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Witness: *Alan J. Bax*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Rebuttal Testimony*
Case No.: *ET-2021-0082*
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MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

ENGINEERING ANALYSIS DEPARTMENT

REBUTTAL TESTIMONY

OF

ALAN J. BAX

**UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURI**

CASE NO. ET-2021-0082

*Jefferson City, Missouri
February 2021*

1 **REBUTTAL TESTIMONY**

2 **OF**

3 **ALAN J. BAX**

4 **UNION ELECTRIC COMPANY,**
5 **d/b/a AMEREN MISSOURI**

6 **CASE NO. ET-2021-0082**

7 Q. Please state your name and business address?

8 A. Alan J. Bax, P.O. Box 360, Jefferson City, Missouri, 65102.

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

10 A. I am employed by the Missouri Public Service Commission (Commission)
11 as an Associate Engineer in the Energy Analysis Department of the Industry Analysis
12 Division.

13 Q. Please describe your educational and work background.

14 A. My educational and work history are attached to this Rebuttal Testimony.

15 Q. What is the purpose of your testimony?

16 A. The purpose of this testimony is to discuss assertions made by
17 Ameren Missouri witnesses Jared Schneider and Steven M. Wills in their respective
18 testimonies regarding the overall anticipated effectiveness of Ameren Missouri's proposed
19 Surge Protection Program.

20 Q. How does the Company describe the reasons behind their request in
21 potentially offering a Surge Protection Program?

22 A. In his testimony, Mr. Schneider summarizes the background information
23 defining an electrical surge, as well as the actions generally taken by Ameren Missouri

1 personnel in the standard design and operation of Ameren Missouri’s electric delivery
2 systems to prevent and/or limit surges and their otherwise harmful effects that may
3 subsequently occur to a customer’s electrical equipment. On Page 6, Lines 5-7,
4 Mr. Schneider notes that “...While the Company’s system is designed to minimize surges
5 and does a good job of doing so, there is only so much that can be done at the
6 electric system level to prevent damage from surges.” Mr. Schneider describes the
7 proposed Surge Protection Program as “...a means whereby customers can choose to
8 further protect their appliances and equipment for potential damage when surges still
9 occur”¹. Mr. Schneider contends that “...A surge protection device can nearly eliminate
10 this risk [to customers’ electrical equipment], which is protection that a substantial number
11 of customer want and value...”² according to results of surveys the Company has purported
12 to have conducted. Mr. Wills concurs, as he states in his Direct Testimony on Page 3,
13 Lines 19-20, “...the surge protection device is intended to nearly eliminate the risk of
14 damage to the customer’s electronically connected property.”

15 Q. What assertions are you specifically addressing?

16 A. Mr. Schneider and Mr. Wills contend that a surge protection device can
17 nearly eliminate the risk of damage occurring to customers’ electrical equipment from
18 surges. However, the proposed Surge Protection Program and the associated warranty has
19 limitations. Contending that the surge protection device can nearly eliminate the risk of
20 damage and saying such surges are rare, both Mr. Schneider and Mr. Wills praise the

¹ Direct Testimony of Jared Schneider – Page 3, Lines 6-7.

² Direct Testimony of Jared Schneider – Page 6, Lines 7-8.

1 associated warranty offered with the proposed Surge Protection Program in spite of the
2 limitations of the items covered by the associated warranty.

3 Q. What are the limitations of the warranty?

4 A. Mr. Schneider states that the program's accompanying warranty covers
5 "motor driven household equipment, such as refrigerators, clothes dryers..."³ while
6 Mr. Wills says the program's warranty covers "certain appliances".⁴ A Surge Protection
7 Program that advertises to provide "surge protection to a customer's electronic equipment"
8 and nearly eliminate the risk of damage to such equipment upon experiencing an electric
9 surge should provide a greater level of assurance beyond offering a championed warranty
10 with such limitations.

11 Q. In your opinion, is a program such as the proposed Surge Protection
12 Program necessary in providing safe and reliable service?

13 A. No. As noted above, Mr. Schneider says that the Company does a good job
14 of minimizing surges in the general, typical actions Ameren Missouri has taken in
15 designing and operating its electric delivery systems. In addition, Mr. Wills describes the
16 development of the Surge Protection Program "...as an extension of the Company's base
17 provision of electric service."⁵ Therefore, the Surge Protection Program is acknowledged
18 to be at best an extension of providing service and not be necessary for Ameren Missouri
19 to provide safe and reliable service.

20 Q. Do you have experience developing a surge protection program?

³ Direct Testimony of Jared Schneider – Page 7, Lines 20-21

⁴ Direct Testimony of Stephen M. Wills – Page 3, Line 21.

⁵ Direct Testimony of Stephen M. Wills – Page 3, Lines 3-4.

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1 A. Yes. When I was employed as an engineer in the Standards Department at
2 the Empire District Electric Company, I assisted in the development of a surge protection
3 program and evaluated the equipment utilized in the program.

4 Q. Based on your experience, what would you recommend to improve the
5 effectiveness of the proposed Surge Protection Program?

