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Lighting Class
Witness: Ryan P. Ryterski
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Sponsoring Party: Union Electric Company
File No.: ER-2019-0335
Date Testimony Prepared: July 3, 2019

MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. ER-2019-0335

DIRECT TESTIMONY

OF

RYAN P. RYTERSKI

ON

BEHALF OF

UNION ELECTRIC COMPANY

D/B/A AMEREN MISSOURI

**St. Louis, Missouri
July, 2019**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	PURPOSE OF TESTIMONY	2
III.	LIGHTING CLASS DESCRIPTIONS AND LED CONVERSION.....	2
IV.	LIGHTING COST OF SERVICE	5
V.	NEW FIXTURE RATES.....	8

1 **DIRECT TESTIMONY**

2 **OF**

3 **RYAN P. RYTERSKI**

4 **FILE NO. ER-2019-0335**

5 **I. INTRODUCTION**

6 **Q. Please state your name and business address.**

7 A. My name is Ryan P. Ryterski and my business address is One Ameren
8 Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103.

9 **Q. What is your position with Ameren Missouri?**

10 A. I am employed by Union Electric Company d/b/a Ameren Missouri
11 ("Ameren Missouri" or "Company") as a Regulatory Rate Specialist.

12 **Q. Please describe your educational background and employment**
13 **experience.**

14 A. I received a Bachelor's Degree of Business Administration with majors in
15 Economics & Finance and Management from McKendree University in 2013. While
16 pursuing my undergraduate degrees, I interned at Ameren Services in the Strategic
17 Sourcing Department. Following completion of my undergraduate degrees, I was hired by
18 Ameren Services as a Procurement Specialist in the Strategic Sourcing Department. I
19 subsequently earned a Master of Business Administration from McKendree University in
20 2015.

21 In February of 2017, I was promoted to Supplier Relationship Management Analyst
22 in Strategic Sourcing where I was responsible for tracking both qualitative and quantitative
23 performance measures for transmission and distribution projects for both Ameren Illinois

1 Company and Ameren Missouri. In November of 2017, I accepted a position with Ameren
2 Missouri as a Regulatory Rate Specialist. Since becoming a member of the Missouri
3 Regulatory Group, I have conducted a Class Cost of Service Study for Ameren Missouri's
4 pending gas rate case, File No. GR-2019-0077 and filed testimony supporting the study.

5 **II. PURPOSE OF TESTIMONY**

6 **Q. What is the purpose of your direct testimony?**

7 A. My direct testimony discusses the rate design for the Ameren Missouri lighting
8 customer classes being proposed in this case as developed through a Lighting Cost of Service
9 Study.

10 **Q. Please summarize your testimony.**

11 A. In this testimony, I describe the two Ameren Missouri Lighting classes and the
12 differences between them. I then describe the lighting cost of service study and the purpose for
13 conducting it. In this testimony, I recommend that the Missouri Public Service Commission
14 ("Commission") approve the rates reflected in the Company's filed lighting tariff sheets
15 that decrease the revenue requirement of the 5M class by \$10,545, and decrease the
16 revenue requirement of the 6M class by \$1,004.

17 **III. LIGHTING CLASS DESCRIPTIONS AND LED CONVERSION**

18 **Q. Can you describe the difference between the 5M and 6M lighting classes?**

19 A. Yes. The difference between the 5M and 6M rate classes is ownership of the
20 lighting fixtures and poles. The Company owns, operates and maintains the lighting fixtures and
21 post top poles for the 5M class, and customers taking service under the 6M class purchased, and
22 therefore own, the lighting fixtures and poles used to serve them. Thus, the main reason for the

1 difference in rates for these two classes is Ameren Missouri's non-energy related cost of
2 providing facilities used to serve the 5M class.

3 **Q. Is the Company responsible for the maintenance of any lights in the 6M**
4 **class?**

5 A. As stated above, the Company owns, operates, and maintains the lighting
6 fixtures and post top poles for all of the 5M customers. The Company provides limited
7 maintenance to facilities in its 6M class that are served on the energy and maintenance rates;
8 however, non-standard maintenance items (e.g. wire, bracket, fixture, post top pole, etc.) for the
9 6M class are the responsibility of the customer because the customer owns the facilities and
10 provides the fixtures, and parts necessary to maintain those facilities. When repairs are needed,
11 the Company is responsible for disconnecting and reconnecting lines between the lights and the
12 distribution system so that the 6M customer can repair its own facilities. Therefore, maintenance
13 rates for the 6M class are based on the costs associated with only limited activities performed
14 by the Company.

15 **Q. What occurred during and following the 2016 electric general rate case**
16 **(File No. ER-2016-0179) that impacted the lighting classes?**

17 A. Following the 2016 electric general rate case, Ameren Missouri began its LED
18 conversion program to replace certain traditional lighting products with LED fixtures. This
19 technology shift triggered evaluation of the lighting classes to establish more appropriate rates
20 for both the new LED fixtures, and also for the existing obsolete fixtures that will be replaced.
21 In prior cases, the Class Cost of Service Study ("CCOSS") conducted by the Company did not
22 differentiate between the two lighting classes. Lighting was handled as a single class when
23 determining a new revenue requirement. However, because the costs to serve 5M and 6M

1 customers are different given the Company's different ownership and responsibilities associated
2 with each, treating both classes as a single class for CCOSS purposes caused the rates that were
3 set to diverge from the actual cost to serve the lighting customers. The lighting rates filed in this
4 case seek to begin addressing that divergence.

5 **Q. How many LED fixtures are currently installed and owned by Ameren**
6 **Missouri?**

7 A. As of December 2018, Ameren Missouri owned and operated approximately
8 51,000 LED light fixtures in the 5M class compared to approximately 140,000 Non-LED
9 fixtures.

10 **Q. Do you expect the number of LED fixtures to continue to increase?**

11 A. Yes. For the purpose of maintaining the most accurate fixture counts when
12 developing the lighting rates for this case, we projected that a total of 67,000 LED fixtures would
13 be installed by the end of 2019, which is the expected true-up date in this case. This increase of
14 16,000 LED fixtures accounts for the anticipated progress of the conversion program at the end
15 of the true-up period.

