

In the Matter of the Application of Kansas)
City Power & Light Company for Approval) Docket No. 07-KCPE-905-RTS
to Make Certain Changes in Its Charges for)
Electric Service to Begin the Implementation)
of its Regulatory Plan)

STATE CORPORATION COMMISSION

AUG 03 2007

 Docket
Room

DIRECT TESTIMONY

PREPARED BY

JAMES M. SANDERSON

UTILITIES DIVISION

KANSAS CORPORATION COMMISSION

1 **Q: Please give your name and business address.**

2 A: James M. Sanderson, Kansas Corporation Commission, 1500 S.W. Arrowhead
3 Road, Topeka, Kansas, 66604-4027.

4 **Q: In what capacity does the Commission employ you?**

5 A: I have been employed by the Commission as Senior Research Economist since
6 July 2004. My responsibilities include research on regulatory policy topics and
7 analysis of issues found in dockets before the Commission.

8 **Q: Have you previously offered testimony to the Commission?**

9 A: Yes. I provided Commission testimony under the following dockets:
10 04-AQLE-1065-RTS, 05-AQLG-367-RTS, 05-EPDE-980-RTS,
11 05-WSEE-981-RTS, 06-MDWE-1027-RTS, 06-KCPE-828-RTS, and
12 07-AQLG-431-RTS.

13 **Q: Please describe your professional qualifications.**

14 A: I earned a Bachelor of Arts in Business Administration degree with a
15 concentration in finance from Kansas Wesleyan University in 1994. I also earned
16 two graduate degrees from Kansas State University: a Master of Business
17 Administration with an emphasis in finance in 1997 and a Master of Arts in
18 Economics in 2004. Prior to my employment at the Commission, I was employed
19 by Kansas State University as a graduate research assistant conducting research in
20 the transportation field and as a graduate teaching assistant instructing economics
21 courses at the undergraduate and graduate levels. While employed at the
22 Commission, I have used econometric modeling techniques to weather normalize
23 utility test year data in a number of rate cases.

1 **I. Introduction**

2 **Q: What is the purpose of your testimony?**

3 A: I am sponsoring Staff Income Statement Adjustment No.32 for weather
4 normalization in the amount of -\$2,741,120.

5 **Q: Are there significant differences between Staff's and the Company's**
6 **weather normalization adjustments?**

7 A: Yes. The Company normalized test year retail sales volumes with an adjustment
8 of -54,794 MWh. Staff's adjustment to retail sales is somewhat larger at
9 -65,566 MWh. The Company's revenue adjustment is -\$2,687,814. Again,
10 Staff's adjustment is larger with a value of -\$5,428,934. The difference between
11 Staff's and the Company's revenue adjustments is -\$2,741,120, and this
12 difference is the value of Staff's Income Statement Adjustment No. 32.

13 **Q: Does Staff have an explanation for the differences?**

14 A: Yes. A significant factor leading to differences between adjustments is selection
15 of weather stations. The Company selected a single Missouri weather station at
16 Kansas City International airport while Staff selected three stations within the
17 Company's Kansas service territory. Staff's weather stations were much nearer to
18 actual customer populations. For this reason, Staff believes its weather
19 normalization adjustments produce test year sales and revenues more reflective of
20 normal temperatures for Kansas customers.

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1 **II. Purpose of Weather Normalization**

2 **Q: What is the purpose of weather normalization?**

3 A: The purpose of weather normalization is to adjust test year sales volumes and
4 revenues to reflect normal temperatures. Customer electricity use is sensitive to
5 temperature. For example, when conditions are warmer than normal during
6 spring and summer months, customer electricity consumption will reflect an
7 increased demand for air conditioning. When conditions are cooler than normal
8 during fall and winter months, customer electricity consumption will reflect an
9 increased demand for electric space heating. Weather normalization adjustments
10 are added to or subtracted from actual test year sales volumes and revenues to
11 construct a test year that reflects normal or average temperatures.

12 **Q: How do revenue adjustments relate to temperature conditions?**

13 A: When temperatures result in increased demand for electricity, the Company's
14 revenue collections are greater than normal. In such circumstances, Staff's
15 adjustments are negative, removing test year revenue. Conversely, when
16 temperatures lead to reduced demand for electricity, Staff's adjustments add test
17 year revenue. In this way, a weather normalized historical test year is
18 constructed.

19 **Q: Why is it important to normalize test year sales and revenues?**

20 A: It is important to normalize test year sales and revenues because the weather-
21 normalized test year supports determination of the normalized revenue
22 requirement and of the normalized billing determinants. The weather-normalized
23 test year provides the basis for establishing normalized rates. Weather normalized

1 rates are appropriate because they reflect average or expected temperature
2 conditions.

3 **Q: If actual temperatures during the test year were normal, would Staff**
4 **recommend making a weather normalization adjustment?**

5 A: No. If actual temperatures during the test year were normal, there would be no
6 need to make a weather normalization adjustment.

7 **Q: How are “normal” temperature conditions determined?**

8 A: By convention of the World Meteorological Organization, a climatological
9 normal is defined as an arithmetic mean over three consecutive decades.¹ Staff
10 utilizes climatological normals calculated by the National Oceanic and
11 Atmospheric Administration (NOAA).

12
13 **III. Description of Staff’s Weather Normalization Procedures**

14 **Q: Please provide a general description of Staff’s weather normalization**
15 **procedures.**

16 A: Weather normalization adjustments are developed with a four-step process:
17 1. Selection of weather stations,
18 2. Estimation of customer temperature sensitivity coefficients,
19 3. Calculation of kWh sales adjustments with an adjustment formula, and
20 4. Use of tariff rates to calculate dollar adjustments.

21

¹ National Oceanic and Atmospheric Administration, *Climatology of the United States No. 81. Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1971-2000. 14 Kansas*. National Climatic Data Center, Asheville, NC. 2002.

1 **Q: What criteria are used to select weather stations?**

2 A: Staff selects weather stations on the basis of the completeness of published data
3 and on the basis of proximity to customers. It is important that stations be
4 selected near customer locations, especially in the case of high density
5 populations. Selection of weather stations that are near customers ensures that
6 temperature conditions at the stations are similar to conditions experienced by
7 customers. As the distance between customers and stations increases, so does the
8 probability that temperature conditions will differ significantly between the
9 locations.

10 **Q: Please list the weather stations that Staff utilized in this case.**

11 A: Staff used weather data from stations at: 1) Olathe, 2) Ottawa, and 3) Paola.
12 These are the three stations that Staff used in the previous rate case
13 (06-KCPE-828-RTS).

14 **Q: What was the source of the weather data utilized by Staff?**

15 A: Staff utilized weather data published by NOAA. Official NOAA publications
16 provided normal and actual heating and cooling degree-day data.² This data is
17 listed in Exhibit JMS-1. Also listed are degree-day departures.

18 **Q: Please define the terms “heating degree-day” and “cooling degree-day”.**

19 A: Heating degree-day (HDD) and cooling degree-day (CDD) measures are used to
20 indicate the level of demand for heating and air conditioning created by daily
21 temperatures. The HDD measure provides an indication of how cool a day’s
22 average temperature was relative to a pre-determined base temperature (the

² Ibid. Also, National Oceanic and Atmospheric Administration, *Climatological Data*, National Climatic Data Center. Volume 120 Number 1 through 12.