6 A. An effective surge protection program would include multiple device types.
7 Attaching a collar device in a customer's meter base, as labeled by Mr. Wills, has limited
8 effectiveness in protecting electrical equipment based on the restrictions described in the
9 proposed Surge Protection Program's associated warranty. A collar device such as this,
10 installed in the meter base, is often referenced as a Type 1 surge protection device. There
11 are also Type 2 and Type 3 surge protection devices. Type 2 surge protection devices will
12 typically be installed near a customer's electric service panel. Surge strips that are
13 commonly used in conjunction with outlets in which a customer is operating electronic
14 equipment, such as a computer, are referred to as Type 3 surge protection devices. These
15 types of surge protection devices is further discussed in the rebuttal testimony of
16 Amanda Coffey. A "surge protection program" that is asserted/advertised to protect
17 customers' electrical equipment from most surges would ostensibly need to incorporate all
18 three types of surge protection devices. The proposed Surge Protection Program utilizes
19 only a Type 1 device.

20 Q. Would such a program that includes all three types of surge protection
21 devices be regulated?

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1 A. No. As previously stated, such a program is not necessary in providing safe
2 and reliable service. It is Staff's position that any program of this nature should not be
3 regulated.

4 Q. Does this conclude your Rebuttal Testimony?

5 A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of)
Union Electric Company d/b/a) Case No. ET-2021-0082
Ameren Missouri for Approval of)
its Surge Protection Program)

AFFIDAVIT OF ALAN J. BAX

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COME NOW ALAN J. BAX and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal Testimony of Alan J. Bax*; and that the same is true and correct according to his best knowledge and belief, under penalty of perjury.

Further the Affiants sayeth not.

/s/ *Alan J. Bax* _____
ALAN J. BAX

ALAN J. BAX

I graduated from the University of Missouri - Columbia with a Bachelor of Science degree in Electrical Engineering in December 1995. Concurrent with my studies, I was employed as an Engineering Assistant in the Energy Management Department of the University of Missouri – Columbia from the Fall of 1992 through the Fall of 1995. Prior to this, I completed a tour of duty in the United States Navy, completing a course of study at the Navy Nuclear Power School and a Navy Nuclear Propulsion Plant. Following my graduation from the University of Missouri - Columbia, I was employed by The Empire District Electric Company as a Staff Engineer until August 1999, at which time I began my employment with the Staff of the Missouri Public Service Commission. My current position is a Utility Engineering Specialist III in the Engineering Analysis Unit, within the Industry Analysis Division. I am a member of the Institute of Electrical/Electronic Engineers (IEEE).

TESTIMONY AND REPORTS
BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION

BY ALAN J. BAX

COMPANY	CASE NUMBER
Aquila Networks – MPS	ER-2004-0034
Union Electric Company d/b/a AmerenUE	EO-2004-0108
Empire District Electric Company	ER-2002-0424
Kansas City Power and Light Company	EA-2003-0135
Union Electric Company d/b/a AmerenUE	EO-2003-0271
Aquila Networks – MPS	EO-2004-0603
Union Electric Company d/b/a AmerenUE	EC-2002-0117
Three Rivers and Gascoage Electric Coops	EO-2005-0122
Union Electric Company d/b/a AmerenUE	EC-2002-1
Aquila Networks – MPS	EO-2001-0384
Empire District Electric Company	ER-2001-299
Aquila Networks – MPS	EA-2003-0370
Union Electric Company d/b/a AmerenUE	EW-2004-0583
Union Electric Company d/b/a AmerenUE	EO-2005-0369
Trigen Kansas City	HA-2006-0294
Union Electric Company d/b/a AmerenUE	EC-2005-0352
Missouri Public Service	ER-2001-672
Aquila Networks – MPS	EO-2003-0543
Kansas City Power and Light Company	ER-2006-0314
Macon Electric Coop	EO-2005-0076
Aquila Networks – MPS	EO-2006-0244
Union Electric Company d/b/a AmerenUE	EC-2004-0556
Union Electric Company d/b/a AmerenUE	EC-2004-0598
Empire District Electric Company	ER-2004-0570
Union Electric Company d/b/a AmerenUE	EC-2005-0110
Union Electric Company d/b/a AmerenUE	EC-2005-0177
Union Electric Company d/b/a AmerenUE	EC-2005-0313
Empire District Electric Company	EO-2005-0275
Aquila Networks – MPS	EO-2005-0270
Union Electric Company d/b/a AmerenUE	EO-2006-0145
Empire District Electric Company	ER-2006-0315

