

3. Findings and Analysis

This section contains the primary findings, analysis, and detailed descriptions of the systems and processes that support outage communications at Ameren-IL. Liberty organized this section to address the following:

- a. Outage Management Systems
- b. Estimated Restoration Time
- c. Interruption Reporting
- d. Outage Information Data Integrity
- e. Communicating Outage Information
- f. Best Practices

a. Outage Management Systems

Ameren installed its Outage Analysis System (OAS) in 1993. Originally purchased from Price Waterhouse, in-house Ameren resources have modified and supported the system since its implementation. Ameren-UE (Union Electric) was the first operating company to use OAS, followed by Ameren-CIPS in 1996, Ameren-CILCO in October 2003, and finally Ameren-IP in October 2005.⁹¹ Although CILCO and Illinois Power each had their own different (vendor-supplied) outage systems, they were converted to Ameren's OAS system.

The Outage Analysis System (OAS) is the primary system used by the Ameren-IL companies to manage all gas and electric service requests and service orders, including: service connects, service disconnects, special reads, meter change-outs, meter installs, meter removals, tampering investigations, as well as service trouble orders—lights out, gas leaks, and wire downs.⁹² Specific to storms and outages, the OAS analyzes, tracks, and records all information related to system outages and service problems.⁹³

The following can initiate service trouble orders in the Outage Analysis System:

- Customers calling the company's call center representatives
- Customers self-reporting trouble through the Interactive Voice Response system
- Customers self-reporting trouble through the high-volume overflow Interactive Voice Response system
- Automatic meter reading device notification (minimal in Illinois in 2006)
- Supervisory Control and Data Acquisition (SCADA) can automatically trigger feeder outages in OAS. (Illinois has limited SCADA at the feeder level). Sub-transmission outages must be entered into the system manually.
- Dispatchers can manually create outage orders
- Work-management system maintenance requests can be initiated from OAS.

⁹¹ Interview #9, October 4, 2007.

⁹² Response to Data Request #257.

⁹³ Response to Data Request #92.

The Outage Analysis System analyzer module interprets each outage call and creates outage orders, which are associated or “tagged” to a likely electrical device, such as a transformer. Ameren’s distribution electrical connectivity model groups devices using relational database tables that create the link for customers to transformers, transformers to fuses or other protective devices, devices to circuits, and so forth.

The system records all repeat calls to preserve the call history, however it just notes and groups with the existing order subsequent calls to the same order. Dispatchers have the capability to manually group or split orders, although these are difficult and time-consuming tasks due to system design.. As new trouble reports arrive, the system continues conditional grouping automatically until stopped.⁹⁴

Because the Outage Analysis System manages outage and non-outage service work, service requests mix in with trouble/service orders. To help expedite restoration, Ameren prioritizes orders in OAS as outlined in the table below.⁹⁵ This allows users to filter out or limit the type of orders to those essential to the storm restoration process.

OAS Order Priorities	
1. Emergencies	29. Pole Leaning
2. Equipment Fire, Pole Down	30. No-Pay Reconnects
3. Gas Requests	30-45. Meter Job
4. One Call (Locates)	32. Successor Reconnects
5-8. Electric Outages (LO, WD)	41. Bracket Loose
9. Partial Outages	43. Tree on Service
10. Service Work	51. Dusk/dawn Reconnect
24. Pole Burning	52. Dusk/dawn Trouble
25. Service Down	53. Streetlight Trouble
26. Equipment Problem	55. Dusk/dawn Disconnect
28. Wire Problem	56. Remove Service

Outage Analysis System (OAS) information is readily available to Call Center Representatives, the Interactive Voice Response systems, Ameren’s website, dispatchers, and any Ameren field or office employee that has access and has been trained to use the system. Troublemens and servicemen can access OAS by wireless mobile data terminals (MDTs). Generally, all single servicemen vehicles are equipped with MDT equipment for use with OAS.

To make outage information more accessible, Ameren created an intranet application, available to all employees, that summarizes Outage Analysis System (OAS) activity. The screen displays a snapshot of current outage orders, by state, division, and dispatch office. The screen provides a summary of the number of outage orders by outage type and status. It shows orders grouped into OAS “buckets” based on assignment—Dispatch, Field Checker, Forestry, and Construction. Users accessing this screen can “drill-down” into summaries by state, division, dispatch office, and specific areas of work.⁹⁶

⁹⁴ Interview #9, October 4, 2007.

⁹⁵ Response to Data Request #259-A.

⁹⁶ Response to Data Response #334.

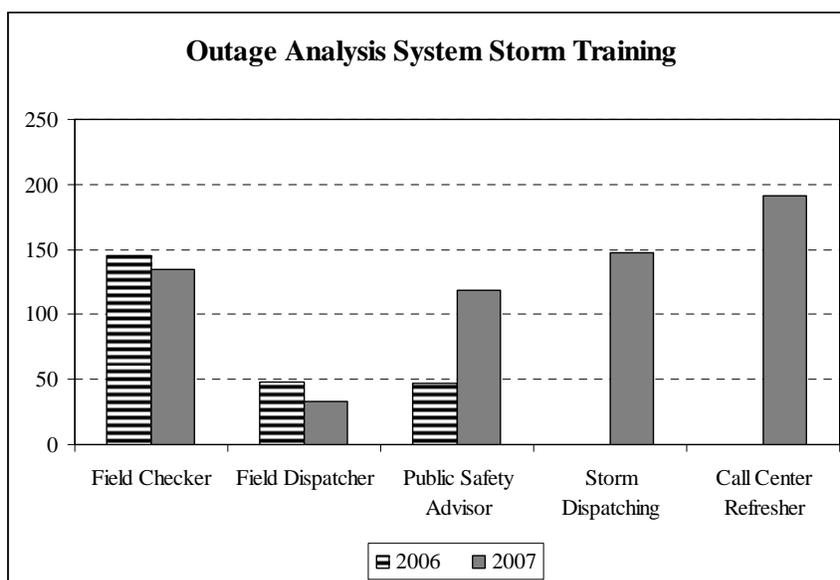
However, the Outage Analysis System is a “green-screen” system. That is, it is a command-based system (text and codes) not updated to take advantage of the point-and-click features of desktop computing. Users must know the correct code name of the screen to accomplish a transaction. As a result, personnel need a significant amount of training to become familiar with the system.⁹⁷

During March and April 2006, Ameren’s Employee Development and Systems Training group provided several OAS training classes for field and contact center employees. Approximately 240 Ameren-IL employees received training as field checkers, field dispatchers, or public safety advisors.

After the storms, Ameren modified the training curriculum to take advantage of “lessons learned.” It rolled out new classes in Illinois in the spring and early summer of 2007, including classes for Public Safety Advisors, Field Checkers, Storm Dispatching, and Outage Analysis System refresher for Contact Centers. The level of Outage Analysis System training delivered to Ameren-IL employees after the 2006 storms nearly tripled—625 employees received training in 2007.

In addition, starting in 2007, Ameren instituted yearly storm training as a refresher for employees. At the end of 2007, Ameren-IL also began offering “OAS for Electric Dispatchers” training to gas dispatchers. This will enable gas dispatchers to provide support for electric dispatchers during storms and other emergencies.

The following chart details the number of Ameren-IL employees trained in the Outage Analysis System during 2006 and 2007.⁹⁸



The increase in Outage Analysis System (OAS) training during 2007 was a direct result of recommendations from the both July and November 2006 storm critiques. A critique of the July

⁹⁷ Response to Data Request #611.

⁹⁸ Response to Data Request #94.

2006 storm suggested additional OAS training for field personnel, especially Ameren-IP personnel.⁹⁹ An action item resulting from the November 2006 storm critique directed Ameren to develop and execute additional OAS and restoration process training for all Illinois divisions who require it by May 1, 2007.¹⁰⁰

Because Ameren deployed the Outage Analysis System (OAS) at Ameren-IP in October 2005,¹⁰¹ many Ameren-IP employees had limited exposure to OAS prior to the storm and had never used OAS during a large storm.¹⁰² The January 2007 Critique of Ameren Illinois Service Restoration Activities summarized the challenges faced:¹⁰³

With some of the IP territories still mastering the functionalities of OAS, there were some issues with the timely updating of this information. Some of the areas will need retraining in the operation of OAS as well as in the restoration process (moving of work, updating of orders, breaking down the data into smaller more manageable subsets, etc.).

The post-storm critiques and a subsequent technology evaluation identified 75 potential improvements to the Outage Analysis System, Ameren.com, Visual Dispatch, and the Interactive Voice Response. Ameren directed more than half (45 of 75 items) of the improvement opportunities at the Outage Analysis System.¹⁰⁴

Outage Analysis System issues encountered during the 2006 storms included:¹⁰⁵

- Improper grouping and rolling-up of orders. OAS groups orders automatically based on pre-defined rules and schema hierarchy. However, the auto-grouping function did not have the desired outcome on all orders, creating more work for people to examine groupings, separate orders, or partially restore orders. In addition, individual outage information was more difficult to locate when OAS grouped orders to a higher device, making it more difficult to restore orders that the system grouped improperly. In addition, the OAS created duplicate single outage orders when it had first grouped orders to a higher device and then call-takers logged another order linked to that same device (e.g., transformer). As a result, people had to review more single outage orders and resolve the duplicates.
- All customer calls are logged into the OAS system. Customers often call multiple times and different customers often report the same problem resulting in duplicate wire-down and service-down orders logged by call-takers. This inflated the OAS order volume. Because the storms stretched out over days, many customers called multiple times trying to find out when Ameren would restore their service. There was no validation in the order entry system to prevent a call-taker from creating multiple OAS orders for the same issue. “There were a high number of duplicate orders during this storm. One account had a wire down, service down, lights out, and a wires burning for the same address. This

⁹⁹ Response to Data Requests #85-B.

¹⁰⁰ Response to Data Request #8-D.

¹⁰¹ Responses to Data Requests #89-#91.

¹⁰² Response to Data Request #85-B.

¹⁰³ Response to Data Request #8-D.

¹⁰⁴ Response to Data Request #8-C.

¹⁰⁵ Response to Data Request #261.

creates numerous pages of outages that need to be reviewed and scrolled through by the Construction Supervisor.”¹⁰⁶

- Lights-out trouble orders logged to gas-only accounts. There was no validation in the order entry application to prevent call-takers from creating OAS electric trouble orders for customers with gas-only accounts calling. This happened in areas of Ameren-IL’s service territory where it provided gas service but another company or municipality provided electric service. In these cases, customers were calling and creating orders through the IVR for “lights out” when they did not have electric service with Ameren, but happened to have their gas service with Ameren.
- Certain types of lights out, service down orders did not show up as an outage in history or as Power Out in My Electric Outage. (Service Order-Wire Down orders are not considered outages in the OAS system.) The programming for My Electric Outage failed to include lights-out, service down orders in a customer’s outage history; it did not even indicate that the power was out. As a result, some customers visiting the website did not get verification of their reported outage or that the company knew their lights were out. This stimulated more calls to the call centers and frustrated customers.
- During a major storm, customers may be involved in multiple outage orders. The outage restoration call-back procedure did not eliminate duplicate orders, duplicate call-backs. Ameren’s automatic call back procedure allowed duplicate call-backs. Because of this, customers could receive more than one call-back, depending upon how many different trouble orders were with their account.

The lack of training and exposure to OAS is an issue that Liberty discusses more in the next section of the report, Estimated Restoration Time.

In addition to the lack of preparedness of employees, Ameren also failed to identify “critical customers” in the Outage Analysis System prior to the July or November storms. As a result, each division had to identify and prioritize critical customers on their own as the storm progressed. Ameren has since created a list of critical customers in the Outage Analysis System by circuit based on SIC (Standard Industry Classification) codes.

Otherwise, the performance and reliability of the Outage Analysis System during the 2006 storms was generally good. OAS was operational during both storms, except during brief periods of preemptive maintenance. In addition, Ameren’s Information Technology shut down mainframe testing and development resources during both storms to maximize the Central Processing Unit resources available to the Outage Analysis System during the storm. This was a proactive measure taken to maximize the Outage Analysis System throughput, not in response to any system problems.¹⁰⁷

Ameren also halted processing of non-storm outage management system orders (queued them for later processing) to allow a better flow for storm-related orders during the July 2006 storm.¹⁰⁸

¹⁰⁶ Response to Data Request #8-F.

¹⁰⁷ Response to Data Request 264.

¹⁰⁸ Interview #9, October 4, 2007.

Ameren made the following enhancements to the Outage Analysis System since the 2006 storms:¹⁰⁹

- E-mail alerts when the Outage Analysis System automatically turns off Estimated Restoration Times. These alerts notify division management, call center support, Emergency Operations Center management, and other individuals with storm responsibilities. These notifications alert management that sufficient trouble order volume has been received and turns off the reporting of Estimated Restoration Times (ERT) to customers. The OAS system continues to calculate automatic estimates.
- GIS Map viewing software integrated with the Outage Analysis System in 2007. Visual Dispatch displays outage events on geographic maps facilitating quicker location and analysis of the events. Visual Dispatch is also available via Mobile Data Terminals in the field.¹¹⁰ These functions are generally not used by Dispatchers or Troublemens in real-time storm management due to a inadequate functionality.
- The Outage Analysis System (OAS) enhanced to offer e-mail and paging alerts of order volume when the number of outages exceeds a set threshold. This is another notification for division, Emergency Operations Center (EOC), and call center management indicating that OAS has received a significant number of outage orders. These alerts help communicate the need to ramp up the workforce and possibly open the EOC.
- The Outage Analysis System Call Entry screens modified to limit entry of outage orders to electric accounts only. This change eliminated the possibility of electric trouble orders created for gas-only accounts. This change helps call-takers easily identify these situations so they can discuss the matter properly with the customer.
- Generic weather cause relayed during major storms when an order does not have the cause. In the 2006 storms, Ameren was unable to deliver the cause of the outage to callers because cause code assignment was only at order completion. As a result, when customers called to check on the status of their trouble order, no cause was available. The Outage Analysis System change allows Ameren management to assign a generic “weather-related” cause to all open orders, thereby informing callers of the cause through Interactive Voice Response and on the website.
- E-mail alerts issued when orders dispatched for long periods. This enhancement alerts field management to any orders that have been in “dispatch” status for an extended period. This change will help prioritize orders by age, especially during a large event when Outage Analysis System has logged thousands of orders.
- The partial restoration process enhanced to increase the number of transformers that personnel can select. Outage Analysis System has established limits and rules for the manual grouping of orders. These changes make it easier to group restored orders and separate them from those not yet restored on a device with many associated trouble orders. In practice, the partial restore process is difficult and cumbersome. As a result it is, for the most part, abandoned during major storms.
- The Outage Analysis System restoration verification outbound call process now identifies if a customer has called in to report the outage while the call-back process was attempting to contact them to confirm power restoration.

¹⁰⁹ Response to Data Request #93 and 102.

¹¹⁰ Response to Data Request #92.

Changes made after the 2006 storms to other systems and technologies that rely on the Outage Analysis System data include:¹¹¹

- Improved use of Caller ID to make it easier to self-report outages in the Interactive Voice Response.
- Revised scripting in the Interactive Voice Response to recognize first outage calls and repeat outage calls. The system now offers different options to callers.
- Interactive Voice Response no longer relays an Estimated Restoration Time that has expired.
- Standardized and streamlined company-wide PBX (Private Branch Exchange [private telephone switchboard]) announcements. This creates a more consistent and coordinated message to customers.
- Allow My Electric Outage website access by phone number (registration not required).

b. Estimated Restoration Time

Another role of outage systems is to provide estimates for the time of restoration. Estimated Restoration Times (ERTs) are a critical information component of the restoration process. Customers, government officials, and the public want to understand how long the outage will last. This information is basic to determining if alternate housing will be necessary and helps residents and businesses make the appropriate plans for dealing with an extended outage. It is to the company's benefit to derive ERTs in order to determine better the level of resources required to restore the electrical system.

The absence of Estimated Restoration Times (ERTs) can generate a significant response from customers and the public, in the form of phone calls, website visits, and contact with government officials to try to find out something, anything about the outage. The longer the company proceeds without ERTs, the more frantic and disgruntled customers will become trying to contact the company.

However, offering Estimated Restoration Times (ERTs) that are grossly inaccurate can cause more damage than offering no ERTs at all. Inaccurate ERTs foster distrust and the perception of incompetence.

For day-to-day operations, Ameren programmed the Outage Analysis System to calculate automatically the Estimated Restoration Time based on area, order type, and active order volume.¹¹² The Outage Analysis System uses historical outage records and predefined rules to assign automatically Estimated Restoration Times to orders. Personnel can also manually update the Outage Analysis System's Estimated Restoration Times to override an automatic Estimated Restoration Time on any individual outage order.

Prior to the July 2006 storm, Ameren enhanced the Outage Analysis System to allow turning on or off the auto-calculate Estimated Restoration Time for all orders after encountering Estimated

¹¹¹ Response to Data Request #102.

¹¹² Responses to Data Requests #89-#91.

Restoration Time accuracy issues during a significant outage in August 2005.¹¹³ Ameren has since established order volume thresholds by division to automatically turn off the auto-calculate during large outage events.

However, when the auto-calculate is off, personnel must manually update Estimated Restoration Times (ERT), or else the order will not have an ERT. This means that the Interactive Voice Response, My Electric Outage, and the Call Centers have no ERT information. As a result, customers and the public receive no information other than what Corporate Communications provides. During the July 2006 storm, only 35 percent of orders had an ERT assigned, and of those, the Outage Analysis System automatically assigned most. Only 6 percent of orders created during the July 2006 Storm had a manually updated ERT.¹¹⁴ Similarly, only 35 percent of orders created during the November/December 2006 Storm had assigned ERTs. Only 4 percent of orders had a manually assigned ERT.¹¹⁵

Compounding the lack of estimated restoration information, during the July 2006 storm Ameren's Interactive Voice Response had incorrect programming. The Interactive Voice Response did not deliver the date component of the Estimated Restoration Time. For instance, if an Estimated Restoration Time indicated restoration the following day at 11:00 a.m., the caller would only hear 11:00 a.m. This led to the inaccurate interpretation that Ameren-IL would restore service the day the customer placed the call, creating additional frustration for customers.¹¹⁶ Ameren corrected this flaw on July 22, 2006, however approximately 30 percent of the orders received prior to the correction (about 2,400 orders, affecting 316,000 Illinois customers) would have delivered incorrect Estimated Restoration Time information to customers.¹¹⁷

Additionally, during both storms, callers may have received expired Estimated Restoration Times, as the Interactive Voice Response was relaying all available estimated times, even if they had expired.

Ameren formed a team in January 2007 because of a Missouri Public Service Commission report and internal storm critiques to investigate the process for providing Estimated Restoration Times and to identify potential improvements.¹¹⁸ The goal was to have a process to develop a geographical Estimated Restoration Time based on an initial assessment of storm damage and use those data to provide meaningful information to customers.

Because of the work by this team, Ameren formalized the process for developing area-wide estimated restoration times.¹¹⁹ It is now the responsibility of the Operating Department as part of the activities of the Emergency Operation Center (EOC) to update manually Estimated Restoration Times. Damage assessment will generally take place within the first 24 hours of the

¹¹³ Responses to Data Requests #89-#91.

¹¹⁴ Response to Data Request #267.

¹¹⁵ Response to Data Request #604.

¹¹⁶ Response to Data Request #206.

¹¹⁷ Response to Data Request #267.

¹¹⁸ Response to Data Request #8-D and #574.

¹¹⁹ Response to Data Request #89 – 91-B.

storm. Appropriate field personnel will complete the “ERT Template” available on the “Storm Info” SharePoint site to indicate estimated times for restoration based on their assessment. They will designate these estimates at the operating center level.

Designated members of the Emergency Operations Center will populate a particular screen on the Outage Analysis System with the restoration-time template data. Corporate Communications and Contact Center management can then expect that the Emergency Operations Center will complete the first update after the first 24 hours. Ameren-IL will repeat this process each succeeding 24-hour period in order to provide Estimated Restoration Time updates by order type and operating center.¹²⁰ However, any new trouble orders arriving after these updates will not have an ERT assignment.

In addition, the team specified a process to produce job-specific Estimated Restoration Time updates. It created handouts to stress the importance of the updates to Ameren field employees who dispatch mutual assistance and contractor crews, and to the outside crews themselves. In addition, Ameren created a “learning moment” presentation for its field operations employees.¹²¹

Ameren’s revised area-wide Estimated Restoration Time process may still not be timely enough for customers. Analysis of an August 2007 storm revealed that the storm center updated area-wide estimated times manually at three points during the storm—a limited update at 7 a.m. (not the bulk of the customers affected), and two others at 2 p.m. and 4 p.m. However, it appears that the two afternoon updates were not timely enough to meet the peak customer-contact period for the storm, which was from 9 a.m. to noon. Since the storm occurred in the early hours on August 13, the majority of customers contacted the company when they awoke to no power. Since Ameren did not update the estimated times until later that afternoon, the bulk of customers did not receive any Estimated Restoration Times.¹²²

Aside from surveying other utilities about their Estimated Restoration Time process, Ameren has not conducted any studies or analysis on the accuracy or appropriateness of the default estimates provided by OAS.¹²³

c. Interruption Reporting

The Outage Analysis System is Ameren’s primary interruption reporting system. The collection process for interruption primarily starts with a customer call and ends with the close out of outage records by Ameren field personnel through mobile data terminals during non-storm periods. During storms, Ameren office support personnel primarily close interruption records.

The overall outage management and interruption reporting schema is well structured. Relational tables organize the data for efficiency. Unique outage order numbering is the cornerstone of its referential integrity. The system has robust capacity to handle large data volumes during storm periods. Data input quality is dependent on data entry at the outage start and end, however

¹²⁰ Response to Data Request #574.

¹²¹ Response to Data Request #574.

¹²² Response to Data Request #447-B.

¹²³ Response to Data Request #573.

several “edit-check” features exist within the database to preclude the omission of key data fields at closeout.

The Outage Analysis System includes a pseudo-connectivity and analysis model that relates customers to transformers, transformers to protective devices, and devices to circuits. The model is hierarchical and based on the assumption of a single failure. During storms the system cannot distinguish multiple or nested failures that can occur in widespread severe weather. These limitations are common with a system of this vintage. Additional limitations include the lag time by personnel (~1 day in most Ameren service areas) to update OAS outage status. Given the design of the system, updating the system to reflect temporary field switching changes in the connectivity model is virtually precluded. This results in inaccuracies on OAS orders as they do not always reflect the correct outage device or correct customer affected count in these instances.

The Outage Analysis System supports several interruption reporting and extraction formats. In general, when reviewing Outage Analysis System summary data, one must understand the basis of the summary totals for transparent interpretation, *e.g.*, the Order Type inclusion and the duration of the summing interval. For example, summaries of the 2006 storms provided externally by Ameren and used in this report contain customer totals based on hourly intervals compared to the entire storm interval. Other summaries refer to “unique customer interruptions,” *i.e.*, it counts a customer only once, despite several interruptions throughout the storm restoration.

d. Outage Information Data Integrity

During normal day-to-day operations, the Outage Analysis System automatically creates an Estimated Restoration Time (ERT) when it receives a trouble order. Dispatchers in each of Ameren-IL’s Distribution Dispatch Operation Centers then assign orders to a troubleman. The troubleman or dispatcher may or may not update the ERT, depending on the circumstances found in the field. After completion of the trouble order in the field, the troubleman uses a Mobile Data Terminal (MDT) to record the completed order information in the Outage Analysis System, or calls in the order completion information that the dispatcher then records.¹²⁴ An automated call-back occurs through the Interactive Voice Response to confirm service restoration.

A third-party vendor, Stericycle, places Ameren’s outbound restoration calls between the hours of 7 a.m. and 10 p.m. Central time.¹²⁵ Ameren programmed the system to call customers when the Outage Analysis System has recorded a closing of any outage with a device higher than a Single Outage or Transformer Outage.¹²⁶ Customers who indicate they are still without power generate a report back into the Outage Analysis System for dispatcher review and assignment.

This process changes significantly during large outage events, such as the July and November 2006 storms. During large storms, Field Superintendents assume the responsibility for dispatching trouble orders to field crews, who perform the bulk of the restoration. Field crews do not use the Outage Analysis System to accomplish their work. However, they rely on the Outage

¹²⁴ Interview #102, November 15, 2007.

¹²⁵ Response to Data Request #102.

¹²⁶ Response to Data Request #435.

Analysis System during large storms and outages. As a result, many are not as familiar with the Outage Analysis System as dispatchers and troublemen.

When Ameren disables auto-calculate estimated times during a large outage, the Outage Analysis System is dependent on the field forces to provide accurate and timely Estimated Restoration Times. However, because of the limited access to the Outage Analysis System by field crews, timely and properly closure of many of the orders does not occur. This was a problem during both 2006 storms. What actually happened was the order assignment and closure did not occur in real time, but rather at the end of the evening to close orders for that day. Often, orders closed past the 10 p.m. call-back cut-off time and did not receive a scheduled call-back. As a result, the automatic call-back process was less effective.

Issues related to the 2006 storms and Outage Analysis System updating and use in the field were:¹²⁷

- Not all field crews had access to mobile data terminals or air-card equipped laptops. Some of the Outage Analysis System updating occurred at the end of the day when crews checked out to get rest. Outage Analysis System updates came from paperwork turned in by field crews.
- Not all field supervisors had laptops with air cards resulting in delays in updating Outage Analysis System data.
- Not all “crew guides” had access to mobile data terminals or air card equipped laptops resulting in delays in Outage Analysis System updates. Crew guides are responsible for updating Outage Analysis System with crew assignments and order completion information.
- The Field Supervisors’ priority was restoring service, not completing, and updating Outage Analysis System orders.
- Field employees did not update OAS device outages with the identification of the actual device found in the field to be malfunctioning. For example, if the OAS system had predicted a feeder outage but ground-truth observation revealed that a downstream recloser caused the outage, that information was not reflected in the OAS system.
- There were delays in completing feeder outages until restoration of all the group outages to ensure that the feeder outage would not come back in the Outage Analysis System. This problem related to the rules that assign orders to devices and how grouped orders are rolled-up to devices. Closing out a feeder outage before closing all the associated grouped outages linked to this feeder could initiate a new feeder trouble order in OAS. As a workaround, dispatchers were leaving feeder orders open until they could close all linked orders. This resulted in longer restoration times in OAS for these individual feeders.
- During the November 2006 storm, weather conditions delayed damage assessment and the timely update of information in Outage Analysis System.

Ameren-IL’s own critique of the November 2006 storm summarized these Outage Analysis System issues and challenges:¹²⁸

¹²⁷ Response to Data Request #155.

¹²⁸ Response to Data Request #8-D.

...discussed the need to use OAS as our sole method of managing the work, and of doing so in a “real-time” fashion. We can’t revert back to a paper system when the workload gets heavy, and we can’t operate on OAS in a “batch mode”. If we do so, it slows down the restoration process in a number of ways.

The Division V Ice Storm Critique contained a similar finding:¹²⁹

OAS not being utilized to managed storm restoration efforts:

- OAS orders being closed at the end of the day versus real time as the crew makes repairs.*
- OAS being closed after 10:00PM when customer callbacks are not being made*
- Partial outages not being used to clean up OAS*
- Using the “C” and “D” Buckets for managing work*
- Leaving Feeder Outages (FO) on the “D” screen and only DDO can close them out.*

An action item resulting from this critique suggested additional OAS training for the division leadership team.

Other Outage Analysis System design considerations potentially compromise data integrity, especially during storms. For instance, the Outage Analysis System does not group emergency orders such as gas leaks or wire downs. During a large event, customers can call in repeatedly to report a wire down. In some cases, it is not possible to assign an order to a location or premise. Consequently, this can lead to multiple wire-down orders on the same device, and duplication of wire-down orders. These types of orders have to be resolved one-by-one. During both storms, Ameren-IL faced many of these orders.

The Outage Analysis System data integrity affects self-service inquiries through the Interactive Voice Response and Internet, press releases, regulatory updates, as well as call center communications with customers calling in. The delay can be substantial, enough so that the media has challenged the numbers.¹³⁰

July 2006 Storm Specific Outage Analysis System Issues

During the July 2006 storm, Ameren’s Information Technology automatically restored 590 Outage Analysis System orders on July 23, 2006. These “data repairs” closed out Outage Analysis System orders that the field assumed someone had repaired. The field was sweeping entire circuits with crews, repairing as they went. However, they did not close associated Outage Analysis System orders as they performed the work.¹³¹ Ameren-IL made the decision to mass-close orders and then hope customers would call back if they still had no power.¹³² While mass closing of orders might help Ameren-IL “catch up,” it challenged the integrity of the Outage Analysis System data. Someone should close out orders individually as field forces work them.

¹²⁹ Response to Data Request #8-F.

¹³⁰ Response to Data Request #447, Attachment-B.

¹³¹ Response to Data Request #579.

¹³² Interview #102, November 15, 2007.

According to Ameren, this was the only time that Outage Analysis System orders were “automatically restored.”¹³³

According to Ameren-IL, since the July 2006 storms occurred shortly after Ameren-IP transitioned to the Outage Analysis System, it felt the opportunity existed for inaccurate data, both from employees using a new system and because of the tremendous volume of outages. It took several steps to review and clean up the Outage Analysis System data including¹³⁴:

- Decatur Distribution Dispatch Office reviewed transmission and sub-transmission outages to make sure outage data reflected them correctly.
- Reliability Programs and Division personnel reviewed outages that affected entire circuits.
- Reliability Programs and Division personnel also reviewed several smaller outages to reduce the amount of potential overlap in the number of customer affected.

This clean-up process put the most focus on the largest outages that affected the most customers and worked down to lower impact outages. Ameren-IL conducted this effort in November 2006 and it was still underway when the November 30, 2006, storm hit. As a result, Ameren-IL never completed this clean-up effort. Due to the November 2006 storm occurring near the end of the year, Ameren-IL did not coordinate any high-level “clean up” effort for the storm. However, Distribution Dispatch Office and local area personnel performed additional review of outage data for both storms as part of ongoing efforts.¹³⁵

November 2006 Storm Specific Outage Analysis System Issues

On December 1, 2006, the Outage Analysis System did not process 45,867 “lights out” trouble orders from Stericycle because the Outage Analysis System considered them “stale.” Stericycle is Ameren’s high-volume outage reporting service provider. Initiated by Ameren’s mainframe job scheduler, the Stericycle process runs every six minutes to processing incoming outage tickets. However, for reasons unknown, the job scheduler put this job on hold on November 27, 2006. Consequently, the Stericycle process was not running during the first hours of the November/December Storm. Ameren’s Outage Analysis System support discovered the job in the hold status at 3:16 a.m. on December 1, 2006, and restarted the transaction; however, the 45,867 lights-out calls received by Stericycle went unprocessed because they were older than one hour.¹³⁶

Ameren recently found the root cause of the Stericycle transaction stoppage. The Stericycle process will not invoke if the job scheduler attempts to start the process exactly at midnight (system time 00:00:00). To rectify this problem going forward, Ameren instituted a daily manual process to check the status of the transaction. Additionally, Ameren-IL added these transactions to the Outage Analysis System Storm Checklist for monitoring during all future storms. Ameren scheduled a system code change for the second quarter 2008 to prohibit the job scheduling at midnight.¹³⁷

¹³³ Response to Data Request #580.

¹³⁴ Response to Data Request 581.

¹³⁵ Response to Data Request 581.

¹³⁶ Response to Data Request #225, Attachment-B.

¹³⁷ Response to Data Request #647.

This oversight resulted in 45,867 customer-reported lights-out discarded calls—these calls generated no Outage Analysis System trouble orders (includes both Missouri and Illinois customers). As this occurred early in the November/ December 2006 storm, Ameren lost a significant level of outage information at a point when gathering outage information is critical in establishing or confirming the storm’s “footprint” or scope. Because the outage system does not require all affected customers to call in order to predict outage impact, there is a possibility that the system may have predicted some of these outages even though the calls were discarded. However, any of the 45,867 customers calling back to check on the outage that they previously reported would have been told that Ameren had no record of their outage. If the loss of outage intelligence was not significant enough, Ameren certainly experienced a loss in credibility from these customers.

Even more disturbing, Stericycle was experiencing extremely high call volumes at this point in the storm and the volume exceeded Stericycle’s capacity to answer calls. Subsequently 61 percent of Ameren-IP callers received busy signals when attempting to log their outage on November 30, 2006.¹³⁸ Not only were many Illinois customers unable to reach Ameren to report the outage, Ameren discarded outage intelligence from 45,867 of 48,000 calls that were successfully logged by Stericycle at this point in the storm (40 percent of which were Ameren-IP outage tickets).¹³⁹

In total, these discarded lights-out orders represent 25 percent of the total lights-out orders received by Stericycle during the entire storm (for all customers).¹⁴⁰

Another issue appeared during the November/December 2006 storm that created confusion for dispatchers and field employees working with Outage Analysis System. When this problem was occurring, certain dispatched outage orders were incorrectly showing assignment to one specific crew (XE16) as well as the actual crews assigned to work the orders. The problem occurred most prevalently on December 6, 2006, affecting about 100 Ameren-IL trouble orders. Ameren implemented a temporary repair on December 6 and continued to monitor for reoccurrence. Ameren made a permanent modification to Outage Analysis System in May 2007 to correct this problem.¹⁴¹

The Outage Analysis System data collection process does not have formal Quality Assurance or Quality Control. While there was some information checking following the July 2006 storm, this effort was not comprehensive nor did Ameren conduct this level of review following the November/December 2006 storm. In addition, there was no formal data lockdown process to safeguard the data from deletion or modification. Ameren needs formal processes to protect data integrity and ensure repeatable results retrospectively.

¹³⁸ Response to Data Request #327, Attachment-J2.

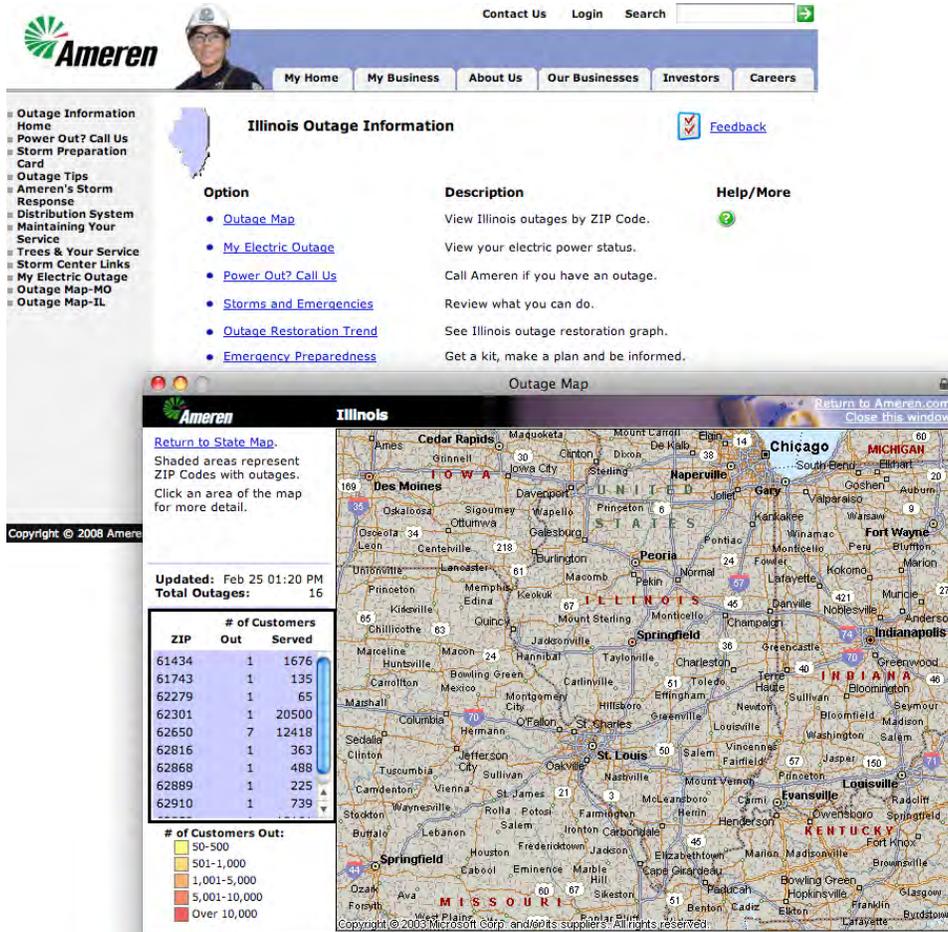
¹³⁹ Response to Data Request #327, Attachment-I.

