Exhibit No.:	
Issues:	Tree Trimming, Storms, Reliability
Witness:	Ronald C. Zdellar
Sponsoring Party:	Union Electric Company
Type of Exhibit:	Rebuttal Testimony
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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2007-0002

REBUTTAL TESTIMONY

OF

RONALD C. ZDELLAR

ON

BEHALF OF

UNION ELECTRIC COMPANY
d/b/a AmerenUE

St. Louis, Missouri
January 2007

Public

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REBUTTAL TESTIMONY

OF

RONALD C. ZDELLAR

CASE NO. ER-2007-0002

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Ronald C. Zdellar. My business address is One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63166-6149.

Q. Are you the same Ronald C. Zdellar that filed Supplemental Direct Testimony on September 29, 2006, in this proceeding?

A. Yes, I am.

Q. What is the purpose of your Rebuttal Testimony in this proceeding?

A. My testimony will respond to the portions of the direct testimony filed by Missouri Public Service Commission Staff (Staff) members Greg Meyer and Warren Wood that addressed AmerenUE's tree-trimming expenditures and efforts as well as the portion of the testimony of State of Missouri witness Steven Carver that addressed our proposal to spend an additional $15 million on tree trimming. In addition, I will address the issue of AmerenUE's reliability of service and the storms which have buffeted the Company's electric system. Many of these issues were raised at the public hearings held in this case.

II. TREE TRIMMING

Q. Your Supplement Direct Testimony proposed expanding AmerenUE's vegetation management programs. The testimony of both Staff witnesses Meyer and Wood stated a need for AmerenUE to increase its level of tree trimming. Do you agree with their assessments?

A. As I stated in my Supplemental Direct testimony, I would first point out that AmerenUE is currently in compliance with the tree-trimming schedule agreed to between Staff and AmerenUE and approved by the Commission in Case No. EW-2004-0583. In that agreement, AmerenUE committed to spending $30 million per year on vegetation management. In addition, the agreement stated that AmerenUE would eliminate its then-existing tree trimming backlog by December 31, 2008. Since entering into that agreement, the Company has filed quarterly and annual reports with the Commission on its progress on this agreement. To date, AmerenUE is on target and in compliance with the agreement. However, AmerenUE believes it can expand its vegetation management programs and has proposed to do so.

Q. How does your proposal to expand vegetation management programs compare to those set forth by Mr. Wood?

A. The Company is currently spending around $30 million per year on vegetation management programs. In my September 29, 2006 Supplemental Direct Testimony, I proposed spending an incremental $15 million per year on more aggressive vegetative management programs. My testimony detailed four areas for expansion of the Company's existing vegetation management program. These proposals are consistent with the proposals described on page 6 of the Direct Testimony of Mr. Wood.

Q. Mr. Wood also recommended that AmerenUE require that new urban development distribution lines be placed underground. Does AmerenUE believe this is an appropriate requirement?

A. Electric lines for new developments are already typically undergrounded. If the Commission wants AmerenUE to formalize this requirement, AmerenUE would not be opposed to such action, as long as the requirement allows for exceptions when specific circumstances might dictate and as long as the Commission recognizes there will need to be coordination with local authorities so that local ordinances and any Commission order work together to promote the undergrounding of lines. At this point, the Company is looking into the type of cooperation that may be needed to implement such a policy.

Q. In discussing the expanded tree trimming programs you proposed in your Supplemental Direct Testimony, Messrs. Wood and Meyer state that it will take time for these programs to function at their full level, mostly because of a shortage in labor. Do you agree with their assessment?

A. No. Although the Company was initially concerned about a shortage of trained tree trimming personnel, we have since determined that our proposed tree trimming programs will not be adversely impacted by any shortage in labor. If our proposal is approved, AmerenUE should be able to expand its tree trimming to spend the additional $15 million per year beginning with the effective date of the rates set by the Commission in this case.

Q. Mr. Meyer proposes that $4.2 million of the costs to fund this expansion of the Company's vegetation removal programs be funded from the expiration of the

amortization of merger costs resulting from the merger between AmerenUE and Central Illinois Public Service Company (CIPS). Is this acceptable to AmerenUE?

A. Absolutely not. In fact, the Company believes this recommendation to be contrary to normal Commission practice for setting rates. In Case No. EM-96-14, the Commission authorized the Company to amortize merger costs over a ten-year period. That ten-year period ends in December of 2007. Mr. Meyer is proposing an adjustment that occurs considerably past the January 1, 2007 cut-off for known and measurable changes that the Commission has adopted in this case. Without updating all costs through December of 2007, which is obviously not possible given that it is only January of 2007, this proposal does not work. While the CIPS merger amortization will end, other costs will increase between the end of the update period in this case and December of 2007. For example, costs associated with union wages and benefits will increase in July of 2007 and that increase alone will likely be greater than the amortization amount discussed by Mr. Meyer. It would not be appropriate for those costs be recovered in this rate case. All of those changes, including the expiration of the amortization of merger costs, will be captured in a subsequent rate case.

Q. State of Missouri witness Carver questioned whether or not AmerenUE had met its commitment to spend $30 million per year on vegetation management as it was ordered to do in Case No. EW-2004-0583. Has the Company fulfilled its commitment?

A. Yes it has. An annual update on the expenditure of this money is provided to the Commission Staff as part of AmerenUE's annual report on its vegetation management

made in Case No. EW-2004-0583. I am not aware that Staff has questioned the veracity of the report or challenged the stated level of expenditures.

