

**BEFORE THE STATE CORPORATION COMMISSION  
OF THE STATE OF KANSAS**

**In the Matter of the Application of The    )  
Empire District Electric Company to    ) Docket No. 19-EPDE-223-RTS  
Make Certain Changes in Its Charges    )  
for Electric Service.                        )**

**DIRECT TESTIMONY**

**PREPARED BY**

**LANA J. ELLIS, Ph.D.**

**UTILITIES DIVISION**

**KANSAS CORPORATION COMMISSION**

**May 13, 2019**

1                                   **I.       STATEMENT OF QUALIFICATIONS**

2   **Q.     What is your name?**

3   A.     Lana J. Ellis.

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

5   A.     I am employed by the Kansas Corporation Commission (KCC or Commission) as  
6           Deputy Chief of the Economics and Rates Section within the Utilities Division.

7   **Q.     What is your business address?**

8   A.     1500 S.W. Arrowhead Road, Topeka, Kansas, 66604-4027.

9   **Q.     What is your educational background and professional experience?**

10  A.     I have a B.S.B.A with a major in Honors Economics from Missouri Western State  
11           University, an M.A. in economics and an interdisciplinary studies Ph.D. in  
12           economics and political science from the University of Missouri-Kansas City, an  
13           M.B.A. from Rockhurst University, and a J.D. from Seattle University. Before I  
14           began my employment with the Commission in 2010, I worked for Sprint  
15           Corporation for nine years, serving primarily in strategic planning and market  
16           research positions. In addition, I have taught university-level business and  
17           economics courses as an adjunct instructor.

18  **Q.     Have you previously submitted testimony before this Commission?**

19  A.     Yes. I filed testimony in Docket Nos. 14-KCPE-272-RTS, 14-BHCG-502-RTS,  
20           15-WSEE-181-TAR, 16-KCPE-446-TAR, 17-WSEE-147-RTS, 18-WSEE-328-  
21           RTS, 18-KCPE-480-RTS, and 18-KGSG-560-RTS. I have also participated, as a  
22           member of Commission Staff, in a number of other dockets.



1 Empire proposes to first increase the existing Municipal Street Lighting Service  
2 tariff (Schedule SPL) amounts to reflect the proposed revenue requirement  
3 increase,<sup>3</sup> then freeze the MV Lamp portion of the existing tariff and add LED  
4 fixtures to the tariff.<sup>4</sup> In addition, Empire is proposing to record a Regulatory  
5 Account (asset/liability) to track the actual cost and revenue impacts of the MV to  
6 LED conversion for recovery consideration in its next rate case.<sup>5</sup>

7 ***Conversion Project***

8 **Q. Why is Empire proposing to replace the MV street lights within its Kansas**  
9 **territory?**

10 A. Empire is proposing to replace the MV street lights within its Kansas territory  
11 because it expects LEDs will be more energy efficient and will have lower  
12 maintenance cost, improved visibility, and a longer life than the existing MV  
13 lights.<sup>6</sup> In addition, Empire has concerns about the potential environmental impact  
14 of mercury exposure on its communities.<sup>7</sup>

15 **Q. Does Staff concur with Empire's reasoning for the conversion to LEDs?**

16 A. Yes. Staff witness, Tim Stringer, has evaluated and concurs with Empire's proposal  
17 to replace the MV street lights with LED lamps within its Kansas territory.<sup>8</sup> In  
18 addition, he notes that MV street lights are no longer being manufactured and HPS  
19 street light manufacturing is being curtailed because of the availability of LED  
20 street lights.<sup>9</sup>

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<sup>3</sup> Application, Section 18, Schedule 18 – SPL, p. 3.

<sup>4</sup> Westfall Direct, p. 7, lns. 10-23.

<sup>5</sup> Westfall Direct, p. 7, lns. 20-23; p. 8, lns. 1-4.

<sup>6</sup> Westfall Direct, p. 7, lns. 15-19; p. 9, lns. 15-19.

<sup>7</sup> Westfall Direct, p. 9, lns. 19-21.

<sup>8</sup> Stringer Direct, p. 6, lns. 12-18.

<sup>9</sup> Stringer Direct, p. 4, lns 18-19; p. 5, lns. 1-4.

