MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2014-0370

DIRECT TESTIMONY

OF

ALBERT R. BASS, JR.

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

Kansas City, Missouri
October 2014

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

2   A: My name is Albert R. Bass, Jr. My business address is 1200 Main, Kansas City,

3   Missouri 64105.

4   Q: **By whom and in what capacity are you employed?**

5   A: I am employed by Kansas City Power & Light Company ("KCP&L" or "Company") as

6   Manager of Market Assessment.

7   Q: **On whose behalf are you testifying?**

8   A: I am testifying on behalf of KCP&L.

9   Q: **What are your responsibilities?**

10   A: My responsibilities include supervising two employees with responsibility for short-term

11   electric load forecasting, long-term electric load forecasting, weather normalization, and

12   various other analytical tasks.

13   Q: **Please describe your education, experience and employment history.**

14   A: I received a Bachelor of Science in Business Administration degree with emphasis in

15   Marketing from Missouri Western State University in 1989. I earned a Master of

16   Business Administration degree from William Woods University in 1995.

17   Prior to joining KCP&L, I worked for APS Technologies developing product

18   forecast models and conducting market analysis. In June 1998, I joined KCP&L as a

19   Technical Professional. In this role, I conducted market analysis, developed market

1		options studies, and research. In May 2000, I took over the responsibilities for short-term
2		forecasting (Budget), long-term load forecasting for the Integrated Resource Plan (IRP),
3		monthly kWh sales and peak weather normalization, and weather normalization for rate
4		case fillings. On July 2013, I was promoted to my current position as Manager of Market
5		Assessment.
6	Q:	**Have you previously testified in a proceeding before the Missouri Public Service**
7		**Commission ("Commission" or "MPSC") or before any other utility regulatory**
8		**agency?**
9	A:	No.
10		**I. WEATHER NORMALIZATION, CUSTOMER GROWTH**
11	Q:	**What is the purpose of your testimony?**
12	A:	The purposes of my testimony are to:
13		I. Sponsor the weather normalization, customer growth, rate switching, and energy
14		efficiency adjustments of test year monthly Kilowatt-hour ("kWh") sales and peak
15		loads in Schedules ARB-1 through ARB-4.
16		II. Sponsor the ten-year electric load forecast that is being used by the Company in this
17		case to determine the need for resources to meet future load growth in Schedule
18		ARB-5.
19	Q:	**What normalizations are you making to kWh sales and peak loads?**
20	A:	Both monthly and hourly kWh sales are adjusted to reflect normal weather conditions.
21		This is called a weather adjustment. KWh sales are further adjusted for customer growth
22		that occurs between the test year and the true-up date, and for customers who were

1		switched from one rate to another during or after the test year. These customers are
2		known as rate switchers.
3	**Q:**	**What adjustment did you make for rate switchers?**
4	A:	Each year a small percentage of customers are switched from their current tariff to
5		another that is expected to reduce their electric bills. We adjusted kWh sales for the
6		Large Power tariff for customers that switched into or out of this tariff. The customer
7		growth adjustment accounted for rate switchers in the other tariffs.
8	**Q:**	**What adjustment did you make for customer growth?**
9	A:	For each month in the test year, the weather-normalized sales per customer was
10		multiplied by the number of customers projected for the true-up date. This adjustment is
11		made to weather-normalized sales to the Residential, Small General Service ("GS"),
12		Medium GS, and Large GS classes. When the numbers become available, I will revise
13		this adjustment using the actual number of customers as of the true-up date. Sales to
14		Large Power customers are adjusted by plotting each customer's month kWh sales and
15		looking for any changes in sales that appear to be or are known to be permanent. If any
16		such changes are identified, sales during the test year are adjusted to reflect the change.
17		The adjustments for growth to Large Power sales will be revised using the most current
18		data for the true-up.
19	**Q:**	**Were any other adjustments made besides the adjustment for rate switchers and**
20		**customer growth?**
21	A:	Yes, as part of the overall weather normalization process, I develop the coincident peak
22		kW for each month and each class of customers. This is based on load research data.

