

Exhibit No.:  
Issue: Rate Design,  
Outdoor Lighting  
Witness: Robert Wagner  
Sponsoring Party: Robert Wagner  
Type of Exhibit: Surrebuttal Testimony  
Case No.: ER-2010-0355  
ER-2010-0356  
Date Testimony Prepared: January 5, 2011

**MISSOURI PUBLIC SERVICE COMMISSION**

**CASE NO. ER-2010-0355**

**CASE NO. ER-2010-0356**

**SURREBUTTAL TESTIMONY**

**OF**

**ROBERT WAGNER**

**ON BEHALF OF**

**ROBERT WAGNER**

**Kansas City, Missouri  
January 2011**

1 **Q PLEASE STATE YOUR NAME AND ADDRESS**

2 A My name is Robert Wagner and my address is 9005 N Chatham Avenue, Kansas City, MO  
3 64154.

4 **Q WITH WHAT ORGANIZATION ARE YOU AFFILIATED WITH AND IN WHAT**  
5 **CAPACITY?**

6 A The International Dark-Sky Association. I serve as the President of the Board of Directors.

7 **Q ON WHOSE BEHALF ARE YOU TESTIFYING?**

8 A I am testifying on behalf of myself, Robert Wagner, Pro Se Intervener

9 **Q HAVE YOU FILED TESTIMONY PREVIOUSLY BEFORE THE COMMISSION?**

10 A Yes, I filed direct and rebuttal testimony in ER-2010-0355 and ER-2010-0356.

11 **Q WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?**

12 A The purpose of my testimony is to address the Rebuttal Testimony of William P. Herdegen  
13 III, related to outdoor street and area lighting.

14 **Q WHAT IS YOUR GENERAL VIEW OF MR. HERDEGEN'S REBUTTAL**  
15 **TESTIMONY?**

16 A Mr. Herdegen's rebuttal testimony presents opposing views and offers little additional  
17 evidence. He presents a two-birds in the bush are better than one in the hand argument,  
18 then fails to back up his claims. Additionally, he mentions that the Companies are  
19 interested in improving the "life in the communities they serve – always being  
20 environmentally aware and responsible." (ER-2010-0355, Herdegen Rebuttal, p. 3, L. 15-  
21 16 / ER-2010-0356, Herdegen Rebuttal, p. 3, L. 8-9 ) I have been trying to work with the  
22 Companies since 2005 and have seen no interest in working with me on light pollution  
23 concerns. Mr. Herdegen also interprets communities interest in LED lighting as an interest

1 in the product itself rather than a plea to provide additional choices and lower cost lighting.  
2 A 14% increase in rates is significant and the only choice the Companies have currently  
3 proposed in order to keep cities within budget is to remove 14% of lights. Since the  
4 Companies also bind their customers to large removal fees through their rules, their  
5 customers will suffer a major financial hit. If this rate increase goes through, I would also  
6 recommend the Commission waive removal fees and institute a low cost conversion to  
7 part-night lighting during any outdoor lighting rate increase.

8 **Q SHOULD THE COMMISSION AND OTHER PARTIES TO THESE CASES**  
9 **ASSUME THAT IF YOU HAVE NOT REBUTTED AN ITEM THAT YOU AGREE**  
10 **WITH MR. HERDEGEN'S POSITION ON THAT ITEM?**

11 A No.

12 Voluntary Part-Night Rates for Outdoor Lighting

13 **Q MR. HERDEGEN MENTIONS THAT THIS MAY INCREASE LIABILITY. HOW**  
14 **DO YOU RESPOND?**

15 A Part-night lighting has been in use in the United States for some time. As communities are  
16 faced with rising utility rates, fluctuating tax revenues and a need to reduce green house  
17 gas emissions; they are looking at alternative ways for conservation. The city of Santa  
18 Rosa, CA<sup>1</sup> has taken this opportunity to reevaluate their roadway warranting program and  
19 saves \$400,000 annually. They used part-night street lighting as part of their plan that also  
20 includes removal of street lights. Both Rhode Island and Maine Department of  
21 Transportations have part-night street light initiatives. The Texas Department of

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<sup>1</sup> [http://ci.santa-rosa.ca.us/doclib/Documents/Street\\_Light\\_Reduction\\_Program.pdf](http://ci.santa-rosa.ca.us/doclib/Documents/Street_Light_Reduction_Program.pdf)

1 Transportation's *Highway Illumination Manual: Lighting Curfews*<sup>2</sup> discusses both the  
2 positive aspects and identifies concerns a community should review prior to changing  
3 lighting. In particular they mention that:

