Missouri Public Service Commission
Staff Final Report of the
Investigation of Aquila, Inc.'s Storm Preparation and Restoration Efforts
Following the Major Ice Storm in December 2007

Case No. EO-2008-0220

June 17, 2008

Photos courtesy of Aquila, Inc.

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Attachments:

Executive Summary

This report has been prepared in response to the Missouri Public Service Commission's (Commission) Order in Case No. EO-2008-0220, In the Matter of an Investigation of Aquila, Inc.'s Storm Preparation and Restoration Efforts. The Order directed the Staff of the Missouri Public Service Commission (Staff) to investigate the effectiveness of Aquila, Inc.'s storm preparation and power restoration efforts regarding the ice storms Aquila, Inc. (Aquila or Company) experienced in December 2007. All four investor-owned electric utilities were affected by the December 2007 storms, including rural electric cooperatives and municipal electrical systems. Missouri's State Emergency Management Center (SEMA) was activated from December 9, 2007 through December 18, 2007.

Aquila indicates that approximately 84,000 of its customers lost power for some period of time during the storms, but the greatest storm impact occurred in its North Region, which includes St. Joseph, Maryville, Tarkio, Mound City and other communities. In the North Region, approximately 62,000 customers were without power at some period because of the ice storm that occurred December 10, 2007 through December 11, 2007. A much smaller portion of Aquila's service territory was impacted by the ice storm that occurred December 8 through December 10, 2007.

The Company activated its Storm Team at 3:00 p.m. on December 10, 2007 and, throughout the storm and outage, utilized the resources of 942 FTE (Full-Time Equivalent) personnel, including both internal and external utility resources. External personnel came from 10 different states.

Attachment A to this report is the Staff's January 8, 2008 letter to the Company, which addresses the Commission's orders in all four storm cases, and requests Aquila to provide specific information. The Staff held an on-site meeting with Aquila on February 7, 2008 at the Company's Raytown, Missouri headquarters, and also held discussions with various city and county officials to review the utility's storm response from the perspective of various governmental bodies. Twenty-six public comments that are in the Commission's Electronic Filing and Information System (EFIS) for

Case No. EO-2008-0220 were also reviewed by the Staff. A chart is included in this report that summarizes the types of matters addressed by the comments.

The Staff previously completed a report that analyzed Aquila's January 2002 storm response, and the Staff reviewed that report as part of its analysis in the present docket. Commissioner Robert M. Clayton III submitted a concurring opinion in Case No. EO-2008-0220, which included a section titled "Need for an Investigation". Commissioner Clayton requested that Staff include responses to address a number of specific issues. The Company's response to each of those issues is included as Attachment B to this report. This report includes 18 recommendations for Company improvement that may be found in respective sections of the report. A summary of all recommendations may be found at the end of Staff's report in a section entitled Summary of Recommendations.

Weather Conditions and Severity of Storm

Due to the extent of damage and outages resulting from the December 2007 ice storms striking Missouri, Staff communicated with Dr. Patrick Guinan, Missouri State Climatologist, and researched National Oceanic and Atmospheric Association (NOAA)/National Weather Service (NWS) Internet sites to gauge the December 2007 storms in a historical context.

Dr. Guinan, in the January 2008 issue of the Missouri Ruralist, stated:

> Several weeks ago Missouri experienced its second major ice storm in less than a year with a large part of the state cocooned in ice. The storm reached historical proportions over parts of northwestern Missouri, where some communities in Buchanan, Andrew, Holt, Atchison and Nodaway counties reported ice as thick as 1-inch on trees, power lines, vehicles and just about everything that was exposed to the elements.
>
> Winter storms that deposit a glaze of 0.75 to 1-inch of ice are rare and have about a 1 in 50 year recurrence interval for any given location in Missouri. Historical accounts of major ice storms of this magnitude in Missouri indicate the rarity of these events. According to archived storm reports from the National Climatic Data Center, National Weather Service reports, and various press clippings, only a handful of storms of this magnitude have impacted Missouri.

During December 2007, Missouri faced three distinct storm events, striking separate areas of Missouri. Dr. Guinan's report helps place the storms in a historical

perspective. A NOAA Technical Report, published in 2002, entitled "The Development of a U.S. Climatology of Extreme Ice Loads" confirms that a 1-inch accumulation is on average a once in 50-year occurrence for most of Missouri. Listed below is a summary of the weather conditions and the areas affected during the course of these storms (data was collected from NOAA's NWS Web site.

- December 8-10, 2007 storm – Storm impacted Missouri Ozarks, with ice accumulations across Joplin, Missouri. Lesser accumulations of 1/4 to 1/2 inch with locally higher amounts. Nearly three-quarters of an inch fell along the Interstate 44 corridor.

- December 8-12, 2007 storm – Conditions started building by later afternoon Saturday, December 8, 2007. Thunderstorms with freezing rain and sleet formed after midnight Saturday night. Areas affected were parts of Central and Northeast Missouri where thunderstorms produced up to 2 inches of sleet. The hardest hit portions of the area were the Jefferson City/Central Missouri area, and an area from Western Warren County, across Lincoln County to Pike County.

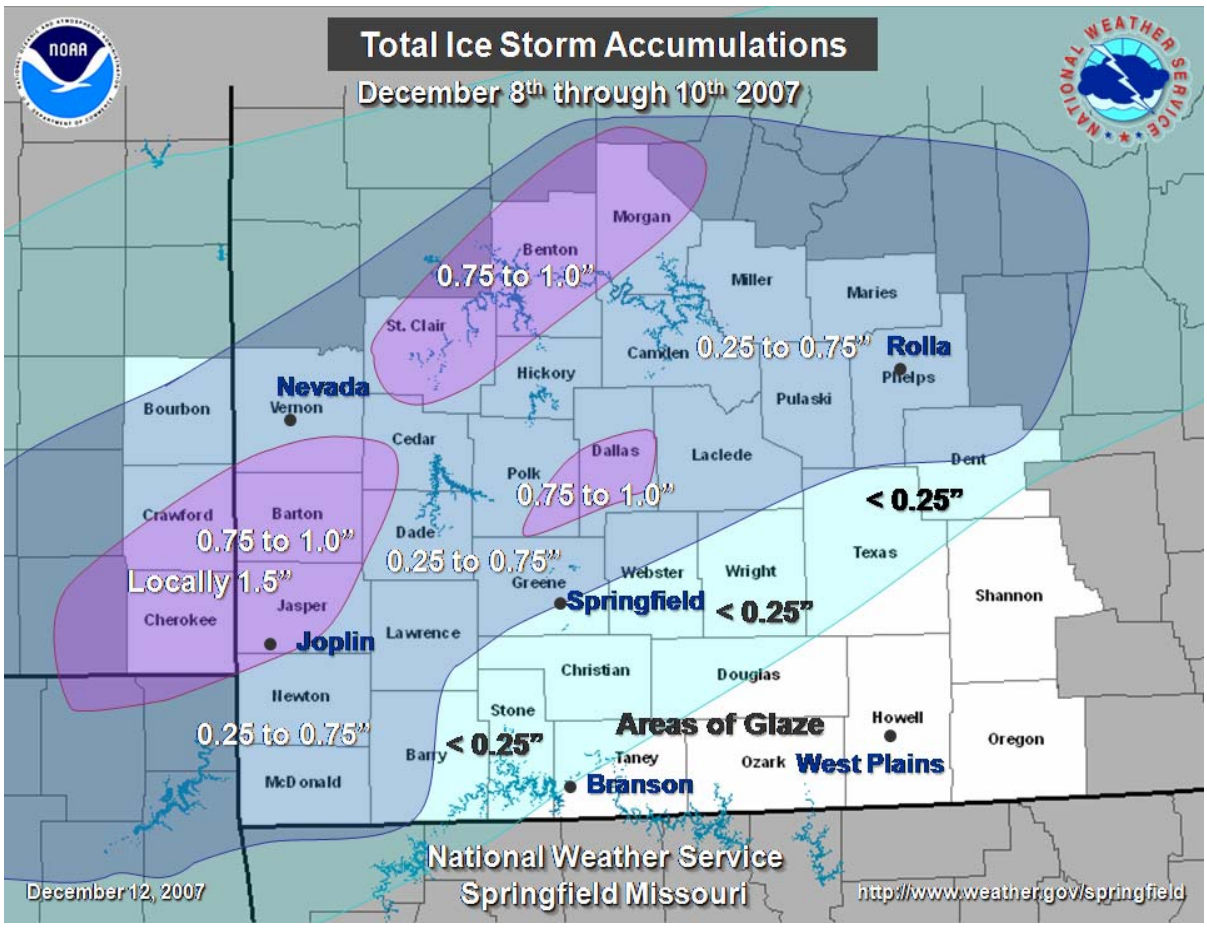
- December 10-11, 2007 storm - Precipitation rates increased quickly Monday evening, December 10, 2007, with ice rapidly accumulating on many surfaces, especially trees and power lines. Precipitation began to wind down in the evening of Tuesday, December 11, 2007. Conditions improved by Wednesday, December 12, 2007, as roads were treated and the thin sheet of ice dried off. Areas affected were along and north of the Missouri river extending into adjacent northeast Kansas. Ice accumulations of 3/4 inch were common, with isolated accumulations around 1 inch generally north of a line from Atchison, Kansas through Trenton, Missouri to Unionville, Missouri. Further south, temperatures warmed during the overnight, and by dawn hovered between 32 and 34 degrees. As a result, ice accumulations between ¼ inch and ½ inch were noted along the Interstate 70 corridor, with lesser amounts further south.

