

EP INTERROGATORY #4

INTERROGATORY

References: Exhibit C1 Tab 2 Schedule 1 Page 9,
Exhibit C2 Tab 2 Schedule 1 Page 23
Exhibit C2 Tab 1 Schedule 3 Page 7.

Preamble: The rate of actual average use decline in 2016 was an anomaly as it was not consistent with the historical trend, declining from 2015 by -3.2%. No significant development occurred in 2016 that would allow direct causal inference with 2016 results. As a result, the Company is inclined to treat the 2016 experience as an anomaly until additional, similar actual observations constitute an indication of trend. This treatment is confirmed through diagnostic testing of econometric models as further detailed in the Average Use Evidence at Exhibit C2 Tab 1 Schedule 3 on page 7.

- A). Please provide for the residential class for each of the 3 heating degree zones, charts showing the forecast and/or actual average use, for 2007 to 2017 and forecast 2018.
- B). Please explain the structural change/result in increased average use in 2016 for the residential class.
- In terms of contributing causes (including those discussed at Exhibit C2 Tab 2 Schedule 1 Page 23
 - In terms of the Average Use Model and Statistics Exhibit C2 Tab 1 Schedule 3
- C). Please provide the actual degree days and Normalized Average Use occurring in winter 2016/17.
- D). Compare to prior years 2007-16 and to 2018 forecast.

Witnesses: R. Cheung
H. Sayyan
M. Suarez

RESPONSE

- a) The table on the following page shows the Actual and Board-Approved average uses by the three weather zones along with the degree days, for the years from 2007 to 2018.

The table has been expanded to include responses to part c) & d).

The response to part b) is on page 4.

Witnesses: R. Cheung
H. Sayyan
M. Suarez

TABLE 1
 GENERAL SERVICE AVERAGE USE AND DEGREE DAYS

Test Year	Weather Zones	Actual Normalized Average Use (m ³)	Board-Approved Normalized Average Use (m ³)	Normalized Average Use Variance (m ³)	Actual Degree Days	Board-Approved Degree Days
2007	Central	2,814	2,771	43	3,613	3,617
	Eastern	2,458	2,435	23	4,361	4,410
	Niagara	2,392	2,356	36	3,313	3,546
2008	Central	2,720	2,736	(16)	3,750	3,543
	Eastern	2,364	2,371	(7)	4,369	4,321
	Niagara	2,341	2,316	25	3,469	3,472
2009	Central	2,700	2,715	(15)	3,764	3,514
	Eastern	2,386	2,403	(17)	4,472	4,363
	Niagara	2,259	2,336	(77)	3,527	3,435
2010	Central	2,670	2,705	(35)	3,454	3,546
	Eastern	2,337	2,411	(74)	3,979	4,390
	Niagara	2,184	2,240	(56)	3,316	3,433
2011	Central	2,689	2,727	(38)	3,597	3,602
	Eastern	2,311	2,432	(121)	4,108	4,421
	Niagara	2,239	2,241	(2)	3,344	3,447
2012	Central	2,630	2,597	33	3,194	3,532
	Eastern	2,219	2,270	(51)	4,048	4,343
	Niagara	2,166	2,153	13	3,013	3,418
2013	Central	2,661	2,687	(26)	3,746	3,668
	Eastern	2,210	2,192	18	4,484	4,297
	Niagara	2,121	2,174	(53)	3,537	3,420
2014	Central	2,571	2,543	28	4,044	3,517
	Eastern	2,190	2,089	101	4,552	4,243
	Niagara	2,130	2,091	39	3,814	3,386
2015	Central	2,527	2,516	11	3,710	3,536
	Eastern	2,133	2,134	(1)	4,397	4,267
	Niagara	2,075	2,066	9	3,548	3,376
2016	Central	2,504	2,588	(84)	3,412	3,617
	Eastern	2,102	2,174	(72)	4,231	4,323
	Niagara	2,035	2,084	(49)	3,233	3,408
2017 Board-Approved ¹	Central		2,584			3,639
	Eastern		2,162			4,341
	Niagara		2,047			3,405
2018 Proposed	Central		2,463			3,642
	Eastern		2,081			4,331
	Niagara		1,985			3,421

Note

1. 2017 Board-Approved average use provided in lieu of actual average use as partial year information is not indicative of full year results.

Witnesses: R. Cheung
 H. Sayyan
 M. Suarez

- b) It is acknowledged that contributing factors like heat content impacts, Building Code effectivity, and changes in customer behavior may have influenced 2016 results. However, these factors cannot be evaluated in such a way as to constitute measurable, definitive explanations for the actual usage variances.

The Company has observed progressively higher energy content values over the past few years as a result of gas supplies from Marcellus-Utica taking up a larger share of sendout. The average use forecast relies on historical average uses that have inherently lower heat values than what would have been in effect in 2016 due to the different mix of supplies. That is, volumes in 2016 would, on average, have had a higher effective energy content than what would have been implicit in the forecast, thereby possibly requiring lesser volumes than anticipated to meet normalized energy requirements. While this understanding would help explain the directional difference in average use, it cannot explain the magnitude.

Similarly, when the 2016 forecast was developed, 2014 volumes constituted the last full year of actual values. In January 2014, the 2012 Building Code came into effect, and its impact would have had partial effectivity in the actual 2014 volumes included in the historical sample. The Company surmises that 2016 actual volumes likely reflect the fuller impact of those code changes, contributing to average use reductions that were deeper than anticipated.

Finally, customer behavior is the most difficult factor to assess or predict. It is possible that volatile natural gas prices from 2014 and 2015 may have contributed to a shift in consumption patterns in the winter months. Also, government proposals in 2016 to transition away from natural gas usage, coupled with Cap and Trade discussions, could have created uncertainty in the continued viability of natural gas as a fuel source for consumers.

As noted in Board Staff Interrogatory #6, at Exhibit I.C2.EGDI.STAFF.6 and Exhibit I.C2.EGDI.EP.5, diagnostic testing is used to assess the reliability of the econometric models. Where models fail the diagnostic tests, model modifications are made to ensure the results can be interpreted with confidence. The Chow Test assesses whether a structural break (outliers, level-shifts, or temporary changes) has occurred. Test results are shown in Tables 6 and 9 (Exhibit C2 Tab 1 Schedule 3, pages 14 and 19, respectively) which confirm that a structural break is evident for Metro region revenue class 20 (Rate 1) and Eastern region revenue class 73 (Rate 6) models. The Company included dummy variables in those models to suppress the likelihood of a similar off-trend result in 2016 being forecast for 2018.

- c) & d) Actual average use and degree days included in same table as in part a)

Witnesses: R. Cheung
H. Sayyan
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