Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 1
Schedule 1
Page 1 of 3

2017 OPERATING REVENUE SUMMARY

1. The purpose of this evidence is to present the 2017 Updated Revenue Forecast as compared to the 2016 Board Approved and 2017 Board Approved Placeholder revenue amounts.

2. Table 1 shows the respective 2016 Board Approved, 2017 Board Approved Placeholder, and 2017 Updated Forecasts by operating revenue component.

Table 1
COMPARISON OF UTILITY OPERATING REVENUE

Item No.		Col. 1 EB-2015-0114 2016 Board Approved ($Millions)	Col. 2 EB-2012-0459 2017 Board Approved (placeholder) ($Millions)	Col. 3 2017 Updated Forecast ($Millions)
1	Gas Sales	2,624.8	2,480.3	2,436.9
2	Transportation of Gas	279.7	211.1	281.7
3	Transmission, Compression and Storage (inc. Rate 332)	6.7	1.8	6.7
4	Other Revenue	42.7	42.7	42.7
5	Other Income	0.1	0.1	0.1
6	Total Operating Revenue	2,954.0	2,736.0	2,768.1

3. The 2017 Updated Revenue Forecast of $2,768.1 million is also shown at Exhibit C3, Tab 1, Schedule 1. This represents a $32.1 million increase over the 2017 Placeholder of $2,736.0 million.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 1
Schedule 1
Page 2 of 3

4. The variance is explained by revenue category in the following paragraphs, as well as at page 2 of Exhibit C3, Tab 1, Schedule 1.

Gas Sales and Transportation of Gas Revenues

5. Gas sales and transportation of gas revenues for the 2017 Board Approved Placeholder used the Board-approved commodity rates in place in 2013 and the 2017 gas volume budget. Specifically, the 2017 Board Approved Placeholder was developed on the basis of EB-2013-0045 commodity rates set out in the April 2013 QRAM and the 2013 final rates that can be found in the Board Decision and Order for EB-2011-0354. The 2017 Updated Forecast Gas Sales and transportation of Gas Revenues are based on the EB-2016-0184 commodity rates set out in the July 2016 QRAM and the 2016 Final Rate Order in EB-2015-0114. Those updated commodity rates are applied to the updated gas volume forecast set out within this rate adjustment application.

6. The evidence in support of the Company's 2017 updated gas volume forecast is set out within Exhibit C1, Tab 2, Schedule 1 and the C2 series of exhibits, with further numeric details in the C3 series of exhibits.

7. The increase in gas sales and transportation of gas revenues of $32.1 million from the 2017 Board Approved Placeholder to the 2017 Updated Forecast is primarily due to higher volumes forecasted in the 2017 updated gas volume forecast.

8. A breakdown of the 2017 Updated Forecast and 2016 Board Approved Placeholder gas sales and transportation of gas revenues by rate class is provided within the C3 series of exhibits.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 1
Schedule 1
Page 3 of 3

<u>Transmission, Compression and Storage</u>

9. Transmission, Compression and Storage revenues for the 2017 Updated Forecast are also developed on the basis of the Final Rate Order in EB-2014-0276, resulting in a $4.9 million increase as compared to the 2017 Board Approved Placeholder.

<u>Other Operating Revenues</u>

10. Within the Board's EB-2012-0459 Decision with Reasons, Enbridge's Other Operating Revenues and Other Income were set at the level of $42.7 million and $0.1 million for each year from 2014 to 2018. Accordingly, there is no change in these amounts within the 2017 Updated Forecast.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 1 of 12
Plus Appendices

GAS VOLUME BUDGET

1. The purpose of this evidence is to present the 2017 forecast of volumes to reflect updated forecast assumptions as part of the annual adjustment for the 2017 Rates proceeding. The evidence describes the forecasting methodology and the key assumptions used to develop the volumes forecast for General Service customers and Contract Market customers. The 2017 volume forecasts have been prepared based on the approved methodologies applied in prior rate case applications, including the probability-weighted approach for potential new contract customers.

2. A summary of the 2017 volumes forecast is provided below. Further rate class detail and explanation for all gas volumes and related items are provided at Exhibit C3, Tab 2, Schedule 3.

Table 1
Summary of Gas Sales and Transportation Volumes
(Volumes in $10^6 m^3$)

	2015 Actual	2016 Board-Approved Budget	2017 Budget
General Service Volumes	10 003.9	9 664.9	9 774.0
Contract Market Volumes	1 927.9	1 899.8	1 978.2
Total Volumes, Gas Sales and Transportation	11 931.8	11 564.7	11 752.2

3. Total customers are reported as the annual average of monthly actual or forecast customer numbers. This annual average customer methodology has been used to

Witnesses: R. Cheung
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 2 of 12
Plus Appendices

develop Board-Approved annual average customer numbers for more than ten years. Table 2 shows the annual average number of general service and contract market customers for the forecast year. The methodology used to develop the customer budget is described at Appendix B of this evidence.

Table 2
Summary of Total Average Number of Customers

	2015 Actual	2016 Board-Approved Budget	2017 Budget
General Service Customers	2 094 297	2 130 061	2 153 514
Contract Market Customers	384	376	410
Total Number of Customers (Average)	2 094 681	2 130 437	2 153 924

General Service Demand Forecast Methodology

4.   The General Service volume forecast is derived using the General Service customer budget and the normalized average use per customer forecast generated from the average use forecasting models.

5.   The average use forecasting models are regression models developed by the Company which are described at Exhibit C2, Tab 1, Schedule 3. The forecast incorporates economic assumptions from the Economic Outlook (Q2 2016) as shown at Exhibit C2, Tab 1, Schedule 1.

Witnesses: R. Cheung
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 3 of 12
Plus Appendices

6.   The major explanatory variables in the Rate 1 and Rate 6 models are heating degree days, vintage (Rate 1 only), employment, Ontario real gross domestic product, vacancy rates (Rate 6 only), real energy prices, and a time trend.   The impacts of Cap and Trade were not incrementally factored into the volumetric forecasts.[1] Annual econometric models are employed to model and quantify the impact of different variables on average use per customer. The vintage variable is constructed to reflect the impact that new homes, which are associated with more energy efficient gas equipment and enhanced building codes, have on average use. The time trend, along with the dynamic variable in the regression model, captures the historical actual average trend, conservation initiatives pursued by customers themselves or promoted by government programs and other historical impacts not reflected in the aforementioned driver variables.

7.   The forecast of average use per customer is generated based on weather-normalized volumes data. Normalization is the process that allows the Company to compare average use per customer absent any variations due to weather. The Company's weather normalization methodology, the description of which is included at page 11 of this evidence, has been approved by the Board and utilized for more than fifteen years.

8.   Consistent with previous rate cases, the Company continues to report the results that the models would have generated using the actual data for driver variables to compare results to the prior year's forecast. Rate 1 average in-sample forecast error using the regression models is 0.7%, and Rate 6 average in-sample absolute

---

[1] Note that if the implementation of Cap and Trade and the related increases in customer rates results in lower consumption, the impacts will be captured in the Average Use True-Up Variance Account (AUTUVA).

Witnesses: R. Cheung
                    M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 4 of 12
Plus Appendices

forecast error is 1.2% over the last 10 years[2]. Overall, the regression model continues to be a reliable predictor of General Service average use.
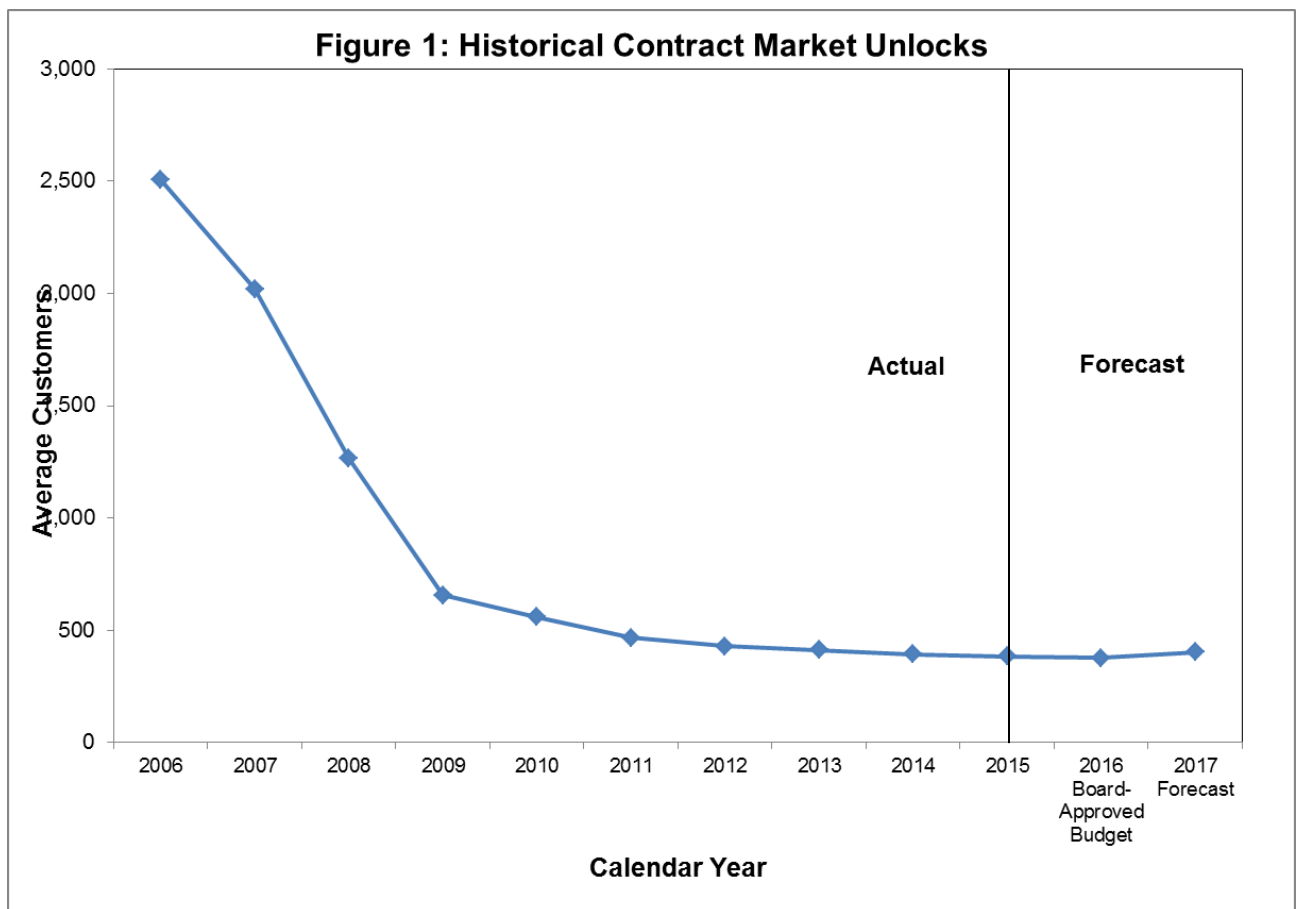
Contract Market Volume Forecast Methodology

9.   The Contract Market volume budget was generated using the established grassroots approach as well as the probability-weighted forecast approach for potential, new large-volume contract customers.

10.   At any given point in time, Enbridge is in conversation with new and existing customers to evaluate their gas service requirements. The traditional grassroots approach arrives at volume forecasts at the individual customer level through consultation between Account Executives ("AEs") and customers during the budget process. Specifically, the AEs review the contract attributes of each contract to ensure that customers can meet the contracted rate class minimum volume and load factor requirements. Current economic and industry conditions as well as budgeted degree days are factored into the budget determination. The same approach has been retained to forecast volumes for existing contract customers.

11.   For the purpose of establishing a probability-weighted methodology for potential contract customers, existing practices were leveraged. Over the years, as the AEs in the Key Accounts group have worked with numerous potential customers, they collectively devised a system of capturing the stages at which new contract customers' progress from the initial evaluation stage to ultimately signing a Large Volume Distribution Contract. Five stages or buckets are used to funnel projects from initial discussions through to energizing the pipeline. The probabilities or weights for each stage were assigned through conversations with the AEs who

---

[2] Please see Exhibit C2 Tab 1 Schedule 3, Tables 2 and 3 for other reported forecast errors. Average absolute variance is shown for Rate 1 and Rate 6 in Column 8 of both tables, respectively.

Witnesses: R. Cheung
                    M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 5 of 12
Plus Appendices

drew on actual experiences over the years, and were applied to the volumes that were forecast to be effective in the forecast year. For more details on the approach, please refer to EB-2014-0276, Exhibit C1, Tab 2, Schedule 1.

12. Based on the combined grassroots and probability-weighted approaches, Figure 1 below shows Contract Market unlocks forecasts for 2017, 2016 Board-Approved unlocks, as well as historical actual Contract Market unlocks from the last ten years.

Figure 1: Historical Contract Market Unlocks

Witnesses: R. Cheung
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 6 of 12
Plus Appendices

13. Approximately 2,000 Contract Market customers migrated to General Service from 2006 to 2010, which drove up average use per customer in Rate 6 over that period. With rate migration stabilizing in recent years, the number of projected Contract Market customers follows a relatively flat trend.

14. As a consequence of the implementation of the Natural Gas Electricity Interface Review ("NGEIR") in 2007, the Company experienced customer migration from bundled rate classes that bill distribution volumes volumetrically, reported in Table 1, to unbundled rate classes (e.g., Rate 125, Rate 300 Firm) that do not bill distribution volumes volumetrically. Unbundled customers incur monthly contract demand charges on contract volumes and generate fixed contract demand revenues. Table 3 below presents a summary of these contract demand volumes.