Maps and additional explanation from the National Weather is presented later in this report. These areas of severe ice correlate with the counties shown in the FEMA Disaster Declaration FEMA map, also presented subsequently in this report.

Historically, the data demonstrates that parts of Missouri have been affected by ice storms of varying magnitude every few years. However, the year 2007 was unusual in that Missouri was struck with two ice storms in back-to-back winters (January 12-14, 2007 and December 8-11, 2007). The more widespread December storm met the theoretical criteria for a once-in-50-year occurrence at numerous locations throughout the state. Attachment C to this report describes the

historic ice storms that have impacted Missouri over the last century and a half (from "December 1848 - December 2007), based on an ice thickness of at least 1/2 inch. The occurrence has not been ranked in terms of severity of damage or duration, but a few that have been categorized as being severe were in December 1924, December 1987 and January 12-14, 2007.

National Weather Service Report on December 2007 Ice Storms



Ice Storm Event Summary December 8 through 10, 2007

The second major ice storm of the year impacted much of the Missouri Ozarks and southeast Kansas from Saturday, December 8 to Monday, December 10, 2007.

Damaging ice accumulations of ¾ inch of an inch to 1 1/2 inches occurred from the Joplin Missouri and Pittsburg Kansas areas northeast to the Osceola and Versailles areas. These accumulations downed numerous trees, tree branches and power lines resulting in widespread power outages.

Lesser accumulations of 1/4 to 1/2 of an inch, with locally higher amounts near 3/4 inch, fell along the Interstate 44 corridor. This resulted in downed tree branches and scattered power outages.

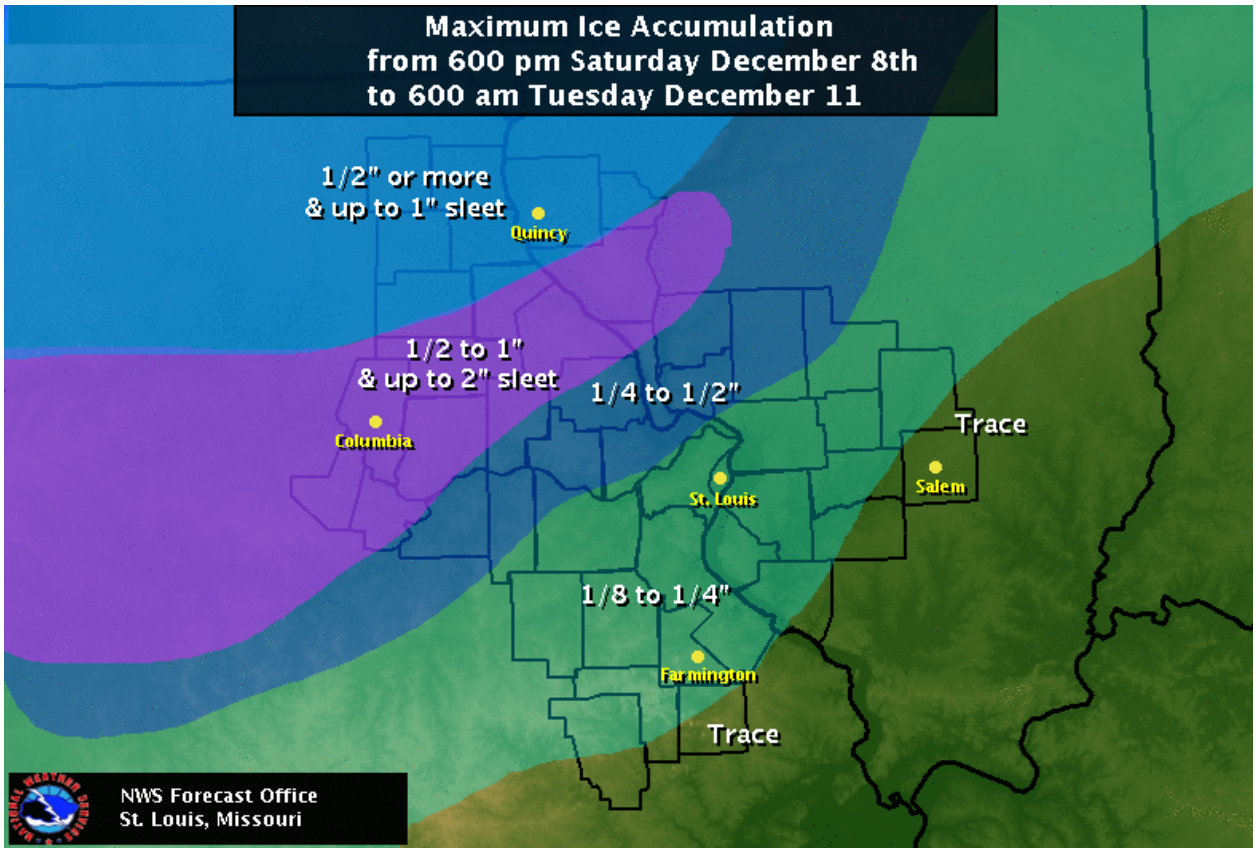
The table below provides ice accumulations for the December 8 through December 10 storm. Aquila's territory covers all or a portion of the italicized counties.