1 standard base is 65 degrees).³ In terms of weather normalization, the HDD
2 measure indicates demand for space heating. Similarly, the CDD measure reflects
3 the demand for air conditioning due to warm temperatures. The *monthly* HDD
4 and CDD measures used by Staff are the sum of *daily* HDD and CDD measures
5 for the given month.

6 **Q: Please define HDD and CDD departures.**

7 A: An HDD or CDD departure equals the monthly *normal* degree-day value minus
8 the monthly *actual* degree-day value. For example, according to NOAA, the
9 normal February HDD value for the station at Paola, Kansas is 820. During the
10 2006 test year, Paola experienced an actual HDD value of 889. Therefore, the
11 Paola HDD departure for February is 820 minus 889 or -69. In this instance,
12 temperatures during February were cooler than normal. Since a degree-day
13 departure represents the deviation of actual temperature from normal, it also
14 indicates any resulting customer electricity demand deviation from the normal
15 level.

16 **Q: Please explain the temperature sensitivity coefficients listed in step two of the**
17 **weather normalization procedures.**

18 A: Temperature sensitivity coefficients explain changes in customer electricity
19 consumption from the normal level as a function of temperature. They are
20 obtained from statistical models of electricity consumption and are utilized in the
21 weather normalization adjustment equation to calculate test year kWh

³ Heating degree-days are calculated as a base number in degrees minus the average of the maximum and minimum daily temperatures:

$$\text{HDD} = \text{Base} - (\text{Max} + \text{Min})/2$$

Cooling degree-days (CDD) are calculated as the average daily temperature minus the base:

$$\text{CDD} = (\text{Max} + \text{Min})/2 - \text{Base}$$

Additionally, degree-day values cannot be less than zero. Negative values are set to zero.

1 adjustments. Specifically, a sensitivity coefficient explains the change in
2 customer kWh electricity consumption resulting from an additional degree-day
3 departure from normal.

4 **Q: Please provide a general description of the techniques Staff utilizes to**
5 **estimate temperature sensitivity coefficients.**

6 A: Relying on a simple model of customer electricity consumption, Staff employs
7 statistical techniques to estimate temperature sensitivities. The following
8 theoretical model describes per-capita electricity consumption as a function of
9 degree-days:

$$\text{per-capita use}_t = \beta_0 + \beta_1(\text{AVCDD}) + \beta_2(\text{AVHDD}).$$

12
13 In the model, β_0 is a constant term that captures baseline per-capita electricity use,
14 β_1 and β_2 are temperature sensitivity coefficients, and AVCDD and AVHDD are
15 the average degree-day measures for the current and previous months. The
16 theoretical model of electricity consumption provides a foundation for statistical
17 models. Staff uses Ordinary Least Squares (OLS), Weighted Least Squares
18 (WLS), Autoregressive Moving Average (ARMA), and Autoregressive Integrated
19 Moving Average (ARIMA) statistical models to estimate temperature
20 sensitivities.

21 **Q: How were customer temperature sensitivities estimated in this case?**

22 A: In this instance, Staff relied on the weather normalization analysis that was
23 completed in the previous rate case (06-KCPE-828-RTS). Due to the short period

1 of time between the current and previous rate case, the sensitivity coefficients
2 estimated in the previous case are still valid; therefore, Staff used them in the
3 current case. The sensitivity coefficients are listed in Exhibit JMS-2.

4 **Q: Please describe the weather normalization adjustment formula listed in step**
5 **3 above, and explain how it is used to calculate kWh sales adjustments.**

6 A: Staff uses a weather normalization adjustment formula to calculate kWh sales
7 adjustments. The adjustment formula uses temperature sensitivity coefficients,
8 degree-day departures, and customer counts to produce kWh adjustments. The
9 adjustment formula takes the form:

10

11
$$\text{WNA Adjustment} = [\beta_1(\text{CDDdepart}_t) + \beta_2(\text{HDDdepart}_t)](\text{customer count}_t),$$

12

13 where the beta terms are the estimated CDD and HDD sensitivity coefficients, the
14 CDDdepart_t and HDDdepart_t terms are the current month CDD and HDD
15 departures, and the customer count term is the customer count for the current
16 month.

17 **Q: How did Staff obtain the Company data that was required for weather**
18 **normalization?**

19 A: Staff obtained sales and customer count data from the Company as the result of
20 Staff Data Request No.114. Staff obtained billing frequency data as the result of
21 Staff data request No.135.

22

23

1 **Q: How were tariff rates used to convert kWh sales adjustments to revenue**
2 **adjustments as was listed in step 4 of the normalization procedures?**

3 A: Staff multiplied kWh adjustments by weighted average tariff rates to produce
4 revenue adjustments. The rates used were the weighted average tariff class block
5 rates for both the summer and winter periods. Billing units obtained from billing
6 frequency data were used to weight the tariff rates. Staff's weighted average tariff
7 rates are listed in exhibit JMS-5.

8
9 **IV. Weather Normalization Adjustment Results**

10 **Q: How did actual test year temperature conditions compare to normal**
11 **conditions?**

12 A: In general, average temperatures were warmer than normal. Both HDD and CDD
13 departures indicate that average temperatures were warmer than normal during
14 much of the year.

15 **Q: Does this testimony provide the adjustment amounts that resulted from your**
16 **weather normalization calculations?**

17 A: Yes. Staffs weather normalization adjustment calculations are presented in
18 exhibit JMS-3, and a summary of adjustments is presented in exhibit
19 JMS-4. As shown in the exhibits, Staff's total sales volume adjustment is
20 -65,565,991 kWh, and Staff's total dollar adjustment is -\$5,428,934. Weather
21 normalization results indicate that \$5,428,934 should be subtracted from test year
22 revenue in order that the adjusted test year reflect normal temperature conditions.

23

1 **Q: Given Staff's weather normalization results, how is Income Statement**
2 **Adjustment No. 32 calculated?**

3 A: Staff's income statement adjustment equals the difference between the
4 Company's and Staff's weather normalization adjustments. The Company's
5 income statement adjustment for weather normalization is -\$2,687,814. This
6 adjustment differs from Staff's weather normalization adjustment by -\$2,741,120,
7 which is the value of Staff's Income Statement Adjustment No. 32.

8 **Q: What is Staff's explanation for the difference between the Company's and**
9 **Staff's weather normalization adjustments?**

10 A: Weather station selection was a significant factor contributing to the difference
11 between adjustments. The Company used a single Missouri weather station at
12 Kansas City International (KCI) airport to normalize sales and revenues for its
13 entire service territory. It is important to note that this station is not within
14 Kansas, and in fact, the KCI station is over 90 miles distant from some of the
15 Company's Kansas customers. Staff selected three weather stations within the
16 Kansas service territory: 1) Olathe, 2) Ottawa, and 3) Paola. Staff's stations are
17 much nearer to actual customer locations.

18 **Q: How should effective weather stations be selected?**

19 A: Selection of effective weather stations requires that stations be selected near the
20 center points of the highest population densities within the service territory and
21 also requires that no customers be too great a distance from a weather station.
22 Staff selected the Olathe station to represent conditions for the high-density
23 customer population in the Kansas City metropolitan area. Staff selected the

1 Ottawa station to represent conditions for the customers in the western parts of the
2 Company's service territory, and Staff selected the Paola station to represent
3 conditions in the eastern and southern parts of the Company's service territory.