Q. Mr. Carver goes on to assert that AmerenUE does not have a written work plan or cost support for the proposed new vegetation management programs. Is this correct?

A. No. The Company's Vegetation Management staff does have a schedule for vegetation management through 2008 and a detailed written work plan for the year 2007. These documents list the circuits that have been identified for the implementation of the expanded vegetation management approach, such as the focus on removal of additional overhang on the backbone portion of the circuit along with the removal of on and off right-of-way trees. The additional removal of off right-of-way trees will be specifically identified as part of the on-going planning work that goes into each circuit schedule for a given calendar year.

Q. Mr. Carver makes several recommendations, the first of which is that AmerenUE use local focus groups to obtain community input on the proposed expansion of its vegetation management programs. Is this something the Company supports?

A. It is. In fact, AmerenUE has worked with various communities and urban forestry councils in the past. The Company supports the recommendation to form customer focus groups and, in fact, is in the early stages of exploring the best method to launch such an initiative.

Q. Mr. Carver also recommends that AmerenUE create a planning document with descriptions, objectives and milestones with a break-down of the budget

for these programs and, also, that the Company provide an annual update on its progress. Has AmerenUE considered these recommendations?

A. Yes. As I stated above, the AmerenUE Vegetation Management staff already prepares an annual work plan with objectives and expected deliverables. Many of the proposed expansion programs have already been incorporated into the 2007 work plan. As far as the recommendation that the Commission order AmerenUE to provide an annual update on its progress, in my Supplemental Direct Testimony, I proposed to provide an annual report to reconcile the account deposits, interest earned and qualifying expenditures. The recommendations of Mr. Carver are not objectionable to the Company, but it should be recognized that they have already been implemented or proposed by the Company.

Q. Mr. Carver recommends that qualifying expenditures be restricted to work that had not been implemented prior to January of 2005 and that separate work crews or vendors should be used to perform traditional tree trimming and for the expanded vegetation management work. He also recommends that no internal Company labor or overhead be attributed to the expanded programs and that none of the additional funds be used for capital projects or for work after power outages. Does AmerenUE agree with these recommendations?

A. For the most part, yes. In my Supplemental Direct Testimony, I indicated that AmerenUE proposed to spend an additional $15 million on expanding its vegetation management programs and, as part of that proposal, to keep this amount in a separately tracked account and to guarantee that these dollars would only be used to pay for the new programs. Some of Mr. Carver's suggestions, however, should not be accepted by the Commission. For example, to have one set of crews assigned to traditional tree trimming and

another set of crews devoted solely to the expanded programs would be disruptive to our customers and very inefficient. There would be duplication in drive times, work set-up, trimming of the same trees and additional clean-up at each work site. The inefficiencies are self evident. Overall, this would lead to increased program costs and would ultimately reduce the amount of additional vegetation clearance which could be accomplished with the new programs.

Presently, all tree trimming costs are tracked per individual circuit by a separate Tree Trim Order. This is a unique number which accumulates all the labor, equipment hours and costs associated with an individual circuit. To ensure that the Commission is comfortable with the tracking of costs of the expanded vegetation management programs, AmerenUE will work with Staff to develop and implement a method to track these costs.

AmerenUE does foresee the need for additional personnel both internally and externally and believes these costs would be legitimately expended from the $15 million fund. Internal positions will be needed to manage the additional $15 million of expenditures. External positions will be needed to supervise, plan for upcoming projects and to initiate customer contacts to discuss work. A key component to successful implementation of these expanded projects is personal contact with homeowners and municipalities to discuss our upcoming work plans and to secure permission to enter property and remove vegetation, as is necessary.

III. WINTER STORM DAMAGE

Q. The AmerenUE service territory has experienced multiple significant storms in the last year. Can you briefly discuss those storms?

A. AmerenUE was hit by very severe storms in 2006. I described the July 2006 storms in my Supplement Direct Testimony and will not repeat that description here, except to point out that these were strong storms with incredible wind speeds that caused damage to property, trees and our utility distribution systems in the St. Louis area, extending out as far as St. Francis and Washington Counties. As examples, a 60-foot portion of St. Louis Lambert Airport's roof was blown onto I-70, a semi-tractor trailer was blown off of I-57 and three buildings in downtown St. Louis collapsed.

After experiencing the summer windstorms, AmerenUE's service territory was subjected to a large ice storm on November 30th and December 1st of 2006 (winter storms). A very powerful early season winter storm, it produced significant accumulations of sleet and freezing rain in excess of two inches across Eastern Missouri and Western Illinois. As the January 2007 winter storm has also shown for other utilities in Missouri and surrounding states, that magnitude of ice accumulation causes substantial damage to utility distribution systems and results in extensive power outages and hardships for utility customers who face lengthy outages despite extraordinary restoration efforts by utility crews.

At the peak, 285,000 customers lost electric service because of the 2006 winter storms. However, due to the diligent efforts of our crews and of those provided by other utilities, nearly all AmerenUE customers had their service restored within six days. During this outage, AmerenUE suffered lost electric margins and paid considerable capital and operations and maintenance (O&M) costs to complete its restoration efforts. AmerenUE

estimates that it will ultimately incur incremental capital costs of approximately ** [redacted] ** and incremental O&M expenses of ** [redacted] ** as a result of the winter storms. These expenditures are in addition to the amounts set forth in my Supplemental Direct Testimony for the July storms, bringing the total expended on the summer and winter storms to ** [redacted] **. Of that total, ** [redacted] ** were capital costs and ** [redacted] ** were incremental O&M.