4 "By providing full lighting during periods when volumes are high and the roadway  
5 operates near capacity and providing reduced lighting as the traffic decreases, the  
6 potential exists for realizing considerable energy savings while still providing the  
7 benefits of full lighting at locations (e.g., interchanges) and at times (i.e., high  
8 volumes) where driver decision-making is the most critical and the greatest visibility  
9 is required." (FHWA/RD-86/018, *Reduced Lighting on Freeways During Periods of*  
10 *Low Traffic Density*)

11 In addition the American Association of State Highway and Transportation Officials  
12 (AASHTO) recognizes the valid need for streetlight curfews as documented in the October  
13 2005 Roadway Lighting Design Guide. AASHTO is recognized by the United States  
14 Federal Highway Administration as the premier organization in formulating highway  
15 policy. Certainly the practice of using curfews for streetlights can be presumed to be legal,  
16 since AASHTO would never be involved in recommending illegal policies and practices.  
17 Under their Reasons for Curfews, they note: "Recent studies show that light dimming and  
18 turn-off curfews are viable options for the management of public lighting systems,  
19 including roadway lighting." (AASHTO *Roadway Lighting Design Guide*, Reasons for  
20 Curfews – Page 7, October 2005). Communities have the choice on how they make they  
21 roadways safe, there is not a state or national mandate that this must be accomplished  
22 through lighting. Indeed it should be noted that most of the roadways in our state do not  
23 have continuous lighting. If such a mandate did exist, then we would expect to see every

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<sup>2</sup> [http://onlinemanuals.txdot.gov/txdotmanuals/hwi/lighting\\_curfews.htm](http://onlinemanuals.txdot.gov/txdotmanuals/hwi/lighting_curfews.htm)

1 road with continuous lighting and street lighting would be mandatory. This is a burden  
2 that neither the state nor federal government has imposed to date. Private businesses  
3 should also be able to save energy as they see fit. Businesses leasing private area lighting  
4 from the Companies will only be able to realize similar savings if a rate is made available  
5 in the Companies' tariffs for midnight shutoff of private area lighting.

6 **Q MR. HERDEGEN MENTIONS THAT DOUBLE-CYCLING LIGHTS WILL**  
7 **REDUCE LAMP LIFE AND INCREASE THE REPLACEMENT FREQUENCY**  
8 **AND COSTS (ER-2010-0355, Herdegen Rebuttal, p. 18, L. 11-12 / ER-2010-0356,**  
9 **Herdegen Rebuttal, p. 17, L. 4-5 ). HOW DO YOU RESPOND?**

10 A Mr. Herdegen is correct that lamp rated life will be reduced slightly, but is confusing rated  
11 life with overall life from install date till burnout. However, he provides nothing to back  
12 the claim that this will increase the lamp replacement frequency and costs. Reduced lamp  
13 rated life will be more than offset by reduced usage and result in a reduction in the  
14 replacement frequency and costs.

15 **Q MR. HERDEGEN MENTIONS THAT GROUP RELAMPING WILL LEAVE**  
16 **MANY CUSTOMERS IN THE DARK UNTIL A RE-LAMPING EVENT OCCURS**  
17 **(ER-2010-0355, Herdegen Rebuttal, p. 17, L. 17-18 / ER-2010-0356, Herdegen**  
18 **Rebuttal, p. 16, L. 13-14 ). HOW DO YOU RESPOND?**

19 A Mr. Herdegen is obviously unfamiliar with group relamping programs. These programs  
20 are designed to leave the customer with no periods of darkness. Occasional, one-off  
21 fixture repairs still occur, but at a greatly reduced rate. The debate over whether or not  
22 group or individual relamping is more cost effective can only be solved by working  
23 through the worksheet provided in my direct testimony and auditing the results. Similar

1 information to the EPA report is available in IES DG-4-03, *Design Guide for Roadway*  
2 *Lighting Maintenance*; but that document is copyright protected from duplication. To date,  
3 Mr. Herdegen has not provided any worksheets to validate his response. The main concern  
4 with group relamping is ensuring the lighting system does not degrade beyond design  
5 specifications. Mr. Herdegen's insistence that an inexpensive, lumen depreciated bulb  
6 (when combined with luminaire dirt depreciation that has depreciated the luminaires output  
7 to 50 percent or more of the initial luminaire output) is more valuable than maintaining the  
8 quality of the lighting system should be taken into account when considering whether or  
9 not the Companies are acting in the best interest of the public.

