
Total	-$141,527	-$143,166	-$1,639	1.16%

8

9   The variance between the 2010 Board Approved Other Operating revenue and actual reflects

10 an overall slight difference of $1,639 or 1.16%. Account #4390 reflects an increase of $10,617.

11 This account is used to record our revenues from scrap sales. In 2010 a large amount of scrap

12 wire was removed and sold for scrap explaining the large increase over the budget. Account

13 #4405, Interest and Dividend income shows an increase of $9,380, which represents more

14 interest earned on the bank balance than forecasted. These two increases were offset by

15 reduced miscellaneous service revenues, late payment charges, and revenues from jobbing.

16

Table 3.36: Variance Analysis of Other Operating Revenues

2010 - 2011

Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
	2010	**2011**	**$**	**%**
USoA Description				
4235-Miscellaneous Service Revenues	-$15,945	-$26,323	-$10,378	65.09%
4225-Late Payment Charges	-$24,841	-$28,301	-$3,460	13.93%
4082-Retail Services Revenues	$0	$0	$0	
4084-Service Transaction Requests (STR) Revenues	$0	$0	$0	
4086-SSS Administration Revenue	-$11,610	-$11,707	-$97	0.84%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$35,033	-$35,033	$0	0.00%
4245-Government Assistance Directly Credited to Income	$0	$0	$0	
4305-Regulatory Debits	$0	$0	$0	
4324-Special Purpose Charge Recovery	-$3,928	$0	$3,928	100.00%
4325-Revenues from Merchandise Jobbing, Etc.	-$6,785	-$8,599	-$1,814	26.73%
4355-Gain on Disposition of Utility and Other Property	$0	$0	$0	
4360-Loss on Disposition of Utility and Other Property	$0	$0	$0	
4375-Revenues from Non-Utility Operations	-$11,527	-$10,380	$1,147	9.95%
4390-Miscellaneous Non-Operating Income	-$14,117	-$4,990	$9,128	64.66%
4405-Interest and Dividend Income	-$19,380	-$35,113	-$15,733	81.18%
Total	-$143,166	-$160,446	-$17,280	12%

Specific Service Charges	-$15,945	-$26,323	-$10,378	65.09%
Late Payment Charges	-$24,841	-$28,301	-$3,460	13.93%
Other Distribution/Operating Revenues	-$46,643	-$46,740	-$97	0.21%
Other Income or Deductions	-$55,737	-$59,082	-$3,345	6.00%
Total	-$143,166	-$160,446	-$17,280	12.07%

The variances between 2010 and 2011 reflect very little change, a 12% increase or $17,280

overall. Account #4235, Miscellaneous Service Revenues, showed an increase of $10,378. This

was mainly due to the LLP recovery posted to this account representing $7,633 of the variance.

Account #4405, Interest and Dividend Income showed an increase of $15,733, due to increased

bank interest and carrying charges on deferral accounts.

1 **Table 3.37: Variance Analysis of Other Operating Revenues**

2 **2011 - 2012**

Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
	2011	**2012**	**$**	**%**
USoA Description				
4235-Miscellaneous Service Revenues	-$26,323	-$24,522	$1,801	6.84%
4225-Late Payment Charges	-$28,301	-$20,988	$7,313	25.84%
4082-Retail Services Revenues	$0	-$4,446	-$4,446	
4084-Service Transaction Requests (STR) Revenues	$0	-$58	-$58	
4086-SSS Administration Revenue	-$11,707	-$12,040	-$333	2.84%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$35,033	-$38,033	-$3,000	8.56%
4245-Government Assistance Directly Credited to Income	$0	$0	$0	
4305-Regulatory Debits	$0	$0	$0	
4324-Special Purpose Charge Recovery	$0	$0	$0	
4325-Revenues from Merchandise Jobbing, Etc.	-$8,599	-$7,569	$1,030	11.98%
4355-Gain on Disposition of Utility and Other Property	$0	$0	$0	
4360-Loss on Disposition of Utility and Other Property	$0	$0	$0	
4375-Revenues from Non-Utility Operations	-$10,380	-$7,673	$2,707	26.08%
4390-Miscellaneous Non-Operating Income	-$4,990	-$3,685	$1,305	26.15%
4405-Interest and Dividend Income	-$35,113	-$33,722	$1,391	3.96%
Total	-$160,446	-$152,737	$7,709	5%