Q. Are the dollar amounts you quote unusually high for storm restoration?

A. There is no doubt that the costs associated with restoring service to the Company's customers after major storms has been growing. In 2000, AmerenUE spent approximately $4.6 million on restoration efforts. As you can see in Figure 1, the dollar amount spent on restoration has grown most every year. In 2006 the Company spent over ** [redacted] **.

** [redacted]

[redacted]

Q. How would you describe AmerenUE's efforts in restoring service to its customers?

A. I believe that our crews and the outside crews who came to assist us performed exceptionally well. AmerenUE responded with an unparalleled effort to get the power back on for all of its customers. We activated the Company's storm plan quickly and opened lines of communication with outside organizations to request support and assistance. In the July restoration effort alone, AmerenUE used the equivalent of six months of utility supplies, located 15,000 hotel and dormitory rooms to house outside workers and served 55,000 meals. These efforts did not go unnoticed. In January of this year, the Edison Electric Institute (EEI) honored Ameren Corporation as the winner of the Association's Emergency Recovery Award. This award is presented annually to recognize outstanding efforts in restoring electric service that has been disrupted by severe weather conditions or other natural events.

IV. PUBLIC HEARINGS

Q. The Commission has held 16 public hearings in this case and in Case No. GR-2007-0003. Are you aware of the public testimony that was given at these hearings?

A. Yes, I am. I received reports on comments made and have instructed that issues raised at these public hearings be reviewed by my staff. This work requires a great deal of time and is still in process. Some examples, however, include reviewing the service history of those who complained of reliability problems to determine if there is a consistent cause that can be addressed. Also, if the customer identified a specific problem, such as a low hanging wire or a tree on their property, we have already or will send out the appropriate personnel to address the issue.

Q. Do you believe the testimony given at the public hearings to be representative of the feelings of AmerenUE customers across the Company's entire service area?

A. I do not. First, over the past year, portions of the AmerenUE electric system experienced multiple, unusually strong storms. The first set of storms occurred on July 19th and July 21st. The report filed by Staff on November 17, 2006, characterized the storms that hit the AmerenUE's system as "…extraordinary in terms of their wind speeds and direction and the fact that they occurred only two days apart." Report on AmerenUE's Storm Outage Planning and Restoration Effort Following the Storms on July 19 and 21, 2006, EO-2007-0037, p.1. The report is attached to the December 15, 2006 testimony of Staff witness Wood. The second set of storms to hit AmerenUE's service territory occurred on November 30th and December 1st. Large amounts of ice accumulated on trees and power lines and once again caused widespread damage to the electric system.

Unfortunately, many of the Company's customers who suffered through the extended outage after the July storms were also subjected to an extended outage after the December ice storms. The Company recognizes that these events caused real hardship for its customers and does not wish to minimize the impact of the outages upon its customers. The summer outages occurred during a period of record heat and the winter outages during a time of extreme cold.

There is no doubt that these events motivated many St. Louis area customers to appear and to testify at the public hearings. This testimony, however, should not be extrapolated across the entire AmerenUE system. Although attendance at the St Louis area public hearings was higher than normal, attendance at the public hearings in the portions of

the Company's territory spared these outages was not at a similar level. The public hearings at both Jefferson City and Excelsior Springs, for example, had only two individuals who offered testimony and not a single person offered testimony at the Kirksville public hearing. In addition, we have had numerous compliments from our customers through our contact center, letters and one-on-one conversations between employees and our customers. I am confident most customers recognized that there was little AmerenUE could have done to prevent damage to our facilities, as they witnessed damage to their homes and surrounding property.

Q. Are you saying the Commission should ignore the testimony it heard at the public hearings?

A. Absolutely not. I would not dismiss the importance of that testimony or minimize the substantial difficulties our customers faced during those outages. I would, however, argue this testimony needs to be placed in the proper context. When compared to the total number of customers that AmerenUE serves, a very small percentage testified, even at the public hearings held in the hardest hit areas of AmerenUE's service territory. In many cases, the individuals who testified did so because of the burdens the outages placed upon them. They were understandably upset. The Company is attempting to address the concerns raised by these customers. The proposal to expand our vegetation management programs is part of our effort. But the Company also hopes that the Commission recognizes that these storms were unusual in their size and impact upon AmerenUE's territory. It is in the context of this recognition that the public comment received at the St. Louis area public hearings should be viewed.

Q. There have been statements that residents of the St. Louis area suffer a disproportionate impact from severe weather. How do you respond to those statements?

