

Exhibit No.:
Issue: Rate Design
Witness: Sarah L.K. Lange
Sponsoring Party: MoPSC Staff
Type of Exhibit: Supplemental Direct
Testimony
Case No.: ER-2019-0335
Date Testimony Prepared: January 9, 2020

MISSOURI PUBLIC SERVICE COMMISSION

COMMISSION STAFF

INDUSTRY ANALYSIS DIVISION

TARIFF/RATE DESIGN DEPARTMENT

SUPPLEMENTAL DIRECT TESTIMONY

OF

SARAH L.K. LANGE

**UNION ELECTRIC COMPANY,
d/b/a Ameren Missouri**

CASE NO. ER-2019-0335

*Jefferson City, Missouri
January 2020*

Staff Exhibit No. 107
Date 3/4/20 Reporter JWB
File No. ER-2019-0335

1 SUPPLEMENTAL DIRECT TESTIMONY

2 OF

3 SARAH L.K. LANGE

4 UNION ELECTRIC COMPANY,
5 d/b/a Ameren Missouri

6 CASE NO. ER-2019-0335

7 Q. Please state your name and business address.

8 A. My name is Sarah L.K. Lange and my business address is Missouri Public
9 Service Commission, P. O. Box 360, Jefferson City, Missouri 65102.

10 Q. Who is your employer and what is your present position?

11 A. I am employed by the Missouri Public Service Commission ("Commission")
12 and my title is Regulatory Economist III, Tariff/Rate Design Department of the Commission
13 Staff Division. A copy of my credentials is attached to the Staff's Class Cost of Service Report
14 ("CCOS Report") filed on December 18, 2019, in this matter, to which I contributed.

15 Q. What is the purpose of this supplemental direct testimony?

16 A. Due to an internal miscommunication concerning the treatment of the temporary
17 tax rider, I designed rates reflected in the CCOS Report to recover more revenue than Staff
18 auditors have calculated for Ameren Missouri's retail cost of service. The magnitude of dollars
19 of additional reduction would result in rate designs that are not reasonable if the entire revenue
20 decrease recommended by Staff is ordered by the Commission following the rate
21 implementation methods provided in the CCOS Report. To address this unreasonable result,
22 Staff will provide revised rate design recommendations in this filing.

23 Q. What changes are necessary to reflect this correction in the CCOS Report?

1 A. The most significant changes are described below:

2 The Executive Summary at page 1 should read:

3 In Staff's *Cost of Service Report* ("COS Report") filed December 4,
4 2019, Staff recommended a revenue requirement for Union Electric
5 Company, d/b/a Ameren Missouri ("Ameren Missouri") of
6 approximately \$2.525 billion, at its recommended rate of return of
7 6.921%, based on Ameren Missouri's actual costs through June 30,
8 2019, net of other revenue of approximately \$400 million, a decrease of
9 approximately \$230 million from its current retail rate revenues of
10 approximately \$2.756 billion, a decrease of approximately 8.4%. Please
11 note that this decrease is applicable to the currently tariffed rate
12 schedules for each class. Because the temporary tax rider is being
13 eliminated as part of this case, the actual decrease that customers would
14 experience at Staff's recommended revenue requirement is
15 approximately \$65 million, or 2.5%.¹

16 As the CCOS Report currently reads, the "Rate Revenue" figures are provided
17 excluding the temporary tax rider. To incorporate the correction to the treatment of the
18 temporary tax rider, throughout the CCOS Report, but particularly in the "Bundled Class Cost
19 of Service Results and Recommended Decrease Implementation" section, the "Rate Revenue"
20 indicated for each class in the various figures is net of the temporary tax rider.

21 The section "Interaction of Tariffed Rates and Temporary Tax Rider," is reflective of
22 the underlying miscommunication and is no longer applicable at Staff's recommended revenue
23 requirement, but would be applicable if the Commission orders a higher revenue requirement.

¹ This result on a per-customer basis would be contingent on the reduction being applied as an equal percentage decrease to all rate elements for all classes net of the Temporary Tax Rider.

1 The rate design recommendations and customer impacts described in the CCOS Report
 2 are subject to the updates described below.

3 Staff continues its general recommendation to maintain relative levels of class revenue
 4 responsibility.

5 **Updated Rate Design**

6 Q. What is Staff’s revised Residential rate design recommendation?

7 A. In general, at the approximate residential revenue requirement of \$1.23 billion,
 8 Staff recommends a two step process. First, the second block tariffed rate for both seasons
 9 should be reduced by the Temporary Tax rider amount of \$0.00621/kWh. Second, the
 10 remaining decrease should be applied to the first block rates in both seasons, proportionate to
 11 existing seasonal energy charge recovery.