Table 3
Summary of Unbundled Customers Contract Demand Volumes
(Volumes in $10^6 m^3$)

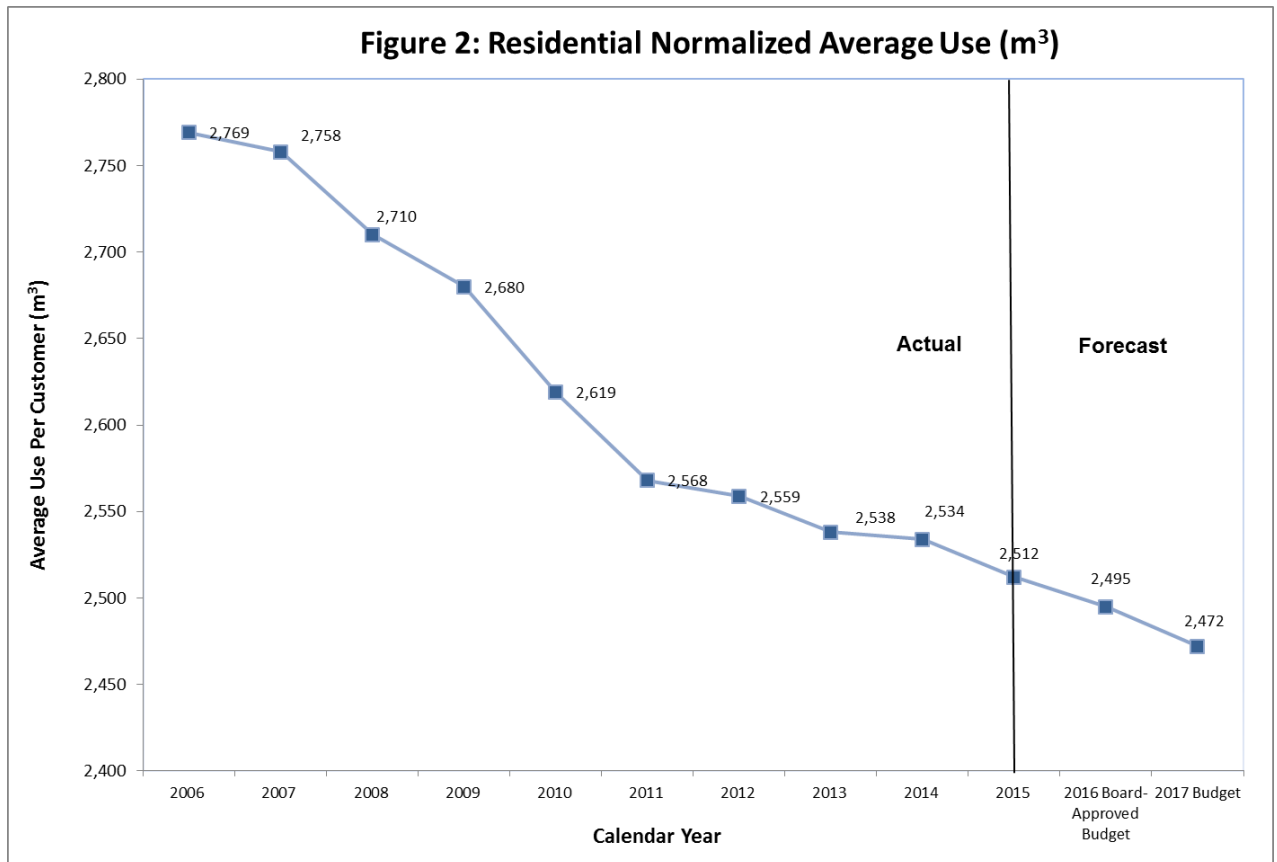|	2015 Actual	2016 Board-Approved Budget	2017 Budget
Total Contract Demand Volumes	119.3	119.4	119.4

2017 Volume Budget

15. Budget volumes are derived by incorporating heating degree day forecasts, average use forecasts, customer unlocks forecasts, as well as grassroots and

Witnesses: R. Cheung
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 7 of 12
Plus Appendices

probability-weighted contract market forecasts. The 2017 Budget volumes reflect the meter reading heating degree days forecast generated using approved degree day forecasting methodologies from the EB-2012-0459 Decision. The 2017 Budget is comprised of General Service volumes of 9,774.0 10^6m^3 and Contract Market volumes of 1,978.2 10^6m^3. A detailed breakdown of gas volumes by rate class is provided at Exhibit C3, Tab 2, Schedule 1. Monthly meter reading heating degree days are determined by combining the Gas Supply heating degree day forecasts with the billing schedules. Please refer to Exhibit C2, Tab 1, Schedule 2 for a detailed explanation of the derivation of the Company's 2017 heating degree day forecast.

16. Residential average use per customer has declined steadily over the period of 2006 through 2015, at an average rate of 1.1% per year. Appendix A of this evidence presents historical normalized actual and Board-Approved General Service average uses normalized to their respective Budget degree days (Table 1) or to 2017 Forecast degree days (Tables 2 and 3) to eliminate varying weather impacts and facilitate year-over-year comparison. Figure 2 depicts this trend using values from Table 2 in Appendix A.

Witnesses: R. Cheung
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 8 of 12
Plus Appendices

Figure 2: Residential Normalized Average Use (m³)

17. The current 2017 forecast, which incorporates the latest actual data up to 2015, calls for a continuation of the declining trend for Rate 1 average use per customer.

18. Figure 3 shows the normalized actual average use per customer for Rate 6 from 2006 to 2015 as well as the projections for 2016 to 2017 as detailed at Table 2 and Table 3 of Appendix A.

Witnesses: R. Cheung
                    M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 9 of 12
Plus Appendices

Figure 3: Rate 6 Normalized Average Use (m³)

In Fall 2006, cost savings have encouraged contract market customers to migrate to rate 6. Hence, average use started to increase

Data points (Average Use Per Customer, m³):
- 2006: 21,807
- 2007: 23,110
- 2008: 25,531
- 2009: 27,394
- 2010: 29,514
- 2011: 29,468
- 2012: 29,332
- 2013: 29,096
- 2014: 29,313
- 2015: 29,641
- 2016 Board-Approved Budget: 28,916
- 2017 Budget: 29,058

Actual / Forecast

Y-axis: Average Use Per Customer (m³)
X-axis: Calendar Year

19. As noted earlier, customer migration from Contract Market to General Service has resulted in a significant increase in Rate 6 average use per customer particularly from 2006 to 2010. Rate design changes which became effective April 2007 prompted much of this rate migration.

20. Over the more recent years, rate migration has stabilized and Rate 6 average use per customer has reflected a relatively flat trend. It is expected that Rate 6 average use per customer will increase slightly in 2017 compared to 2016 Board Approved Budget.

Witnesses: R. Cheung
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 10 of 12
Plus Appendices

<u>Comparison of Volumes: 2017 Budget versus 2016 Board-Approved Budget</u>

21. The 2017 Budget volumes reflect the Gas Supply heating degree days forecast for the Central Region of 3,639, an increase of 22 degree days compared to the 2016 Board Approved Budget level of 3,617.

22. As shown at Exhibit C3, Tab 2, Schedule 3, page 1, the 2017 Budget volumetric forecast of 11 752.2 10^6m^3 is 187.5 10^6m^3, or 1.6%, above the 2016 Board-Approved Budget of 11 564.7 10^6m^3. The increase is primarily attributable to customer growth, the higher degree days forecast, and higher volumes in the Contract Market. On a weather-normalized basis, the 2017 Budget volumes are forecast to be 130.6 10^6m^3 higher than the 2016 Budget as shown at Exhibit C3, Tab 2, Schedule 3, page 2. The volumetric increase on a normalized basis is made up of increases in General Service volumes of 53.5 10^6m^3 and in the Contract Market of 77.1 10^6m^3. The following paragraphs describe contributing factors to these volumetric changes.

23. Page 3 of the same schedule shows that the increase in General Service volumes of 53.5 10^6m^3, on a weather-normalized basis, is primarily due to net customer growth of 66.3 10^6m^3 (combined impact of new customers and lost customers), higher average use per customer in Rate 1 and Rate 6 totaling 34.0 10^6m^3, partially offset by net customer migration to Contract rates of 46.6 10^6m^3 (net transfers).

24. The 2017 Contract volume budget is expected to see an increase of 77.1 10^6m^3 compared to the 2016 Budget on a weather-normalized basis. The variance is mainly due to net customer migration of 46.6 10^6m^3 from General Service, higher usage of 20.5 10^6m^3, and net customer growth of 10.1 10^6m^3.

Witnesses: R. Cheung
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 11 of 12
Plus Appendices

Evaluation of Forecast Accuracy – Historical Normalized Actual vs. Board-Approved Budget

25. The key factor used to evaluate the accuracy of the General Service volumetric demand is the variance of normalized residential average use per customer. Table 1: General Service Average Use found at Appendix A of this exhibit illustrates the 10-Year history of Normalized Actual vs. Board-Approved volumes, where the average normalized percentage variance over the last 10 years is 0.4% for Rate 1 and 1.6% for Rate 6. These results support the view that the General Service average use forecasting methodology continues to be a reliable predictor for General Service average use.

26. For the Contract Market, customer migration has had a significant impact on forecast accuracy over the period from 2006 to 2010. In addition, Contract Market volumes are primarily driven by economic factors which, during that period, were particularly volatile. Table 4 at Appendix A (p. 5) of this evidence shows the 10-Year history of Normalized Actual vs. Board-Approved volumes for Contract Market customers to evaluate accuracy of total forecast volumes. Over the last 10 years, the average normalized percentage variance for contract customers is 0.8%. Of note, the variance is larger in the first five years than the latter five years as migration has tapered off.

Weather Normalization Methodology

27. The Company's weather normalization methodology has been approved by the Board and utilized for over fifteen years. Consistent with previous rate cases, this section explains the Board-Approved normalization methodology of eliminating the impact of weather when reporting actual consumption for all rate classes.

Witnesses: R. Cheung
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Page 12 of 12
Plus Appendices

28. General Service normalization is carried out at the revenue class level to homogenize gas usage within Rates 1 and 6 for six operating regions residing within three delivery areas in the franchise. The heat sensitive portion of consumption is isolated for each grouping using balance point degree days.

29. To derive normalized average use, total load per customer of a particular customer grouping is calculated by dividing the group's monthly consumption by the total monthly customers within the group to arrive at a representative average load. Baseload, which represents non-weather-sensitive load such as water heating, is then determined using the average of total consumption during non-weather-sensitive summer months (July and August). Heatload is the difference between total load per customer and baseload per customer. This heatload represents the heat-sensitive portion of consumption that is adjusted for normalized consumption. Actual Use per degree day is derived by dividing the heatload per customer by Actual Heating Degree Days. The Actual Use per degree day is then multiplied by the Budget Heating Degree Days to normalize each year to the same weather impact, thereby removing any variability. Consequently, total normalized average use per customer is defined as the sum of baseload use per customer and normalized heatload per customer.

30. For Contract Market customers, a similar process is followed to determine the actual baseload for each contract. Actual heatload is obtained by removing baseload and process load from total consumption, which is then adjusted to reflect normal weather. The actual volumes are also adjusted, where necessary, to the budgeted level of curtailment for interruptible customers.

Witnesses: R. Cheung
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix A
Page 1 of 5

GENERAL SERVICE AVERAGE USES
HISTORICAL NORMALIZED ACTUAL AND BOARD-APPROVED
<u>FISCAL AND CALENDAR YEARS</u>

1. To facilitate the comparison of average uses between Actual and Board-Approved values, as well as observe year-over-year trends, it is essential to normalize the weather impact by removing the variation that is caused by weather. The series of tables in this appendix provides historical comparisons of average use volumes for General Service and Contract Market classes.

2. Tables 1 to 3 show normalized General Service average uses, and Table 4 shows normalized total contract volumes. Actual average uses in Table 1 on the following page have been normalized to the corresponding Board-Approved degree days for the respective year. In contrast, the normalized average uses in Tables 2 and 3 are presented on a calendar-year basis where each year has been normalized to the 2017 forecast degree days. This alternative presentation is used to consistently eliminate to the same weather impact. In Table 4, the total contract volumes have been normalized to the corresponding Board-Approved degree days for each of the respective years.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix A
Page 2 of 5

TABLE 1
GENERAL SERVICE AVERAGE USE

Test Year	Rate Classes	Col. 1 Actual Normalized Average Use	Col. 2 Board-Approved Normalized Average Use	Col. 3 Variance Normalized Average Use	Col. 4 %Variance Normalized Average Use
2006	Rate 1	2,796	2,850	(54)	-1.9%
	Rate 6	22,272	21,999	273	1.2%
	Total General Service	4,444	4,438	6	0.1%
2007	Rate 1	2,726	2,687	39	1.5%
	Rate 6	22,783	21,010	1,773	8.4%
	Total General Service	4,412	4,200	212	5.0%
2008	Rate 1	2,636	2,647	(11)	-0.4%
	Rate 6	24,869	24,204	665	2.7%
	Total General Service	4,493	4,449	44	1.0%
2009	Rate 1	2,604	2,637	(33)	-1.3%
	Rate 6	27,281	28,165	(884)	-3.1%
	Total General Service	4,659	4,770	(111)	-2.3%
2010	Rate 1	2,579	2,622	(43)	-1.6%
	Rate 6	29,106	27,949	1,157	4.1%
	Total General Service	4,403	4,705	(302)	-6.4%
2011	Rate 1	2,594	2,643	(49)	-1.8%
	Rate 6	29,471	28,029	1,442	5.1%
	Total General Service	4,764	4,726	38	0.8%
2012	Rate 1	2,529	2,510	18	0.7%
	Rate 6	28,941	30,122	(1,182)	-3.9%
	Total General Service	4,642	4,715	(73)	-1.5%
2013	Rate 1	2,547	2,568	(22)	-0.8%
	Rate 6	29,878	29,878	(0)	0.0%
	Total General Service	4,665	4,719	(54)	-1.1%
2014	Rate 1	2,475	2,433	41	1.7%
	Rate 6	28,634	28,383	251	0.9%
	Total General Service	4,543	4,461	82	1.8%
2015	Rate 1	2,427	2,419	9	0.4%
	Rate 6	28,600	28,341	259	0.9%
	Total General Service	4,485	4,465	20	0.4%

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix A
Page 3 of 5

TABLE 2
GENERAL SERVICE
SYSTEM-WIDE TOTAL NORMALIZED AVERAGE USE*

		Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12
												2016 Board-Approved Budget	2017 Forecast
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
Residential		2,769	2,758	2,710	2,680	2,619	2,568	2,559	2,538	2,534	2,512	2,495	2,472
	Change		(11)	(48)	(30)	(61)	(51)	(9)	(21)	(4)	(22)	(17)	(23)
	% Change		-0.40%	-1.74%	-1.11%	-2.28%	-1.95%	-0.35%	-0.82%	-0.16%	-0.87%	-0.68%	-0.92%
Apartment		88,435	102,799	127,049	145,406	164,419	152,531	149,291	149,431	152,418	151,234	145,956	150,321
	Change		14,364	24,250	18,357	19,013	(11,888)	(3,240)	140	2,987	(1,184)	(5,278)	4,365
	% Change		16.24%	23.59%	14.45%	13.08%	-7.23%	-2.12%	0.09%	2.00%	-0.78%	-3.49%	2.99%
Commercial		17,280	17,742	18,423	19,078	19,706	19,858	20,026	19,785	19,837	20,374	19,945	19,866
	Change		462	681	655	628	152	168	(241)	52	537	(429)	(79)
	% Change		2.67%	3.84%	3.56%	3.29%	0.77%	0.85%	-1.20%	0.26%	2.71%	-2.11%	-0.40%
Industrial		56,460	61,303	75,491	89,219	107,899	109,203	106,657	108,220	111,361	111,201	109,843	113,715
	Change		4,843	14,188	13,728	18,680	1,304	(2,546)	1,563	3,141	(160)	(1,358)	3,872
	% Change		8.58%	23.14%	18.18%	20.94%	1.21%	-2.33%	1.47%	2.90%	-0.14%	-1.22%	3.53%

* All historical average uses are on a calendar-year basis and have been normalized to the 2017 Budget degree days.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix A
Page 4 of 5

TABLE 3
GENERAL SERVICE
SYSTEM-WIDE TOTAL NORMALIZED AVERAGE USE*

	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10	Col. 11	Col. 12
											2016 Board-Approved Budget	2017 Forecast
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
Rate 1	2,769	2,758	2,710	2,680	2,619	2,568	2,559	2,538	2,534	2,512	2,495	2,472
Change		(11)	(48)	(30)	(61)	(51)	9	(21)	(4)	(22)	(17)	(23)
% Change		-0.40%	-1.74%	-1.11%	-2.28%	-1.95%	-0.35%	-0.82%	-0.16%	-0.87%	-0.68%	-0.92%
Rate 6	21,807	23,110	25,531	27,394	29,514	29,468	29,332	29,096	29,313	29,641	28,916	29,058
Change		1,303	2,421	1,863	2,120	(46)	(136)	(236)	217	328	(725)	142
% Change		5.98%	10.48%	7.30%	7.74%	-0.16%	-0.46%	-0.80%	0.75%	1.12%	-2.45%	0.49%

* All historical average uses are on a calendar-year basis and have been normalized to the 2017 Budget degree days.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix A
Page 5 of 5

TABLE 4

CONTRACT CUSTOMERS' TOTAL NORMALIZED VOLUME

Test Year	Col. 1 Actual Normalized Consumption ($10^6 m^3$)	Col. 2 Board-Approved Normalized Consumption ($10^6 m^3$)	Col. 3 Variance Normalized Consumption (1-2)	Col. 4 %Variance Normalized Consumption (3/2)*100
2006	4,119.1	4,387.9	(268.8)	-6.1%
2007	3,739.8	4,134.3	(394.5)	-9.5%
2008	3,099.6	3,355.2	(255.6)	-7.6%
2009	2,191.4	2,316.6	(125.2)	-5.4%
2010	2,191.5	2,008.6	182.9	9.1%
2011	2,081.8	2,022.9	58.9	2.9%
2012	2,072.6	1,943.4	129.2	6.6%
2013	2,022.7	1,945.5	77.2	4.0%
2014	1,923.6	1,967.0	(43.4)	-2.2%
2015	1,913.5	1,916.2	(2.7)	-0.1%

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix B
Page 1 of 5

AVERAGE NUMBER OF CUSTOMERS

1.   The purpose of this exhibit is to present the forecast of the annual average number of customers underpinning the 2017 volume budget. The annual average customer methodology has been used by Enbridge to calculate Board-Approved annual average number of customers for more than ten years.