10 Inclusion of rates for lower wattage high pressure

11 sodium outdoor lamps

12 **Q MR. HERDEGEN MENTIONS THAT 50W LIGHTS MAY NOT PROVIDE**  
13 **SUFFICIENT LIGHT. HOW DO YOU RESPOND?**

14 **A** Lighting is based on the task to be accomplished. Tasks such as walking down a sidewalk  
15 require less light than say, reading a gasoline receipt. To date, Mr. Herdegen has not  
16 provided any worksheets to validate his response that a 50W light is unsuitable in every  
17 circumstance. Many utilities companies include the 50W HPS light in their rates. When,  
18 in decades past, incandescent lamps were used for street lighting, a 200W incandescent  
19 lamp was often standard. A 50W (4000 lumen) high-pressure sodium lamp today produces  
20 the same amount of initial light (lumen) output as a 200W incandescent lamp – a lamp that  
21 was for years deemed safe and reliable in lighting our streets, businesses and private  
22 residences. KCP&L itself had rates approved for 1000, 2500 and 4000 Lumen  
23 incandescent municipal streetlights in Kansas. These can be found in Municipal Street

1 Lighting Service, Schedule ML (See Schedule RAW2010-36). Additionally, GMO Sheet  
2 88 mentions a 3300 Lumen Mercury Vapor streetlight.

3 Conversion of outdoor lighting rates from listing lumens and wattages  
4 to listing expected illumination on the ground

5 **Q MR. HERDEGEN MENTIONS THAT THE COMPANIES WOULD HAVE A**  
6 **PROBLEM PROVIDING REFLECTED ILLUMINATION AS THIS MAY VARY**  
7 **DEPENDING ON THE GROUND COVER. HOW DO YOU RESPOND?**

8 A Mr. Herdegen is confusing ground-based illumination (light striking the ground) with  
9 ground-based luminance (light reflected off the ground). There is no need to provide  
10 ground-based luminance for such a conversion.

11 **Q MR. HERDEGEN SAYS THAT THIS CALCULATION IS BEST LEFT TO THE**  
12 **CUSTOMER'S DESIGNERS AND ENGINEERS (ER-2010-0355, Herdegen**  
13 **Rebuttal, p. 26, L. 6-8 / ER-2010-0356, Herdegen Rebuttal, p. 24, L. 6-7 ). HOW DO**  
14 **YOU RESPOND?**

15 A Many of the lights that the Companies lease have little to no photometric information  
16 available to designers and engineers. If the Companies expected designers and engineers  
17 to be able to use their lights in a photometric report, they would lease only high quality  
18 luminaires that have IES files associated with them. The IES files document the exact  
19 output of the light fixture and includes: lumen and directional values, as well as,  
20 compliance with national standards. Upon request, the Companies were able to provide  
21 only six of fifteen HPS Roadway luminaires' associated IES files, and none for their area  
22 or floodlight luminaires. Additionally, the Companies have several different  
23 manufacturers for luminaire type. Each of these are unique and compliance using one

1 particular luminaire may result in a design that is out of compliance using a different  
2 replacement model. Providing a minimal ground based illuminance rating for each  
3 category will help ensure adequacy.

4 Prohibit the marketing of outdoor lights as safety, security or crime  
5 prevention lights without a guarantee to back up this claim

6 **Q MR. HERDEGEN BELIEVES THE CUSTOMERS BENEFIT FROM HAVING**  
7 **THESE CLAIMS IN THE COMPANIES MARKETING MATERIALS. HOW DO**  
8 **YOU RESPOND?**

9 A Of particular concern to customers is civil liability when the Companies' claims are not  
10 met. The Companies can make any unsubstantiated claims in order to sell their products,  
11 but when they fail to perform as marketed, the customer is left with the liability. The  
12 Companies appear to require an Indemnity Agreement requiring the customer pay for any  
13 damage or injury to persons or property. The practice of making claims without a  
14 guarantee and then requiring the customer to pay to defend the Companies should be  
15 eliminated.