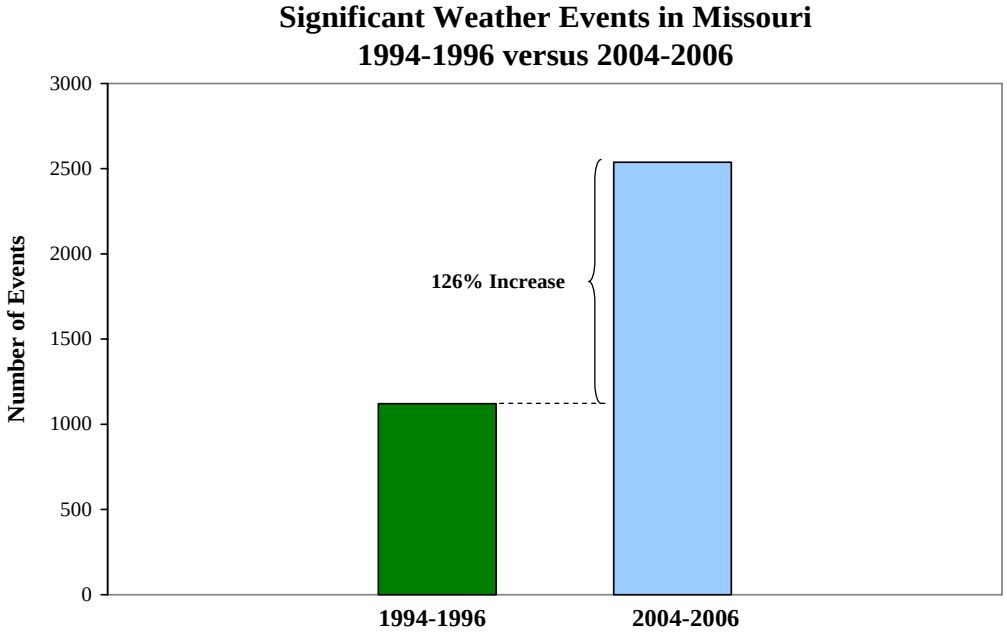
A. I agree, of course, that being subjected to both the summer and winter storms within five months is highly unusual. However, the types of storms and the resulting outages are, unfortunately, not that unusual when looking across the entire country. The St. Louis region is not the only area to suffer an extended outage because of severe weather. Schedule RCZ-1 to my testimony shows that there were at least 23 severe weather related outages of seven days or more which have been experienced by various utilities across the nation since 1999. Each of these outages was associated with a severe summer or winter storm, not including hurricanes. Unfortunately, these types of storms occur from time to time and, when they occur, they cause extended outages. As the most recent January 2007 winter storm in Western Missouri and Oklahoma demonstrates, the impact of severe storms upon AmerenUE customers is no different from the impact upon customers of other utilities subjected to similar storms. Severe storms can result in extended outages. The Western Missouri and Oklahoma storms caused outages of two weeks or longer. The unfortunate complication for AmerenUE's territory is that it was subjected to several such storms in less than six months.

Indeed, significant weather events in Missouri have increased tremendously when compared to significant weather events ten years ago. As Howard Altschule, Meteorologist with Forensic Weather Consultants found after completing a detailed study of severe weather occurrences in Missouri, including severe weather trends in frequency and intensity over the past twelve years, "The data…clearly demonstrates that the number of

significant weather events in Missouri and Illinois has increased compared to 10 years ago. The intensity of these significant weather events has also become much more severe than they were 10 years ago. According to the NWS [National Weather Service]: 'The Weather Forecast Office in St. Louis, Missouri, experienced more severe weather than any other office in the National Weather Service in 2006, with a total of 723 significant weather events recorded.'" The complete report is included as Schedule RCZ-2 to my testimony.

As can be seen in Figure 2, the number of significant weather events experienced in Missouri for the time period of 2004-2006 is 126% higher than for 1994-1996. The term significant weather event is used by both the National Weather Service and the National Climatic Data Center to describe weather phenomena such as thunderstorms, wind storms, hail, ice storms, tornados and floods.

Figure 2



Source: Forensic Weather Consultants, "Detailed Study of Severe Weather Occurances in Missouri and Illinois and the Severe Weather Trends in Frequency and Intensity Over the Past 12 Years" December 21, 2006.

V. SYSTEM RELIABILITY

Q. Earlier, you mentioned the Staff report in EO-2007-0037. Did the report address the question of whether AmerenUE's tree trimming cycles contributed to the outages suffered by its customers during these storms?

A. No. In fact, the Staff report on the July storms specifically notes that

> …even if AmerenUE had totally eliminated its tree trimming backlog last year, most of the tree related outages observed following the storms on July 19th and 21st would have still occurred. One common misconception is that vegetation management programs are structured to significantly reduce the extent of damage to the electric utility's transmission and distribution infrastructure during major storms. While this is true for right-of-way corridor vegetation clearance programs along transmission lines, this is generally not true for sub-transmission and distribution lines. Report on AmerenUE's Storm Outage Planning and Restoration Effort Following the Storms on July 19 and 21, 2006, EO-2007-0037, p.40.

The Staff report continues, "While the vegetation management programs of AmerenUE can improve day-to-day reliability, in their current form, they will not significantly reduce the severity of outages following major storms." Id, p. 41.

Q. Why doesn't normal tree trimming prevent severe storm related outages?

A. While trimming trees branches that are close to the wire can reduce brief interruptions caused by contact between the branch and the electric wire, the storms that hit the St. Louis region in July and December were of such force that large limbs, which would not normally come into contact with the wires and so would normally not be trimmed, broke off and fell or were blown onto the wires and poles. In fact, entire trees were uprooted and overturned by these storms. Tree trimming cannot prevent outages associated with that type of storm damage.

Q. Individuals at the public hearings also testified about general reliability concerns. Do you contend all of those issues are related to extreme storms?

A. No. The Company is reviewing the specific situations brought forth at the public hearings to determine if the issues are as described in the testimony and, if so, how the specific problems can be resolved. We take our obligation to provide reliable service very serious and want to work with the Commission and our customers to address their concerns. Our concern for reliability is not new. Company efforts to improve the reliability of its system are ongoing. In his direct testimony, filed in July of 2006, Company witness Richard Mark described several of the programs AmerenUE has implemented to improve the reliability of its electric system. In addition to these system-wide programs, the Company responds to specific reliability concerns of its customers. For example, a new substation is being put into service in the Potosi area to improve service reliability for customers in a portion of our service territory that has experienced higher than normal non-storm related service interruptions. Crews were clearing ground for this substation when the July storms hit the AmerenUE service area.