16 **Q. What was the methodology used to predict this shift from non-LED to LED**
17 **fixtures?**

18 A. In order to capture both the non-LED to LED conversion fixtures and also any
19 system growth that was occurring during the second half of the test year, we compared the June
20 2018 component counts to the counts at the end of December 2018. The changes in component
21 counts in either a positive or negative direction were then annualized to project what the counts
22 will be at the end of the true-up period in December 2019.

1 A. The study Mr. Hickman conducted provides a basis for allocating and/or
2 assigning the Company's total jurisdictional cost of providing electric service to Ameren
3 Missouri's customers in a manner that reflects cost causation. While I used Mr. Hickman's study
4 as a starting point for my analysis, I further analyzed the lighting classes down to the fixture
5 level to develop cost reflective rates for all of the different lights permitted by our tariffs.

6 **Q. Did the CCOSS performed in this case by Mr. Hickman make any**
7 **adjustments to the costs being allocated to the lighting classes?**

8 A. Yes. The biggest shift in cost allocation performed by Mr. Hickman was to
9 adjust the Four Non-Coincident Peak (4 NCP) Average and Excess Demand allocation factor
10 that is being assigned to the lighting classes. In prior class cost of service studies, the lighting
11 class average and excess 4 NCP calculation assigned four peaks to the lighting classes as was
12 done in those prior studies for the non-lighting classes. This methodology is being revised in
13 this case to more accurately represent cost causation, because the lighting classes peak in the
14 winter and at night when the system is not peaking. The revised process applies only one of the
15 class's NCPs from the test year due to the fact that one of the 4 NCPs for the system occurred in
16 the winter, so it was determined that the lighting class would have one winter month applied to
17 its 4 NCP average and excess allocation.

18 **Q. What costs are allocated based on the 4 NCP Average and Excess**
19 **allocation factor?**

20 A. This particular allocation factor is used to allocate demand-related production
21 plant costs to the different classes. As mentioned before, the lighting classes have peak energy
22 demand in the winter during the night, or "off-peak hours," so the class would not be responsible

1 for adding marginal load to the system during most peak usage periods. That is the reason these
2 cost allocations were reduced for the lighting classes.

3 **Q. Why is it useful to perform a separate CCOSS for the two lighting classes?**

4 A. The lighting classes are unique from the other rate classes in the large variety of
5 services that are available to customers. As a result, it is appropriate to conduct a CCOSS within
6 these two classes to allocate the costs to the different types of fixtures, and also to the different
7 service levels such as energy only service and energy, and maintenance service on customer
8 owned fixtures in the 6M rate class.

9 **Q. You noted earlier that current lighting rates had diverged from cost of**
10 **service study results. Are there other issues the lighting rates proposed in this case are**
11 **designed to address?**

12 A. Yes. Not only was there an imbalance of revenue requirements between the
13 lighting classes from a cost of service perspective, but there was also inequality of rates for
14 different fixtures within each class. In proposing lighting rate adjustments in this case for the
15 5M class that differ by category of fixture type, we have taken a step toward reducing that
16 inequality within the class.

17 **Q. If you were to fully align the revenue requirements of the 5M and 6M**
18 **classes with the revenues calculated by the lighting CCOSS, how much would they need**
19 **to change?**

20 A. Please see the table below which shows the revenue requirement shifts that
21 would be required to fully align the 5M and 6M classes with their cost to serve.

	<u>CCOSS</u>	<u>Current</u>	<u>Change Required</u>
5(M)	\$ 31,193,209	\$ 35,604,417	-12.4%
6(M)	\$ 4,788,996	\$ 3,396,515	41.0%

22

1 **Q. Did you use only the currently installed totals for each fixture type in**
2 **determining appropriate rates?**

3 A. No. As discussed previously in this testimony, to accurately reflect the fixture
4 counts at the end of the true-up period it was necessary to develop a conversion model for LED
5 fixtures, and also consider the quantities of non-LED fixtures that will be eliminated as a result
6 of the conversion program.

7 **Q. Why is it not sufficient to use the current component counts in developing**
8 **your rates for this case?**

9 A. Getting component counts that most accurately reflect the true state of the
10 Company's lighting system at the end of the true-up period will allow for rates to be more
11 appropriately designed to recover the approved revenue requirements for both of the lighting
12 classes, and will minimize any over- or under-recoveries that would have occurred if outdated
13 billing units were used to develop rates.

14 **Q. Are you proposing that all of the fixture rates shift independently by the**
15 **amounts outlined in the lighting cost of service study?**

16 A. Yes. As I mentioned previously, I am proposing detailed recommendations for
17 intra-class rate shifts to begin a gradual transition toward a more accurate reflection of the
18 current cost of lighting service in this case. To simplify the implementation of new rates, we are
19 suggesting that the rates of the fixtures in the 5M class be adjusted in three different buckets.
20 These buckets will be: LED Fixtures, Post Top Fixtures, and Obsolete Fixtures to be Converted
21 to LED.

22 **Q. How would the adjustments made to each of the three buckets differ?**

1 A. The rate adjustments for the three buckets mentioned above would reflect the
2 magnitude that the rates of the fixtures within the bucket are misaligned with their cost of
3 service. The LED Fixtures will receive the largest average reduction amount of 0.081% rate
4 reduction per fixture. The Post Top lights will receive average reductions of 0.009% per fixture,
5 and the Obsolete Fixtures will receive average rate reductions of 0.007%.

6 **Q. Will the 6M rates be adjusted in a similar manner?**

7 A. No. Due to the smaller size of the 6M revenue requirement, it is more logical to
8 apply the class's reduction evenly across all of the fixtures within the class. This method resulted
9 in an average rate reduction of 0.19% for all of the fixture types in the 6M class.

10 **Q. Are you proposing to adjust the limited LED conversion option and**
11 **grandfathering provision charges in the 6M class?**

12 A. No. Because of the overall reduction that is being proposed as a result of this
13 rate case, we have elected to leave these rates the same.