¹⁴⁰ Response to Data Request #327, Attachment-I.

¹⁴¹ Response to Data Request #263.

e. Communicating Outage Information

Ameren has leveraged its public website to provide outage-related information to customers and website visitors through its Storm Center. Customers can review general information on Ameren’s storm response, emergency preparedness, and tree trimming procedures, access key weather and emergency assistance sites, and find out what number to call to report an outage. The figure below provides a sample from the website, including the outage mapping application.¹⁴²



¹⁴² Ameren.com

Ameren introduced outage maps to its website in May 2005.¹⁴³ In June 2005, Ameren formed the Customer Centered Business Initiative team to address customer satisfaction, with a goal of driving business initiatives to improve overall customer satisfaction. A spin-off of the team was an effort to improve customer outage communications led by an Outage Communications team. This team meets regularly to review customer feedback and website activity and discuss improvement efforts.¹⁴⁴

In the spring of 2007, Ameren enhanced Outage Mapping to provide more detail mapping by zip code and offering area-based pop-up alerts. It extracts Outage Analysis System information every 10 minutes to produce zip code-based outage maps available to any website visitor. Users can assign alerts or special messages to specific zip codes providing the capability for a more customized message.

In response to requests for restoration progress information, Ameren introduced Outage Trending to its website in early 2007.¹⁴⁵ With this feature, any visitor can view the last eight days of outage volume in each state, county or specific zip code location.

Ameren introduced My Electric Outage to its customers through the website on May 16, 2006.¹⁴⁶ Using My Electric Outage, customers can check on the status of their outage, review available restoration time information, and review outage cause. This information is available for up to 48 hours following the completion of the outage. Customers wishing to use My Electric Outage must establish a web account and password through Ameren. In 2007, Ameren modified this feature so that a customer can obtain outage information without an account, simply by entering a valid telephone number.

The chart below details the number of account accesses to My Electric Outage service during the 2006 and 2007 storms.¹⁴⁷ A significant number of customers in both Illinois and Missouri accessed the site during both 2006 storms, especially considering that a log-on and password was prerequisite to obtaining storm information.

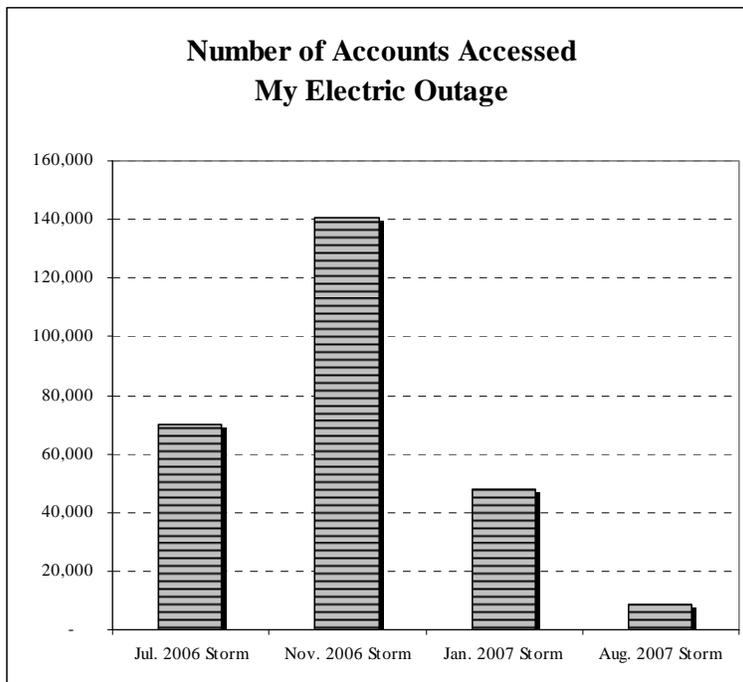
¹⁴³ Response to Data Request #447.

¹⁴⁴ Response to Data Request #447.

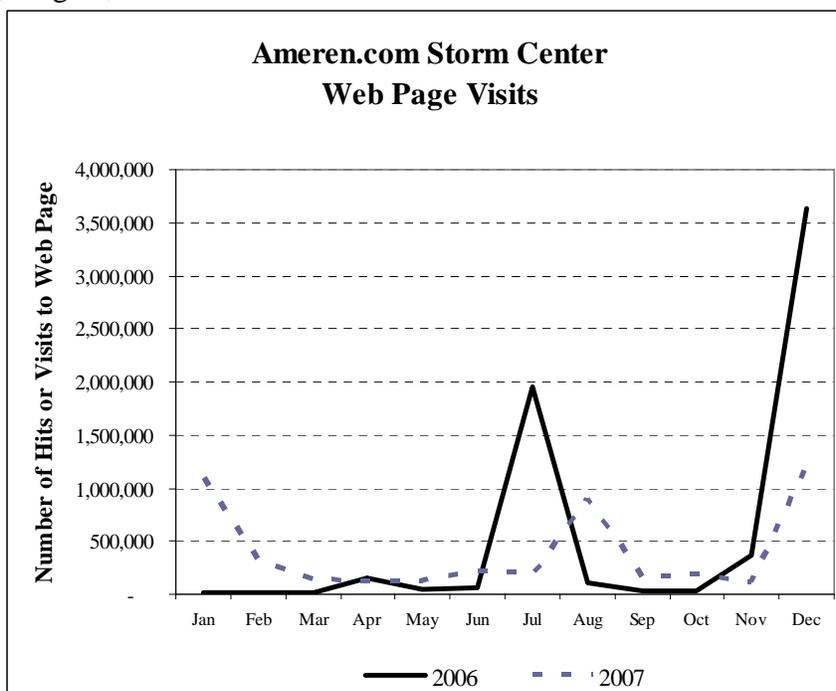
¹⁴⁵ Response to Data Request #447-A.

¹⁴⁶ Responses to Data Requests #89-#91.

¹⁴⁷ Response to Data Request #578.



The chart below details the number of Storm Center website visits during 2006 and 2007. The peaks in the chart indicate significant website activity during the July and November 2006 storms. Ameren’s Storm Center experienced nearly 2 million visits in the July 2006 storm and 3.6 million visits during the November 2006 storm. Visits to the Storm Center also peaked during January, August, and December 2007.¹⁴⁸



¹⁴⁸ Response to Data Request #577.

However, Ameren.com did not hold up to the high volumes accessing the site during the July 2006 storm. At 8:30 a.m. on July 20, the web and Outage Map server locked up, rendering Ameren.com inaccessible (visitors received a server error message). Ameren found an interim solution later that afternoon at approximately 3 p.m. to make the site once again accessible. The true effect on web visitors is indeterminable; however, extrapolation of daily hit statistics suggests that the problem prevented as many as 100,000 hits.¹⁴⁹

Ameren designed the Ameren.com website without redundancy or load balancing. When the increased web traffic exceeded the server's capacity, the server failed, bringing the corporate website down. In the spring of 2007, Ameren moved Ameren.com to a high-availability, fault-tolerant environment providing automatic failover and load balancing. Ameren has had no issues since it moved to this new configuration.¹⁵⁰

f. Best Practices

This section addresses elements of the Ameren's Outage Communications that Liberty recognized as a utility "best practice" or practices that proved to be especially effective.

Based on its review, Liberty identified as an industry best practice:

- Ameren has integrated mobile computing with the Outage Analysis System to allow mobile update and interaction.
- Ameren has integrated mapping software with the Outage Analysis System to provide a more intuitive and visual analytical outage restoration tool although the tool has significant limitations in production mode.
- Ameren's ability to provide customer-specific estimated restoration times and storm status, through the call center, Interactive Voice Response, and web site during normal operations (not during a large storm).
- Ameren's deployment of the Ameren.com Storm Center, an interactive Internet website that provides general outage information, outage mapping, outage trending, and customer-specific outage restoration status.

Liberty also notes that Ameren has opportunities to adopt the following important best practices:

- Ability to offer early Estimated Restoration Times immediately to customers based on storm modeling and historical storm restoration performance. (Recommendations IV-21 and IV-22)
- Ability to provide area specific and customer-specific estimated restoration times and restoration status information through the call center, Interactive Voice Response, and web site during large storms or outages. (Recommendation IV-21 and IV-22)
- Proactively contacting critical care customers to warn of an upcoming storm or after a major storm to inform customers of the location of nearby shelters, telephone numbers where they can obtain help, the importance of making appropriate outage plans, the

¹⁴⁹ Response to Data Request #262.

¹⁵⁰ Response to Data Request #209.

progress of service restoration efforts, and other information relevant to the customer's situation. (Recommendation IV-20)

- Deployment of an interactive self-service outage reporting capability on the company web site. (Recommendation IV-19)
- A more intuitive user interface to streamline and simplify updating of Outage Analysis System data, especially in the field and during large outage events. (Recommendation IV-18)
- Deployment of additional mobile computing technology to restoration crews and other employees in storm roles during large outage events or enhancement of the data collection process through other means. (Recommendation IV-17)

The use of the above outage communications "best practices" combined with Ameren's implementation of Liberty's recommendations will further improve the company's outage communications and ultimately, improve customer satisfaction.

4. Conclusions

1. Ameren does not have a formal Quality Assurance or Quality Control process to ensure Outage Analysis System data integrity. (Recommendation IV-14)

The Outage Analysis System data collection process does not have formal Quality Assurance or Quality Control. While Ameren conducted some information checking following the July 2006 storm, this effort was not comprehensive nor did it conduct this level of review following the November 2006 storm. In addition, there is no formal data lockdown process to safeguard the data from deletion or modification. Ameren needs formal processes to protect data integrity and ensure repeatable results retrospectively. Additionally, Ameren must hold field employees accountable for Outage Analysis System data during large outage events.

2. Many Ameren-IL employees were not appropriately trained or equipped to use the Outage Analysis System as it was intended during the 2006 storms, possibly slowing restoration and compromising data integrity. (Recommendation IV-15)

While the Outage Analysis System was operational during both storms, Ameren-IL did not use it as intended. To a large degree, this was due to a lack of experience with the system, primarily in the Ameren-IP territories. This was understandable, considering that Ameren-IP employees had been operating on an entirely different outage management system up until October 2005. While employees had received initial training, none had experience with the Outage Analysis System in a storm situation. Many of the field employees were just not familiar with the system. The addition of foreign crews made it more challenging to update the Outage Analysis System with status and completion information.

The system provides the capabilities to support the storm restoration process if personnel collect and enter the data appropriately.

3. Ameren continues to enhance and improve the Outage Analysis System in response to storm critiques and user requests. (Recommendation IV-16)

Ameren has initiated a number of Outage Analysis System improvement projects since the 2006 storms to improve Outage Analysis System performance, order grouping, and analysis. Ameren should continue with these efforts to reduce the potential for duplicate orders, incorrect data, and inaccuracies in the number of affected customers. This should be a continual process until Ameren eventually replaces the Outage Analysis System.

Ameren should investigate the potential for adding a more user-friendly front-end to the Outage Analysis System to make it easier for field forces to interact and provide critical storm restoration data. This front-end should also simplify the partial restoration process and make it easier and more intuitive for infrequent users to correct the outaged device on an order.

4. Ameren's Storm Center website is rich in outage information and provides an interactive self-service tool for customer-specific outage information. (Recommendation IV-17)

Ameren's Storm Center website has evolved into an interactive, self-service tool rich in outage information for customers and other interested stakeholders. The site experienced significant usage during both 2006 storms. While the site failed for several hours during the July 2006 storm, Ameren has since corrected the design of the website, building in redundancy and load balancing. Since Ameren implemented these changes, the site has operated without any significant problems.

5. Ameren did not identify critical customers in Outage Analysis System prior to the July and December 2006 storms. (Recommendation IV-18)

Ameren failed to identify "critical customers" in the Outage Analysis System prior to the July or November storms. As a result, each division had to identify and prioritize critical customers on their own as the storm progressed.

Ameren has since created a new application that provides a list of critical customers in Outage Analysis System by circuit, based on SIC (Standard Industry Classification) codes. Ameren has identified Health Care / Life Quality facilities, First Responder Agencies, Critical Social Infrastructure, and Emergency Shelter Sites. A Critical Customer List is available by Division, SIC, and Priority that specifies the customer name, SIC, City, Address, Feeder, and Transformer. Another list details any out-of-service Critical Customers, specifying address, Outage Analysis System order #, ERT, and other trouble ticket information. Division personnel are responsible for keeping the Critical Care information up-to-date.¹⁵¹

¹⁵¹ Response to Data Request #547.

6. Ameren's outage management and interruption reporting schema is well structured.

Relational tables organize the data for efficiency. Unique outage order numbering is the cornerstone of its referential integrity. The system has robust capacity to handle large data volumes during storm periods. Data input quality is dependent on data entry at the outage start and end, however several "edit-check" features exist within the database to preclude the omission of key data fields at closeout.

7. Ameren did not provide Estimated Restoration Times (ERTs) nor did it have a process in place to gather and update ERTs during the 2006 storms.
(Recommendations IV-19 and IV-20)

The Outage Analysis System turned off the Estimated Restoration Time prediction component to delay providing Estimated Restoration Times until company resources could complete a full damage assessment of the outage. However, Ameren did not provide any area-specific Estimated Restoration Time updates during either 2006 storm.

The lack of Estimated Restoration Times and an ambiguous message was very frustrating for customers and call center agents trying to be responsive to customer inquiries. The lack of storm and restoration information aggravated the capacity constraints of the call center.

5. Recommendations

IV-14 Develop a quality assurance and review process to ensure Outage Analysis System data integrity.

Ameren needs to ensure the quality of Outage Analysis System data. Ameren performed some information checking following the July 2006 storm, but this effort was not comprehensive. It did not check data quality following the November 2006 storm. Ameren needs a means to safeguard the data from deletion or modification such as a secure historical data warehouse that maintains periodic (monthly) downloads of customers/circuit relationships to establish a history of these data. Retrospective results taken from Outage Analysis System data should be repeatable. Ameren must hold field personnel accountable for Outage Analysis System data during large outage events.

Ameren-IL is in the process of developing a formal process with defined roles and responsibilities for Outage Analysis System Quality Assurance and Quality Control (QA/QC).¹⁵² This is a step in the right direction. Ameren-IL should continue pursuing a quality process to improve Outage Analysis System data integrity, including:

- Define the QA/QC goals and objectives
- Define the day-to-day QA/QC process
- Detail major storm QA/QC process
- Identify QA/QC process roles
- Assign responsibility to QA/QC roles, day-to-day and during storms

¹⁵² Response to Data Request #581.

Ameren-IL should define this process within six months and implement these specific steps within twelve months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-15 Implement a multi-tiered process to ensure real-time updates of information into the outage system.

During large outage events, Ameren should equip its field forces with mobile data terminals or laptops that can communicate and interact with the Outage Analysis System or develop a real-time process wherein outage information is communicated from the field to a skilled OAS user in a dispatch office, operating center, or other location using cellular telephone, radio, or other communications device. This will improve the likelihood that Outage Analysis System trouble order data is updated in a timely manner. It will also eliminate a lot of paper.

Ameren instituted annual refresher storm training for employees. Ameren-IL should review its training for effectiveness after each major storm and incorporate any future lessons learned.

Ameren-IL should complete the implementation of this recommendation within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-16 Enhance the Outage Analysis System with a user-friendly front-end to make it easier for field forces to interact and update storm critical data.

Ameren should investigate the potential for adding a more user-friendly front-end to the Outage Analysis System to make it easier for field forces to interact and provide critical storm restoration data. Ease of use will encourage better updating of data in the field, especially among infrequent users. These changes should also improve the partial restoration process and the ability to resolve nested outages for infrequent users. If system limitations prevent the addition of a more effective means for field forces to interact with the Outage Analysis System, Ameren-IL should implement more intense training for field forces.

In comments on the draft report, Ameren-IL indicated that it is considering the purchase of a **D**istribution **M**anagement **S**ystem (DMS) that would include a replacement outage analysis system. Ameren-IL should either implement a more friendly front-end on the current OAS system within twenty-four months or demonstrate plans for the implementation a DMS system within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-17 Continue to enhance and improve the Storm Center website and provide the option for self-reporting outages.

Customers clearly are coming to the Storm Center for information during large storm events. Ameren should continue to enhance the Storm Center website to make the site more functional for customers wishing to report their outage. With the growth in mobile devices, web-capable

phones, and Wi-Fi networks, customers have many more opportunities to access Ameren's website during a power outage. Ameren-IL should develop and deploy a self-service, web-based outage-reporting tool on its Storm Center website. Adding a self-reporting feature will provide another way to interact with the company, increasing customer satisfaction, and possibly reducing call volumes. Ameren-IL should implement this recommendation within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-18 Expand efforts with Level One (Health Care / Life Quality) critical care customers to proactively contact these customers prior to planned outages and as soon as possible after unplanned outages when the emergency response plan is activated.

Ameren-IL should adopt a policy of contacting "critical care customers" prior to all planned outages. During a major storm, Ameren-IL should contact critical care customers at the earliest time it knows the effect and extent of the storm to encourage them to make alternative shelter arrangements. Ameren-IL should also seek customer feedback to determine the most effective means of contacting critical care customers.

Ameren-IL should implement this recommendation within twelve months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-19 Develop an "early" area-specific Estimated Restoration Time to set customer expectations and update Estimated Restoration Times as Ameren-IL learns more about the outage.

Due to the sensitivity relating to the lack of available outage information during the 2006 storms and the difficulties providing timely area-specific estimated times during the August 2007 storm, Ameren-IL should now make a concerted effort to develop an early Estimated Restoration Time, or "Smart ERT," which it can use initially during a large-scale outage. Ameren-IL would build the Smart ERT ahead of time, based on historical restoration performance, and adjusted by storm modeling predictions. The purpose is to present a "best guess" based on all known factors going into a storm so that customers can have an initial, realistic expectation of how the storm will affect their specific area. Ameren-IL can then modify this "best guess" as necessary as it learns more about the specifics of the outage.

Because it relies on predictive methods, Ameren-IL can continue to enhance and improve the Smart ERT process as Ameren-IL employs it. Ameren-IL should create a review and evaluation process to compare estimates to actual for the purpose of improving future estimates.

Ameren-IL should formalize the Smart ERT process in the Electric Emergency Restoration Plan (EERP), including the establishment of an overall Estimated Restoration Time Coordinator and Estimated Restoration Time Monitors within each division. The Coordinator should be responsible for monitoring storm conditions, outage and restoration progress, estimating outage duration, and ensuring that Ameren-IL posts up-to-date restoration times in a timely manner. The

Monitors should be responsible for continual posting, monitoring, and revision of customer restoration messaging for specific restoration nodes during a major storm.

The establishment of an Estimated Restoration Time Coordinator in the Emergency Electric Restoration Plan formalizes the process during a large outage event as well as assigns accountability. The process itself manages the development of the early Estimated Restoration Time and monitors in-progress Estimated Restoration Times to ensure better accuracy and ultimately, better information for customers.

Ameren-IL should implement this recommendation within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-20 Develop specific, measurable goals and objectives for improving the accuracy and timeliness of outage related information provided to its constituents.

Ameren-IL will undoubtedly experience additional outages in the future and should develop goals and objectives to improve the accuracy of estimated restoration times. Ameren should begin measuring and tracking the accuracy of Estimated Restoration Times (ERTs) as compared to actual restoration time, both on a day-to-day basis and during major outage events.

Ameren-IL should revise outage communication procedures to provide more emphasis on the importance of providing accurate and timely estimates to customers, building upon the “learning moment” that was developed after the 2006 storms. Procedures should include documenting the Estimated Restoration Time originally provided to customers as well as a requirement to provide on-line an updated estimate prior to expiration of any existing estimate. It should offer an explanation to the customer if the estimate changes. During each outage, Ameren should record a complete history of Estimated Restoration Times given to each customer.

Finally, Ameren-IL should implement goals to communicate better with constituents in the aftermath of outages. It should analyze customer complaints to determine whether it is making improvements regarding estimated restoration times. Debriefing sessions should be held with all involved employees, including crews, customer service representatives, and communications personnel. The Company should also hold meetings with city and town officials, other government agencies, and the media.

Ameren-IL should implement this recommendation within two years of the date of this report.

E. Communications

1. Objectives

This section of the report provides a description and evaluation of Ameren-IL’s event communications and performance of its call centers. Liberty’s focus was on the performance of these systems and processes during the 2006 storms. However, Liberty also examined the modifications or enhancements made since the storms. Liberty’s objectives were to:

- Examine whether Ameren demonstrated the ability to communicate effectively with customers and other stakeholders. This includes examining call center staffing and determining whether the performance of these centers was effective and efficient.
- Determine whether customers could reach the utility during the storms to report outages.
- Determine whether Ameren-IL kept key stakeholders informed during the storms.
- Determine whether Ameren-IL communicated effectively with the public with regard to matters that may have contributed to the length of restoration times or that dealt with public safety.
- Determine how Ameren-IL employed industry “best practices.”
- Identify any areas that might be suitable for adoption of industry “best practices.”

This section addresses items **2.3.2.5.27** and **2.3.2.5.28** from the Illinois Commerce Commission’s Request for Proposals.

2. Background

When the power goes out, most customers pick up the phone and call their electric utility. It is a natural response. All customers want answers to the same questions: Does the utility know the power is out? What caused the outage? When will the utility restore power? Storms present unique challenges for utility customer service. Many customers can simultaneously lose power, causing a flood of calls to the utility. The bigger the storm in terms of customers affected, the higher the number of customers trying to contact the company.

This is a challenge common to the electric utility industry—how can utilities effectively respond to a sudden extreme and often extended peak in call volume associated with a storm or outage. Solutions have evolved over the years, with the development of various technologies and service providers. Most utilities have embraced the use of Interactive Voice Response (IVR) technology to offer self-service outage reporting and status updates via telephone. However, the number of calls can exceed in-house capacity quickly during a large outage. After-hours outages can be especially challenging to capacity as more customers are at home and fewer agents are on-hand to answer calls.

Generally, it is cost prohibitive to configure an in-house IVR system large enough to handle the largest spike in call volume. Attempting to staff a call center, or to outsource to a center large enough to handle these calls, also is cost prohibitive. A more economical approach is to outsource or offload overflow to a third party IVR when call volumes are threatening to exceed capacity—effectively renting capacity as needed. Many large investor-owned electric utilities in the United States have adopted this approach, contracting with a high volume outage handling IVR service to handle overflow.

Either by choice or by default, utilities have adopted three basic approaches to “peak” call handling:

1. Block calls (busy signal to customers) to a manageable level (within the capacity of call center staff and IVR system).

2. Provide an upfront “message” to many callers; immediately terminate the call or let queue limitations in the IVR or agent-queue force callers to “choose” to abandon if hold times become too long.
3. Let all customers who call or otherwise contact the company (website) notify the company of an emergency, report an outage, or inquire about restoration status, with the help of self-service technology (IVR / Web).

The industry best practice is option 3—let as many callers as necessary into your system to self-report outages and to offer customer-specific outage status messaging. Until distribution automation eliminates the need, this is the best option for customers and offers the highest satisfaction.

In addition to responding to customer inquiries and outage notification calls, utilities must be prepared to communicate storm restoration status to the general public as well as local and state officials and community leaders.

One of the most vital functions of a utility’s Corporate Communications Department during a major storm is to make sure that all employees present the same information about storm restoration to their contacts outside the company. In addition, it must effectively disseminate storm restoration status information to stakeholders—state and local government officials, large industrial customers, the media, employees, and customers. The goal is to deliver the same message to the press, mayors, legislators, city officials, and the next customer calling into the call center.

To manage and disseminate information effectively, Corporate Communications must work closely with the Emergency Operations Center (EOC) to gather information on storm restoration progress, the number of customers out of power, and projected restoration times. Ultimately, the outage management system is the repository and source for this information. It effectively links the field with other areas of the company to manage the restoration effort and communicate progress.

An effective strategy is to time storm restoration progress-reports for release around the local news media cycles, early morning, noon, 5 p.m., and 10 p.m., so the media can feature the reports on local radio and television newscasts. Equally important is the need to coordinate with operations prior to each release so the numbers are fresh and accurate. Concurrently, call center representatives and other key employees working with community and public officials, key accounts, and state emergency agencies can receive this same message.

Community Relations is another key utility function during a major storm, especially keeping state and local officials informed. This role usually falls to community relations officials, quite often filled by district or division management. No one knows their communities better than the people who work in them day-in and day-out.

Before a storm even starts, community relations officials begin contacting elected officials, community leaders, and key customers to start the flow of communication. During the storm, the community relations officials can assist local emergency and other governmental agencies by

providing critical infrastructure information, offering restoration progress updates, and redirecting resources to address emergency issues and community priorities.

On an ongoing basis, it is important to play an educational role in communities regarding storm restoration. An excellent way to involve the community and open the lines of communication between local officials and the company is to host community workshops promoting storm response awareness. These forums also provide an opportunity for the utility to gather feedback and learn expectations. To be effective at community relations, utilities need to emphasize training for community relations representatives and other employees actively interfacing with the community and public. Training should familiarize employees with sources of outage information and with how best to interact with the public, governmental officials, and community leaders.

3. Findings and Analysis

This section contains the primary findings, analysis, and detailed descriptions of the systems and processes that supported outage communications at Ameren-IL during the 2006 storms. Liberty organized this section to address the following:

- a. Customer Call Center Operations
- b. Corporate Communications
- c. Community Relations
- d. Best Practices

a. Customer Call Center Operations

Ameren-IL's Customer Service organization reports to the vice president of Customer Service and Public Relations, who reports directly to the president and chief executive officer of Ameren-IL. During 2006, the manager of Customer Service led Ameren-IL's Customer Service organization. In September 2007, Ameren elevated this position to vice president and pulled the responsibility of Illinois Public Relations into the Ameren-IL Customer Service & Public Relations organization. Ameren intended this change to increase the focus of the organization on better serving the needs of Illinois customers and various other stakeholders.¹⁵³

Call Center Technologies & Telecommunications

Ameren has five main call centers located in St Louis, Jefferson City, Decatur, Peoria, and Pawnee, with telecommunications hardware co-located at each center. Ameren configured the call centers to operate as a single virtual unit off a single Avaya Communication Manager PBX.¹⁵⁴ A primary server cluster is in the St. Louis General Office Building and a backup server cluster is located in Decatur. Gateway servers are in Peoria, Pawnee, and Jefferson City.¹⁵⁵

¹⁵³ Response to Data Request #103.

¹⁵⁴ PBX means "Private Branch Exchange," a private telephone switchboard.

¹⁵⁵ Responses to Data Requests #204 and #189.

Three production Avaya IVRs (Interactive Voice Response) are in the St. Louis General Office Building location that supports all call centers. To support the call centers, there are 597 trunks¹⁵⁶ for all companies for inbound traffic.¹⁵⁷ An additional two production Avaya IVRs are in Decatur. There are 238 trunks for Union Electric and Illinois companies in Decatur. Additionally, the outsourcer First Contact connects to Ameren's call center telephony through trunks in both Decatur and St. Louis.¹⁵⁸ Peoria's call center configuration has 117 total trunks while Pawnee has 48 trunks.

To take advantage of interstate toll pricing, the Decatur PBX receives Ameren Missouri customer calls and Ameren Illinois overflow calls while the St. Louis PBX receives Ameren Illinois customer calls, AmerenUE overflow calls, and St. Louis AmerenUE local customer calls. Incoming calls first go to Ameren's internal IVRs. Calls not handled within the IVRs transfer to Ameren's private network and agent queues in each of the centers. The majority of inbound Ameren-IL customer calls originate through toll-free numbers.¹⁵⁹

The flow for inbound calls is essentially the same during business and non-business hours. Calls go to the IVR for call classification and self-service. During business hours, callers can request to speak with an agent and the system transfers them to an agent queue. Emergency calls (reporting gas odor or downed wires) received at any time of the day are immediately queued to an agent group. Otherwise, all other call types will request authentication to provide self-service options or additional account information.¹⁶⁰ In 2007, Ameren modified the routing scheme such that if three or more agents are available to handle calls, the system immediately routes the caller to the agent queue bypassing the IVR.

Calls automatically overflow to Stericycle IVRs (Interactive Voice Response), Ameren's outage-overflow service provider during high volume periods, specifically when internal Ameren's primary call center trunks are full. Customers whose phone number the system can identify and match are able to report a power outage and receive an estimated restoration time for an existing outage. Customers should receive the same outage information, regardless of whether they interact with Ameren's or Stericycle's IVRs. However, the system immediately transfers all emergency calls, such as gas odors or downed wires, back to Ameren, through dedicated emergency trunks.¹⁶¹ Both gas odor and wire-down calls share the same dedicated trunks.¹⁶²

AT&T currently provides long distance (inbound 800 service), dedicated private line services (T-1, T-3, analog)¹⁶³ and Internet services to Ameren.¹⁶⁴ Ameren also assumed a contract with MCI (now Verizon Business) after the Illinois Power acquisition. Services provided by MCI included

¹⁵⁶ A "trunk" is a circuit between telephone switchboards or other switching equipment.

¹⁵⁷ Response to Data Request #204.

¹⁵⁸ Response to Data Request #204, Interview #43, October 25, 2007.

¹⁵⁹ Responses to Data Requests #189 and #204.

¹⁶⁰ Response to Data Request #189.

¹⁶¹ Response to Data Request #183.

¹⁶² Interview #43, October 25, 2007.

¹⁶³ T-1 and T-3 are communications schemes of certain capacity and speed.

¹⁶⁴ Response to Data Request #190.

long distance (inbound 800 services and outbound), dedicated private lines services, and Internet services.¹⁶⁵ In 2007, Ameren migrated Ameren-IP from MCI to AT&T.

Ameren's Information Technology (IT) group supports the call-center telecommunications technology. Ameren has implemented state-of-the-art telephony equipment with the appropriate redundancy. Ameren also uses AT&T's Disaster Recovery call allocation to redirect calls to any location "on-the-fly" and according to plan.

Ameren instituted a Disaster Recovery plan for its telephony equipment in early 2005.¹⁶⁶ Disaster Recovery is the ongoing process of creating, testing, and maintaining the policies and procedures an organization will follow should a disaster occur. The goal of a telecommunications disaster-recovery plan is to avoid service interruption by redirecting calls around failed facilities and equipment to backup facilities. In the event that equipment or an entire facility is lost, the plan attempts to bring up lost services as quickly as possible. Ameren's plan addresses telecommunications equipment and facility failure in any of Ameren's call centers and provides the appropriate contingencies to allow continuous operations with minimal disruption to the company and customers. The plan was in place prior to the 2006 storms; Ameren followed it at various points during the storms to address many of the issues experienced during the storms. However, prior to the 2006 storms, Ameren had not fully tested its Disaster Recovery plan through any drills or simulations.

Prior to the 2007 winter storm season, Ameren successfully tested its Disaster Recovery plan, including the simulation of a complete failure of the St. Louis telephony servers.¹⁶⁷ This was the first whole-scale test of the equipment. Ameren plans to conduct tabletop Disaster Recovery drills a minimum of two times per year on a random basis, working through the process that various employees should follow based on various scenarios. Going forward, Ameren is considering an annual drill, similar to the one conducted in October.¹⁶⁸ Testing a Disaster Recovery Plan on an ongoing basis helps ensure the effectiveness of the plan as policies, procedures, and personnel change.

Ameren's Network Operations Center (NOC) is responsible for monitoring operational performance of the telephony network. On a daily basis, the Network Operations Center (NOC) uses the "HP OpenView" applications to monitor system alerts from the PBX, networks, routers, radio systems, SCADA circuits, etc. They monitor trunk use and performance 24/7 for the Avaya system, as well.

Ameren had not fully established this group and only a few personnel had been trained on the call center technologies prior to the July 2006 storms; company personnel had to call in appropriately skilled IT employees as needed to resolve problems and issues with the network. Ameren put a new process in place prior to the November/December 2006 storm to enhance IT storm response; employees were required to report issues to the NOC and/or the IT Help Desk. Today, Ameren has established 24/7 coverage for call center telecommunications support. In

¹⁶⁵ Response to Data Request #191.

¹⁶⁶ Waiting on the response to Data Request #749 to confirm the initiation date.

¹⁶⁷ Response to Data Request #326.

¹⁶⁸ Interview #43, October 25, 2007.

addition, Ameren assigns a NOC liaison to the Emergency Operations Center during storms and large outages.¹⁶⁹

Ameren cannot monitor its 800-network traffic, nor can it verify that calls are terminating successfully.¹⁷⁰ Ameren can only verify that trunks are operating and observe performance. As a result, Ameren did not know that customers were having trouble contacting the company during the 2006 storms. Call center supervisors brought the problems to the IT NOC's attention after Ameren call-takers relayed customer comments to the supervisors during the storms. Ameren did not understand the scope of the problem until after the storm, when AT&T was able to provide Ameren with network traffic statistics. Ameren is considering implementing AT&T's network monitoring software to monitor more closely network traffic.

Call Center Staffing & Operations

Residential customers wishing to contact Ameren-IL call one of three toll-free numbers, one for each Ameren-IL operating company. Similarly, business customers call one of three toll-free business telephone numbers. With the exception of specialized collections telephone numbers, Ameren's Integrated Voice Response (IVR) technology processes all calls. In 2008 all calls, including specialized collection calls, are routed to the IVR.

Three call centers handle calls for Illinois customers. Currently, each call center is able to operate independently in the event that network connectivity to the main and backup servers is lost, albeit at reduced capacities. The system routes calls to any location based on skill assignments at the agent level. Customer service representatives working in the Peoria or Pawnee call centers handle callers contacting Ameren-CIPS or Ameren-CILCO. Since January 2005, these two call centers have operated as one virtual call center—agents at either center can handle calls from Ameren-CIPS or Ameren-CILCO customers. Prior to 2008, representatives working in the Decatur call center exclusively handled customers calling Ameren-IP.¹⁷¹

The IBEW Local 1306 bargaining unit represents call center representatives working at Ameren-IP's call center, while a bargaining unit does not represent call center personnel at the two other Ameren-IL call centers. In 2008, all Illinois centers answer calls in a virtual manner as a result of a negotiated agreement with IBEW Local 1306.

Ameren's call centers operate from 7 a.m. through 7 p.m. Monday through Friday. During these business hours, call center representatives handle customer calls relating to service, billing and collections, and calls to report power interruptions. Ameren-IL supplements its call handling during business hours through a contract with First Contact. A skeleton crew handles emergency calls after hours and on weekends. The IVR informs callers that they can conduct after-hours business in a self-service mode and routes emergency calls to agents.