Q. Some individuals at the public hearings asserted that AmerenUE has failed to adequately maintain its distribution system, thus negatively impacting system reliability. Do you believe that to be true?

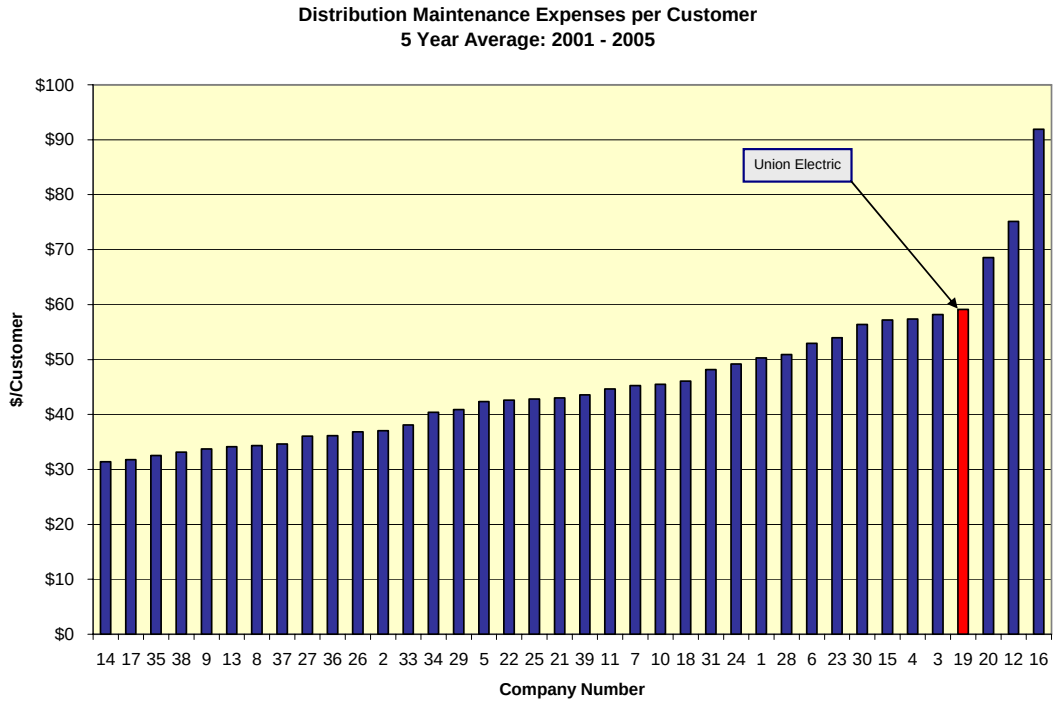
A. No. In fact, Figures 3 and 4, below, provide a comparison of AmerenUE to 38 other Midwest utilities and show that AmerenUE is in the top quarter for expenditures on distribution maintenance for the 2001-05 time period, based on expenditures reported by each utility in their FERC Form 1.

Figure 3

	Distribution Maintenance Expense per Customer					
	5Y Avg.	2005	2004	2003	2002	2001
Ameren-UE	$59	$63	$57	$53	$61	$61
39 Company Average	$48	$50	$49	$48	$46	$46
Ameren-UE Percentile Ranking	92%	84%	82%	74%	89%	87%

To look at the same information in a different form, it is apparent that AmerenUE has not, as some have alleged, refused to invest money in its distribution system.

Figure 4



I do not intend to convey the impression that we believe there are not areas where the distribution system can be improved. We recognize there are and some of those

areas have been highlighted in the recent public hearings. AmerenUE is working hard to identify those areas and to develop the best method of addressing those needs.

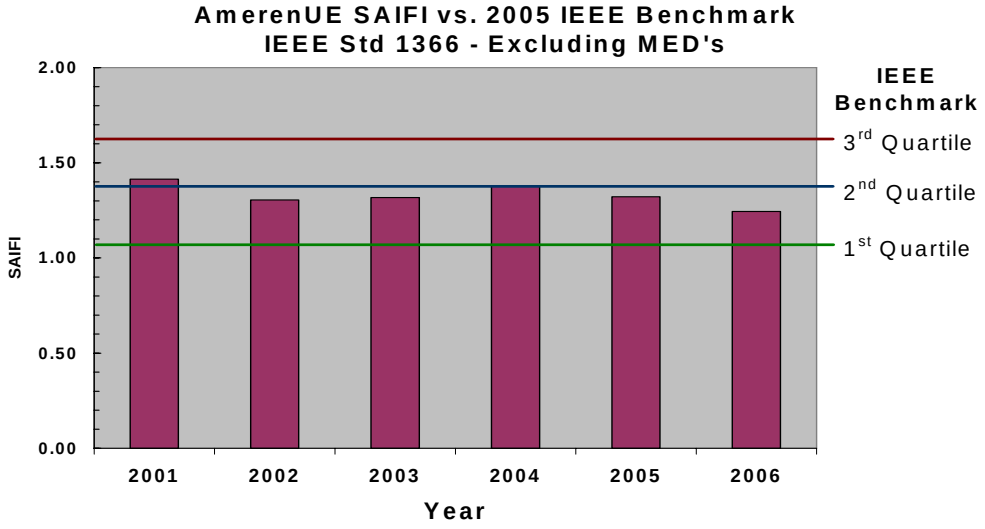
Q. What type of reliability statistics does AmerenUE track?