Specific Service Charges	-$26,323	-$24,522	$1,801	6.84%
Late Payment Charges	-$28,301	-$20,988	$7,313	25.84%
Other Distribution/Operating Revenues	-$46,740	-$54,577	-$7,837	16.77%
Other Income or Deductions	-$59,082	-$52,650	$6,432	10.89%
Total	-$160,446	-$152,737	$7,709	4.80%

3

4 2011 to 2012 - Variances between 2011 and 2012 once again showed very little change, a

5 decrease of 4.8%, or $7,709 overall.

6

7

1 **Table 3.38: Variance Analysis of Other Operating Revenues**

2 **2012 - 2013**

Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
	2012	**2013**	**$**	**%**
USoA Description				
4235-Miscellaneous Service Revenues	-$24,522	-$19,080	$5,442	22.19%
4225-Late Payment Charges	-$20,988	-$21,437	-$449	2.14%
4082-Retail Services Revenues	-$4,446	-$4,300	$146	3.28%
4084-Service Transaction Requests (STR) Revenues	-$58	-$58	$0	0.43%
4086-SSS Administration Revenue	-$12,040	-$12,191	-$152	1.26%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$38,033	-$35,033	$3,000	7.89%
4245-Government Assistance Directly Credited to Income	$0	-$278	-$278	
4305-Regulatory Debits	$0	$183,938	$183,938	
4324-Special Purpose Charge Recovery	$0	$0	$0	
4325-Revenues from Merchandise Jobbing, Etc.	-$7,569	-$6,726	$843	11.14%
4355-Gain on Disposition of Utility and Other Property	$0	$0	$0	
4360-Loss on Disposition of Utility and Other Property	$0	$6,455	$6,455	
4375-Revenues from Non-Utility Operations	-$7,673	-$10,539	-$2,865	37.34%
4390-Miscellaneous Non-Operating Income	-$3,685	-$3,336	$350	9.48%
4405-Interest and Dividend Income	-$33,722	-$29,067	$4,655	13.80%
Total	-$152,737	$48,347	$201,084	132%

	CGAAP 2012	CGAAP 2013	Var Analysis $	Var Analysis %
Specific Service Charges	-$24,522	-$19,080	$5,442	22.19%
Late Payment Charges	-$20,988	-$21,437	-$449	2.14%
Other Distribution/Operating Revenues	-$54,577	-$51,861	$2,716	4.98%
Other Income or Deductions	-$52,650	$140,725	$193,375	367.29%
Total	-$152,737	$48,347	$201,084	131.65%

3

4 2012 to 2013 - Balances in the Other revenue accounts for 2012 and 2013 are very

5 comparable. Account #4305, Regulatory Debit, is the one major change. The regulatory debit

6 account represents the difference in depreciation caused by the 2013 accounting policy change,

7 extending the useful lives for some property, plant and equipment assets. If this account

8 balance total of $183,938 was removed from the overall variance, the new variance would

9 reflect a decrease in other revenues of $17,146 or 11.2%. The three main contributors to the

10 decrease are: Account #4235, Miscellaneous Service Revenues reflecting a decrease of $5,442

11 caused from the LLP recovery ending in 2012 representing $6,076 of the decrease for 2013;

12 Account #4360 - Loss on Disposition reflecting a $6,455 loss on the removal of distribution

13 assets during the year; and account #4405, Interest and Dividend Income, reflecting a decrease

14 of $4,655 from less interest earned on the bank balance than in the prior year.