1   The Kansas June 2013 retail coincident peak allocator was adjusted to reflect the June

2   2014 value.

3 **Q:** **Why was this adjustment made?**

4 **A:** In 2013 Kansas peaks did not respond as their historical trend would suggest. The annual

5   peak and coincident peaks for the year occurred in July where Missouri's occurred in

6   August. Historically Kansas would have its annual peak and coincident peak in the same

7   month as Missouri. Further, the month of June 2013 stood out as an anomaly with

8   Kansas weather normalized peak declining year-over-year by 92 MW and Missouri

9   weather normalize peak growing by 165 MW resulting in a peak allocation of Missouri -

10   57% and Kansas - 43%. Historically, the allocation between Missouri and Kansas in

11   June has been approximately Missouri - 53% and Kansas - 47%. The decline in Kansas

12   was primarily driven by the residential class. Since the June 2014 values returned to

13   normal trend it was concluded that June 2013 was an anomaly and it was adjusted to

14   reflect the Kansas June 2014 peak value resulting in a peak allocation of Missouri - 53%

15   and Kansas – 47%. This adjustment is used in the D1 allocator sheet used by Company

16   witness Ronald A. Klote in developing the jurisdictional revenue requirement. This will

17   be trued-up during the update in the case.

18 **Q:** **What is the purpose of making a weather adjustment?**

19 **A:** Abnormal weather can increase or decrease a utility company's revenues, fuel costs, and

20   rate of return. Therefore, revenues are typically adjusted to reflect normal weather when

21   these are used to determine a company's future electric rates. These adjustments are

22   made by first adjusting kWh sales and hourly loads and then using these results to adjust

23   revenues and incremental costs (i.e. fuel and purchased power). Weather normalized

1		sales and peak loads are also used to allocate costs between jurisdictions and different
2		rate groups.
3	**Q:**	**What method was used to weather-normalize kWh sales?**
4	A:	The method was based on load research ("LR") data, which was derived by measuring
5		hourly loads for a sample of KCP&L's customers representing the Residential, Small GS,
6		Medium GS, Large GS, and Large Power classes. The hourly loads were grossed up by
7		the ratio of the number of customers for each of these classes divided by the number
8		sampled.
9		In the first step, the hourly loads for the sample were calibrated to the annual
10		billed sales of all customers in each class. The ratio of the billed sales divided by the sum
11		of the hourly loads was multiplied by the load in each hour.
12		In the second step, the hourly loads were estimated for lighting tariffs and the
13		loads for all tariffs, including sales for resale, were grossed up for losses and compared to
14		Net System Input ("NSI"). The difference between this sum and the NSI then was
15		allocated back to the LR data in proportion to the hourly precisions that were estimated
16		for the load research data.
17		In the third step, regression analysis was used to model the hourly loads for each
18		rate class. These models included a piecewise linear temperature response function of a
19		two-day weighted mean temperature.
20		In the fourth step, this temperature response function was used to compute daily
21		weather adjustments as the difference between loads predicted with normal weather and
22		loads predicted with actual weather. Normal weather was derived using spreadsheets

1   provided by the MPSC Staff. The normal weather represents average weather conditions

2   over the 1981-2010 time-period.

3   In the fifth step, the daily weather adjustments were split into hourly adjustments

4   and these were added to NSI to weather-normalize that series.

5   In the sixth step, the daily weather adjustments were split into billing months

6   based on the percentage of sales on each billing cycle and the meter reading schedule for

7   the test year period. These weather adjustments then are summed by billing month and

8   added to billed kWh sales to weather-normalize that data.

9 **Q:** **What are the adjustments to annualize the impact of Company's energy efficiency**

10   **programs on test year's sales?**

11 **A:** During the test year, KCP&L invested significantly on programs designed to help

12   customers use energy more efficiently. The result of this investment in energy efficiency

13   programs is a decline in the sales made by the Company relative to the level of sales that

14   would be made absent of the programs. Because the Company programs generated

15   customer saving during the test year and true up period, the impact of those efficiency

16   measures installed during the test year should be annualized to reflect the full impact of

17   the measures on the Company's sales.