Management forecasts staffing levels to fit projected workload derived from historical call volumes, known events, and seasonal variations. To comply with Illinois Commerce

¹⁶⁹ Response to Data Request #330.

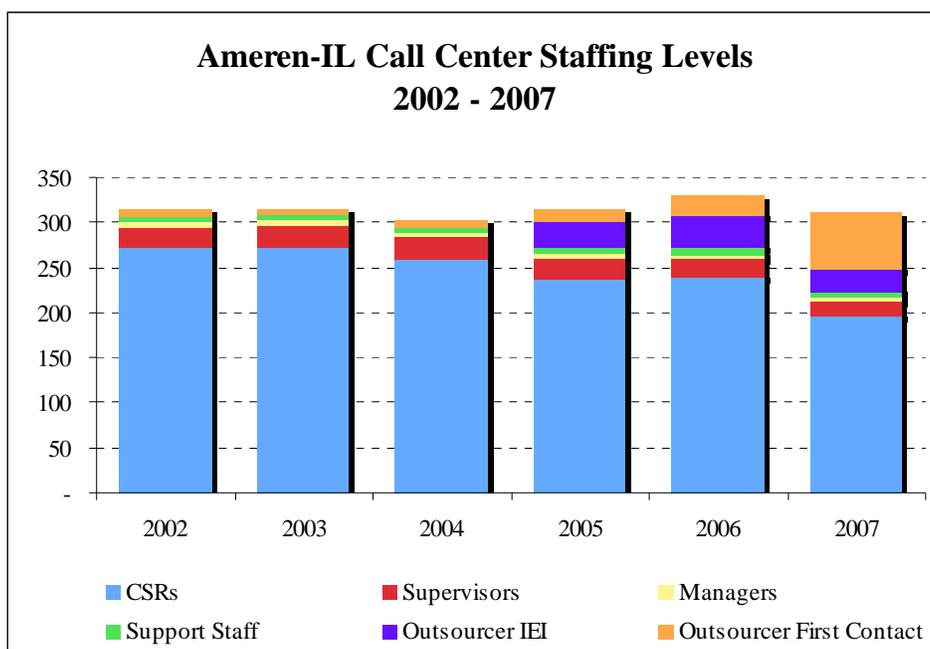
¹⁷⁰ Interview #43, October 25, 2007.

¹⁷¹ Response to Data Requests #204.

Commission code “Part 410: Standards of Service for Electric Utilities and Alternative Retail Electric Suppliers,” Ameren established service level goals as follows for all three Illinois call centers:¹⁷²

- Average Speed of Answer of 60 seconds or less
- Abandon rate less than 10 percent

Ameren-IL’s service level goals are consistent with other utilities. Based on these service levels, management determines the number of employees required to handle projected call volumes. This is a common call center staffing approach used by other utilities and other industries. As seen in the chart below, Ameren-IL’s call center staffing has remained constant over the past five years, with a peak in staffing during 2006.¹⁷³



CSR = customer service representative

On the basis of seat capacity, average call handle time, service level goals, and agent availability, Ameren-IL can handle 3,000 to 4,000 calls per hour at maximum staffing (during normal business hours) and another 2,000 to 3,000 self-service calls per hour through the IVR.¹⁷⁴ Ameren-IL adequately sized the total call center capacity to handle day-to-day call volumes. Call volumes exceeding these levels will increase the wait times in queue, reduce service level, and increase abandons.

July 2006 Storm Response

The July 2006 storms began on Wednesday, July 19, prior to close of business. Ameren-IL’s call center management was able to shift gears quickly, reassigning on-duty employees to emergency

¹⁷² Responses to Data Requests #105, #106, and #107.

¹⁷³ Response to Data Request #572.

¹⁷⁴ Response to Data Request #328.

and “lights out” queues, and asking for volunteers to work overtime. Ameren’s call-center duty supervisor tracked storm progress and secured additional resources for overnight coverage. By 7:00 p.m., the outage system was reporting more than 220,000 Ameren customers without power.¹⁷⁵

On Thursday afternoon, Pawnee and Peoria call center management asked employees to work one additional hour of overtime on Friday. Shortly following that request, management asked for volunteers to work overtime on Thursday.¹⁷⁶

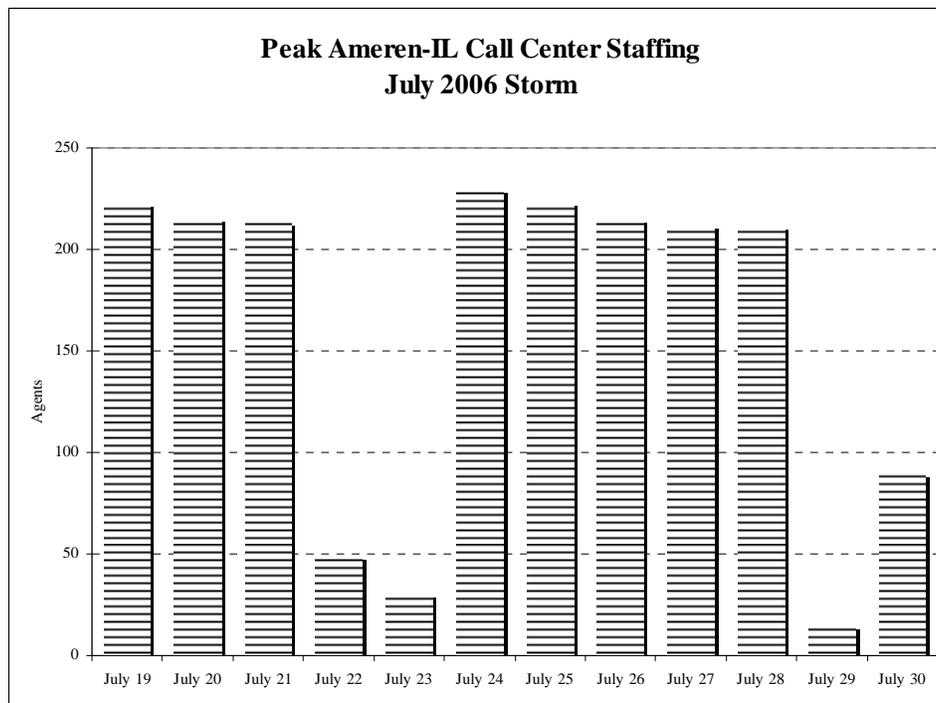
The Ameren-IL call centers did not have formal storm emergency plans documents in place, nor did they have one prior to the July and November/December 2006 storms. As part of a corporate-wide process, each of the call centers have developed Business Continuity Plans¹⁷⁷ addressing disaster scenarios such as tornados, fires, earthquakes, work stoppages, and pandemic events such as the Asian Flu. However, these plans do not address emergency storm response. The magnitude of the damage to individual services, poles, and lines caused the call centers to underestimate the delay in restoring service. As a result, significant outages continued through the weekend resulting in under-staffing at the call centers on Saturday and Sunday. As a result, Ameren-IL was short staffed for the weekend and overstaffed during the following week as the chart below shows.¹⁷⁸ The sparsely staffed weekend shifts were unable to handle the volume of calls from customers reporting outages and emergencies over the weekend, creating long wait times and frustrating customers. By the time Ameren was able to ramp up staffing, the peak in call volume had subsided, resulting in the inefficient use of call center resources.

¹⁷⁵ Response to Data Request #324.

¹⁷⁶ Response to Data Request #324.

¹⁷⁷ Response to Data Request #207

¹⁷⁸ Response to Data Request #218.



The process followed by Ameren-IL management, specifically at the Decatur call center, to staff during a storm was quite onerous. Based on union protocol, up to 10 agents have pagers to give management a “head start” on staffing during storm situations. Employees with pagers should be at work within 30 minutes, and receive premium pay. However, several employees reported problems with the pagers during the storm, so Ameren’s head start was somewhat limited. Ameren has since replaced the pagers with cell phones.¹⁷⁹

Aside from the paged-in employees, management must call additional staff based on seniority and job position. Management must call all call center employees before it can ask employees in other areas, such as customer accounting or collections, to assist. Additionally, management must call all company employees before it can ask a contractor to assist. This was a time-consuming process during the July and December 2006 storms, delaying Ameren’s ability to adequately staff its centers to handle incoming outage calls from customers and creating long waits and busy signals for many customers. Ameren recently automated this call-out process with an auto-dialer. The dialer automates the first-pass more efficiently; management can manually go back to make second requests.¹⁸⁰

To add to the challenge, Ameren’s telecommunications were not set up to easily shift call volume to the contractors. Moreover, the contractors were not ready or under contract to assist with the weekend load, further limiting Ameren’s available call-takers, resulting in long waits in queue and busy signals for many customers. Ameren has since resolved this issue so that its contractors are trained and under contract to assist during large outage events.

¹⁷⁹ Interview #49, October 24, 2007.

¹⁸⁰ Interview #49, October 24, 2007.

Ameren encountered a number of telecommunications issues during the course of the storm. First, Ameren's Interactive Voice Response (IVR) ports locked up several times resulting in decreased capacity and requiring a restart to regain full capacity. Ameren's Information Technology (IT) group implemented a work-around, spacing calls by adding a few seconds at the end of each call. This gap was enough to keep the IVRs operational. This problem affected all five IVRs at some point. Customers using the IVRs at the time of the lock-up and who were connected to the impacted ports may have been dropped unexpectedly when the units were restarted, unable to complete their transaction, requiring another call to the company. After the July storm, Avaya released a patch to resolve the issue. Ameren has also configured the IVRs as an agent queue, making it easier to monitor and reset them when needed.¹⁸¹

Ameren-IL usually does not use an upfront-message (*i.e.*, the first message all callers hear) to alert callers to the storm, and to ask them to call back later if it is not an emergency. During the storm, management decided to place an upfront message when the queues began piling up. However, the call centers had problems placing the message because it would not record correctly; this resulted in a zero-length announcement. Ultimately, this caused the "Voice Announcement over LAN" (VAL) board to lock-up. IT resolved the problem initially by re-setting the VAL board. However, the problem was recurring. Each time the VAL board locked up, any callers that were waiting for that particular announcement were disconnected unexpectedly when the VAL board was re-set, requiring another call to the company. Ameren has since implemented a software and firmware patch and tested it vigorously. Ameren also made a hardware change at the end of 2007 to address this problem.

Ameren lost connectivity to its mainframe computer from one of its IVRs at approximately 9:30 a.m. July 21. The IVR was back on-line by 10:15 a.m. Callers directed to that IVR were not able to use the self-service "lights out" reporting functionality. The system directed affected callers to a customer service representative for assistance; however, wait times to an agent were lengthy, causing many callers to abandon in queue. Ameren has since implemented changes, discussed at the end of this section, to address this issue.

Ameren's Interactive Voice Response outage status application also did not deliver the date component of the Estimated Restoration Time to callers. For instance, if an Estimated Restoration Time indicated restoration the following day at 11:00 a.m., the caller would only hear 11:00 a.m. This led to the inaccurate interpretation that Ameren-IL would restore service the day the customer placed the call, creating frustration for customers.¹⁸² Ameren corrected this flaw on July 22, 2006, however approximately 30 percent of the orders received prior to the correction (about 2,400 orders, affecting 316,000 Illinois customers) would have delivered incorrect Estimated Restoration Time information to customers.¹⁸³

Ameren's call centers were unable to accommodate all callers. Ameren's telephony overflows to the high-volume IVR provider, Stericycle, when internal trunks are full. However, during the July 2006 storm, there were 6,860 blocked calls at the Stericycle facility. Callers blocked at the Stericycle facility received busy signals, requiring customers to call repeatedly to reach the

¹⁸¹ Interview #43, October 25, 2007.

¹⁸² Response to Data Request #206.

¹⁸³ Response to Data Request #267.

company. One of the primary goals of a high-volume overflow IVR provider is to guarantee that customers will not receive any busy signals when trying to report emergency or “lights out” situations.

**Ameren-IP Customer Calls Blocked
July 2006 Storm:**¹⁸⁴

	Blocked at Stericycle	% Blocked
July 19	5,064	59.7%
July 20	16	47.1%
July 21	1,780	39.8%

Ameren-CILCO had problems as well with call overflow during the July 2006 storm. From about 6:00 p.m. through 6:30 p.m. on July 19, Ameren-CILCO outage calls did not overflow to Stericycle and customers received busy signals when they called the toll-free number.¹⁸⁵ While Ameren addressed the problem quickly, it occurred during a peak calling period at the beginning of the first storm.

Ameren also experienced issues while routing outage calls to one of its outsourcing providers, First Contact. On July 20 at 8:30 a.m., one span of First Contact trunks failed due to a bad circuit connection. Ameren alleviated the problem at 2:30 p.m. that afternoon by reducing the number of calls forwarded to First Contact.¹⁸⁶ However, Ameren was limited in the number of calls it could send to First Contact through the remainder of the July 2006 storm, further reducing Ameren’s available call-takers and creating longer wait times for customers.

Considering that all Ameren companies shared telecommunications resources, it is relevant that Ameren-UE also experienced trunk loading and overflow problems during the July 2006 storm, from both the toll-free Ameren-UE number and its local numbers. Customers were receiving busy signals when calling one of two local numbers, indicating that calls were not overflowing correctly to Stericycle from 9:00 a.m. through 1:00 p.m. on July 20. As an interim fix, Ameren increased overflow trunking to Stericycle from 250 to 500 trunks.¹⁸⁷ The blocking was such a problem that Ameren asked customers to call the toll-free number instead of the local numbers in the morning and evening press releases on July 22.¹⁸⁸

In addition to the difficulty in securing adequate call center staffing during the July 2006 storms, Ameren experienced significant failure of its telecommunications equipment, including:

- Ameren’s internal Interactive Voice Response units locked up and had to be restarted at various times during the storm, interrupting customers attempting to use the self-service outage reporting application.
- Ameren’s Voice Announcement over LAN (VAL) boards locked up numerous times during the storm, requiring a restart to resolve temporarily the problem, interrupting customers trying to reach the IVR or an agent.

¹⁸⁴ Response to Data Request #327-J2.

¹⁸⁵ Response to Data Request #206-D.

¹⁸⁶ Response to Data Request #206-D.

¹⁸⁷ Response to Data Request #206-D.

¹⁸⁸ Response to Data Request #366.

- Ameren's Interactive Voice Response units were not delivering the date component of the Estimated Restoration Time to callers, confusing many callers.
- Many customer calls were blocked when overflowing to the Stericycle high-volume IVR service, delivering busy signals to callers and making it extremely difficult to reach the company to report emergencies or lights out situations.
- Telephone trunks between Ameren and its contractor failed, further limiting the number of calls routed to the contractor.

November/December 2006 Storm Response

Ameren-IL summarized its call center response in the following paragraph from the Critique of Ameren Illinois Service Restoration Activities November 30, 2006, Ice Storm:¹⁸⁹

During the event we received 400,000 total in-bound calls with 150,000 going to agents, 220,000 to VRUs [voice response units] and about 20,000 abandoned (≈ 5%). Average speed of answer over the weekend was 3-5 minutes. The Ameren system did busy-out over the weekend. We utilized some 250 call takers with 150 being experienced and around 100 brought in from other areas. We utilized some home agents, and had challenges getting people into the call centers with the weather conditions. Cots were set up at the Pawnee center to keep agents overnight.

After watching the storm develop on Thursday afternoon November 30, Pawnee and Peoria call center managers began asking for volunteers to stay late and to work the overnight shift.¹⁹⁰ The worst of the storm hit on Thursday night. By Friday morning, it was difficult for employees to drive into work. In addition, schools and daycare facilities closed, making childcare challenging for employees with children. There were more than 210,000 customers out of power in Illinois and many calls were coming in to the centers. By 7 a.m., Stericycle had handled close to 54,000 calls, the Illinois centers 22,000 calls, and there were many more blocked calls at the Stericycle facility.¹⁹¹

As management was coping with getting employees into work on Friday, they were also trying to staff for the weekend. Again, Ameren-IL did not have a call-center storm plan in place and instead followed a regimented call-out procedure to fill seats during evenings and weekends. During this storm, however, Ameren-IL was able to gain assistance from contractors over the weekend.

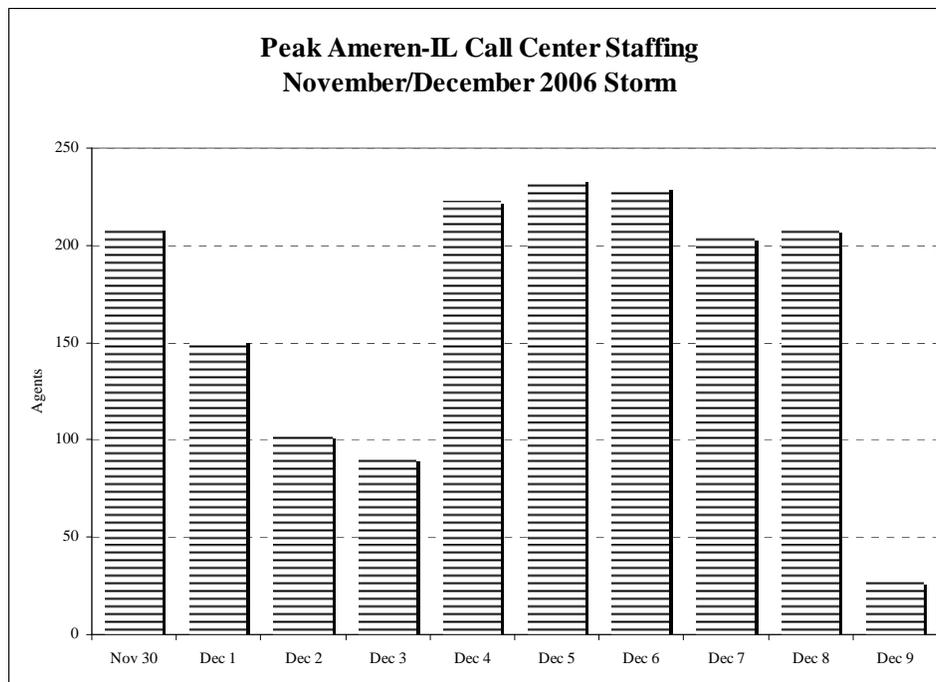
The following chart details the peak staffing for each day of the storm. While Ameren was more effective at securing contractor resources to assist with the weekend, there was still a significant problem ramping up required staffing. Ameren's staffing levels peaked on the sixth day of the storm.¹⁹²

¹⁸⁹ Response to Data Request #8D.

¹⁹⁰ Response to Data Request 324-D.

¹⁹¹ Response to Data Request 372-I.

¹⁹² Response to Data Request 313.



The nature of this storm created many wire-down calls from customers. In addition, many customers attempting self-service through the IVR opted out or failed out, causing many “lights out” calls to queue for an agent. With the staff that was available, Ameren-IL concentrated on working the Wire Down/Gas Leak queue. This left many lights-out calls queued, creating long wait times and abandoned calls.

At the same time, Ameren-IL call-center’s police/fire queues were filling up, especially in the Decatur area. Local police and fire stations have emergency telephone numbers for Ameren-IL that route to dedicated queues. Usually, these are calls to alert Ameren-IL to dangerous wire-down or other emergencies. The Pawnee and Peoria centers assisted the Decatur center in handling these calls. Agents also asked emergency officials to compile and fax lists of downed wires to keep the lines clear for more calls.¹⁹³ Ameren did not have enough call takers to handle all the emergency calls received from emergency officials. This caused long wait times to report these emergencies, ultimately delaying Ameren’s ability to identify the emergencies so the field could respond. While Ameren asked emergency officials to fax in lists of emergencies to help clear the lines, these faxed requests had to be handled by call center resources that were already swamped with calls.

Call volumes reached their peak on Friday morning December 1, such that Ameren-IP instructed employees in the Decatur center to report to work after taking a 7 hour 45 minute rest, a practice common in the field. Additionally, Ameren placed an upfront message on the IVR to alert callers to the storm asking they call back later in the day for any reason other than an emergency.¹⁹⁴

Approximately XXX,XXX customers are still without power. As a result, we are only able to handle emergency inquiries such as electric outages, gas odors, or

¹⁹³ Response to Data Request 324.

¹⁹⁴ Response to Data Request #324-D.

*downed power lines. We are not able to answer your call regarding your bill, payment plans or requests to start or stop service. If you have any outage, please stay on the line to report your emergency using our automated system.*¹⁹⁵

It was not until Monday that all Ameren-IL centers moved to an around the clock schedule. Management asked Peoria and Pawnee agents to work 12-hour shifts and agents working overtime in Decatur continued the 7 hour 45 minute rest periods. Additionally, management asked agents in Decatur to take half lunch periods, with lunch provided on-site by management. At noon, Decatur management implemented “mandatory” overtime, extending shifts by one hour before and three hours after. On Tuesday, Wednesday, and Thursday, Ameren-IP brought in employees from the field to assist with calls. The centers returned to regular shifts on Friday.¹⁹⁶ While these measures leveraged as many Ameren-IL employees as possible to handle customer phone calls, Ameren did not enact them until the fifth day of the storm, long after the peak in storm call volume. Had a storm-staffing plan been in place, Ameren could have ramped up staffing much more quickly and more efficiently.

Expecting a high volume of callers on Monday, Ameren reprogrammed its IVRs to the “after-hours” mode, informing callers that Ameren was handling emergency calls only (for all centers). This remained in effect until Wednesday morning for Ameren-IP and Ameren-UE centers and until Tuesday morning for the Ameren-CIPS and Ameren-CILCO centers.¹⁹⁷ However, due to technical limitations, Ameren was not able to change the IVR scripting that stated, “Our office is closed. Please call back Monday – Friday, 7:00 a.m. to 7:00 p.m.” As a result, many callers reaching the IVR during business hours were confused by the script telling them to that the offices were closed and to call back during business hours.

An astounding number of callers attempted to reach Ameren during the first five days of the November/December 2006 storm—approximately 1.27 million calls came to Ameren (all operating companies) from November 30 through December 4.¹⁹⁸ On December 1 alone, nearly 750,000 callers attempted to contact the company—averaging about 31,000 calls per hour for that 24-hour period. The following chart shows total calls offered, by day, for all Ameren companies during the November/December 2006 storm.¹⁹⁹ During this same 5-day period, nearly 400,000 calls overflowed from Ameren-IP to Stericycle.²⁰⁰

¹⁹⁵ Response to Data Request #324.

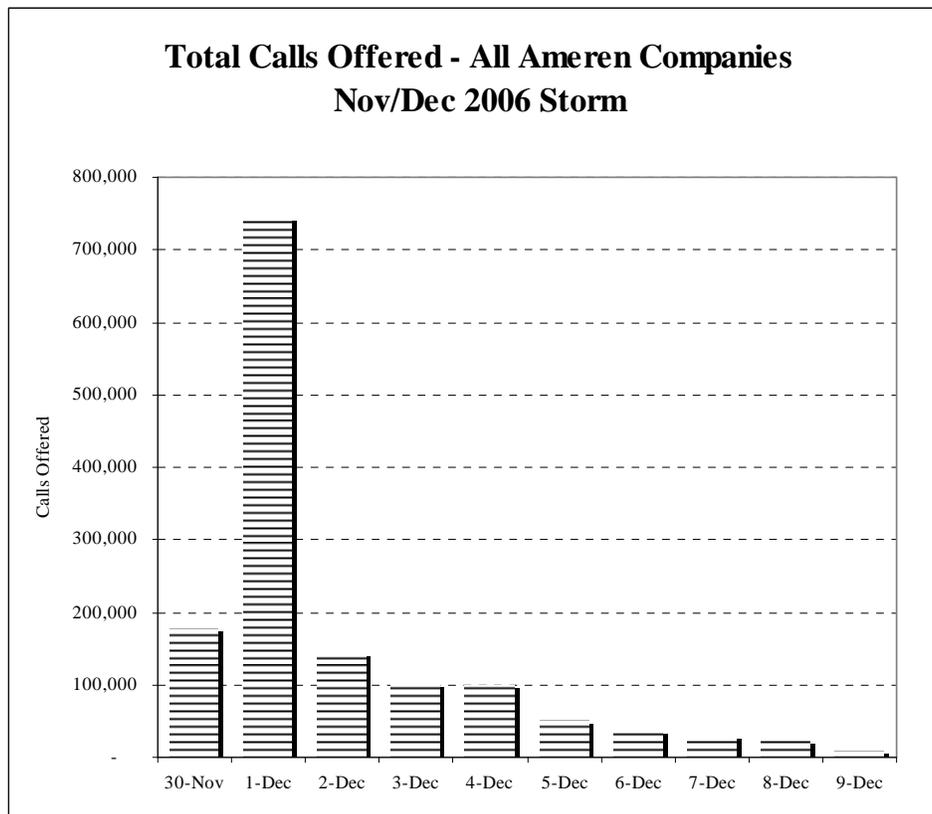
¹⁹⁶ Response to Data Request #324.

¹⁹⁷ Responses to Data Requests #200, #201, #202, and #203.

¹⁹⁸ Response to Data Request #327.

¹⁹⁹ Response to Data Request #327.

²⁰⁰ Response to Data Request #327.



Ameren identified an issue with Stericycle routing at 10:20 p.m. on November 30, 2006. Many of the calls that the system should have routed to Ameren-IP’s wire-down emergency queues were misrouted. As an interim fix at 12:00 a.m., Ameren asked Stericycle to reroute calls intended for Ameren-IP’s wire-down queues to Ameren-IP’s gas odor queues. Limited testing conducted by Stericycle to investigate this issue determined that about half of the calls routed during this period went to a wrong number. MCI was at fault in this instance and corrected the routing problem at 1:10 a.m. on December 1. However, this problem caused anywhere from 800 and 2,000 wire-down emergency calls to be misdirected, requiring callers to hang up and call back to report their emergency.²⁰¹

Ameren’s call flow technology was not properly handling the extremely high call volumes received during the storm. Ameren’s system “busied-out” over the weekend—customers received busy signals when trying to reach the company.²⁰² During the November/December 2006 storms, many callers were unable to reach Ameren’s call centers because all trunks were full.²⁰³

Blocking at the Stericycle facility was much worse in the November/December 2006 storm. There were more than 270,000 Ameren-IP blocked calls on November 30 and December 1.

²⁰¹ Response to Data Request #311-A1.

²⁰² Response to Data Request #8-D.

²⁰³ Response to Data Request #550.

Ameren-IP Customer Calls Blocked
Nov/Dec 2006 Storm:²⁰⁴

	Blocked at Stericycle	% Blocked
Nov. 30	49,832	61.6%
Dec. 1	228,030	75.0%

While Ameren-IP calls were overflowing correctly to Stericycle during the storm, Ameren-CIPS calls were not. Another 100,000 calls were supposed to overflow from CIPS/CILCO, however, due to a technical problem, calls did not overflow from CIPS to Stericycle. Instead, 100,000 or so of the customers attempting to reach Ameren-CIPS received busy signals.²⁰⁵ Ameren did not discover this during the storm. In fact, it was discovered recently in a response to Liberty's investigation of blocked calls.²⁰⁶ At Liberty's request, Ameren asked AT&T to provide further documentation to quantify the volume of calls blocked during the storm, specifically the calls that were sent to Stericycle from Ameren. The additional documentation provided by AT&T pointed out the blockage at CIPS/CILCO. Ameren did not have network-level call traffic monitoring software installed during the storms. As a result, Ameren could not see the disposition of calls outside its centers. It could not see that so many calls were being blocked. Ameren is considering implementing this software going forward. The following table details calls blocked during the storm:

Ameren-CIPS 800# Customer Calls Blocked
Nov/Dec 2006 Storm²⁰⁷

	Calls Offered	% Blocked
Nov. 30	11,773	69.5%
Dec. 1	86,477	90.8%
Dec. 2	511	9.1%

Callers wishing to report an emergency, such as a gas leak, downed wire, or fire, also had difficulty reaching an Ameren agent. During the November/December 2006 storm, 27 percent of the calls presented to Stericycle were identified as emergency calls—gas odor or downed wires.²⁰⁸ Stericycle's system immediately routes these emergency calls back to Ameren for an agent to handle. However, during the storm there were several occasions when Ameren-IP's emergency trunks were full and could not accept any calls from Stericycle. The following table details the number of calls that were blocked, both gas odor and wire-down emergencies, as Stericycle attempted to route the calls back to an Ameren agent handling emergency calls.

²⁰⁴ Response to Data Request #327-J2.²⁰⁵ Response to Data Request #327.²⁰⁶ Response to Data Request #327.²⁰⁷ Response to Data Request #327-B.²⁰⁸ Response to Data Request #327.

**Ameren-IP Emergency Calls Blocked
Nov/Dec 2006 Storm²⁰⁹**

	Ameren-IP Gas Odor Customer Calls Blocked ²¹⁰		Ameren-IP Wire-Down Customer Calls Blocked ²¹¹	
	Blocked	% Blocked	Blocked	% Blocked
Nov. 30	157	80.1%	3,212	83.8%
Dec. 1	719	82.5%	13,336	81.8%
Dec. 2	30	63.8%	476	62.0%

In total, there were 17,930 blocked emergency calls during the first three days of the November/December 2006 storm, indicating that Ameren-IP did not have enough trunk capacity to handle this volume of emergency calls. During the 2006 storms, Ameren-IP had only 24 trunks to handle inbound gas and wire-down emergency calls (separate published 800 toll free number) and any emergency calls transferred back from Stericycle.²¹² Not enough to handle the volume of emergency calls generated by the November 2006 storm, as evidenced in the chart above. Blocking emergency calls means that customers who are reporting gas leaks or wire-down emergencies are receiving busy signals—they cannot get through to the company to report the emergency. This delays getting the needed information to the field so it can resolve the emergency and lengthens public safety concerns.

Since the storms, Ameren has added trunking such that AmerenIP now shares 48 trunks with the other two Ameren-IL companies for all calls transferred back from Stericycle. However, the shared 48 trunks would have not been sufficient to handle the volume of calls received in the November/December 2006 storm. Ameren has designed its secondary overflow routing to point back to its normal inbound trunk groups, when the primary overflow is full.²¹³ However, calls are routed to Stericycle when Ameren trunks are full, so the likelihood of finding an available inbound trunk if all other trunk groups are full is very slim. If Ameren is going to rely on inbound trunks to supplement the 48 shared emergency trunks, then Ameren must route calls to Stericycle much earlier, rather than waiting until it has reached maximum capacity. This would provide the ability to reserve more trunks when needed for emergency calls.

In summary, Ameren again encountered difficulty in securing adequate call center staffing during the November/December 2006 storm, and experienced significant failure of its telecommunications equipment, including:

- Many customers attempting self-service through the IVR opted out of the system or failed out of it, resulting many “lights out” calls to queue for an agent.
- Ameren’s Voice Announcement over LAN(VAL) board locked up numerous times during the storm, requiring a restart to resolve temporarily the problem. This resulted in reduced capacity of self-service customers trying to reach the IVR or an agent.

²⁰⁹ Response to Data Request #327.

²¹⁰ Response to Data Request #327-G.

²¹¹ Response to Data Request #327-G.

²¹² Response to Data Request #676.

²¹³ Response to Data Request #676.

- Close to 300,000 Ameren-IP customer calls were blocked when overflowing to the Stericycle high-volume IVR service, delivering busy signals to callers and making it extremely difficult to reach the company to report emergencies or lights out situations.
- 100,000 Ameren-CIPS calls were blocked because the calls were not overflowing to Stericycle, delivering busy signals to callers, and making it very difficult to reach the company.
- Ameren-IP's dedicated fire and police emergency telephone lines were full, making it difficult for emergency personnel to report dangerous wire-down and wire-burning situations.
- Several thousand Ameren-IP emergency calls were improperly routed from Stericycle to a wrong number, making it difficult for customers to report wire-down or wire-burning emergencies.
- 17,000 Ameren-IL customers calling to report wire-down and wire-burning emergency situations received busy signals as more than 80% of these calls were blocked on November 30th and December 1st due to insufficient telephone capacity.

The biggest issue Ameren encountered during both storms, in terms of impacted customers, was the blocking of calls to or from Ameren's high-volume overflow provider, Stericycle, through improper call routing or due to insufficient telecommunications capacity at Ameren or Stericycle. The primary goal of a high-volume overflow provider is to handle the extremely high peak calling periods that occur with any large outage or storm. While Stericycle was able to handle a high volume of the calls presented during these storms, it failed to handle several hundred thousand calls, creating frustration for callers and delaying the identification of customers without power. Stericycle's capacity was insufficient to handle the volume of calls presented. Ameren's internal telephony was operating at full capacity as well, too full to accommodate the emergency calls that Stericycle was instructed to route back to Ameren agents. This reduced Stericycle's capacity, as it was required to hold these calls until they could be successfully transferred, resulting in more call blocking.

High-Volume, Outage-Overflow IVR Services

Call blocking at the Stericycle facility occurred because Stericycle was not configured appropriately to handle the call volume that Ameren received during the July 2006 and November/December 2006 storms.

In late 1997, Union Electric contracted with Twenty First Century Communications, Inc. to provide high volume outage IVR services, with the capacity to handle a minimum of 20,000 calls per hour (average call duration of one to one and one-half minutes).²¹⁴ The contract provisioned service to handle UE overflow calls with an option to implement similar services at CIPS, with no increase in capacity. In 2000, Ameren switched its outage overflow services contract to Stericycle (NNC Hanover at the time), at a reduced cost, and with commitment from Stericycle to develop an outage notification service (for planned outages).²¹⁵

²¹⁴ Response to Data Request #443.

²¹⁵ Response to Data Request #184.

Initially, Stericycle configured its Overflow Outage IVR to handle 20,000 calls per hour. Ameren initiated a stress test of the service in November 2001.²¹⁶

The purpose of this stress test is to confirm that more than 100 concurrent calls can be processed and rerouted to Hanover Communications via a Hanover provided AT&T toll free number when an "all trunks busy" condition occurs on Ameren's local trouble reporting number. This will demonstrate that Hanover (and SBC/AT&T) can handle the call load and that there is no network bottleneck or limitation of 100 lines. Also, this will help address any concerns for the next phase of overflowing Ameren's regional toll free outage number to Hanover. Both local and regional outage calls could potentially hit 20,000 calls per hour.

In June 2004, Ameren renewed its contract with Stericycle.²¹⁷ At that time, however, Stericycle had closed its Indianapolis center and the maximum calls that Stericycle could handle per hour was 15,000. Ameren accepted this contract change, even though it had originally projected call volumes as high as 20,000 calls per hour for UE and CIPS. However, the reduced capacity of 15,000 one-minute-calls per hour applied to all Ameren operating companies, UE, CIPS, and CILCO, at that time. Moreover, Ameren did not add capacity when it acquired Illinois Power in 2004.

In an amended contract between Ameren and Stericycle, effective March 1, 2007, Stericycle agreed to provide inbound call capacity of 15,000 one-minute calls per hour, with an option to expand capacity to 30,000 one-minute calls per hour after Stericycle expanded its system.²¹⁸ This contract change became operational in August 2007.²¹⁹ The 30,000 call per hour capacity should be able to handle a similar sized storm as the November/December 2006 storm, if Ameren has allocated enough trunk capacity to handle emergency calls transferred back from Stericycle. However, if Ameren continues to overflow to Stericycle after it has reached maximum capacity, there will not be enough emergency trunks available and blocking of emergency calls will occur as well as blocking at the Stericycle facility.