1   **Table 3.39: Variance Analysis of Other Operating Revenues**

2   **2013-2014**

Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
	2013	2014	$	%
USoA Description				
4235-Miscellaneous Service Revenues	-$19,080	-$18,017	$1,063	5.57%
4225-Late Payment Charges	-$21,437	-$21,456	-$19	0.09%
4082-Retail Services Revenues	-$4,300	-$4,592	-$292	6.79%
4084-Service Transaction Requests (STR) Revenues	-$58	-$39	$19	33.19%
4086-SSS Administration Revenue	-$12,191	-$12,322	-$131	1.07%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$35,033	-$38,709	-$3,676	10.49%
4245-Government Assistance Directly Credited to Income	-$278	-$556	-$278	100.00%
4305-Regulatory Debits	$183,938	$163,528	-$20,410	11.10%
4324-Special Purpose Charge Recovery	$0	$0	$0	
4325-Revenues from Merchandise Jobbing, Etc.	-$6,726	-$13,639	-$6,913	102.79%
4355-Gain on Disposition of Utility and Other Property	$0	$0	$0	
4360-Loss on Disposition of Utility and Other Property	$6,455	$12,269	$5,815	90.09%
4375-Revenues from Non-Utility Operations	-$10,539	-$7,123	$3,415	32.41%
4390-Miscellaneous Non-Operating Income	-$3,336	-$3,500	-$165	4.94%
4405-Interest and Dividend Income	-$29,067	-$23,489	$5,578	19.19%
Total	$48,347	$32,353	-$15,994	33%

Specific Service Charges	-$19,080	-$18,017	$1,063	5.57%
Late Payment Charges	-$21,437	-$21,456	-$19	0.09%
Other Distribution/Operating Revenues	-$51,861	-$56,219	-$4,358	8.40%
Other Income or Deductions	$140,725	$128,044	-$12,681	9.01%
Total	$48,347	$32,353	-$15,994	33.08%

3

4   2013 to 2014 - Balances in Other Revenues are again, very comparable reflecting an increase

5   of 33% or $15,994 from prior year. Account #4305, Regulatory Debit used to record the

6   difference in depreciation expense (caused by the change in asset useful lives) represents the

7   majority of the year over year change. The debit decreased by $20,410 causing an overall

8   increase to other income. Details on the difference in depreciation calculations can be found in

9   in Exhibit 2. 2014 is also reflecting a slight increase in outside jobbing - Account #4325 showing

10   an increase of $6,913 over prior year. These two increases are offset by the increase in account

11   #4360 Loss on disposition of utility property - +$5,815, caused from the removal of distribution

12   assets during the year and Account #4405, Interest and Dividend income, as the bank balance

13   continues to decrease earning $5,578 less in interest income.

1   **Table 3.40: Variance Analysis of Other Operating Revenues**

2   **2014 - 2015**

Reporting Basis	CGAAP	MIFRS	Var Analysis	Var Analysis
	2014	**2015**	**$**	**%**
USoA Description				
4235-Miscellaneous Service Revenues	-$18,017	-$18,198	-$181	1.00%
4225-Late Payment Charges	-$21,456	-$18,986	$2,470	11.51%
4082-Retail Services Revenues	-$4,592	-$4,733	-$141	3.07%
4084-Service Transaction Requests (STR) Revenues	-$39	-$45	-$6	15.48%
4086-SSS Administration Revenue	-$12,322	-$12,352	-$30	0.24%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$38,709	-$37,492	$1,218	3.15%
4245-Government Assistance Directly Credited to Income	-$556	-$818	-$261	46.98%
4305-Regulatory Debits	$163,528	$172,388	$8,860	5.42%
4324-Special Purpose Charge Recovery	$0	$0	$0	
4325-Revenues from Merchandise Jobbing, Etc.	-$13,639	-$5,195	$8,444	61.91%
4355-Gain on Disposition of Utility and Other Property	$0	-$398	-$398	
4360-Loss on Disposition of Utility and Other Property	$12,269	$11,107	-$1,163	9.48%
4375-Revenues from Non-Utility Operations	-$7,123	-$23,280	-$16,156	226.81%
4390-Miscellaneous Non-Operating Income	-$3,500	-$3,615	-$115	3.29%
4405-Interest and Dividend Income	-$23,489	-$16,348	$7,142	30.40%
Total	$32,353	$42,036	$9,683	30%

Specific Service Charges	-$18,017	-$18,198	-$181	1.00%
Late Payment Charges	-$21,456	-$18,986	$2,470	11.51%
Other Distribution/Operating Revenues	-$56,219	-$55,439	$780	1.39%
Other Income or Deductions	$128,044	$134,659	$6,614	5.17%
Total	$32,353	$42,036	$9,683	29.93%

3

4   2014 to 2015 - The Other Revenues variance reflects a decrease of $9,683 or 29.9% overall.