1 **Proposed Rates**

2 **Q. What is the basis for Empire's proposed rates for the new LED fixtures?**

3 A Empire's proposed Municipal Street Light LED tariff rate is based on the cost of  
4 service for HPS lamps, reduced by the expected cost reductions observed in  
5 Empire's Missouri Pilot Study.<sup>10</sup>

6 **Q. How were Empire's proposed rates calculated?**

7 A. Empire started with the Kansas proposed rates for the existing HPS lights.<sup>11</sup>  
8 Assuming the existing HPS rates are cost based, Empire then used the CCOS of  
9 Empire witness Tim Lyons to split the Kansas HPS rate between fixed costs (97%)  
10 and variable costs (3%). The expected reduction in fixed costs from the Missouri  
11 Pilot Study was then subtracted from the calculated fixed portion of the HPS rate.

$$12 \quad HPS FC_{KS} - (HPS FC_{MO} - LED FC_{MO}) = LED FC_{KS}$$

13 Similarly, the variable portion of the Kansas HPS rates was reduced by expected  
14 cost reductions from the Missouri Pilot Study.

$$15 \quad HPS VC_{KS} - (HPS VC_{MO} - LED VC_{MO}) = LED VC_{KS}$$

16 The results of these equations were combined to calculate Empire's proposed  
17 LED annual charge as illustrated in Table 1 below.

18 **Table 1**

LUMENS	Watts	Current Annual Charge per HPS Lamp	Fixed Charge % per COS Study	Fixed Charge 97% per COS Study	HPS/LED Annual Maintenance Cost	Variable Charge % per COS Study	Variable Charge 3% per COS Study	HPS/LED Energy Cost	LED Annual Charge Conversion
7,500-9,500	150	\$ 163.53	97%	\$ 159.25	(\$13.34)	3%	\$ 4.28	(\$2.14)	\$ 148.05
13,000-16,000	250	\$ 205.99	97%	\$ 200.60	(\$13.69)	3%	\$ 5.39	(\$2.70)	\$ 189.61
19,000-22,000	400	\$ 255.68	97%	\$ 248.99	(\$13.69)	3%	\$ 6.69	(\$3.35)	\$ 238.65

<sup>10</sup> Empire conducted a study for its Missouri pilot program (Missouri Pilot Study), which indicated that the cost of service for an LED Municipal Street Lamp would be less than the cost of service for an equivalent HPS lamp. Westfall Direct, p. 9, lns. 2-14.

<sup>11</sup> Work papers of Jeffrey L. Westfall submitted in response to discovery request KCC-1.

1   **Q.    Why were the HPS rates used, instead of the MV rates, as the basis for**  
2   **Empire’s proposed LED rates?**

3   A.    The existing Kansas HPS rates were used as the basis for Empire’s proposed LED  
4        rates, instead of the MV rates, because HPS lights were the subject of the Missouri  
5        Pilot Study.

6   ***Regulatory Account***

7   **Q.    Why is Empire requesting a Regulatory Account to track the impacts of the**  
8   **MV to LED conversion?**

9   A.    Because the actual cost and revenue impacts of the MV to LED conversion cannot  
10        be known until Empire is granted permission and actually performs the conversion,  
11        the LED Municipal Light rates proposed in this proceeding are based only on  
12        estimates.<sup>12</sup> Therefore, Empire is requesting that a Regulatory Account be  
13        established to track the cost and revenue impacts of the conversion for recovery  
14        consideration in its next rate case.<sup>13</sup>

15   **Staff’s Analysis**

16   ***Proposed Rates***

17   **Q.    Has Staff evaluated Empire’s model and assumptions to determine whether**  
18   **the results provide a reasonable estimate of per-unit costs?**

19   A.    Yes. Staff witness, Stringer, evaluated Empire’s model and input assumptions. As  
20        he explains, Empire used a top-down method for estimating the cost reductions that  
21        were used to design its proposed tariff.<sup>14</sup> In contrast, Mr. Stringer made several  
22        cost assumptions, in addition to the cost estimates that Empire provided, and

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<sup>12</sup> Westfall Direct, p. 10, lns. 5-12.

<sup>13</sup> Westfall Direct, p. 10, lns. 12-15.

<sup>14</sup> Stringer Direct, p. 5, lns. 19-22; p. 6 lns 1-10.

performed a bottom-up cost analysis. While Staff believes that a bottom-up cost based estimate more accurately reflects what the actual costs will be, the results of the two approaches are very similar as shown in Table 2 below.

**Table 2**

LUMENS	Watts	Empire	Staff
7,500-9,500	150	\$ 148.05	\$ 177.33
13,000-16,000	250	\$ 189.61	\$ 193.64
19,000-22,000	400	\$ 238.65	\$ 222.87

**Q. What is your recommendation regarding Empire's proposed lighting rates?**

A. I recommend the LED rates be based on Staff's per unit cost estimates. Accordingly, I used Staff's analysis of LED lighting costs to develop new LED rates for Municipal Street Lighting as shown in Table 2 above. In addition, I recommend a Regulatory Account be established to track the actual cost and revenue impacts of the conversion for the reasons discussed below.