2.   The 2017 Customer Budget of 2,153,924 is forecast to be 23,487, or 1.1%, above the 2016 Board-Approved Budget of 2,130,437. A detailed breakdown of the number of customers by rate class is provided at Exhibit C3, Tab 2, Schedule 2. The increase in customers is primarily attributable to the customer additions in the 2017 Budget and the higher opening balance of customers from December 2015. Total customer additions are forecast at 31,297 for 2017 (Exhibit C2, Tab 1, Schedule 4). The customer additions forecast underpins the new customer volumes of 79.4 $10^6 m^3$ added between the 2017 Budget and 2016 Budget as shown at Exhibit C3, Tab 2, Schedule 3 (page 3, Column 6).

Underlying Forecast Methodology

3.   Consistent with previous rate proceedings, each year's customer count is reported as the annual average of monthly customer numbers. Every month, customer numbers are determined by the number of active meters (or unlock meters)[1]. As a result, each month's customer number is an aggregate sum of the total active meters for that particular month. Specifically, each year's annual average is calculated as follows:

---

[1] An unlock meter is counted as a customer whose gas meter is unlocked, allowing gas to flow through the meter to a premise.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix B
Page 2 of 5

Annual Average_Customers = (1/12)*(January_active_meters + February_active_meters + March_active_meters + April_ active_meters + May_ active_meters + June_ active_meters + July_ active_meters + August_ active_meters + September_ active_meters + October_ active_meters + November_ active_meters + December_ active_meters)

4. Consistent with the contract demand forecast methodology discussed in the Gas Volume Budget evidence, contract customer counts in the contract market are generated through the grassroots approach between account executives and customers (including the probability-weighted methodology for potential new customers). The approach for forecasting the total number of contract market customers is represented below:

forecast contract market customers = year end customers

+ forecast new customer additions

+ forecast replacement customer additions

- forecast lost customers

+ forecast transfer gains (i.e., customer migration from general service Rate 6 to contract market rate class)

– forecast transfer losses (i.e., customer migration from contract market rate class to general service Rate 6)

5. In the most simplistic sense, general service customers are forecast as follows:
   General Service customers = year-end customers

   + forecast new customers

   – forecast locked customers

   +/- forecast gains or losses.

   However, due to lags inherent in moving a customer addition to an unlocked customer, as well as variability in the timing of locked customers, lags impact the final number of unlocked customers. Regression analysis is used to enhance the

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix B
Page 3 of 5

objectivity of the forecast by leveraging model results using actual monthly data to predict the lags and the pattern of locked meters. Transfer gains or losses between contract rate class and general service Rate 6 continue to be obtained from account executives, and layered onto general service Rate 6 customers.

6.   There is always a time lag between when the service line is installed (that underpins capital expenditures and customer additions) and the first flow of gas which occurs when the customer moves into the premise and calls to have their meter unlocked by field staff. Only then does gas service commence and the customer's account (that underpins billed revenues and volumes) becomes activated. This time lag is challenging to predict. The Company has enhanced the forecast process by modeling historical lags and incorporating the results from the regression equations as part of its forecast of unlocks.

7.   Lock meters are defined as customers whose gas meters are locked and no gas is flowing through the meter to a premise. These can result from vacant premises (e.g., new construction, move-in/move out, bankruptcies, etc.), customers switching off gas to an alternate energy source, payment or credit reasons and seasonal usage. Unfavorable economic conditions (e.g., vacancy or bankruptcy) may lead to an increase in locked meters and this factor has been incorporated into the models.

8.   The 2017 Customer forecast was informed by the cumulation of the latest actual number of customers from 2015, expectations of year-end 2016 customer additions, 2017 forecast of housing starts, and the ensuing 2017 forecast of customer additions. As shown at Table 2, the 2015 Actual Total Customer count was 4,271 lower than the 2015 Board-Approved Budget which was in line with lower customer additions in 2015 compared to budget as shown at Table 1 below.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix B
Page 4 of 5

It is expected that 2016 variances will track similarly. These contributing factors were taken into account in the development of the 2017 Customer Budget.

Table 1 - Comparison of Customer Additions

2015 Customer Additions

Actual	Board-Approved Budget	Variance
31,533	34,536	(3,003)

Evaluation of Forecast Accuracy – Historical Actual vs. Board-Approved Budget

9. Historical Board-Approved customer numbers are set out in Table 2. The information for periods prior to 2006 reflect a fiscal year-end of September 30th, whereas the years starting from 2006 are calendar years.

10. Table 2 on the following page shows Historical Actual vs. Board-Approved customer numbers. The average percentage error variance over the history shown is approximately 0.1%.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C1
Tab 2
Schedule 1
Appendix B
Page 5 of 5

Table 2 - General Service and Contract Market Customers

	Col. 1	Col. 2	Col. 3	Col. 4
Test Year	Actual Customers	Board-Approved Customers	Variance Customers (1-2)	%Variance Customers (3/2)*100
1996	1,263,290	1,262,815	475	0.0%
1997	1,312,434	1,309,752	2,682	0.2%
1998	1,364,350	1,353,178	11,172	0.8%
1999	1,414,788	1,417,832	(3,044)	-0.2%
2000[a]	1,464,738	1,468,915	(4,177)	-0.3%
2001	1,519,039	1,514,710	4,329	0.3%
2002	1,566,710	1,565,017	1,693	0.1%
2003	1,622,016	1,615,037	6,979	0.4%
2004*	1,676,380	1,672,586	3,794	0.2%
2005[b]	1,724,716	1,718,766	5,950	0.3%
2006	1,782,813	1,792,615	(9,802)	-0.5%
2007	1,824,789	1,823,258	1,531	0.1%
2008	1,865,020	1,864,047	973	0.1%
2009	1,887,605	1,906,437	(18,832)	-1.0%
2010	1,926,294	1,931,528	(5,234)	-0.3%
2011	1,960,378	1,965,538	(5,160)	-0.3%
2012	1,994,903	1,984,734	10,169	0.5%
2013	2,030,001	2,025,462	4,539	0.2%
2014	2,063,837	2,059,619	4,218	0.2%
2015	2,094,681	2,098,952	(4,271)	-0.2%
2016		2,130,437		

FISCAL YEAR spans 1996–2005. CALENDAR YEAR spans 2006–2016.

* 2004 Bridge Year Estimate from RP-2003-0203 was reported at column 2 because Board-Approved numbers are not available since there was no 2004 Board-Approved Volumes Budget due to the nature of the 2004 Rate Application. Please see RP-2003-0048, Exhibit A, Tab 3, Schedule 1 for the rationale for implementing this new approach.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 1
Page 1 of 2

KEY ECONOMIC ASSUMPTIONS

ECONOMIC OUTLOOK: CANADA & U.S.*

CALENDAR YEAR	2011	2012	2013	2014	2015	2016F	2017F
REAL GDP (% CHANGE)							
CANADA	3.1	1.6	1.9	2.6	1.2	1.6	2.2
U.S.	1.8	2.8	0.7	2.4	2.4	2.1	2.4
CANADA REAL EXPORTS (% CHANGE)	4.8	2.9	2.2	4.8	3.4	4.0	3.9
CANADA REAL IMPORTS (% CHANGE)	6.1	4.2	1.7	1.6	0.8	-0.7	3.0
CANADA HOUSING STARTS (000's)	194.0	214.8	187.9	189.3	195.5	185.0	175.7
CANADA UNEMPLOYMENT RATE (%)	7.6	7.4	7.1	6.9	6.9	7.2	7.0
CANADA EMPLOYMENT GROWTH (% CHANGE)	1.5	1.4	1.3	0.6	0.8	0.5	0.9
CONSUMER PRICES (% CHANGE)							
CANADA	2.9	1.6	0.9	1.9	1.1	1.6	2.2
U.S.	3.1	2.1	1.5	1.6	0.1	1.4	2.5

* The forecasts have been updated to reflect the Q2 2016 Economic Outlook.

ECONOMIC OUTLOOK: ONTARIO*

CALENDAR YEAR	2011	2012	2013	2014	2015	2016F	2017F
REAL GDP (% CHANGE)	2.4	1.3	1.3	2.7	2.5	2.5	2.5
REAL MANUFACTURING OUTPUT (% CHANGE)	2.4	2.0	-1.6	3.8	0.9	2.3	2.6
HOUSING STARTS (000's)	67.8	76.7	61.1	59.1	70.2	68.6	62.7
UNEMPLOYMENT RATE (%)	7.9	7.9	7.6	7.3	6.8	6.7	6.5
EMPLOYMENT GROWTH (% CHANGE)	1.8	0.7	1.8	0.8	0.7	1.1	1.0
CONSUMER PRICES (% CHANGE)	3.1	1.4	1.1	2.3	1.2	1.8	2.2
RETAIL SALES (% CHANGE)	3.6	1.6	2.3	5.0	4.6	4.7	3.6
WAGE RATE ** (% CHANGE)	2.7	2.2	0.9	2.7	2.0	2.2	2.3
REAL RESIDENTIAL NATURAL GAS PRICE (% CHANGE)	-10.7	-9.4	4.8	3.8	-5.5	-6.7	5.2
REAL COMMERCIAL NATURAL GAS PRICE (% CHANGE)	-12.8	-12.0	6.8	5.8	-6.1	-2.0	6.6

* The forecasts have been updated to reflect the Q2 2016 Economic Outlook.

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 1
Page 2 of 2

ECONOMIC OUTLOOK: REGIONS*

CALENDAR YEAR	2011	2012	2013	2014	2015	2016F	2017F
FRANCHISE HOUSING STARTS (000's)	48.7	56.3	43.3	37.4	51.0	45.8	41.7
CENTRAL							
HOUSING STARTS (000's)	40.9	48.3	34.8	29.4	43.7	38.0	34.6
SINGLES	18.4	18.8	16.6	15.3	18.2	17.1	15.2
MULTIPLES	22.5	29.5	18.2	14.1	25.5	20.8	19.4
CONSUMER PRICES (% CHANGE)	3.0	1.6	1.1	2.4	1.6	1.7	2.0
EMPLOYMENT GROWTH (% CHANGE)	2.1	0.8	3.2	0.9	0.2	2.2	2.0
COMMERCIAL VACANCY RATE (%)	7.0	6.8	7.1	7.8	7.8	7.8	7.8
INDUSTRIAL VACANCY RATE (%)	6.3	6.1	5.9	5.5	4.4	4.4	4.4
VINTAGE METRO REGION CENTRAL WEATHER ZONE (% CHANGE)	-0.7	-0.6	-0.7	-0.6	-0.4	-0.5	-0.5
VINTAGE WESTERN REGION CENTRAL WEATHER ZONE (% CHANGE)	-1.7	-1.9	-1.9	-1.8	-1.6	-1.6	-1.6
VINTAGE CENTRAL REGION CENTRAL WEATHER ZONE (% CHANGE)	-2.0	-1.9	-1.6	-2.0	-1.5	-1.6	-1.6
VINTAGE NORTHERN REGION CENTRAL WEATHER ZONE (% CHANGE)	-2.5	-2.5	-2.2	-2.0	-1.7	-1.8	-1.9
CENTRAL HEATING DEGREE DAYS**	2856	2388	2879	3326	2995	2763	2791
EASTERN							
HOUSING STARTS (000's)	6.47	6.73	7.13	6.05	5.42	6.27	5.71
SINGLES	4.85	3.90	4.29	4.04	3.93	4.17	3.69
MULTIPLES	1.62	2.83	2.84	2.01	1.48	2.10	2.01
CONSUMER PRICES (% CHANGE)	3.0	1.4	0.9	1.9	1.0	1.4	2.2
EMPLOYMENT GROWTH (% CHANGE)	0.1	2.5	-1.3	1.2	-1.1	1.9	2.0
VINTAGE EASTERN WEATHER ZONE (% CHANGE)	-2.9	-2.6	-2.4	-2.5	-1.6	-2.4	-2.3
EASTERN HEATING DEGREE DAYS **	3261	3160	3501	3804	3619	3342	3356
NIAGARA							
HOUSING STARTS (000's)	1.34	1.25	1.37	1.86	1.87	1.54	1.40
SINGLES	1.17	1.06	1.29	1.80	1.61	1.38	1.25
MULTIPLES	0.17	0.18	0.09	0.07	0.26	0.16	0.15
EMPLOYMENT GROWTH (% CHANGE)	2.5	2.7	-3.5	0.0	4.2	1.1	0.5
VINTAGE NIAGARA WEATHER ZONE (% CHANGE)	-1.1	-1.1	-1.4	-1.5	-1.2	-1.2	-1.2
NIAGARA HEATING DEGREE DAYS **	2737	2318	2795	3199	2948	2692	2691

* The forecasts have been updated to reflect the Q2 2016 Economic Outlook.

**Balance Point Heating Degree Days are adjusted for billing cycles. The 2016 and 2017 Degree Day forecasts for all weather zones are generated by the methods approved by the Board in its EB-2012-0459 Decision with Reasons dated July 17, 2014.

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 1 of 11

<u>BUDGET DEGREE DAYS</u>

1. The purpose of this evidence is to provide the forecast of degree days for the
    2017 test year.

2. The 2017 degree day forecasts were prepared in accordance with the Ontario
    Energy Board's (the "Board") EB-2012-0459 Decision with Reasons dated July 17,
    2014. In that Decision the Board has approved the use of the 50:50 Hybrid method
    for the Central weather zone, the de Bever with Trend method for the Eastern
    weather zone, and the 10-year moving average method for the Niagara weather
    zone. Table 1 displays the 2017 degree day forecasts that were generated
    according to the approved methodologies for each weather zone within the franchise
    using Environment Canada degree days. Conversions to Gas Supply degree days
    are depicted in the latter part of this evidence.