16 **Q DO YOU HAVE EVIDENCE THAT SUGGESTS LIGHTING DOES NOT SOLVE**  
17 **CRIME?**

18 A There has been little consensus among professionals as to the question if lighting reduces  
19 crime. The Heschong Mahone Group, Inc. released CALMAC Study ID: PGE0269.01,  
20 HMG Project #0425 on 11/7/2008 for Pacific Gas and Electric Company, Steve Blanc<sup>3</sup>  
21 entitled *Outdoor Lighting and Security: Literature Review*. Their bibliography references  
22 40 reports and they state in their summary:

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<sup>3</sup> [http://www.calmac.org/publications/Outdoor\\_Lighting\\_and\\_Security\\_White\\_Paper\\_CALMAC\\_versionES.pdf](http://www.calmac.org/publications/Outdoor_Lighting_and_Security_White_Paper_CALMAC_versionES.pdf)



1 “None of the papers reviewed presents sufficient evidence to demonstrate a causal  
2 link between night-time lighting and crime. The available results show a mixed  
3 picture of positive and negative effects of lighting on crime, most of which are not  
4 statistically significant. This suggests either that there is no link between lighting  
5 and crime, or that any link is too subtle or complex to have been evident in the data,  
6 given the limited size of the studies undertaken.”

7 **Q DOES THIS CONCLUDE YOUR TESTIMONY TODAY?**

8 **A** Yes.

**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 )  
Continue the Implementation of Its Regulatory Plan )     **Case No. ER-2010-0355**

In the Matter of the Application of KCP&L Greater )  
Missouri Operations Company to Modify Its )     **Case No. ER-2010-0356**  
Electric Tariffs to Effectuate a Rate Increase )

**AFFIDAVIT OF ROBERT WAGNER**

**STATE OF MISSOURI**     )  
  ) ss  
**COUNTY OF PLATTE**     )

Robert Wagner, being first duly sworn on his oath, states:

1. My name is Robert Wagner, I live at 9005 N Chatham Ave, Kansas City, MO, and I am the President of the Board of Directors for the International Dark-Sky Association.

2. Attached hereto and made a part hereof for all purposes is my Surrebuttal Testimony on behalf of Robert Wagner consisting of eight (8) pages, having been prepared in written form for introduction into evidence in the above captioned dockets.

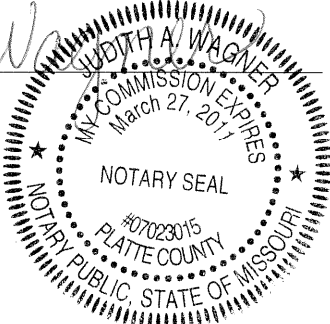
3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

  
\_\_\_\_\_  
Robert Wagner

Subscribed and sworn before me this 5 day of Jan, 2011.

  
\_\_\_\_\_  
Notary Public

My commission expires: March 27, 2011



**KANSAS CITY POWER & LIGHT COMPANY**

(Name of Issuing Utility)

Replacing Schedule 73 Sheet 1

Rate Areas 2 & 4

(Territory to which schedule is applicable)

which was filed July 24, 2009

No supplement or separate understanding shall modify the tariff as shown hereon. Sheet 1 of 5 Sheets

**MUNICIPAL STREET LIGHTING SERVICE**  
Schedule ML

**AVAILABILITY:**

Available for street lighting service through a Company-owned Street Lighting System within corporate limits of a municipality.

**TERM OF CONTRACT:**

Contracts under this schedule shall be for a period of not less than ten years from the effective date thereof.

**RATE (Incandescent):**

1.0 Street lamps equipped with a hood and reflector, supported on a wood pole or existing trolley pole and supplied from overhead circuits by an extension not in excess of 500 feet per unit: (Code X)

	<u>Size of Lamp</u>	<u>Rate per Lamp per Year</u>
1.1	1000 Lumen (65-watt)**	\$75.96
1.2	2500 Lumen (187-watt)*	\$107.52

2.0 Street lamps equipped with a hood, reflector, and refractor, on wood poles served overhead by an extension not in excess of 500 feet per unit: (Code IWT)

	<u>Size of Lamp</u>	<u>Rate per Lamp per Year</u>
2.1	4000 Lumen (269-watt)*	\$182.04
2.2	6000 Lumen (337-watt)*	\$203.28

\*Limited to the units in service on December 28, 1972, until removed.

\*\*Limited to the units in service on December 1, 2010, until removed.

10-KCPE-415-RTS  
Approved  
Kansas Corporation Commission  
November 22, 2010  
/s/ Susan K. Duffy

SAC

Issued: <u>November 22, 2010</u> Month Day Year	FILED
Effective: <u>December 1, 2010</u> Month Day Year	THE STATE CORPORATION COMMISSION OF KANSAS
By: <u>Curtis D. Blanc</u> Sr. Director Title	By: _____ Secretary

**KANSAS CITY POWER & LIGHT COMPANY**

(Name of Issuing Utility)

Replacing Schedule 73 Sheet 2

Rate Areas 2 & 4

(Territory to which schedule is applicable)

which was filed July 24, 2009

No supplement or separate understanding shall modify the tariff as shown hereon.