***Regulatory Account***

**Q. Should the revenue requirement reflect the cost differential between LEDs and the MV lights they are replacing?**

A. Yes. Ideally, the revenue requirement would reflect the cost differential between LEDs and the existing MV lights they are replacing. It is established regulatory practice that a utility should have the opportunity to earn its revenue requirement but not over-earn or under-earn its revenue requirement. However, any revenue requirement established in this proceeding will not reflect the monetary impact of the LED conversion because an adjustment has not been made to account for the expected cost differential. Therefore, the proposed revenue requirement does not reflect the expected cost reductions.

1   **Q.   Why wasn't an accounting adjustment made to reflect the lower costs of LEDs**  
2   **in this proceeding?**

3   A.   There was no accounting adjustment to the revenue requirement made in this  
4       proceeding because the impact of the LED conversion is not known and  
5       measurable.

6   **Q.   Why is the revenue requirement impact of the LED conversion not known and**  
7   **measurable?**

8   A.   The revenue requirement impact of the LED conversion is not known and  
9       measurable at this time for the following three reasons:

10       (1) The conversion will occur outside the test year. The proposed conversion  
11       will not occur unless it is approved in this rate case. Thus, if it does occur, the  
12       conversion will occur outside the test year, which has already passed.

13       (2) There is uncertainty surrounding the affected lighting billing determinants.  
14       If approved, Empire plans to replace the existing MV street lights with LED fixtures  
15       over an eighteen-month period. During the conversion, the lights encountered in  
16       the field may be replaced with different fixtures than what was originally  
17       anticipated. Therefore, it cannot be known exactly how many of each wattage of  
18       lights will be installed.

19       (3) There is uncertainty surrounding the actual per unit costs compared to the  
20       estimates. As discussed above, Staff witness Stringer reviewed Empire's cost  
21       estimates associated with the LED fixtures and has made several adjustments to  
22       those estimates. And Staff's proposed LED rates are based on Mr. Stringer's per  
23       unit cost estimates. If the cost estimates used to establish the LED rates are  
24       accurate, Empire will not be harmed by the reduction in revenue because that



1 revenue reduction would be offset by an equal reduction in cost. However, as with  
2 any estimate, there is uncertainty about how close the actual per unit costs will be  
3 to the estimates.

4 For these three reasons, there was no accounting adjustment made to the  
5 proposed revenue requirement in this proceeding. Because the proposed revenue  
6 requirement does not reflect the expected cost reductions, Staff recommends a  
7 Regulatory Account (asset/liability) be established to track the actual cost and  
8 revenue impacts of the conversion for recovery consideration in Empire's next rate  
9 case.

#### 10 IV. CONCLUSION

##### 11 Recommendation

12 **Q. Please summarize Staff's recommendations.**

13 A. As discussed above, Staff's proposed rates for LED lighting are based on Staff's  
14 bottom-up cost analysis. However, as with any estimate, it is uncertain how close  
15 the actual per unit costs will be to the estimates. Therefore, I recommend the  
16 Commission accept Staff's proposed rates and establish a Regulatory Account to  
17 track the actual costs and revenue impacts of the LED conversion for recovery  
18 consideration in the next rate case.


19 **Q. Does this conclude your testimony?**

20 A. Yes. Thank you.

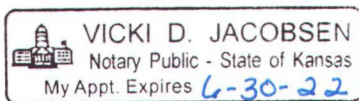
**VERIFICATION**

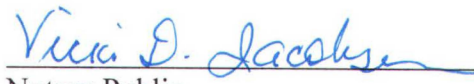
STATE OF KANSAS                     )  
  ) ss.  
COUNTY OF SHAWNEE            )

Lana Ellis, being duly sworn upon her oath deposes and states that she is the Deputy Chief of Economics and Rates for the Utilities Division of the State Corporation Commission of the State of Kansas; that she has read and is familiar with the foregoing *Direct Testimony*, and that the statements contained therein are true and correct to the best of her knowledge, information and belief.

  
\_\_\_\_\_  
Lana Ellis  
Deputy Chief of Economics and Rates  
Kansas Corporation Commission  
of the State of Kansas

SUBSCRIBED AND SWORN to before me this 13<sup>th</sup> day of May, 2019.



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

My Appointment Expires: 6-30-22

## **CERTIFICATE OF SERVICE**

19-EPDE-223-RTS

I, the undersigned, certify that a true and correct copy of the above and foregoing Direct Testimony was served via electronic service this 13th day of May, 2019, to the following:

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