Ice Storm Accumulation County Summary

County	Ice Accumulation
Kansas:	
Bourbon	0.25 to .050
Crawford	0.50 to 1.50
Cherokee	0.75 to 1.50
Missouri:	
Vernon	0.50 to 1.00
Barton	0.75 to 1.50
Jasper	0.75 to 1.50
Newton	0.25 to 0.75
McDonald	0.25 to 0.50
St. Clair	0.50 to 1.00
Cedar	0.50 to 1.00
Dade	0.25 to 0.75
Lawrence	0.25 to 0.50
Barry	0.10 to 0.50
Stone	0.10 to 0.25
Christian	0.10 to 0.25
Greene	0.25 to 0.75
Polk	0.25 to 0.75
Hickory	0.50 to 1.00
Benton	0.50 to 1.00
Morgan	0.75 to 1.00
Camden	0.25 to 0.75
Dallas	0.50 to 1.00
Webster	0.10 to 0.50
Taney	0.10 or less
Maries	0.25 to 0.75
Laclede	0.25 to 0.75
Wright	0.10 to 0.25
Douglas	0.10 to 0.25
Texas	0.10 to 0.25
Pulaski	0.25 to 0.75
Phelps	0.25 to 0.75
Dent	0.25 to 0.50
Shannon	0.10 or less

The December 8 - 12, 2007 Ice Storm

Ice and sleet accumulation map from around the area:



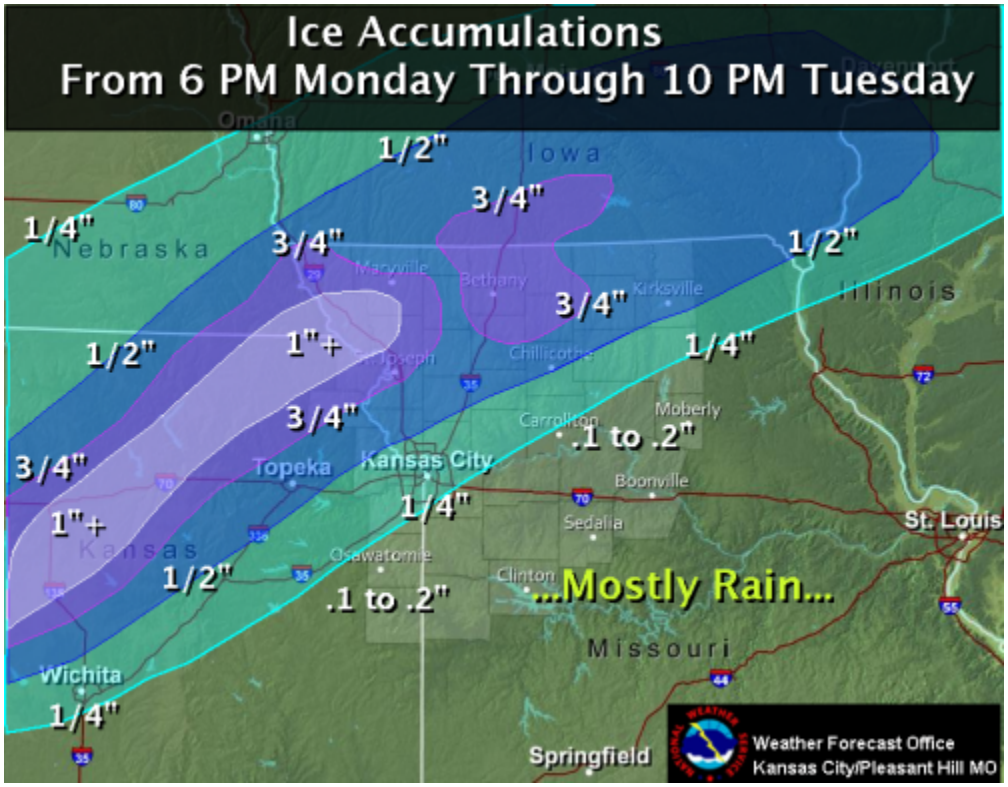
(Analysis by Fred Glass, Senior Forecaster WFO St. Louis)

Discussion:

On Saturday, December 8, 2007, a strong, cold high pressure system moved from Canada into the Great Plains. This high pressure system brought some very cold air streaming into the Midwest and Great Plains regions. At 2:00 p.m. on Saturday December 8, 2007, temperatures ranged from the mid-30s in Southeast Missouri to the upper teens in Northeast Missouri. As this cold air was settling in across the Bi-State region, a low pressure system developed over the southern plains which drew copious amounts of Gulf moisture up and over the cold air which was locked in at the surface. Sub-freezing temperatures across the northern 2/3 of the Bi-State Region combined with this overrunning warm and moist air provided the perfect setup for freezing rain.

Between Saturday evening and Tuesday morning, several waves of precipitation affected Missouri and Illinois, bringing up to an inch of freezing rain accumulation, as well as up to two inches of sleet in parts of Central and Northeast Missouri, which fell after midnight on Sunday morning. While this storm did not affect any of Aquila's customers, it did impact the resources available for Aquila's use.

December 10 - 11, 2007 Ice Storm



A slow moving storm system brought a long duration of freezing rain to a large portion of the nation's mid-section. After several rounds of minor snow and ice accumulations over the previous week, a major storm system produced one final blow, capping the region with significant ice accumulations. The event began early Monday evening and continued into the early evening hours on Tuesday. Very warm and moist air aloft was brought in ahead of a large storm system moving slowly out of the southwest United States. At the surface, Canadian high pressure which had been in firm control over much of the past week, helped keep temperatures near ground level in the upper 20s to lower 30s. With surface temperatures at or below freezing, combined with a warm layer of air just above the surface, the precipitation fell in the form of freezing rain.