18 **Q:** **Does installed efficiency measures in the test year affect the test year sales and why**

19   **is it necessary to further adjust sales to fully reflect the impact of the programs?**

20 **A:** For example, if a residential customer who is not participating in any Company energy

21   efficiency programs has an annual average usage of 10,500 kWh and then decided to

22   participate in the Company programs with four months left in the test year, which now

23   reduces their actual test year usage to 10,000 kWh the Company would only see a

1	reduction of 500 kWh in the test year. In this example on an annual basis going forward,
2	however, the customer's true annual average consumption is actually reduced by 1,500
3	kWh due to the energy efficiency actions promoted by the Company. The reason is the
4	change took place during the test year, but the impacts of the installed measures are only
5	reflected in one-third of the test year load. The effect can be extreme when you start
6	looking at all customer participation rates and the fact that they sign up and participate in
7	various programs throughout the test year. Since the Company has documented
8	participation rates and measures installed in the test year, the annualized energy savings
9	of those measures, and the installation dates of the measures, it is appropriate to reflect
10	the full energy impact of the measures in the test year. This is a known and measurable
11	change in the energy consumption that occurred before the end of the test year, which
12	will continue going forward and should be annualized.
13	Q:	Describe how you calculated the energy efficiency adjustment.
14	A:	Using tracking reports maintained by the Company, we assessed each program and the
15		measure installed during the test year to determine the annualized impacts from the
16		tracking reports. The impacts are applied to the weather normalized and customer
17		adjusted kWhs. Schedule ARB-2 shows the annualized kWh impacts by month and rate
18		class.
19	Q:	What are the results of these normalizations?
20	A:	Schedule ARB-1 shows the monthly adjustments for normalization on kWh sales.
21		Schedule ARB-2 shows the annualized kWh energy efficiency impact. Schedule ARB-3
22		shows weather-normalized customer annualized monthly peaks by class, and Schedule

1   ARB-4 shows weather-normalized customer annualized loads by class at the time of the

2   monthly system peak load.

3   **II.   TEN YEAR ELECTRIC LOAD FORCAST**

4   **Q: How was the electric load forecast developed?**

5   A: KCP&L develops a forecast for each class of customers in each state. The classes are

6   residential, commercial, industrial, and lighting. The commercial and industrial classes

7   are split by voltage level and the lighting class is split by type of lighting. These

8   forecasts are based on KCP&L historical information and on other forecasts, one being a

9   forecast of economic activity provided by Moody's economy.com ("Moody's") and the

10   other being a forecast of appliance and equipment use provided by the U.S. Department

11   of Energy ("DOE") for the West North Central Region.

12   **Q: How was the load forecast for the residential class developed?**

13   A: KCP&L forecasts both the number of residential customers and the kWh used per

14   customer, and the product of these is the forecast of kWh sales for the class. The number

15   of customers is forecasted using a forecast of households for the Kansas City Metro Area

16   from Moody's. The forecast of kWh used per household is developed using data from

17   KCP&L's own appliance saturation surveys, forecasts of trends in efficiencies and usage

18   rates for appliances from DOE and from forecasts of economic variables from Moody's,

19   such as income per household and persons per household.

20   **Q: Why did you choose to use a forecast from Moody's?**

21   A: Moody's is one of two major vendors of economic forecasts with over 500 clients

22   worldwide, including the largest commercial and investment banks, insurance companies,

23   financial services firms, mutual funds, governments at all levels, manufacturers, utilities,