A. Like most utilities, AmerenUE tracks reliability statistics, such our System Average Interruption Frequency Index (SAIFI). This is a commonly used reliability indicator that shows the average number of interruptions that a customer of the utility would experience. It is typically measured over a year. SAIFI is calculated by dividing the total number of customer interruptions by the total number of customers served. The AmerenUE SAIFI for 2005 was 1.32 and was 1.24 for 2006, when adjusted for major storm days.

Q. You said "like most utilities, AmerenUE tracks reliability statistics." How does AmerenUE's numbers compare to other utilities across the nation?

A. We compare favorably. AmerenUE's numbers fall into the 2nd quartile as compared to all utilities for both years, according to the statistics collected by the Institute of Electrical and Electronics Engineers (IEEE) P1366 Working Group. Figure 5 provides an illustration of how AmerenUE's SAIFI rating compares to that of other utilities since 2001.

Figure 5



Q. Do you have any final observations?

A. Yes. The data I cite above demonstrates that AmerenUE's distribution systems are reliable and that Company has expended appropriate resources to ensure such reliability. Nonetheless, we are committed to further improve and enhance serviced reliability by expending more money, accepting the many recommendations offered by Staff and intervenors as I described, and just as important, engaging with the Commission, Commission Staff and our customers, in a meaningful dialogue.

Q. Does this conclude your Rebuttal Testimony?

A. Yes, it does.

Storm Related Outages Since 1999
Lasting 7 Days or More
Excluding Hurricanes

Start Date	Utility/Power Pool (NERC Region)	Area	Type of Disturbance	Number of Customers Affected	Outage Duration (days)
05/03/1999	Western Resources (SPP)	Kansas City	Severe Storms	51,000	9
05/25/2000	Duke Power (SERC)	North Carolina	Severe Weather	100,000	8
01/30/2002	Oklahoma Gas & Electric (SPP)	Oklahoma	Ice Storm	200,000	8
01/30/2002	Missouri Public Service (SPP)	Missouri	Ice Storm	95,000	11
12/4/2002*	Duke Power	North Carolina	Ice Storm	1,042,034	7
12/4/2002*	Progress Energy	North Carolina	Ice Storm	460,400	7
2/15/2003*	Kentucky Utilities	Northern Kentucky	Ice Storm	146,000	10
12/26/2003*	PacifiCorp - Utah Power	Utah	Winter Storm	190,000	10
03/04/2004	Electric Reliability Council of Texas (ERCOT)	North Texas	High Winds - Severe Storm	63,000	12
12/23/2004	American Electric Power (ECAR)	Columbus District	Major Freezing Rain and Ice Storm	359,171	9
01/04/2005	Westar Energy (SPP)	Eastern one third of the state of Kansas	Winter Storm	211,000	10
01/05/2005	Ohio Edison/First Energy (ECAR)	Akron and Mansfield areas	Ice Storm	246,990	8
01/05/2005	American Electric Power (ECAR)	Indiana Michigan Region - Muncie District	Winter Ice Storm	114,791	11
12/15/2005	Duke Energy Company/Duke Power Control Area (SERC)	Piedmont North Carolina and South Carolina	Ice Storm	683,000	7
07/17/2006	Consolidated Edison Company of NY (NPCC)	Northwest Queens, New York City	Severe Weather/Public Appeals Made/Voltage Reduction	25,000	7
07/19/2006	Ameren Corporation (MRO)	Greater St. Louis Metropolitan area (Missouri and Illinois)	Severe Storms (3) (Many customers experienced multiple outages.)	700,000	9
10/12/2006	Niagara Mohawk Power Corporation (NPCC)	Western New York State	Snow Storm	250,000	11
10/12/2006	New York State Electric and Gas (NPCC)	Western New York State	Snow Storm	120,000	9
11/30/2006*	Ameren Corporation (MRO)	Missouri	Ice Storms (2)	270,082	9
12/14/2006**	PSE	Washington	Rain/Winds	700,000	16
12/29/2006**	NPPD	Nebraska	Ice Storm	11,000	22
1/12/2007*	City Utilities, Empire Electric, Southwest Electric, Rural Electric Coops	Missouri	Ice Storm	173,000	18
1/12/2007*	Oklahoma Gas & Electric and Public Service Company of Oklahoma	Oklahoma	Ice Storm	65,000	12

Sources/Notes:

Data from Energy Information Agency, Electric Power Monthly, Appendix B unless otherwise noted.

* Data from storm response reports filed with state or federal regulatory/monitoring authorities.

** Data from news articles.

FORENSIC WEATHER CONSULTANTS

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Date: **December 21, 2006**
Attn: **Ms. Donna Martin**
Company: **Ameren Corp.**

DETAILED STUDY OF SEVERE WEATHER OCCURRENCES IN MISSOURI AND ILLINOIS AND THE SEVERE WEATHER TRENDS IN FREQUENCY AND INTENSITY OVER THE PAST 12 YEARS

1. INTRODUCTION

Forensic Weather Consultants (FWC) has been retained to conduct a study of the number and severity of "significant weather events" that have occurred in Missouri and Illinois in recent years compared to a similar period 10 years earlier. The term "significant weather events" is used by the National Weather Service (NWS) and the National Climatic Data Center (NCDC), both agencies of the U.S. Department of Commerce, to describe weather phenomena such as thunderstorms, wind storms, hail, ice storms, tornados and floods.

In order to determine how much of a change, if any, has occurred over the past few years compared to the same period approximately 10 years ago, FWC conducted a detailed study of reported significant weather events for the period January 1, 2004 through July 31, 2006 and those that occurred between January 1, 1994 and July 31, 1996 (the same period but 10 years earlier).