4 **Q: Did Staff analyze the temperature data from the KCI station to determine**
5 **how it affected the Company's adjustment results?**

6 A: Yes. Staff converted the daily temperature data utilized by the Company to
7 monthly HDD and CDD departures so that the KCI data could be compared to
8 Staff's Kansas data. The comparison of departures between stations is presented
9 in Exhibit JMS-6.

10 **Q: Are any patterns evident from the comparison?**

11 A: Yes. As may be seen in the degree-day departure values in JMS-6, monthly HDD
12 departures at KCI are larger than those at Kansas stations, and monthly CDD
13 departures at KCI are less than those at Kansas stations. Degree-day measures
14 indicate that temperatures at KCI were cooler than those at the Kansas stations.

15 **Q: Can Staff present examples where the Company's selection of the KCI**
16 **weather station resulted in adjustments that differ from Staff's?**

17 A: Yes. Two instances are particularly suited as examples. One instance occurred in
18 February, and another instance occurred in September. Departure values for these
19 months have been highlighted in Exhibit JMS-6 to illustrate the examples.

20 **Q: Please explain the February instance.**

21 A: While Kansas temperatures were generally warmer than normal in 2006, Staff
22 noted that a cooler than normal period occurred during February. February HDD
23 measures for each of the three Kansas stations were all less than zero indicating

1 cooler than normal temperatures. Staff's February kWh and revenue adjustments
2 are negative reflecting the increased demand for space heating. The February
3 HDD departure at KCI is positive indicating warmer than normal temperatures,
4 and as a result, the Company's February kWh and revenue adjustments are large
5 and positive. The Company's kWh and revenue adjustments are of opposite sign
6 to Staff's because conditions at KCI were dissimilar to conditions at the three
7 Kansas stations.

8 **Q: Please explain the September instance.**

9 A: Again, while 2006 temperatures were generally warmer than normal in Kansas,
10 Staff noted that September temperatures were cooler than normal. Departure
11 values in Exhibit JMS-6 illustrate. At the Kansas stations, September HDD
12 departures are negative, and September CDD departures are positive. The
13 departures indicate cooler than normal temperatures. However, at the KCI
14 station, the September HDD departure is positive (opposite sign as Kansas
15 departures), and while being positive (same sign as Kansas stations), the
16 September CDD departure is significantly less than the Kansas departures.
17 Degree-day departures for Kansas indicate that demand for air conditioning
18 should have been considerably less than normal while demand for space heating
19 should have been slightly greater than normal. Staff's large positive September
20 adjustments reflect the cooler than normal temperatures. The Company's large
21 negative adjustments do not.

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23

1 **V. Recommendations**

2 **Q: What are your recommendations to the Commission?**

3 A: I have two recommendations. First, I recommend that the Commission accept
4 Staff's Income Statement Adjustment No.32 in the amount of -\$2,741,120. Staff
5 believes that with this revenue adjustment, the test year will better reflect normal
6 temperatures.

7 **Q: What is your second recommendation?**

8 A: Staff recommends that the Commission direct the Company to explore the
9 possibility of using weather stations within the Kansas service territory for future
10 weather normalization. The stations should be selected to better represent the
11 temperature conditions experienced by Kansas customers.

12 **Q: Does that conclude your testimony?**

13 A: Yes. Thank You.

STATE OF KANSAS)
) ss.
COUNTY OF SHAWNEE)

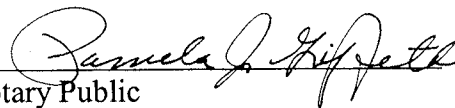
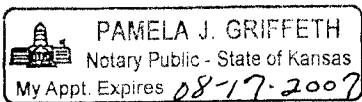
VERIFICATION

Jim Sanderson, being duly sworn upon his oath deposes and says that he is the Senior Research Economist of the Kansas Corporation Commission; that he has read and is familiar with the foregoing *Direct Testimony*, and that the statements therein are true to the best of his knowledge, information and belief.



Jim Sanderson
Senior Research Economist
Utilities Division
State Corporation Commission of the
State of Kansas

Subscribed and sworn to before me this 3rd day of August, 2007.


Notary Public

My Appointment Expires: August 17, 2007

**Exhibit JMS-1
Weather Actuals, Normals, and Departures
07-KCPE-905-RTS**

Weather Actuals

	Olathe		Ottawa		Paola	
	HDD	CDD	HDD	CDD	HDD	CDD
January	756	0	682	0	783	0
February	877	0	812	0	889	0
March	610	0	508	1	596	0
April	183	39	146	71	192	49
May	121	138	117	137	116	140
June	0	327	1	294	0	292
July	0	481	0	473	0	459
August	0	479	0	472	0	488
September	66	92	63	71	74	79
October	360	46	372	43	361	36
November	550	1	571	0	552	0
December	870	0	858	0	885	0

Weather Normals

	Olathe		Ottawa		Paola	
	HDD	CDD	HDD	CDD	HDD	CDD
January	1113	0	1073	0	1096	0
February	839	0	807	0	820	0
March	609	0	567	0	578	0
April	292	14	261	22	271	17
May	100	108	83	122	90	112
June	6	279	3	311	4	293
July	0	432	0	476	0	455
August	6	383	4	428	5	404
September	45	171	35	197	46	182
October	226	19	204	24	227	18
November	622	0	590	1	613	0
December	989	0	954	0	980	0

Weather Departures

	Olathe		Ottawa		Paola	
	HDD	CDD	HDD	CDD	HDD	CDD
January	357	0	391	0	313	0
February	-38	0	-5	0	-69	0
March	-1	0	59	-1	-18	0
April	109	-25	115	-49	79	-32
May	-21	-30	-34	-15	-26	-28
June	6	-48	2	17	4	1
July	0	-49	0	3	0	-4
August	6	-96	4	-44	5	-84
September	-21	79	-28	126	-28	103
October	-134	-27	-168	-19	-134	-18
November	72	-1	19	1	61	0
December	119	0	96	0	95	0

Exhibit JMS-2
Weather Sensitivity Coefficient Estimates
Estimates from 06-KCPE-828-RTS
07-KCPE-905-RTS

class	class abbreviation	station	degree day	sensitivity coefficient
Large General Service All Electric	LGA	Olathe	CDD	86.550
			HDD	48.954
	LGA	Ottawa	CDD	0.000
			HDD	0.000
Large General Service	LGA	Paola	CDD	105.016
			HDD	96.537
	LGS	Olathe	CDD	67.709
			HDD	0.000
Large General Service	LGS	Ottawa	CDD	26.957
			HDD	0.000
	LGS	Paola	CDD	40.984
			HDD	0.000
Large Power Service	LPS	Olathe	CDD	392.045
			HDD	0.000
	LPS	Ottawa	CDD	748.563
			HDD	0.000
Large Power Service	LPS	Paola	CDD	0.000
			HDD	0.000
	Medium General Service All Electric	MGA	Olathe	CDD
HDD				9.823
MGA		Ottawa	CDD	10.429
			HDD	6.889
Medium General Service All Electric	MGA	Paola	CDD	9.733
			HDD	6.033
	Medium General Service	MGS	Olathe	CDD
HDD				0.000
MGS		Ottawa	CDD	5.869
			HDD	2.850
Medium General Service	MGS	Paola	CDD	11.075
			HDD	2.090
	Residential	R	Olathe	CDD
HDD				0.446
R		Ottawa	CDD	2.045
			HDD	1.015
Residential	R	Paola	CDD	2.474
			HDD	1.287
	Residential Time of Day	RTOD	Olathe	CDD
HDD				0.252
Small General Service All Electric	SGA	Olathe	CDD	0.791
			HDD	0.951
	SGA	Ottawa	CDD	2.993
			HDD	2.558
Small General Service All Electric	SGA	Paola	CDD	5.189
			HDD	2.439
	Small General Service	SGS	Olathe	CDD
HDD				0.157
SGS		Ottawa	CDD	0.765
			HDD	0.303
Small General Service	SGS	Paola	CDD	1.148
			HDD	0.378