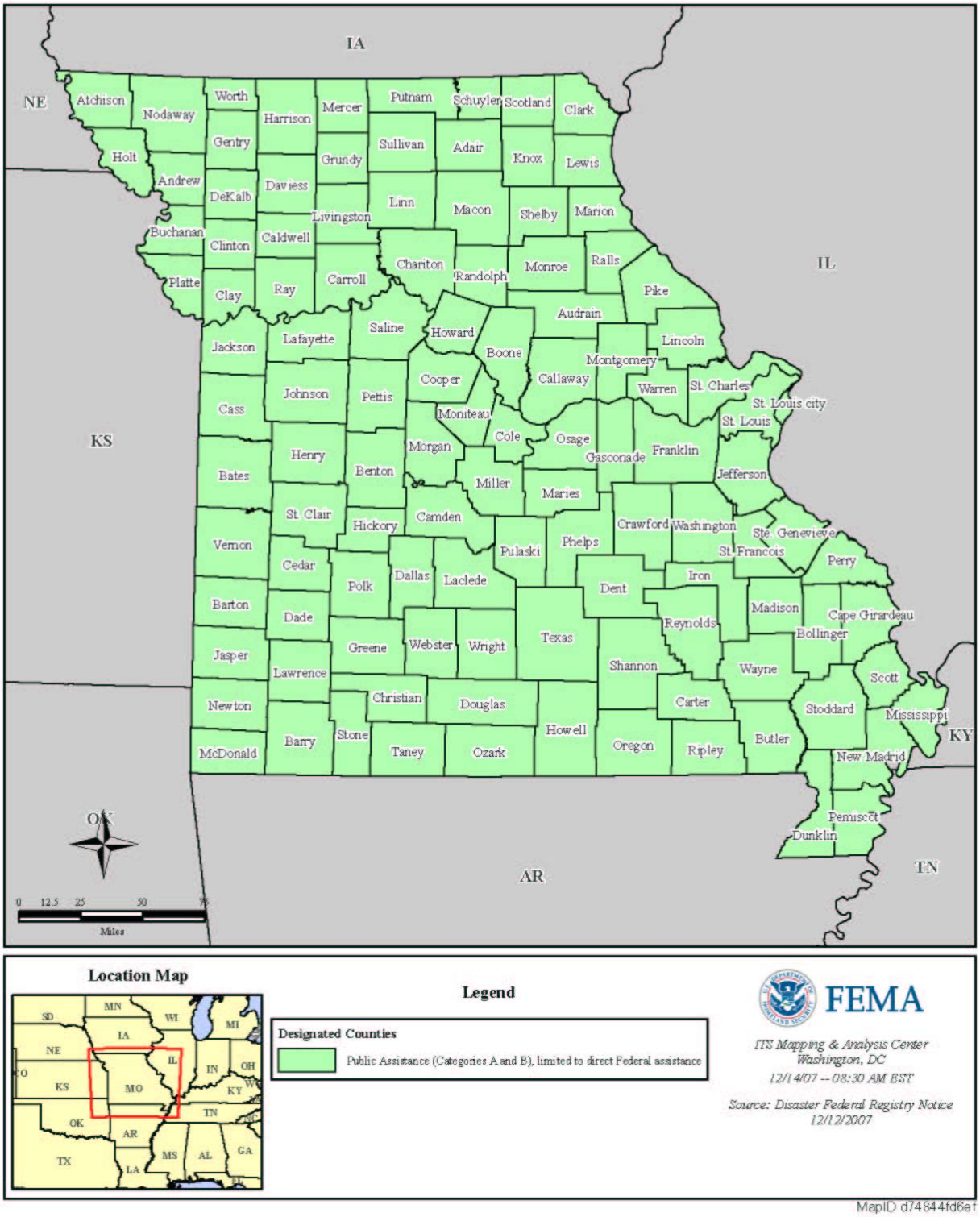
As precipitation rates increased quickly Monday evening, ice rapidly accumulated on many surfaces, especially trees and power lines. Locally, ice accumulation was particularly devastating along and north of the Missouri river, extending into adjacent northeast Kansas. Ice accumulations of 3/4 inch were common, with isolated

accumulations around 1 inch generally north of a line from Atchison Kansas through Trenton Missouri to Unionville, Missouri. Further south, temperatures warmed during the overnight, and by dawn hovered between 32 and 34 degrees. As a result, ice accumulations between 1/4 inch and 1/2 inch were noted along the Interstate 70 corridor, with lesser amounts further south.

Area electricity providers are reporting widespread power outages across portions of eastern Kansas and northwest Missouri. The most hard-hit areas extended from near Manhattan Kansas, through St Joseph, Missouri, and into southwest Iowa, where estimates are that nearly 75% of customers remain without power. Specifically, in communities along and north of US Highway 36, and west of Interstate 35, numerous fallen larger tree branches and downed power lines were reported. As of 5 p.m. Tuesday, December 11, providers are estimating that over 165,000 Missouri residents were without electricity.

Precipitation began to wind down Tuesday evening. However, additional power outages and damage were caused as north winds of 15 to 20 mph buffeted northern Missouri through the late evening. As temperatures fell quickly back through the 20s, wet roadways quickly refroze, resulting in widespread black ice. Several multiple vehicle accidents were reported during the evening hours Monday along major interstate routes as travelers suddenly found wet roadways had turned to a thin sheet of ice. Conditions had largely improved by Wednesday morning as roads were treated and dried out.

FEMA-3281-EM, Missouri
Emergency Declaration as of 12/12/2007



Storm Restoration Planning Process

Aquila prepared its report, Aquila Report on December 2007 Ice Storm Restoration, dated February 29, 2008 (Attachment D) in response to Staff's letter dated January 8, 2008. Aquila's report included six (6) Appendices that presented an additional 224 pages of information. Appendices to Aquila's December 2007 Report include:

Appendix A	Emergency Storm Restoration Plan
Appendix B	Resources Utilized
Appendix C	News Releases
Appendix D	Customer Compliments
Appendix E	Customer Comments to the PSC and Aquila Responses
Appendix F	Vegetation Management Standard

The most voluminous of the appendices is Appendix D, Customer Compliments, which is 82 pages long. The Staff has chosen to only attach Aquila's Report and Appendix A to that document. Rather than restate what is contained in Aquila's Report, Staff will direct the reader to the relevant portions of Aquila's Report and will summarize the various Appendices that pertain to the specific portions of Staff's Report. Aquila's Emergency Restoration Plan is presented as Attachment E.

Staff expects that the items identified as "Lessons Learned" on pages 44-46 of Aquila's Report will be incorporated into the ESRP by revising the 2007 version.

1. Recommendation: Revise the Emergency Service Restoration Plan (ESRP) to incorporate the "Lessons Learned".

Staff would note that the incorporation of "Lessons Learned" is also applicable to the topics discussed in other sections of Staff's Report, but the recommendation is only presented once to avoid redundancy.

All Missouri investor-owned electric utilities were impacted by the December storms and Staff was ordered to file a report for all of the electric utilities. There is benefit in Aquila reviewing the storm experiences and outage restoration activities of the other Missouri regulated electric utilities. These reports may contain practices and procedures that could be beneficial for future storm responses and general utility operations.

2. Recommendation**: **Review and evaluate all other December 2007 Storm Investigation Staff reports, including all findings and recommendations. Consider for implementation all practices, procedures and recommendations determined to be applicable and beneficial to future utility operations.

A workshop to discuss this report, progress toward implementation of all recommendations and other storm-related topics has the opportunity to benefit Aquila.

3. Recommendation: Participate in a Commission sponsored storm restoration workshop to discuss this report and concurrent reports for other utilities. Incorporate an agenda item for the workshop to include consistent methodology for future utility storm reporting.

Aquila's Report discusses the Company's actions and response to the December 2007 Storm throughout the document. The section titled "Aquila Response" provides a good overview of the timing of the Company's response to the December 2007 Storm. This includes a reference to the implementation of the ESRP two days before the first outage and three days before the main storm hit Aquila's North Region. In the section titled "Resources Utilized", which is on pages 30-31 of Aquila's Report, Aquila provides information on the Company, contractor and mutual assistance FTE's that assisted the restoration effort.

Since the most significant impacts to Aquila's system occurred during the second storm, it is clear that the ability to attract mutual assistance FTEs was hampered. However, a significant portion of the "Contractor" and "Tree" FTEs were, in part, available through communications that occurred under the mutual assistance process.

Outage Tracking and Field Dispatch Coordination

In addition to the information provided regarding Aquila's ESRP, Aquila's Report includes three other sections that provide additional insight into the restoration effort. The section titled "Overview of Aquila's System" describes the four (4) regions in which Aquila divides its service territory. The section titled "Outage Statistics" on pages 8-9

gives some insight into the relative level of outages that each region experienced. The section titled "Miscellaneous Storm Restoration Statistics" on page 10 discusses the level of manpower and materials that were required for the entire outage. Although these statistics speak for themselves, Staff would note that Aquila reported that 83,649 customers lost power for some period of time and the number of manhours worked to restore power was also about 83,000. That means that, on average, one manhour was spent to restore each customer. In addition, Aquila reported that 101,330 splices were used during the restoration process which would equate to approximately 1.2 splices per customer.