Table 1
Forecast of 2017 Environment Canada Degree Days

Region	Methodology	Forecast
Central	50:50 Hybrid	3,678
Eastern	De Bever with Trend	4,377
Niagara	10-year moving average	3,413

<u>Degree Day Forecast Methodology</u>

3. The degree day forecast for the Central weather zone was prepared using the 50:50
    Hybrid method which is an average of the 10-year Moving Average and the 20-year
    Trend forecast. Table 2 provides the actual Environment Canada degree day data
    for the Central weather zone and the resultant 10-year moving average, 20-year
    Trend, and 50:50 Hybrid forecast. The 10-year moving average is calculated using

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 2 of 11

data covering the period 2006 to 2015[1], while 20-year Trend model is estimated for the period 1996 to 2015. The 20-year Trend model results are provided in Table 3.

---

[1] The 10 year moving average for year t is calculated as $(DD_{t-2}+DD_{t-3}+ \ldots +DD_{t-10}+DD_{t-11})/10$ where DD is the actual degree day value.

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 3 of 11

Table 2

Environment Canada Degree Day Forecast – Central

Col. 1	Col. 2
Calendar Year	Actual[1]
1996	4,177
1997	4,026
1998	3,220
1999	3,539
2000	3,826
2001	3,420
2002	3,630
2003	3,982
2004	3,798
2005	3,797
2006	3,378
2007	3,722
2008	3,837
2009	3,836
2010	3,501
2011	3,648
2012	3,215
2013	3,775
2014	4,103
2015	3,766
2017 Forecast (10-year Moving average)	3,678
2017 Forecast (20-year Trend)[2]	3,679
2017 Forecast (50:50 Hybrid)[3]	3,678

[1]Environment Canada heating degree day observations from Pearson Int't Airport until June 2013. Effective June 13th, 2013 Environment Canada is no longer able to provide degree day data for Pearson Int'l Airport. Data from June 12th, 2013 and thereafter are obtained from the Toronto Int'l A station.

[2]Calculated using the 20-year Trend regression equation from Table 3.

[3]Average of 10-year Moving average and 20-year Trend forecasts.

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 4 of 11

Table 3
Model Results & Test Statistics: 20-year Trend Methodology

Sample: 1996 2015   Included observations: 20

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3,737.822	128.25	29.15	0.000
TREND	-2.6821	10.71	-0.25	0.805
R-squared	0.003	F-statistic	0.06	
		F-prob	0.81	

Environment Canada Central Degree Day= 3,737.822-2.6821*TREND
The trend variable takes the values of 1 through 20 for each of the years from 1996 to 2015. The value of 22 is used for 2017 to generate 2017 degree day forecast.

4. The degree day forecast for the Eastern weather zone was prepared using the de Bever with Trend method. This method regresses actual Environment Canada degree days on a constant, a 5-year weighted average of Environment Canada degree days[2] and a trend. The 5-year weighted averages are lagged two years. Table 4 displays the actual Environment Canada degree day data for the Eastern weather zone, the 5-year weighted averages used to estimate the model, and the resultant degree day forecast for 2017. The model is estimated over the period 1950 to 2015 for a total of 66 years which is determined by the cycle length with the smallest variance. Estimation results are provided in Table 5.

---

[2] The five-year weighted average for year t is calculated as $(5*DD_{t-2}+4*DD_{t-3}+3*DD_{t-4}+2*DD_{t-5}+DD_{t-6})/15$ where DD is the actual degree day value.

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 5 of 11

Table 4
Environment Canada Degree Day Forecast – Eastern

Col. 1	Col. 2	Col.3
Calendar Year	Actual[1]	5-year Weighted MA[2]
1950	4,824	4,665
1951	4,587	4,594
1952	4,404	4,661
1953	4,059	4,641
1954	4,707	4,556
1955	4,689	4,385
1956	4,799	4,465
1957	4,405	4,523
1958	4,736	4,626
1959	4,718	4,584
1960	4,451	4,652
1961	4,586	4,669
1962	4,826	4,596
1963	4,921	4,584
1964	4,569	4,667
1965	4,810	4,753
1966	4,683	4,709
1967	4,882	4,755
1968	4,780	4,735
1969	4,698	4,775
1970	4,899	4,778
1971	4,797	4,762
1972	5,014	4,805
1973	4,420	4,808
1974	4,725	4,876
1975	4,514	4,736
1976	5,008	4,723
1977	4,597	4,637
1978	4,939	4,741
1979	4,589	4,695
1980	4,920	4,790
1981	4,438	4,735
1982	4,647	4,798
1983	4,536	4,674
1984	4,535	4,658
1985	4,659	4,601
1986	4,501	4,570
1987	4,328	4,585
1988	4,640	4,564
1989	4,931	4,482
1990	4,250	4,524
1991	4,303	4,657
1992	4,861	4,537
1993	4,780	4,461
1994	4,730	4,585
1995	4,585	4,646
1996	4,603	4,681
1997	4,786	4,680
1998	3,828	4,664
1999	4,137	4,689
2000	4,543	4,399
2001	4,115	4,276
2002	4,381	4,328
2003	4,715	4,240
2004	4,637	4,273
2005	4,421	4,444
2006	4,037	4,531
2007	4,447	4,511
2008	4,488	4,373
2009	4,534	4,376
2010	3,973	4,388
2011	4,144	4,430
2012	4,055	4,293
2013	4,402	4,242
2014	4,632	4,155
2015	4,486	4,209

2017 Forecast (de Bever with Trend)[3]	4,377

[1] Environment Canada heating degree day observations from MacDonald-Cartier Airport until December 2011. Effective December 15th, 2011, Environment Canada is no longer able to provide degree day data for MacDonald-Cartier Airport. Data from December 15th, 2011 and thereafter are obtained from the Ottawa Int'l A station.

[2] 5-year weighted average lagged 2 years.

[3] Calculated using the de Bever with Trend regression equation from Table 5.

Witnesses: H. Sayyan
              M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 6 of 11

Table 5

Model Results & Test Statistics: De Bever with Trend Methodology

Sample: 1950 2015   Included observations: 66

Col. 1	*Col. 2*	*Col. 3*	*Col. 4*	*Col. 5*
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3,922.39	1,052.81	3.73	0.00
ECEDD5WA	0.1769	0.22	0.80	0.43
TREND	-4.8323	1.96	-2.47	0.02
R-squared	0.18	F-statistic	6.97	
		F-prob	0.00	

Environment Canada Eastern Degree Day= 3,922.39+0.1769*ECEDD5WA-4.8323*TREND
5-year weighted average of 4,428 is used for 2017 to generate 2017 degree day forecast.
Trend variables takes the values from 1 to 66 for the period of 1950-2015. 68 is used for 2017 to generate 2017 degree day forecast.

5. The degree day forecast for the Niagara weather zone was prepared using the 10-year Moving Average method. Table 6 displays the actual Environment Canada degree day data for the Niagara weather zone and the resultant degree day forecast which is calculated using data covering the period 2006 to 2015[3].

---

[3] The 10 year moving average for year *t* is calculated as $(DD_{t-2}+DD_{t-3}+ \ldots +DD_{t-10}+DD_{t-11})/10$ where DD is the actual degree day value.

Witnesses: H. Sayyan
                    M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 7 of 11

Table 6

Environment Canada Degree Day Forecast – Niagara

Col. 1	*Col. 2*
Calendar Year	Actual[1]
2006	3,163
2007	3,296
2008	3,480
2009	3,565
2010	3,344
2011	3,458
2012	3,021
2013	3,527
2014	3,832
2015	3,450
2017 Forecast (10-yr Moving average)	3,413

[1]Environment Canada heating degree day observations from St. Catherines Airport until August 2008. Effective September 2008 Environment Canada is no longer able to provide degree day data for St.Catherines Airport. Data from September 2008 and thereafter are obtained from the Vineland Climate Station.

Gas Supply Degree Day Conversion

6. The final step in the degree day forecast involves the conversion of Environment Canada degree days to Gas Supply degree days. Environment Canada degree days are calculated as the average of degree days related to the daily minimum and maximum temperatures within a 24-hour period. On the other hand, Gas Supply degree days are determined relative to average hourly temperatures within a 24-hour period. The latter are used by Enbridge as it is more representative of temperature variations within a given day. Although there are differences between the two measurements, the data sets are highly correlated.

Witnesses: H. Sayyan
                M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 8 of 11

7. The conversion leverages the correlation between both series and is carried out by regressing actual Gas Supply degree days onto actual Environment Canada degree days. The resultant equation (one for each weather zone) is used to convert the Environment Canada degree day forecast to the Gas Supply degree day forecast. Tables 7, 8, and 9 display actual Environment Canada degree days, actual Gas Supply degree days and the resultant Gas Supply degree day forecasts for the 2017 test year for each of the Central, Eastern, and Niagara regions, respectively. Each conversion model uses a sample that is consistent with the prescribed approved methodology to generate the forecasts. The sample for the Eastern region utilizes all the historical data available for Gas Supply degree days.

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 9 of 11

Table 7
Determination of Gas Supply Equivalent Degree Days - Central

Col. 1	*Col. 2*	*Col. 3*
Calendar Year	Actual Environment Canada Degree Days	Actual Gas Supply Degree Days
1996	4,177	4,133
1997	4,026	3,966
1998	3,220	3,202
1999	3,539	3,497
2000	3,826	3,784
2001	3,420	3,400
2002	3,630	3,597
2003	3,982	3,949
2004	3,798	3,766
2005	3,797	3,750
2006	3,378	3,355
2007	3,722	3,659
2008	3,837	3,801
2009	3,836	3,767
2010	3,501	3,466
2011	3,648	3,597
2012	3,215	3,194
2013	3,775	3,746
2014	4,103	4,044
2015	3,766	3,710
2017 Forecast (10-year Moving average)[1]		3,634
2017 Forecast (20-year Trend)[2]		3,643
2017 Forecast (50:50 Hybrid)[3]		3,639

[1]2017 forecast (10-year Moving average) is calculated using the following regression equation:
Gas Supply degree day =127.3+0.953397*(Environment Canada degree day)
R-squared=0.997, Adjusted R-squared=0.9968, F-statistic=2,933.876, Prob(F-statistic)=0.000000

[2]2017 forecast (20-year Trend) is calculated using the following regression equation:
Gas Supply degree day =91.2+0.96555*(Environment Canada degree day)
R-squared=0.998, Adjusted R-squared=0.998, F-statistic=8,694.617, Prob(F-statistic)=0.000000

[3]2017 forecast (50:50 Hybrid) is an average of 10-year Moving average and 20-year Trend.

Witnesses: H. Sayyan
              M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 10 of 11

Table 8
Determination of Gas Supply Equivalent Degree Days - Eastern

Col. 1	*Col. 2*	*Col. 3*
Calendar Year	Actual Environment Canada Degree Days	Actual Gas Supply Degree Days
1970	4,899	5,018
1971	4,797	4,584
1972	5,014	4,816
1973	4,420	4,480
1974	4,725	4,858
1975	4,514	4,229
1976	5,008	4,901
1977	4,597	4,604
1978	4,939	4,920
1979	4,589	4,550
1980	4,920	4,853
1981	4,438	4,361
1982	4,647	4,617
1983	4,536	4,515
1984	4,535	4,504
1985	4,659	4,648
1986	4,501	4,507
1987	4,328	4,268
1988	4,640	4,601
1989	4,931	4,883
1990	4,250	4,225
1991	4,303	4,270
1992	4,861	4,746
1993	4,780	4,715
1994	4,730	4,700
1995	4,585	4,530
1996	4,603	4,561
1997	4,786	4,711
1998	3,828	3,802
1999	4,137	4,112
2000	4,543	4,506
2001	4,115	4,071
2002	4,381	4,317
2003	4,715	4,663
2004	4,637	4,598
2005	4,421	4,397
2006	4,037	4,012
2007	4,447	4,411
2008	4,488	4,431
2009	4,534	4,472
2010	3,973	3,947
2011	4,144	4,108
2012	4,055	4,048
2013	4,402	4,484
2014	4,632	4,552
2015	4,486	4,397
2017 Forecast[1]		4,341

[1]2017 forecast is calculated using the following regression equation:
Gas Supply degree days = 170.503+0.95277*(Environment Canada degree days)
R-squared=0.9378 Adjusted R-squared=0.9363 F-statistic=662.87 Prob(F-statistic)=0.000000

Witnesses: H. Sayyan
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 2
Page 11 of 11

Table 9

Determination of Gas Supply Equivalent Degree Days - Niagara

Col. 1	*Col. 2*	*Col. 3*
Calendar Year	Actual Environment Canada Degree Days	Actual Gas Supply Degree Days
2006	3,163	3,079
2007	3,296	3,349
2008	3,480	3,510
2009	3,565	3,547
2010	3,344	3,322
2011	3,458	3,334
2012	3,021	3,013
2013	3,527	3,537
2014	3,832	3,814
2015	3,450	3,548
2017 Forecast[1]		3,405

[1]2017 forecast is calculated using the following regression equation:

Gas Supply degree days = -83.8753+1.0222*(Environment Canada degree days)

R-squared=0.9292 Adjusted R-squared=0.9203 F-statistic=104.96 Prob(F-statistic)=0.0000

2017 Degree Day Forecasts:

Table 10

Summary of 2017 Degree Days Forecast

Region	*Environment Canada Degree Days*	*Gas Supply Degree Days*
Central	3,678	3,639
Eastern	4,377	4,341
Niagara	3,413	3,405

Witnesses: H. Sayyan
                   M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 1 of 24

<u>AVERAGE USE FORECASTING MODEL</u>

1. The purpose of this evidence is to present the forecasting methodology used to forecast average use for Rate 1 revenue class 20 and Rate 6 revenue classes 12, 48, and 73[1]. Rate 1 is the Company's residential rate class while Rate 6 is the Company's small apartment, commercial, and industrial rate class. Revenue class 20 is forecast to comprise 86% of Rate 1 volumes while revenue classes 12, 48, and 73 are forecast to collectively comprise 93% of Rate 6 volumes in 2017. The forecasting methodology for the other revenue classes in Rate 1 and Rate 6 are very similar to the models presented in this exhibit. The evidence validates that the Company's models continue to be accurate predictors of average use.

2. The Company moved to a more objective forecasting methodology starting in the 2001 Budget year in order to address the Board's concern with the systemic bias attributed to the grassroots forecasting process. This forecasting methodology removes systemic or subjective bias by developing regression models to forecast average use for the Company's Rate 1 general service customers and Rate 6 general service customers. This econometric methodology has been in place since 2001, the forecasts of which have been accepted in settlement proposals and Board decisions since. As shown in Tables 1 to 3, 5, and 8, the models exhibit a high R^2 and low Root Mean Squared Percentage Error ("RMSPE") indicating that each of the regression models is a good predictor of average use.

---

[1] Rate 1 is comprised of: revenue class 10 - residential heating, revenue class 20 - residential space heating and water heating, revenue class 50 - space heating, water heating and pool heating, revenue class 60 – residential general service and revenue class 61 – residential water heating. Rate 6 is comprised of: revenue class 12 – apartment heating and other uses, revenue class 48 commercial heating and other uses, revenue class 73 industrial heating and other uses, revenue class 79 commercial general service, revenue class 83 – industrial general service, revenue class 86 – apartment general service, revenue class 90 – commercial air conditioning and space heating.