14 **Q. What direction would you be adjusting these rates if the circumstances**
15 **would allow?**

16 A. The rates for each of the lights included in this program, the 100, 250 and 400
17 Watt Equivalent Light charges would all be increased if they were updated in accordance with
18 their cost to serve. We plan to propose to move toward these rates in future cases to ensure that
19 customers' rates move in a manner consistent with the costs the Company incurs to serve them.

20 **Q. Are there any tariff changes that will be made outside of updating the**
21 **rates?**

22 A. Yes, merely to remove expired deadlines. Please refer to Schedules RPR-D3
23 RPR-D4 for the redlined lighting class's tariff sheets, 5M and 6M respectively.

1 **Q. Does this conclude your direct testimony?**

2 **A. Yes, it does.**

Fixture Description	Fixture Count	Current Rate	COSS Rate	Proposed Rate
9500 HPS Enclosed	7,398	\$ 12.89	\$ 11.14	\$ 12.21
25500 HPS Enclosed	7,914	\$ 18.63	\$ 22.62	\$ 16.89
50000 HPS Enclosed	1,658	\$ 33.21	\$ 33.25	\$ 30.47
6800 MV Enclosed	4,157	\$ 12.89	\$ 16.19	\$ 11.72
20000 MV Enclosed	2,296	\$ 18.63	\$ 31.19	\$ 16.05
54000 MV Enclosed	74	\$ 33.21	\$ 69.00	\$ 27.08
5800 HPS Open Btm	88	\$ 10.44	\$ 7.55	\$ 10.04
9500 HPS Open Btm	27,379	\$ 11.41	\$ 10.57	\$ 10.73
3300 MV Open Btm	1,594	\$ 10.44	\$ 10.93	\$ 9.72
6800 MV Open Btm	8,714	\$ 11.41	\$ 15.74	\$ 10.24
9500 HPS Post Top	41,701	\$ 23.65	\$ 15.28	\$ 22.97
3300 MV Post Top	102	\$ 22.35	\$ 15.43	\$ 21.63
6800 MV Post Top	8,233	\$ 23.65	\$ 20.04	\$ 22.47
25500 HPS Direct	2,986	\$ 23.65	\$ 22.99	\$ 21.91
50000 HPS Direct	2,991	\$ 37.40	\$ 33.58	\$ 34.66
34000 MH Direct	961	\$ 23.65	\$ 31.41	\$ 21.10
100000 MH Direct	690	\$ 74.76	\$ 71.65	\$ 68.52
20000 MV Direct	237	\$ 23.65	\$ 31.73	\$ 21.07
54000 MV Direct	24	\$ 37.40	\$ 69.52	\$ 31.27
11000 MV Open Btm	84	\$ 11.41	\$ 21.00	\$ 9.74
34200 HPS Direct	4	\$ 23.65	\$ 26.18	\$ 21.07
140000 HPS Direct	11	\$ 74.76	\$ 65.63	\$ 69.08
27500 HP Enclosed	308	\$ 18.63	\$ 22.62	\$ 16.89
36000 MH Direct	3,373	\$ 23.65	\$ 31.41	\$ 21.10
47000 HPS Direct	133	\$ 37.40	\$ 33.58	\$ 34.66
LED 100 W EQ Bracket	51,955	\$ 10.31	\$ 6.82	\$ 10.03
LED 250 W EQ Bracket	7,475	\$ 16.70	\$ 9.68	\$ 16.19
LED 400 W EQ Bracket	1,453	\$ 30.89	\$ 18.59	\$ 29.76
LED Direct-Large	270	\$ 69.13	\$ 24.72	\$ 67.40
LED Direct-Medium	1,577	\$ 34.69	\$ 14.69	\$ 33.81
LED Direct-Small	1,085	\$ 21.61	\$ 10.86	\$ 21.09
LED Post Top - All	3,216	\$ 22.59	\$ 9.72	\$ 22.28

Fixture Description	Fixture Count	Current Rate	COSS Rate	Proposed Rate
Energy charge (per kWh)	55,769,535 kWh	\$ 0.0472	\$ 0.0704	\$ 0.0440
9500 HPS Enrg&Maint	11,544	\$ 3.80	\$ 3.13	\$ 3.67
25500 HPS Enrg&Maint	762	\$ 6.61	\$ 7.53	\$ 6.29
50000 HPS Enrg&Maint	70	\$ 9.54	\$ 11.63	\$ 9.03
5500 MH Enrg&Maint	169	\$ 5.49	\$ 3.87	\$ 5.36
12900 MH Enrg&Maint	53	\$ 6.57	\$ 6.32	\$ 6.35
3300 MV Enrg&Maint	5	\$ 3.80	\$ 3.37	\$ 3.67
6800 MV Enrg&Maint	2,077	\$ 4.94	\$ 5.22	\$ 4.72
11000 MV Enrg&Maint	86	\$ 6.69	\$ 7.22	\$ 6.38
20000 MV Enrg&Maint	38	\$ 8.87	\$ 11.03	\$ 8.39
54000 MV Enrg&Maint	4	\$ 18.93	\$ 25.83	\$ 17.79
9500 HPS Enrgy Only	184	\$ 1.84	\$ 2.81	\$ 1.71
25500 HPS Enrgy Only	1	\$ 4.70	\$ 7.20	\$ 4.44
50000 HPS Enrgy Only	1	\$ 7.39	\$ 11.30	\$ 6.88
3300 MV Enrgy Only	86	\$ 1.95	\$ 2.98	\$ 1.82
6800 MV Enrgy Only	122	\$ 3.17	\$ 4.85	\$ 2.95
11000 MV Energy Only	24	\$ 4.51	\$ 6.90	\$ 4.20
20000 MV Energy Only	88	\$ 6.96	\$ 10.67	\$ 6.48
54000 MV Energy Only	18	\$ 16.57	\$ 25.33	\$ 15.43
100W LED Energy Only	29	\$ 1.59	\$ 2.35	\$ 1.48
180W LED Energy Only	2	\$ 2.86	\$ 4.22	\$ 2.66
25W LED Energy Only	2	\$ 0.40	\$ 0.59	\$ 0.37
36W LED Energy Only	21	\$ 0.57	\$ 0.84	\$ 0.53
40W LED Energy Only	69	\$ 0.64	\$ 0.94	\$ 0.59
57W LED Energy Only	7	\$ 0.91	\$ 1.34	\$ 0.84
70W LED Energy Only	13	\$ 1.11	\$ 1.64	\$ 1.04
75W LED Energy Only	546	\$ 1.19	\$ 1.76	\$ 1.11
76W LED Energy Only	0	\$ 1.21	\$ 1.76	\$ 1.12
85W LED Energy Only	51	\$ 1.35	\$ 1.99	\$ 1.26
6M Ltd LED 100 W EQ (City of St. Louis Alley Lights)	5,771	\$ 3.52	\$ 3.89	\$ 3.47
6M Ltd LED 250 W EQ (City of St. Louis Alley Lights)	97	\$ 4.98	\$ 5.64	\$ 4.88