Prioritization of Outage Repairs

Although the section titled "Transmission Infrastructure Affected" on pages 11-15 of Aquila's Report does not, at first glance, appear to be relevant to the prioritization of outage repairs, it provides some valuable insight into the priorities defined in Aquila's ESRP. Pages 24-25 of Aquila's ESRP includes the following list of Restoration Priorities:

1) Transmission Lines
2) Substations
3) Distribution Feeder Circuits
4) Sub-feeder Circuits and Laterals
5) Individual Transformers and Mainline Secondaries
6) Services
7) Street Lights and Private Area Lighting

Given the amount of transmission infrastructure that was affected and the priorities outlined in the ESRP, one might conclude that these transmission lines were given first priority and the other six (6) items listed simply had to wait. However, the ESRP actually assigns resources (FTEs, equipment, material, etc.) to the higher priority items and makes a determination if other resources are available which can be assigned to the lower priority items. The transmission section of Aquila's Report highlights the fact that work on the other six items did begin prior to the completion of a higher priority as resources are available. In the specific case of the St. Joseph to Cooper 345 kV line, Aquila actually restored power to all of its customers before work on this transmission

line was completed (December 18 vs. December 21). Although there were no customer outages due to the St. Joseph to Cooper 345 kV line being out, the line did fall on railroad tracks and Highway 159 resulting in closing both the railroad and the highway. The initial estimate for getting the line back in service was January 20, 2008. However, Aquila began restoration work on December 11 and steadily worked on getting this line restored. The line went back into service on December 21, 2007. Clean up work on this transmission line continued until January 5, 2008 just as lower priority items on Aquila's list were addressed after all customers were restored.

Call Center Operations

Call centers serve a critical function in utility operations in that call centers often serve as the primary means for customers to contact their utilities. Customers require contact with utilities for a wide range of issues including reporting emergencies and service outages. When customers experience outages, they want to communicate with their utility for any number of reasons including: 1) telling the utility they are without service; 2) inquiring as to when their service may be restored; 3) reporting an unsafe circumstance including a down power line or other equipment failure; or 4) reporting a neighbor or relative that is without service including those that may be disabled or elderly.

Aquila has two Call Centers that staff Customer Service Associates. The centers are located in Lincoln, Nebraska, and in Raytown, Missouri. Both the Nebraska and Missouri Call Centers are staffed 24 hours a day, seven days a week.

The Staff examined Call Center staffing and the volume of calls that Aquila received during the December 2007 outage. Staff also reviewed Aquila's Call Center performance indicators, including the average speed of answer (ASA) and the abandoned call rate (ACR) during the outage. There are many call center indicators used by utility management to monitor call center performance and, of those, ASA and ACR are considered to be two foundational call center performance metrics.

The Staff monitors Aquila's Call Center performance on a monthly basis. Such monthly reporting was agreed to by the Company in a previous rate case,

Case No. ER-2004-0034. Historical Call Center data the Staff receives from the Company which demonstrates the Company's Call Center performance over time is presented below:

Aquila Call Center Performance Data						
Date	Total Calls Offered*	Abandoned Call Rate (%)	Average Speed of Answer (sec)	Call Center Staffing	Service Level Total Agent	Service Level Emergency
Jan-06	236,096	4.8%	54	202	66%	91%
Feb-06	206,453	3.4%	40	198	71%	93%
Mar-06	222,600	1.6%	18	206	85%	95%
Apr-06	201,129	1.6%	18	207	83%	95%
May-06	256,650	7.2%	78	194	56%	88%
Jun-06	221,588	3.6%	39	186	77%	93%
Jul-06	173,203	0.8%	9	180	90%	96%
Aug-06	194,772	1.3%	14	192	86%	92%
Sep-06	172,449	1.3%	14	184	85%	96%
Oct-06	195,783	1.5%	14	183	86%	97%
Nov-06	148,157	0.5%	3	175	96%	98%
Dec-06	133,725	0.7%	5	173	95%	92%
Jan-07	163,896	1.1%	7	167	92%	94%
Feb-07	147,557	1.2%	9	179	89%	97%
Mar-07	159,565	1.2%	12	171	87%	95%
Apr-07	164,009	1.6%	16	168	84%	95%
May-07	169,899	1.5%	16	166	84%	95%
Jun-07	159,176	1.4%	14	163	84%	94%
Jul-07	162,039	1.5%	18	180	81%	93%
Aug-07	170,539	1.5%	17	170	80%	92%
Sep-07	153,283	1.5%	17	166	81%	94%
Oct-07	187,324	3.2%	42	159	65%	94%
Nov-07	151,275	2.0%	24	154	80%	95%
Dec-07	150,328	2.4%	21	153	84%	84%
Jan-08	158,001	1.8%	19	166	80%	93%
Feb-08	149,699	1.7%	17	162	80%	93%
Mar-08	149,513	0.8%	6	157	91%	97%
Apr-08	154,290	1.0%	12	154	87%	96%

Source: Aquila, Inc.
*Total calls offered includes calls offered only to Agents.

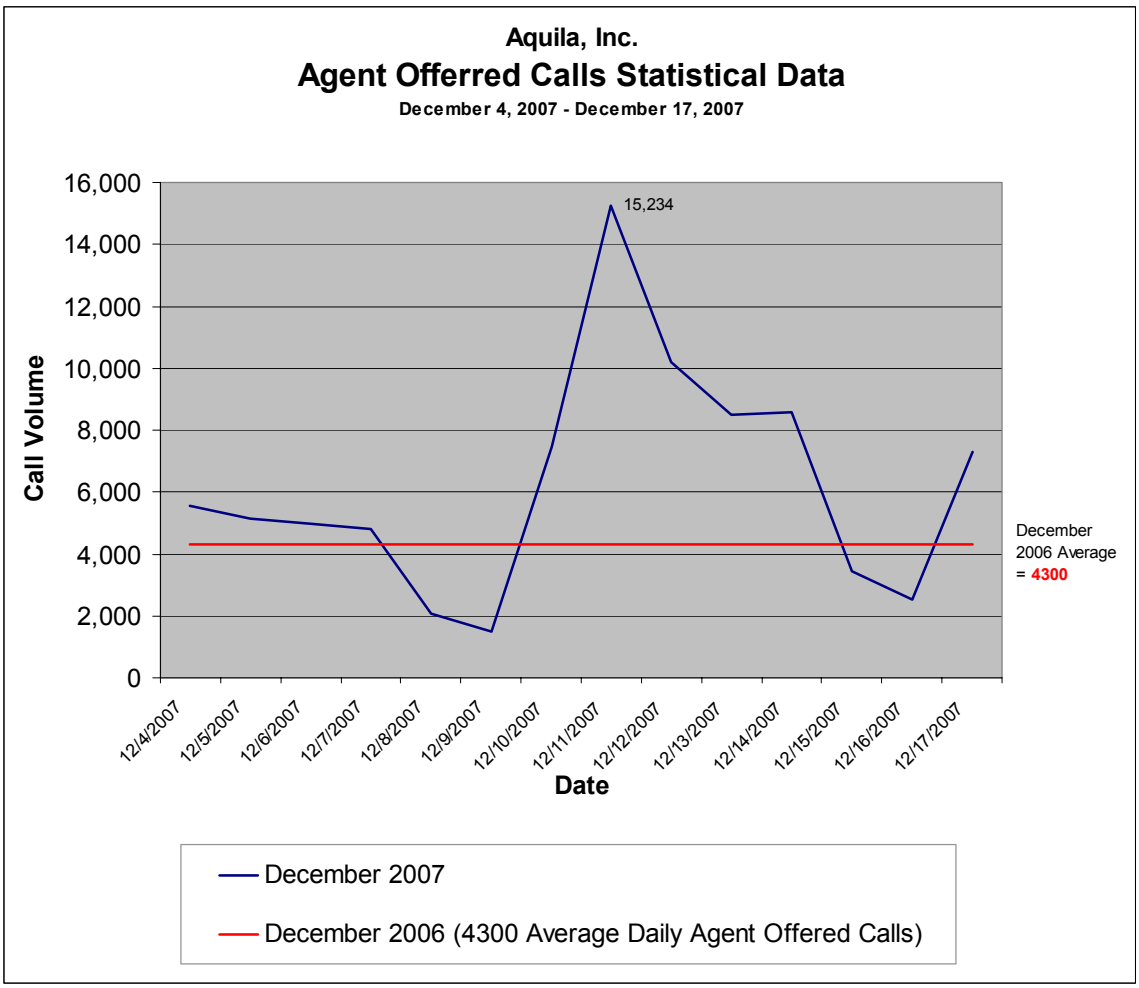
Below are some of the key call center performance indicators that demonstrate the Company's Call Center performance during the December 2007 ice storm outage. As can be seen, gross call volume was approximately six times higher on Tuesday, December 11, 2007 than the previous Tuesday, December 4, 2007 when the Company's