Technology Enhancements Following 2006 Storms

The following is a summary of the enhancements Ameren made to its telephony equipment since the 2006 storms:²²⁰

- In 2007, Ameren modified the routing scheme such that if three or more agents are available to handle calls, the system routes the caller immediately to the agent queue (and bypasses the IVR).
- In July/August 2007, Ameren developed and rolled out a hardware/software status display that delivers hardware statistics for the IVR servers, such as CPU usage, memory utilization, and disk space consumption. In addition, various critical software applications are monitored to collect usage statistics, such as call processed, calls active in IVR, and

²¹⁶ Response to Data Request #213, Addendum-A2.

²¹⁷ Response to Data Request #442.

²¹⁸ Response to Data Request #442.

²¹⁹ Response to Data Request #550.

²²⁰ Responses to Data Requests #550 and #213.

status of the communications channels between the IVRs and Ameren's systems (such as OAS for logging outage reports).

- Ameren implemented a web-based tool to make it easier for Ameren's call center supervisors to shift calls to its outsourcer, First Contact. Call center management can now control the level of calls routed to First Contact without requiring IT assistance.
- Ameren installed and tested a software and firmware patch to address the PBX's Voice Announcement over LAN (VAL) board lockup issues. The VAL boards enable the PBX to broadcast upfront general announcements—all callers will hear the announcement when first reaching the company. Ameren also developed scripting to notify the Network Operations Center and Voice Engineering when a zero length announcement occurs, to help avoid possible VAL board lockups. Ameren created a procedure for replacing the zero length announcements with a valid announcement.
- Ameren implemented audio groups for static announcements, spreading the load of announcements across multiple VAL boards and reducing the probability that a single board lockup will affect all callers.
- IVR Zip Code Outage Announcement – Ameren implemented loading across multiple ports to reduce the probability of a port lockup affecting multiple callers.
- Load Distribution – Ameren addressed IVR Loading by distributing incoming calls across all five IVRs in a circular fashion.
- Call Center Announcements – Ameren implemented standardization of announcements played to customers across the Illinois call centers.²²¹
- Ameren automated the process for placing an up-front message. Call center supervisors can now enter a 5-digit code and pick from a standard set of messages. This is much easier to do, easier to turn on and off, and presents a more consistent message in all centers. Using the scripted message provides an alternative to avoid the VAL board update process, which, at times, can be problematic.
- Ameren expanded the capability of reader-board functionality in the call centers by allowing supervisors to view more detailed call handling information and call handling agent status information on their desktop PCs. Ameren-IL and Ameren-UE supervisors were given view access to each others' displays, making it easier for call centers to shift calls to available resources.
- Ameren is now sharing contractor resources among all three Ameren-IL centers, balancing resources so that each center can meet service level goals.
- Ameren-IL has a number of at-home agents that can more easily assist in handling after-hours calls.
- In June 2007, Ameren moved to a "trunk pool" concept, designating 428 trunks for the Illinois call centers to draw capacity, as needed. At this point, Ameren-IP is drawing from the pool. Ameren-CIPS and Ameren-CILCO will switch over in second quarter of 2008. As of July 2008, all Ameren-IL companies are in the trunk pool.

These changes have addressed many of the problems that Ameren encountered during the 2006 storms, described earlier in this section, and should serve to improve Ameren's call handling

²²¹ Response to Data Request #311.

performance in future storms. However, Ameren has more opportunities to improve its telecommunications to handle better customer calls in future large outage events. Liberty discusses these opportunities in the Recommendations section at the end of this section.

Storm Restoration Internal Communications

While Ameren-IL experienced trouble with its telephony, it was also having difficulties delivering a consistent storm-restoration status message to its employees or customers. Call center employees generally receive updates from supervisors and this occurred during both storms. However, call center leadership did not regularly receive consistent information from Operations or Corporate Communications about the storm. This is evident from the e-mail logs of the call center's Duty Supervisor during the storms.

The following table lists the storm status (number of customers out of service) information that was available to call center agents during the July 2006 storms:

Date	Time	Center	Source ²²²	Illinois Out	Total Out
July 19	3:52 pm	Pawnee/Peoria	DDO Query ²²³	8,500	10,491
	7:38 pm	Pawnee/Peoria	DDO Query	36,804	224,032
	10:30 pm	Pawnee/Peoria	DDO Query	11,000 CIPS/CILCO	416,000
July 20	1:07 am	Pawnee/Peoria	DDO Query	7,000 CIPS/CILCO	419,000
	6:51 am	Decatur	DDO Query	43,261 IP	305,762
	7:35 am	Pawnee/Peoria	CILCO/CIPS IRV ²²⁴		400,000
	8:00 am	Pawnee/Peoria	News Release		500,000
	8:52 am	Decatur	EOC Conf. Call	46,183	297,334
	9:20 am	Pawnee/Peoria	Media Conf. Announced		500,000
	1:08 pm	Decatur	Media Advisory		500,000
	1:49 pm	Pawnee/Peoria	Call Center Mgt		450,000
	5:00 pm	Decatur	EOC Conf. Call	89,178	
	5:08 pm	Pawnee/Peoria	News Release		400,000
	9:09 pm	Pawnee/Peoria	Call Center Mgt		400,000
July 21	8:08 am	Pawnee/Peoria	News Release		320,000
	10:00 am	Pawnee/Peoria	CILCO/CIPS IRV ²²⁵		320,000
	10:07 am	Pawnee/Peoria	EOC Conf. Call		400,000
	2:31 pm	Pawnee/Peoria	News Release	100,000	570,000
	7:10 pm	Decatur	EOC Conf. Call	167,000	577,000
July 22	9:41 am	Decatur	EOC Conf. Call	67,000	457,000
	2:38 pm	Decatur	DDO Query	65,800	424,338
	9:06 pm	Decatur	EOC Conf. Call	64,727	
July 23	8:52 am	Pawnee/Peoria	EOC Conf. Call	76,000	327,000
	1:52 pm	Decatur	DDO Query	56,000 IP	321,000
	5:58 pm	Pawnee/Peoria	EOC Conf. Call	66,000	298,000
	10:09 pm	Decatur	EOC Conf. Call	45,000+	
July 24	9:11 am	Decatur	EOC Conf. Call	39,548	193,579
	1:28 pm	Pawnee/Peoria	EOC Conf. Call	52,000	240,000
July 25	5:36 pm	Decatur	EOC Conf. Call	35,000	142,000
July 26	1:21 pm	Pawnee/Peoria	EOC Conf. Call	23,700	105,700
	5:22 pm	Decatur	EOC Conf. Call	15,000	82,000

The information e-mailed to call takers during the storms did not correlate with the information documented during the EOC conference calls. The following table provides the outage statistics discussed and documented during the twice-daily EOC Restoration Update Conference Calls:²²⁶

	Time	IL Out	MO Out
July 20	8:00 am	100,000	406,000
	4:00 pm	89,178	406,000
July 21	8:00 am	60,000	350,000
	4:00 pm	167,000	410,000
July 22	8:00 am	88,000	352,000
	4:00 pm	95,000	319,000
July 23	8:00 am	76,000	251,000
	4:00 pm	66,000	232,000

²²² Response to Data Request #324 for all sources in table, except where otherwise noted.

²²³ DDO Query refers to an intranet-based user query that pulls storm-restoration outage statistics from the Outage Analysis System creating an outage snapshot at the time of the query.

²²⁴ Responses to Data Requests #192, #193, #194, and #195-B.

²²⁵ Responses to Data Requests #192, #193, #194, and #195-B.

²²⁶ Response to Data Request #424.

The following table lists the storm status (number of customers out of service) information that was available to call center agents during the November/December 2006 storm:

Date	Time	Center	Source ²²⁷	Illinois Out	Total Out
Nov 30	10:29 am	Pawnee/Peoria Decatur	News Release		
Dec 1	8:43 am	Pawnee/Peoria Decatur	EOC Conf. Call	210,000	482,000
	10:06 am	Decatur	News Release		500,000
	12:03 pm	Pawnee/Peoria	CIPS/CILCO IVR ²²⁸		500,000
	12:41 pm	Pawnee/Peoria	EOC Conf. Call	220,000	500,000
	5:04 pm	Decatur	News Release		500,000
	5:05 pm	Decatur	News Release	230,000	500,000
Dec 2	5:45 am	Pawnee/Peoria	DDO Query ²²⁹	214,168	461,908
	7:15 am	Pawnee/Peoria	Dec 1 st News Release	230,000	500,000
	8:00 am		Ameren.com ²³⁰		2.4 million
Dec 3	9:06 am	Pawnee/Peoria	EOC Conf. Call	187,000	383,000
	11:17 pm	Pawnee/Peoria	EOC Conf. Call	170,000	353,000
Dec 4	11:23 am	Pawnee/Peoria Decatur	EOC Conf. Call	146,000	300,000
Dec 6	12:30 pm	Decatur	EOC Conf. Call	55,000 IP	
	12:47 pm	Pawnee/Peoria	DDO Query	66,650	
	4:49 pm	Pawnee/Peoria	DDO Query	61,975	78,204
	7:17 pm	Pawnee/Peoria	EOC Conf. Call	63,000	80,500

Emergency Operations Center conference call notes existed only from the July 2006 storms. Ameren discontinued the practice of developing conference call notes on July 23.²³¹

Call center employees received their information largely from the Emergency Operations Center conference calls, through the notes taken by participating call center management. However, even that was inconsistent, considering that Ameren held the EOC conference calls twice a day during the storm. Call takers also received some of the news releases issued by Corporate Communications—three releases were shared with agents on December 1.

The lack of a consistent, coordinated message was especially difficult for call center employees trying to answer difficult questions from thousands of callers. Ameren-IL call center leadership summarized Ameren’s call center challenges in the following paragraph from the Critique of Ameren Illinois Service Restoration Activities November 30, 2006 Ice Storm:²³²

We need to communicate correct data to manage customer expectations and also need to build consistency in our message (i.e., information from the agents, the VRU, Corporate Communications, etc.). Automated restoration functionality is turned off during a major storm. While we input an estimated restoration time

²²⁷ Response to Data Request #324 for all sources in table, except where noted otherwise.

²²⁸ Responses to Data Requests #192, #193, #194, and #195-C.

²²⁹ DDO Query refers to an intranet-based user query that pulls storm-restoration outage statistics from the Outage Analysis System creating an outage snapshot at the time of the query.

²³⁰ Response to Data Request #311-F.

²³¹ Response to Data Request #424.

²³² Response to Data Request #8D.

into jobs that are assigned to construction, we need a better way to communicate to those customers whose outage orders have not yet been assigned. In addition, we need to build consistency into the information we provide to customers from different corporate entities (i.e. Corporate Communications, Call Centers, VRUs [voice response units], and Divisions).

Even the media became confused with outage information during the November/December 2006 storm, as the Chicago Sun-Times reported that “About 2.4 million Ameren Corp. customers across central and Southern Illinois and parts of Missouri were without power early Friday after ice snapped power lines and tree limbs.”²³³ According to Ameren, outage maps displayed on its Storm Center website showed that Ameren served 2.4 million customers. A media source misinterpreted this number to mean that Ameren reported 2.4 million customers out.²³⁴ However, the published caused customers to comment on this as they called Ameren’s call centers. Ameren removed this statement from the outage maps on its website, hoping to avoid further misinterpretation by customers and the media.²³⁵

Call takers did not have the information they needed to discuss storm restoration status with customers. In addition, limited information was available publicly, through press releases and media advisories. As a result, customers were worried and frustrated because they had no idea how long they would be without power, making it difficult to make the appropriate decisions about making other living arrangements. This created more calls to the company as the outage duration lengthened. As customers had no information, they would call back repeatedly hoping to get some information from the company.

Ameren established an Integrated Communications Strategy Group in 2005 to discuss a variety of company and industry issues. Its goal was to determine the appropriate means and media for continuing to educate customers, shareholders, legislators, and others about company and industry issues. A team comprised of senior executives from each of Ameren’s business lines met and dealt with communications issues. Following the 2006 storms, members of the team provided perspective on what worked and did not work during the storms. “Storm Communications—After Action Review Summary” documented comments from team members.²³⁶ It listed 19 items under “What Worked”:

- Frequency of communications
- Ameren personal stories – the human side
- Formal (managed) press conferences
- Releases kept primary spokespeople “on message”
- Information flow to community/state leaders and regulators
- Collection process for Ameren personal stories
- Volume of positive stories reduced volume of negative stories
- Media access to Ameren leadership

²³³ “Storm blasts region”, *Chicago Sun-Times*, December 1, 2006.

²³⁴ Response to Data Request #674.

²³⁵ Response to Data Request #674.

²³⁶ Response to Data Request #445.

- Managing Al Sharpton’s claims before his press conference
- Scheduled call-in briefings in the Storm Center
- Coordination between customer contact centers
- Keeping ICC abreast on regular basis
- Follow-up thank you to coworkers and customers – letter in papers
- Internally generated commercials
- Worker hardship angle in messages
- Messages were more strategically managed as event progressed
- Improved language-from repairs to system rebuilds
- Positioning of storm magnitude-no electrical system in US could withstand
- Executives on TV, radio, print gave company a human face and expressed empathy

It listed 31 items under “What could have been done more effectively?” The top ten items on the list were:

- Better information on where crews are working
- Varying restoration estimates caused confusion/lack of credibility
- Approval process for press releases too slow
- IL under-represented regarding restoration progress
- Outage numbers reported from various sources were inconsistent
- “End of Storm/Emergency” declared too early
- Web site numbers did not agree with Distribution Dispatch Operations & storm center
- Confusion between “storm related outages” and “non-storm related outages”
- Difficulty weaning media off storm stories after the event was over
- Post’s reporting of \$30M cost figure without Ameren approval

Liberty discusses most of the items on the “What could have been done more effectively” list in this chapter. A major problem was the inconsistency or lack of restoration status information. The lack of a consistent storm restoration message, and inconsistencies in outage statistics, made it difficult for customers and Ameren employees communicating with customers and the public. Ameren recognizes that these were problems during the storm and has addressed many of these items since the storm, or initiated improvement initiatives.²³⁷

b. Corporation Communications

Ameren’s Corporate Communications department issued nine news releases during the July Storm. It issued the first release at 8:00 a.m. on July 20, 2006. “Half Million Ameren Companies Customers Affected by Massive Storm; Restoration Efforts Underway.” A second release followed at 5 p.m. on July 20: “160,000 Restored of More Than 500,000 Customers Affected by Massive Storm.”

²³⁷ Response to Data Request #446.

It issued two releases each day on July 21 through July 23, and one release on July 24, 25, and 26. The following table summarizes the information released by Corporate Communications regarding the number of customers without power:²³⁸

Date	Time	Illinois Out	Missouri Out	Total Out
July 20	8:00 am			500,000 & 450,000
	5:00 pm			400,000
July 21	8:00 am		320,000*	
	2:00 pm	100,000		570,000
July 22	8:00 am	100,000	360,000*	
	6:00 pm		305,000*	395,000
July 23	12:00 pm		255,000*	320,000
	4:30 pm		241,000*	298,000
July 24	?		171,000*	216,000
July 25	9:00 pm		88,000*	113,000
July 26	?		50,000*	58,000

*Metro St. Louis Area only

The press releases reported outage restoration status and outage counts generally oriented towards the St. Louis Metro area. Only two releases stated the number of Ameren-IL customers out of power during the entire July 2006 storm—on July 21 and July 22. Otherwise, Metro was the area of focus for these releases. Additionally, Ameren generally issued the morning releases at the same time the Emergency Operations Center (EOC) morning conference call was taking place, making it difficult to ensure the numbers were consistent with EOC discussions.

While Ameren indicated a three-day restoration effort on July 20, this was before the second storm hit the service territory on July 21. Ameren stretched the initial estimate after the second storm, from 72 hours to 4 to 7 days. The following details when Communications released information regarding estimated restoration times:²³⁹

	Message in News Release	Anticipated Restoration Date
July 20	Cannot offer anticipated restoration times	
July 20	At least 72 hours, make customer-specific restoration times available as soon as possible	July 23
July 21	A total of 72 hours, make customer-specific restoration times available as soon as possible	July 23
July 22	Initial 3 to 5 day restoration estimate could stretch a day or two longer	July 24 to July 26
July 23	Tuesday or Wednesday	July 25 or July 26
July 24	Majority Tuesday night, remainder Wednesday and the very last customers on Thursday	July 25 to July 27
July 28	Complete all restoration by noon today	July 28

²³⁸ Response to Data Request #366.

²³⁹ Response to Data Request #366.

Ameren did not deliver a consistent message to customers affected by these storms. Ameren’s initial 72-hour restoration time ended up stretching to 8 days. While Ameren was providing a general estimate to all customers, it was not providing customer-specific estimates. Because the majority of Ameren press releases were oriented towards restoration efforts in the Metro St. Louis Area, Ameren-IL customers received limited information about the damage and restoration efforts in their area. The lack of publicly available information forced customers to call the company, already overwhelmed with incoming calls, to learn more about the restoration efforts. This further frustrated customers because call-takers were unable to offer any more detail.

Ameren alerted customers to the predicted winter weather on November 30 at 10:00 a.m. It issued six releases (three for Illinois, three for Missouri) on December 1 detailing the number of customers out of power, the hardest hit areas, and the level of resources assigned to the restoration effort. It also warned customers that “lengthy outages are expected” and that the company could not offer anticipated restoration times.

During the November/December 2006 storm, Ameren generally issued separate releases for Illinois and Missouri, as can be seen in the table below:²⁴⁰

	Time	Illinois Out	Missouri Out	Total Out
Nov 30	Ameren Prepares for Predicted Winter Weather			
Dec 1	10:00 am	220,000		
	10:00 am		280,000	
	1:00 pm	235,000		
	1:00 pm		285,000	
	5:00 pm	230,000		
	5:00 pm		280,000	
Dec 3	Ameren’s Safety Warning on Portable Generators			
Dec 4	?	50,000*		
	?	150,000		
Dec 5	10:00 am	100,000	80,000	180,000

*Decatur only

Corporate Communications did not release the next news release until Monday, December 4. While it broadcast an anticipated restoration date of Wednesday, December 6 in this release, this was very late in the storm—the fifth day of the storm. The table below details the estimated restoration information released by Corporation Communications during the November/December 2006 storm.²⁴¹

²⁴⁰ Response to Data Request #366.

²⁴¹ Response to Data Request #366.

	Message in News Release	Anticipated Restoration Date
Dec 1	Cannot offer anticipated restoration times, lengthy outages are expected	
Dec 4	Most restored by Wednesday, difficult conditions by Friday	Dec 6 to Dec 8
Dec 5	Bulk restored by end of day Wednesday	Dec 8

While Corporate Communications did a better job providing statistics and town information specific to Illinois during the December 2006 storm news releases, anticipated restoration dates were absent. As a result, customers had no idea when Ameren would restore their power. One of the primary purposes of a storm-restoration status news release is to release storm information to a wide audience, thereby eliminating the need for customers to call the company to hear this same information. However, Ameren did not provide anticipated restoration dates, as a result, more customers called the company, breaching the call center capacity, causing other telephony equipment to fail, and creating busy signals.

Corporate Communications did not effectively coordinate with all relevant groups to gather and disseminate storm restoration information. While Corporate Communications participated in EOC conference calls, it did not take control of the “storm message” for the company and it did not press Operations for anticipated restoration times. At a point when the public, state, and local government officials were unhappy with restoration progress and the lack of information, Corporate Communications neglected its responsibilities.

Although Corporate Communications had a “Communications Plan for Severe Storms,” it did not appear that it followed the plan. Rather, the group fell into a reactionary mode, returning “media hotline” calls as it received them, and putting out fires as they popped up.

In fact, during the July storm, Corporate Communications group had already left for the day when Ameren activated the Emergency Operations Center at 7:15 p.m. on July 19. No one from Corporation Communications reported into the EOC that evening to begin preparing the message. It was the next morning before Corporate Communications began addressing the situation and responding to media hotline inquiries.²⁴²

Additionally, Corporate Communications provided minimal information to Ameren-IL customers during the July 2006 Storm, as the majority of news releases were oriented to the Metro St. Louis area. While damage was significantly worse in that area, there were still 100,000 customers without power in Illinois.

Corporate Communications was not an effective “gatekeeper.” There was no coordination or control of the information released to the media, the recordings placed on the telephone systems, and the information relayed by other personnel in the field, such as the community relations’ representatives. As a result, Ameren released conflicting statistics, anticipated restoration dates

²⁴² Interview #97, November 13, 2007.

were late, and company employees were ill informed. Customers were confused with the provided information and frustrated because they were unable to get anticipated restoration times from the company until late in the storm. Ameren's credibility suffered as a result.

Ameren worked with the media a little differently during the November/December 2006 storm to show how Ameren conducted restoration work, and to provide media access to crews, the Decatur "war room," and other key operations personnel. Ameren shortened the approval process for news releases from 60 minutes during the July storm to 30 minutes. Drafts of releases were prepared well in advance of Emergency Operations Center conference calls so the releases could be prepared in time to meet evening news broadcast schedules.

c. Community Relations

At Ameren-IL, the community relations responsibility generally falls to the field Customer Service Supervisor or Business Administrator, reporting to Division management. This is not a dedicated job at Ameren, as the individuals filling this role can also be responsible for meter readers, meter changers, and other clerical support staff. Normally, community relations representatives attend city events and planning meetings, community leader meetings, and any franchise and rates meetings. Other participation includes local community leader clubs, school boards, and charities, with a goal of establishing a company presence in the local community.

During storms and other emergencies, Ameren-IL's community relations representatives also coordinate closely with state and local emergency organizations. The community relations representative also participates in local and state emergency management meetings, providing restoration status, damage assessments, and the number of customers out of power.

During the July 2006 storm, Ameren assigned two community relations officers to work 24/7 with the Illinois Emergency Management Agency (IEMA) at its Unified Command Center (UCC). This was the first time in Illinois history that IEMA had set up a remote location within the area most damaged by the storm. Ameren's presence and participation in the UCC was very effective, giving IEMA direct access to storm restoration progress and helping to coordinate efforts among the Health Department, Fire, Police, Illinois Department of Transportation, Red Cross, and other state and local organizations. Additionally, city officials and legislators visited the IEMA trailer often during the storm, improving Ameren's visibility.

Each field supervisor filling the community relations role for Ameren-IL was responsible for developing and maintaining relationships in the community and with local officials and leaders. The individual controlled community relations; there was no overall coordination or consistency among divisions.

As a result, community relations' involvement in the storms varied among the divisions. There was no community relations plan that each division could follow. As a result, there were inconsistencies in response and a few public relations incidents, particularly in towns that were without power for several days.

During a large storm, the public looks to the utility first for restoration estimates. When these are unavailable, the next step is to contact local officials, demanding they get an answer. As a result,

if the utility does not keep these town and city officials informed, they become angry and frustrated because they cannot answer their constituents. This happened in several locations, particularly during the November/December storm. For instance, the mayor of Decatur took issue with Ameren because no one from the utility had contacted him during the storm. Ameren also received many calls from mayors and school officials looking for information.²⁴³

Ameren had no consistent or coordinated approach to keeping city officials and municipal leaders informed. In addition, critical infrastructures, such as water treatment plants, lift stations, gasoline stations, hospitals, and nursing homes, were not easily identifiable in the Outage Analysis System. As a result, Operations was unable to prioritize restoration efforts for critical customers. This left many small towns in difficult situations—without drinking water or water treatment facilities, gas stations unable to pump gasoline, schools without power, etc. This made it difficult to prioritize restoration efforts, and in some cases, creating public relations issues. Lessons learned discussed in the July storm debriefing presentation to the Illinois Department of Transportation identified a need to improve communications with local community leaders.²⁴⁴

d. Best Practices

This section addresses elements of Ameren’s outage communications that Liberty recognized as a utility “best practice” or practices that proved to be especially effective. Based on its review, Liberty identified as an industry best practice:

- Ameren has the ability to manage and operate its five call centers as one or two virtual centers using “first available agent” routing so that calls can be balanced among available resources in all centers (currently deployed at Peoria and Pawnee centers)
- Ameren has developed a comprehensive disaster recovery plan for its call center telecommunications, and revised it following the 2006 storms.
- Ameren’s Outage Information intranet application provides a quick snapshot of storm progress for any Ameren employee.
- Ameren’s practice of embedding a company liaison into Illinois Emergency Management Association’s (IEMA) Unified Command Center during catastrophic events helped expedite emergency response and improve communications.

Liberty also notes that Ameren has opportunities to adopt the following important best practices:

- Call center staffing plan for storms so that all call center employees know their role and job expectations during a large storm. In cases when the company can predict or model potential storm damage, making accommodations for call takers at local hotels, so they do not have to travel to work in bad conditions and to ramp up staffing quickly at the onset of a storm. (Recommendation IV-23.)
- Consistent and timely storm restoration information communicated internally and externally. (Recommendation IV-25 and IV-26.)
- High-volume stress testing to ensure telephony and integrated systems respond as designed during actual high-volume outage events. (Recommendation IV-27.)

²⁴³ Response to Data Request #8-G.

²⁴⁴ Response to Data Request DR #455.

The use of the above outage communications “best practices” combined with Ameren’s implementation of Liberty’s recommendations will further improve the company’s outage communications and ultimately, improve customer satisfaction.

4. Conclusions

1. The Ameren-IL call centers had no formal emergency storm plan documented and were unable to ramp up staffing as quickly as needed during the 2006 storms to respond to customer calls. (Recommendation IV-21)

Ameren’s call centers do not have a call center formal Storm Plan documented today, nor did they have one prior to the July and November/December 2006 storms. The lack of a plan forced management to ask for volunteers to cover after-hours and weekend needs. Ameren enforced mandatory overtime in the November/December 2006 storm after the weekend staffing proved insufficient. As a result, Ameren-IL was short staffed for the weekend and overstaffed during the following week. In addition, weather conditions made it difficult for employees to report to work during the November/December 2006 storm, further reducing Ameren-IL’s available staff. Ameren could not take advantage of its contractor workforce because the contractor had not been trained to handle outage calls, nor had the contract had been established for weekend and after-hour support. In addition, Ameren did not configure the telephony to easily shift call volume to the contractor’s facilities.

2. Ameren experienced significant failures in its call center telephony during the extremely high volume of calls received during 2006 storms. (Recommendation IV-22 and IV-26)

The systems blocked many Ameren-IL customer calls during both 2006 storms, largely due to insufficient capacity of its telecommunications facilities, especially its high-volume outage-reporting provider, Stericycle.

Additionally, various technology failures inhibited call flow and made it difficult for customers to report outages. Ameren instituted patches and “workarounds” to deal with some of the problems; however, the failures damaged the caller “experience” and customer satisfaction, and further inflated call volume.

3. Ameren was unable to recognize the extreme level of call blocking occurring during the storms. (Recommendation IV-22 and IV-26)

Ameren cannot monitor its 800-network traffic, nor can it verify that calls are terminating successfully.²⁴⁵ Ameren can only verify that trunks are operating and observe performance. As a result, Ameren did not know that customers were having trouble contacting the company during the 2006 storms. Supervisors brought problems to Information Technology’s attention after Ameren call-takers relayed customer comments to the call center supervisors during the storms. Ameren did not understand the scope of the problem until after the storm, when AT&T was able to provide Ameren with network traffic statistics.

²⁴⁵ Interview #43, October 25, 2007.

4. Callers wishing to report an emergency situation, such as a gas leak, downed line, or fire had difficulty reaching an Ameren agent. (Recommendation IV-22 and IV-26)

In total, there were 17,930 blocked emergency calls during the first three days of the November/December 2006 storm; Ameren-IL's emergency trunks were not large enough to handle this volume of emergency calls. As a result, callers wanting to alert Ameren to a dangerous situation received busy signals while trying to reach dedicated emergency lines. Callers had to redial repeatedly until they reached the company, and then wait in queue for an available agent. This delayed getting critical information to the field to locate and mitigate these emergencies. Furthermore, the blocking of emergency phone calls is a public safety concern, delaying the dispatch of first responders to assess and secure, lengthening public exposure to unsafe conditions.

5. Ameren has instituted appropriate disaster recovery contingencies for its call center telecommunications equipment.

Ameren has instituted an appropriate Disaster Recovery Plan for its telephony equipment. Ameren successfully tested its Disaster Recovery Plan in October 2007, including the simulation of a complete failure of the St. Louis telephony servers.²⁴⁶ This was the first whole-scale test of the equipment. Ameren plans to conduct tabletop Disaster Recovery drills a minimum of two times per year on a random basis, working through the process that various employees would follow based on various scenarios. Ameren is considering an annual drill, similar to the one conducted in October, going forward.²⁴⁷

6. Ameren's Corporate Communications group did not deliver a consistent message nor did it make a real effort to obtain Estimated Times of Restoration from Operations. (Recommendation IV-23)

One of the most vital functions of a utility's Corporate Communications department during a major storm is to make sure that all employees present the same information about storm restoration to their contacts outside the company. In addition, it must effectively disseminate storm restoration status information to stakeholders—state and local government officials, large industrial customers, the media, employees, and customers. The goal is to deliver the same message to the press, mayors, legislators, city officials, and the next customer calling into the call center. A critical component of this message is the anticipated time and date of restoration.

Corporate Communications did not effectively coordinate with all relevant groups to gather and disseminate storm restoration information. While Corporate Communications participated in EOC conference calls, it did not take control of the "storm message" for the company and it did not press Operations for anticipated restoration times. Although Corporate Communications had a "Communications Plan for Severe Storms," it did not appear that it followed the plan. Rather, the group fell into a reactionary mode, returning "media hotline" calls as it received them, and putting out fires as they popped up.

²⁴⁶ Response to Data Request #326.

²⁴⁷ Interview #43, October 25, 2007.

At a point when the public, state, and local government officials were unhappy with restoration progress and the lack of information, Corporate Communications neglected its responsibilities. As a result, Ameren delivered conflicting messages to the press, city and emergency officials, and customers calling into the call centers. Ameren did not effectively provide estimated times of restoration to customers, the public, city and state officials, call center representatives, or other key employees during the 2006 storms. In addition, the timing and limitations in the level of detail provided about the storm and restoration progress frustrated customers, the media, emergency and public safety coordinators, and government officials, ultimately creating more phone calls and customer dissatisfaction.

7. Ameren's Corporate Communications Storm Plan for Severe Storms does not reference or coordinate with Ameren's Electric Emergency Restoration Plan. (Recommendation IV-24)

There is no reference in the Corporate Communications Storm Plan for Severe Storms to the corporate Electric Emergency Restoration Plan or the Ameren emergency response organization. To be effective, emergency plans need to be coordinated and consistent with each other. In addition, the plan does not contain any information concerning the communications emergency response organization or job duties within that organization.

To be a complete and effective corporate communications emergency response plan, it should furnish this information and should be coordinated with and refer to the corporate EERP. Ameren-IL should complete this improvement within six months of the date of this report.

8. Ameren-IL did not have a consistent and coordinated approach to keep city officials and municipal leaders informed. (Recommendation IV-25)

Ameren did not have a consistent or coordinated approach to keep city officials and municipal leaders informed. In addition, critical infrastructures, such as water treatment plants, lift stations, gasoline stations, hospitals, and nursing homes, were not easily identifiable in the Outage Analysis System. This made it difficult to prioritize restoration efforts, and in some cases, creating public relations issues. Since the 2006 storms, Ameren has identified critical infrastructure accounts in the Outage Analysis System. However, Ameren has an opportunity to improve its relationships in all communities and further educate constituents in its storm restoration process.

5. Recommendations

IV-21 Create a call center staffing model to facilitate quick ramp-up and consider staging agents in nearby hotels in preparation for a large storm, especially one that makes travel to the center difficult or unsafe.

To be adequately prepared for the high volume of calls into its call center during a large outage, Ameren-IL should have adequate and experienced agents on hand to respond. This could be a combination of Ameren employees and third-party agents, if the agents have appropriate access to Ameren information systems and restoration information. In either case, Ameren should be prepared to fully staff centers to be able to respond to customer outage calls.

To assist with the need to ramp up staffing beyond normal staffing levels, Ameren should develop a call-center resource plan that it activates during major storms or large outage events. Integrated with this plan should be a staffing model that will provide guidelines for adding resources, based on the predicted severity of the event, projected call volumes, the timing, and expected duration.

Ameren should consider a pre-storm staging strategy for its call center agents, especially when weather makes travel difficult. Ameren's planning process should ask agents to come to the centers prepared to spend several days away from home, if necessary, and arrange for rooms in a nearby hotel, along with meals and other logistics. Ameren-IL should complete this improvement within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-22 Redesign call center technology to improve communications with customers during a large outage or storm.

While Ameren has committed to adding more physical telephone trunks to improve the overall capacity of its call centers,

- Ameren-IL should reconsider its routing strategies. It should route calls to the high volume IVR provider well before Ameren reaches maximum capacity. This will ensure that enough of Ameren's inbound trunks are available to supplement dedicated emergency trunks to eliminate all blocking on emergency wire-down and gas odor calls.
- Ameren-IL should alleviate the telephony capacity restraints to minimize instances when callers receive busy signals.
- Ameren should implement network-level monitoring services to be able to track the disposition of calls routed outside its centers, to vendors and high-volume overflow service providers.
- Ameren should continually review its call volumes, handle times, and service level performance to ensure the call center is adequately sized (trunks, seats) to deliver responsive service.

Ameren-IL should complete this improvement within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation and indicated that it is reviewing various options to meet it.

IV-23 Revise and update Ameren communications policies and develop comprehensive communications procedures related to outage communications.

Communications policies must be comprehensive and should address all aspects of outage-related communications and the organizations and personnel involved. They should include communications intended to prepare customers and their communities for outages, such as media advertisements, mailings, and bill inserts, in addition to emergency communications and information provided while an outage is in effect. They should also include post-outage communications, such as debriefings with city officials, reports to the ICC, and media articles explaining outage causes and remedial activities. Policy documents should cover both internal

and external communications, and should establish the roles and responsibilities of all participants in the various processes. This includes not only communications personnel and others in the traditional public affairs functions, but also Operations and Customer Services employees.

Once Ameren establishes and documents revised and updated policies, it should write procedures that clearly identify the actions that responsible individuals should take. Procedures should focus on the communications processes and, as such, should cross department lines. This will mitigate the effect of future organization changes on communications procedures.

The procedures should emphasize other important aspects of communications, such as the need to press Operations for accurate estimates of restoration times, specific time requirements for advanced communications, thoroughness, and consistency. Ameren-IL Communications should serve as the “gatekeeper” to coordinate and control of the information released to the media, the recordings placed on the telephone systems, and the information relayed by other personnel in the field, such as the community relations’ representatives.

Procedures should also address coordination with community relations officers to ensure that Ameren keeps key customers, government officials, and others informed.

Finally, the procedures should include a requirement and process for a periodic review and update. This should include the processes as well as personnel names, locations, telephone numbers, etc. The review and update process should call for regular interface with personnel outside Ameren, such as customers, government officials, the ICC and the media, in order to ensure that communications policies and procedures are still meeting their needs. Ameren-IL should complete this improvement within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-24 Modify the Corporate Communications Storm Plan for Severe Storms to emphasize effective communications and better coordination with the Emergency Operations Center.

Ameren should revise the Communication Plans for Severe Storms to reference the corporate EERP and other emergency plans and to establish consistent definitions of storm levels between the different plans. Ameren-IL should complete the recommendation within six months of the date of the final report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-25 Ameren should pursue a more coordinated and consistent approach to keeping community leaders and municipal officials better informed of storm restoration status.