12 If the Commission orders residential class revenues in excess of approximately
 13 \$1.268 billion, Staff maintains its rate design recommendation as filed in the CCOS Report.

	Staff recommended rates at indicated Residential Revenue Requirement, maintaining a \$9 customer charge			
	Current Tariff	Current with Tax Rider Reduction	\$1.23 billion	\$1.35 billion
Summer first 750	\$ 0.12580	\$ 0.11959	\$ 0.10977	\$ 0.11992
Summer over 750	\$ 0.12580	\$ 0.11959	\$ 0.11959	\$ 0.12580
Non Summer first 750	\$ 0.08760	\$ 0.08139	\$ 0.07980	\$ 0.08387
15 Non Summer over 750	\$ 0.06000	\$ 0.05379	\$ 0.05379	\$ 0.06000

16 As discussed in the CCOS Report and still applicable with the revised residential rate
 17 design, the resulting mild-incline summer rates and reduced-decline non-summer rates will
 18 enable migration to Staff’s Time of Use (“ToU”) design.

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1 Q. What is the significance of the residential revenue requirement numbers
2 provided above?

3 A. Current residential revenues net of the temporary tax rider are approximately
4 \$1.268 billion. The residential revenue requirement contemplated in Staff's CCOS Report –
5 premised on initial understanding of the treatment of the temporary tax rider - was \$1.35 billion.
6 Staff's residential revenue requirement with the error corrected is \$1.23 billion.

7 Q. What are the applicable ToU rates that result from correction of the Staff
8 residential revenue requirement?

9 A. The resulting ToU rates are provided below, based on maintaining the higher
10 priced block charge by season for the "on peak" period for a residential revenue requirement of
11 \$1.23 billion:

	Off Peak	On Peak
Summer	\$ 0.10373	\$ 0.11959
Non-summer	\$ 0.05471	\$ 0.07980

13
14 Q. Have you estimated rate impacts of these designs and the Ameren Missouri
15 design (including Ameren Missouri's \$11 customer charge proposal) relative to the current bills
16 customers are experiencing net of the temporary tax rider?

