MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2006-____

FILED³

NOV 1 3 2006

DIRECT TESTIMONY

OF

LAURA BECKER

Missouri Public
Service Commission

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

Kansas City, Missouri
January 2006

DIRECT TESTIMONY

OF

LAURA BECKER

Case No. ER-2006-____

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

2 A: My name is Laura Becker. My business address is 1201 Walnut, Kansas City, Missouri

3 64106-2124.

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

5 A: I am employed by Kansas City Power and Light Company ("KCPL") as a Regulatory

6 Analyst in the Regulatory Affairs department.

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

8 A: My primary responsibility is maintaining KCPL's Load Research program. My other

9 responsibilities include the development of the Bill Frequency initiative for the 2006 rate

10 case and evaluating and developing new tariffs related to the Demand Response,

11 Efficiency, and Affordability programs outlined in the Stipulation and Agreement

12 concerning KCPL's Regulatory Plan, which the Missouri Public Service Commission

13 ("MPSC") approved in Case No. EO-2005-0329.

14 **Q:** **Please describe your education and employment history.**

15 A: I received a Bachelor of Science degree in Geological Engineering from the University of

16 Arizona in 1981, a Master of Science degree in Mining Engineering from the University

17 of Montana at Butte in 1984, and a Bachelor of Art degree in Secondary Education

18 Mathematics from the University of Missouri at Kansas City in 1990. I have been

19 employed by KCPL for eight years; first in the Marketing Analysis and Decision Support

1   department and currently in the Regulatory Affairs department. I also have prior electric

2   utility experience at Salt River Project, Phoenix, Arizona in the Fuels and System

3   Planning departments with responsibilities including development of, securing liability

4   bonding for and meeting compliance regulations of a company-owned coal operation as

5   well as modeling long-term utility strategies.

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

7   A: The purpose of my testimony is to discuss KCPL's Load Research program. I will

8   discuss the historical background of the program, the current sample design, the

9   methodology employed for the sampling, and the use of the Cellnet metering network for

10   this program.

11   Q: **What is Load Research?**

12   A: Load Research is a methodology that estimates how much and when a group of similar

13   customers (a "customer class") uses electricity. Load data is collected from a

14   representative sample for each customer class. This load data is 15-minute measurements

15   of kilowatt demand for each customer class. The data is aggregated on an hourly basis.

16   This hourly data is then analyzed to produce load profiles that show how demand varies

17   over time and how each customer class contributes to the total KCPL system load.

18   Q: **How does KCPL use the data from its load research analysis?**

19   A: KCPL uses its load research analysis data to determine the contribution of each customer

20   class to total system load. The summation of the customer class load profiles plus

21   adjustments made to include Line Loss, Company Use, Lighting and Unaccounted For

22   are calibrated to equal the hourly Net System Input. KCPL uses this data to allocate its

23   costs among the customer classes.

1   Q: **Does KCPL perform a single load research analysis for its entire bi-state service**

2   **territory?**

3   A: No, because KCPL's service territory extends into two states, KCPL performs separate

4   load research analyses for each state, which ultimately results in separate customer class

5   load profiles for Missouri and Kansas.

6   Q: **How was this jurisdictional load research analysis accomplished?**

7   A: The representative sample for each customer class was utilized but instead of applying

8   the total number of customers in a customer class to determine the total hourly loads, the

9   per-state number of customers was used.

10   Q: **What is the historical background of the Load Research sample?**

11   A: The former load research sample was last designed and implemented in 1994. Because

12   changes in customer energy usage patterns, and therefore the sample points, can become

13   non-representative of their class, load research is usually re-sampled every three to five

14   years. By 2003, KCPL's sample was nine years old and a redesigning and re-sampling

15   project was undertaken.

16   Q: **What do you mean by "redesigning" the load research sample?**

17   A: The load research design from 1994 was designed with four classes of customers:

18   Residential, Residential Heat, Commercial and Industrial. The strata (*i.e.*, subsets) in the

19   two residential classes were based on peak summer month and peak winter month energy

20   usage. The strata in the Commercial and Industrial classes were based on peak summer

21   month demand. When the project to redesign the Load Research program began, KCPL

22   consulted with the MPSC Staff to ask their advice on how best to design the Load

23   Research program. This collaboration resulted in the decision to design load research

1 based on the rate classes, namely, Residential, Residential Heat, Small General Service,

2 Medium General Service, and Large General Service. Because KCPL collects meter data

3 for all Large Power Service customers, a class design was not necessary. The Residential

4 strata were designed as before, with the strata based on peak summer month and peak

5 winter month energy usage. The new Small, Medium and Large General Service and

6 Large Power Service class designs are also based on peak summer month and peak winter

7 month energy usage.