MO.P.S.C. SCHEDULE NO. 6 ~~4th-5th~~ Revised SHEET NO. 58

CANCELLING MO.P.S.C. SCHEDULE NO. 6 ~~3rd-4th~~ Revised SHEET NO. 58

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 5 (M)
STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED

RATE PER UNIT PER MONTH LAMP AND FIXTURE

A. LED bracket mounted luminaire on existing wood pole:

<u>Identification</u>	<u>Rate</u>
100W Equivalent (1)	\$10. 31 <u>03</u>
250W Equivalent (1)	\$16. 70 <u>19</u>
400W Equivalent (1)	\$ 30.99 <u>29.76</u>

(1) The equivalent wattage represents the rating of the high pressure sodium lamp that the LED replaces.

~~* The Light Emitting Diode (LED) offerings under sections B. and C. below will be made available to customers beginning on or about July 1, 2017.~~

B. LED directional flood luminaire; limited to installations accessible to Company basket truck:

<u>Identification</u>	<u>Rate</u>
Directional - Small	\$21. 61 <u>09</u>
Directional - Medium	\$ 3433.69 <u>81</u>
Directional - Large	\$ 6967.13 <u>4045</u>

~~** C.~~ LED post-top luminaire including standard 17-foot post:

<u>Identification</u>	<u>Rate</u>
All Styles	\$22. 59 <u>2830</u>

The High Pressure Sodium and Mercury Vapor offerings under sections D. and E. below are no longer available. Company will replace these existing fixtures, upon failure, with an LED fixture under section A.

D. Standard horizontal burning, enclosed luminaire on existing wood pole:

<u>High Pressure Sodium</u>		<u>Mercury Vapor</u>	
<u>Lumens</u>	<u>Rate</u>	<u>Lumens</u>	<u>Rate</u>
9,500	\$12. 89 <u>21</u>	6,800	\$ 12.89 <u>11.72</u>
25,500	\$ 18.63 <u>16.89</u>	20,000	\$ 18.63 <u>16.05</u>
50,000	\$ 33.21 <u>30.47</u>	54,000	\$ 33.21 <u>27.08</u>

E. Standard side mounted, hood with open bottom glassware on existing wood pole:

<u>High Pressure Sodium</u>		<u>Mercury Vapor</u>	
<u>Lumens</u>	<u>Rate</u>	<u>Lumens</u>	<u>Rate</u>
5,800	\$10. 44 <u>04</u>	3,300	\$ 10.44 <u>9.72</u>
9,500	\$ 11.41 <u>10.73</u>	6,800	\$ 11.41 <u>10.24</u>

~~*Indicates Change. **Indicates Addition.~~

DATE OF ISSUE July 3, 2019 DATE EFFECTIVE August 2, 2019

ISSUED BY Michael Moehn President St. Louis, Missouri
 NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 ~~4th-5th~~ Revised SHEET NO. 58.1

CANCELLING MO.P.S.C. SCHEDULE NO. 6 ~~3rd-4th~~ Revised SHEET NO. 58.1

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 5 (M)

STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED (Cont'd.)

The High Pressure Sodium, Metal Halide and Mercury Vapor offerings under section F. below ~~are no longer available for new installations.~~ ~~will only be available for new installations through on or about June 30, 2017.~~ At that time, ~~Company~~ will replace these existing fixtures, upon failure, with an LED fixture under section B.

F. Pole-mounted, directional flood luminaire; limited to installations accessible to Company basket truck:

<u>High Pressure Sodium</u>		<u>Metal Halide</u>		<u>Mercury Vapor</u>	
<u>Lumens</u>	<u>Rate</u>	<u>Lumens</u>	<u>Rate</u>	<u>Lumens</u>	<u>Rate</u>
25,500	\$23.65 <u>21.91</u>	34,000	\$23.65 <u>21.10</u>	20,000	\$23.65 <u>21.07</u>
50,000	\$37.40 <u>34.66</u>	100,000	\$74.76 <u>68.52</u>	54,000	\$37.40 <u>31.27</u>

The High Pressure Sodium and Mercury Vapor offerings under sections G. below ~~are no longer will only be~~ available for new installations ~~through on or about June 30, 2017.~~

*-G. Standard post-top luminaire including standard 17-foot post:

<u>High Pressure Sodium</u>		<u>Mercury Vapor (1)</u>	
<u>Lumens</u>	<u>Rate</u>	<u>Lumens</u>	<u>Rate</u>
9,500	\$23.65 <u>22.97</u>	3,300	\$22.35 <u>21.63</u>
		6,800	\$23.65 <u>22.47</u>

(1) Mercury Vapor lamps and fixtures are limited to customers served under contracts initiated prior to September 27, 1988. Company will continue to maintain these lamps and fixtures so long as parts are economically available.

*-H. All poles and cable, where required to provide lighting service: The installation of all standard poles and cables shall be paid for in advance by customer, with all subsequent replacements of said facilities provided by Company.