17 A. Yes. A table and illustrative graph are provided below:

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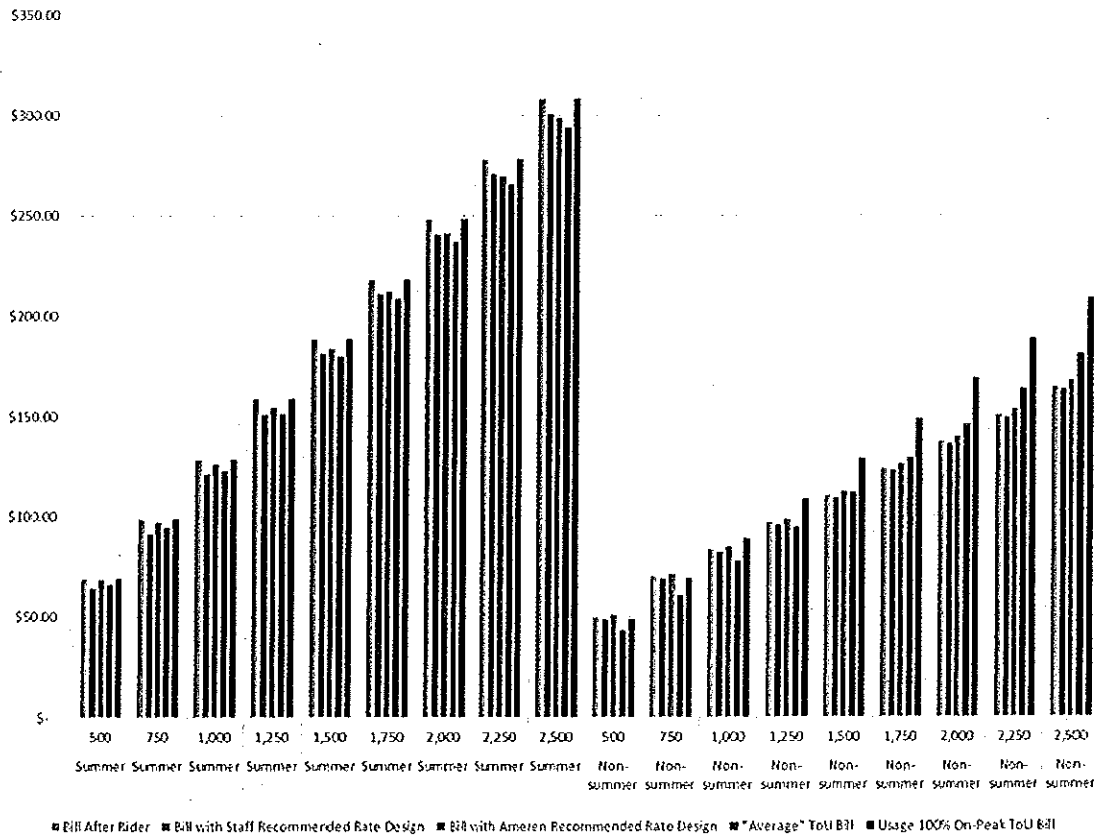
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Season	Usage	Bill before Rider	Temporay Tax Rider	Bill After Rider	Bill with Staff Recommended Rate Design	Bill with Ameren Recommended Rate Design	"Average" ToU Bill	Usage 100% On-Peak ToU Bill
Summer	500	\$ 71.90	\$ (3.11)	\$ 68.80	\$ 63.88	\$ 68.50	\$ 65.99	\$ 68.80
Summer	750	\$ 103.35	\$ (4.66)	\$ 98.69	\$ 91.33	\$ 97.25	\$ 94.49	\$ 98.69
Summer	1,000	\$ 134.80	\$ (6.21)	\$ 128.59	\$ 121.22	\$ 126.00	\$ 122.98	\$ 128.59
Summer	1,250	\$ 166.25	\$ (7.76)	\$ 158.49	\$ 151.12	\$ 154.75	\$ 151.48	\$ 158.49
Summer	1,500	\$ 197.70	\$ (9.32)	\$ 188.39	\$ 181.02	\$ 183.50	\$ 179.98	\$ 188.39
Summer	1,750	\$ 229.15	\$ (10.87)	\$ 218.28	\$ 210.92	\$ 212.25	\$ 208.46	\$ 218.28
Summer	2,000	\$ 260.60	\$ (12.42)	\$ 248.18	\$ 240.81	\$ 241.00	\$ 236.97	\$ 248.18
Summer	2,250	\$ 292.05	\$ (13.97)	\$ 278.08	\$ 270.71	\$ 269.75	\$ 265.45	\$ 278.08
Summer	2,500	\$ 323.50	\$ (15.53)	\$ 307.98	\$ 300.61	\$ 298.50	\$ 293.95	\$ 307.98
Non-summer	500	\$ 52.80	\$ (3.11)	\$ 49.70	\$ 48.90	\$ 51.00	\$ 43.31	\$ 48.90
Non-summer	750	\$ 74.70	\$ (4.66)	\$ 70.04	\$ 68.85	\$ 71.00	\$ 60.47	\$ 68.85
Non-summer	1,000	\$ 89.70	\$ (6.21)	\$ 83.49	\$ 82.30	\$ 84.78	\$ 77.64	\$ 83.49
Non-summer	1,250	\$ 104.70	\$ (7.76)	\$ 96.94	\$ 95.75	\$ 98.55	\$ 94.78	\$ 96.94
Non-summer	1,500	\$ 119.70	\$ (9.32)	\$ 110.39	\$ 109.19	\$ 112.33	\$ 111.94	\$ 110.39
Non-summer	1,750	\$ 134.70	\$ (10.87)	\$ 123.83	\$ 122.64	\$ 126.10	\$ 129.11	\$ 123.83
Non-summer	2,000	\$ 149.70	\$ (12.42)	\$ 137.28	\$ 136.09	\$ 139.88	\$ 146.25	\$ 137.28
Non-summer	2,250	\$ 164.70	\$ (13.97)	\$ 150.73	\$ 149.54	\$ 153.65	\$ 163.41	\$ 150.73
Non-summer	2,500	\$ 179.70	\$ (15.53)	\$ 164.18	\$ 162.98	\$ 167.43	\$ 180.58	\$ 164.18

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Residential Comparison



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1 Examples of annual impacts for customers with higher energy usage in the summer and
 2 true winter months and lower relative usage in the shoulder months are provided below:

3

Estimated Annual Bills						
Annual kWh	Current Bills	Staff	Ameren	Ameren Increase from Staff	Staff Change from Current	
10,500	\$1,081	\$1,043	\$1,081	\$38	-\$38	
13,500	\$1,329	\$1,290	\$1,325	\$35	-\$39	
16,500	\$1,556	\$1,517	\$1,550	\$33	-\$39	
19,500	\$1,783	\$1,744	\$1,775	\$31	-\$39	
22,500	\$2,010	\$1,971	\$2,000	\$29	-\$39	
25,500	\$2,237	\$2,198	\$2,226	\$27	-\$39	
28,500	\$2,465	\$2,426	\$2,451	\$25	-\$39	

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5 Q. What is Staff's revised non-residential rate design recommendation?