Ameren should standardize and coordinate community relations efforts among the Illinois divisions. The role of a community relations officer should clearly specify duties during major storms as well as day-to-day activities to develop relationships, maintain contact lists, update

critical infrastructure records, and educate communities on Ameren's storm response approach. This includes interfacing with all communities, big and small, within the Illinois service territory.

Ameren should be more proactive during storms, contacting community leaders regularly before, during, and after the storm to provide an update on restoration progress, so that they can keep constituents informed and make proper decisions. Ameren-IL should complete this improvement within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-26 Rigorously test call-handling technology to ensure it operates to expectations and specifications.

Ameren owns a HAMMER server from Empirix that allows testing of its call center scripting and applications. However, the HAMMER tool is limited to 48 simultaneous calls and cannot simulate the high volumes needed to sufficiently test Ameren's telephony, such as the volumes received during the peak calling periods of a large storm.

Ameren has made changes and improvements to its telecommunications facilities since the 2006 storms, including increasing the capacity of its third-party outage overflow provider. It is critical that Ameren stress test these changes to ensure proper performance during future storms, especially in light of its performance during the 2006 storms. The test should place great demands on Ameren's existing call answering technology, simulating at least 30,000 calls per hour, to demonstrate system performance under extremely high call volumes. This will help Ameren confirm the upper limitations of its customer-facing technology in terms of simultaneous callers, queue build-up, and systems response. The test will also provide important feedback in terms of how the system works as a whole, from the PBX through the IVRs and to an agent as well as the overflow to Stericycle. Many of the problems encountered during the 2006 storms could have been avoided if Ameren had comprehensively stress tested its telephony after each major equipment upgrades or change.

Additionally, Ameren's emergency drills should include scenarios that test the supporting technologies and telephony. This will help Ameren be prepared and more responsive during emergencies. Ameren-IL should complete this improvement within one year of the date of this report and after major modifications to its telecommunications equipment or supporting systems.

In its comments on the draft report, Ameren-IL accepted this recommendation.

F. Support Organizations

1. Objectives

This section provides a description and Liberty's evaluation of the support functions that were part of the Ameren emergency organization responding to the 2006 storms. Specifically, this report provides an analysis of each specific support function and its effect on the restoration of service to Ameren-IL's customers. The report addresses the following item in the ICC's Request for Proposals for this investigation:

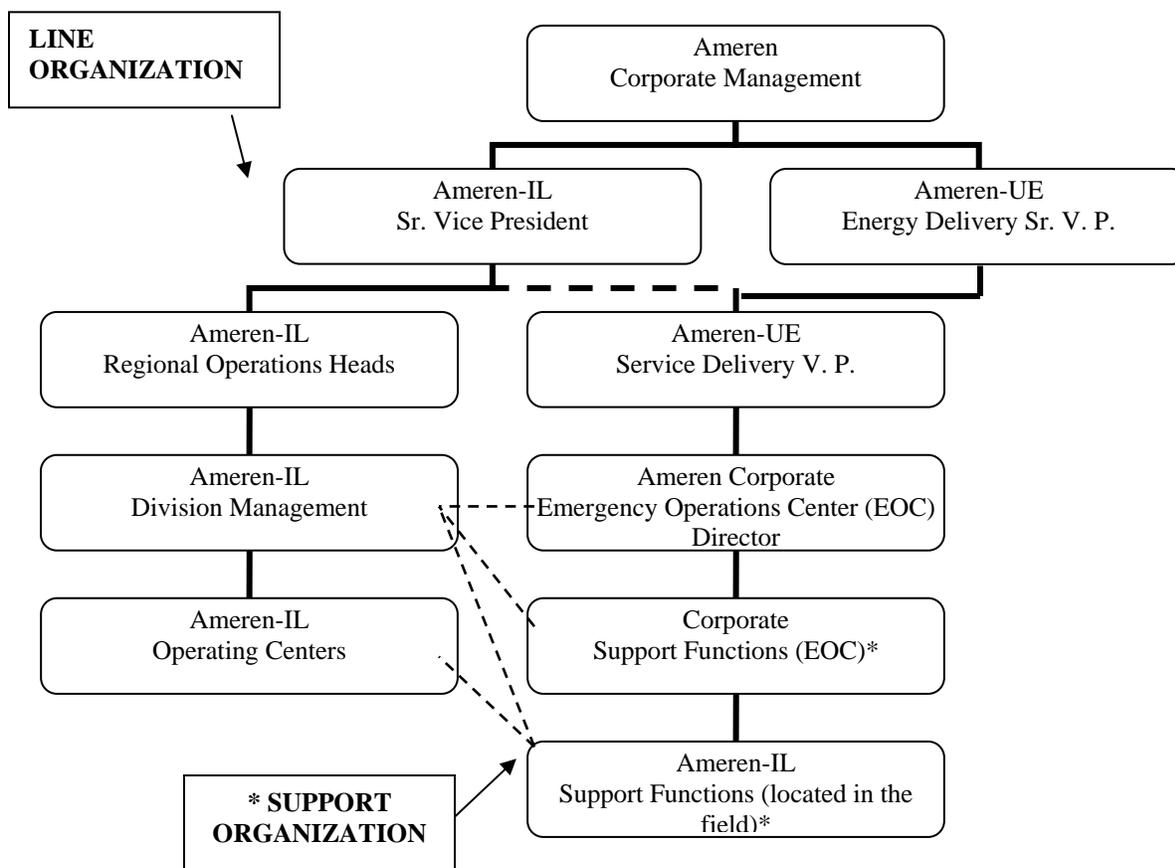
- **4.3.2.5.29** An evaluation of the performance of the utilities' support organizations such as safety, security, logistics, materials, and transportation.

2. Background

An evaluation of a utility's response to a major outage event rightly focuses much attention on the "line organization." Section IV.C (Organizational Performance) and Section IV.G (Field Restoration) contain the findings and analyses of Liberty's review of Ameren-IL's line organization during the two 2006 storms. Liberty defines the Ameren-IL line organization as the corporate management structure responsible for oversight and direction of the storm effort, the corporate storm management organization (*i.e.*, the Emergency Operations Center (EOC)), and the Ameren-IL emergency organization, including regional operations, the divisions, and the operating centers. The functions of storm management, damage assessment (field checking)/engineering, dispatch, first responders/switchmen, line repair crews, and vegetation management (tree) crews are included in the line management organization.

This section of the report deals with the support functions, which are Safety, Stores (Materials), Transportation/Fuel, Security, and Logistics (Lodging, Meals, Laundry). A military saying is that "an army fights on its stomach," meaning that the military line organization needs ammunition, food, fuel, and supplies to do its job. Similarly, the utility's line emergency-response organization needs support to be timely, efficient, and reliable.

The chart below shows the relationship between the emergency response line organization and these support functions.



Ameren personnel with the responsibility to lead a support function or to perform a role at the corporate level in that function are in the box entitled, “Corporate Support Functions (EOC).” They were either located at or near the Emergency Operations Center (EOC) at the Ameren General Office Building in St. Louis or maintained close and ongoing contact with the EOC from their workstations during the emergency response. These individuals communicated and coordinated directly with Division Managers and/or Division Superintendents or their designees. They provided direction and support to the members of their support organization who were located in the field in the Ameren-IL service area. The members of the support organization shown in the box entitled, “Ameren-IL Support Functions (located in the field)” communicated and coordinated directly with Division Managers and/or Division Superintendents or their designees as well as the Ameren-IL supervisory personnel in charge of the restoration in the operating centers.²⁴⁸

3. Findings and Analysis

This section presents Liberty’s findings and analysis of:

1. The organizational structure of the following support functions assisting the Ameren-IL emergency response organization in the two 2006 storms:

- Safety

²⁴⁸ Response to Data Requests #5 and #70 and Interview #77 (November 2, 2007).

- Security
- Logistics
- Stores/Material
- Transportation/Fuel

2. The effectiveness and timeliness of the performance of the above organizations in supporting the Ameren-IL response effort in the two 2006 storms, including the organization's performance in:

- Promoting and ensuring employee and public safety
- Providing responders with necessary information, equipment, services, supplies, etc.
- Supporting and enabling responders in restoring service as quickly and efficiently as possible.

a. Safety Support Function

No matter how timely and efficiently a utility restores service in a major outage event, if the safety performance—protecting the safety of the public and the response workers—was not good, the effort was not successful. This segment analyzes how Ameren-IL organized and performed its safety support function.

(1) Safety Support Organizational Structure

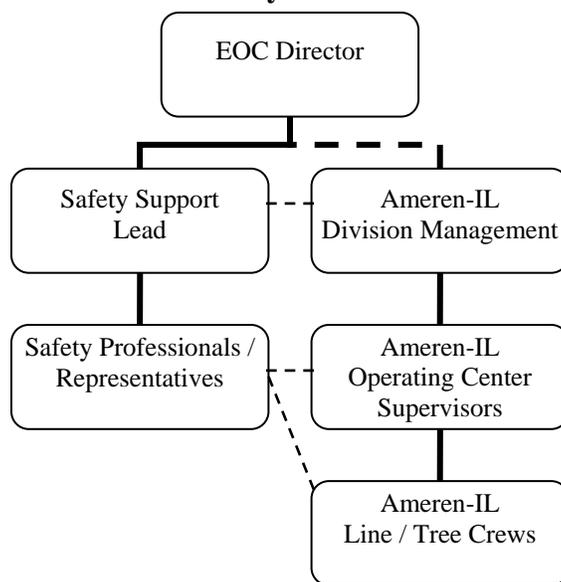
The Safety Lead, located in the Ameren General Office Building in St. Louis, headed the safety support organization for Ameren-IL in the July 2006 storm. In the July storm, this individual was the Managing Supervisor, Safety, Energy Delivery, with responsibility for safety in Missouri and Illinois. He, like the other lead personnel who had responsibility for support functions in the two 2006 storms, had good experience in his assigned functional area. In his emergency response role as Safety Lead, he reported directly to the Emergency Operations Center (EOC) Director. The safety professionals/representatives assigned in the field reported to him as Safety Lead. The normal complement of Ameren-IL safety professionals in July 2006 was six. Ameren brought in additional qualified safety professionals from other areas of the company (*e.g.*, the nuclear organization). In addition, some of the line and tree contractors had safety representatives designated for their contingent. The Safety Lead requested that all outside crews/teams coming in from outside to assist Ameren either bring their own safety professional or designate a member of the crew/team as the safety representative. The total of the safety professionals/representatives for the Ameren-IL area for the July 2006 storm was thirteen (13).

Ameren changed the safety support organization for Ameren-IL for the response to the November/December 2006 storm. Rather than report to the corporate EOC Safety Lead, the Ameren-IL safety professionals/representatives reported to the various division managers where they were assigned. The total number of safety professionals/representatives for the Ameren-IL area for the November/December 2006 storm was twelve (12).²⁴⁹

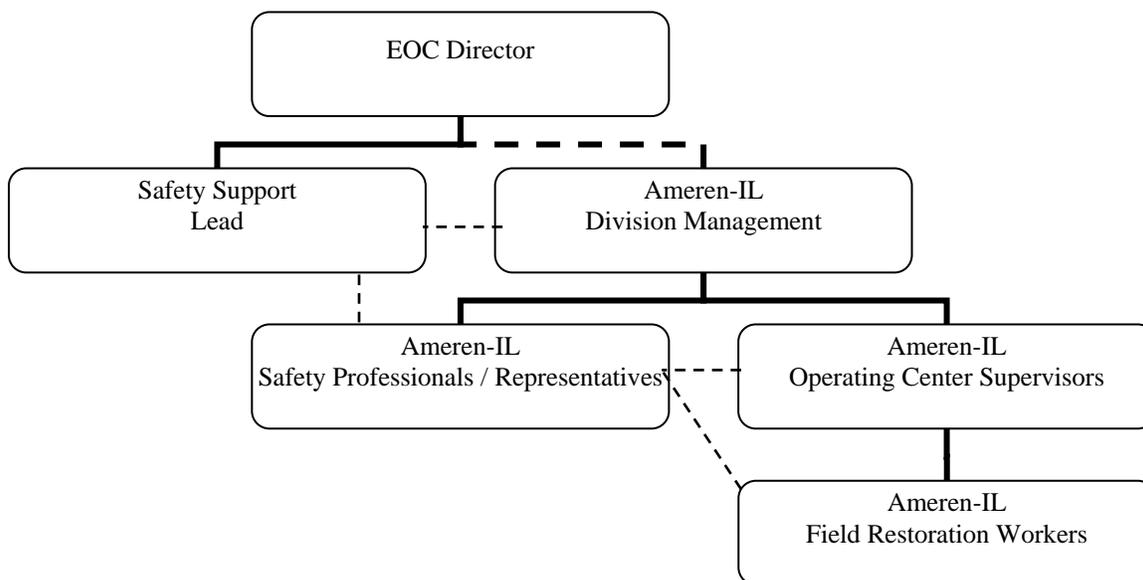
The two charts below depict the Safety Support organization for the two storms.

²⁴⁹ Interview #92 (November 15, 2007), Response to Data Requests #76 and #160.

July 2006



November/December 2006



Ameren-IL did not give a specific reason for this organizational change. However, in an interview with the Ameren-IL CEO (who was the Senior Vice President, Ameren-IL, during the two 2006 storms), Liberty learned that Ameren’s top management had made the decision in the spring of 2006 to begin moving toward a state-run organizational model.²⁵⁰ In light of the move to bring in a Co-Director of the Emergency Operations Center (EOC) with specific responsibility for Illinois during the November/December 2006 storm response, and the subsequent move to establish a separate Illinois EOC in 2007, it seems reasonable to assume that this change in the safety support organization was made as part of the move to more individual state control.

²⁵⁰ Interview #15 (November 14, 2007).

Regardless of the reasons, Liberty found that the Ameren-IL Safety Support organization for the November/December 2006 storm response was not the best option. When the safety professionals/representatives report directly to the assigned Division Manager, there is a negative effect on communications among these individuals as well as the coordination of a consistent approach to the safety support function. Flexibility is affected, as it becomes more cumbersome to quickly move the safety representatives than if they were all reporting to one Safety Support Lead. Now that Ameren-IL has established its own Emergency Operations Center (EOC), it would be better if it establishes a Safety Support Lead position at the Illinois EOC and have all safety professionals/representatives report to that lead.

(2) *Safety Support Organizational Performance*

Safety performance is the responsibility of each individual employee, of each crew or work unit, of each functional group or department, and ultimately the entire emergency response organization. Unless each of these maintain a high level of care and focus on safety rules and precautions, safety performance will suffer. The emergency response line organization has the highest exposure to safety incidents, accidents, and injuries, and typically, the majority of safety issues arise from this group. Section IV.G (Field Restoration) covers specifics of the actual safety performance of the Ameren-IL emergency response organization.

The focus of this segment of this report is on the activities of the Safety Support group in assisting the Ameren-IL emergency response organization. Because this group assisted Ameren-IL only during the July 2006 storm response, Liberty confines its comments here to activities and results for that storm only. Section IV.G (Field Restoration) includes a review of the November/December 2006 safety-related activities, assigned to the Ameren-IL operating divisions.

The Ameren corporate Electric Emergency Restoration Plan (EERP) in use at the time of the 2006 storms did not include a section on safety. Recommendation III-1 of Chapter III (Emergency Plans) recommended that Ameren add safety, as well as other functions not covered in the plan. In the absence of any plan to direct the Safety Support Lead, the individual in that role performed the activities that were deemed the most appropriate and useful to accomplish the task. Upon review, Liberty found that the activities were appropriate and accomplished the desired goal.

At the onset of the July 2006 storm, which occurred after the end of the normal workday on July 19, the Safety Support Lead began following the outages through use of his "Blackberry." After receiving a call from his supervisor, he contacted all of the safety professionals. He instructed them to pack and report early the next day. For the safety professionals in the affected area, he assigned a specific operating center and told them to report there. He instructed the others to begin traveling in to the metropolitan St. Louis area and that they would receive their assignment while en route. This gave the safety professionals the amount of specific instruction they needed while allowing time to determine where their services could be put to the best use. The Safety Support Lead reported that there were no conflicts with any of the Ameren-IL operating divisions on his assignment of safety professionals in the July 2006 storm.

The Safety Support Lead did not have a workstation at the Emergency Operations Center (EOC), but was located in the same building at the Ameren General Office Building in St. Louis. He

made “ten to twelve visits per day” to the EOC during the July 2006 restoration effort. He described his goal as trying to maintain a “decent knowledge of where work was going on.” He worked closely with the logistics group to learn where Ameren housed people so that he could get safety professionals to go there at the start of the day. He attended all morning Resource Update Calls at the EOC, providing a report on the call. His report covered safety incidents and the areas of focus of the safety group.

Safety professionals made a concerted effort to meet with outside crews at staging areas when they first arrived on Ameren property. They tried to go where the crews were going. The Safety Support Lead thought they did a good job in meeting incoming outside crews for orientation in the July 2006 response effort. As an example of the effort toward that end, in one instance Safety called a Division Superintendent to meet a crew at 10:00 p.m. when no safety professional was available.²⁵¹

The area of communications is extremely important for effective safety support, as it is for every other emergency response function. Two-way communications between the Safety Support Lead and the safety professionals/representatives, as well as between the Safety Support organization and the rest of the emergency response organization, are essential. As noted above, the Safety Support Lead participated in the EOC Resource Update Calls. He did not hold special conference calls in the July 2006 storm with the safety professionals/representatives. In the November/December 2006 response effort, when the safety professionals/representatives in the Ameren-IL area were reporting to the operating divisions, Ameren corporate Safety Support instituted two conference calls per day, one call with safety representatives from each outside crew/team (contractor and Mutual Assistance utility²⁵²), and one with Ameren safety professionals. The Ameren-IL safety professionals usually participated in these calls, even though they were no longer reporting to the corporate Safety Support Lead.²⁵³ Conference calls such as this among support function groups are a utility “best practice” and should be part of the standard procedure by these groups during a major outage event.

Two areas can be problematic in the Safety Support function. To the credit of the Safety Support Lead and the safety professionals/representatives, there were no reported issues in either of these areas. The first is the perceived or actual authority of Safety Support personnel in their dealings with the rest of the emergency response organization. Put another way, how much weight is given to what they say in the area of safety rules and practices? There were no reported issues in this regard. The Safety Support Lead put it this way, “I think what I said was respected.” The other potential problem area is feedback from field workers received by the safety professionals/representatives. Because of the emphasis put on safety, reports from the safety professionals/representatives concerning situations in the field that could pose a safety risk are routed quickly up the emergency response organization and receive prompt and close attention by those in leadership roles. There is sometimes a tendency among field workers to seek resolution to non-safety issues by reporting them to the safety professionals/representatives. Examples of this would be the quality of the meals, the lodging arrangements, the length of the

²⁵¹ Interview #92 (November 15, 2007).

²⁵² A “Mutual Assistance utility” is one which has entered into a reciprocal agreement with other utilities to come to each others’ aid during major outage events on a “not for profit” basis.

²⁵³ Interview #92 (November 15, 2007).

daily commute, etc. Liberty found that the safety professionals/representatives were seasoned veterans and did a good job of screening the feedback received from the field.

The Safety Support Lead addressed safety issues that arose during the restoration effort, such as the need for more specific direction on the amount of rest time between shifts for the field workers, the process for crew convoys traveling through intersections, identifying orientation sites, and specific incidents when personnel did not follow safety procedures correctly.²⁵⁴ The post-storm critiques discussed these matters. Section IV.G (Field Restoration) addresses the orientation sites for incoming outside crews and the rest time issue.

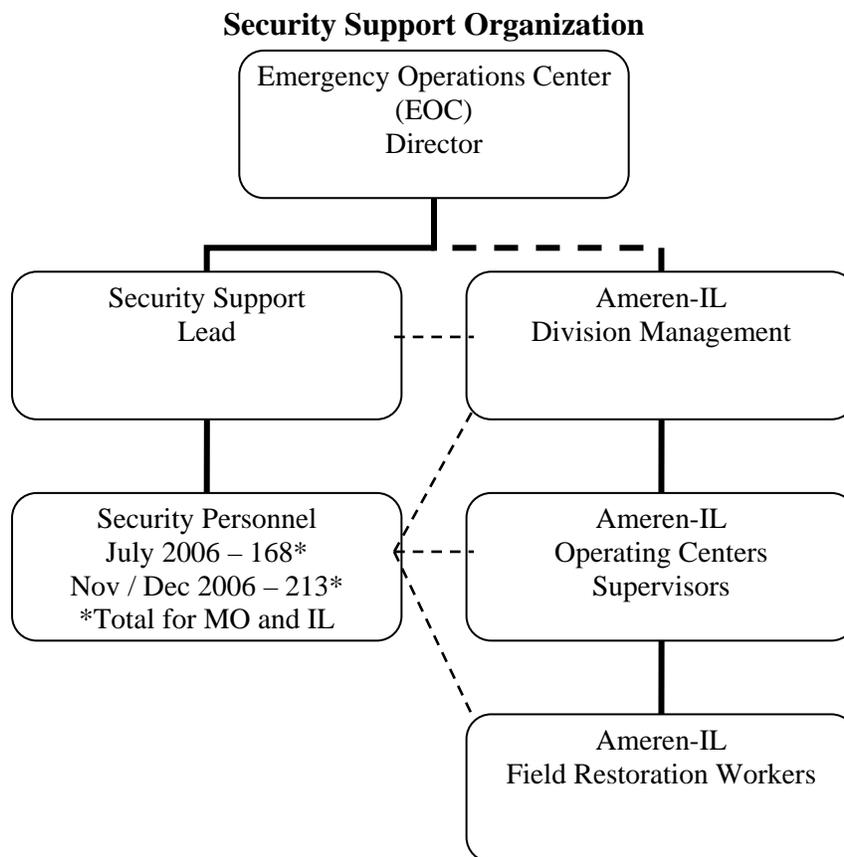
b. Security Support Function

The security of workers, customers, and the public must be a primary concern of a utility emergency response organization during a major outage event. The large amount of outside workers and equipment brought into the area from other locations increases the risk. Irate customers, vandals, thieves, and saboteurs all pose a certain level of risk to utility workers, customers, and the public, as well as a risk of property theft and damage.

(1) Security Support Organizational Structure

Ameren's organization chart of the corporate Emergency Operations Center (EOC) showed two leads for the Security Support function. However, in interviews, the Security representatives explained that in reality, there was only one lead person for the Security Support function. The individual filling this role was Ameren's Manager, Corporate Security. He assigned the other full time Ameren security personnel various duties in the field. Contract security personnel and off-duty police officers made up the largest portion of the security workforce. Ameren did not furnish a breakdown of the number of security personnel assigned specifically to the Ameren-IL area for either of the two 2006 storms. Ameren corporate level managed overall security, with security resources moved between states as the need required. They used 168 security personnel to respond to the July 2006 storm, and 213 for the November/December 2006 storm. The diagram below shows the organization chart for the Security Support function.

²⁵⁴ Interview #92 (November 15, 2007).



(2) *Security Support Organizational Performance*

The Ameren security organization has someone on call, twenty-four hours a day, every day. All of the Ameren fulltime security personnel are equipped with a laptop computer, a “Blackberry,” and two different phones. With the aid of this technology, and the additional outside resources brought in, the Ameren fulltime security personnel were able to remain in their normally assigned area where they had familiarity with the facilities, geography, and available outside security resources.

The Security Support lead reported directly to the Ameren Emergency Operations Center (EOC) Director, but did not remain at the EOC in St. Louis. He functioned as a “floater,” moving to those areas that needed attention, and checking on the status of security in different areas. The Security Support lead conducted two conference calls daily with Ameren security personnel. He or his designee sat in on all of the EOC Resource Update Calls. Two Security Support personnel sat in on all Ameren Logistics conference calls, which occurred three or four time per day.

The Security Support lead and other members of his staff arranged for coverage and support from local police departments in the affected area. When there was an equipment breakdown on one of the repair crews, Security would notify law enforcement and they would supply assistance.

Ameren focused attention on the issue of relations between union and non-union crews. The Ameren workforce in the affected area was comprised of bargaining unit employees, and

typically, Ameren would not bring in non-union forces to assist them in this area. Due to the significant damage and number of customers affected, Ameren had no viable alternative but to bring in non-union workers. Ameren contacted the union leadership and reached an agreement. There were some disgruntled individuals, and Ameren needed security assistance to ensure that “no games were being played.” Ameren established clear boundaries between the work areas of union and non-union crews. Ameren separated the crews and placed marked security vehicles in clear sight. The effectiveness of these measures was borne out in the fact that with all of the exposure and risk, only one incident of a cut tire was reported.

During extended outages, customers’ patience is put to the test and tempers grow short. This is a common challenge for all utilities responding to major outage events. The Ameren Security Support group experienced some problems with irate customers. Some geographic areas in particular were a concern. With regard to such areas, the established rule among repair crews was, “Don’t work unsafe – back out – go to a safe haven.” Ameren put out public safety announcements advising that repair crews would be withdrawn in threatening situations and only return when it was deemed safe. Again, these steps proved effective in that only one customer had to be arrested because of threatening actions.

Another important role of the security forces was the protection of equipment and tools belonging to outside repair crews who left trucks parked overnight at staging sites and hotel parking lots. The security forces successfully protected all of this equipment and property during the two storms, with only one incident in which someone stole tools when a crew came in earlier than expected, before the security detail was in place.

Given the large number of workers, equipment, and tools involved, and the difficult situations attendant with prolonged power outages, Liberty found that the Ameren Security Support function performed their role well in the two 2006 storms.

c. Logistics Support Function

Three people who headed the Logistics Support functions defined logistics as including:²⁵⁵

- Security
- Fueling
- Lodging
- Meals
- Transportation
- Laundry
- Staging Sites (excluding materials)

Liberty addresses security, fueling, and transportation separately. Therefore, the functions addressed in this segment as being included in the Logistics Support function are Meals, Lodging, Laundry, and Staging Sites (excluding materials).

²⁵⁵ Interview #85 (November 27, 2007).

(1) Logistics Support Organizational Structure

Three individuals who served as “directors” or leads headed the Logistics Support function. They were located at the Emergency Operations Center (EOC) in the Ameren General Office Building in St. Louis. The three worked as a team; there was no one designated Logistics Support lead. They divided the different logistics areas such as lodging and meals among the three, rather than assignment responsibility by state. Ameren brought in three or four additional people to assist the three leads at the EOC. The rest of the employees working in the Logistics Support area were located in the operating divisions where field personnel needed the logistical support. The table below shows the number of employees who worked in these support areas in the two 2006 storms.

Logistic Support Staffing – 2006 Storms²⁵⁶

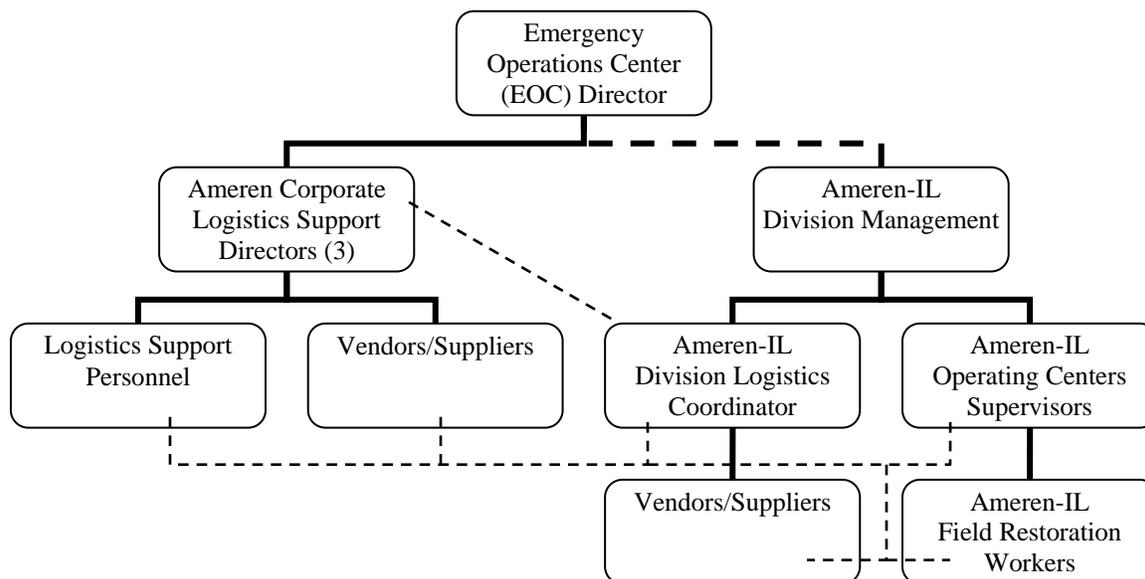
Logistics Area	July 2006 Storm		November/December 2006 Storm	
	EOC	Ameren-IL	EOC	Ameren-IL
Lodging	86		93	
Meals	3		45	
Laundry	11		3	
Staging Sites*	4	4	28	5
Total	104	4	169	5

*Set up, maintenance, & management, traffic control

The disparity in the staffing numbers shown in the “EOC” column compared to the Ameren-IL column for these two storms was due to the approach taken by Logistics Support to make assignments by logistics area rather than by state or operating division. This was an acceptable approach. The reduction in the numbers assigned to “Laundry” was due to Ameren’s decision to discontinue its July 2006 practice of providing centralized laundry service in the metropolitan St. Louis area for the November/December 2006 storm. The general increase in staffing for the November/December storm was understandable given the larger number of workers for that storm (3,553 compared to 1,518 in July 2006). The staffing level of three employees to handle meals for the field workers in July 2006 was woefully inadequate.

²⁵⁶ Response to Data Request #160

The diagram below shows the organization of the Logistics Support function.



The dashed lines on the above organization chart can be confusing. The concept of the Logistics Support organization was that the three Logistics Support heads at the EOC, with logistics personnel working for them, engage vendors and suppliers to provide certain supplies and services; they also coordinate closely with the Division Logistics Coordinators, who are located in the operating divisions and report directly to the Division Manager. The Division Logistics Coordinators are part of the division emergency response organization, and are not included in the staffing numbers for corporate Logistics Support. These Division Logistics Coordinators, working in concert with the corporate Logistics Support staff also engaged vendors and suppliers as needed to provide certain supplies and services. There was close coordination between the corporate Logistics Support staff, the Division Logistics Coordinators, vendors and suppliers engaged by corporate and the divisions, and the “end users” the operating centers and the field restoration workers.²⁵⁷

(2) *Logistics Support Organizational Performance*

The three individuals serving in the role of Logistic Support Co-Director had very little logistics experience between them. Liberty understands that no utility maintains a staff of people who do nothing but logistics work. Any utility employee moved into a logistics role during a major outage event comes from another work area. Hopefully, some of the leaders of the logistics support function will have had several years’ experience with logistics during a major outage event. In the case of the two 2006 storms that are the subject of this report, Ameren had three employees heading up Logistics Support, none of whom had been working logistics in major storms for as long as a year. The most experienced of the three began in the fourth quarter of 2005, the second most experienced began with a storm in March 2006, and the third got his first logistics experience in the July 2006 storm. Notwithstanding this fact, the three Co-Directors acquitted themselves well. Liberty did not find any evidence of serious logistics deficiencies in

²⁵⁷ Response to Data Request #70, Interview #85 (November 27, 2007).

either of the storm response efforts, certainly nothing that affected the restoration time or safety and welfare of the workers.

The Ameren corporate Electric Emergency Restoration Plan (EERP) provided very little guidance for the Logistic Support organization. Liberty addresses this fact in Chapter III (Emergency Plans) of this report.²⁵⁸ The Logistic Support function leads referred to the EERP, but had to develop the tasks “as they went along.”²⁵⁹ Ameren brought additional people into the EOC to help them. They identified necessary tasks, began developing estimates of numbers of outside personnel coming in, and adjusted as things changed. They used information software, Resources on Demand (ROD), and a spreadsheet developed by Asset Management to help track pertinent information. Logistics Support made extensive use of the Ameren internal web site (SharePoint) for gathering and posting storm management information.²⁶⁰ The Logistics Support organization held several conference calls each day to share information and update everyone on status and issues.²⁶¹

The following comments address some of the particular activities and issues in four logistics areas.

Meals

During the November/December 2006 restoration effort in the Ameren-IL area, there were 16,000 box lunches and 38,000 meals prepared.²⁶² No separate figures were available for Illinois in the July 2006 storm. Mid-day meals for restoration workers were box lunches. This avoided the non-productive time of shutting down workers and traveling for a lunch meal. The Ameren-IL operating divisions and operating centers arranged for their box lunches with coordination and support of the Division Logistics Coordinators. The largest number of those lunches came from independent vendors (*i.e.*, delicatessens and caterers). Some commercial restaurants in some areas provided box lunches. At the time of the July 2006 storm, Ameren only had a few providers of box lunches and had to quickly find and engage others. The outlying areas had been working in advance on specifications for box lunches and did not have much difficulty in finding providers because the amount of box lunches needed were less than in the metro area.

Ameren provided the morning and evening meals at or near the location housing workers. They did not provide meals at staging sites in the two 2006 storms, but are now considering this.²⁶³ Feeding workers at the staging sites is a utility “best practice.” Experience has shown that with proper planning and qualified caterers, the utility can feed large numbers of workers healthy, economical meals in a short period, eliminating a great amount of lost time eating at commercial establishments. Additionally, the utility can realize significant savings in lost time and expense by parking the trucks overnight at the staging sites and shuttling the workers to and from their lodging. This arrangement is very beneficial in the efforts to fuel all vehicles at night, provide security for the trucks, equipment, and tools, and to meet with workers in large groups for the

²⁵⁸ Conclusion #5 and Recommendation V-3 in Chapter V, Emergency Plans.

²⁵⁹ Interview #85 (November 27, 2007).

²⁶⁰ Response to Data Request #8, Attachment 8-D.

²⁶¹ Interview #90 (November 27, 2007).

²⁶² Response to Data Request #8, Attachment 8-D.

²⁶³ Interview #85 (November 27, 2007).

purpose of orientation and updates on safety, restoration progress, and other items of interest. Liberty recommends that Ameren adopt this practice.

Lodging

In the Ameren-IL area during the November/December 2006 restoration effort, there were a total of 10,000 “room-nights” engaged at 35 different hotels. Due to the tremendous influx of outside workers, the Logistics Support group was hard-pressed to accommodate all of the lodging needs. At one point, Logistics reported that they had “run out of hotels.” In some locations, Ameren housed workers in school dorms secured by the Logistics Support group from school officials.

Logistics Support workers went to the lodging sites, assigned lodging, and personally checked workers into their lodging when they knew where the workers would be located. They sent volunteers out to assist at the school dorms with any needs that might arise. They made an effort to keep crews together and to locate them near their assigned work area.

In spite of the challenges, Ameren met all lodging needs and Liberty found no significant deficiencies in this area.

Laundry

In the July 2006 restoration effort, the Ameren-IL operating centers at E. St. Louis and Alton, known as Metro East, were included in a centralized laundry process set up in the parking lot of the Ameren General Office Building in St. Louis. Ameren brought in equipment and set up to handle all of the laundry needs in the metro St. Louis area. When the vendor had trouble initially getting the equipment up and running, 30 Logistics Support volunteers took all of the laundry to commercial Laundromats and worked through the night to get the laundry cleaned. Once the equipment was running, the centralized process worked well. The rest of the Ameren-IL area handled the laundry needs locally.

Ameren did not use the centralized laundry process in the November/December 2006 storm effort, and Ameren handled all laundry needs locally. Ameren washed over one thousand loads of laundry.²⁶⁴ Liberty found no deficiencies in this area.