5   Account #4375, Revenues from Non-Utility Operations shows an increase of $16,156, which

6   represents the 2011-2014 CDM performance incentive payment or $17,302 being received. The

7   accounts causing the overall decrease are: #4405, Interest and Dividend Income - reflecting a

8   decrease of $7,142 caused by reduced bank interest and carrying charges on the DVA

9   balances; Outside Jobbing #4325 reducing by $8,444 from the prior year; and the Regulatory

10   Debit #4305 increasing by $8,860 from prior year.

1   **Table 3.41: Variance Analysis of Other Operating Revenues**

2   **2015 - 2016**

Reporting Basis	MIFRS	CGAAP	Var Analysis	Var Analysis
	2015	**2016**	**$**	**%**
USoA Description				
4235-Miscellaneous Service Revenues	-$18,198	-$18,199	-$1	0.01%
4225-Late Payment Charges	-$18,986	-$18,991	-$5	0.03%
4082-Retail Services Revenues	-$4,733	-$4,732	$1	0.02%
4084-Service Transaction Requests (STR) Revenues	-$45	-$45	$0	0.56%
4086-SSS Administration Revenue	-$12,352	-$12,374	-$22	0.18%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$37,492	-$37,494	-$2	0.01%
4245-Government Assistance Directly Credited to Income	-$818	-$800	$18	2.18%
4305-Regulatory Debits	$172,388	$172,500	$112	0.06%
4324-Special Purpose Charge Recovery	$0	$0	$0	
4325-Revenues from Merchandise Jobbing, Etc.	-$5,195	-$6,177	-$982	18.90%
4355-Gain on Disposition of Utility and Other Property	-$398	-$67,674	-$67,276	16893.70%
4360-Loss on Disposition of Utility and Other Property	$11,107	$10,000	-$1,107	9.96%
4375-Revenues from Non-Utility Operations	-$23,280	-$6,909	$16,371	70.32%
4390-Miscellaneous Non-Operating Income	-$3,615	-$3,600	$15	0.43%
4405-Interest and Dividend Income	-$16,348	-$11,820	$4,528	27.70%
Total	$42,036	-$6,315	-$48,351	115.02%

	MIFRS	CGAAP	Var Analysis	Var Analysis
Specific Service Charges	-$18,198	-$18,199	-$1	0.01%
Late Payment Charges	-$18,986	-$18,991	-$5	0.03%
Other Distribution/Operating Revenues	-$55,439	-$55,445	-$6	0.01%
Other Income or Deductions	$134,659	$86,320	-$48,339	35.90%
Total	$42,036	-$6,315	-$48,351	115.02%

3

4   The forecast for the 2016 Other revenues reflects an increase of $48,351 overall. All the

5   accounts are very comparable with the exception of three. Account #4355 Gain on Disposition

6   of Utility Property reflects an increase of $67,276. RHI has calculated a gain on the sale of the

7   old office building as $67K. The property was listed in 2015. This increase was offset by the

8   removal of the 2015 CDM bonus of $17K in account 4375, and account #4405, Interest and