1		and industrial and technology clients. Moody's has a solid reputation among economists
2		and has provided us a good product for many years.
3	Q:	**Why did you choose to rely on forecasts from the DOE?**
4	A:	The DOE has a large research staff devoted to energy forecasting. The DOE periodically
5		conducts surveys of homes, commercial buildings and factories to determine their current
6		energy using characteristics, their stocks of appliances and equipment and how these are
7		changing over time. The DOE forecasts energy usage trends for appliances and
8		equipment used in these buildings and incorporates the impacts of energy standards and
9		tax credits for efficient equipment. The DOE provides extensive documentation of their
10		models, assumptions and data that can be downloaded over the internet. Many electric
11		utilities use DOE data and forecasts in their load forecasting models.
12	Q:	**How did you develop the load forecast for commercial customers?**
13	A:	First, we forecasted the number of commercial customers on a secondary voltage in a
14		statistical regression based on the historical number of residential customers. Most
15		commercial customers, such as retail, schools, banks and government are operating to
16		serve households or other commercial customers, so we used the number of households
17		as the primary driver. Next, we forecasted commercial secondary use per customer based
18		on DOE projections of equipment use for different types of equipment used in
19		commercial buildings. The forecast of sales for this class is the product of the forecasts
20		for the number of customers and kWh sales per customer. The forecast of sales for
21		commercial customers served at a primary voltage was forecasted directly using DOE
22		projections of equipment use for commercial customers.

1   **Q:**   **How did you develop the load forecast for industrial customers?**

2   **A:**   In Missouri, sales to industrial customers are about 17 percent of total sales. Because

3   light manufacturing comprises most of the sales to this class, the sales were forecasted

4   using methods that were similar to those used for commercial customers.

5   **Q:**   **How do the Company's energy efficiency programs affect the load forecast?**

6   **A:**   The load forecast includes the impacts of demand side management and energy efficiency

7   for the programs that KCP&L has adopted. New programs that the Company might

8   adopt in the future are not included in the forecast but are instead evaluated along with

9   supply options for meeting future load growth.

10   **Q:**   **Please summarize your electric load forecast.**

11   **A:**   Schedule ARB-5 shows the forecast of annual net system input and peak demand for

12   KCP&L customers in Kansas and Missouri from 2011 through 2020.

13   **Q:**   **How are these results used?**

14   **A:**   The load forecast is used to determine the need for future resources to meet future load

15   growth. This process is described in the Direct Testimony of KCP&L witness Burton

16   Crawford.

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

18   **A:**   Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Kansas City Power & Light)
Company's Request for Authority to Implement) Case No. ER-2014-0370
A General Rate Increase for Electric Service)

AFFIDAVIT OF ALBERT R. BASS, JR.
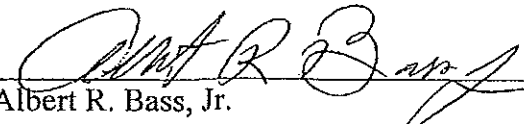
STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Albert R. Bass, Jr., being first duly sworn on his oath, states:
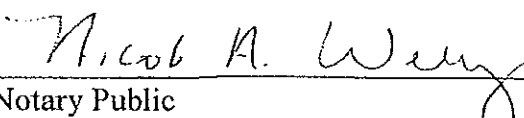
1. My name is Albert R. Bass, Jr. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Manager of Market Assessment.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Kansas City Power & Light Company consisting of ____ten____ (10) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

_____
Albert R. Bass, Jr.

Subscribed and sworn before me this ___30th___ day of ___October___, 2014.