Exhibit JMS-3
Weather Normalization Adjustment Calculations
07-KCPE-905-RTS
page 1

LGAOlathe	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	86.54976	0	48.95371	357	221	3,862,301	0.040882	\$157,897
	2	86.54976	0	48.95371	-38	219	-407,393	0.04184	-\$17,045
	3	86.54976	0	48.95371	-1	221	-10,819	0.041944	-\$454
	4	86.54976	-25	48.95371	109	225	713,747	0.042445	\$30,295
	5	86.54976	-30	48.95371	-21	249	-902,506	0.045355	-\$40,333
	6	86.54976	-48	48.95371	6	240	-926,560	0.047703	-\$44,199
	7	86.54976	-49	48.95371	0	232	-983,898	0.047523	-\$46,758
	8	86.54976	-96	48.95371	6	251	-2,011,779	0.047619	-\$95,799
	9	86.54976	79	48.95371	-21	241	1,400,066	0.043915	\$61,484
	10	86.54976	-27	48.95371	-134	230	-2,046,227	0.042085	-\$86,115
	11	86.54976	-1	48.95371	72	252	866,406	0.041601	\$36,043
	12	86.54976	0	48.95371	119	245	1,427,246	0.041822	\$59,690
						total	980,585	total	\$14,106

LGAOttawa	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	0	0	0	391	3	0	0.040882	\$0
	2	0	0	0	-5	3	0	0.04184	\$0
	3	0	-1	0	59	3	0	0.041944	\$0
	4	0	-49	0	115	3	0	0.042445	\$0
	5	0	-15	0	-34	3	0	0.045355	\$0
	6	0	17	0	2	3	0	0.047703	\$0
	7	0	3	0	0	3	0	0.047523	\$0
	8	0	-44	0	4	3	0	0.047619	\$0
	9	0	126	0	-28	3	0	0.043915	\$0
	10	0	-19	0	-168	3	0	0.042085	\$0
	11	0	1	0	19	3	0	0.041601	\$0
	12	0	0	0	96	3	0	0.041822	\$0
						total	0	total	\$0

LGA Paola	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	105.016	0	96.53662	313	11	332,376	0.040882	\$13,588
	2	105.016	0	96.53662	-69	11	-73,271	0.04184	-\$3,066
	3	105.016	0	96.53662	-18	11	-19,114	0.041944	-\$802
	4	105.016	-32	96.53662	79	12	51,191	0.042445	\$2,173
	5	105.016	-28	96.53662	-26	12	-65,405	0.045355	-\$2,966
	6	105.016	1	96.53662	4	12	5,894	0.047703	\$281
	7	105.016	-4	96.53662	0	13	-5,461	0.047523	-\$260
	8	105.016	-84	96.53662	5	13	-108,403	0.047619	-\$5,162
	9	105.016	103	96.53662	-28	13	105,477	0.043915	\$4,632
	10	105.016	-18	96.53662	-134	13	-192,741	0.042085	-\$8,111
	11	105.016	0	96.53662	61	13	76,554	0.041601	\$3,185
	12	105.016	0	96.53662	95	12	110,052	0.041822	\$4,603
						total	217,148	total	\$8,094

LGS Olathe	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	67.709	0	0	357	734	0	0.040573	\$0
	2	67.709	0	0	-38	740	0	0.041656	\$0
	3	67.709	0	0	-1	739	0	0.042301	\$0
	4	67.709	-25	0	109	734	-1,242,460	0.042751	-\$53,117
	5	67.709	-30	0	-21	735	-1,492,983	0.046241	-\$69,038
	6	67.709	-48	0	6	738	-2,398,523	0.047761	-\$114,555
	7	67.709	-49	0	0	739	-2,451,810	0.047553	-\$116,592
	8	67.709	-96	0	6	737	-4,790,547	0.047226	-\$226,238
	9	67.709	79	0	-21	736	3,936,872	0.044821	\$176,456
	10	67.709	-27	0	-134	745	-1,361,966	0.042647	-\$58,083
	11	67.709	-1	0	72	724	-49,021	0.042066	-\$2,062
	12	67.709	0	0	119	720	0	0.041496	\$0
						total	-9,850,440	total	-\$463,229

LGS Ottawa	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	26.95675	0	0	391	10	0	0.040573	\$0
	2	26.95675	0	0	-5	10	0	0.041656	\$0
	3	26.95675	-1	0	59	10	-270	0.042301	-\$11
	4	26.95675	-49	0	115	10	-13,209	0.042751	-\$565
	5	26.95675	-15	0	-34	10	-4,044	0.046241	-\$187
	6	26.95675	17	0	2	10	4,583	0.047761	\$219
	7	26.95675	3	0	0	10	809	0.047553	\$38
	8	26.95675	-44	0	4	10	-11,861	0.047226	-\$560
	9	26.95675	126	0	-28	10	33,966	0.044821	\$1,522
	10	26.95675	-19	0	-168	10	-5,122	0.042647	-\$218
	11	26.95675	1	0	19	10	270	0.042066	\$11
	12	26.95675	0	0	96	10	0	0.041496	\$0
						total	5,122	total	\$249