Sheet 2 of 5 Sheets

**MUNICIPAL STREET LIGHTING SERVICE**  
Schedule ML

(Continued)

**RATE** (Incandescent): (continued)

4.0 Street lamps equipped with hood, reflector, and refractor, on ornamental steel poles served underground by an extension not in excess of 300 feet per unit:

	<u>Size of Lamp</u>	<u>Rate per Lamp per Year</u>
4.1	4000 Lumen (269-watt) Under Sod* (1)	\$285.48

(1) Code ISE

\*Limited to the units in service on December 28, 1972, until removed.

10-KCPE-415-RTS  
Approved  
Kansas Corporation Commission  
November 22, 2010  
/s/ Susan K. Duffy

*AC*

Issued: November 22, 2010  
Month Day Year

Effective: December 1, 2010  
Month Day Year

By: Curtis D. Blanc *Curtis D. Blanc* Sr. Director  
Title

FILED

THE STATE CORPORATION COMMISSION OF KANSAS

By: \_\_\_\_\_  
Secretary

**KANSAS CITY POWER & LIGHT COMPANY**

(Name of Issuing Utility)

Replacing Schedule 73 Sheet 3

Rate Areas 2 & 4

(Territory to which schedule is applicable)

which was filed July 24, 2009

No supplement or separate understanding shall modify the tariff as shown hereon. Sheet 3 of 5 Sheets

**MUNICIPAL STREET LIGHTING SERVICE**  
Schedule ML

(Continued)

**RATE (Customer Owned):**

6.0 Street lamps equipped with a hood, reflector, and refractor, owned and installed by customer, maintained and controlled by the Company, served overhead or underground:

	<u>Size of Lamp</u>	<u>Rate per Lamp per Year</u>
6.1	12100 Lumen Limited Maintenance* (250-watt) <sup>(1)</sup>	\$175.44
6.2	22500 Lumen Limited Maintenance* (400-watt) <sup>(1)</sup>	\$229.56
6.4	16000 Lumen Limited Maintenance (150-watt) <sup>(1)</sup>	\$175.80
6.5	27500 Lumen Limited Maintenance (250-watt) <sup>(1)</sup>	\$230.28

<sup>(1)</sup> Code LMX

**RATE (Mercury Vapor):**

7.0 Post-top, low-mounting street lamps with canopy and refractor mounted on 14-foot posts served underground by an extension under sod not in excess of 200 feet per unit. (Code PTE)

	<u>Size of Lamp</u>	<u>Rate per Lamp per Year</u>
7.1	8600 Lumen** (175-watt)	\$248.52

\* Limited to the units in service on September 9, 1974, until removed.

\*\* Limited to the units in service on September 30, 1985, until removed.

**NOTE:** Wattage specifications do not include wattage required for ballast.

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Approved  
Kansas Corporation Commission  
November 22, 2010  
/s/ Susan K. Duffy

*SAC*

Issued: November 22, 2010  
Month Day Year

Effective: December 1, 2010  
Month Day Year

By: Curtis D. Blanc Sr. Director  
Title

FILED  
THE STATE CORPORATION COMMISSION OF  
KANSAS  
By: \_\_\_\_\_  
Secretary

**KANSAS CITY POWER & LIGHT COMPANY**

(Name of Issuing Utility)

Replacing Schedule 73 Sheet 4

Rate Areas 2 & 4

(Territory to which schedule is applicable)

which was filed July 24, 2009

No supplement or separate understanding shall modify the tariff as shown hereon.

Sheet 4 of 5 Sheets

**MUNICIPAL STREET LIGHTING SERVICE**  
Schedule ML (Continued)

**RATE (Mercury Vapor and High Pressure Sodium Vapor):**

8.0 Basic Installation:

Street lamps equipped with hood, reflector, and refractor, on wood poles served from overhead circuits by an extension not in excess of 200 feet per unit: (Code OW)