The study included a review of official NWS and NCDC reports of significant weather events for both states. These reports contain the weather data and climatological records that meteorologists rely upon every day during the normal course of business. NWS receives its information from a variety of sources, which include: county, state and federal emergency management officials, local law enforcement officials, skywarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public. It is important to note that only significant occurrences of these events are archived. For example, this archive includes any tornado or funnel cloud, any thunderstorm wind gust over 50 knots (58 MPH), any damage that can be attributed to the wind and hail over 0.25" in diameter.

2. WEATHER ANALYSIS

The following table contains detailed "county by county" breakdowns of the significant weather events for the counties in Missouri that make up AmerenUE's service territory. These tables show:

- The number of significant weather events that were reported to the National Weather Service during the period January 1, 2004 through July 31, 2006.

- The number of significant weather events that were reported to the National Weather Service during the period January 1, 1994 through July 31, 1996 (the same period but 10 years earlier).

NUMBER OF SIGNIFICANT WEATHER EVENTS

	January 1, 2004-July 31, 2006	January 1, 1994-July 31, 1996
Adair County, MO	**12**	**7**
Audrain County, MO	**42**	**10**
Bollinger County, MO	**30**	**21**
Boone County, MO	**118**	**42**
Butler County, MO	**36**	**25**
Caldwell County, MO	**22**	**8**
Callaway County, MO	**71**	**28**
Camden County, MO	**69**	**33**
Cape Girardeau County, MO	**48**	**38**
Chariton County, MO	**17**	**10**
Clark County, MO	**27**	**11**
Clay County, MO	**86**	**43**
Clinton County, MO	**36**	**20**
Cole County, MO	**26**	**17**
Cooper County, MO	**56**	**12**
Daviess County, MO	**44**	**9**
DeKalb County, MO	**31**	**12**
Dunklin County, MO	**40**	**26**
Franklin County, MO	**79**	**45**
Gasconade County, MIO	**42**	**19**
Gentry County, MO	**45**	**16**
Howard County, MO	**35**	**15**
Iron County, MO	**23**	**15**
Jefferson County, MO	**77**	**43**
Knox County, MO	**12**	**5**
Lewis County, MO	**23**	**4**

Lincoln County, MO	**40**	**19**
Linn County, MO	**35**	**8**
Livingston County, MO	**35**	**6**
Macon County, MO	**38**	**11**
Maries County, MO	**29**	**23**
Marion County, MO	**36**	**6**
Miller County, MO	**45**	**25**
Mississippi County, MO	**21**	**10**
Moniteau County, MO	**31**	**23**
Monroe County, MO	**27**	**9**
Montgomery County, MO	**44**	**18**
Morgan County, MO	**39**	**28**
New Madrid County, MO	**24**	**16**
Osage County, MO	**33**	**11**
Pemiscot County, MIO	**17**	**23**
Pettis County, MO	**47**	**20**
Phelps County, MO	**37**	**19**
Pike County, MO	**40**	**10**
Ralls County, MO	**29**	**18**
Randolph County, MO	**21**	**5**
Ray County, MO	**17**	**15**
Reynolds County, MO	**22**	**14**
Saline County, MO	**28**	**23**
Schuyler County, MO	**7**	**4**
Scotland County, MO	**17**	**5**
Scott County, MO	**42**	**16**
St. Genevieve County, MO	**41**	**11**
St. Charles County, MO	**104**	**36**
St. Francois County, MO	**50**	**26**
St. Louis County, MO	**237**	**78**
Stoddard County, MO	**42**	**19**
Sullivan County, MO	**16**	**3**
Warren County, MO	**28**	**14**
Washington County, MO	**71**	**14**
Total significant weather events:	**2537**	**1120**

MISSOURI

As can be seen above, the number of reported significant weather events increased from **1120** during the period January 1, 1994 to July 31, 1996 to **2537** for the period January 1, 2004 to July 31, 2006**.** These figures show that the number of significant weather events has more than doubled in this timeframe, increasing by 126%.

One example of this increase in severe weather occurred on May 24, 2004 in Missouri. An enormous severe weather outbreak caused widespread damage to the entire region. Around 123 confirmed significant weather events were reported in Missouri on this one day alone. In one of these events, hail 6" in diameter fell in Meadville, MO, causing major damage. This appears to be the largest hailstone ever measured officially in the state of Missouri and one of the largest ever recorded in the country. It was 6 inches in diameter and 16 1/2 inches in circumference. Hail did extensive damage to roofs and crops across Linn County.

ILLINOIS

The number of significant weather events reported in Illinois also greatly increased -- from **1649** during the period January 1, 1994 to July 31, 1996 to **4129** for the period January 1, 2004 to July 31, 2006. This is an increase of 150%**.** .

TORNADO FREQUENCY AND INTENSITY IN MISSOURI AND ILLINOIS

In addition to the number of significant weather events that were reported, the severity of many of these significant weather events has increased over the past few years as well.

TORNADO OCCURRENCE IN MISSOURI

The number of confirmed tornadoes in Missouri increased from **95** during the period January 1, 1994 to July 31, 1996 to **248** for the period January 1, 2004 to July 31, 2006

The number of F3 or greater tornadoes increased from **3** during the period January 1, 1994 to July 31, 1996 to **18** for the period January 1, 2004 to July 31, 2006

The number of Violent Tornadoes (F4 or Higher) increased from **0** during the period January 1, 1994 to July 31, 1996 to **4** for the period January 1, 2004 to July 31, 2006

In addition, the tornadoes have become more costly over the past few years as well. The damage reports estimate that property damage associated with these tornadoes increased from $50.980 million during the period January 1, 1994 to July 31, 1996 to $165.587 million for the period January 1, 2004 to July 31, 2006. These values come from the NWS, which estimates damage costs using all available data at the time of the publication.