Witnesses: H. Sayyan
                M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 2 of 24

3. The year-over-year growth rates in average use for all revenue classes are used as the basis for the average use forecast for Rate 1 and Rate 6 shown at Exhibit C1, Tab 2, Schedule 1 Appendix A. Factors influencing overall average use include new customers (both new construction and replacement customers), the timing of new customer additions to the system, rate migration, gas prices, economic conditions, other external policy changes (e.g., Building Code) , and the Company's DSM programs. While average use changes for Rate 1 are fairly reflective of regression model results because of the homogenous nature of customers within this class, modeled Rate 6 average uses may be adjusted to account for known rate migration or specific changes in usage patterns for customers within this class. Please refer to Exhibit C1, Tab 2, Schedule 1 for a detailed explanation of the derivation of the Company's gas volume budget.

4. Average use is defined as gas volume per unlock customer. The econometric models presented here utilize historical data and relationships to estimate driver variable impacts and derive a top down forecast of average use. The models presented in the exhibit incorporate updated driver variables and historical data obtained from federal and provincial statistical agencies and the Company's database. Maintaining an econometric model is an ongoing process; consequently, the models must be monitored and refined to ensure they are valid and produce accurate forecasts of general service average use.

Error Correction Model

5. The Company uses Error Correction Models ("ECM") to forecast the average use for Rate 1 and Rate 6. The ECM method and two step estimation procedure are

Witnesses: H. Sayyan
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 3 of 24

described more fully in Engle and Granger (1987).[2] The ECM uses the concept of cointegration or long-run association between variables.

6. In other words, variables hypothesized to be linked by some theoretical economic relationship should not diverge from each other in the long run. Such variables may drift apart in the short run; however, if they were to diverge without bound, an equilibrium relationship among such variables could not be said to exist. The ECM methodology has been used extensively in the energy field for modeling electricity sales[3] and natural gas prices[4].

7. The major difference between the ECM approach and the standard dynamic single-equation model is the ECM approach explicitly takes into account both long-run equilibrium and short-run dynamic relationships in the determination of average use. It is known that economic theory can provide useful information about the variables relevant in the long-run. However, it is relatively silent on the short-run dynamics between variables. The ECM approach allows the historical data to determine the lag structures and short run dynamics.

8. The estimated models are used to generate a normalized forecast of average use. The main purpose of the normalized forecast is to derive average use such that the weather impact has been taken out. Using the estimated coefficients, weather normalized average use data are obtained by replacing actual degree days in the model with proposed degree days for 2017 for every year so that year-to-year

---

[2] Engle, R.F. and Granger, C.W.J (1987), "Cointegration and Error Correction: Representation, Estimation and Testing," *Econometrica*, Vol. 55, No.2.
[3] Engle, R.F., Granger, C.W.J. and Hallman, J.J. (1989), "Merging Short- and Long-Run Forecasts: An Application to Monthly Electricity Sales Forecasting," *Journal of Econometrics*, Vol.40.
[4] Bopp, A.E. (1990), "An Analytical Approach to Forecasting Natural Gas Prices," *AGA Forecasting Review*: American Gas Association.

Witnesses: H. Sayyan
               M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 4 of 24

percentage changes reflect the pure average use trend by eliminating weather variability.

Average Use Forecasting Methodology

9. The model's specification is based on an objective criterion: to minimize both in-sample and out-of-sample forecast error. The discrepancy between actual average use and the model's forecast can be segregated into three major sources of uncertainty: (1) model specification, (2) forecast error from the driver variables used in the model, and (3) unexpected shocks or structural breaks. Sources (2) and (3) are not within the Company's control and will inevitably occur regardless of which forecasting methodology is adopted. Therefore the objective of the modeling procedure, described below, is to minimize the controllable source of error, the model's specification.

10. The main criteria for assessing the model's predictive ability is the model's forecast accuracy. A comparison of actual un-normalized average use versus the forecasts produced by the model is used to assess predictive ability. Forecast accuracy for 2017 is measured using both in-sample and out-of-sample Mean Percentage Error ("MPE") and RMSPE. In-sample, or ex-post, means that the estimated model incorporates the entire sample, in this case 1985 to 2015. Out-of-sample, or ex-ante, means that the model incorporates only a portion of the sample, in this case 1985 to 2013. Forecasts of average use are produced under both approaches and measured against actual average use from 2014 to 2015 quantitatively via MPE and RMSPE. A two year "hold out" sample is used to compute the out-of-sample forecast accuracy statistics since the forecasting horizon for volumetric budgeting purposes is two years.

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 5 of 24

11. Table 1 presents the forecast accuracy statistics for Rate 1 and Rate 6. The
    smaller the MPE and RMSPE, the better the model's forecast performance.

TABLE 1
FORECAST ERRORS - PERCENT VARIANCE & ROOT MEAN SQUARED
PERCENTAGE ERROR

Col 1.	Col 2.	Col 3.
Forecast Error Method	Rate 1	Rate 6
In-Sample % Variance (2 Years)	-0.17%	0.21%
In-Sample RMSPE (2 Years)	0.70%	0.40%
Out-of-Sample % Variance (2 Years)	0.06%	-0.35%
Out-of-Sample RMSPE (2 Years)	0.76%	0.44%

$$MPE = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{Forecast_i - Actual_i}{Actual_i}\right)$$

$$RMSPE = \sqrt{\frac{1}{N}\sum_{i=1}^{N}\left(\frac{Forecast_i - Actual_i}{Actual_i}\right)^2}$$

12. Consistent with the settlement of Issue 1.1 in the RP-2000-0040 Settlement
    Agreement, Tables 2 and 3 report the results that the models would generate using
    actual data to allow parties to compare results to the prior year's forecast. Tables 2
    and 3 show the results that the models would have produced had all actual driver
    values been available at the time the forecast was produced. The tables are not
    updated for 2004 since there are no Board approved average use forecasts for this
    particular test year. In order to compare the variance between actual and Board
    Approved average use on the same basis, the actual results for each year have
    been normalized to the corresponding Board Approved degree days for each

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 6 of 24

respective test year. The results in Tables 2 and 3 show the regression model is a good predictor of general service average use.

TABLE 2

RATE 1 IN-SAMPLE FORECAST COMPARISON

Col 1.	Col 2.	Col 3.	Col 4.	Col 5.	Col 6.	Col 7.	Col 8.
Fiscal Year	Actual Normalized Average Use Per Customer	Board Approved Normalized Average Use Per Customer[1,3]	Variance Normalized Average Use Per Customer	% Variance Normalized Average Use Per Customer	Model's Normalized Average Use Per Customer[2]	Variance Normalized Average Use Per Customer	% Variance Normalized Average Use Per Customer
	(m3)	m(3)	(2-3)	100*((2-3)/3)	(m3)	(2-6)	100*((2-6)/6)
2001	3,014	3,044	(30)	-1.0%	3,022	(8)	-0.26%
2002	2,980	2,970	10	0.3%	2,963	17	0.57%
2003	2,877	2,892	(15)	-0.5%	2,897	(20)	-0.69%
2004	2,843	n/a	n/a	n/a	2,864	(21)	-0.73%
2005	2,890	2,953	(63)	-2.1%	2,929	(39)	-1.33%
2006	2,796	2,850	(54)	-1.9%	2,816	(20)	-0.71%
2007	2,726	2,687	39	1.5%	2,695	31	1.15%
2008	2,636	2,647	(11)	-0.4%	2,611	25	0.97%
2009	2,616	2,637	(21)	-0.8%	2,623	(6)	-0.24%
2010	2,579	2,622	(43)	-1.6%	2,550	29	1.15%
2011	2,594	2,643	(49)	-1.9%	2,607	(13)	-0.51%
2012	2,529	2,510	18	0.7%	2,528	1	0.02%
2013	2,547	2,568	(22)	-0.8%	2,517	30	1.18%
2014	2,475	2,433	41	1.7%	2,490	(15)	-0.60%
2015	2,427	2,419	9	0.4%	2,404	23	0.97%

[1]Board approved normalized average use from RP-2000-0040, RP-2001-0032, RP-2002-0133, RP-2003-0203, EB-2005-000, EB-2006-0034, EB-2007-0615, EB-2008-0219, EB-2009-0172, EB-2010-0146, EB-2011-0277, EB-2011-0354, EB-2012-0459 and EB-2014-0276 for 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2009, 2010, 2011,2012, 2013, 2014 and 2015 respectively.

[2]Model's normalized average use is generated by running the model using actual data and driver variable information.

[3]There is no Board approved normalized average use for 2004.

Witnesses: H. Sayyan
                     M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 7 of 24

TABLE 3
RATE 6 IN-SAMPLE FORECAST COMPARISON

Col 1.	Col 2.	Col 3.	Col 4.	Col 5.	Col 6.	Col 7.	Col 8.
Fiscal Year	Actual Normalized Average Use Per Customer	Board Approved Normalized Average Use Per Customer[1,3]	Variance Normalized Average Use Per Customer	% Variance Normalized Average Use Per Customer	Model's Normalized Average Use Per Customer[2]	Variance Normalized Average Use Per Customer	% Variance Normalized Average Use Per Customer
	(m3)	m(3)	(2-3)	100*((2-3)/3)	(m3)	(2-6)	100*((2-6)/6)
2001	22,510	22,643	(133)	-0.6%	22,706	(196)	-0.86%
2002	22,097	22,125	(28)	-0.1%	21,957	140	0.64%
2003	21,593	21,685	(92)	-0.4%	21,613	(20)	-0.09%
2004	21,472	n/a	n/a	n/a	21,377	95	0.44%
2005	22,241	22,507	(266)	-1.2%	22,334	(93)	-0.42%
2006	22,272	21,999	273	1.2%	22,149	123	0.55%
2007	22,783	21,010	1773	8.4%	22,973	(190)	-0.83%
2008	24,869	24,204	665	2.7%	25,273	(404)	-1.60%
2009	27,654	28,165	(512)	-1.8%	27,875	(222)	-0.79%
2010	29,106	27,949	1157	4.1%	29,691	(585)	-1.97%
2011	29,471	28,029	1442	5.1%	30,240	(769)	-2.54%
2012	28,941	30,122	(1182)	-3.9%	28,634	307	1.07%
2013	29,203	29,878	(675)	-2.3%	28,756	447	1.56%
2014	28,634	28,383	251	0.9%	28,535	99	0.35%
2015	28,600	28,341	259	0.9%	28,375	225	0.79%

[1]Board approved normalized average use from RP-2000-0040, RP-2001-0032, RP-2002-0133, RP-2003-0203, EB-2005-000, EB-2006-0034, EB-2007-0615, EB-2008-0219, EB-2009-0172, EB-2010-0146, EB-2011-0277, EB-2011-0354, EB-2012-0459 and EB-2014-0276 for 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2009, 2010, 2011,2012, 2013, 2014 and 2015 respectively.

[2]Model's normalized average use is generated by running the model using actual data and driver variable information.

[3]There is no Board approved normalized average use for 2004.

13. The primary goal of the average use forecast is to be accurate and objective. Ideally, the forecast error should be small in magnitude and distributed in a random fashion. Although the forecast errors in Tables 1, 2, and 3 are small in magnitude, forecast accuracy is conditional on driver variable forecast accuracy and the absence of any structural break between the historical period and the upcoming forecast period. Consequently, besides testing forecast accuracy, the models were subjected to a battery of diagnostic tests. These tests were run on the model to check for incorrect functional forms, parameter instability, structural breaks, omitted variables and randomness of residuals. Overall the models have been thoroughly tested and are statistically valid.

Witnesses: H. Sayyan
                     M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 8 of 24

The following diagnostic tests were run on each model[5] (results are shown in Tables 6 and 9):

Breusch-Godfrey Serial Correlation LM Test

This test is used to test for autocorrelation in the residuals. Autocorrelation occurs when disturbances in a regression equation are serially correlated. The test is set up as follows:

Null Hypothesis: No serial correlation

Alternative Hypothesis: Serial correlation

ARCH Test

This test is used to test for Autoregressive Conditional Heteroskedasticity ("ARCH"). ARCH occurs when the variance of disturbances in a regression equation are not constant and are serially correlated. The test is set up as follows:

Null Hypothesis: No ARCH

Alternative Hypothesis: ARCH

Chow Forecast Test

This test is used to test for stability of a regression model. A regression model is not stable if the estimated coefficients change (and consequently the model's predictions) when estimated over various sample ranges. The test is set up as follows:

Null Hypothesis: No structural change

Alternative Hypothesis: Structural change

---

[5] The Durbin-Watson test is not used since it is not valid when there are lagged dependent variables in a regression equation. The Durbin Watson test is biased toward the finding of no serial correlation if there are lagged values of the dependent variable in the regression equation.

Witnesses: H. Sayyan
              M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 9 of 24

Ramsey RESET Test

This is a general test which tests for omitted variables, incorrect functional form and correlation between the independent variables and disturbances. The test is set up as follows:

Null Hypothesis: Normally distributed disturbances (zero mean, constant variance)

Alternative Hypothesis: Non- normally distributed disturbances (non-zero mean, constant variance)

14. The following tables present the mnemonics used in the models (Tables 4 and 7), the regression equations for each model (Tables 5 and 8), and the diagnostic tests results run on the models (Tables 6 and 9). For the t tests in the regression equations shown at Tables 5 and 8, the p-values indicate the probability of obtaining a forecast at least as extreme as one that was actually observed, assuming that the null hypothesis (coefficient is not significant) is true. The p-value is compared to a significance level which is often 0.05 or 0.10, so that if its value is smaller, the null hypothesis is rejected at the 95% or 90% confidence level, respectively. The smaller the p-value, the more strongly the test rejects the null hypothesis, thereby supporting the statistical significance of the coefficient. In any instance where insignificant variables were retained within the models, it was for the purposes of (1) improving the significance of other coefficients or (2) optimizing forecast accuracy. In contrast, for the diagnostic test results shown in Tables 6 and 9, the null hypotheses tested are the desired outcomes. In each case, to support the null hypothesis, p-values in excess of 0.10 are preferred. Overall, diagnostic test results in Table 6 and 9 show that the models in Table 5 and 8 are statistically valid and no assumptions appear to be violated at the 95% confidence level.