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Location	Year	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
LGSPaola	2006	40.98365	0	0	313	15	0	0.040573	\$0
		40.98365	0	0	-69	15	0	0.041656	\$0
		40.98365	0	0	-18	15	0	0.042301	\$0
		40.98365	-32	0	79	15	-19,672	0.042751	-\$841
		40.98365	-28	0	-26	15	-17,213	0.046241	-\$796
		40.98365	1	0	4	15	615	0.047761	\$29
		40.98365	-4	0	0	15	-2,459	0.047553	-\$117
		40.98365	-84	0	5	13	-44,754	0.047226	-\$2,114
		40.98365	103	0	-28	17	71,762	0.044821	\$3,216
		40.98365	-18	0	-134	15	-11,066	0.042647	-\$472
		40.98365	0	0	61	15	0	0.042066	\$0
		40.98365	0	0	95	15	0	0.041496	\$0
total							-22,787	total	-\$1,094
LPSOlathe	2006	392.0453	0	0	357	47	0	0.031663	\$0
		392.0453	0	0	-38	43	0	0.032174	\$0
		392.0453	0	0	-1	46	0	0.032232	\$0
		392.0453	-25	0	109	46	-450,852	0.032053	-\$14,451
		392.0453	-30	0	-21	47	-552,784	0.034331	-\$18,978
		392.0453	-48	0	6	47	-884,454	0.03545	-\$31,354
		392.0453	-49	0	0	46	-883,670	0.035326	-\$31,217
		392.0453	-96	0	6	46	-1,731,272	0.035176	-\$60,900
		392.0453	79	0	-21	47	1,455,664	0.033607	\$48,920
		392.0453	-27	0	-134	46	-486,920	0.032046	-\$15,604
		392.0453	-1	0	72	47	-18,426	0.031594	-\$582
		392.0453	0	0	119	46	0	0.032037	\$0
total							-3,652,715	total	-\$124,165
LPSOttawa	2006	748.5631	0	0	391	2	0	0.031663	\$0
		748.5631	0	0	-5	2	0	0.032174	\$0
		748.5631	-1	0	59	2	-1,497	0.032232	-\$48
		748.5631	-49	0	115	2	-73,359	0.032053	-\$2,351
		748.5631	-15	0	-34	2	-22,457	0.034331	-\$771
		748.5631	17	0	2	2	25,451	0.03545	\$902
		748.5631	3	0	0	2	4,491	0.035326	\$159
		748.5631	-44	0	4	2	-65,874	0.035176	-\$2,317
		748.5631	126	0	-28	2	188,638	0.033607	\$6,340
		748.5631	-19	0	-168	2	-28,445	0.032046	-\$912
		748.5631	1	0	19	2	1,497	0.031594	\$47
		748.5631	0	0	96	1	0	0.032037	\$0
total							28,445	total	\$1,048
LPSPaola	2006	0	0	0	313	3	0	0.031663	\$0
		0	0	0	-69	2	0	0.032174	\$0
		0	0	0	-18	2	0	0.032232	\$0
		0	-32	0	79	2	0	0.032053	\$0
		0	-28	0	-26	2	0	0.034331	\$0
		0	1	0	4	2	0	0.03545	\$0
		0	-4	0	0	2	0	0.035326	\$0
		0	-84	0	5	2	0	0.035176	\$0
		0	103	0	-28	2	0	0.033607	\$0
		0	-18	0	-134	2	0	0.032046	\$0
		0	0	0	61	2	0	0.031594	\$0
		0	0	0	95	2	0	0.032037	\$0
total							0	total	\$0
MGAOlathe	2006	19.35895	0	9.823469	357	254	890,773	0.050811	\$45,261
		19.35895	0	9.823469	-38	253	-94,443	0.052099	-\$4,920
		19.35895	0	9.823469	-1	255	-2,505	0.052874	-\$132
		19.35895	-25	9.823469	109	258	151,390	0.052902	\$8,009
		19.35895	-30	9.823469	-21	257	-202,275	0.05814	-\$11,760
		19.35895	-48	9.823469	6	275	-239,329	0.062784	-\$15,026
		19.35895	-49	9.823469	0	258	-244,736	0.062104	-\$15,199
		19.35895	-96	9.823469	6	244	-439,082	0.061511	-\$27,008
		19.35895	79	9.823469	-21	270	357,227	0.05669	\$20,251
		19.35895	-27	9.823469	-134	276	-507,574	0.052229	-\$26,510
		19.35895	-1	9.823469	72	275	189,181	0.052744	\$9,978
		19.35895	0	9.823469	119	267	312,121	0.052448	\$16,370
total							170,748	total	-\$688

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MGAOttawa	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	10.4293	0	6.888886	391	16	43,097	0.050811	\$2,190
	2	10.4293	0	6.888886	-5	16	-551	0.052099	-\$29
	3	10.4293	-1	6.888886	59	18	7,128	0.052874	\$377
	4	10.4293	-49	6.888886	115	17	4,780	0.052902	\$253
	5	10.4293	-15	6.888886	-34	18	-7,032	0.05814	-\$409
	6	10.4293	17	6.888886	2	17	3,248	0.062784	\$204
	7	10.4293	3	6.888886	0	17	532	0.062104	\$33
	8	10.4293	-44	6.888886	4	17	-7,333	0.061511	-\$451
	9	10.4293	126	6.888886	-28	17	19,060	0.05669	\$1,081
	10	10.4293	-19	6.888886	-168	17	-23,043	0.052229	-\$1,204
	11	10.4293	1	6.888886	19	17	2,402	0.052744	\$127
	12	10.4293	0	6.888886	96	16	10,581	0.052448	\$555
						total	52,871	total	\$2,727

MGAPaola	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	9.733388	0	6.033124	313	36	67,981	0.050811	\$3,454
	2	9.733388	0	6.033124	-69	37	-15,403	0.052099	-\$802
	3	9.733388	0	6.033124	-18	37	-4,018	0.052874	-\$212
	4	9.733388	-32	6.033124	79	37	6,110	0.052902	\$323
	5	9.733388	-28	6.033124	-26	37	-15,888	0.05814	-\$924
	6	9.733388	1	6.033124	4	37	1,253	0.062784	\$79
	7	9.733388	-4	6.033124	0	37	-1,441	0.062104	-\$89
	8	9.733388	-84	6.033124	5	38	-29,923	0.061511	-\$1,841
	9	9.733388	103	6.033124	-28	39	32,511	0.05669	\$1,843
	10	9.733388	-18	6.033124	-134	39	-38,362	0.052229	-\$2,004
	11	9.733388	0	6.033124	61	39	14,353	0.052744	\$757
	12	9.733388	0	6.033124	95	40	22,926	0.052448	\$1,202
						total	40,101	total	\$1,786

MGSOlathe	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	12.05377	0	0	357	3139	0	0.050961	\$0
	2	12.05377	0	0	-38	3136	0	0.052211	\$0
	3	12.05377	0	0	-1	3138	0	0.053259	\$0
	4	12.05377	-25	0	109	3135	-944,714	0.054057	-\$51,069
	5	12.05377	-30	0	-21	3123	-1,129,317	0.060297	-\$68,095
	6	12.05377	-48	0	6	3142	-1,817,901	0.063534	-\$115,498
	7	12.05377	-49	0	0	3138	-1,853,411	0.063091	-\$116,934
	8	12.05377	-96	0	6	3170	-3,668,202	0.062588	-\$229,585
	9	12.05377	79	0	-21	3176	3,024,338	0.057896	\$175,098
	10	12.05377	-27	0	-134	3134	-1,019,966	0.053975	-\$55,052
	11	12.05377	-1	0	72	3144	-37,897	0.053171	-\$2,015
	12	12.05377	0	0	119	3197	0	0.052014	\$0
						total	-7,447,071	total	-\$463,151

MGSOttawa	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	5.868741	0	2.850116	391	107	119,240	0.050961	\$6,077
	2	5.868741	0	2.850116	-5	107	-1,525	0.052211	-\$80
	3	5.868741	-1	2.850116	59	108	17,527	0.053259	\$933
	4	5.868741	-49	2.850116	115	107	4,301	0.054057	\$232
	5	5.868741	-15	2.850116	-34	109	-20,158	0.060297	-\$1,215
	6	5.868741	17	2.850116	2	108	11,391	0.063534	\$724
	7	5.868741	3	2.850116	0	109	1,919	0.063091	\$121
	8	5.868741	-44	2.850116	4	116	-28,632	0.062588	-\$1,792
	9	5.868741	126	2.850116	-28	109	71,903	0.057896	\$4,163
	10	5.868741	-19	2.850116	-168	107	-63,165	0.053975	-\$3,409
	11	5.868741	1	2.850116	19	107	6,422	0.053171	\$341
	12	5.868741	0	2.850116	96	114	31,192	0.052014	\$1,622
						total	150,415	total	\$7,718