9   Dividend Income continues to decrease as the bank balances decreases.

10

1 **Table 3.42: Variance Analysis of Other Operating Revenues**

2 **2016 - 2017**

Reporting Basis	CGAAP	CGAAP	Var Analysis	Var Analysis
	2016	**2017**	**$**	**%**
USoA Description				
4235-Miscellaneous Service Revenues	-$18,199	-$18,500	-$301	1.65%
4225-Late Payment Charges	-$18,991	-$20,000	-$1,009	5.31%
4082-Retail Services Revenues	-$4,732	-$5,000	-$268	5.66%
4084-Service Transaction Requests (STR) Revenues	-$45	-$50	-$5	11.11%
4086-SSS Administration Revenue	-$12,374	-$12,500	-$126	1.02%
4205-Interdepartmental Rents	$0	$0	$0	
4210-Rent from Electric Property	-$37,494	-$38,000	-$506	1.35%
4245-Government Assistance Directly Credited to Income	-$800	-$800	$0	0.00%
4305-Regulatory Debits	$172,500	$0	-$172,500	100.00%
4324-Special Purpose Charge Recovery	$0	$0	$0	
4325-Revenues from Merchandise Jobbing, Etc.	-$6,177	-$7,000	-$823	13.32%
4355-Gain on Disposition of Utility and Other Property	-$67,674	$0	$67,674	100.00%
4360-Loss on Disposition of Utility and Other Property	$10,000	$10,000	$0	0.00%
4375-Revenues from Non-Utility Operations	-$6,909	-$8,000	-$1,091	15.79%
4390-Miscellaneous Non-Operating Income	-$3,600	-$3,700	-$100	2.78%
4405-Interest and Dividend Income	-$11,820	-$4,000	$7,820	66.16%
Total	-$6,315	-$107,550	-$101,235	1603%

	CGAAP 2016	CGAAP 2017	Var $	Var %
Specific Service Charges	-$18,199	-$18,500	-$301	1.65%
Late Payment Charges	-$18,991	-$20,000	-$1,009	5.31%
Other Distribution/Operating Revenues	-$55,445	-$56,350	-$905	1.63%
Other Income or Deductions	$86,320	-$12,700	-$99,020	114.71%
Total	-$6,315	-$107,550	-$101,235	1603.09%

3

4 The forecast for the 2017 Other Revenues reflects an increase of $101K. The major change is

5 the removal of the account balance in #4305, Regulatory Debit as RHI rates will now be set with

6 the new extended useful lives of asset categories, and reduced depreciation expense. This

7 account will no longer be necessary to track the difference in depreciation expense and

8 represents $172K of the 2017 variance. This is offset by the removal of the balance in account

9 #4355, Gain on Disposition of Utility and Other Property, as RHI expects the old office building

10 to sell in 2016, and therefore the 2016 gain of $67K is removed for the 2017 forecast. Account

11 #4405, Interest and Dividend Income is forecast to be $7,820 lower than prior year. RHI has

12 only included an estimate for bank interest and did not include carrying charges on the DVA

13 accounts in the 2017 forecast.

14

1   **Ex. 3/Tab 4/Sch. 3 – Proposed Specific Service Charges**

2

3   RHI is proposing no changes to the current specific services charges except for the microFIT

4   service charge. RHI incurs a $10.00 monthly fee per microFIT meter point from RHI's vendor

5   Utilismart and would like to pass this charge onto its microFIT customers. This increase in the

6   customer charge from $5.40 to $10.00 was also agreed to in St. Thomas Energy Inc. (EB-2014-

7   0113) Cost of Service Application.

8   **Ex. 3/Tab 4/Sch. 4 – Revenue from affiliate transactions, shared services,**

9   **corporate cost allocation.**

10

11 RHI is affiliated to Renfrew Power Generation Inc. by common ownership. The company

12 structure is illustrated at Ex. 1/Tab5/Sch.4.

13 There are no shared services or allocated costs between RHI and its affiliate. Transactions with

14 its affiliate are limited to the services described below which are all invoiced as services are

15 rendered based on market-based methodology.

16 RHI provides streetlight and traffic light maintenance services to Renfrew Power Generation

17 Inc., using the market-based pricing methodology. Contract work is charged using fully allocated

18 costs plus a rate of return. Fully allocated costs include labour plus payroll burden, materials,

19 and vehicle burden costs. This is outlined in the most current Services Agreement between RHI

20 and Renfrew Power Generation which came into effect on March 1, 2016. This agreement is

21 provided in the Exhibit 4 appendices. The mark-up (rate of return) is posted as other income in

22 account #4375 – Revenues from Non-Utility Operations, and has remained fairly consistent as

23 summarized below:

Revenues from Non-Utility Operations									
	2010 BA	2010	2011	2012	2013	2014	2015	2016	2017
#4375	10,600	11,527	10,380	7,673	10,539	7,123	5,978	6,909	8,000

24

25