Witnesses: H. Sayyan
                 M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 10 of 24

TABLE 4 - RATE 1 MODEL MNEMONICS

Mnemonic	Definition
C	Constant Term
LOG(X)	Logarithm of Variable X
DLOG(X)	$LOG(X_t) - LOG(X_{t-1})$, First Difference of Logarithm of Variable X
CDD, EDD, NDD	Balance Point Heating Degree Days for Central, Eastern and Niagara Weather Zones
MET20VINT	Vintage Variable for the Metro Region, Central Weather Zone
WES20VINT	Vintage Variable for the Western Region, Central Weather Zone
CEN20VINT	Vintage Variable for the Central Region, Central Weather Zone
NOR20VINT	Vintage Variable for the Northern Region, Central Weather Zone
ERC20VINT	Vintage Variable for the Eastern Weather Zone
NRC20VINT	Vintage Variable for the Niagara Weather Zone
REALCRCRPG	Real Residential Natural Gas Price for the Central Weather Zone
REALERCRPG	Real Residential Natural Gas Price for the Eastern Weather Zone
DUM2008-DUM2009-DUM2010	Dummy Variables for Recession Impact
CENTEMP	Central Weather Zone Employment
ECM_Region	Error Correction Term for Each Region

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 11 of 24

TABLE 5 - RATE 1 REVENUE CLASS 20 REGRESSION EQUATIONS

Metro Region - Central Weather Zone

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	2.64	10.11	0.00
LOG(CDD)	0.70	21.35	0.00
LOG(REALCRCRPG)	-0.03	-1.57	0.13
LOG(MET20VINT)	0.83	11.25	0.00
DUM2008	-0.04	-3.72	0.00
DUM2010	-0.04	-2.84	0.01
R-squared	0.99		
Adjusted R-squared	0.99		
S.E. of regression	0.01		
F-statistic	540.86		0.00

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.00	0.04	0.97
DLOG(CDD)	0.75	30.56	0.00
DLOG(MET20VINT)	0.99	1.86	0.07
DUM2008	-0.01	-1.45	0.16
ECM_MET20(-1)	-0.34	-1.62	0.12
R-squared	0.98		
Adjusted R-squared	0.98		
S.E. of regression	0.01		
F-statistic	284.16		0.00

Western Region - Central Weather Zone

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	1.16	1.57	0.13
LOG(CDD)	0.69	26.49	0.00
LOG(REALCRCRPG)	-0.09	-5.74	0.00
LOG(WES20VINT)	0.42	5.66	0.00
LOG(CENTEMP)	0.17	2.00	0.06
DUM2008	-0.04	-3.67	0.00
DUM2010	-0.05	-4.28	0.00
R-squared	0.99		
Adjusted R-squared	0.99		
S.E. of regression	0.01		
F-statistic	629.90		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	-0.005	-2.17	0.04
DLOG(CDD)	0.72	37.68	0.00
DLOG(REALCRCRPG)	-0.08	-4.18	0.00
DUM2008	-0.01	-2.45	0.02
ECM_WES20(-1)	-0.64	-2.95	0.01
R-squared	0.98		
Adjusted R-squared	0.98		
S.E. of regression	0.01		
F-statistic	395.36		0.000

Central Region - Central Weather Zone

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.78	1.01	0.32
LOG(CDD)	0.70	20.92	0.00
LOG(REALCRCRPG)	-0.03	-1.85	0.08
LOG(CEN20VINT)	0.54	8.29	0.00
LOG(CENTEMP)	0.21	2.40	0.02
DUM2008	-0.05	-4.29	0.00
R-squared	0.99		
Adjusted R-squared	0.99		
S.E. of regression	0.01		
F-statistic	553.60		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.00	0.11	0.91
DLOG(CDD)	0.70	28.35	0.00
DLOG(REALCRCRPG)	-0.04	-1.63	0.12
DUM2008	-0.01	-1.43	0.17
DLOG(CEN20VINT)	0.37	1.81	0.08
ECM_CEN20(-1)	-0.92	-4.57	0.00
R-squared	0.98		
Adjusted R-squared	0.97		
S.E. of regression	0.01		
F-statistic	197.01		0.000

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 12 of 24

TABLE 5 CONTINUED - RATE 1 REVENUE CLASS 20 REGRESSION EQUATIONS

Northern Region - Central Weather Zone

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.91	1.10	0.28
LOG(CDD)	0.68	23.36	0.00
LOG(REALCRCRPG)	-0.08	-4.73	0.00
LOG(NOR20VINT)	0.47	7.55	0.00
LOG(CENTEMP)	0.22	2.25	0.03
DUM2009	-0.05	-4.46	0.00
R-squared	0.99		
Adjusted R-squared	0.99		
S.E. of regression	0.01		
F-statistic	838.60		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.00	-0.55	0.58
DLOG(CDD)	0.68	30.54	0.00
DLOG(REALCRCRPG)	-0.06	-2.79	0.01
DLOG(NOR20VINT)	0.26	1.51	0.14
ECM_NOR20(-1)	-1.03	-4.69	0.00
R-squared	0.98		
Adjusted R-squared	0.97		
S.E. of regression	0.01		
F-statistic	264.24		0.000

Eastern Weather Zone

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	1.69	5.56	0.00
LOG(EDD)	0.77	20.72	0.00
LOG(REALERCRPG)	-0.03	-1.89	0.07
LOG(ERC20VINT)	0.43	18.51	0.00
DUM2009	-0.04	-3.77	0.00
R-squared	0.99		
Adjusted R-squared	0.99		
S.E. of regression	0.01		
F-statistic	845.32		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	-0.01	-2.96	0.01
DLOG(EDD)	0.78	25.34	0.00
DLOG(REALERCRPG)	-0.02	-0.64	0.53
DUM2008	-0.01	-1.78	0.09
ECM_ERC20(-1)	-1.07	-4.67	0.00
R-squared	0.97		
Adjusted R-squared	0.97		
S.E. of regression	0.01		
F-statistic	209.91		0.000

Niagara Weather Zone

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	2.19	6.38	0.00
LOG(NDD)	0.74	17.06	0.00
LOG(NRC20VINT)	1.23	19.09	0.00
DUM2008	-0.05	-3.79	0.00
R-squared	0.99		
Adjusted R-squared	0.98		
S.E. of regression	0.02		
F-statistic	645.25		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	-0.01	-4.43	0.00
DLOG(NDD)	0.74	25.10	0.00
ECM_NRC20(-1)	-0.63	-3.60	0.00
R-squared	0.96		
Adjusted R-squared	0.96		
S.E. of regression	0.02		
F-statistic	350.81		0.000

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 13 of 24

TABLE 6 - RATE 1

Model Diagnostic Tests

Col 1.	Col 2.	Col 3.	Col 4.	Col 5.	Col 6.	Col 7.	Col 8.
Test		Metro Region	Western Region	Central Region	Northern Region	Eastern Weather Zone	Niagara Weather Zone
Breusch-Godfrey Serial Correlation LM Test	Test Statistic	1.33	0.24	0.45	0.40	0.07	0.96
	P Value	0.25	0.62	0.50	0.53	0.79	0.33
ARCH Test	Test Statistic	0.16	1.34	0.64	0.15	0.05	0.87
	P Value	0.69	0.25	0.42	0.70	0.83	0.35
Chow Forecast Test: Forecast from 2015 to 2015	Test Statistic	0.70	0.67	0.87	2.07	0.22	0.09
	P Value	0.41	0.42	0.36	0.15	0.64	0.77
Ramsey RESET Test	Test Statistic	1.14	1.67	0.61	0.05	1.91	0.04
	P Value	0.30	0.21	0.44	0.83	0.18	0.84

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 14 of 24

TABLE 6 - RATE 1
Model Diagnostic Tests

Col 1.	Col 2.	Col 3.	Col 4.	Col 5.	Col 6.	Col 7.	Col 8.
Test		Metro Region	Western Region	Central Region	Northern Region	Eastern Weather Zone	Niagara Weather Zone
Breusch-Godfrey Serial Correlation LM Test	Test Statistic	0.83	0.29	0.49	0.27	0.07	0.75
	P Value	0.36	0.59	0.48	0.60	0.79	0.39
ARCH Test	Test Statistic	0.24	3.15	0.62	0.02	0.00	0.80
	P Value	0.62	0.08	0.43	0.89	0.95	0.37
Chow Forecast Test: Forecast from 2014 to 2014	Test Statistic	0.44	0.80	0.03	0.31	0.74	1.05
	P Value	0.51	0.38	0.86	0.58	0.40	0.31
Ramsey RESET Test	Test Statistic	0.77	1.12	0.25	0.10	1.77	0.01
	P Value	0.39	0.30	0.62	0.75	0.20	0.91

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 15 of 24

TABLE 7 - RATE 6 MODEL MNEMONICS

Mnemonic	Definition
C	Constant Term
LOG(X)	Logarithm of Variable X
DLOG(X)	$LOG(X_t) - LOG(X_{t-1})$, First Difference of Logarithm of Variable X
CDD, EDD, NDD	Balance Point Heating Degree Days for Central, Eastern and Niagara Weather Zones
CENTEMP	Central Weather Zone Employment
EASTEMP	Eastern Weather Zone Employment
NIAGEMP	Niagara Weather Zone Employment
REALERCCPG	Real Commercial Gas Price for the Eastern Weather Zone
REALNRCCPG	Real Natural Gas Price for the Niagara Weather Zone
ONTGDP	Ontario Real Gross Domestic Product
CRCCOMVAC	GTA Commercial Vacancy Rate
TIME	Time Trend
DUMRegion	Dummy Variable for Migration Impact
DUMXXXX	Dummy Variable for the Break in the Year XXXX
AR(p)	pth-order Autoregressive Process Term
ECM_Region	Error Correction Term for Each Region

Witnesses: H. Sayyan
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 16 of 24

TABLE 8 - RATE 6 REVENUE CLASS 12 REGRESSION EQUATIONS

Central Revenue Class 12 (Apartment)

Single Equation Model

Variable	Coefficient	t-Statistic	p-Value
C	2.27	1.91	0.07
LOG(CDD)	0.60	7.86	0.00
LOG(CENTEMP)	0.56	4.98	0.00
DUM1996	-0.09	-4.10	0.00
DUMCRC12	0.21	5.45	0.00
AR(1)	0.49	2.43	0.02
R-squared	0.97		
Adjusted R-squared	0.97		
S.E. of regression	0.03		
F-statistic	181.731		0.000

Eastern Revenue Class 12 (Apartment)

Single Equation Model

Variable	Coefficient	t-Statistic	p-Value
C	3.26	2.30	0.03
LOG(EDD)	0.57	8.72	0.00
LOG(TIME)	-0.05	-4.00	0.00
DUMERC12	0.26	10.23	0.00
DUM2011	-0.13	-5.35	0.00
LOG(REALERCCPG)	-0.14	-3.24	0.00
LOG(EASTEMP)	0.47	2.55	0.02
DUM2014	0.05	2.32	0.03
R-squared	0.97		
Adjusted R-squared	0.97		
S.E. of regression	0.02		
F-statistic	120.79		0.000

Niagara Revenue Class 12 (Apartment)

Single Equation Model

Variable	Coefficient	t-Statistic	p-Value
C	4.64	4.02	0.00
LOG(NDD)	0.54	8.29	0.00
LOG(TIME)	-0.03	-2.86	0.01
LOG(NIAGEMP)	0.34	2.15	0.04
LOG(REALNRCCPG)	-0.06	-1.74	0.10
DUMNRC12	-0.07	-4.23	0.00
DUM2011	-0.10	-4.50	0.00
AR(1)	-0.34	-1.57	0.13
R-squared	0.90		
Adjusted R-squared	0.87		
S.E. of regression	0.03		
F-statistic	29.49		0.000

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 17 of 24

TABLE 8 CONTINUED - RATE 6 REVENUE CLASS 48 REGRESSION EQUATIONS

Central Revenue Class 48 (Commercial)

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.23	0.28	0.78
LOG(CDD)	0.84	17.52	0.00
LOG(TIME)	-0.12	-9.14	0.00
LOG(CRCCOMVAC)	-0.07	-4.36	0.00
LOG(ONTGDP)	0.26	4.39	0.00
DUMCRC48	0.11	10.78	0.00
R-squared	0.97		
Adjusted R-squared	0.96		
S.E. of regression	0.02		
F-statistic	153.58		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.00	0.14	0.89
DLOG(CDD)	0.82	31.63	0.00
DLOG(TIME)	-0.06	-3.07	0.01
DLOG(CRCCOMVAC)	-0.05	-3.88	0.00
DUMCRC48	0.02	2.41	0.02
ECM_CRC48(-1)	-0.81	-5.36	0.00
R-squared	0.98		
Adjusted R-squared	0.97		
S.E. of regression	0.01		
F-statistic	203.68		0.000

Eastern Revenue Class 48 (Commercial)

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	1.73	1.75	0.09
LOG(EDD)	0.74	10.28	0.00
LOG(TIME)	-0.16	-12.00	0.00
LOG(ONTGDP)	0.19	3.44	0.00
DUMERC48	0.10	4.74	0.00
DUM2010	0.11	5.40	0.00
R-squared	0.96		
Adjusted R-squared	0.95		
S.E. of regression	0.03		
F-statistic	111.59		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.01	1.19	0.24
DLOG(EDD)	0.69	8.83	0.00
DLOG(TIME)	-0.13	-2.79	0.01
ECM_ERC48(-1)	-0.73	-2.52	0.02
R-squared	0.80		
Adjusted R-squared	0.77		
S.E. of regression	0.03		
F-statistic	34.03		0.000

Niagara Revenue Class 48 (Commercial)

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	-1.61	-1.19	0.25
LOG(NDD)	0.73	14.86	0.00
LOG(TIME)	-0.10	-5.33	0.00
LOG(REALNRCCPG)	-0.18	-5.04	0.00
LOG(ONTGDP)	0.43	4.39	0.00
DUMNRC48	0.11	4.75	0.00
DUM2010	-0.11	-3.80	0.00
R-squared	0.94		
Adjusted R-squared	0.92		
S.E. of regression	0.02		
F-statistic	62.12		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	0.00	-0.37	0.72
DLOG(NDD)	0.75	13.62	0.00
DUMNRC48	0.11	3.42	0.00
DUM2010	-0.12	-3.44	0.00
DLOG(REALNRCCPG)	-0.07	-1.54	0.14
ECM_NRC48(-1)	-0.87	-2.72	0.01
R-squared	0.91		
Adjusted R-squared	0.89		
S.E. of regression	0.03		
F-statistic	50.39		0.000

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 18 of 24

TABLE 8 CONTINUED - RATE 6 REVENUE CLASS 73 REGRESSION EQUATIONS

Central Revenue Class 73 (Industrial)

Long Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	1.63	0.58	0.56
LOG(CDD)	0.47	2.68	0.01
LOG(TIME)	-0.15	-3.78	0.00
LOG(ONTGDP)	0.45	2.73	0.01
DUMCRC73	0.52	12.64	0.00
R-squared	0.92		
Adjusted R-squared	0.90		
S.E. of regression	0.07		
F-statistic	71.84		0.000

Short Run Equation

Variable	Coefficient	t-Statistic	p-Value
C	-0.02	-2.21	0.04
DLOG(CDD)	0.55	8.84	0.00
DLOG(ONTGDP)	0.71	2.37	0.03
DUMCRC73	0.24	6.51	0.00
DUM2009	-0.18	-4.84	0.00
ECM_CRC73(-1)	-0.62	-6.35	0.00
R-squared	0.87		
Adjusted R-squared	0.84		
S.E. of regression	0.03		
F-statistic	32.34		0.000

Eastern Revenue Class 73 (Industrial)

Single Equation Model

Variable	Coefficient	t-Statistic	p-Value
C	-319,256.00	-3.67	0.00
EDD	34.36	2.59	0.02
DUM2003	57,733.93	3.37	0.00
DUM2004	-160,946.50	-7.23	0.00
DUMERC73	122,447.20	11.50	0.00
EASTEMP	671.43	4.91	0.00
TIME	-5,567.67	-5.07	0.00
R-squared	0.95		
Adjusted R-squared	0.94		
S.E. of regression	15,508.71		
F-statistic	73.99		0.000