Staging Sites

The Logistics Support group was responsible for providing staging sites with ice, water, portable restrooms, trash receptacles, and other incidentals. The Stores/Material group was responsible for the material at each staging site.

Ameren set up staging sites at divisions and local operating centers located near the affected area. In the July 2006 storm response, Ameren set up two additional staging sites, one in East St. Louis, and one at Trenton, IL. In the November/December 2006 effort, Ameren set up two additional sites, one in Swansea, and one in Collinsville, IL. Logistics Support coordinated with

²⁶⁴ Response to Data Request #8, Attachment 8-D; Ameren-IL Power Point presentation, “Ameren-Illinois Storm Response, November-December, 2006.”

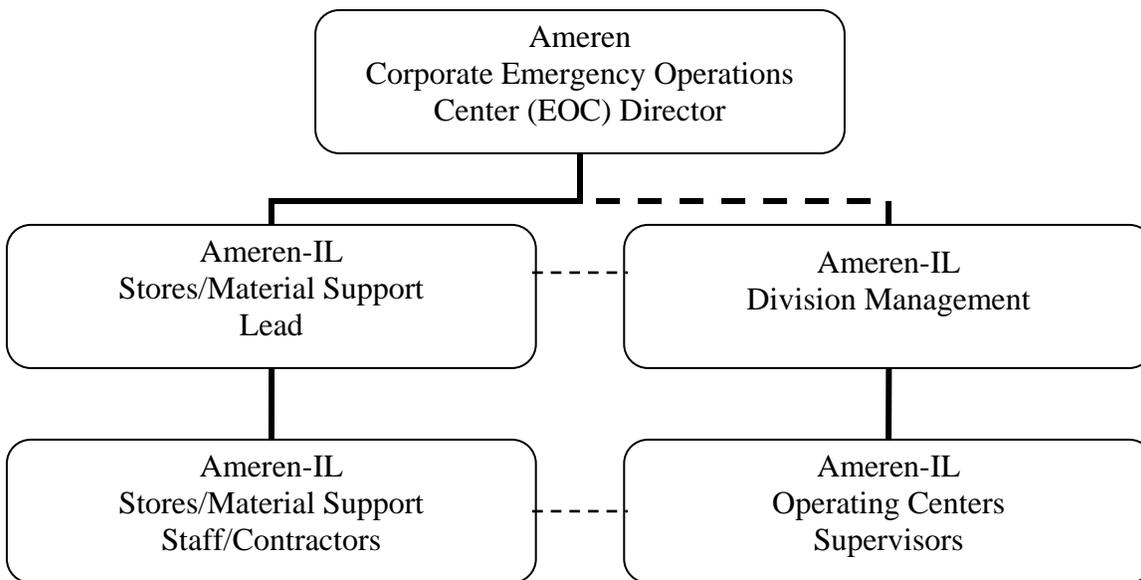
the divisions and with Stores/Material personnel to provide the needed supplies and services (as described above) for each staging site. Again, Liberty found no deficiencies in the Logistics Support response to staging sites.

d. Stores/Material Support Function

(1) Stores/Material Support Organizational Structure

The Stores/Material Support lead for Ameren-IL in the two 2006 storms was a superintendent in the Ameren Energy Delivery, Supply Chain organization with responsibility for all Illinois storerooms. During the 2006 storms, he was the Stores Storm Manager for Illinois, working out of the Materials Distribution Facility (MDF) in Decatur, IL. The total staffing for materials procurement and management for Ameren-IL for both storms was approximately 75.²⁶⁵

The diagram below depicts the Stores/Material Support organization and its relationship to the corporate Emergency Operations Center (EOC) and the Ameren-IL emergency response organization as used in the response to the two 2006 storms.



(2) Stores/Material Support Organizational Performance

The table below, which shows the material issued for each storm, provides a sense of the workload on the Stores/Material Support organization during the 2006 storms.

²⁶⁵ Interview #89 (January 9, 2008); Response to Data Request #160.

Material Issued – 2006 Storms - Illinois²⁶⁶

Item	July 2006	Nov / Dec 2006	Total
Poles	848	1,359	2,207
Cross Arms	1,519	2,973	4,492
Wire/Cable (Ft.)	1,040,004	1,431,609	2,471,613
Transformers	806	601	1,407

The increase in three of the four items of material between the July 2006 and the November/December 2006 storms is reflective of the greater severity and scope of the winter storm event in the Ameren-IL area. The decrease in numbers of transformers is understandable in light of the fact that wind and lightning storms generally do more damage to transformers than do winter storms. The “bottom line” of the above numbers is that these were two significant weather events, and the Stores/Material Support organization had quite a challenge in supplying the Ameren-IL emergency response organization with the needed material in a timely and efficient manner.

The Ameren corporate Electric Emergency Restoration Plan (EERP) had no information on the duties/responsibilities of the Stores/Material Support organization. The Ameren-IL Stores/Material Support Lead based the actions he took on his years of experience in this field and his specific experience in major outage events.

In the interview with the Stores/Material Support Lead, Liberty learned that he was not notified of the fact that a major outage event had occurred until July 20, the day after the initial impact. He was notified by a call to dispatch a material storm trailer to E. St. Louis. Liberty addresses the issue of Ameren’s ineffective alert system in Section IV.B (Pre-Storm Preparations), and Recommendation IV-3 provides for the use of a paging system to avoid such problems in the future.

Material storm trailers were first used in Illinois in 1995. They are for storm use only. Each trailer contained enough material to outfit 50 poles in a 12,000-volt line plus services. There were 200 different types of material in each of these trailers. Within 24 hours of a trailer’s return to the warehouse, personnel can fully load it and ready it for use again. Ameren-IL indicated that it could reduce this turn-around to a matter of a few hours in an emergency. Ameren-IL assigned stores supervisors at each location where it sent a trailer during a major outage event.

In the July 2006 storm response, Ameren-IL sent three material storm trailers to the field, one to E. St. Louis, one to Maryville, and one to Trenton, IL. In the November/December 2006 storm response, Ameren-IL also deployed three material storm trailers, one to Belleville in advance of the storm, and one each to Maryville and Decatur after the storm hit.²⁶⁷

The Stores/Material Support organization monitored the Outage Analysis System (OAS) to get information on the amount of damage. The function lead or his designee sat in on the Emergency

²⁶⁶ Response to Data Request #71, Attachment 71-F.

²⁶⁷ Interview #89 (January 9, 2008); Ameren-IL PowerPoint presentation, “Ameren-Illinois Storm Response, November – December, 2006.”

Operations Center (EOC) Restoration Update Calls to provide and obtain information. Members of the Stores/Material Support group worked closely with Stock Control – Procurement. This group worked 18-hour days and provided good support. They worked with their normal supplier contacts and were able to get the material they needed. The Stores/Material Support function lead put it this way, “Coming out of the chute we gave them big numbers – got good support.”²⁶⁸ By this he meant that they operated under the philosophy that it would be much better to order more material than needed than to run out of material and delay restoration.

The trucking arrangement set up by the Stores/Material Support group to move the storm trailers worked very well; they moved the trailers quickly and efficiently.

Overall, this support organization fulfilled their role during both of the storms. Liberty found no instances in which a material shortage or delivery slowed restoration.

e. Transportation/Fuel Support Function

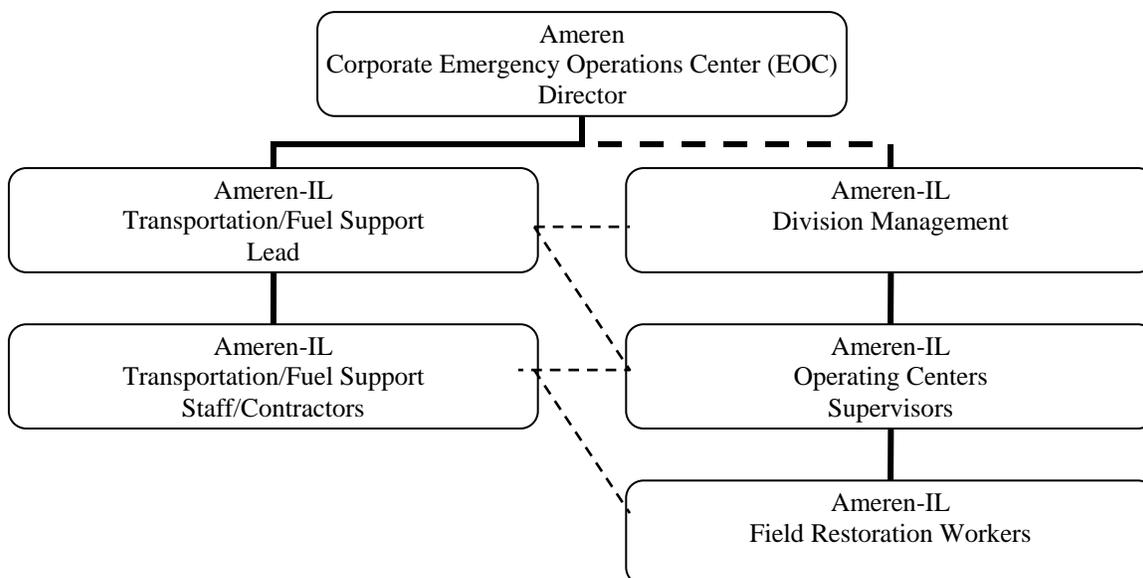
(1) Transportation/Fuel Support Organizational Structure

The Transportation/Fuel Support Organization consisted of one lead who reported directly to the Ameren corporate Emergency Operations Center (EOC) Director. The balance of the staffing for Ameren-IL in this functional support group was in the field. The staffing level for the Transportation/Fuel Support organization during the July 2006 response effort was 45, including the function lead. For the November/December 2006 storm effort, that number was 39. The Transportation/Fuel Support lead for the two storms was an experienced Ameren employee who serves as the Ameren corporate Fleet Administrator, with responsibility for Missouri and Illinois.²⁶⁹

The diagram below depicts the Transportation/Fuel Support organization and its relationship to the corporate Emergency Operations Center (EOC) and the Ameren-IL emergency response organization in place during the response to the two 2006 storms.

²⁶⁸ Interview #89 (January 9, 2008).

²⁶⁹ Interview #90 (November 27, 2007); Response to Data Request #160.



The function lead, while reporting directly to the Emergency Operations Center (EOC) Director, coordinated closely with management at the operating division level, and to somewhat of a lesser degree, with the supervisors in local operating centers. By far the most detailed coordination was between the Transportation/Fuel Support staff, the operating center supervisors, the team leaders, and other members of the field restoration workforce.²⁷⁰

This organizational approach provided the oversight and direction necessary, while at the same time allowing for the flexibility that is so important in coordinating processes such as re-fueling large numbers of trucks spread over a large geographic area.

(2) *Transportation/Fuel Support Organizational Performance*

The July 2006 storm response for the Transportation/Fuel Support organization did not get off to a very good start. In fact, it got off to a late start. Nobody notified the function lead of the major outage event or for the need of support until the second day of the storm, after crews had been working 1½ days. The trucks needed gas and gas stations were without power, a familiar situation in any major outage event.

The Transportation/Fuel Support group moved quickly into action. It had secured a contract with a supplier in 2005, and the group arranged with that supplier to provide tanker trucks²⁷¹ to handle the re-fueling needs. The maximum number of tankers brought in to help in either of the two storms was 23. As Ameren released outside work crews, it reduced this number. Ameren brought in tankers from Mississippi and Arkansas.

²⁷⁰ Interview #90 (November 27, 2007).

²⁷¹ A “tanker truck” is a truck or a tractor and trailer rig equipped with a large storage tank, pump, and hose to facilitate the emptying of the contents of the tank. Varying sizes are used depending on whether the tank will be set up at one location to fuel many trucks, or if the re-fueling will occur at different sites, where there are fewer vehicles.

Ameren had re-fueling performed at night. The Transportation/Fuel Support group would find out through the divisions and operating centers (as well as Logistics) where crews were at night. It then arranged to get tankers to those locations.

As was the case with some other support functions, the Ameren corporate Electric Emergency Restoration Plan (EERP) did not contain any information to provide guidance to the Transportation/Fuel Support Lead or the members of that support group.

With his years' of experience, the function lead knew what actions to take, and provided effective leadership to this group. His office is one and one-half blocks away from the Emergency Operations Center (EOC) in the Ameren St. Louis General Office building. He spent a great deal of time at the EOC. He got regular updates on the number of workers and vehicles, and used this information to calculate the anticipated fuel needs.

One obstacle faced by this support group was the Illinois Fire Code regulation that does not permit "wet hose fueling" within 100 feet of a permanent structure. The only exception is during an "emergency." The regulation does not define an emergency. The function lead got an opinion from the Ameren legal department, and based on that used the Operations Managers as the authority to declare an "emergency." The state authorities did not challenge this during either restoration effort. The performance of the re-fueling process was excellent; there were no spills and no problems encountered.

The function lead worked 12 hours a day and turned it over at night to his back-up who monitored the re-fueling data – numbers of vehicles, amount of gas, vehicle owners, etc.

Although the re-fueling process was the largest single ongoing effort by this support group, another important duty was the maintenance and repair of vehicles to minimize down time. This group handled that challenge as well, using Ameren mechanics and independent shops as conditions dictated. When necessary, the Transportation/Fuel Support group also handled the repairs to contractor and Mutual Assistance utility vehicles, but the preferred arrangement was for those companies sending crews to send their own mechanics because of workload and familiarity with equipment.

Liberty found that the Transportation/Fuel Support organization fulfilled its role in supporting the Ameren-IL emergency response organization. There was no evidence of undue delays in restoration caused by lack of fuel, tardiness in the re-fueling process, or vehicle downtime waiting on repairs.

4. Conclusions

1. The Ameren employees who performed in lead support function roles all had good experience in their assigned storm role with one exception. (Recommendation IV-27)

Liberty interviewed all of the Ameren employees who served in a lead role of a support function in either one or both of the 2006 storms. In all but one case, the assigned employee had a number of years experience in that particular field. The one support function that had relatively

inexperienced people in the lead role was Logistics Support. Of the three Co-Directors assigned to lead this support function, one had begun working in that area in the fourth quarter of 2005, one had their first major storm experience in logistics in March 2006, and the third got his first experience in the July 2006 storm.

It is crucial to have lead personnel who are experienced in the assigned function. The past work experience provides necessary information to allow the lead to initiate the proper steps in a timely and efficient manner. This results in the response “line organization” receiving the right amount of support in a timely and efficient manner. In addition, contacts with other utilities, suppliers, contractors, and consultants developed through this experience provide a good network of assistance in procuring needed material, supplies, services, and equipment.

The three Co-Directors who headed the Logistics Support function acquitted themselves very well. Liberty did not find any evidence of serious logistics deficiency in either of the storm response efforts, certainly nothing that affected the restoration time or safety and welfare of the workers. However, having so little experience in the lead role of an important support function such as logistics is not the desired state. It is not fair to the employees who get the assignment or to those depending on their performance. In order to ensure timely and efficient performance in all areas of emergency response, a utility should seek to keep a certain level of experience in lead roles in the response effort.

2. The organizational change made in the Ameren-IL Safety Support function for the November/December 2006 storm response was not the best option for the response organization. (Recommendation IV-28)

In the response to the July 2006 storm, the safety professionals/representatives working in the Ameren-IL area reported to the Safety Support Lead, who was part of the corporate Emergency Operations Center (EOC) team. This lead person coordinated all of the activities of the safety professionals/representatives, who were assigned to different Ameren-IL operating divisions. In the response to the November/December 2006 storms, these safety professionals/representatives reported directly to the division manager in the division in which they were assigned.

This change in organization had a negative effect on communications among these individuals as well as the coordination of a consistent approach to the safety support function. It affects flexibility, as it becomes more cumbersome to quickly move the safety professionals/representatives than if they were all reporting to one Safety Support Lead. Now that Ameren-IL has established its own Emergency Operations Center (EOC), it will be better served if it establishes a Safety Support Lead position at the Illinois EOC and have all safety professionals / representatives report to that lead.

3. The Safety Support, Stores/Material Support, and the Transportation/Fuel organizations did not have any emergency plan to direct their activities. The lead personnel of these support organizations did a good job in developing and implementing appropriate and useful action steps to accomplish the desired goal. (Recommendation IV-29)

As discussed in Chapter III (Emergency Plans), the Ameren corporate Electric Emergency Restoration Plan (EERP) in use at the time of the two 2006 storms was lacking information on

several important emergency response functions. Without any plan, the lead personnel and each of these support organizations had no specific direction as to the appropriate and useful steps to take in order to provide timely and efficient support to the Ameren-IL emergency response organization in their assigned area. Notwithstanding this fact, they did a good job in determining the necessary action steps to be taken. Ameren-IL should develop sections on each of these support functions to be included in the corporate Electric Emergency Restoration Plan (EERP).

4. Conference calls by the support function groups were not regularly scheduled and held during the two 2006 storms. (Recommendation IV-30)

Having daily conference calls among the team members involved in a particular support function is a utility “best practice.” Given the large amount of restoration workers brought in to assist in the effort, with the attendant support needs, it is crucial that leads keep all team members updated with progress, developments, resource deployment changes, organization, and procedures. This is an excellent forum for team members to raise issues and seek guidance.

The Safety Support organization implemented conference calls for the November/December 2006 storm effort. It held two calls each day, one with safety representatives from outside contractors and Mutual Assistance utilities, and one with Ameren Safety professionals.²⁷² In addition, the Logistics Support organization held several conference calls each day.²⁷³

5. The Safety Support group employees, including the lead, were seasoned safety veterans. Their advice, suggestions, and guidance in safety issues were received well by the field workers in the emergency response organization, and they did a good job of screening the feedback from the field to give proper attention to genuine safety-related issues.

Two areas can be problematic in the Safety Support function. To the credit of the Safety Support Lead and the safety professionals/representatives, there were no reported issues in either of these areas. The first is the perceived or actual authority of Safety Support personnel in their dealings with the rest of the emergency response organization. Put another way, how much weight is given to what they say in the area of safety rules and practices? There were no reported issues in this regard. The Safety Support Lead put it this way, “I think what I said was respected.”²⁷⁴ The other potential problem area is feedback from field workers received by the safety professionals/representatives. Because of the emphasis put on safety, reports from the safety professionals/representatives concerning situations in the field that could pose a safety risk are routed quickly up the emergency response organization and receive prompt and close attention by those in leadership roles. There is sometimes a tendency among field workers to seek resolution to non-safety issues by reporting them to the safety professionals/representatives. Examples of this would be the quality of the meals, the lodging arrangements, and the length of the daily commute. Liberty found that the safety professionals/representatives were seasoned veterans and did a good job of screening the feedback received from the field.

²⁷² Interview #92 (November 15, 2007).

²⁷³ Interview #90 (November 27, 2007).

²⁷⁴ Interview #92 (November 15, 2007).

6. The Security Support function performed its storm role well, with few security incidents reported despite the exposure and risk involved in the two major outage events.

The Security Support group recruited assistance from security contractors and off-duty police officers to augment their workforce. They made arrangements with police departments in the impacted area, and law enforcement assistance was provided during times of equipment breakdown and threatening situations with irate members of the public. Considerable effort was expended to prevent any incidents involving Union and non-Union work crews. These efforts were successful in that only a few incidents were reported during the two 2006 storms.

7. The Logistics Support Co-Directors did a good job of developing the necessary tasks that needed to be performed in the absence of any information of this sort in the corporate Electric Emergency Restoration Plan (EERP). (Recommendation IV-31)

The Ameren corporate Electric Emergency Restoration Plan provided very little information on specific tasks needed in the logistics support function. As pointed out in Chapter III (Emergency Plans) of this report, Ameren-IL needs to revise the EERP to include more specific and helpful information. The Logistic Support Co-Directors brought in additional people, identified necessary tasks, began developing estimates of numbers of outside personnel coming in, and adjusted as things changed. They used software – Resources on Demand (ROD) – and a spreadsheet developed by Asset Management to help track pertinent information.²⁷⁵ Logistics Support made extensive use of the Ameren internal website, SharePoint, for gathering and posting storm management information.²⁷⁶

8. The Logistics Support organization did a good job assisting the emergency response organization, but there are improvement opportunities in providing meals for the workers. (Recommendation IV-32)

Liberty's investigation revealed no significant deficiencies in the services rendered by Logistics Support in the areas of meals, lodging, laundry, and staging sites. (Logistics support is responsible for providing ice, water, portable toilets, trash receptacles, and other incidentals for staging sites, but not material.)

The staffing level for Logistics Support employees assigned to providing meals for workers was 3 for the July 2006 storm and 45 for the November/December 2006 storm. The July staffing was woefully inadequate for the meal function, and was reflective of the relative inexperience of the Logistics Support function leaders and the lack of specific guidance from the emergency plan. At the time of the July 2006 storm, Ameren only had a few providers of box lunches and had to quickly find and engage some others. The outlying areas had been working in advance on specifications for box lunches and did not have much difficulty in finding providers because the amount of box lunches needed were less than in the metro area.

²⁷⁵ Interview #85 (November 27, 2007).

²⁷⁶ Response to Data Request #8, Attachment 8-D.

Ameren provided the morning and evening meals at or near the location where it housed the workers. They did not provide meals at staging sites in the two 2006 storms, but are now considering this.²⁷⁷ Feeding workers at the staging sites is a utility “best practice.” Experience has shown that with proper planning and qualified caterers, large numbers of workers can be fed healthy, economical meals in a short period, eliminating a great amount of lost time eating at commercial establishments. Additionally, significant savings in lost time and expense can be realized by parking the trucks overnight at the staging sites and shuttling the workers to and from their lodging. This arrangement is very beneficial in the efforts to fuel all vehicles at night, provide security for the trucks, equipment, and tools, and to meet with workers in large groups for the purpose of orientation and updates on safety, restoration progress, and other items of interest.

9. The Stores/Material Support organization did a good job assisting the emergency response organization. There were no delays in service restoration due to material shortages or late delivery. This was despite the fact that the Stores/Material Support lead was not alerted to the July 2006 storm until the next morning. (Recommendation IV-33)

The Stores/Material Support organization monitored the Outage Analysis System (OAS) to get information on the amount of damage. The function lead or his designee sat in on the Emergency Operations Center (EOC) Restoration Update Calls to provide and obtain information. Members of the Stores/Material Support group worked closely with Stock Control – Procurement. This group worked 18 hour days and provided good support. They worked with their normal supplier contacts and were able to get the material they needed.

Nobody notified the Stores/Material Support lead of the fact that a major outage event had occurred until July 20, the day after the initial impact. He was notified by a call to dispatch a material storm trailer to E. St. Louis. Liberty addressed the issue of Ameren’s ineffective alert system in Section IV.B (Pre-Storm Preparations), and Recommendation IV-3 provides for the use of a paging system to avoid such problems in the future.

10. The Transportation/Fuel Support organization did a good job assisting the emergency response organization. There were no undue delays in service restoration due to fuel shortages, tardiness in re-fueling vehicles, or vehicle downtime waiting for repair. This was despite the fact that the Transportation/Fuel Support Lead was not alerted to the July 2006 storm until the second day of the storm, after crews had been working for 1½ days and were having problems getting re-fueled. (Recommendation IV-34)

Re-fueling occurred at night. The Transportation/Fuel Support group would find out through the divisions and operating centers (as well as Logistics) where crews were being tied up at night. They then arranged to get tankers to those locations. One obstacle faced by this support group was the Illinois Fire Code regulation that does not allow “wet hose fueling” within 100 feet of a permanent structure. The only exception is during an “emergency.” The Operations Managers declared an emergency, and state authorities did not challenge Ameren’s decision. The

²⁷⁷ Interview #85 (November 27, 2007).

performance of the re-fueling process was excellent, there were no spills, and no problems encountered.

This group also handled well the task of vehicle maintenance.

The July 2006 storm response for the Transportation/Fuel Support organization did not get off to a very good start because the function lead did not learn of the major outage event or for the need of support until the second day of the storm. The trucks needed gas and gas stations were without power, a familiar situation in any major outage event. The Transportation/Fuel Support group moved quickly into action and brought in as many as 23 tankers.

5. Recommendations

IV-27 Develop and implement a process to identify and train future response function leaders to provide appropriate levels of experience to all who will be in leadership roles in the emergency response organization.

Ameren-IL should review the roster of employees who are presently serving in lead roles in the emergency response organization to confirm experience level and anticipate the effect of attrition and retirements. Ameren-IL should identify future response-function leaders and employ them in emergency response roles in order to provide the necessary experience and prepare them to assume the leadership role. The goal should be to avoid having to place inexperienced personnel into response lead roles. Ameren-IL should complete this review and identify employees within six months of the date of this report, and determine storm assignments for future leaders and make those assignments in the next major outage event after it has completed the review.

In its comments on the draft report, Ameren-IL accepted this recommendation but proposed an implementation schedule that Liberty believes is too long.

IV-28 Establish a Safety Support function at the Ameren-IL Emergency Operations Center (EOC) with direct line authority over the safety professionals/representatives working in the Ameren-IL operating divisions during a major outage event.

The Safety Support Lead person should report directly to the EOC Director and have line authority over all safety professionals/representatives. Ameren-IL should include this organizational concept in the corporate Electric Emergency Restoration Plan (EERP) and should implement the concept within one month and update the EERP within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-29 Add a section on safety support, stores/material support, and transportation/fuel support to the Ameren-IL corporate Electric Emergency Restoration Plan (EERP). (Also, see Chapter III, Recommendation III-1.)

Ameren should add sections to the corporate EERP detailing these three support organizations, and the action steps the function lead personnel and other members of these support

organizations should take. Ameren-IL should complete this action within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-30 Implement daily conference calls for each support function assisting in a major outage restoration effort.

Ameren should revise the corporate Electric Emergency Restoration Plan (EERP) to include the daily conference call procedure as a standard practice among all support functions. Ameren should make this change to the EERP and implement the procedure within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-31 Provide necessary details in corporate and division Electric Emergency Restoration Plans (EERPs) to give appropriate guidance to logistic support employees. (Also, see Chapter III, Recommendation III-3.)

Ameren-IL should revise the corporate Electric Emergency Restoration Plan (EERP) and its division plans to include specific details on logistics duties and activities at the EOC, Division, and Operating Center level. Ameren-IL should complete this recommendation within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-32 Improve meal and feeding practices.

a. Ameren-IL should establish desired staffing levels of Logistics Support employees to assist in the meal function of Logistics Support, based on the number of restoration workers to be fed and the meal arrangements necessitated by the profile of the storm response. Ameren-IL should include this provision in the Ameren-IL Emergency Response Plan and complete implementation within six months of the date of this report.

b. Ameren-IL should identify caterers and other establishments throughout their service territory that are qualified, willing, and able to provide quality meals in the quantities and conditions that it might require. Ameren-IL should reach and maintain formal agreements with these providers to ensure on-going and short-notice access to their services in the event of future emergency response events. Ameren-IL should include this provision in the Ameren-IL Emergency Response Plan and complete implementation within nine months of the date of this report.

c. Ameren should implement as the normal meal practice during major outage events the feeding of workers at the staging sites for the morning and evening meals where practical. Ameren-IL should revise the Electric Emergency Response Plan [EERP] to incorporate this change and complete implementation within six months of the date of this report.

d. Ameren-IL should implement as normal practice during major outage events the parking of crew trucks at the staging sites where practical. It should provide shuttles to transport workers to and from the staging sites and their lodging. Ameren-IL should revise the Electric Emergency Response Plan [EERP] to incorporate this change and complete implementation within six months of the date of this report.

IV-33 Implement a process to confirm that all line and support function lead personnel have been alerted when the initial event alert has been sent. (Also, see Recommendation IV-3, Section IV.B, Pre-Storm Preparations.)

A process should be developed and implemented to have all lead personnel – both line and support functions – in the Ameren-IL emergency response organization to respond confirming receipt after Ameren transmits a major outage event alert. This process should be included in the Ameren-IL Electric Emergency Restoration Plan (EERP). Ameren-IL should implement this recommendation within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

G. Field Restoration

1. Objectives

This section provides a description and Liberty's evaluation of the actual restoration activities that were part of the Ameren emergency organization responding to the 2006 storms. The activities included in this section are those directly involved in the restoration of power and not included in other sections, such as Section C, Organization Performance, or Section F, Support Organizations. This report provides an analysis of each of the basic restoration activities and their effect on the restoration of service to Ameren-IL's customers. The report addresses the following items in the ICC's Request for Proposals for this investigation:

- **4.3.2.5.25** Restoration personnel. What was the number of Ameren employees, contractors, and outside utility personnel working on service restoration during each day and broken down by line personnel, forestry personnel, supervisory personnel, etc.? What was the length of work hours for restoration personnel each day? Did any restoration personnel sustain any serious injuries?
- **4.3.2.5.30** Shortages. Did a shortage of material, equipment, or personnel affect Ameren's service restoration efforts?
- **4.3.2.5.31** Materials. What was the number of poles, wires, transformers, crossarms, etc. that each utility replaced during its service restoration efforts? What steps did the utilities take to ensure that the materials used for storm restoration were of acceptable quality and that they would provide safe and reliable service?
- **4.3.2.5.32** Delays. Did any factors delay or hasten the utilities' service restoration efforts?
- **4.3.2.5.33** Restoration time. How long did it take the utilities to restore service to customers? What could the utilities have done to shorten their restoration times? What should the utilities do to shorten restoration times after the next storm?

- **4.3.2.5.34** Restoration work quality. What have the utilities done to ensure that the work completed during storm restoration efforts by their personnel and by personnel for contractors and outside utilities is of acceptable quality, meets NESC requirements, and will provide reliable and safe electric service?
- **4.3.2.5.35** An evaluation of the utilities' field restoration. This task shall focus on the actual field restoration activities, such as the following: field restoration organization; reporting structure; coordination with other emergency response organizations such as the Illinois Emergency Management Agency, Emergency Services and Disaster Agencies, other utilities, police, and fire; use of vegetation management crews; switching, clearance, and tagging processes; work prioritization processes; crew deployment processes; restoration status reporting processes; work centers and staging sites; processes for communicating with restoration crews; meal practices; work hours; and the parking and security for restoration vehicles.

2. Background

Other sections of this chapter address functions and activities that either precede or support the field restoration process. All of those elements, pre-storm preparation, organization performance, outage information, communications, and support organizations, are essential to good storm restoration performance, but their primary focus is to support and facilitate field restoration.

“Field restoration” is the ultimate goal. It is the process of actually restoring power to the customers at their residences and places of business. No matter how well the utility performs the other functions and activities, unless it carries out field restoration in a safe, timely, and effective manner, the overall storm restoration process will not be successful. A utility may be well prepared and organized for a major outage event, with excellent support organizations and good processes in place and working for outage information and communications, but unless the field restoration is effective, the overall effort will fall short of expectations.

The field restoration process includes the following components – the field command centers (or “storm rooms”), the field workforce, the supply of material and equipment, the actual restoration work, and the coordination with other emergency response organizations. Field restoration following a major outage event differs from the normal routine outage restoration in both size and complexity. The significantly larger amount of outages and damage with the resultant necessary repair work, the large number of outside workers who must be managed, the extended working hours for a number of days, and the often-challenging working conditions, all combine to make major outage field restoration a challenging task. A successful field restoration effort depends on a well-designed and rehearsed plan, an effective field organization, an adequate number of experienced, trained, and dedicated workers, consistent and effective oversight and management, timely and adequate supplies of material, equipment and other support needs, and close coordination within the restoration organization and with other emergency response groups.

3. Findings and Analysis

Liberty's findings and analysis of the Ameren-IL field restoration performance in the two 2006 storms focused on the specific components contained in the following subsections:

- a. Field organizational structure and performance
- b. Field workforce
- c. Material Supply
- d. Field restoration work

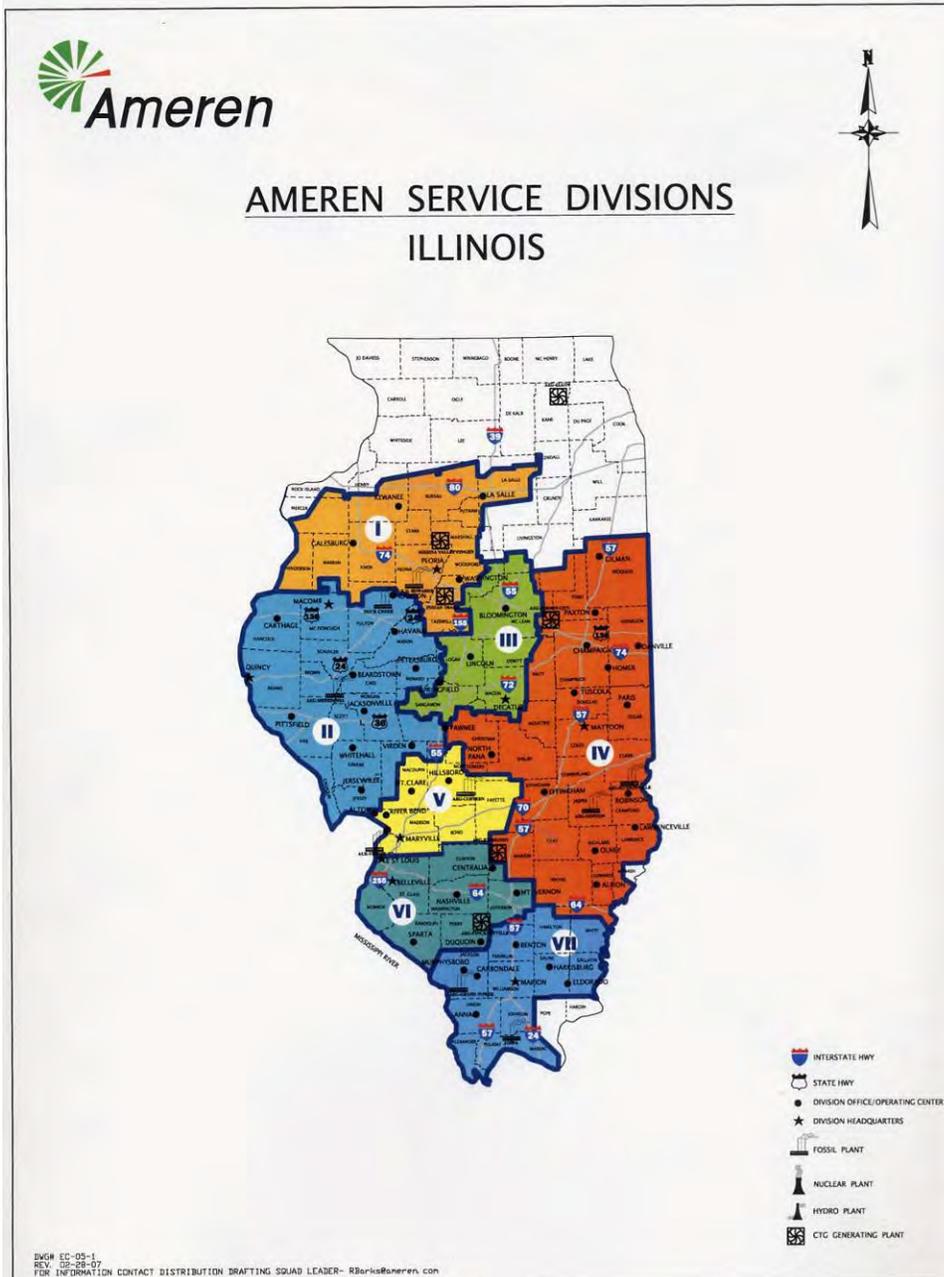
Liberty performed numerous interviews, submitted numerous data requests, and conducted field inspections to gather the information, develop the findings, and perform the analyses of Ameren-IL's performance in each of these areas.

a. Field Organizational Structure/Performance

The 2006 storms both had a significant impact on the Ameren-IL service area. The July 2006 storms primarily affected three of the seven Ameren-IL operating divisions—Divisions I, V, and VI. In the November/December 2006 storm, four operating divisions—Divisions III, IV, V, and VI—were hardest hit.²⁷⁸ The map below shows the location of each of the divisions in 2006.²⁷⁹

²⁷⁸ Response to Data Request #82, Attachment 82-Summary.