*-I. Former Subsidiary Company lighting units provided under contracts initiated prior to April 9, 1986, which facilities will only be maintained by Company so long as parts are available in Company's present stock:

<u>Lamp and Fixture</u>	<u>Per Unit Monthly Rate</u>
11,000 Lumens, Mercury Vapor, Open Bottom	\$11.41 <u>9.74</u>
140,000 Lumens, H.P. Sodium, Directional	\$74.76 <u>69.08</u>

Term of Contract Minimum term of three (3) years where only standard facilities are installed; ten (10) years where post-top luminaires are installed.

UNION ELECTRIC COMPANY

ELECTRIC SERVICE

MO.P.S.C. SCHEDULE NO. 6 ~~4th-5th~~ Revised SHEET NO. 58.1

CANCELLING MO.P.S.C. SCHEDULE NO. 6 ~~3rd-4th~~ Revised SHEET NO. 58.1

APPLYING TO MISSOURI SERVICE AREA

~~*Indicates Reissue.~~

DATE OF ISSUE July 3, 2019 DATE EFFECTIVE August 2, 2019

ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6

4th Revised

SHEET NO. 58.2

CANCELLING MO.P.S.C. SCHEDULE NO. 6

3rd Revised

SHEET NO. 58.2

APPLYING TO

MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 5 (M)

STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED (Cont'd.)

*Discount for Franchised Municipal Customers A 10% discount will be applied to bills rendered for lighting facilities served under the above rates and currently contracted for by municipalities with whom the Company has an ordinance granted electric franchise as of September 27, 1988. The above discount shall only apply for the duration of said franchise. Thereafter, the above discount shall apply only when the following two conditions are met: 1) any initial or subsequent ordinance granted electric franchise must be for a minimum term of twenty (20) years and 2) Company must have a contract for all lighting facilities for municipal lighting service provided by Company in effect.

*Payments Bills are due and payable within twenty-one (21) days from date of bill and become delinquent thereafter.

Tax Adjustment Any license, franchise, gross receipts, occupation or similar charge or tax levied by any taxing authority on the amounts billed hereunder will be so designated and added as a separate item to bills rendered to customers under the jurisdiction of the taxing authority.

*Indicates Reissue.

Schedule RPR-D3
Page 4 of 9

DATE OF ISSUE May 22, 2017

DATE EFFECTIVE June 21, 2017

ISSUED BY Michael Moehn
NAME OF OFFICER

President
TITLE

St. Louis, Missouri
ADDRESS

MO.P.S.C. SCHEDULE NO. 6 3rd Revised SHEET NO. 58.3

CANCELLING MO.P.S.C. SCHEDULE NO. 6 2nd Revised SHEET NO. 58.3

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 5 (M)

STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED (Cont'd.)

Fuel and Purchased Power Adjustment (Rider FAC) The kilowatt-hours for lighting service provided under the terms of this Service Classification shall be subject to the provisions of Company's Fuel and Purchased Power Adjustment Clause (Rider FAC).

*Renewable Energy Standard Rate Adjustment Mechanism (Rider RESRAM) The kilowatt-hours for lighting service provided under the terms of this Service Classification shall be subject to the provisions of Company's Renewable Energy Standard Rate Adjustment Mechanism (Rider RESRAM).

The kilowatt-hour consumption of each lamp, whose operating hours are determined by a photoelectric control, shall be determined from the manufacturer's rated wattage multiplied by the number of hours of operation for the month, in accordance with the following schedules:

	<u>Rating (Watts)</u>	<u>Billing Month</u>	<u>Burning Hours</u>
LED Fixtures:			
Bracket Mount - 100W Equivalent	48	January	408
Bracket Mount - 250W Equivalent	88	February	347
Bracket Mount - 400W Equivalent	195	March	346
Directional Flood - Small	89	April	301
Directional Flood - Medium	150	May	279
Directional Flood - Large	297	June	255
Post-Top - All Styles	51	July	272
		August	298
		September	322
		October	368
		November	387
		December	417
	<u>Rating (Lumens)</u>	<u>Rating (Watts)</u>	
High Pressure Sodium Fixtures:			
	5,800	70	
	9,500	120	
	16,000	202	
	25,500	307	
	50,000	482	
	140,000	1000	
Mercury Vapor Fixtures:			
	3,300	127	
	6,800	207	
	11,000	294	
	20,000	455	
	42,000	700	
	54,000	1080	
Metal Halide Fixtures:			
	34,000	450	
	100,000	1100	

*Indicates Addition.

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 5 (M)

STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED (Cont'd.)

* 1. **RATE APPLICATION**

Available for lighting streets, alleys, walkways and other thoroughfares, or for outdoor lighting of public or private areas for security or similar purposes when such lighting facilities are operated and maintained as an extension of Company's distribution system.

* 2. **CHARACTER OF SERVICE SUPPLIED**

Company shall inventory, furnish, install, maintain and deliver electric service to automatically-controlled lighting fixtures currently offered as standard facilities by Company. Customer shall select the type and size of lamps and fixtures from the standard equipment inventoried and offered by the Company and shall specify the location of said fixtures. Other than service to Company's post-top fixtures, the service provided hereunder shall be supplied by lines or cables through fixtures supported by standard upsweep brackets attached to existing poles; however, certain non-standard facilities may be installed hereunder in accordance with the terms and conditions stated in the following paragraph 3.

* 3. **NON-STANDARD FACILITIES**

Whenever customer requires Company to install non-standard facilities hereunder (such as longer upsweep brackets, switches, protective barriers, etc.) and there is no engineering, construction, safety, legal or practical reason which would, in Company's judgment, make such non-standard installation inadvisable, Company will make such installation provided customer pays in advance to Company all costs in connection therewith. Subsequent replacements of said facilities will be provided by the Company.

* 4. **CONVERSION OR MODIFICATION OF LAMPS**

Where customer requests a conversion or modification of the size or type of lamp currently installed, and Company would not otherwise be converting such lights at that time, Company will make the requested changes, within the parameters described below, provided that customer pays in advance to the Company \$100.00 per lamp for both the removal cost and loss of the remaining life of such lamps and, additionally, signs a new contract at the time when 20 percent or more of the customer's total lamps then installed are so converted or modified. Billing for the revised lamps will be prorated based on the removal and installation dates.