6 A. Consistent with Staff's concern expressed in its CCOS Report that non-energy
 7 charges have disproportionately increased in recent cases, to accommodate the larger decrease
 8 to existing tariff rates than was contemplated in Staff's CCOS Report, Staff recommends a
 9 multistep process that isolates the cost of energy to serve load from being reduced as part of the
 10 rate adjustment process. The non-energy portion of the energy rates and all other rate elements
 11 are then adjusted by an equal percent. This recommendation is illustrated as follows:

- 12 1. Find the average cost per kWh of energy to serve load², adjusted to the at-meter
 13 value for secondary and primary.

14

	kWh at Meter	Loss % per Ameren	kWh at Transmission	\$/kWh at meter
kWh @ secondary	24,379,138,178	108.15%	26,367,011,870	\$ 0.0286
kWh @ primary	7,447,940,524	104.89%	7,812,283,209	\$ 0.0278

15

² See Direct Revenue Requirement testimony of Shawn E. Lange providing this figure from Staff's direct production model as \$904,991,372.

2. For each energy charge rate element, find the rate element's value net of the applicable cost of energy.

For example, Small Primary Service ("SPS") third block non-summer energy is currently tarified at \$0.0374/kWh. Removing the primary voltage energy value of \$0.0278/kWh produces a net energy rate of \$0.008763/kWh.

3. Adjust the energy-netted rates and all non-energy rate components to obtain the desired class revenue when the energy-cost portion of the energy rates are held constant.

For example, the \$0.008763/kWh portion of the SPS third block non-summer energy will receive the same percentage adjustment as the \$4.66 per kW SPS summer demand charge. Then, the primary voltage energy value will be added back to the adjusted non-energy third block value to find the adjusted SPS third block non-summer energy rate.

Q. What are the approximate resulting rates at Staff's direct-filed revenue requirement and maintaining Staff's recommendation to maintain the revenue responsibility of classes?

A. The approximate results are provided below:

Season	Small General Service	Current Rate	Approximate Rate
s	Single Phase	11.19	\$ 9.91
s	Three Phase	21.38	\$ 18.93
s	Single Phase TOD	21.43	\$ 18.97
s	Three Phase TOD	41.84	\$ 37.05
s	All kWh	\$ 0.112000	\$ 0.102348
s	TOD On Peak	\$ 0.166400	\$ 0.150513
s	TOD Off Peak	\$ 0.067800	\$ 0.063213
w	Single Phase	11.19	\$ 9.91
w	Three Phase	21.38	\$ 18.93
w	Single Phase TOD	21.43	\$ 18.97
w	Three Phase TOD	41.84	\$ 37.05
w	Base Use	\$ 0.083600	\$ 0.077202
w	Seasonal Use	\$ 0.048200	\$ 0.045859
w	TOD On Peak	\$ 0.109600	\$ 0.100223
w	TOD Off Peak	\$ 0.050300	\$ 0.047718

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Season	Large General Service	Current Rate	Approximate Rate
S	Customer Charge	\$ 94.51	\$ 82.58
S	Customer Charge TOD	\$ 115.59	\$ 101.00
S	First 150 kWh per KW	\$ 0.1058	\$ 0.095953
S	Next 200 kWh per KW	\$ 0.0796	\$ 0.073059
S	All over 350 kWh per KW	\$ 0.0535	\$ 0.050253
S	TOD On Peak Adjust per kWh	\$ 0.0125	\$ 0.010923
S	TOD Off Peak Adjust per kWh	\$ (0.0071)	\$ (0.006204)
S	Demand: per kW of Billing Demand	\$ 5.4000	\$ 4.7185
W	Customer Charge	\$ 94.51	\$ 82.58
W	Customer Charge TOD	\$ 115.59	\$ 101.00
W	First 150 kWh per KW	\$ 0.0665	\$ 0.061613
W	Next 200 kWh per KW	\$ 0.0494	\$ 0.046671
W	All Over 350 kWh per KW	\$ 0.0389	\$ 0.037496
W	Seasonal Energy Charge	\$ 0.0389	\$ 0.037496
W	TOD On Peak Adjust per kWh	\$ 0.0038	\$ 0.003320
W	TOD Off Peak Adjust per kWh	\$ (0.0021)	\$ (0.001835)
W	Demand: per kW of Billing Demand	\$ 2.00	\$ 1.7476