²⁷⁹ Response to Data Request #123.



The table below provides details on the impact of the two 2006 storms on Ameren-IL's divisions and operating centers within those divisions.²⁸⁰

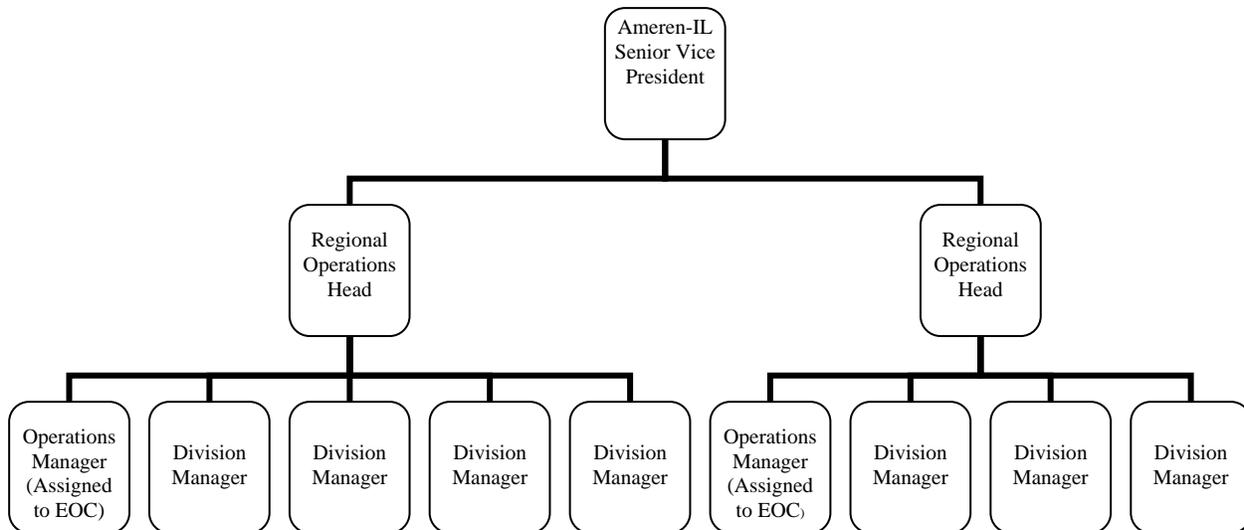
Impact of 2006 Storms – Ameren-IL

Division	Company	# Op. Centers	DDO Center	Customer Outages		Feeder Outages		Services Down	
				July	December	July	December	July	December
I	IP	3	Decatur	13,708	1,137	8	0	20	19
I	CILCO	2	Peoria	21,745	2,949	7	2	86	11
II	CIPS	9	Mattoon	9,450	19,834	8	5	44	244
II	IP	1	Decatur	2,707	1,132	0	0	10	2
III	IP	2	Decatur	4,709	74,267	1	49	10	2,287
III	CILCO	2	Peoria	9,856	16,293	5	16	66	552
IV	CIPS	3	Mattoon	10,342	30,820	10	20	16	416
IV	IP	1	Decatur	6,742	15,265	2	4	14	85
IV	CILCO	1	Peoria	68	2,282	0	0	2	13
V	IP	2	Decatur	85,865	88,043	77	58	1,121	2,792
V	CIPS(UE)	1	St. Louis	24,641	13,946	68	43	1,031	2,404
VI	IP	4	Decatur	60,047	76,200	34	45	464	2,113
VI	CIPS(UE)	1	St. Louis	34,485	21,910	*	*	*	*
VII	CIPS	5	Mattoon	15,362	5,810	16	1	54	3
VII	IP	1	Decatur	2,385	434	1	0	8	1
Totals				302,112	370,322	237	243	2,946	10,942

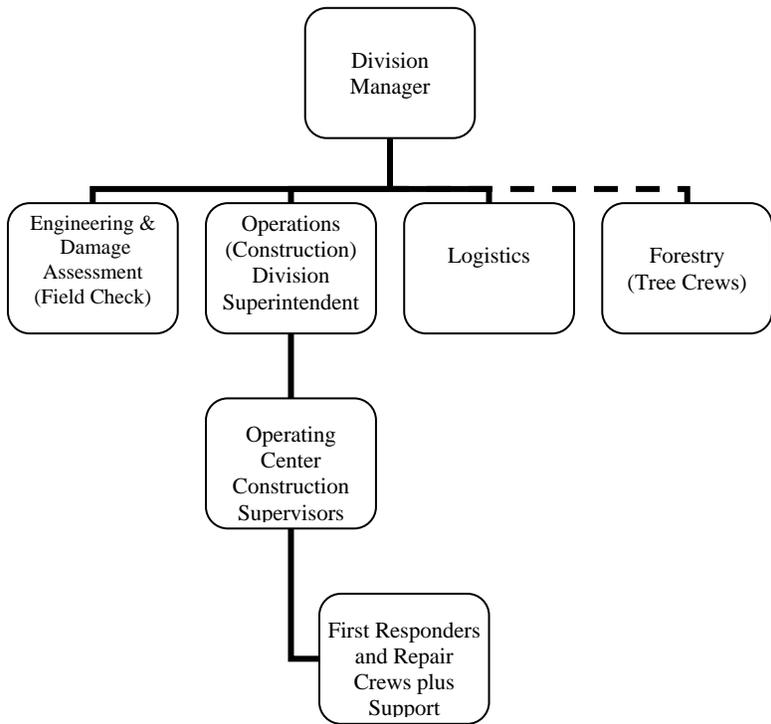
To respond to the major outage event impacting the different operating divisions and operating center areas in these two storms, Ameren-IL set up its emergency response organization in accordance with their corporate and division emergency plans. Liberty presented the two organization charts shown below in Section C – Organizational Performance. This section reproduces them to depict the reporting structure through which management gave direction to and received status reports from the field organization. Liberty omitted a number of key functional areas and management positions from the first chart in order to focus on the reporting relationship within Ameren-IL from the Senior Vice President down through the Division Managers.²⁸¹

²⁸⁰ Responses to Data Requests #71, Attachment 71-A, and #82, Attachment 82-Summary. “DDO” is Distribution Dispatch Operations. * numbers included in Division V, CIPS (UE).

²⁸¹ Response to Data Request #5.



The following chart depicts the typical Ameren-IL operating division emergency organization.²⁸²



(1) Field Command/Reporting/Support Structure

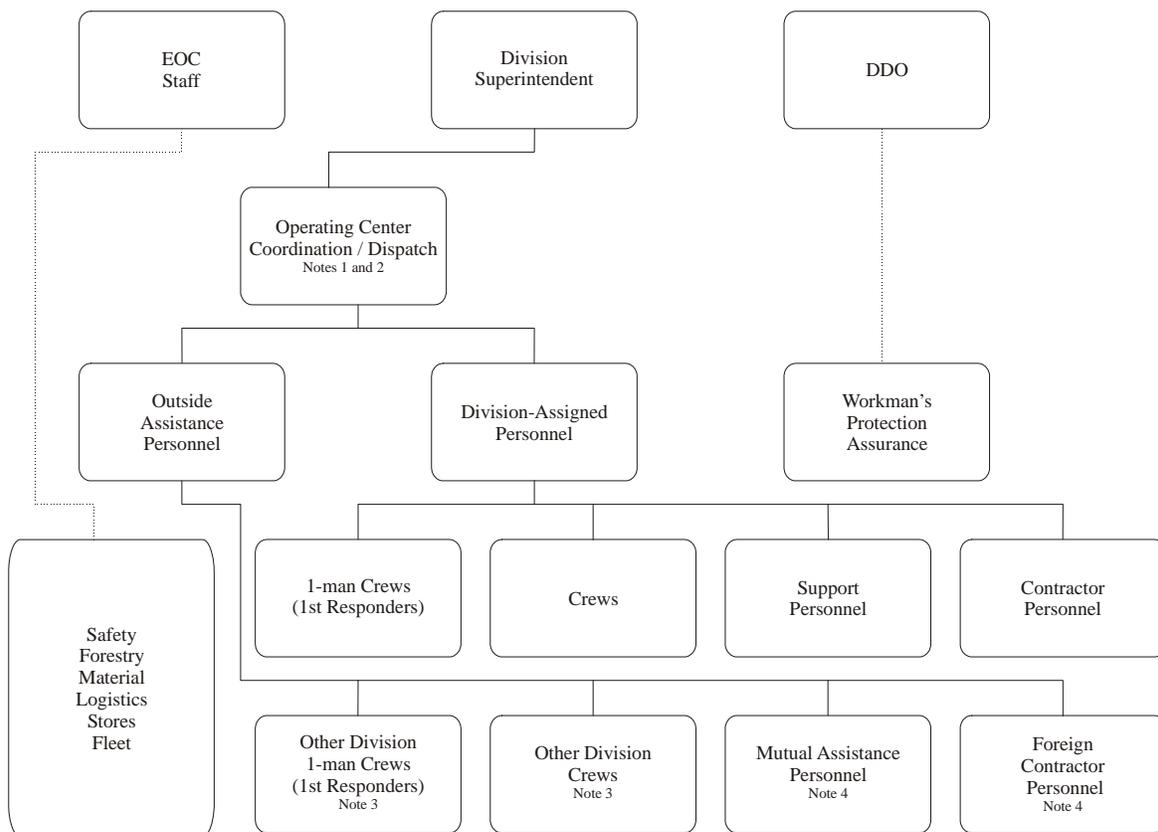
The “nerve centers” for the Ameren-IL field restoration effort were the operating division command centers, headed by the division managers and the division superintendents who coordinated engineering and damage assessment, logistics, and forestry (tree crews) with the line restoration workforce in the field. Construction supervisors headed the individual operating

²⁸² Response to Data Request #310.

centers (referred to in this report as the field command centers). For the most part, the division superintendents at the division command centers had direct responsibility for the restoration work in the field, and the construction supervisors running each operating center (field command center) reported directly to the division superintendents. In some cases, however, the division manager assumed a much more “hands on” approach in directing the restoration effort, and assumed the role of direct responsibility for the field operating centers. Recommendation IV-13 in Section C above encourages Ameren-IL to clarify the division manager’s role during major outage response to provide more clarity, consistency, and efficiency in training and preparing the emergency response organization.

Ameren-IL had 38 operating centers spread among the seven divisions. The 2006 storms did not affect significantly all of these centers but hit hard at some centers in both storms.²⁸³ Ameren-IL furnished the chart below to describe the field operating center organization and explain various response duties.²⁸⁴

Response at the Operating Center Level



- Notes:
1. This level scalable to the number of operating centers within the division & to the characteristics of the storm response effort. Each is a mirror image of the operating center structure depicted.
 2. Personnel assigned to either substations or specific feeders along with all associated OAS orders. Circuits “sweeps” completed using this method of coordination.
 3. Other divisions responsible for supplying their own supervisors & necessary support personnel.
 4. These personnel provided oversight by Ameren field representatives as appropriate to ensure crew safety and maintain coordination & worker productivity.

²⁸³ Response to Data Request #71, Attachment 71-A.

²⁸⁴ Response to Data Request #310.

The following is a summary of how Ameren organized, directed, supported, and operated the field response organization.

1. The operating center head (a construction supervisor) reported directly to the Division Superintendent. (See comments above concerning the need for clarity in this role between the division manager and division superintendent.)
2. The corporate Emergency Operations Center (EOC) provided support to the division and the local operating centers in the areas of safety, forestry (tree crews), material, logistics, stores, and fleet (including fueling). Not shown above but included in this support is security. In most of these areas, the division furnished personnel to augment and coordinate the EOC support. During the November/December 2006 storm, Ameren-IL transferred the responsibility for safety from the EOC to the division managers.²⁸⁵
3. The field operating centers and individual work crews received support and direction in the area of switching, clearances, and tagging from the Distribution Dispatch Operations (DDO) centers responsible for that geographic area. These procedures are part of the Workman's Protection Assurance (WPA) process, which provides for an efficient and safe process to identify and isolate segments of the electric distribution facilities so that personnel can repair and then return these facilities safely to service.
4. The operating center under the direction of a construction supervisor was responsible for "coordination/dispatch." This means the task of coordinating the different functions and work groups involved in the restoration in that operating center area. Functions such as damage assessment (field checking), forestry (tree crews), logistics, safety, security, fleet support (including fueling) all must receive coordination to maintain an efficient restoration process. The "dispatch" function is the actual direction provided by the field-operating center to the work crews. These crews have assigned, specific areas and/or Outage Analysis System (OAS) tickets to direct them to the work to perform. The dispatch process involves the prioritization of the restoration work and the matching of crew resources to the work required.
5. The workforce responsible for repairing the electric distribution lines has two basic groups—"Division-Assigned Personnel" and "Outside Assistance Personnel."

The Division-Assigned Personnel are the Ameren-IL employees and outside contractor personnel normally assigned to the specific division in question. They are in four groupings. Utilities typically call the one-man crews (first responders) either "Servicemen" or "Troublemens." As the name implies, during major outage events, they are the first to respond. They perform switching and clearing procedures to restore power and provide an early report as to the nature and extent of the damage. The support personnel include all of those assigned to support the crew supervisors and personnel. They are not qualified or equipped to perform actual repair. The other personnel in this area are the line crew personnel—either Ameren-IL employees or contractor personnel.

Included in the Outside Assistance Personnel are Ameren-IL employees from other Ameren divisions. This includes the one-man crew (first responders) as well as

²⁸⁵ Interview #92 (November 15, 2007).

Ameren line crews. The other two categories are Mutual Assistance personnel²⁸⁶ and “Foreign Contractor Personnel.” Ameren uses the word “foreign” to designate those contractors who are not normally assigned to work in that division.

6. The footnotes mean the following:

Note 1: Ameren-IL can expand or reduce the organization depicted depending on the number of affected operating centers in any one division and the specifics of the outage event involved. For example, depending on the number of people assigned to assist a particular operating center, Ameren-IL can scale up or down the number of construction supervisors assigned to assist the operating center head.

Note 2: As part of the “Coordination / Dispatch” process, superintendents assign work crews specific geographic areas defined by either that area served by one specific feeder circuit, or that area served by an entire electric distribution substation. Superintendents assign the outage tickets—Outage Analysis System (OAS) orders—associated with the area to the crew that will be working there. With this method of assigning work areas, work crews are responsible to “sweep” their assigned circuits. This means that whether or not there is a specific OAS order for a particular location, the crew completes all needed repair and restoration on a given electric feeder circuit before moving to another circuit.

Note 3: Ameren-IL divisions sending help into another division will provide the necessary supervision and support so that the impacted division will not have that responsibility.

Note 4: Ameren provides Mutual Assistance and Foreign Contractor personnel with the appropriate oversight by Ameren field representatives to ensure safety, help with coordination, and enhance productivity.

Liberty concluded that the field operating center organization as described above, directed and supported by the corporate Emergency Operations Center and the Ameren-IL division organization, was well-designed and appropriate to manage the restoration effort for the two 2006 storms.

Liberty found that the Ameren-IL employees assigned to lead the restoration effort at the operating centers were without exception veteran operating employees with many years of experience in storm response. A construction supervisor normally assigned to that location headed most of the individual operating centers. However, Ameren-IL also used Division Superintendents to head up the effort at operating centers at some locations. The Division Superintendent sometimes headed up the operating center at the division headquarters town, and in several cases, Division Superintendents from divisions not heavily impacted took the lead at operating centers in other divisions where there was a need. For example, Ameren-IL sent the Division IV Superintendent to head up the E. St. Louis operating center in Division VI in the November/December 2006 storm. The Division I Superintendent took the lead at the E. St. Louis operating center in Division VI in the July 2006 storm, and worked as a field supervisor in Division III in the Springfield area during the November/December 2006 storm. The

²⁸⁶ “Mutual Assistance” is a term used in the electric utility industry to describe the mutual agreement between utilities to come to each others’ aid during major outage events on a “not for profit” basis. Mutual Assistance personnel are employees of an outside electric utility that has come to assist in the restoration effort.

Superintendent in Division V had the lead role at the division command center and also headed up the local operating center effort at the division headquarter town of Maryville during the July 2006 storm. In interviews, Liberty learned that this proved to be too large of a role for one individual, and in the November/December 2006 storm, a local construction supervisor headed up the Maryville operating center while the Superintendent handled the division command center.²⁸⁷ In addition to the supervisors (Superintendents) used by Ameren-IL to head up the local operating centers, Liberty found that the other supervisory personnel used in the field operations to coordinate and direct the restoration workforce were well experienced in storm response.²⁸⁸

(2) *Field Command Centers / Staging Sites*

Field Command Centers

The facilities used to house the field command centers (operating centers) are an important part of a successful response to a major outage event. These facilities need to meet a certain criteria and have the appropriate equipment and services to support the functions of the field command center. Liberty toured six of the field command-center facilities (referred to as “storm rooms”) at locations affected by one or both of the 2006 storms. The locations visited were E. St. Louis, Maryville, Belleville, Pana, Champaign, and Decatur. Liberty also interviewed Ameren-IL employees at each of these locations who were stationed at those facilities and were involved in the restoration effort.

During the tours and interviews, Liberty sought answers to the following:

1. Accessibility of the Storm Room
 - a. Is the storm room facility dedicated for that purpose alone?
 - b. How quickly can it be set up?
2. Back-up power supply – is there an Uninterruptible Power Supply (UPS) or back-up generator available for the storm room?
3. Accessibility to support groups
 - a. Logistics
 - b. Engineering / Field Checking
 - c. Forestry (Tree Crew coordination), etc.
4. Equipment at the Storm Room
 - a. Computers
 - b. Printers/Plotters
 - c. Fax Machines
 - d. Telephone – line lines, cell phones, satellite phones
 - e. Company Radio, commercial band radio, television, etc.
5. Traffic flow
 - a. Is storm room located to avoid interruptions from customers and/or routine business activities?

²⁸⁷ Interviews #17 (October 25, 2007), #69 (October 30, 2007), and #72 (November 29, 2007).

²⁸⁸ Interviews #121 (January 14, 2008), #122 (January 14, 2008), #123 (January 10, 2008), #124 (January 15, 2008), #125 (January 10, 2008), and #126 (January 14, 2008).

- b. Is the storm room located to avoid or minimize unnecessary traffic from restoration workers?

The chart below reflects Liberty’s assessment of the six storm rooms that it visited.²⁸⁹

Rating System: 1 – Good; 2 – Acceptable; 3 – Needs Improvement

	East St. Louis	Maryville	Belleville	Pana	Champaign	Decatur
Accessibility	2	1	2	2	1	1
Back-up Power*	1-UPS	1- partial UPS	1- partial UPS	1- partial UPS	1- partial UPS	2- b/u generator
Support Groups	1	1	1	2	1	1
Equipment	1	1	1	1	1	1
Traffic Flow	3	1	2	3	1	1

UPS – storm room facility completely on Uninterruptible Power Supply

Partial UPS – computers on UPS, rest of storm room facility on back-up generation

b/u generator – entire storm room facility (including computers) on back-up generation.

In conducting these tours and interviews, Liberty found that regardless of the nature of the storm room center facilities, the Ameren-IL employees manning the facility made good use of what they had and there was no apparent negative effect on performance. Liberty’s ratings and suggestions with regard to the storm center facilities address opportunities for improvement of the facilities that are subject to use as a command center. The ratings do not reflect Liberty’s assessment of the performance of the storm center staff during the 2006 storms.

With regard to accessibility, Liberty found that all of the facilities inspected could be set up and running as a storm center within thirty minutes or less. The storm room at the Champaign office is dedicated for that purpose and is not used for anything else. Equipment is in place for immediate access. In fact, all the storm rooms inspected had equipment in place at all times, thus minimizing set-up time. In addition to Champaign, Maryville and Decatur received a higher rating because their storm room facility is located in a conference room separate from other work stations in the building. At East St. Louis, Belleville, and Pana, at least part of the storm center staff was located in the Construction Supervisors’ work area. This is not ideal, but acceptable.

All the storm rooms inspected had Uninterruptible Power Supply (UPS) protection on their computers, with the exception of Decatur. The East St. Louis facility had UPS protection on its entire storm room facility, while back-up generation protected the Decatur storm room facility entirely. UPS protected the computers at the other facilities, with the remaining equipment on back-up generation. The Decatur arrangement is acceptable, but Ameren-IL could improve it by adding UPS to protect the computers. As its name indicates, UPS protects equipment from experiencing any outage, while facilities on back-up generation will experience a brief outage when switched over to the generator.

²⁸⁹ Interviews #121 (January 14, 2008), #122 (January 14, 2008), #123 (January 10, 2008), #124 (January 15, 2008), #125 (January 10, 2008), and #126 (January 14, 2008).

All of the inspected storm rooms rated “good” with regard to access to support groups except for the Pana storm room, which had the Forestry crew coordinator located in a local restaurant separate from the Pana office. Again, as pointed out earlier, the staff assigned to the Pana storm room did not have trouble with this arrangement, but to assure the best access possible to this important support group, it would be preferable to have the coordinator at the Pana facility.

All the inspected storm rooms had the requisite equipment in place and functioning during the restoration efforts. This includes computers, printers/plotters, fax machines, telephones, radio, etc. At least two of these facilities—Champaign and Decatur—had satellite telephones available.

The ratings on Traffic Flow somewhat mirrored the assessment of the storm room accessibility. The three locations that had separate areas – conference rooms – set up for the storm room were better arranged to maintain good control of traffic flow. At Belleville, a part of the storm room staff was in the Construction Supervisors work area, which could be closed off as required. This is acceptable, but a separate location for the storm room is preferred. Liberty rated the facilities at East St. Louis and Pana with regard to traffic flow as “needs improvement” because the reception areas at these two locations were used as part of the storm room. This arrangement makes it extremely difficult to control traffic flow from others in the building or even those from outside who get access to the facility. Again, Liberty found no evidence that any of the working arrangements noted at the six inspected locations negatively affected the storm response.

Based on the inspection of this representative sample of facilities, Liberty found that the Ameren-IL field-command center facilities used during the two 2006 storms were adequate to good overall, but that there are opportunities for improvement.

Staging Sites

“Staging sites” as employed by Ameren-IL during the two 2006 storm restoration efforts are areas equipped with:²⁹⁰

- Storm material trailers
- Transformers, poles, wire, other major material
- Fork trucks, lighting
- Dumpsters, portable toilets, ice, water, etc.

The primary purpose of the staging site as used by Ameren-IL in the two 2006 storms was for the storage and handling of needed electric system repair material. Utilities use staging sites during a major outage event to get the material and equipment closer to the work site in order to eliminate unnecessary travel by the repair crews. The storm material trailers as mentioned above contained enough material to outfit 50 distribution poles in a 12,000-volt electric distribution line. Ameren-IL assigns stores supervisors at all staging sites where it locates material trailers. Staging sites require security and 24-hour, on-call access to assigned personnel. Ameren-IL provides 24-hour coverage at the site if necessary. As stated in the Ameren corporate Electric Emergency Restoration Plan (EERP), Ameren may need to arrange for meals, fuel, and laundry services in addition to the items mentioned above. The EERP also states that, “consideration should be

²⁹⁰ Response to Data Request #123, Attachment 23-B, page 38.

given to bussing construction personnel to and from staging areas and hotels should space allow.”²⁹¹ Liberty found that during the 2006 storms, Ameren-IL did not use the staging sites to feed crew personnel or park crew trucks.

Ameren-IL opened and operated two staging sites in the July 2006 storm—one in East St. Louis, IL and one in Trenton, IL. In the November/December 2006 storm recovery effort, Ameren-IL again used two staging sites—one in Swansea, IL and one in Collinsville, IL. Ameren reported “staging sites that were not owned by Ameren were secured at the time of need by face-to-face communications.”²⁹²

Liberty found that the staging sites served their intended purpose during the Ameren-IL response to the two 2006 storms. The performance of the staging site personnel was effective in accomplishing the intended purpose of material storage and handling. However, Ameren-IL could have made better use of these sites by arranging for the crews to take their morning and evening meals there, using caterers to prepare and serve the meals, and by parking the crew vehicles at the staging sites each night and using shuttles to get the crew personnel to and from their lodging. This is a widely accepted electric utility best practice during major outage events, and has proven to be quite efficient. The utility saves time and money in traveling and feeding crews, fueling vehicles at a few staging sites rather than multiple lodging establishments, and providing security for these vehicles after hours. Liberty also found that the approach used by Ameren-IL during the 2006 storms response to secure the staging sites by face-to-face communications at the time of need was ill advised. To wait until the time of need runs the risk of creating bottlenecks and delays in securing acceptable sites for this critical function.

(3) *Field Operations: Communications, Status Reporting, Work Prioritization, Crew Deployment, Coordination with other Emergency Response Organizations*

This segment of the report deals with five key components of the field restoration process. Communications is of course critical to any successful restoration effort. Communications with workers in the field, communications between workers, communications with key support groups, and upward communications to those who are directing the restoration effort at a higher level all are important to the safe, timely, and effective restoration of service during a major outage event. A specific part of these communications deals with the timely and accurate updates of the status of the restoration effort. The process of gathering this information on a regular basis during each day from the restoration workers in the field is critical not only to keeping all constituents apprised of the progress being made, but also plays a big part in updating the Outage Analysis System (OAS) which is a key tool in the restoration effort. Work prioritization and crew deployment are also key components that when done effectively have a significant positive impact on restoration time. In major outage events, a number of other emergency response organizations are involved, and coordination with these groups is a very important part of any electric utility’s restoration effort. Included in these emergency response organizations are the Illinois Emergency Management Agency, emergency services and disaster agencies, other

²⁹¹ Interview #89 (January 9, 2008); Response to Data Request #153; Ameren Electric Emergency Restoration Plan (EERP), Sections 9.2 and 9.3.

²⁹² Response to Data Request #153.

utilities, and local police and fire departments. Liberty discusses below its findings regarding the performance of the Ameren-IL field restoration organization in each of these component areas.

Communications

Section E of this chapter deals with Ameren-IL's communications on a broad level. In this segment, Liberty addresses the communications specific to the field restoration effort.

With regard to communications from the field command centers to workers in the field, and communications between workers in the field, Ameren-IL normally uses its voice radio system. This worked satisfactorily so long as the communications were between units on the same radio system. However, in a number of instances during the 2006 storms restoration efforts, Ameren-IL response personnel who were on different radio systems were working in the same geographic area. The Ameren corporate Electric Emergency Restoration Plan (EERP) in effect at the time of the 2006 storms described the voice radio system as follows:²⁹³

“Ameren’s voice radio system consists of four distinct and different systems. Currently there is no interoperability between these systems.

- Ameren UE utilizes an M/A-Com EDACs 800MHZ trunked radio system.
- Ameren CIPS continues to utilize a conventional low band system.
- Ameren CILCO utilizes a Motorola SmartNet system based on the 800MHZ frequency range.
- Ameren IP utilizes a Motorola 800 MHZ trunked radio SmartZone system.”

Liberty found that while some inter-system communications was possible between radio units on the Ameren-UE, Ameren-CILCO, and Ameren-IP systems, units on the Ameren-CIPS system could only communicate with other units on that system. Because of this situation, personnel used cellular telephones almost exclusively for communications between field command centers and workers in the field and between workers. Liberty found no evidence that this limitation on the voice radio system caused any significant delay in restoration, or caused any undue safety concerns. Ameren-IL reported that the cellular telephones worked “O.K.,” although there was a lot of traffic in the Metro area (the area east of St. Louis in the Ameren-IL service area) that caused delays.²⁹⁴

Ameren-IL's resourcefulness in using cellular telephones in place of the normal voice radio system is commendable. However, this was certainly not the arrangement of choice. Voice radios are to be preferred for the type communications involved. Storms often damage cellular telephone towers limiting the capability of the cellular system in that area. In addition, in urban areas in times of emergency such as these, cellular traffic is extremely heavy, can create problems getting a call through, and can result in delays in important communications. While there is always a risk of losing the radio system, and back-up alternatives such as cellular telephones must always be at hand, it is essential that Ameren-IL move as expeditiously as possible to get all of their voice radios on the same system. Liberty learned that Ameren-IL has

²⁹³ Response to Data Request #64, Attachment 64-A, Section 13.4.

²⁹⁴ Interview #81, November 28, 2007.

already taken steps to install a new radio system and expects the project to be complete by November 1, 2008.²⁹⁵

Liberty found that the communications between the field command centers and key support groups such as logistics, engineering / field checking, forestry (tree crews), etc. were good during the Ameren-IL restoration effort following the two 2006 storms. As pointed out in the segment above dealing with the inspection of the field command center facilities at six different locations, some support group coordinators were located in the same facility with the field “storm room.” Where this was not the case, there were regular communications by telephone between the field command centers and support coordinators or the coordinators would make frequent visits to the field command-center facility.²⁹⁶ Liberty found no negative effect on the restoration efforts resulting from communications (or problems in communications) with the field command centers and the support groups.

Ameren-IL normally handled the upward communications from the field command centers to the division command center by telephone conversations numerous times during the day as the need arose. Some divisions held conference calls on an occasional, as-needed basis, but this was not a common practice at Ameren-IL during the two 2006 storm restoration efforts.²⁹⁷ Liberty found that these communications worked well, but recommends that Ameren-IL consider a more structured, scheduled approach to the telephone communications between the division and field command centers. There will always be the need for unscheduled communications between these command centers, but by scheduling regular conference calls and/or specific times for status calls, there is an opportunity to gain efficiency in the operation of the division and field command centers. This more structured and scheduled approach to communications is widely used by electric utilities and is a best practice.

Status Reporting

The preceding segment included comments about the communications of restoration status between the field and division command centers. This segment deals with the process employed by the Ameren-IL field organization to report timely and accurately as it completed restoration work so that the Outage Analysis System (OAS) was current and Ameren-IL could furnish accurate restoration status information throughout the organization.

The issue of restoration or outage status reporting proved to be one of the most challenging facets of the overall Ameren-IL response to the two 2006 storms. Section D of this chapter goes into detail concerning the issues related to the Outage Analysis System (OAS), Ameren’s computerized outage-management system. This segment will not repeat all of those issues. Rather, the focus here is on the process in place in the field during the two 2006 storms to report the ongoing status as crews completed outage tickets and restored power.

²⁹⁵ Interview #81 (November 28, 2007), and response to Data Request #797.

²⁹⁶ Interviews #121 (January 14, 2008), #122 (January 14, 2008), #123 (January 10, 2008), #124 (January 15, 2008), #125 (January 10, 2008), and #126 (January 14, 2008).

²⁹⁷ Interviews #68 (November 1, 2007), #69 (November 29, 2007), #70 (November 1, 2007), #72 (October 30, 2007), and #73 (October 29, 2007).

Many of the Ameren-IL employees involved in the response to the two 2006 storms were not adequately trained or properly equipped to use OAS during a major outage event. Ameren identified these issues as affecting the process to update OAS during the restoration effort.²⁹⁸

- At several locations, the decision was made to “sweep” each major feeder or electric circuit. This means that all power was restored on each circuit before moving on to another circuit. During this process, the crews often did not update OAS to identify the order(s) they were working. In some instances, this resulted in OAS not being updated until the end of the day. There were a number of OAS orders that were “massed closed” on July 23, 2006, during the restoration effort because the crews who were “sweeping” circuits had assumed that all of these orders would be closed when they reported the circuit as restored. In fact, Ameren-IL should have closed each individual order.
- Not all field supervisors had laptop computers equipped with “air cards” to allow them to update outage status on a real-time basis from the field.
- Field supervisors chose to give priority to restoration of service over reporting outage status timely.
- Crews did not report a “feeder” (major electric circuit) breaker as restored until they cleared all outage tickets in that area. This resulted in a delay in reporting the restoration of a large number of customers.
- Poor weather and road conditions during the November/December 2006 restoration effort had a negative impact on outage status reporting. These conditions caused a delay in getting needed resources into affected areas and resulted in employees having to assume duties for which they were ill prepared to handle.

All of these issues are familiar to electric utilities that have computerized outage-management systems and that have experienced a major outage event. There are several remedies to address these issues, and Liberty found that Ameren-IL is actively addressing them. Additional training on the use of OAS is essential and has been conducted following the two 2006 storms. (See Section IV-D, Outage Information for details on the training done.) Ameren-IL should address the equipment issues, making sure that it properly equips appropriate field personnel to perform the necessary update processes from the field. The issues related to the weather are common, and the only way to address the problem of delayed arrival of needed personnel is to stage proactively these employees in areas anticipated to be affected.

Liberty recommends that Ameren-IL establish the storm role of “reporter” or “OAS liaison,” assigned to repair crews. The primary, if not the sole, responsibility of this individual would be to update OAS as the crew completes the orders, using laptop computers with air cards to interface with OAS. In those instances where a laptop computer is not available, the “reporter” should have a contact individual at an operating center to which he or she relays the information. It is impractical to expect the supervisor of the field crews to be able to take time away from the critical responsibility of service restoration, crew performance, and employee and public safety to be able to update the outage management system as orders are being completed. Ameren-IL could easily train in advance employees who do not have outage response duties but possess the qualifications needed for this type work and move them into these positions during major outage

²⁹⁸ Responses to Data Requests #155 and #579.

events. A sufficient number of these employees should be trained so as to provide “reporters” for all crews working during the storm effort.

Work Prioritization / Crew Deployment

The prioritization of pending work and the appropriate deployment of crews to restore power to the largest number of customers in the safest and quickest manner possible is a critical function of the field restoration process. Liberty found that Ameren-IL employees directing the field restoration effort did a good job in this function during the two 2006 storm restoration efforts. These employees were, without exception, experienced, knowledgeable utility “storm veterans” who knew what needed to be done and did it.

The fact that Ameren-IL did not identify “critical customers” in its Outage Analysis System (OAS) hampered the prioritization of work effort. The field command centers did not have important information that would have helped in the prioritization process. Section IV.D of this chapter contains the conclusion that “Ameren did not identify critical customers in Outage Analysis System prior to the July and December 2006 storms.” As a result, each division had to identify and prioritize critical customers on their own as the storm progressed.

Since the 2006 storms, Ameren created a list of critical customers in Outage Analysis System by circuit, based on SIC (Standard Industry Classification) codes. Ameren identified Health Care / Life Quality facilities, First Responder Agencies, Critical Social Infrastructure, and Emergency Shelter Sites. A Critical Customer List is available by Division, SIC, and Priority that specifies the customer name, SIC, City, Address, Feeder, and Transformer. Another list details any out-of-service Critical Customers, specifying address, Outage Analysis System order #, Estimated Restoration Time, and other trouble ticket information. Division Engineering is responsible for keeping the Critical Care information up-to-date.²⁹⁹

Not only were the critical customers not entered into the Outage Analysis System (OAS), but also the operating centers did not have circuits that served critical loads identified in advance and therefore did this as the storm restoration progressed.