Aquila Networks – MPS	ER-2005-0436
Union Electric Company d/b/a AmerenUE	EO-2006-0096
West Central Electric Cooperative	EO-2006-0339
Kansas City Power and Light Company	ER-2006-0314
Union Electric Company d/b/a AmerenUE	EO-2008-0031
Union Electric Company d/b/a AmerenUE	EC-2009-0193
Empire District Electric Company	ER-2008-0093
Missouri Rural Electric Cooperative	EO-2008-0332
Grundy Electric Cooperative	EO-2008-0414
Osage Valley Electric Cooperative	EO-2009-0315
Union Electric Company d/b/a AmerenUE	EO-2009-0400
Union Electric Company d/b/a AmerenUE	EO-2008-0310
Aquila Networks – MPS	EA-2008-0279
West Central Electric Cooperative	EO-2008-0339
Empire District Electric Company	EO-2009-0233
Union Electric Company d/b/a/ AmerenUE	EO-2009-0272
Empire District Electric Company	EO-2009-0181
Union Electric Company d/b/a AmerenUE	ER-2008-0318
Kansas City Power and Light Company	ER-2009-0089
Kansas City Power and Light – GMO	ER-2009-0090
Union Electric Company d/b/a AmerenUE	ER-2010-0036
Empire District Electric Company	ER-2010-0130
Laclede Electric Cooperative	EO-2010-0125
Union Electric Company d/b/a AmerenUE	EC-2010-0364
Union Electric Company d/b/a AmerenUE	EO-2011-0052
Kansas City Power and Light Company	ER-2010-0355
Union Electric Company d/b/a AmerenUE	EO-2010-0263
Kansas City Power and Light – GMO	EO-2011-0137
Kansas City Power and Light – GMO	ER-2010-0356
Union Electric Company d/b/a AmerenUE	ER-2011-0028
Kansas City Power and Light – GMO	EO-2012-0119
Kansas City Power and Light Company	EO-2011-0137
Union Electric Company d/b/a AmerenUE	ER-2012-0121
Union Electric Company d/b/a/ Ameren Missouri	EX-2012-0332
Empire District Electric Company	EO-2011-0085
Empire District Electric Company	EO-2012-0192
Empire District Electric Company	EO-2013-0313
Union Electric Company d/b/a AmerenUE	ER-2012-0180
Union Electric Company d/b/a AmerenUE	EO-2013-0418
City Utilities of Springfield	EO-2012-0441

Kansas City Power and Light – GMO	EO-2012-0367
Empire District Electric Company	ER-2011-0004
Union Electric Company d/b/a/ Ameren Missouri	ER-2012-0166
Kansas City Power and Light Company	ER-2012-0174
Union Electric Company d/b/a/ Ameren Missouri	ER-2013-0044
Kansas City Power and Light – GMO	ER-2012-0175
Central Missouri Electric Cooperative	EO-2015-0137
Empire District Electric Company	ER-2012-0345
Kansas City Power and Light Company	EO-2012-0367
Boone Electric Cooperative	EO-2015-0012
Transource Missouri, LLC	EA-2013-0098
Black River Electric Cooperative	EO-2015-0096
Union Electric Company d/b/a/ Ameren Missouri	EW-2012-0369
Empire District Electric Company	ER-2014-0351
Union Electric Company d/b/a/ Ameren Missouri	EO-2014-0044
Union Electric Company d/b/a/ Ameren Missouri	EO-2013-0418
Union Electric Company d/b/a/ Ameren Missouri	EE-2013-0511
Union Electric Company d/b/a/ Ameren Missouri	EO-2015-0017
Union Electric Company d/b/a/ Ameren Missouri	EO-2016-0087
Union Electric Company d/b/a/ Ameren Missouri	EO-2014-0009
Kansas City Power and Light Company	EO-2014-0128
Union Electric Company d/b/a/ Ameren Missouri	EO-2017-0358
Empire District Electric Company	EO-2016-0192
Empire District Electric Company	EO-2017-0217
Union Electric Company d/b/a/ Ameren Missouri	EO-2014-0296
Union Electric Company d/b/a/ Ameren Missouri	EO-2015-0328
Union Electric Company d/b/a/ Ameren Missouri	ER-2014-0258
Union Electric Company d/b/a/ Ameren Missouri	EX-2017-0153
Union Electric Company d/b/a/ Ameren Missouri	EO-2019-0391
Empire District Electric Company	EO-2018-0118
Empire District Electric Company	ER-2016-0023
Ozark Electric Cooperative Inc	EO-2020-0163
Union Electric Company d/b/a/ Ameren Missouri	EC-2016-0235
Union Electric Company d/b/a/ Ameren Missouri	EO-2018-0058
Union Electric Company d/b/a/ Ameren Missouri	EE-2019-0395
Kansas City Power and Light – GMO	ER-2016-0156
Kansas City Power and Light – GMO	EO-2019-0061
Kansas City Power and Light Company	ER-2014-0370
Union Electric Company d/b/a/ Ameren Missouri	EO-2017-0044
Kansas City Power and Light Company	ER-2016-0285

Empire District Electric Company	EO-2019-0381
Union Electric Company d/b/a/ Ameren Missouri	ER-2016-0179
Union Electric Company d/b/a/ Ameren Missouri	EO-2018-0278
Union Electric Company d/b/a/ Ameren Missouri	EO-2020-0315
Union Electric Company d/b/a/ Ameren Missouri	EO-2017-0127
Kansas City Power and Light Company	ER-2018-0145
Kansas City Power and Light Company – GMO	ER-2018-0146
Union Electric Company d/b/a/ Ameren Missouri	ER-2019-0335
Union Electric Company d/b/a/ Ameren Missouri	EE-2019-0383
Empire District Electric Company	ER-2019-0374