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Season	Small Primary Service	Current Rate	Approximate Rate
S	Customer Charge	\$ 323.82	\$ 280.10
S	Customer Charge TOD	\$ 344.90	\$ 298.34
S	First 150 kWh per KW	\$ 0.10230	\$ 0.092355
S	Next 200 kWh per KW	\$ 0.07700	\$ 0.070471
S	All over 350 kWh per KW	\$ 0.05160	\$ 0.048500
S	TOD On Peak Adjust per kWh	\$ 0.00910	\$ 0.007872
S	TOD Off Peak Adjust per kWh	\$ (0.00510)	\$ (0.004412)
S	Demand: per kW of Billing Demand	\$ 4.660	\$ 4.0309
S	Billing Kvars	\$ 0.380	\$ 0.3287
S	Rider B 34kv: per kW	\$ (1.2300)	\$ (1.0640)
S	Rider B 138kv: per kW	\$ (1.4600)	\$ (1.2629)
w	Customer Charge	\$ 323.82	\$ 280.10
w	Customer Charge TOD	\$ 344.90	\$ 298.34
w	First 150 kWh per KW	\$ 0.06440	\$ 0.059572
w	Next 200 kWh per KW	\$ 0.04780	\$ 0.045213
w	All over 350 kWh per KW	\$ 0.03740	\$ 0.036217
w	Seasonal Energy Charge	\$ 0.03740	\$ 0.036217
w	TOD On Peak Adjust per kWh	\$ 0.003	\$ 0.002941
w	TOD Off Peak Adjust per kWh	\$ (0.002)	\$ (0.001557)
w	Demand: per kW of Billing Demand	\$ 1.69	\$ 1.4619
s	Rider B 34kv: per kW	\$ (1.23000)	\$ (1.0640)
s	Rider B 138kv: per kW	\$ (1.46000)	\$ (1.2629)
s	Billing Kvars	\$ 0.38000	\$ 0.3287

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Season	Large Primary Service	Current Rate	Approximate Rate
s	Customer Charge	\$ 323.82	\$ 272.27
s	Energy Charge	\$ 0.03540	\$ 0.03432
s	Demand Charge	\$ 21.16	\$ 17.79
s	Reactive Charge kVar	\$ 0.38	\$ 0.32
s	Rider B 115 kV or higher	\$ (1.46)	\$ (1.23)
s	Rider B 69 kV or lower	\$ (1.23)	\$ (1.03)
s	Off Peak	\$ (0.00380)	\$ (0.00320)
s	On Peak	\$ 0.00690	\$ 0.00580
s	TOD adjust	\$ 21.08	\$ 17.72862
w	Customer Charge	\$ 323.82	\$ 272.27
w	Energy Charge	\$ 0.03140	\$ 0.03
w	Demand Charge	\$ 9.61	\$ 8.08
w	Reactive Charge kVar	\$ 0.38	\$ 0.31950
w	Rider B 115 kV or higher	\$ (1.46)	\$ (1.22757)
w	Rider B 69 kV or lower	\$ (1.23)	\$ (1.03)
w	Off Peak	\$ (0.00180)	\$ (0.00)
w	On Peak	\$ 0.00310	\$ 0.00261
w	TOD adjust	\$ 21.08	\$ 17.73

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Q. Does this conclude your supplemental direct testimony?

4

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company)
d/b/a Ameren Missouri's Tariffs to Decrease) Case No. ER-2019-0335
Its Revenues for Electric Service)

AFFIDAVIT OF SARAH L.K. LANGE

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

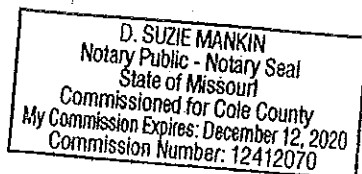
COMES NOW SARAH L.K. LANGE and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing *Supplemental Direct Testimony*; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Sarah L.K. Lange
SARAH L.K. LANGE

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 9th day of January 2020.



D. Suzie Mankin
Notary Public