*Indicates Reissue.

Schedule RPR-D3

Page 6 of 9

DATE OF ISSUE May 22, 2017 DATE EFFECTIVE June 21, 2017

ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 ~~3rd~~^{2nd} Revised SHEET NO. 58.5CANCELLING MO.P.S.C. SCHEDULE NO. 6 ~~2nd~~^{1st} Revised SHEET NO. 58.5APPLYING TO MISSOURI SERVICE AREASERVICE CLASSIFICATION NO. 5(M)STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED (Cont'd.)4. CONVERSION OR MODIFICATION OF LAMPS (Cont'd.)

Company will convert to LED up to 1,000 lights per year requested by customers. Customer requests for LED lights ~~are now being accepted~~^{will not be accepted prior to April 1, 2016,} and will be limited to twenty-five (25) lights per customer account per calendar year. Customer requests must be in writing and, at a minimum, identify the specific physical location and billing account number and service date requested of each light. In the event Company determines it cannot accommodate all requests for conversions in the timeframes requested, prioritization of the requests will be at Company's discretion.

5. CHANGE OR RELOCATION

Upon receipt of written request and authorization from customer, Company will, insofar as it may be practical and permissible, make any other change in or relocation of its facilities used in rendering service hereunder, provided customer pays in advance Company's estimated costs in connection therewith.

6. ADDITIONAL INSTALLATIONS

Customer may obtain the installation of additional lamps and the supply of service thereto under the existing contract for the remainder of the term thereof upon written application to the Company, provided, however, that if at any time during the term of the contract customer requires such additional lamps so as to cause the total number of lamps in service to exceed by 20% the lamps originally contracted for and then installed, the parties shall execute a new contract.

7. TERMINATION

If customer requests in writing the termination of all or a portion of any lighting service, not paid for in advance, within three years of the installation of the lamps being terminated, or within ten years of the installation of post top luminaires, wood poles or cable being terminated, customer shall pay in advance to Company \$100.00 per lamp for both the removal costs associated therewith and the loss of the remaining life value of such facilities. If said request for termination of lighting service is made after the above three and ten year in-service periods, as applicable, and customer requests a new lighting installation within twelve months after the removal of the prior terminated lighting facilities, customer shall pay the amount specified earlier in this paragraph for all facilities previously removed prior to Company making any new lighting installation.

Schedule RPR-D3
Page 7 of 9

DATE OF ISSUE ~~May 22, 2017~~ July 3, 2019 DATE EFFECTIVE ~~June 21, 2017~~ August 2, 2019ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 58.6

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 5 (M)

STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED (Cont'd.)

*** 8. GENERAL PROVISIONS**

Customer shall furnish to Company without cost to Company and on forms suitable to it, or customer shall reimburse Company for all costs incurred in obtaining all rights, permits and easements necessary to permit the installation and maintenance of Company's facilities on, over, under and across both public and private property where and as needed by Company in providing service hereunder. In addition, customer shall pay all costs incurred by Company in extending its distribution system, including transformers, to provide energy to said lighting facilities supplied hereunder, in accordance with the provisions of Section III.Q - Special Facilities.

*** 9. GENERAL RULES AND REGULATIONS**

In addition to the above specific rules and regulations, all of Company's General Rules and Regulations shall apply to service supplied under this Service Classification.

*Indicates Reissue.

DATE OF ISSUE May 22, 2017 DATE EFFECTIVE June 21, 2017

ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

UNION ELECTRIC COMPANY

ELECTRIC SERVICE

NO. 6 MO.P.S.C. SCHEDULE Original 1st SHEET NO. 58.7

CANCELLING MO.P.S.C. SCHEDULE
NO. 6 Original SHEET
NO. 58.7

APPLYING TO MISSOURI SERVICE AREA

~~SERVICE CLASSIFICATION NO. 5(M)~~

~~STREET AND OUTDOOR AREA LIGHTING - COMPANY-OWNED (Cont'd.)~~

FEDERAL TAX RATE REDUCTION

~~This bill line item is temporarily being added to allow the Company to pass the benefits of service cost reductions on to customers from the federal Tax Cuts and Jobs Act of 2017 ("TCJA") (Public Law 115-97) as required by Senate Bill 564.~~

~~The below flat rate will be applied as a credit per kilowatt-hour of lighting service to all 5M Customer Bills.~~

~~5M Company Owned Lighting Federal Tax Rate Reduction \$ (0.01701)~~

THIS SHEET RESERVED FOR FUTURE USE (Blank)

DATE OF ISSUE July 16, 2019 DATE EFFECTIVE August 12, 2019
ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 ~~4th-5th~~ Revised SHEET NO. 59

CANCELLING MO.P.S.C. SCHEDULE NO. 6 ~~3rd-4th~~ Revised SHEET NO. 59

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 6 (M)
STREET AND OUTDOOR AREA LIGHTING - CUSTOMER-OWNED

MONTHLY RATE FOR METERED SERVICE

Customer Charge Per Meter	\$6.599797	per month
Energy Charge	4.04072¢	per kWh

RATE PER UNIT PER MONTH FOR UNMETERED SERVICE

<u>RATE PER UNIT PER MONTH</u>	<u>H.P. Sodium</u>	<u>Energy & Maintenance (1)</u>	<u>Energy Only (2)</u>
<u>H.P. Sodium</u>			
9,500 Lumens, Standard		\$ 3.596780	\$ 1.8741
25,500 Lumens, Standard		\$ 6.25961	\$ 4.4470
50,000 Lumens, Standard		\$ 9.02354	\$ 7.98839
<u>Metal Halide</u>			
5,500 Lumens, Standard		\$ 5.41936	N/A
12,900 Lumens, Standard		\$ 6.213557	N/A
<u>Mercury Vapor</u>			
		(3)	
3,300 Lumens, Standard		\$ 3.596780	\$ 1.84295
6,800 Lumens, Standard		\$ 4.677294	\$ 3.00172.95
11,000 Lumens, Standard		\$ 6.32869	\$ 4.26051
20,000 Lumens, Standard		\$ 8.38987	\$ 6.54896
54,000 Lumens, Standard		\$187.87993	\$156.664357
<u>Light Emitting Diodes (LED)</u>			<u>Energy Only</u>
			<u>En</u>
<u>Energy Charge - per rated wattage per month</u>			1.50489¢