MGSPaola	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	11.07524	0	2.090408	313	166	108,613	0.050961	\$5,535
	2	11.07524	0	2.090408	-69	167	-24,088	0.052211	-\$1,258
	3	11.07524	0	2.090408	-18	165	-6,209	0.053259	-\$331
	4	11.07524	-32	2.090408	79	168	-31,797	0.054057	-\$1,719
	5	11.07524	-28	2.090408	-26	168	-61,229	0.060297	-\$3,692
	6	11.07524	1	2.090408	4	168	3,265	0.063534	\$207
	7	11.07524	-4	2.090408	0	170	-7,531	0.063091	-\$475
	8	11.07524	-84	2.090408	5	171	-157,297	0.062588	-\$9,845
	9	11.07524	103	2.090408	-28	171	185,059	0.057896	\$10,714
	10	11.07524	-18	2.090408	-134	170	-81,510	0.053975	-\$4,399
	11	11.07524	0	2.090408	61	169	21,550	0.053171	\$1,146
	12	11.07524	0	2.090408	95	169	33,562	0.052014	\$1,746
						total	-17,610	total	-\$2,370

ROIlathe	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
1	2.484778	0	0.446442	357	179614	28,626,846	0.05933	\$1,698,442	
2	2.484778	0	0.446442	-38	180503	-3,062,197	0.059514	-\$182,243	
3	2.484778	0	0.446442	-1	180187	-80,443	0.059426	-\$4,780	
4	2.484778	-25	0.446442	109	180903	-2,434,458	0.061794	-\$150,434	
5	2.484778	-30	0.446442	-21	181139	-15,200,933	0.071481	-\$1,086,574	
6	2.484778	-48	0.446442	6	181385	-21,147,799	0.0791	-\$1,672,791	
7	2.484778	-49	0.446442	0	182488	-22,218,663	0.0791	-\$1,757,496	
8	2.484778	-96	0.446442	6	181771	-42,872,507	0.0791	-\$3,391,215	
9	2.484778	79	0.446442	-21	182287	34,073,477	0.072453	\$2,468,718	
10	2.484778	-27	0.446442	-134	182466	-23,157,167	0.063225	-\$1,464,108	
11	2.484778	-1	0.446442	72	182960	5,426,420	0.061602	\$334,277	
12	2.484778	0	0.446442	119	182950	9,719,512	0.060046	\$583,617	
					total	-52,327,912	total	-\$4,624,587	

ROttawa	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
1	2.04459	0	1.014964	391	11574	4,593,151	0.05933	\$272,513	
2	2.04459	0	1.014964	-5	11630	-59,020	0.059514	-\$3,513	
3	2.04459	-1	1.014964	59	11627	672,485	0.059426	\$39,963	
4	2.04459	-49	1.014964	115	11675	193,056	0.061794	\$11,930	
5	2.04459	-15	1.014964	-34	11698	-762,448	0.071481	-\$54,500	
6	2.04459	17	1.014964	2	11687	429,941	0.0791	\$34,008	
7	2.04459	3	1.014964	0	11771	72,201	0.0791	\$5,711	
8	2.04459	-44	1.014964	4	11723	-1,007,031	0.0791	-\$79,656	
9	2.04459	126	1.014964	-28	11648	2,669,715	0.072453	\$193,428	
10	2.04459	-19	1.014964	-168	11699	-2,449,316	0.063225	-\$154,858	
11	2.04459	1	1.014964	19	11708	249,719	0.061602	\$15,383	
12	2.04459	0	1.014964	96	11680	1,138,058	0.060046	\$68,336	
					total	5,740,512	total	\$348,746	

RPaola	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
1	2.473697	0	1.286614	313	13117	5,282,349	0.05933	\$313,404	
2	2.473697	0	1.286614	-69	13191	-1,171,049	0.059514	-\$69,694	
3	2.473697	0	1.286614	-18	13170	-305,005	0.059426	-\$18,125	
4	2.473697	-32	1.286614	79	13233	297,533	0.061794	\$18,386	
5	2.473697	-28	1.286614	-26	13217	-1,357,591	0.071481	-\$97,042	
6	2.473697	1	1.286614	4	13212	100,677	0.0791	\$7,964	
7	2.473697	-4	1.286614	0	13281	-131,413	0.0791	-\$10,395	
8	2.473697	-84	1.286614	5	13206	-2,659,127	0.0791	-\$210,337	
9	2.473697	103	1.286614	-28	13255	2,899,738	0.072453	\$210,094	
10	2.473697	-18	1.286614	-134	13257	-2,875,878	0.063225	-\$181,827	
11	2.473697	0	1.286614	61	13321	1,045,478	0.061602	\$64,403	
12	2.473697	0	1.286614	95	13263	1,621,114	0.060046	\$97,341	
					total	2,746,828	total	\$124,173	

RTODOlathe	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
1	2.796692	0	0.252309	357	66	5,945	0.0574	\$341	
2	2.796692	0	0.252309	-38	66	-633	0.0574	-\$36	
3	2.796692	0	0.252309	-1	67	-17	0.0574	-\$1	
4	2.796692	-25	0.252309	109	65	-2,757	0.0574	-\$158	
5	2.796692	-30	0.252309	-21	65	-5,798	0.0574	-\$333	
6	2.796692	-48	0.252309	6	65	-8,627	0.066139	-\$571	
7	2.796692	-49	0.252309	0	64	-8,770	0.071911	-\$631	
8	2.796692	-96	0.252309	6	66	-17,620	0.071911	-\$1,267	
9	2.796692	79	0.252309	-21	65	14,017	0.065692	\$921	
10	2.796692	-27	0.252309	-134	64	-6,996	0.0574	-\$402	
11	2.796692	-1	0.252309	72	66	1,014	0.0574	\$58	
12	2.796692	0	0.252309	119	65	1,952	0.0574	\$112	
					total	-28,291	total	-\$1,966	

SGAOlathe	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
1	0.790933	0	0.951452	357	850	288,718	0.073045	\$21,089	
2	0.790933	0	0.951452	-38	855	-30,913	0.075524	-\$2,335	
3	0.790933	0	0.951452	-1	903	-859	0.075622	-\$65	
4	0.790933	-25	0.951452	109	833	69,918	0.076252	\$5,331	
5	0.790933	-30	0.951452	-21	868	-37,939	0.086344	-\$3,276	
6	0.790933	-48	0.951452	6	872	-28,127	0.095099	-\$2,675	
7	0.790933	-49	0.951452	0	881	-34,144	0.094056	-\$3,211	
8	0.790933	-96	0.951452	6	903	-63,409	0.090828	-\$5,759	
9	0.790933	79	0.951452	-21	896	38,083	0.083912	\$3,196	
10	0.790933	-27	0.951452	-134	903	-134,411	0.073859	-\$9,927	
11	0.790933	-1	0.951452	72	905	61,281	0.074665	\$4,576	
12	0.790933	0	0.951452	119	906	102,580	0.073804	\$7,571	
					total	230,777	total	\$14,514	