service territory had not experienced the outage. The Company's service level, which is defined as the percentage of calls answered by Customer Service Associates within 20 seconds, declined by approximately 50% from the same day of the previous week.

Call Center Daily Statistics During December 2007 Outage									
Date	Day of Week	Service Level	Gross Call Volume	Agent Offered Calls	Blocked Call %	HVCA Redirects	Net HVCA	Peak Staffing By Day (Total Scheduled Work)	Overtime Hours Per Day
12/4/07	Tuesday	99%	8,604	5,570	0.2%	33	397	69.03	0
12/5/07	Wednesday	97%	7,749	5,142	0.3%	37	206	61.07	0
12/6/07	Thursday	96%	7,694	4,968	0.3%	31	330	56.77	0
12/7/07	Friday	97%	7,477	4,817	0.4%	20	118	54.27	0
12/8/07	Saturday	93%	2,799	2,054	0.6%	12	136	17.50	51.87
12/9/07	Sunday	92%	3,186	1,495	0.9%	72	321	17.00	0.25
12/10/07	Monday	96%	12,351	7,448	1.3%	148	1,236	79.10	1.42
12/11/07	Tuesday	47%	53,930	15,234	13.7%	5,860	26,983	70.87	82.4
12/12/07	Wednesday	78%	22,493	10,203	0.2%	1,920	8,102	65.67	65
12/13/07	Thursday	91%	17,629	8,477	0.2%	1,171	5,722	68.50	62.64
12/14/07	Friday	61%	15,644	8,569	0.3%	923	3,956	65.50	32.4
12/15/07	Saturday	52%	7,150	3,451	1.2%	563	2,082	24.00	41.62
12/16/07	Sunday	88%	5,869	2,525	0.5%	482	2,114	20.00	74.72
12/17/07	Monday	99%	11,026	7,275	0.2%	363	769	83.50	3.25

Source: Aquila, Inc.

The Company's daily average calls offered to its Call Center Associates for December 2006 was approximately 4,300 and on December 11, 2007 calls coming into the Call Center Associates was three and one-half times that amount with 15,234 calls being presented.



Source: Aquila, Inc.

Aquila provides customers with two 800 or toll-free numbers. One is a Customer Service number for any customer service matter that may need to be addressed and the other is a toll-free Emergency number. All calls, outage or otherwise, are initially answered by a VRU (Voice Response Unit) which provides a menu listing of options. The first menu option to customers is to report a power outage. Customers may report outages through the VRU or they may elect to speak directly with a Customer Service Associate (CSA).

If customers chose the first option of reporting their power outage, their calls are routed to the High Volume Call Answering (HVCA) service where they can 1) report a power outage, 2) report a downed wire or other dangerous situation or 3) report a street or private area light being out. Aquila contracts with Twenty-First Century for this high volume call answering service. Customers who select to report the later two options are

automatically directed to the Customer Service Center to speak personally with a Customer Service Associate. These calls are placed in the queue as the highest priority calls.

Calls at call centers may be blocked by either the initiation or direction of the telecommunications company serving the utility. Utilities may also elect to block calls coming into their call centers by programming allowed call capacities. Typically, calls are intentionally blocked when excessively high call volumes place call systems at risk of failure, resulting in the prevention of even a greater number of customers being unable to have their calls successfully handled by either the telecommunications network or by a call center system.

Aquila found during the December 2007 ice storm that the Maximum Call Allowed (MCA) threshold for blocked calls was set too low, resulting in more calls being blocked than was necessary in order to answer as many calls as possible (page 20 of Aquila Report on December 2007 Ice Storm Restoration). Calls coming into the 800 Emergency or Customer Service numbers were connected appropriately; however, customers who elected either option 2 or 3 (which routed calls to Customer Service Associates while in the High Volume Calling Answering Service) may have had their calls 'blocked.' The Company found that the increased number of calls being blocked on December 11, 2007 was primarily the result of these types of calls.

The Company indicates that when lines are busy, the HVCA system will attempt to connect customers back to a Customer Service Associate a total of three times when the customer requests such contact. Each of the three times callers will hear a message requesting them to continue holding as well as music. At the end of the third attempt to connect the customer to an associate, the caller is told that their call is unable to be answered at that time and to please try their call again.

4. Recommendation: Review the maximum call allowed value (MCA) on all toll-free numbers at the on-set of future outages and periodically throughout outages to minimize the occurrence of blocked calls. Adjust MCA values to appropriate levels to allow the maximum level of calls to the Call Center that can effectively be handled.

5. Recommendation: Incorporate MCA reviews and adjustment steps in the Company's Emergency Storm Restoration Plan as an actionable item to review during outages.

Aquila utilized its outage management system, (ServiceOn), to track and coordinate outages and outage restoration. "Call backs" were made to customers once field operations indicated service had been restored. Customers receiving a call-back from the utility were asked to confirm or disagree that their service had been restored by using the keypad of their telephone. These automated return customer calls allow Aquila customers and the Company to have confirmation that service has been restored. During a majority of the outage, system-wide estimated restoration times were offered to customers by the Call Center as well as provided through media releases and in radio programs. Toward the end of the outage when more specific restoration times could be estimated with greater certainty, more detailed information was provided to customers by the Call Center

An opportunity for improvement in the system 'call-back' process may exist by the utilization of secondary phone numbers such as cell phone or employment phone numbers. If a home land-line is dependent upon electricity for operation, calls to the customer to verify the restoration of service will not be successful. Greater customer accessibility through the use of cell phones or work phones may be achieved in the call back process.

6. Recommendation: Review opportunities to improve the call-back system during system outages by utilizing customer secondary phone numbers. If determined operationally feasible and cost-effective to use secondary phone numbers in the call-back process, verify that the Company consistently obtains secondary customer phone numbers during its contacts with customers, such as through the Call Center at the time of service application or other contact opportunities.

Aquila indicates that one of the actionable requests it makes to its customers via its call-back system is to turn their porch light on when service is restored. This enables field personnel to visibly verify those customers that have had their service returned. There may be benefit in reviewing Call Center outage scripts to include indication to customers that they will receive a return call from the Company when their service is restored and request the customer to turn on their porch light at that time if they have one.

Opportunities may also exist to provide customers with additional useful information through the Company's Call Center.