Size of Lamp	Lumen Charge per Lamp per Year <sup>(1)</sup>	Total Charge per Lamp per Year <sup>(1)</sup>
8.1 8600 Lumen Mercury Vapor (175-watt)*	\$39.24	\$178.56
8.2 12100 Lumen Mercury Vapor (250-watt)*	\$55.08	\$194.40
8.3 22500 Lumen Mercury Vapor (400-watt)*	\$104.64	\$243.96
8.5 5800 Lumen High Pressure Sodium (70-watt)	\$27.60	\$166.92
8.6 9500 Lumen High Pressure Sodium (100-watt)	\$39.60	\$178.92
8.7 16000 Lumen High Pressure Sodium (150-watt)	\$55.56	\$194.88
8.8 27500 Lumen High Pressure Sodium (250-watt)	\$105.00	\$244.32
8.9 50000 Lumen High Pressure Sodium (400-watt)	\$245.28	\$384.60

<sup>(1)</sup>Rates above are based on a Base Unit Charge of \$139.32 plus a Lumen Charge as stated above. Twin units will be billed at one and one-half (1 1/2) times the Base Unit Charge plus (2) times the appropriate Lumen Charge.

9.0 Optional Equipment: The following rates for Optional Equipment shall be added to the rate for Basic Installation listed in 8.0 above for Mercury Vapor and High Pressure Sodium Vapor installations only.

9.1 Ornamental steel pole instead of wood pole, additional charge per unit per year \$38.88. (New installations are available with underground service only).

9.2 Laminated wood pole instead of wood pole.\*\* (Available with underground service only). Additional charge per unit per year \$81.72.

9.3 Aluminum pole instead of a wood pole, additional charge per unit per year \$79.92. (Available with underground service only).

**NOTE:** Wattage specifications do not include wattage required for ballast

\* Limited to the units in service on April 18, 1992, until removed.

\*\* Limited to the units in service on December 1, 2010, until removed.

10-KCPE-415-RTS

Approved

Kansas Corporation Commission

November 22, 2010

/s/ Susan K. Duffe

*SAC*

Issued: <u>November 22, 2010</u> Month Day Year	FILED
Effective: <u>December 1, 2010</u>	THE STATE CORPORATION COMMISSION OF KANSAS
By: <u>Curtis D. Blanc</u> Sr. Director Title	By: _____ Secretary

**KANSAS CITY POWER & LIGHT COMPANY**

(Name of Issuing Utility)

Replacing Schedule 73

Sheet 5

Rate Areas 2 & 4

(Territory to which schedule is applicable)

which was filed

July 24, 2009

No supplement or separate understanding shall modify the tariff as shown hereon.

Sheet 5 of 5 Sheets

**MUNICIPAL STREET LIGHTING SERVICE**  
Schedule ML

(Continued)

**RATE (Mercury Vapor and High Pressure Sodium Vapor): (Continued)**

Optional Equipment (continued)

- 9.4 Underground service extension, under sod, not in excess of 200 feet. Additional charge per unit per year \$68.52.
- 9.5 Underground service extension under concrete, not in excess of 200 feet. Additional charge per unit per year \$370.56.
- 9.6 Breakaway base. Additional charge per unit per year \$35.88. (Available with underground service only).
- 9.7 Special black square luminaire, \* instead of basic installation luminaire. (Available with underground service only). Additional charge per unit per year \$78.84.

**REPLACEMENT OF UNITS:**

Existing street lamps shall be replaced at the same pole location with a different type of standard unit installation only by mutual agreement of the Company and the Municipality. The Company has the right to replace existing incandescent and mercury vapor street lamps in need of repair or replacement (or on poles in need of repair or replacement) with equivalent high pressure sodium vapor street lamps.

**STANDARD UNITS:**

Standard street lamps are those mercury vapor or high pressure sodium vapor units for which a rate is stated except those with an X designation in the type code.

**BURNING HOURS:**

Unless otherwise stated, lamps are to burn each and every day of the year from one-half hour after sunset to one-half hour before sunrise, approximately 4100 hours per year.

**TAX ADJUSTMENT:**

Tax Adjustment Schedule TA shall be applicable to all customer billings under this schedule.

**ENERGY COST ADJUSTMENT:**

Energy Cost Adjustment, Schedule ECA, shall be applicable to all customer billings under this schedule.

**REGULATIONS:**

Subject to Rules and Regulations filed with the State Regulatory Commission.

\* Limited to the units in service on December 1, 2010, until removed.

10-KCPE-415-RTS

Approved

Kansas Corporation Commission

November 22, 2010

/s/ Susan K. Duffe

*SAC*

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THE STATE CORPORATION COMMISSION OF  
KANSAS

By: Curtis D. Blanc Sr. Director  
Title

By: \_\_\_\_\_  
Secretary