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SGAOttawa	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	2.992665	0	2.55808	391	31	31,006	0.073045	\$2,265
	2	2.992665	0	2.55808	-5	31	-397	0.075524	-\$30
	3	2.992665	-1	2.55808	59	32	4,734	0.075622	\$358
	4	2.992665	-49	2.55808	115	32	4,721	0.076252	\$360
	5	2.992665	-15	2.55808	-34	35	-4,615	0.086344	-\$398
	6	2.992665	17	2.55808	2	35	1,960	0.095099	\$186
	7	2.992665	3	2.55808	0	36	323	0.094056	\$30
	8	2.992665	-44	2.55808	4	42	-5,101	0.090828	-\$463
	9	2.992665	126	2.55808	-28	42	12,829	0.083912	\$1,077
	10	2.992665	-19	2.55808	-168	42	-20,438	0.073859	-\$1,510
	11	2.992665	1	2.55808	19	41	2,115	0.074665	\$158
	12	2.992665	0	2.55808	96	41	10,069	0.073804	\$743
						total	37,207	total	\$2,776
SGAPaola	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	5.189231	0	2.439482	313	70	53,449	0.073045	\$3,904
	2	5.189231	0	2.439482	-69	66	-11,109	0.075524	-\$839
	3	5.189231	0	2.439482	-18	90	-3,952	0.075622	-\$299
	4	5.189231	-32	2.439482	79	69	1,840	0.076252	\$140
	5	5.189231	-28	2.439482	-26	60	-12,523	0.086344	-\$1,081
	6	5.189231	1	2.439482	4	67	1,001	0.095099	\$95
	7	5.189231	-4	2.439482	0	71	-1,474	0.094056	-\$139
	8	5.189231	-84	2.439482	5	73	-30,930	0.090828	-\$2,809
	9	5.189231	103	2.439482	-28	70	32,633	0.083912	\$2,738
	10	5.189231	-18	2.439482	-134	73	-30,682	0.073859	-\$2,266
	11	5.189231	0	2.439482	61	74	11,012	0.074665	\$822
	12	5.189231	0	2.439482	95	76	17,613	0.073804	\$1,300
						total	26,878	total	\$1,567
SGSOlathe	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	1.324898	0	0.156785	357	15945	892,477	0.070494	\$62,915
	2	1.324898	0	0.156785	-38	15917	-94,831	0.072562	-\$6,881
	3	1.324898	0	0.156785	-1	15968	-2,504	0.074071	-\$185
	4	1.324898	-25	0.156785	109	15843	-254,009	0.075584	-\$19,199
	5	1.324898	-30	0.156785	-21	15777	-679,033	0.087004	-\$59,079
	6	1.324898	-48	0.156785	6	16144	-1,011,492	0.092948	-\$94,016
	7	1.324898	-49	0.156785	0	16100	-1,045,212	0.091717	-\$95,864
	8	1.324898	-96	0.156785	6	16044	-2,025,547	0.090617	-\$183,550
	9	1.324898	79	0.156785	-21	15926	1,614,489	0.084367	\$136,209
	10	1.324898	-27	0.156785	-134	16020	-909,638	0.074957	-\$68,183
	11	1.324898	-1	0.156785	72	16079	160,205	0.073883	\$11,836
	12	1.324898	0	0.156785	119	16112	300,608	0.071968	\$21,634
						total	-3,054,487	total	-\$294,363
SGSOttawa	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	0.764512	0	0.303229	391	1532	181,638	0.070494	\$12,804
	2	0.764512	0	0.303229	-5	1546	-2,344	0.072562	-\$170
	3	0.764512	-1	0.303229	59	1549	26,528	0.074071	\$1,965
	4	0.764512	-49	0.303229	115	1552	-4,019	0.075584	-\$304
	5	0.764512	-15	0.303229	-34	1557	-33,907	0.087004	-\$2,950
	6	0.764512	17	0.303229	2	1565	21,289	0.092948	\$1,979
	7	0.764512	3	0.303229	0	1589	3,644	0.091717	\$334
	8	0.764512	-44	0.303229	4	1559	-50,552	0.090617	-\$4,581
	9	0.764512	126	0.303229	-28	1602	140,717	0.084367	\$11,872
	10	0.764512	-19	0.303229	-168	1626	-106,451	0.074957	-\$7,979
	11	0.764512	1	0.303229	19	1579	10,304	0.073883	\$761
	12	0.764512	0	0.303229	96	1557	45,324	0.071968	\$3,262
						total	232,171	total	\$16,993
SGSPaola	2006	β_1	CDD departure	β_2	HDD departure	cust count	volume adjustment	average tariff rate	dollar adjustment
	1	1.147809	0	0.378306	313	2155	255,173	0.070494	\$17,988
	2	1.147809	0	0.378306	-69	2176	-56,800	0.072562	-\$4,122
	3	1.147809	0	0.378306	-18	2160	-14,709	0.074071	-\$1,089
	4	1.147809	-32	0.378306	79	2186	-14,960	0.075584	-\$1,131
	5	1.147809	-28	0.378306	-26	2173	-91,211	0.087004	-\$7,936
	6	1.147809	1	0.378306	4	2234	5,945	0.092948	\$553
	7	1.147809	-4	0.378306	0	2243	-10,298	0.091717	-\$945
	8	1.147809	-84	0.378306	5	2237	-211,451	0.090617	-\$19,161
	9	1.147809	103	0.378306	-28	2258	243,032	0.084367	\$20,504
	10	1.147809	-18	0.378306	-134	2240	-159,832	0.074957	-\$11,980
	11	1.147809	0	0.378306	61	2228	51,415	0.073883	\$3,799
	12	1.147809	0	0.378306	95	2204	79,210	0.071968	\$5,701
						total	75,514	total	\$2,180
						Grand Total	-65,565,991 kWh		-\$5,428,934 \$

Exhibit JMS-4
 Adjustment Summary
 07-KCPE-905-RTS
 page 1

Adjustments by Rate Class and Station

	volume	dollar		
LGAOlathe	980,585	\$14,106	residential	R
LGAOttawa	0	\$0	residential time of day	RTOD
LGAPaola	217,148	\$8,094	small general service	SGS
LGSOlathe	-9,850,440	-\$463,229	small general all electric	SGA
LGSOttawa	5,122	\$249	medium general service	MGS
LGSPaola	-22,787	-\$1,094	medium general all electric	MGA
LPSOlathe	-3,552,715	-\$124,165	large general service	LGS
LPSOttawa	28,445	\$1,048	large general all electric	LGA
LPSPaola	0	\$0	large power	LP
MGAOlathe	170,748	-\$688		
MGAOttawa	52,871	\$2,727		
MGAPaola	40,101	\$1,786		
MGSOlathe	-7,447,071	-\$463,151		
MGSOttawa	150,415	\$7,718		
MGSPaola	-17,610	-\$2,370		
ROlathe	-52,327,912	-\$4,624,587		
ROttawa	5,740,512	\$348,746		
RPaola	2,746,828	\$124,173		
RTODOlathe	-28,291	-\$1,966		
SGAOlathe	230,777	\$14,514		
SGAOttawa	37,207	\$2,776		
SGAPaola	26,878	\$1,567		
SGSOlathe	-3,054,487	-\$294,363		
SGSOttawa	232,171	\$16,993		
SGSPaola	75,514	\$2,180		
total	-65,565,991	-\$5,428,934		