7. Recommendation: Review Call Center outage scripts to determine if opportunities for improvement may exist in providing customers specific instructions after service has been restored, such as turning their porch light on, or other beneficial information they may receive in a return call from the utility.

Presently, Call Center Associates do not have access to call-back data to determine whether or not Company records indicate that service has been restored or not during outages. This information would be useful to Customer Service Associates should customers call into the Call Center with reports that service has not yet been restored when Company records indicate it has been. This information may enable field personnel to be notified with greater timeliness that service has not been fully restored in a particular area. There is benefit to having current customer information and the status of service accessible to personnel that have direct contact with customers when possible.

8. Recommendation: Enable Call Center Associates to have access to the call-back system data to determine which customers have been identified as having had their service restored.

Web Site

The Company's Electronic Outage Center (EOC) web site (www.Aquila.com) was updated a minimum of three times daily during the storm. The Company's web site includes an outage map which graphically displays the areas impacted and the number of customers affected by outages. Customers are able to report outages via Aquila's web site as well as receive a variety of information, including the Company's general restoration process, safety tips, how to conserve energy, how the Company prepares for storms and other information. The overview of the restoration process explains the prioritization of making repairs to major substations, transmission and distribution lines in order to restore service to as many customers in as timely of manner as possible.

An opportunity for improvement in the Company's web site exists in the area of more accurate correspondence between area populations and outages. In some cases, outage numbers of a particular township showed to be greater than the actual number of residents. The Company indicates this was because the population in the system only included customers residing inside of city limits. In some cases, electric feeders also overlap the towns that are being served. The outage numbers were correct but this feature of the web site was disabled during the outage to prevent confusion. Customers who have access to the Internet during outages may find the Company's outage information useful and the Company should take action to keep its outage maps accurate and operational.

9. Recommendation: Review and evaluate the Company's web site for improvements including improved correspondence of city and town populations to outage data to allow that portion of the web site to be operational and available to customers during system outages.

Customer Comments and Complaints

The Commission's Electronic Filing and Information System (EFIS) received 26 public comments from Aquila's Missouri customers. Through discussions with Staff, Aquila accessed the public comments that the Commission received regarding the December outage restoration. In Appendix E of Aquila's Report, Aquila lists each of the public comments that the Commission received and provided a response for each comment.

A number of public comments addressed tree trimming concerns, utility storm response and concerns with executive management. A variety of comments were also positive regarding Aquila's storm performance. A summary listing of the breakdown of the public comments is presented on the following page.

Number and Percent of Ice Storm Comments Per Category		
Case Number: EO-2008-0220		
Comment Type	Number of Comments	Percent Per Comment Category
Positive Feedback	9	14.0%
Storm Outage Concern	8	12.5%
Infrastructure Maintenance	4	6.2%
Repeat Outages	1	1.6%
Storm Response	7	10.9%
Tree Trimming	16	25.0%
Tree Cleanup	0	0.0%
Repair Quality	1	1.6%
Credits	1	1.6%
Bill Amount	0	0.0%
Safety	1	1.6%
Bury Lines	0	0.0%
Call Center	3	4.7%
Medical Registry	2	3.1%
Estimated Response Time	2	3.1%
Web	0	0.0%
Concern with Merger	1	1.6%
Customer Communication	2	3.1%
Executive Management	6	9.4%
Total	64	100.0%

Source: Mo PSC Staff Analysis

As is demonstrated above, the majority of the outage comments addressed Company tree trimming operations.

Aquila was not aware at the time of the December 2007 ice storm that it could access customer public comments filed in EFIS. As is presented in the charts above, public comments provide a significant amount of information regarding utility performance, potential areas of improvement and company practices and procedures that have worked successfully during system outages. Public comments received during events such as outages also provide opportunities for the Company to gain insight into customer experiences, comments and opinions unrelated to outages that may be useful to the Company. There is no cost to the utility to review valuable customer insight and Aquila should routinely avail itself of such opportunity and provide necessary follow-up with its customers when appropriate.

10. Recommendation: Review the public comments filed by its customers in the MoPSC's Electronic Filing and Information System (EFIS) continuously to determine areas of customer concern, service quality improvements and areas of success.

Medical and Special Needs Customers

Aquila's "Life Support" customers (those with significant medical needs) who have previously registered with the Company are identified in Aquila's Customer Information System (CIS). Once these customers report their outage through the High Volume Call Answer system (HVCA), they are routed to a live agent and their outage tickets are systematically flagged in the ServiceOn system. Currently, Aquila has 543 Missouri customers on its medical needs or Life Support registry.

Aquila made outbound calls twice daily during the outage period to its Life Support customers to provide pertinent information regarding their specific outage and to encourage customers to plan accordingly. Aquila also passes outage information for these customers onto secondary contact sources noted in the CIS.

New nursing homes including smaller residential facilities may open or close at any given time and utilities need to keep abreast of such customers and their particular vulnerability during service outages.

11. Recommendation: Determine proactive methods to maintain current information on nursing homes and residential care facilities that may be opening and closing in its service territories.

Communication with Customers and City, County and State Officials

As part of its emergency response, Aquila formed a communications team to communicate with customers and public officials as well as news media regarding outages and restoration activities. Methods of communications regarding the storm included news releases, EOC web site, city and emergency services briefings, television interviews, radio call-in and talk shows and public official contacts.

Aquila maintains a list of emergency contacts, including the Missouri Commission Staff, city and county officials, legislators and emergency management officials. Contact was made with the Staff at least twice each day through the outage. A conference call was held on December 11, 2007 with service area cities in response to an invitation by fax from Aquila. The Company indicates that direct contact was made by local supervisors and workers with cities when it was difficult to communicate by fax or e-mail.

Aquila always notifies Energy Department Staff when a large outage occurs and then provides information to Staff at least twice a day regarding the outage situation. Staff has always been able to contact someone at the Company when information is needed regardless of the time of day. Aquila consistently provides requested information to the Staff whether it is the number of customers without service in Missouri, or a response to SEMA regarding when a city's pumping station will have power restored.

In preparation of this report, the Staff made contact with a number of city and county officials to determine from their perspectives the Company's response and communication during the December 2007 ice storm. While there were positive assessments of Aquila's response, some opportunities for improvement were identified, particularly from some governmental officials in the northern part of Aquila's service territory. This portion of the Company's service territory received the most extensive damage during the ice storm. In its February 7, 2008 meeting with the Staff of the Missouri Public Service Commission, Aquila identified in its presentation that it recognized opportunities for improved communications with public officials and emergency management personnel existed.

Opportunities for improved communications occurred at one particular city where the city believed it had a commitment by Aquila to assist in starting and operating a generator for a sewage lift station. The city indicated that Aquila had committed to arrive at the city to provide assistance with the generator during the storm, but subsequently communicated that service would be restored shortly and the generator would not be necessary. Service ultimately was not restored for 36 hours and the city had to determine how to dispose of 2.5 million gallons of sewage without electricity.

From the city's perspective, it had made appropriate plans to utilize a generator for its sewage lift station with the understanding that it would have assistance from its utility company to assist it in getting it started. The assistance did not occur and power was not restored when indicated.

12. Recommendation: Review its procedures for commitments and communication to assist local governments, including commitments to start generators for critical services such as sewage treatment. Coordinate responses and commitments effectively at the Company so that commitments are fulfilled. If commitments cannot be fulfilled, provide restoration status reports to governmental bodies on a timely basis.