- (1) -Company will furnish electric energy, furnish and replace lamps, and adjust and replace control mechanisms, as required. In conjunction with the Company's conversion of its Company-Owned lights to LED, Company anticipates eliminating 6(M) Energy & Maintenance service in the future but not prior to 6/1/2022. Customers remaining on Energy & Maintenance at that time will be transitioned to Energy Only service.
 - (2) Limited to lamps served under contracts initiated prior to September 27, 1988.
 - (3) Maintenance of lamps and fixtures limited to customers served under contracts prior to November 15, 1991.
- N/A Not Available.

Schedule RPR-D4
Page 1 of 7

Term of Contract One (1) year, terminable thereafter on three (3) days' notice.

Discount For Franchised Municipal Customers A 10% discount will be applied to bills rendered for lighting facilities served under the above rates and currently contracted for by municipalities with whom the Company has an ordinance granted electric franchise as of September 27, 1988. The above discount shall only apply for the duration of said franchise. Thereafter, the above discount shall apply only when the following two conditions are met: 1) any initial or subsequent ordinance

DATE OF ISSUE April-July 293, 2019 DATE EFFECTIVE May-August 292, 2019

ISSUED BY Michael Moehn President St. Louis, Missouri
 NAME OF OFFICER TITLE ADDRESS

UNION ELECTRIC COMPANY

ELECTRIC SERVICE

MO.P.S.C. SCHEDULE NO. 6 ~~4th-5th~~ Revised SHEET NO. 59

CANCELLING MO.P.S.C. SCHEDULE NO. 6 ~~3rd-4th~~ Revised SHEET NO. 59

APPLYING TO MISSOURI SERVICE AREA

granted electric franchise must be for a minimum term of twenty (20) years and 2) Company must have a contract for all lighting facilities for municipal lighting service provided by Company in effect.

Schedule RPR-D4

Page 2 of 7

DATE OF ISSUE ~~April-July 293~~, 2019 DATE EFFECTIVE ~~May-August 292~~, 2019

ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 3rd Revised SHEET NO. 59.1

CANCELLING MO.P.S.C. SCHEDULE NO. 6 2nd Revised SHEET NO. 59.1

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 6 (M)

STREET AND OUTDOOR AREA LIGHTING - CUSTOMER-OWNED (Cont'd.)

Fuel and Purchased Power Adjustment (Rider FAC) The kilowatt-hours for lighting service provided under the terms of this Service Classification shall be subject to the provisions of Company's Fuel and Purchased Power Adjustment Clause (Rider FAC).

* Renewable Energy Standard Rate Adjustment Mechanism (Rider RESRAM) The kilowatt-hours for lighting service provided under the terms of this Service Classification shall be subject to the provisions of Company's Renewable Energy Standard Rate Adjustment Mechanism (Rider RESRAM).

The kilowatt-hour consumption of each lamp, whose operating hours are determined by a photoelectric control, shall be determined from the manufacturer's rated wattage multiplied by the number of hours of operation for the month, in accordance with the following schedules:

<u>Lamp Size</u> <u>(Lumens)</u>	<u>Rating</u> <u>(Watts)</u>	<u>Billing</u> <u>Month</u>	<u>Burning</u> <u>Hours</u>
<u>H.P. Sodium</u>			
9,500	120	January	408
25,500	307	February	347
50,000	482	March	346
		April	301
		May	279
		June	255
<u>Mercury Vapor</u>			
3,300	127	July	272
6,800	207	August	298
11,000	294	September	322
20,000	455	October	368
54,000	1080	November	387
		December	417
<u>Metal Halide</u>			
5,500	122		
12,900	206		

Light Emitting Diodes (LED)

Based on the rated wattage of individual customer lights.

Payments Bills are due and payable within twenty-one (21) days from date of bill and become delinquent thereafter.

Tax Adjustment Any license, franchise, gross receipts, occupation or similar charge or tax levied by any taxing authority on the amounts billed hereunder will be so designated and added as a separate item to bills rendered to customers under the jurisdiction of the taxing authority.

* Indicates Addition.

DATE OF ISSUE April 25, 2019 DATE EFFECTIVE May 29, 2019

ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 1st Revised SHEET NO. 59.2CANCELLING MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 59.2APPLYING TO MISSOURI SERVICE AREA**SERVICE CLASSIFICATION NO. 6 (M)****STREET AND OUTDOOR AREA LIGHTING - CUSTOMER-OWNED (Cont'd.)****1. RATE APPLICATION**

Available for automatically controlled dusk-to-dawn lighting where customer furnishes, installs and owns all street and outdoor area lighting facilities. Lighting service provided under this Service Classification shall consist of metered service with all maintenance of such facilities provided by the customer, or unmetered service as provided for or limited by the rate section of this Classification. The metered service portion of this Classification is not available on an individual premises where all other electric service thereon is provided to an individual customer or entity. Any account billed under the provisions of the metered portion of this Classification on September 1, 1992 may continue to be billed under such provisions until alternative or replacement rates or tariff options are approved by the Commission.

2. CHARACTER OF SERVICE SUPPLIED

Company will specify and provide a standard single- and/or three-phase alternating current secondary service voltage. Where customer requires and Company supplies service at a primary service voltage, customer shall furnish all transformers necessary to transform such service to a secondary service voltage.