8 **Q:** **How were the individual strata break points determined for each rate class?**

9 A: The breakpoints for each of the rate class strata were determined using the traditional

10 Dalenius-Hodges technique. For each class of customers, every KCPL customer that had

11 energy data available for both the winter (January 2003) and summer (August 2003) peak

12 months was analyzed to determine strata breakpoints. Once the strata were defined, the

13 Neyman allocator technique was applied to determine the number of sample points

14 needed for each strata to achieve +/-10% relative precision at the 90% confidence level.

15 **Q:** **What was the number of strata determined for each customer class?**

16 A: The Residential class, Residential Heat class, Medium General Service class, and the

17 Large General Service class each have four strata. The Small General Service class has

18 six strata.

19 **Q:** **How many total sample points were deemed necessary to achieve a statistically**

20 **sound load research sample?**

21 A: In total, the recommended minimum number of sample points for the five classes was

22 422. These sample points were utilized for both Missouri and Kansas analysis.

1   **Q:**   **How many additional customers are metered for load research purposes?**

2   A: All customers with a peak demand greater than 1 MW are metered. The number of

3   customers that have a peak demand greater than 1 MW is approximately 291. This count

4   includes the entire Large Power Class of customers.

5   **Q:**   **When was the new load research sample implemented?**

6   A: Within a week of having the randomly selected sample points that would represent each

7   class, demand data was being collected. Cellnet-metered locations provided the first

8   sample points with hourly data. By May of 2004, enough of the total number of meters

9   had been installed and collecting data that the first analysis of the new Load Research

10   program could be performed.

11   **Q:**   **How many sample points are providing meter data from Cellnet meters?**

12   A: Approximately 500 Cellnet meters are providing hourly demand data. The remaining

13   300-plus sample points are metered with traditional metering/recorders.

14   **Q:**   **How were the customer class loads estimated from the sample points for a customer**

15   **class?**

16   A: The mean-per-unit analytical methodology was used. The mean-per-unit analysis method

17   uses the average hourly demand for a customer class and multiplies the demand by the

18   total number of customers for that customer class.

19   **Q:**   **Please provide an example of this analytical method.**

20   A: An example of this method is provided in Schedule LMB-1 using KCPL's 2005 system

21   peak hour, which occurred on July 22, 2005 between 16:00 and 17:00.

1 **Q: How did the new load research sample perform?**

2 A: For KCPL's 2005 system peak hour, with 90% confidence, the precisions for Missouri

3   were as follows: Residential Class - 11.4, Residential Heat Class - 10.9, Small General

4   Service – 14.9, Medium General Service – 10.6, and Large General Service – 7.1. After

5   line losses and proof of revenue adjustment, load research data was within 0.2% of the

6   Net System Input for the test period from October 2004 through September 2005.

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

8 A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Kansas City)
Power & Light Company to Modify Its Tariffs to)   Case No. ER-2006-____
Begin the Implementation of Its Regulatory Plan)

AFFIDAVIT OF LAURA BECKER

STATE OF MISSOURI   )
) ss
COUNTY OF JACKSON   )

Laura Becker, being first duly sworn on her oath, states:

1.   My name is Laura Becker. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as a Regulatory Analyst.

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 six (6) pages and Schedule LMB-1, all of which having been prepared in written form for introduction into evidence in the above-captioned docket.
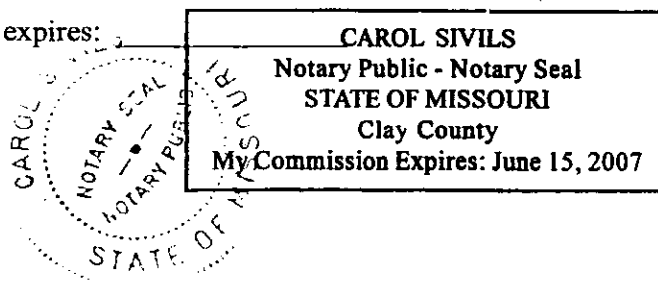
3.   I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and accurate to the best of my knowledge, information and belief.

_____
Laura Becker

Subscribed and sworn before me this 27th day of January 2006.

_____
Notary Public

My commission expires: _____

Missouri Residential Class
July 22, 2005
16:00 – 17:00

Res Class Stratum	Population Weight	Missouri Population	Sample Mean kW	Class Total
LoSumLoWin	0.64621	127,079	2.6085	331,486
LoSumHiWin	0.07258	14,274	3.1645	45,170
HiSumLoWin	0.13497	26,542	5.1472	136,618
HiSumHiWin	0.14624	28,758	6.1822	177,787
Total	1.00000	196,653	17.1024	691,060