Opportunities for improvement occurred at one city during the outage where the Staff was informed that city officials had only one phone number for Aquila personnel at a northern Missouri local office. City personnel indicated that a secondary phone number that did not require electricity, such as a cell phone, would have been very beneficial.

After the January 2002 ice storm that impacted Aquila's Missouri service territory, the Staff recommended that the Company contact city officials and agencies impacted by extended electric outages twice a year to update telephone and personnel changes. The Company indicates that this contact has not occurred.

13. Recommendation: Provide city and county officials with current secondary phone numbers and key storm-related personnel changes as a means to access appropriate utility personnel during system outages or during other critical events. Review such phone numbers and personnel changes periodically, such as every six months, with governmental officials to make sure they are current, especially after periods of personnel changes.

One city government indicated that an opportunity for improvement existed in having an Aquila personnel present at its Emergency Operations Center. While the city indicated they were aware of the need for all trained personnel to be in the field restoring service, there are other personnel who might have been able to serve as an 'on-site' utility presence during the most serious portion of the outage. Such personnel would have enabled the Emergency Operations Center to have received more current and accurate information regarding the outage and also been able to relay any pertinent city information back to the Company.

14. Recommendation: <u>Evaluate future opportunities to use on-site Aquila personnel at Emergency Operations Centers in communities where outages are most severe. Review such opportunities with county and city governmental personnel.</u>

The Manager of the Consumer Services Department of the Missouri Public Service Commission has an important need to know the status of utility outages as such personnel may receive hundreds of calls and communications reporting outages and requesting service restoration information. Such personnel should be included on utility e-mail updates and conference call communication when practical.

15. Recommendation: <u>Include the MoPSC Manager of Consumer Services regularly on service outage update communication and restoration progress.</u>

On February 29, 2008, Aquila provided the Staff a copy of its own internal report regarding the storm entitled "Aquila Report On December 2007 Ice Storm Restoration". Aquila's Report is attached to this Staff Report as Attachment D and includes a variety of information regarding the December 2007 ice storm, the Company's response and also lists a number of areas of operational improvement that it identified after the storm. The Staff encourages Aquila to review those internal recommendations to ensure they are appropriately addressed to better prepare the utility for future outages and to report on the status of each of those areas to the Staff by December 1, 2008.

16. Recommendation: <u>Review its February 29, 2008 report and address the areas of improvement identified in a timely manner but no later than the next winter period.</u>

<u>Vegetation Management</u>

Aquila's Report includes a discussion on vegetation management on pages 40-43 and a copy of the Company's Vegetation Management Standard, as Appendix F. This standard shows a date of 08/01/06. This revision date is consistent with the Sigma Six Project review that is discussed on page 41 of Aquila's report. Aquila discusses the budgetary changes that have already taken place this year and will take place in the near future due to the Commission's Electrical Corporation Vegetation Management

Standards and Reporting Requirements, 4 CSR 240-23.030, which will become effective on June 30, 2008. Based on Staff's review of the Company's vegetation management and the Commission's rule, Staff maintains that revisions to Aquila's standard will need to be made to meet the requirements of the following sections of the Commission's Rule:

4 CSR 240-23.030(2) General Provisions
4 CSR 240-23.030(3) Maintenance Cycle
4 CSR 240-23.030(4) Technical Standards for Vegetation Management
4 CSR 240-23.030(5) Transmission Line Vegetation Management
4 CSR 240-23.030(6) Training, Record Keeping and Reporting
4 CSR 240-23.030(7) Public Notice of Planned Vegetation Management
4 CSR 240-23.030(8) Outreach Programs
4 CSR 240-23.030(9) Specific Requirements

17. Recommendation: Revise the Vegetation Management Standard to incorporate the Commission's Electrical Corporation Vegetation Management Standards and Reporting Requirements, 4 CSR 240-23.030, which will become effective on June 30, 2008.

Infrastructure Maintenance

Although infrastructure maintenance is not specifically addressed in Aquila's Report, there are several references to patrolling lines. The Commission's Electrical Corporation Infrastructure Standards, 4 CSR 240-23.020, which will become effective on June 30, 2008, are also expected to result in revisions to Aquila's Operating Standards. Although portions of the Commission's Infrastructure Inspection Rule could be incorporated into existing Standards, Staff expects that Aquila will likely develop a new standard to incorporate the Commission's Infrastructure Inspection Rule.

18. Recommendation: Revise the Company's Operation Standards to incorporate the Commission's Electrical Corporation Infrastructure Standards, 4 CSR 240-23.020, which will become effective on June 30, 2008.

Summary of Recommendations

1. Recommendation: Revise the Emergency Service Restoration Plan (ESRP) to incorporate the "Lessons Learned".

2. Recommendation: Review and evaluate all other December 2007 Storm Investigation Staff reports, including all findings and recommendations. Consider for implementation all practices, procedures and recommendations determined to be applicable and beneficial to future utility operations.

3. Recommendation: Participate in a Commission sponsored storm restoration workshop to discuss this report and concurrent reports for other utilities. Incorporate an agenda item for the workshop to include consistent methodology for future utility storm reporting.

4. Recommendation: Review the maximum call allowed value (MCA) on all toll-free numbers at the on-set of future outages and periodically throughout outages to minimize the occurrence of blocked calls. Adjust MCA values to appropriate levels to allow the maximum level of calls to the Call Center that can effectively be handled.

5. Recommendation: Incorporate MCA reviews and adjustment steps in the Company's Emergency Storm Restoration Plan as an actionable item to review during outages.

6. Recommendation: Review opportunities to improve the call-back system during system outages by utilizing customer secondary phone numbers. If determined operationally feasible and cost-effective to use secondary phone numbers in the call-back process, verify that the Company consistently obtains secondary customer phone numbers during its contacts with customers, such as through the Call Center at the time of service application or other contact opportunities.

7. Recommendation: Review Call Center outage scripts to determine if opportunities for improvement may exist in providing customers specific instructions after service has been restored, such as turning their porch light on, or other beneficial information they may receive in a return call from the utility.

8. Recommendation: Enable Call Center Associates to have access to the call-back system data to determine which customers have been identified as having had their service restored.

9. Recommendation: Review and evaluate the Company's web site for improvements including improved correspondence of city and town populations to outage data to allow that portion of the web site to be operational and available to customers during system outages.

10. Recommendation: Review the public comments filed by its customers in the MoPSC's Electronic Filing and Information System (EFIS) continuously to determine areas of customer concern, service quality improvements and areas of success.

11. Recommendation: Determine proactive methods to maintain current information on nursing homes and residential care facilities that may be opening and closing in its service territories.

12. Recommendation: Review its procedures for commitments and communication to assist local governments, including commitments to start generators for critical services such as sewage treatment. Coordinate responses and commitments effectively at the Company so that commitments are fulfilled. If commitments cannot be fulfilled, provide restoration status reports to governmental bodies on a timely basis.

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15. Recommendation: Include the MoPSC Manager of Consumer Services regularly on service outage update communication and restoration progress.

16. Recommendation: Review its February 29th, 2008 report and address the areas of improvement identified in a timely manner but no later than the next winter period.

17. Recommendation: Revise the Vegetation Management Standard to incorporate the Commission's Electrical Corporation Vegetation Management Standards and Reporting Requirements, 4 CSR 240-23.030, which will become effective on June 30, 2008.

18. Recommendation: Revise the Company's Operation Standards to incorporate the Commission's Electrical Corporation Infrastructure Standards, 4 CSR 240-23.020, which will become effective on June 30, 2008.