_____
Notary Public

My commission expires: ___Feb. 4, 2015___

ADJUSTMENTS TO MONTHLY BILLED SALES OF KCP&L MISSOURI

NORMALIZATIONS TO MONTHLY MWH SALES

State	Tariff	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Test Year	Mar 2015 Customer Growth	Total Adjustments
						Weather Adjustments to Monthly Billed Sales										
KS	Residential	-14,395	-9,791	-1,226	8,364	22,036	-5,719	-11,383	-5,725	-12,245	-12,327	-24,273	-21,312	-87,996		
KS	Small GS	-663	-407	42	494	1,220	-340	-720	-274	-665	-677	-1,344	-1,176	-4,510		
KS	Medium GS	-326	-17	303	780	2,034	-646	-1,659	-142	-865	-922	-1,842	-1,486	-4,788		
KS	Large GS	-2,817	-915	77	1,361	3,903	-782	-3,125	-798	-3,560	-3,791	-7,321	-6,723	-24,491		
KS	Large Power	0	0	0	0	0	0	0	0	0	0	0	0	0		
KS	Off Peak Lighting															
	Total	-18,201	-11,130	-805	10,998	29,193	-7,486	-16,887	-6,939	-17,335	-17,717	-34,779	-30,697	-121,785		
MO	Residential	-13,373	-9,697	-1,325	3,549	22,878	-55	-13,349	-4,606	-10,128	-10,261	-18,434	-20,492	-75,293	23,652	-51,641
MO	Small GS	-851	-494	258	298	1,763	-60	-1,356	-240	-854	-878	-1,576	-1,743	-5,732	852	-4,880
MO	Medium GS	-974	-310	369	477	3,190	-52	-2,589	-194	-1,439	-1,541	-2,750	-2,978	-8,791	-972	-9,763
MO	Large GS	-3,316	-1,593	332	654	3,836	-216	-3,125	-793	-3,565	-3,730	-6,788	-7,260	-25,564	18,009	-7,555
MO	Large Power	1,911	1,305	293	1,144	1,858	-1,160	-1,104	670	80	0	9	483	5,488	51,944	57,432
	Total	-16,603	-10,789	-73	6,122	33,525	-1,544	-21,523	-5,164	-15,906	-16,410	-29,539	-31,990	-109,892	93,485	-16,407
															104,926	-93,752

ENERGY EFFICIENCY ADJUSTMENT TO MONTHLY MWH SALES

State	Tariff	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Test Year	Weather Adjustment	Mar 2015 Customer	Total Adjustm
						Energy Efficiency Adjustments to Monthly Billed Sales											
KS	Residential	0	0	0	0	0	0	0	0	0	0	0	0	0			-50,085
KS	Small GS	0	0	0	0	0	0	0	0	0	0	0	0	0			4,379
KS	Medium GS	0	0	0	0	0	0	0	0	0	0	0	0	0			-365
KS	Large GS	0	0	0	0	0	0	0	0	0	0	0	0	0			-34,754
KS	Large Power	0	0	0	0	0	0	0	0	0	0	0	0	0			0
KS	Off Peak Lighting	0	0	0	0	0	0	0	0	0	0	0	0	0			0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0			-80,345
MO	Residential	-38	-88	-241	-199	-125	-17	-1	0	0	-1	0	0	-709	-75,293	23,652	-52,350
MO	Small GS	-16	-3	0	0	0	0	0	0	0	-20	0	0	-38	-5,732	852	-4,918
MO	Medium GS	-79	-16	0	0	0	0	0	0	0	-99	0	0	-193	-8,791	-972	-9,957
MO	Large GS	-73	-14	0	0	0	0	0	0	0	-91	0	0	-178	-25,564	18,009	-7,733
MO	Large Power	-60	-12	0	0	0	0	0	0	0	-75	0	0	-147	5,488	51,944	57,285
	Total	-266	-132	-241	-199	-125	-17	-1	0	0	-285	0	0	-1,266	-109,892	93,485	-17,674

Schedule ARB-1

ANNUALIZED ENERGY EFFICIENCY IMPACTS FOR KCP&L MISSOURI

Energy Efficiency Adjustments (KWh), without losses

State	Tariff	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Total
KS	Res	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Small GS	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Medium GS	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Large GS	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Large Power	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Sales for Resale	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
MO	Res	38,195	87,558	241,391	198,905	124,525	17,083	563	193	0	594	381	0	709,387
MO	Small GS	15,690	3,095	0	0	0	0	0	0	0	19,601	0	0	38,386
MO	Medium GS	79,036	15,590	0	0	0	0	0	0	0	98,734	0	0	193,359
MO	Large GS	72,884	14,376	0	0	0	0	0	0	0	91,050	0	0	178,311
MO	Large Power	60,062	11,847	0	0	0	0	0	0	0	75,032	0	0	146,941
MO	Sales for Resale	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	265,867	132,466	241,391	198,905	124,525	17,083	563	193	0	285,010	381	0	1,266,384

WEATHER NORMALIZED MONTHLY PEAK LOADS (MW)