Adjustments by Class and Month

LGA	month	volume	dollar	R	month	volume	dollar
	1	4,194,677	\$171,486		1	38,502,346	\$2,284,360
	2	-480,664	-\$20,111		2	-4,292,266	-\$255,450
	3	-29,933	-\$1,256		3	287,038	\$17,058
	4	764,938	\$32,468		4	-1,943,868	-\$120,119
	5	-967,911	-\$43,900		5	-17,320,972	-\$1,238,115
	6	-920,666	-\$43,918		6	-20,617,181	-\$1,630,819
	7	-989,359	-\$47,017		7	-22,277,875	-\$1,762,180
	8	-2,120,181	-\$100,961		8	-46,538,665	-\$3,681,208
	9	1,505,543	\$66,116		9	39,642,931	\$2,872,241
	10	-2,238,968	-\$94,227		10	-28,482,361	-\$1,800,793
	11	942,959	\$39,228		11	6,721,617	\$414,063
	12	1,537,297	\$64,293		12	12,478,685	\$749,294
	total	1,197,733	\$22,200		total	-43,840,572	-\$4,151,668
LGS	month	volume	dollar	RTOD	month	volume	dollar
	1	0	\$0		1	5,945	\$341
	2	0	\$0		2	-633	-\$36
	3	-270	-\$11		3	-17	-\$1
	4	-1,275,341	-\$54,522		4	-2,757	-\$158
	5	-1,514,240	-\$70,021		5	-5,798	-\$333
	6	-2,393,326	-\$114,307		6	-8,627	-\$571
	7	-2,453,461	-\$116,670		7	-8,770	-\$631
	8	-4,847,162	-\$228,912		8	-17,620	-\$1,267
	9	4,042,600	\$181,194		9	14,017	\$921
	10	-1,378,154	-\$58,774		10	-6,996	-\$402
	11	-48,752	-\$2,051		11	1,014	\$58
	12	0	\$0		12	1,952	\$112
	total	-9,868,105	-\$464,073		total	-28,291	-\$1,966
LPS	month	volume	dollar	SGA	month	volume	dollar
	1	0	\$0		1	373,174	\$27,258
	2	0	\$0		2	-42,419	-\$3,204
	3	-1,497	-\$48		3	-77	-\$6
	4	-524,211	-\$16,803		4	76,479	\$5,832
	5	-575,241	-\$19,749		5	-55,078	-\$4,756
	6	-859,003	-\$30,452		6	-25,166	-\$2,393
	7	-879,179	-\$31,058		7	-35,294	-\$3,320
	8	-1,797,146	-\$63,217		8	-99,440	-\$9,032
	9	1,644,302	\$55,260		9	83,545	\$7,010
	10	-515,366	-\$16,515		10	-185,531	-\$13,703
	11	-16,929	-\$535		11	74,408	\$5,556
	12	0	\$0		12	130,262	\$9,614
	total	-3,524,270	-\$123,116		total	294,862	\$18,857
MGA	month	volume	dollar	SGS	month	volume	dollar
	1	1,001,851	\$50,905		1	1,329,288	\$93,707
	2	-110,397	-\$5,752		2	-153,975	-\$11,173
	3	605	\$32		3	9,316	\$690
	4	162,281	\$8,585		4	-272,989	-\$20,634
	5	-225,194	-\$13,093		5	-804,151	-\$69,964
	6	-234,828	-\$14,743		6	-984,259	-\$91,484
	7	-245,644	-\$15,256		7	-1,051,866	-\$96,474
	8	-476,338	-\$29,300		8	-2,287,549	-\$207,292
	9	408,799	\$23,175		9	1,998,239	\$168,585
	10	-568,979	-\$29,717		10	-1,175,922	-\$88,143
	11	205,936	\$10,862		11	221,924	\$16,397
	12	345,628	\$18,127		12	425,142	\$30,596
	total	263,720	\$3,825		total	-2,746,802	-\$275,189
MGS	month	volume	dollar				
	1	227,854	\$11,612				
	2	-25,613	-\$1,337				
	3	11,319	\$603				
	4	-972,210	-\$52,555				
	5	-1,210,704	-\$73,002				
	6	-1,803,245	-\$114,567				
	7	-1,859,023	-\$117,288				
	8	-3,854,131	-\$241,222				
	9	3,281,300	\$189,975				
	10	-1,164,640	-\$62,861				
	11	-9,925	-\$528				
	12	64,753	\$3,368				
	total	-7,314,265	-\$457,803				
		volume	dollar				
	Grand Totals	-65,565,991	-\$5,428,934				
	KCPL Adjustment	-54,794,000	-\$2,687,814				
	Staff IS Adjustment #32		-\$2,741,120				

Exhibit JMS-5
 Weighted Average Tariff Rates
 07-KCPE-905-RTS

Class	Month											
	200601	200602	200603	200604	200605	200606	200607	200608	200609	200610	200611	200612
residential	0.0593	0.0595	0.0594	0.0618	0.0715	0.0791	0.0791	0.0791	0.0725	0.0632	0.0616	0.0600
residential time of day	0.0574	0.0574	0.0574	0.0574	0.0574	0.0661	0.0719	0.0719	0.0657	0.0574	0.0574	0.0574
small general service	0.0705	0.0726	0.0741	0.0756	0.0870	0.0929	0.0917	0.0906	0.0844	0.0750	0.0739	0.0720
small general all electric	0.0730	0.0755	0.0756	0.0763	0.0863	0.0951	0.0941	0.0908	0.0839	0.0739	0.0747	0.0738
medium general service	0.0510	0.0522	0.0533	0.0541	0.0603	0.0635	0.0631	0.0626	0.0579	0.0540	0.0532	0.0520
medium general all electric	0.0508	0.0521	0.0529	0.0529	0.0581	0.0628	0.0621	0.0615	0.0567	0.0522	0.0527	0.0524
large general service	0.0406	0.0417	0.0423	0.0428	0.0462	0.0478	0.0476	0.0472	0.0448	0.0426	0.0421	0.0415
large general all electric	0.0409	0.0418	0.0419	0.0424	0.0454	0.0477	0.0475	0.0476	0.0439	0.0421	0.0416	0.0418
large power	0.0317	0.0322	0.0322	0.0321	0.0343	0.0354	0.0353	0.0352	0.0336	0.0320	0.0316	0.0320

**Exhibit JMS-6
Monthly KCI Degree Days
07-KCPE-905-RTS**

HDD and CDD measures for KCI station

	actual HDD	actual CDD	normal HDD	normal CDD	departure HDD	departure CDD
January	690.5	0	1182	0	491.5	0
February	832.5	0	897	0	64.5	0
March	572	0	658	0	86	0
April	148	62	331	12	183	-50
May	98.5	161.5	124	101	25.5	-60.5
June	0	332.5	8	264	8	-68.5
July	0	514	0	418	0	-96
August	0	469.5	7	367	7	-102.5
September	48.5	90.5	58	151	9.5	60.5
October	329.5	59	269	12	-60.5	-47
November	557	0	668	0	111	0
December	836	0	1047	0	211	0

HDD and CDD Departure Comparison

	KCI HDD	CDD	Olathe HDD	CDD	Ottawa HDD	CDD	Paola HDD	CDD
January	491.5	0	357	0	391	0	313	0
February	64.5	0	-38	0	-5	0	-69	0
March	86	0	-1	0	59	-1	-18	0
April	183	-50	109	-25	115	-49	79	-32
May	25.5	-60.5	-21	-30	-34	-15	-26	-28
June	8	-68.5	6	-48	2	17	4	1
July	0	-96	0	-49	0	3	0	-4
August	7	-102.5	6	-96	4	-44	5	-84
September	9.5	60.5	-21	79	-28	126	-28	103
October	-60.5	-47	-134	-27	-168	-19	-134	-18
November	111	0	72	-1	19	1	61	0
December	211	0	119	0	96	0	95	0

CERTIFICATE OF SERVICE

07-KCPE-905-RTS

I, the undersigned, hereby certify that a true and correct copy of the above and foregoing Direct Testimony was placed in the United States mail, postage prepaid, or hand-delivered this 3rd day of August, 2007, to the following:

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Pamela Griffeth
Administrative Specialist

* Denotes those receiving the Confidential version