TORNADO OCCURRENCE IN ILLINOIS

The number of confirmed tornadoes in Illinois increased from **143** during the period January 1, 1994 to July 31, 1996 to **247** for the period January 1, 2004 to July 31, 2006.

The following table summarizes the increase in tornadoes over the 10-year period.

	1/1/04-7/31/06	1/1/94-7/31/96	% Change
MO	248	95	+160%
IL	247	143	+72%

JULY 19-21, 2006: Two Significant Weather Events in the ST. LOUIS Region

(source: National Weather Service in St. Louis, MO)

The two significant weather events that will mark this year in history occurred in the middle of July during an excessive heat wave. A bowing line of severe thunderstorms traveled southwest from central Illinois and directly hit the St. Louis metropolitan area with winds up to 100 mph. This caused significant damage to trees and power lines, as well as structural damage to houses and businesses. Power outages to more than a half of a million Ameren customers were recorded. Less than 48 hours after this event, another line of severe thunderstorms moved from central Missouri through the Greater St. Louis metropolitan area and into southwest Illinois. Additional damage to trees and power lines caused the number of customers without power to rise to a historic 750,000.

According to the climate records at National Weather Service in St. Louis, Missouri, a wind speed of 100 Miles Per Hour has never occurred in St. Louis, MO before. Therefore, the wind gust of 100 MPH that occurred with this storm was the strongest wind gust ever recorded. The previous record was 83 Miles Per Hour on April 3, 1981.

This was the largest power outage ever to occur in the region according to Ameren Electric Company.

SEPTEMBER 22, 2006: MAJOR SEVERE WEATHER OUTBREAK AFFECTS THE SAME AREAS ALREADY HIT BY THE STORMS OF JULY 19-21, 2006

(source: National Weather Service in St. Louis, MO)

A significant tornado outbreak occurred on September 22nd. Amazingly, some of the very same locations that saw tornadoes earlier in the year fell victim to this outbreak as well. One of the supercells that produced several long track tornadoes in the St. Louis county warning area ultimately produced a F4 tornado in Perry County, Missouri which caused substantial damage to Crosstown.

RECORD NUMBER OF TORNADOES FOR 2006

102 in Missouri
124 in Illinois

The 2006 tornado count for Missouri and Illinois this year surpassed the previous record year of 2003, when 84 tornadoes were recorded in Missouri and 120 in Illinois.

	2006	2003	% Change
MO	102	84	+21%
IL	124	120	+3%

A total of 48 tornadoes occurred the 11th and 12th of March in Missouri and Illinois. This tornado outbreak included a F4 tornado in Monroe County, Missouri. This was the first violent tornado to occur in the St. Louis county warning area since 1981.

NOVEMBER 30-DECEMBER 1, 2006: HEAVY SNOW AND SIGNIFICANT ICING EVENT

A very powerful early season winter storm produced significant amounts of snow and ice across much of the middle of the country on November 30th and December 1st. Over a foot of snow fell from Oklahoma to southeastern Wisconsin and accumulations of sleet and freezing rain in excess of 2 inches were common across eastern Missouri and western Illinois. The last winter weather event of this magnitude occurred on January 1st of 1999. Across eastern Missouri and southwest Illinois up to an inch of freezing rain lead to another widespread power outage. More than 500,000 people were left without power for up to a week during the coldest air of the season thus far. Unfortunately, many of these same customers lost power during the July outages.

The combination of accumulated ice on trees and power lines and gusty northwest winds produced widespread downed trees and power outages. At one

time over 500,000 households and businesses were without power from the St. Louis Metropolitan Area into central Illinois.

3. CONCLUSION

The data provided in this report clearly demonstrate that the number of significant weather events in Missouri and Illinois has increased compared to 10 years ago. The intensity of these significant weather events has also become much more severe than they were 10 years ago. According to the NWS: "The Weather Forecast Office in St. Louis, Missouri, experienced more severe weather than any other office in the National Weather Service in 2006, with a total of 723 significant weather events recorded."

While it is not known what has caused the increase in significant weather event frequency and severity, many meteorologists theorize that these events are a result of either global warming or the general weather cycle that causes storms to become more intense for several decades at a time. Whatever the reason, it is clear that the severe weather in Missouri and Illinois has become much more frequent and much more severe in the past three years than it was 10 years ago.

A copy of my curriculum vitae is attached to this report.

Howard Altschule

Howard Altschule
Meteorologist

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a AmerenUE for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area.	)))))	Case No. ER-2007-0002

AFFIDAVIT OF RONALD C. ZDELLAR

STATE OF MISSOURI)
) **ss**
CITY OF ST. LOUIS)

Ronald C. Zdellar, being first duly sworn on his oath, states:

1. My name is Ronald C. Zdellar. I work in St. Louis, Missouri and I am employed by Ameren Services Company as Vice President of Delivery and Distribution Services.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Union Electric Company d/b/a AmerenUE consisting of 19 pages and Schedules RCZ-1 to RCZ-2, which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

RC Zdellar
Ronald C. Zdellar

Subscribed and sworn to before me this 31st day of January, 2007.

Carolyn J. Woodstock
Notary Public

My commission expires: May 19, 2008

CAROLYN J. WOODSTOCK
Notary Public - Notary Seal
STATE OF MISSOURI
Franklin County
My Commission Expires: May 19, 2008