WEATHER NORMALIZED MONTHLY PEAK LOADS WITH CUSTOMER GROWTH THROUGH March 2015 (MW)

State	Tariff	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Test Year
KS	Residential	499	606	824	981	936	835	632	543	708	739	612	655	981
KS	Small GS	62	73	89	99	95	94	76	61	71	77	66	63	99
KS	Medium GS	130	146	173	185	195	178	142	130	140	150	150	125	195
KS	Large GS	375	411	428	453	475	451	431	378	419	436	413	374	475
KS	Large Power	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Street Lights	3	3	3	3	3	3	3	3	3	3	3	3	3
KS	Traffic Signals	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Area Lights	1	1	1	1	1	1	1	1	1	1	1	1	1
KS	Off Peak Lighting	10	10	10	10	10	10	10	10	10	11	11	11	11
MO	Residential	397	491	823	884	903	749	437	419	589	579	496	516	903
MO	Small GS	68	80	109	111	112	105	87	70	80	82	76	64	112
MO	Medium GS	175	210	267	261	287	248	204	176	199	207	215	177	287
MO	Large GS	356	380	419	420	455	425	397	344	387	410	388	365	455
MO	Large Power	304	334	333	370	338	318	300	273	299	267	281	283	370
MO	Street Lights	18	18	18	18	18	18	18	18	18	16	16	16	18
MO	Traffic Signals	0	0	0	0	0	0	0	0	0	0	0	0	0
MO	Area Lights	4	4	4	4	4	4	4	4	4	4	4	4	4

Note: These numbers include losses.

Schedule ARB-3

WEATHER NORMALIZED MONTHLY COINCIDENT PEAK LOADS (MW)

WEATHER NORM WEATHER NORMALIZED MONTHLY COINCIDENT PEAK LOADS WITH CUSTOMER GROWTH THROUGH March 2015 (MW)

State	Tariff	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Test Year
KS	Residential	495	570	760	919	922	752	603	442	699	739	612	655	922
KS	Small GS	48	70	86	95	92	90	69	50	59	60	55	43	95
KS	Medium GS	95	133	160	175	166	168	129	98	106	113	115	92	175
KS	Large GS	279	373	391	425	412	409	392	363	326	377	348	287	425
KS	Large Power	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Street Lights	3	0	0	0	0	0	0	0	3	3	3	2	3
KS	Traffic Signals	0	0	0	0	0	0	0	0	0	0	0	0	0
KS	Area Lights	1	0	0	0	0	0	0	0	1	1	1	1	1
KS	Off Peak Lighting	10	0	0	0	0	0	0	0	10	11	11	9	11
	Total Retail	931	1,146	1,397	1,614	1,593	1,420	1,195	954	1,204	1,303	1,144	1,090	1,614
MO	Residential	389	476	784	831	878	624	437	360	566	575	481	508	878
MO	Small GS	49	76	105	107	108	99	78	59	68	65	60	45	108
MO	Medium GS	127	181	248	250	245	230	185	143	154	156	156	125	250
MO	Large GS	263	348	391	388	384	387	350	330	304	352	342	290	391
MO	Large Power	277	292	313	350	321	304	290	251	234	238	263	250	350
MO	Street Lights	18	0	0	0	0	0	0	0	18	16	16	14	18
MO	Traffic Signals	0	0	0	0	0	0	0	0	0	0	0	0	0
MO	Area Lights	4	0	0	0	0	0	0	0	4	4	4	3	4
	Total Retail	1,125	1,373	1,841	1,926	1,936	1,643	1,338	1,143	1,348	1,406	1,322	1,235	1,936

Note: These numbers include losses.

FORECAST OF NEST SYSTEM INPUT (NSI) & PEAK FOR KCP&L

	NSI	Hourly Peak Demand
	GWh	MW
2011	16,134	3,610
2012	16,437	3,677
2013	16,588	3,741
2014	16,846	3,798
2015	17,101	3,849
2016	17,409	3,895
2017	17,614	3,939
2018	17,865	3,983
2019	18,133	4,032
2020	18,450	4,116