Niagara Revenue Class 73 (Industrial)

Single Equation Model

Variable	Coefficient	t-Statistic	p-Value
C	-1.59	-0.44	0.66
LOG(NDD)	0.80	3.63	0.00
DUM2002	-0.36	-4.17	0.00
DUMNRC73	0.47	4.44	0.00
DUM2010	0.39	3.66	0.00
LOG(NIAGEMP)	1.26	2.44	0.02
AR(1)	0.66	3.75	0.00
R-squared	0.97		
Adjusted R-squared	0.96		
S.E. of regression	0.10		
F-statistic	106.18		0.000

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 19 of 24

TABLE 9 - RATE 6
Model Diagnostic Tests

Col 1.	Col 2.	Col 3.	Col 4.	Col 5.	Col 6.	Col 7.	Col 8.	Col 9.	Col 10.	Col 11.
		Revenue Class 12 (Apartment) Model Diagnostic Tests			Revenue Class 48 (Commercial) Model Diagnostic Tests			Revenue Class 73 (Industrial) Model Diagnostic Tests		
Test		Central Weather Zone	Eastern Weather Zone	Niagara Weather Zone	Central Weather Zone	Eastern Weather Zone	Niagara Weather Zone	Central Weather Zone	Eastern Weather Zone	Niagara Weather Zone
Breusch-Godfrey Serial Correlation LM Test	Test Statistic	2.24	1.18	0.27	1.45	1.96	1.19	1.64	0.06	2.34
	P Value	0.13	0.28	0.60	0.23	0.16	0.27	0.20	0.80	0.13
ARCH Test	Test Statistic	0.10	1.42	1.22	0.66	0.04	2.33	0.74	0.00	1.96
	P Value	0.75	0.23	0.27	0.42	0.85	0.13	0.39	0.98	0.16
Chow Forecast Test: Forecast from 2015 to 2015	Test Statistic	0.01	0.09	1.94	0.16	1.18	0.18	0.24	1.69	0.00
	P Value	0.93	0.76	0.18	0.69	0.29	0.68	0.63	0.20	0.96
Ramsey RESET Test	Test Statistic	0.95	2.92	0.39	1.07	0.29	1.00	1.44	1.34	2.50
	P Value	0.34	0.10	0.54	0.31	0.59	0.33	0.24	0.26	0.13

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 20 of 24

15. Major driver variables in the models are balance point heating degree days adjusted for billing cycles, vintage, a time trend, real natural gas prices and economic variables. Driver variable assumptions are shown in the Economic Outlook at Exhibit C2, Tab 1, Schedule 1.

16. Natural gas prices have an important impact on average use. Sharp increases typically have two effects. First, they influence customer's fuel use habits, for example, the lowering of thermostat settings. Second, price increases likely factor in customers' decision-making around the purchase of more efficient furnaces and other appliances. In addition, homeowners may also respond by retrofitting older residences in order to reduce energy consumption. In the models, real natural gas prices are used. The Consumer Price Index ("CPI") is used to convert nominal gas prices to real gas prices. Nominal energy price forecast for 2017 is based on the consensus Henry Hub price forecast produced in April 2016.

17. A linear time trend is used as a proxy measure for energy conservation. However, a linear time trend only reflects constant annual changes in appliance efficiency; it will not be able to reflect the time-varying impact of new residential construction on appliance efficiency. Consequently, a vintage variable serves as either a supplementary or complementary variable to the time trend in the model.

18. The vintage variable (for revenue class 20 only) is employed as a proxy measure of gas space heating and gas water heating efficiency gains and residential thermal efficiency. Newer homes with improved thermal envelope characteristics and older homes adding insulation and storm windows/doors reduce the typical amount of gas needed for space heating. Residential thermal efficiency will continue to improve as newer, better-insulated residences account for a larger portion of the

Witnesses: H. Sayyan
            M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 21 of 24

housing stock. The vintage variable captures the impact of both furnace efficiency and new home thermal efficiency on average use.

19. Vintage is defined as the calendar year in which the customer became a customer (new gas service main date) and is not based on the age of the building. This data includes both new construction and conversion customer additions. As space heating efficiency gains have a greater impact on average use than thermal improvements to homes, customers by vintage is a better variable than age of the building in terms of explaining the percentage decline in residential average use.

20. An illustration of the vintage ratio for 1992 follows:

$$V_{1992} = \frac{\sum\limits_{y=1987}^{1991} V_y}{\sum\limits_{yy=1987}^{1992} V_{yy}} \quad \text{where } V \text{ denotes vintage.}$$

21. Calendar 1992 is used as the reference year for the vintage ratio since the Energy Efficiency Act prohibited selling of the conventional low-efficiency furnace in January 1992.[6] Consequently, this ratio will capture the increasing market share of both mid-efficiency and high-efficiency furnaces at the expense of declining market share of conventional furnaces over time. Generally, regions with stronger new construction additions experience a sharper decline in the ratio than established regions like Metro. As more new customers are added to the revenue class the declining ratio leads to lower average use over time.

---

[6] During the 1970s natural gas furnaces averaged about 65% Annual Fuel Utilization Efficiency ("AFUE"). The Energy Efficiency Act imposed 78% AFUE as a minimum for gas furnaces manufactured after January 1, 1992.

Witnesses: H. Sayyan
              M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 22 of 24

22. Thus the sign of this variable's coefficient is positive.

23. Economic variables such as employment, vacancy rates, and gross domestic product can impact demand for new gas appliances as well as impact demand for natural gas for space heating and manufacturing processes. Stronger employment and demand for products both domestically and abroad will generally increase natural gas demand.

Risks to the Forecast

24. The impact of customer mix on average use is not static and changes over time. New customers may have different gas use characteristics than existing customers and may be influenced by builder specifications for inclusion/exclusion of new gas appliances. Thus, aggregate average use will be affected even if customers take no actions that could affect their average use. Advances in the future penetration of gas appliances above historical penetration levels implicit in the model could result in increased average use. Conversely, builder specification of non-gas water and/or space heating equipment represents a risk to the forecast as it could result in lower gas consumption than forecast.

25. The impact of Cap and Trade is not explicitly modeled within the average use equations as it is unclear how including Greenhouse Gas emissions compliance costs as part of distribution charges will be perceived by customers such that this would drive behavioral changes in consumption. Given that Cap and Trade will increase the overall price of natural gas service for customers, the price difference may drive lower consumption than forecast.

Witnesses: H. Sayyan
                      M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 23 of 24

26. New Building Code requirements come into effect in January 2017 that could potentially result in lower average uses than forecast. The potential reductions in average use are largely dependent on the installation options or compliance packages implemented by designers and builders, as well as when permits were applied for. While savings are difficult to model, it is estimated that the impacts will be minimal as forecast average uses are relatively close to the target reduction.

27. The use of more efficient water heaters across the franchise area and/or the loss of natural gas water heating to other fuels could result in a permanent decrease in baseload usage and natural gas consumption relative to the forecast.

28. Gas consumption for space heating is very sensitive to thermostat settings. Customers may set their thermostats lower under extremely warm weather like that experienced in 1998, 2001, 2006, and most recently in 2012.

29. Economic activity can impact both demand for appliances and natural gas. If the economy slows more significantly and natural gas prices are higher than indicated in the Economic Outlook (Exhibit C2, Tab 1, Schedule 1), average use will decline further.

30. A structural break in the historical estimated relationship between average use and the driver variables will increase forecast risk as will forecast uncertainty in the driver variables.

Conclusion

31. The model employed by the Company passes a battery of statistical tests and is valid given current and historical information. Continual evaluation and testing is required, as new information becomes available. The model has been estimated

Witnesses: H. Sayyan
M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 3
Page 24 of 24

over volatile periods in history – recent years of unexpected warm and cold weather, historically high energy prices, and increased energy price volatility. In light of these volatile economic and weather conditions, continuous model evaluation ensures that ongoing impacts in the relationship of average use and its driver variables is captured to produce the most accurate and objective forecast as possible.

Witnesses: H. Sayyan
             M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 4
Page 1 of 3

<u>2017 CUSTOMER ADDITIONS</u>

<u>Customer Additions</u>

1. The 2017 Forecast of customer additions, 2016 Board-Approved Budget of customer additions as filed in Enbridge's 2016 Rate Adjustment application at EB-2015-0114, and 2015 Actual customer additions are outlined in Table 1. The 2017 Forecast projects a decrease in 2017 customer additions relative to 2015 Actual and 2016 Budget.

2. The 2017 customer additions forecast was developed using a number of sources including information gathered through direct contact with builders, developers, and municipalities as well as economic indicators such as housing starts, GDP growth, employment, and mortgage rates. The approach used to develop the forecast is consistent with the approach used by the Company in previous rate applications, and has been accepted in settlement proposals and Board decisions.

<u>Residential Customers</u>

3. The residential sector is comprised of the New Construction ("NC") and replacement markets and accounts for over 90% of the Company's customer additions forecast. Residential NC consists of new homes in new developments while the replacement market is comprised of customers in existing homes that switch to natural gas from other energy sources. Relative to 2015, growth in the NC market is projected to increase in 2016 followed by a slight decline in 2017. The 2017 forecast is in line with the recent trends and activities in the builder markets. Customer growth in the replacement sector is expected to stay positive, driven by the price advantage of natural gas relative to alternative fuels such as electricity, propane and heating oil.

Witness: F. Ahmad

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 4
Page 2 of 3

Compared to previous forecasts and the actual additions in 2015, overall growth in the replacement sector is expected to slightly decline.

Commercial Customers

4. Economic stability in Ontario is expected to encourage investments in the commercial sector with moderate growth projected in both the commercial and apartment traditional segments. Commercial sector growth in 2017 is expected to be stronger than 2015 and slightly weaker than the 2016 Board-Approved Budget.

Industrial Customers

5. The growth expected in the industrial sector is higher than both the 2016 Budget and 2015 Actual. The Company is forecasting to add eight industrial customers in 2017.

Witness: F. Ahmad

Filed: 2016-10-04
EB-2016-0215
Exhibit C2
Tab 1
Schedule 4
Page 3 of 3

Table 1: Gross Customer Additions

Item No.	Sector	Col. 1 2015 Actual	Col. 2 2016 Budget Board Approved	Col. 3 2017 Forecast
	Residential[1]			
1.1	New Construction	23,522	24,346	23,050
1.2	Replacement[2]	5,822	6,956	5,767
1.0	Total Residential	29,344	31,302	28,817
	Commercial[3]			
2.1	New Construction	1,460	1,941	1,840
2.2	Replacement	725	753	632
2.0	Total Commercial	2,185	2,694	2,472
	Industrial			
3.1	New Construction	1	6	8
3.2	Replacement	3	0	0
3.0	Total Industrial	4	6	8
4.0	Total Gross Customer Additions	31,533	34,002	31,297

[1] Residential customers include single homes and apartment ensuites

[2] Replacement customers are existing homes and businesses, which switch from other energy sources to natural gas

[3] Commercial customers include commercial and traditional apartment buildings

Witness: F. Ahmad

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 1
Schedule 1
Page 1 of 2

UTILITY REVENUE
2017 UPDATED FORECAST (INCLUDING CIS & CUSTOMER CARE)

Line No.		Col. 1 EB-2012-0459 2017 Utility Placeholder Revenue ($Millions)	Col. 2 2017 CIR Update Adjustments ($Millions)	Col. 3 2017 Updated Forecast Utility Revenue ($Millions)
1.	Gas sales	2,480.3	(43.4)	2,436.9
2.	Transportation of gas	211.1	70.6	281.7
3.	Transmission, compression and storage revenue	1.8	4.9	6.7
4.	Other operating revenue	42.7	-	42.7
5.	Interest and property rental	-	-	-
6.	Other income	0.1	-	0.1
7.	Total operating revenue	2,736.0	32.1	2,768.1

Witness: R. Small

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 1
Schedule 1
Page 2 of 2

EXPLANATION OF ADJUSTMENTS TO UTILITY REVENUE
2017 UPDATED FORECAST (INCLUDING CIS & CUSTOMER CARE)

Line No. Adj'd	Adjustment ($Millions)	Explanation
1.	(43.4)	Gas Sales
		Adjustment to 2017 placeholder gas sales revenues to reflect the updated 2017 volume forecast and Board Approved July 1, 2016 rates.
2.	70.6	Transportation of gas
		Adjustment to 2017 placeholder transportation of gas revenues to reflect the updated 2017 volume forecast and Board Approved July 1, 2016 rates.
3.	4.9	Transmission, compression and storage revenue
		Adjustment to 2017 placeholder transmission, compression and storage revenues to reflect the updated 2017 volume forecast and Board Approved July 1, 2016 rates, and to reflect approved Rate 332 recoveries of $4.9M through the GTAITCRRDA.

Witness: R. Small

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 2
Schedule 1
Page 1 of 1

CUSTOMER METERS AND VOLUMES BY RATE CLASS
2017 BUDGET

		Col. 1	Col. 2	Col. 3
Item No.		Customers (Average)	Volumes ($10^6 m^3$)	Revenues ($Millions)
General Service				
1.1.1	Rate 1 - Sales	1 884 035	4 659.2	1 579.9
1.1.2	Rate 1 - T-Service	102 994	252.3	54.2
1.1	Total Rate 1	1 987 029	4 911.5	1 634.1
1.2.1	Rate 6 - Sales	144 811	3 104.3	804.6
1.2.2	Rate 6 - T-Service	21 668	1 757.9	168.6
1.2	Total Rate 6	166 479	4 862.2	973.2
1.3.1	Rate 9 - Sales	6	0.3	0.1
1.3.2	Rate 9 - T-Service	0	0.0	0.0
1.3	Total Rate 9	6	0.3	0.1
1.	Total General Service Sales & T-Service	2 153 514	9 774.0	2 607.4
Contract Sales				
2.1	Rate 100	0	0.0	0.0
2.2	Rate 110	44	67.3	12.1
2.3	Rate 115	0	0.0	0.0
2.4	Rate 135	1	1.2	0.2
2.5	Rate 145	5	8.3	1.5
2.6	Rate 170	4	35.7	5.4
2.7	Rate 200	1	170.8	27.7
2.	Total Contract Sales	55	283.3	46.9
Contract T-Service				
3.1	Rate 100	0	0.0	0.0
3.2	Rate 110	229	794.2	33.9
3.3	Rate 115	26	490.3	7.3
3.4	Rate 125	5	0.0 *	10.9
3.5	Rate 135	43	59.7	2.5
3.6	Rate 145	29	55.1	2.0
3.7	Rate 170	21	260.6	3.2
3.8	Rate 300	2	35.0	0.2
3.9	Rate 315	0	0.0	0.0
3.	Total Contract T-Service	355	1 694.9	60.0
4.	Total Contract Sales & T-Service	410	1 978.2	106.9
5.	Total	2 153 924	11 752.2	2 714.3

* There is no distribution volume for Rate 125 customers.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 2
Schedule 2
Page 1 of 1