3. GENERAL PROVISIONS

- a. Customer shall pay all costs incurred by Company in constructing any line extensions required in providing said lighting service to the point or points of delivery designated by Company, in accordance with the provisions of Section III - Special Facilities.
- b. Where required, customer shall install suitable switching, protective equipment, meter loop, space and mounting facilities as determined by the Company.
- c. All equipment owned and installed by customer shall be of a type acceptable to Company and shall be maintained by customer in a condition satisfactory to and approved by the appropriate electrical inspection authority.
- d. Where required for connection to customer's lighting system, customer shall provide, without cost to Company, wire of sufficient length to reach a point specified by Company on Company's secondary distribution system and Company will make the required connection. Such wire may be removed by Company at any time after termination of service hereunder.

Schedule RPR-D4

Page 4 of 7

DATE OF ISSUE March 1, 2019 DATE EFFECTIVE April 1, 2019ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 1st Revised SHEET NO. 59.3CANCELLING MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 59.3APPLYING TO MISSOURI SERVICE AREA**SERVICE CLASSIFICATION NO. 6 (M)****STREET AND OUTDOOR AREA LIGHTING - CUSTOMER-OWNED (Cont'd.)****3. GENERAL PROVISIONS (Cont'd.)**

- e. Customer shall furnish to Company, without cost to Company and on forms suitable to it, or customer shall reimburse Company for all costs incurred in obtaining all rights, permits and easements necessary to permit the installation and maintenance of Company's facilities on, over, under and across both public and private property where and as needed by Company in providing service hereunder.
- f. Customer shall notify Company immediately if any changes are made in customer's installation.
- g. Company may refuse to make the initial connection or may discontinue service to any installation if there is any engineering, construction, safety, legal or practical reason for doing so.
- h. In case of destruction or damage of customer's property hereunder due to highway accidents, storm damage or other similar causes or where replacement of equipment other than as provided above is required, Company, upon receipt of either written or verbal instructions from customer, may at its option, effect the necessary repairs or replacement of the damaged equipment to place it in normal operating condition. Such repairs will be made with parts supplied by customer or, where applicable, with suitable standard items carried in Company stores. Customer shall reimburse Company for such work at the Company's current Productive man-hour rate including applicable overhead for all labor expended and 1.2 times all direct costs or charges incurred by Company for all materials and any related items. All charges and payments hereunder shall be in addition to the monthly charge for normal maintenance.
- *i. For unmetered service, Company shall have the right to verify or audit the type and/or rated wattage of lights installed.

***4. LIMITED LED CONVERSION OPTION AND GRANDFATHERING PROVISION**

Customer-owned horizontal enclosed or open bottom lights which were installed on Company distribution poles and billed under this Service Classification on or before April 1, 2017 are eligible for participation in a LED lighting conversion program.

If customer elects this LED conversion option, the Company will replace existing fixtures, upon failure of the bulb, and/or the lighting fixture or apparatus with an equivalent LED fixture. The Company will install, own and operate and maintain the LED fixture, mast, and wiring. Customer shall continue to receive service under this Service Classification 6(M) subject to being billed the following applicable monthly charges:

Schedule RPR-D4

Page 5 of 7

*Indicates Addition.

Issued pursuant to the Order of the Mo.P.S.C. in Case No. ER-2016-0179.

DATE OF ISSUE March 8, 2017 DATE EFFECTIVE April 1, 2017ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 59.4

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

APPLYING TO MISSOURI SERVICE AREA

SERVICE CLASSIFICATION NO. 6 (M)

STREET AND OUTDOOR AREA LIGHTING - CUSTOMER-OWNED (Cont'd.)

*** 4. LIMITED LED CONVERSION OPTION AND GRANDFATHERING PROVISION (Cont'd.)**

The monthly unmetered energy-only 6(M) LED rate plus,
\$2.76 per month for a 100 watt equivalent LED fixture;
\$3.58 per month for a 250 watt equivalent LED fixture;
\$6.32 per month for a 400 watt equivalent LED fixture.

In addition, all other applicable charges under this Service Classification 6(M) shall apply.

If customer requests, in writing, the termination of all or a portion of converted LEDs under this provision within ten years of the installation of the LED being terminated, customer shall pay in advance to Company \$100.00 per fixture for both the removal costs associated therewith and the loss of the remaining life value of such facilities. If said request for termination is made after the above ten year in-service period, and customer requests a new lighting installation within twelve months after the removal of the prior terminated lighting facilities, customer shall pay the amount specified earlier in this paragraph for all facilities previously removed prior to Company making any new lighting installation.

**** 5. GENERAL RULES AND REGULATIONS**

In addition to the above specific rules and regulations, all of Company's General Rules and Regulations shall apply to service supplied under this Service Classification.

*Indicates Addition.

**Indicates Reissue.

Issued pursuant to the Order of the Mo.P.S.C. in Case No. ER-2016-0179.

DATE OF ISSUE March 8, 2017 DATE EFFECTIVE April 1, 2017

ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

UNION ELECTRIC COMPANY

ELECTRIC SERVICE

MO.P.S.C. SCHEDULE

NO. 6 — ~~Original~~ 1st SHEET NO. 598.5

CANCELLING MO.P.S.C. SCHEDULE

NO. 6- ~~Original~~ SHEET NO. -59.5

APPLYING TO MISSOURI SERVICE AREA

~~SERVICE CLASSIFICATION NO. 6(M)~~

~~STREET AND OUTDOOR AREA LIGHTING — CUSTOMER OWNED (Cont'd.)~~

FEDERAL TAX RATE REDUCTION

~~This bill line item is temporarily being added to allow the Company to pass the benefits of service cost reductions on to customers from the federal Tax Cuts and Jobs Act of 2017 ("TCJA") (Public Law 115-97) as required by Senate Bill 564.~~

~~The below flat rate will be applied as a credit per kilowatt hour of lighting service to all 6M Customer Bills.~~

~~6M Customer Owned Lighting Federal Tax Rate Reduction \$(0.00315)~~

THIS SHEET RESERVED FOR FUTURE USE(Blank)

Schedule RPR-D4

Page 7 of 7

DATE OF ISSUE July 16, 20182019 DATE EFFECTIVE August 12, 20182019

ISSUED BY Michael Moehn President St. Louis, Missouri
NAME OF OFFICER TITLE ADDRESS