COMPARISON OF AVERAGE CUSTOMER METERS BY RATE CLASS
2017 BUDGET AND 2016 BOARD-APPROVED BUDGET

		Col. 1	Col. 2	Col. 3
Item No.		2017 Budget	2016 Board-Approved Budget	2017 Budget Over (Under) 2016 Budget (1-2)
General Service				
1.1.1	Rate 1 - Sales	1 884 035	1 817 516	66 519
1.1.2	Rate 1 - T-Service	102 994	146 683	(43 689)
1.1	Total Rate 1	1 987 029	1 964 199	22 830
1.2.1	Rate 6 - Sales	144 811	144 612	199
1.2.2	Rate 6 - T-Service	21 668	21 243	425
1.2	Total Rate 6	166 479	165 855	624
1.3.1	Rate 9 - Sales	6	6	0
1.3.2	Rate 9 - T-Service	0	1	(1)
1.3	Total Rate 9	6	7	(1)
1.	Total General Service Sales & T-Service	2 153 514	2 130 061	23 453
Contract Sales				
2.1	Rate 100	0	0	0
2.2	Rate 110	44	36	8
2.3	Rate 115	0	0	0
2.4	Rate 135	1	2	(1)
2.5	Rate 145	5	5	0
2.6	Rate 170	4	4	0
2.7	Rate 200	1	1	0
2.	Total Contract Sales	55	48	7
Contract T-Service				
3.1	Rate 100	0	0	0
3.2	Rate 110	229	186	43
3.3	Rate 115	26	25	1
3.4	Rate 125	5	5	0
3.5	Rate 135	43	42	1
3.6	Rate 145	29	47	(18)
3.7	Rate 170	21	21	0
3.8	Rate 300	2	2	0
3.9	Rate 315	0	0	0
3.	Total Contract T-Service	355	328	27
4.	Total Contract Sales & T-Service	410	376	34
5.	Total	2 153 924	2 130 437	23 487

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 2
Schedule 3
Page 1 of 4

COMPARISON OF GAS SALES AND
TRANSPORTATION VOLUME BY RATE CLASS
2017 BUDGET AND 2016 BOARD-APPROVED BUDGET
$(10^6 m^3)$

		Col. 1	Col. 2	Col. 3
Item No.		2017 Budget	2016 Board-Approved Budget	2017 Budget Over (Under) 2016 Budget (1-2)
General Service				
1.1.1	Rate 1 - Sales	4 659.2	4 510.5	148.7
1.1.2	Rate 1 - T-Service	252.3	358.8	(106.5)
1.1	Total Rate 1	4 911.5	4 869.3	42.2
1.2.1	Rate 6 - Sales	3 104.3	3 104.9	(0.6)
1.2.2	Rate 6 - T-Service	1 757.9	1 690.1	67.8
1.2	Total Rate 6	4 862.2	4 795.0	67.2
1.3.1	Rate 9 - Sales	0.3	0.5	(0.2)
1.3.2	Rate 9 - T-Service	0.0	0.1	(0.1)
1.3	Total Rate 9	0.3	0.6	(0.3)
1.	Total General Service Sales & T-Service	9 774.0	9 664.9	109.1
Contract Sales				
2.1	Rate 100	0.0	0.0	0.0
2.2	Rate 110	67.3	81.3	(14.0)
2.3	Rate 115	0.0	0.0	0.0
2.4	Rate 135	1.2	3.8	(2.6)
2.5	Rate 145	8.3	11.2	(2.9)
2.6	Rate 170	35.7	34.1	1.6
2.7	Rate 200	170.8	170.8	0.0
2.	Total Contract Sales	283.3	301.2	(17.9)
Contract T-Service				
3.1	Rate 100	0.0	0.0	0.0
3.2	Rate 110	794.2	622.1	172.1
3.3	Rate 115	490.3	517.1	(26.8)
3.4	Rate 125	0.0 *	0.0 *	0.0
3.5	Rate 135	59.7	55.5	4.2
3.6	Rate 145	55.1	77.3	(22.2)
3.7	Rate 170	260.6	291.6	(31.0)
3.8	Rate 300	35.0	35.0	0.0
3.9	Rate 315	0.0	0.0	0.0
3.	Total Contract T-Service	1 694.9	1 598.6	96.3
4.	Total Contract Sales & T-Service	1 978.2	1 899.8	78.4
5.	Total	11 752.2	11 564.7	187.5

* There is no distribution volume for Rate 125 customers.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 2
Schedule 3
Page 2 of 4

COMPARISON OF GAS SALES AND
TRANSPORTATION VOLUME BY RATE CLASS
2017 BUDGET AND 2016 BOARD-APPROVED BUDGET
($10^6 m^3$)

Item No.		Col. 1 2017 Budget	Col. 2 2016 Board-Approved Budget	Col. 3 2017 Budget Over (Under) 2016 Budget (1-2)	Col. 4 2016* Adjustments	Col. 5 2017 Budget Over (Under) 2016 Budget with Adjustments (3-4)
General Service						
1.1.1	Rate 1 - Sales	4 659.2	4 510.5	148.7	26.1	122.6
1.1.2	Rate 1 - T-Service	252.3	358.8	(106.5)	2.6	(109.1)
1.1	Total Rate 1	4 911.5	4 869.3	42.2	28.7	13.5
1.2.1	Rate 6 - Sales	3 104.3	3 104.9	(0.6)	17.9	(18.5)
1.2.2	Rate 6 - T-Service	1 757.9	1 690.1	67.8	9.0	58.8
1.2	Total Rate 6	4 862.2	4 795.0	67.2	26.9	40.3
1.3.1	Rate 9 - Sales	0.3	0.5	(0.2)	0.0	(0.2)
1.3.2	Rate 9 - T-Service	0.0	0.1	(0.1)	0.0	(0.1)
1.3	Total Rate 9	0.3	0.6	(0.3)	0.0	(0.3)
1.	Total General Service Sales & T-Service	9 774.0	9 664.9	109.1	55.6	53.5
Contract Sales						
2.1	Rate 100	0.0	0.0	0.0	0.0	0.0
2.2	Rate 110	67.3	81.3	(14.0)	0.1	(14.1)
2.3	Rate 115	0.0	0.0	0.0	0.0 **	0.0
2.4	Rate 135	1.2	3.8	(2.6)	0.0	(2.6)
2.5	Rate 145	8.3	11.2	(2.9)	0.0 **	(2.9)
2.6	Rate 170	35.7	34.1	1.6	0.1	1.5
2.7	Rate 200	170.8	170.8	0.0	0.0	0.0
2.	Total Contract Sales	283.3	301.2	(17.9)	0.2	(18.1)
Contract T-Service						
3.1	Rate 100	0.0	0.0	0.0	0.0	0.0
3.2	Rate 110	794.2	622.1	172.1	0.6	171.5
3.3	Rate 115	490.3	517.1	(26.8)	0.0 **	(26.8)
3.4	Rate 125	0.0	0.0	0.0	0.0	0.0
3.5	Rate 135	59.7	55.5	4.2	0.0	4.2
3.6	Rate 145	55.1	77.3	(22.2)	0.1	(22.3)
3.7	Rate 170	260.6	291.6	(31.0)	0.4	(31.4)
3.8	Rate 300	35.0	35.0	0.0	0.0	0.0
3.9	Rate 315	0.0	0.0	0.0	0.0	0.0
3.	Total Contract T-Service	1 694.9	1 598.6	96.3	1.1	95.2
4.	Total Contract Sales & T-Service	1 978.2	1 899.8	78.4	1.3	77.1
5.	Total	11 752.2	11 564.7	187.5	56.9	130.6

*Note: Weather normalization adjustments have been made to the 2016 Board Approved Budget utilizing the 2017 Budget degree days
in order to place the two years on a comparable basis.

** Less than 50,000 m³.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 2
Schedule 3
Page 3 of 4

COMPARISON OF GAS SALES AND
TRANSPORTATION VOLUME BY RATE CLASS
2017 BUDGET AND 2016 BOARD-APPROVED BUDGET
$(10^6 m^3)$

Item No.		Col. 1 2017 Budget	Col. 2 2016 Board-Approved Budget	Col. 3 2017 Budget Over (Under) 2016 Budget (1-2)	Col. 4 Change in Use	Col. 5 Weather	Col. 6 New Customers	Col. 7 Transfer Gains	Col. 8 Transfer Losses	Col. 9 Lost Customers	Col. 10 Added Load
General Service											
1.1.1	Rate 1 - Sales	4 659.2	4 510.5	148.7	(43.0)	26.1	57.6	108.0	0.0	0.0	0.0
1.1.2	Rate 1 - T-Service	252.3	358.8	(106.5)	(1.1)	2.6	0.0	0.0	(108.0)	0.0	0.0
1.1	Total Rate 1	4 911.5	4 869.3	42.2	(44.1)	28.7	57.6	108.0	(108.0)	0.0	0.0
1.2.1	Rate 6 - Sales	3 104.3	3 104.9	(0.6)	1.3	17.9	8.8	(20.9)	(7.7)	0.0	0.0
1.2.2	Rate 6 - T-Service	1 757.9	1 690.1	67.8	76.8	9.0	0.0	59.0	(77.0)	0.0	0.0
1.2	Total Rate 6	4 862.2	4 795.0	67.2	78.1	26.9	8.8	38.1	(84.7)	0.0	0.0
1.3.1	Rate 9 - Sales	0.3	0.5	(0.2)	(0.2)	0.0	0.0	0.0	0.0	0.0	0.0
1.3.2	Rate 9 - T-Service	0.0	0.1	(0.1)	0.0	0.0	0.0	0.0	0.0	(0.1)	0.0
1.3	Total Rate 9	0.3	0.6	(0.3)	(0.2)	0.0	0.0	0.0	0.0	(0.1)	0.0
1.	Total General Service Sales & T-Service	9 774.0	9 664.9	109.1	33.8	55.6	66.4	146.1	(192.7)	(0.1)	0.0
Contract Sales											
2.1	Rate 100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.2	Rate 110	67.3	81.3	(14.0)	3.4	0.1	13.0	8.2	(38.7)	0.0	0.0
2.3	Rate 115	0.0	0.0	0.0	0.0	0.0 *	0.0	0.0	0.0	0.0	0.0
2.4	Rate 135	1.2	3.8	(2.6)	(1.8)	0.0	0.0	0.0	(0.8)	0.0	0.0
2.5	Rate 145	8.3	11.2	(2.9)	0.2	0.0 *	0.0	0.8	(3.9)	0.0	0.0
2.6	Rate 170	35.7	34.1	1.6	1.5	0.1	0.0	0.0	0.0	0.0	0.0
2.7	Rate 200	170.8	170.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.	Total Contract Sales	283.3	301.2	(17.9)	3.3	0.2	13.0	9.0	(43.4)	0.0	0.0
Contract T-Service											
3.1	Rate 100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.2	Rate 110	794.2	622.1	172.1	2.6	0.6	0.0	209.3	(37.5)	(2.9)	0.0
3.3	Rate 115	490.3	517.1	(26.8)	10.2	0.0 *	0.0	56.4	(93.4)	0.0	0.0
3.4	Rate 125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.5	Rate 135	59.7	55.5	4.2	0.9	0.0	0.0	4.7	(1.4)	0.0	0.0
3.6	Rate 145	55.1	77.3	(22.2)	8.1	0.1	0.0	1.2	(31.6)	0.0	0.0
3.7	Rate 170	260.6	291.6	(31.0)	(4.6)	0.4	0.0	24.7	(51.5)	0.0	0.0
3.8	Rate 300	35.0	35.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.9	Rate 315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.	Total Contract T-Service	1 694.9	1 598.6	96.3	17.2	1.1	0.0	296.3	(215.4)	(2.9)	0.0
4.	Total Contract Sales & T-Service	1 978.2	1 899.8	78.4	20.5	1.3	13.0	305.3	(258.8)	(2.9)	0.0
5.	Total	11 752.2	11 564.7	187.5	54.3	56.9	79.4	451.4	(451.5)	(3.0)	0.0

* Less than 50,000 m³.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 2
Schedule 3
Page 4 of 4

The principal reasons for the variances contributing to the weather normalized increase of 130.6 10^6m^3 in the 2017 Budget over the 2016 Budget are as follows:

1. The volumetric increase of 13.5 10^6m^3 in Rate 1 is due to customer growth of 57.6 10^6m^3, partially offset by lower average use per customer of totalling 44.1 10^6m^3;

2. The volumetric increase of 40.3 10^6m^3 in Rate 6 is due to the net customer growth of 8.8 10^6m^3, and higher average use per customer of totalling 78.1 10^6m^3, partially offset by the net customer migration to Contract Sales and T-Service of 46.6 10^6m^3;

3. The volumetric decrease of 0.3 10^6m^3 in Rate 9 is due to lower average use per station of 0.2 10^6m^3 and the loss of a station of 0.1 10^6m^3;

4. The volumetric increase for Contract Sales and T-Service of 77.1 10^6m^3 is due to the increases in the apartment sector and the industrial sector of 84.9 10^6m^3, partially offset by the decrease of the commercial sector of 7.8 10^6m^3.

Witness: M. Suarez

Filed: 2016-10-04
EB-2016-0215
Exhibit C3
Tab 2
Schedule 4
Page 1 of 1

COMPARISON OF GAS SALES AND
TRANSPORTATION REVENUE BY RATE CLASS
2017 BUDGET AND 2016 BOARD-APPROVED BUDGET
($ MILLIONS)

		Col. 1	Col. 2	Col. 3
Item No.		2017 Budget	2016 Board-Approved Budget	2017 Budget Over (Under) 2016 Budget (1-2)
General Service				
1.1.1	Rate 1 - Sales	1 579.9	1 663.9	(84.0)
1.1.2	Rate 1 - T-Service	54.2	74.6	(20.4)
1.1	Total Rate 1	1 634.1	1 738.5	(104.4)
1.2.1	Rate 6 - Sales	804.6	898.7	(94.1)
1.2.2	Rate 6 - T-Service	168.6	151.0	17.6
1.2	Total Rate 6	973.2	1 049.7	(76.5)
1.3.1	Rate 9 - Sales	0.1	0.1	0.0
1.3.2	Rate 9 - T-Service	0.0	0.0	0.0
1.3	Total Rate 9	0.1	0.1	0.0
1.	Total General Service Sales & T-Service	2 607.4	2 788.3	(180.9)
Contract Sales				
2.1	Rate 100	0.0	0.0	0.0
2.2	Rate 110	12.1	17.0	(4.9)
2.3	Rate 115	0.0	0.0	0.0
2.4	Rate 135	0.2	0.7	(0.5)
2.5	Rate 145	1.5	2.3	(0.8)
2.6	Rate 170	5.4	6.2	(0.8)
2.7	Rate 200	27.7	31.9	(4.2)
2.	Total Contract Sales	46.9	58.1	(11.2)
Contract T-Service				
3.1	Rate 100	0.0	0.0	0.0
3.2	Rate 110	33.9	26.9	7.0
3.3	Rate 115	7.3	8.5	(1.2)
3.4	Rate 125	10.9	10.9	0.0 *
3.5	Rate 135	2.5	2.4	0.1
3.6	Rate 145	2.0	2.7	(0.7)
3.7	Rate 170	3.2	3.7	(0.5)
3.8	Rate 300	0.2	0.2	0.0 *
3.9	Rate 315	0.0	0.0	0.0
3.	Total Contract T-Service	60.0	55.3	4.7
4.	Total Contract Sales & T-Service	106.9	113.4	(6.5)
5.	Total	2 714.3	2 901.6	(187.4)

* Less than $50,000.

Witness: M. Suarez