The fact that there were delays in getting outside help to the area initially affected crew deployment. In the July storms, sources of outside help were unable to come to the aid of Ameren because of the extreme heat that was causing significant service problems throughout the Midwest. In the November/December storm, Ameren-IL should have been more proactive in seeking outside help prior to the onset of the storm. (See Section IV.B, Pre-Storm Preparation, Conclusion 9.) After the storm hit, weather conditions limited travel and delayed many of the crews coming to Ameren’s aid. The result of this delay in getting help to the affected areas meant that initial crew deployment was especially challenging. Initially there simply were not enough crews to deploy to major outage locations. This was not a usual situation; in fact, it is very common for electric utilities to encounter this situation at the outset of major restoration efforts. Again, Liberty found that the employees directing the field restoration effort did a good job in deploying the workers assigned to them. Ameren-IL followed the utility best practice of “collapsing” crews into areas still without power when these crews are released from other

²⁹⁹ Response to Data Request #547.

locations.³⁰⁰ This can be quite challenging for the field command centers to effectively manage these additional resources received many times with fairly short notice. Liberty found that Ameren-IL managed this process without any noticeable problems.

The restoration approach known as “sweeping” the circuit has been discussed earlier. The decision facing the field command centers and the crews was whether to (1) restore power working entirely from Outage Analysis System (OAS) orders, moving from location to location in an attempt to always be working on the order(s) involving the most customers, or (2) to assign a crew to remain working on one specific electric feeder circuit until it restored all power. The advantage of the latter is that it reduces lost time for crews to move from location to location, and helps minimize the chance that small isolated outage cases could be overlooked. Ameren addresses this approach in its Electric Emergency Restoration Plan (EERP) in Section VI – Extensive Damage Recovery. In Chapter III of this report, Liberty recommends that Ameren revise the EERP to allow more flexibility in the use of the circuit “sweep” approach. (See Chapter III, Emergency Plans, Conclusion 5 dealing with EERP Section 6.) Liberty found that Ameren-IL used this approach in several different field command centers during the two 2006 restoration efforts,³⁰¹ and recommends that Ameren-IL use it more often. It is a widely-accepted utility work approach and is considered a best practice during major outage response.

In its critique of the November/December 2006 restoration effort, Ameren-IL concluded that it needed more help in managing the large numbers of outside crews brought in during such an event. Ameren-IL used retired employees and some employees from the power generating plants, but it needed more.³⁰² Ameren should implement a much more aggressive process to identify in advance and train employees not normally assigned a role in major outage response in order to assist in this area.

Another utility best practice in crew deployment and coordination was implemented in several locations during the restoration efforts following the two 2006 storms. This is the practice of using the members of the local crews as crew coordinators for outside crews. Rather than using these personnel for “hands on” restoration work, Ameren-IL broke up local crews and assigned individual members to guide and coordinate the outside crews. In this case, Ameren-IL “upgraded” the crewmembers to the classification of Utility Foreman.³⁰³

Liberty found that there were some constraints in some of the labor contracts between the different Ameren-IL companies and the labor union representing the line workers. One provision impacted Ameren-IL’s ability to relocate personnel from one legacy company into the service area of another legacy company unless all line personnel in the target area had been called out to work. A labor provision dealing with “numbered crews” put some restrictions on how Ameren-IL could use personnel on those crews, even during major outage events. Another labor contract provision specified that employees could “volunteer” to go to a work assignment in another legacy company, but they could not be required to go. For the most part, these provisions did not negatively affect the availability and performance of Ameren-IL workers during the response to

³⁰⁰ Interview #69 (November 29, 2007).

³⁰¹ Interviews #17 (October 25, 2007), #69 (November 29, 2007), #72 (October 30, 2007), #123 (January 10, 2008).

³⁰² Response to Data Request #85, Attachment 85-B.

³⁰³ Interviews #69 (November 29, 2007), #72 (October 30, 2007).

these two major outage events. One division reported that management was willing to send 50 percent of its workforce to aid another division, but less than that number volunteered to go initially. This happened in both the July 2006 and the November/December 2006 storms. In both cases, more employees volunteered later and the division met its 50 percent target. The same division reported that it sent its employees to work in a location 45 miles away from headquarters. Even though lodging was offered for them at that location, if any of the workers wanted to come home each night, the company brought them in.³⁰⁴

Such labor provisions represent serious restrictions on a utility's ability to respond adequately to a major outage event. Ameren-IL management and labor are to be commended for working through these provisions and minimizing the potential negative impact on service response. Ameren-IL should place a high priority on negotiating more flexibility in their labor contracts in the area of emergency response. Negotiations between Ameren-IL were ongoing at the time Liberty began this project and were concluded late in 2007. Liberty does not have any specific information on changes made to any contract provisions, but Ameren-IL reported in one interview that the new labor contracts addressed some of these issues.³⁰⁵

Coordination with Other Emergency Response Organizations

Ameren-IL reported that during the July 2006 storm, the Illinois Emergency Management Agency (IEMA) set up a Unified Command Center in Alorton, IL. Ameren-IL provided update briefings at scheduled times during each day to IEMA and various other state agencies (Illinois State Police, Illinois Department of Transportation, Illinois Department of Public Health and others). County officials were also located at the center. Additionally, the IEMA staff at the center was in constant communications with the Ameren-IL liaisons to resolve concerns over a number of issues. Ameren-IL forwarded coordinated information to the IEMA Springfield location and to the Illinois Commerce Commission (ICC) staff at the IEMA office. This arrangement worked so well, according to Ameren, that it has been adopted as a best practice for major outage events such as the July 2006 storm. Liberty did not receive a confirmation that the IEMA remote center was used during the November/December 2006 restoration effort.

Ameren-IL advised that following the 2006 major outage events, it established a Community and Public Relations group. This group is now working with the Ameren-IL Regulatory Affairs department "to provide timely, accurate, and consistent information to all interested parties and to provide liaison capability to local governments and command centers from a single, unified work group."³⁰⁶

An important issue in the coordination with other emergency response agencies is the receiving, prioritizing, and promptly responding to calls from police and fire departments reporting wires down. Ameren-IL reported that it gave these agencies a special number to call that would place their call in a high priority in the Call Center "queue." Ameren also gave fire and police agencies the option of faxing in these reports to the Call Center. The call center added information to the

³⁰⁴ Interviews #69(November 29, 2007), #75 (October 31, 2007) and #76 (October 29, 2007).

³⁰⁵ Interview #69(November 29, 2007).

³⁰⁶ Response to Data Request #761.

Outage Analysis System (OAS) order to help prioritize these tickets. Ameren-IL reported that these orders received high priority by dispatchers, electric troublemen, and Field Checkers assigned to investigate wire down reports.³⁰⁷

However, as discussed in Section IV.E, Communications, Liberty found that Ameren did not have enough people at the call centers to handle the wire down calls from emergency officials, resulting in long wait times and delays in response in the field. One division identified this issue as an opportunity for improvement, stating the “need to assign person to a community to work with fire/police.”³⁰⁸

Based on the above findings, Liberty concluded that Ameren-IL did a good job in coordinating with other emergency response agencies during the two 2006 major outage events, with the exception of the handling of emergency “wire down” calls from fire and police officials.

b. Field Workforce

This segment of the report addresses the size and quality of the workforce assembled as “boots on the ground,” *i.e.*, personnel assigned to line or tree crews who performed the actual hands-on work to repair electric facilities and trim, cut, and clear trees to facilitate those repairs.

(1) Workforce size/qualifications

Workforce Size

Liberty addressed the size of the total workforce in Ameren-IL in the response to the two 2006 storms in Section C (Organizational Performance) of this chapter. In summary, Liberty found that while the impact of the November/December storm was slightly greater than the July storm, the restoration workforce for the winter storm was more than twice the size of the July workforce. The greatest increase was in the number of contract linemen, which was almost seven times more in the November/December 2006 storm than in the July 2006 storm. Liberty compared the size of Ameren-IL’s workforce with that of other utilities and noted that comparisons can be problematic. Nevertheless, Liberty concluded that the size of the Ameren-IL restoration workforce used to respond to the July 2006 storm was smaller in comparison to the other two utilities, significantly smaller than the Ameren-IL restoration workforce that responded to the November/December 2006 storm, and smaller than desirable given the scope and severity of the July 2006 storm.

The tables below show the number of field restoration workers available each day during the restoration efforts in the July 2006 storms and the November/December 2006 storm.³⁰⁹

³⁰⁷ Response to Data Request #154.

³⁰⁸ Interview #73 (October 29, 2007).

³⁰⁹ Response to Data Request #754.

Restoration Workers by Day – July 2006

date	7/20	7/21	7/22	7/23	7/24	7/25	7/26	7/27	7/28
Line Contractor	148	178	251	271	271	271	271	271	271
Mutual Assistance	0	0	0	140	140	44	44	44	44
Ameren	423	423	423	423	423	423	423	423	423
Tree Crew	215	261	303	303	322	322	349	349	349
Total	786	862	977	1,137	1,156	1,060	1,087	1,087	1,087

Restoration Workers by Day – December 2006

date	12/1	12/2	12/3	12/4	12/5	12/6	12/7	12/8	12/9
Line Contractor	157	157	1,029	1,071	1,144	1,359	1,405	1,870	585
Mutual Assistance	0	20	189	189	231	255	255	301	0
Ameren	398	398	394	394	379	417	444	444	278
Tree Crew	414	587	587	589	591	613	613	591	55
Total	969	1,162	2,199	2,243	2,345	2,644	2,717	3,206	918

These two tables clearly reflect the difference in the size of the Ameren-IL field restoration workforce for the two storms. They also show the time required in each restoration effort to get outside help to the affected area.

During interviews with Ameren-IL division and operating center leaders involved in the response to the two 2006 storms, Liberty heard from one division that there was a delay in receiving outside help. In the case of the November/December 2006 restoration effort, this division did not receive any outside help until Monday, December 4, even though it made a request for help Friday morning, December 1. There was a report from one individual that even though the amount of outside help in the November/December 2006 storm response met his expectations, there was not enough help available in one operating center area in his division.³¹⁰

Ameren-IL also reported that the number of Ameren line supervisors (not including supervision furnished with Mutual Assistance utilities and line contractors) was 49 in the July 2006 restoration and 48 in December 2006. These numbers reflect the normal Ameren-IL complement of line supervisors. Ameren did not furnish any information concerning numbers of Ameren personnel who were assigned to guide/coordinate outside crews. With an increase in total workforce between July and December of almost 200 percent, more help of this nature would have been important and necessary.³¹¹

Based upon the above, and consistent with its conclusions and recommendations in earlier sections of this chapter, Liberty found:

- The Ameren-IL field restoration workforce was much smaller than appropriate to respond adequately to the July 2006 storms.
- The Ameren-IL field restoration workforce was of adequate size to respond appropriately to the November/December 2006 storm.

³¹⁰ Interviews #70 (November 1, 2007), #71 (November 2, 2007), and #72 (October 30, 2007).

³¹¹ Response to Data Request #754.

- Several factors delayed the arrival of the outside help in the response to both the July 2006 and the November / December 2006 storms.
- The amount of Ameren-IL line supervision between July 2006 and December 2006 did not increase even though the total workforce doubled.

Workforce Qualifications

This segment addresses the qualifications of the personnel involved in the field restoration efforts at Ameren-IL following the two 2006 storms. This includes the Ameren-IL employees engaged in directing, coordinating, and supporting the field restoration work done by line and tree crews, the personnel comprising the line and tree crews, and those involved in the Engineering / Field Checking process. A later section of this report address the amount and quality of work accomplished; the focus here is on the qualifications of the employees to do the work assigned to them in field restoration.

To determine this, Liberty conducted a number of interviews, reviewed Ameren-IL critiques of the restoration efforts, and toured six field command centers, meeting with employees involved in different functions within field restoration. Liberty was impressed with the experience and knowledge of the Ameren-IL employees interviewed. Ameren-IL as a company has a good reservoir of experienced, knowledgeable, and dedicated employees to call upon to respond to major outages. Liberty found no evidence of any deficiency in the overall qualifications of the Ameren-IL employees responsible for field restoration following these two storms.

With regard to the qualifications of the Mutual Assistance utility workers who responded to Ameren-IL, Liberty reviewed the list of utilities and found that these were well-established organizations with experienced personnel similar to the Ameren-IL employees.³¹²

The contractor crews, both line and tree, that assisted during these two efforts were comprised of both contractors who were working on the Ameren-IL property prior to the onset of these storms, and those brought in from outside. Ameren had previously accepted those already working for Ameren-IL as qualified to perform line and tree work on the property. The group located at the Ameren General Office in St. Louis that manages and coordinates contractor relations for Ameren on a year-round basis handled the recruitment of outside line and tree contractors. All of the contractors brought in from outside met Ameren's qualifications. Some of them were contractors working for Mutual Assistance utilities who released them to come to Ameren's aid.³¹³

Ameren-IL raised the question of qualifications of outside contractors brought in to aid in the restoration during its critique of the November/December 2006 storm restoration. The primary concern raised here was that the more new contractors brought in, the greater the likelihood that some of these crews will have too many "non-climbing" personnel (groundmen, equipment operators, and support personnel.) Following the critique discussion, Ameren took steps to address this, asking the field organization to send in assessments of contractors deployed in their

³¹² Response to Data Request #123, Attachments 123-B and 123-C.

³¹³ Interviews #88 (January 9, 2008) and #95 (January 10, 2008).

area during the restorations. The field organization was to forward this information to the group in the Ameren general office that manages all contractor relations, and they were to address any concerns with the contractors.³¹⁴ Nobody from Ameren-IL mentioned this issue to Liberty during interviews and tours of facilities. However, it is familiar to all utilities that have had to bring in large numbers of outside contractors. Ameren should follow through to ensure that this is not a problem for them in the future.

Notwithstanding this matter, Liberty found no evidence of any deficiency in field restoration performance in the Ameren-IL response to the two 2006 storms resulting from unqualified personnel, whether Ameren employees, Mutual Assistance utility personnel, or contractors.

In responding to these two major outage events, it was necessary for Ameren-IL to bring in non-union contractors to assist. This is a very sensitive issue with the union employees at Ameren and with the unions themselves. Generally, Ameren has always avoided bringing in non-union personnel to work on their property. Due to the severe nature of these outage events, Ameren-IL made the decision to bring in non-union help. Ameren held discussion with union representatives, and to the credit of the union leadership, the Ameren-IL employees, and Ameren-IL management, this issue was handled with very little difficulty. The non-union personnel were the first that Ameren released at the end of the restoration effort.³¹⁵

(2) Working Hours and Meal Practices

Ameren-IL furnished the following information concerning the working hours and meal practices of the field restoration employees.³¹⁶

Field restoration personnel are assigned to work in approximate 14-18 hour shifts with the remainder of the 24-hour period devoted to rest. During the 2006 storms, the amount of rest was adjusted to compensate for the extreme climatological stresses (extreme heat and humidity; extreme cold, winds, and icing) under which personnel labored in both of the storm restoration events.

While most field restoration personnel work a 'day' shift, there are limited numbers of personnel who work through the evening and night-time hours, effecting repairs and maintaining a field presence on a 24/7 basis during the restoration event. Staffing for the evening and night-time hours is determined by the nature of the event, i.e. the time of day that the storm damage occurred, the day of the week during which the damage occurred, the time of day when personnel originally responded to the call for restoration response, the elapsed time of completion of current work, etc.

Generally, a typical day for field personnel engaged in emergency restoration is structured with a wake-up call around 04:30-05:30 (assuming the personnel will have been rested for 5-7 hours previously). Personnel will be fed breakfast at a

³¹⁴ Responses to Data Request #8, Attachment 8-D, and Data Request #85, Attachment 85-B.

³¹⁵ Interview #72 (October 30, 2007).

³¹⁶ Response to Data Request #156.

pre-arranged site or restaurant and will receive a safety briefing and their first orders for the day at that time. As well, in those areas where permitted by labor agreement, personnel may pick-up a boxed lunch to be carried to the job-site with them. In the event that these lunches have not yet been delivered by the caterer, they will be delivered to the personnel in the field later in the morning. Personnel will work continuously, taking time for their noon-time meal as the job permits. In the evening – at the end of approximately 16 hours of work – personnel close down their work and report any remaining pertinent job-related data to their supervisor. They then return to a pre-arranged restaurant or other site for their evening meal and are sent to rest. Personnel from the immediate area that incurred the damage are sent home; all other personnel are lodged in hotels, motels, and in some extreme cases (July 2006), in college and university dormitories.

With regard to working hours, Liberty found that it is Ameren-IL's practice to keep union employees on duty for 16 hours with 7 hours off for rest so that all of the hours they work during the restoration effort will be on "premium" (double) time.³¹⁷

Liberty mentioned above the matter of using the staging sites to feed the field restoration personnel their morning and evening meal as well as to park the crew trucks. The meal provisions as described above and as employed during the two restoration efforts are in keeping with widely accepted practice throughout the utility industry. The box lunch arrangement is very important and is a utility best practice. This provides the personnel with nourishment at the midpoint of their workday without the lost time associated with getting them to some eating location. Where feasible, it is best to have the box lunches ready for the workers when they leave in the morning en route to the work site. This eliminates the necessity for people to bring the lunches to the work site when they could put their time to better use.

The working hour schedule for field restoration workers as described above is also common utility practice. During protracted restoration efforts that span over several days, it is not practical, and more importantly it is not safe to work employees out in the field for more than 16 hours. It is important that the work and rest hours be closely managed to ensure that the workers are rested and able to handle safely and efficiently the repair and restoration of electric facilities. The one area where Ameren-IL's work hours differ from some utilities is the limiting of rest time in order to keep the workers on premium pay. There are many differences among utilities regarding overtime pay during major outage events, and union contracts obligate some to pay double time for all hours worked during major outage events. Other utilities take the same approach as followed by Ameren-IL, and have an understanding with the employees and unions that the work and rest hours will keep the workers on double time throughout the entire restoration effort. Still others have agreed with the union that the primary emphasis will be to give the employees adequate rest, and the work and rest hours are managed so that the employee does not qualify for double time. The present practice is apparently widely accepted at Ameren-IL, and it may not be practical to try to change this, especially in light of some of the other issues that management needs to address with the unions concerning flexibility in emergency response.

³¹⁷ Interview #69 (November 29, 2007), #126 (January 14, 2008).

Liberty concluded that the working hours as established and employed by Ameren-IL during the 2006 restoration efforts align with the practice of other utilities and only recommends that Ameren-IL's management review this practice to ensure that it serves the best interests of the employees and customers during major outage restoration.

(3) *Daily Crew Reporting Process*

An important part of managing the field restoration workforce is to get daily reports on the status of completed work, scheduled work remaining for the next day, any problem areas, and any outstanding issues. This is especially true in light of the large number of workers, the majority of whom have come in from other locations and are not familiar with the area or the host utility's territory and work procedures. Management of this reporting process has to minimize the time required of all concerned and to avoid creating a "bottleneck" by bringing the crews to the field command locations.

Liberty found that Ameren-IL followed no set procedure in the daily reporting process during the two 2006 restoration efforts. There is no specific procedure detailed in the Ameren corporate Electric Emergency Restoration Plan (EERP) or in the two Ameren-IL division plans reviewed by Liberty. In some locations, crew leaders came in to the field command center to make reports, and at other locations, this was handled by telephone. The Ameren-IL field restoration organization was set up so that there were Construction Supervisors assigned to coordinate repair crew work in certain areas. These supervisors maintained ongoing communications with crew leaders during the day and therefore had the information normally covered in the daily reports.³¹⁸

Liberty found that Ameren-IL adequately managed the daily crew reporting process during the two 2006 restoration efforts, and there was no obvious loss of productivity or delay in restoration resulting from the approach taken by Ameren-IL. There is an opportunity to establish a specific process and ensure that this important task is handled more consistently in future major outage restorations.

(4) *Receiving and Orienting Outside Crews*

The number of outside field restoration workers brought in to assist Ameren-IL following the two 2006 storms has been discussed earlier in this Section. All electric utilities receiving large numbers of workers from outside of their service area face the challenge of how to transition this outside help smoothly, safely, and effectively into the restoration effort. The Ameren corporate Electric Emergency Restoration Plan (EERP) contains the following provisions for managing outside resources:

Section 11 – Handling Outside Crews

The purpose of this section is to assist Division personnel in preparing to handle outside crews. Outside crews are crews coming from other utilities or contractors that have not previously worked on Ameren property.

³¹⁸ Interviews #70 (November 1, 2007), #74 (October 29, 2007), #122 (January 14, 2008), #123 (January 10, 2008).

11.1 Checkpoints

These locations will be carefully selected to allow for easy highway access and serve to short stop incoming crews before actually assigning them work. Outside resources will meet with their Ameren Liaisons to discuss hotel arrangements, receive their safety briefing, meet their Squad Leaders and Crew Guides, locate fueling stops, and learn where they will be working. These sites will need to be capable of accommodating large numbers of line trucks and have paved or gravel surfaces. (truck stops, schools, shopping centers, commuter parking areas are suitable sites.) Once crews have been briefed and contacts have been made, they will be directed/guided to their hotels or work areas dependent on time of day.

11.2 Checkpoint Coordinator

This individual will work closely with the Division Coordinator and Division Logistics Coordinator to make sure that the checkpoints are operational. They will make certain that the Safety Coordinators, Liaisons, Field Supervisors, Squad Leaders, and Crew Guides work together to properly receive outside assistance crews.

11.3 Ameren Liaison

This individual will meet the outside crews at the checkpoint site and be their main point of contact for logistical issues. They will coordinate the lodging, security, meal issues, laundry issues, and any other issues needing attention that fall outside the area of field work. They will also cover the details in the outside crew guide before any actual work is performed. They must be available 24 hours a day to provide assistance to outside resources as required.

11.4 Safety Coordinator

This individual will work closely with the Check Point Director to make certain that Outside Assistance Crews clearly understand that SAFETY is the priority while working on Ameren property. They will conduct a thorough safety briefing with all personnel before they engage in any work activity on our property. They will serve as the point of contact for any and all safety related matters to the Outside Assistance Crews and their supervisors.

This section of the corporate EERP also provides for the use of Squad Leaders and Crew Guides to work at the direction of the field-restoration command center and help coordinate and support the outside crews.³¹⁹

These provisions as set forth above are well designed and if followed should help facilitate the smooth, safe, and effective transition of these outside resources into the restoration effort. In reviewing the critique of the November/December 2006 restoration effort and in conducting interviews with those who were involved in managing the outside resources, Liberty found that in most instances Ameren-IL did not use Checkpoints.³²⁰ Ameren-IL stated that the main intent of the Checkpoint is to establish a separation of the arriving outside crews from the restoration

³¹⁹ Response to Data Request 64, Attachment 64-A, Section 11.

³²⁰ Response to Data Request #8, Attachment 8-D, Interview Request #88 (January 9, 2008).

work centers, and that this separation was maintained by either meeting the outside crews at their lodging upon arrival, or meeting with them separately at staging sites.³²¹

In an effort to help with the orientation of outside crews during the November/December 2006 restoration effort, Ameren distributed a document including important contact information, safety expectations, information concerning Ameren's Workman Protection Assurance (WPA) process of handling the clearing and switching of electric power line facilities, and other helpful information. This document was under development at the time of the November/December 2006 storm; Ameren-IL distributed it in draft form. This proved to be very helpful in the orientation process. Ameren-IL has since completed this document and has been using it for orientation of outside workers since 2007.³²²

Liberty found that Ameren-IL could have improved its performance in receiving and orienting outside crews arriving to assist in the two 2006 restoration efforts. By following the Checkpoint provisions in the corporate Electric Emergency Restoration Plan (EERP), this could have been handled in a more consistent manner to ensure a smooth, safe, and effective transition of the outside crews into the restoration workforce. The draft document outlining needed information, which Ameren distributed to outside crews in the November/December 2006 restoration, was a helpful addition to the orientation process.

c. Material Supply

An indispensable component of the field restoration process is the timely supply of material in the required quantity and quality to ensure that there is no delay in restoring power and no compromising of the reliability of the electric system. Liberty discussed material supply to the field restoration organization in Section IV.F, Support Organizations. That section included a summary tabulation of the materials issued during the 2006 storms to provide a sense of the significant workload on the Stores/Material Support organization. In Illinois, and during the restoration from the two major storms in 2006, Ameren-IL issued over 2,200 poles, nearly 4,500 cross arms, over 2 million feet of wire and cable, and over 1,400 transformers.³²³

In that prior section of this report, Liberty concluded that the support organization fulfilled its role during the storms, and found no instances in which a material shortage or delivery problem slowed the restoration.

Liberty also reviewed the steps Ameren-IL took to ensure the quality of materials used during the storms. Those steps included the following.³²⁴

- Ameren-IL had already approved for use the materials coming from its warehouses.
- The storm trailers were pre-equipped with Ameren-approved equipment and materials.
- Ameren inspected materials coming directly from suppliers and from neighboring utilities prior disbursement to line crews.

³²¹ Interview #88 (January 9, 2008).

³²² Response to Data Request #8, Attachment 8-D, Interview #88 (January 9, 2008), and Interview #95 (January 10, 2008).

³²³ Response to Data Request #71, Attachment 71-F.

³²⁴ Response to Data Request #757.

- Ameren engineering approved all non-standard materials prior to allowing the materials on site for distribution.
- Ameren supplied the materials to both in-house and foreign crews.

Liberty concluded that Ameren-IL's supply of the quantity and quality of materials during the 2006 storm restorations was adequate.

d. Field Restoration Work

(1) Field Checking (Damage Assessment)

The corporate Electric Emergency Restoration Plan (EERP) defines the duties of the Field Checker in a major outage restoration. These duties are:

- Inspect outage sites to assess type and degree of damage involved
- Determine what sorts of repairs are needed and list any required materials
- Communicate findings with Field Check Dispatcher
- Perform safety over-watch (barricade and secure sites) on downed wires until relieved. Advise customers of immediate safety concerns on their property.

An area distribution estimator or an engineer normally fills the position.³²⁵

During the July 2006 restoration effort, Ameren-IL had 95 employees in the Field Checker role. In the November/December 2006 storm, that number grew to 169.³²⁶ This increase was in keeping with the increased damage and number of workers in the November/December 2006 restoration.

Damage assessment is extremely important in the field restoration process. Ameren's Electric Emergency Restoration Plan (EERP) lists three stages (or phases) of damage assessment, initial field damage assessment (high level), detailed damage assessment, and heavily localized damage assessment.³²⁷ Ameren-IL provided the data in the table below related to completion of damage assessments.³²⁸

³²⁵ Response to Data Request #64, Attachment 64-A, Section 3.6.

³²⁶ Response to Data Request #76.

³²⁷ Response to Data Request #64, Attachment 64-A, Sections 4.2, 4.3, and 4.4.

³²⁸ Response to Data Request #77.

Field Checkers Completion Date

Division	Operating Center	July 2006 Storm (storms hit July 19 and July 21)	Nov./Dec. 2006 Storm (storm hit on November 30)
I	All	July 20	December 2
II	All	July 20	December 3
III	Decatur	July 20	December 5
III	Springfield/Lincoln	July 21	December 6
III	Bloomington	-	December 4
IV	All	-	December 8
V	All	July 28	December 9
VI	E. St Louis	July 27	December 8
VI	Belleville	July 28	December 7
VI	Mt Vernon/Centralia	July 28	-
VI	Sparta	-	December 3
VII	All	-	-

These data show Ameren-IL did not complete damage assessment in Divisions V and VI in July 2006, and in Divisions IV, V, and VI in December 2006, until the last few days of the restoration effort. Even considering the magnitude of the damage in these two events, the target for completing damage assessment should have been within the first three days.

The Ameren-IL damage assessment process following a major storm puts a high priority on finding, isolating, and clearing public safety hazards such as wires that are down or hanging dangerously low. Field Checkers, often being the first responders into the affected areas, call in to the dispatcher any such hazards found and remain there until relieved to keep the public from making contact with the wires. Ameren-IL uses Public Safety Advisors (PSAs) and Cut-and-Clear crews to respond to these situations so that the Field Checkers can proceed with damage assessment. There are assigned storm response roles for dispatchers to coordinate the work of Field Checkers, Public Safety Advisors, and Cut-and-Clear crews. All utilities responding to damage after a major storm confront these hazards. The Ameren-IL approach is a utility best practice. Given the dual responsibility of assessing the damage to facilities and responding to protect the public from hazardous conditions, and the length of time required to complete the damage assessment in heavily impacted areas, Ameren-IL needs to increase the number of field checkers to meet the workload demands in a timely manner.

The Ameren-IL critiques of the two 2006 restoration efforts and interviews with leaders of the field restoration efforts revealed the following:³²⁹

- In some instances there were too many checkers reporting to one dispatcher.
- Ameren-IL pulled Field Checkers off duty to become crew guides.
- In several cases, the Outage Analysis System (OAS) did not contain enough damage assessment information after the Field Checker completed the assessment.
- Some of the Field Checkers had not received training prior to their assignment to that role.

³²⁹ Responses to Data Requests #8, Attachments 8-C and 8-D, and #85, Attachment 85-B.

- There was a shortage of Public Service Advisors in the July 2006 restoration.
- Ameren-IL called off Cut-and-Clear crews to work on other assignments.

Liberty found that the Ameren-IL Field Checking (Damage Assessment) process as described in the corporate Electric Emergency Restoration Plan (EERP) is adequate and, if executed as intended, should meet the challenge of a major outage event. The roles of Public Safety Advisor (PSA) and Cut-and-Clear crews, along with the dispatchers to communicate with them are utility best practices. However, Ameren-IL's staffing of these positions was inadequate to meet the demands of storms of this magnitude in a timely manner. The damage assessment in the heavily impacted divisions took too long to complete.

(2) *Switching, Clearance, and Tagging Processes*

The safety of the workers and public are paramount in the field restoration effort. Procedures followed by utility repair crews to isolate a damaged line, render it safe, repair it, and return it to service are crucial tasks. The words used here—switching, clearance, and tagging—refer to operating equipment that controls the flow of power, giving and receiving permission (clearance) to work on a line, and identifying the lines being worked on by installing a highly visible devices (*e.g.*, flag, tag) at points where the lines could be energized. The details of how exactly this is accomplished vary among utilities, and it is essential that when utilities bring in outside resources to assist on major outage restoration that they go through orientation to familiarize them with the host utility's processes.

At Ameren-IL, the Workman Protection Assurance (WPA) covers these tasks. According to the Ameren corporate Electric Emergency Restoration Plan (EERP), the WPA processes, including switching, remain under the control of the Distribution Dispatch Office (DDO) responsible for that area, although the EERP notes that, "special cases may warrant a differing approach."³³⁰

With many crews working to repair lines and restore service, the workload on the dispatch offices can overwhelm the dispatchers and cause long delays while crews wait to receive clearances or switching instructions. Liberty's investigation determined that there were delays caused by the process used by Ameren-IL in the July 2006 restoration effort. The notes from the critique of the July 2006 restoration contained the following comment. "There were a number of occasions when the issuance of WPA caused delays to field workers; several cases where the delays were extensive."³³¹ The critique notes from the December 2006 restoration indicated, "We were not aware of a great many delays relative to the issuance of WPA during this restoration." The notes commented that Ameren-IL increased dispatcher staffing, and used additional dispatchers to help write switching orders in the December effort. The notes also mentioned that some of the outside crews were unwilling to accept the WPA restrictions and only accepted them in a "global sense."³³²

During the two 2006 restoration efforts, Ameren-IL sought to address the concerns with WPA and switching procedures with the use of individuals designated as a "functional agent." These

³³⁰ Response to Data Request #64, Attachment 64-A, Section 2.3.

³³¹ Response to Data Request #8, Attachment 8-C.

³³² Response to Data Request #8, Attachment 8-D.

individuals would normally be someone at the job level of superintendent and would undergo detailed training. Ameren-IL expected them to demonstrate proficiency in the process before receiving the designation. This approach had some success in relieving the workload on the Distribution Dispatch Office and reduced some of the delay in getting switching instructions.³³³

This is a very serious but common issue faced during major outages. Utilities must address it with a great deal of care. Safety of workers and the public is paramount. Ameren-IL mentioned Occupational Safety and Health Act (OSHA) requirements in the critiques of both of the 2006 restoration efforts, and it is essential that those requirements are adhered to at all times. It is also very much in the best interest of Ameren-IL and its stakeholders that any appropriate action be taken to modify the existing process so as to not delay the restoration process unnecessarily. Ameren-IL mentioned these delays in its critique of the July storms but not for the November storm. Liberty concluded that in the two 2006 restoration efforts, Ameren-IL managed the switching, clearance, and tagging process responsibly and in accordance with its Workman Protection Assurance (WPA) process, which Ameren-IL designed to meet OSHA requirements. Ameren-IL should continue to seek ways to modify the process and minimize delays while not compromising safety.

(3) Safety Performance

No matter how well a utility performs the other components, if its safety performance is not good, the field restoration process has not been successful. A key measure of the performance of the field organization is the number of employee and vehicle safety incidents experienced during the restoration effort.

Liberty discusses the performance of the Ameren Safety support group Section IV.F, Support Organizations. As noted there, the field safety professionals were under the direction of the Ameren corporate Safety group during the July 2006 restoration, but were under the Ameren-IL division managers in the November/December 2006 effort. Ameren-IL described how it managed safety under the division managers using the safety professionals.³³⁴

The role of safety professionals during emergency response and restoration events is to ensure that safety remains a primary focus and a top priority for all company and contractor personnel. They report directly to the Division Manager in each division and are assigned to travel to the specific areas within the Division that have been impacted by the emergency event. The role of safety during emergency response events is being further clarified and defined as the Ameren-Illinois organization implements a separate and defined emergency response plan structured on the precepts of the Incident Command Structure.

Oversight and direction to the Safety Professionals during the November/December 2006 storm restoration effort was provided through daily direct contact with the Division Manager in two forms: 1) face-to-face meetings

³³³ Response to Data Request #8, Attachment 8-D.

³³⁴ Responses to Data Requests #747 and #753.

and 2) telephone calls. In some cases, meetings took place in the field or at meal locations.

During the “ramp-up” phase of the restoration effort (the transition from normal business operations to emergency response), the Division Manager met with the Safety Professional assigned to his division and outlined performance expectations. Those expectations included:

- Provide safety training and orientation for foreign crews (contractors and those utilities providing “mutual assistance”)
- Ensure that each worker understand that safety is the number one priority at all times and that safety can not be sacrificed for customer service, production or any other reason
- Provide crew safety briefings
- Make crew visits and conduct **Job Behavior Observations (JBO)**
- Ensure that all workers have appropriate **Personal Protective Equipment (PPE)** and further ensure that all such equipment is used at all times (as appropriate for the job at hand).

The safety professionals had the following additional duties:

- Provide morning and evening safety briefings (typically at meal locations)
- Ensure that all workers, regardless of company affiliation work safely and follow safety rules, procedures, and work practices at all times
- Direct or assist with incident investigations (employee or public incidents)

Ameren-IL indicated that division managers met with the safety professionals at least twice per day to discuss any safety incidents that occurred and any other safety issues or concerns. Examples of these issues included the availability of high visibility vests for one of the mutual aid companies and a near-miss incident. Ameren-IL did not require written reports on these matters.

The number of employee and vehicle safety incidents is a key measure of field restoration performance. Even with a well-defined and executed management and coordination plan, the number of safety incidents is the final word on how well safety performed. The table below shows the number of safety incidents in the two restoration efforts.³³⁵ There were three basic employee groups comprising the field restoration workforce, Ameren employees, Mutual Assistance employees, and contractor employees. Interestingly, there were no safety incidents for Mutual Assistance workers in either of the two restoration efforts.

Employee safety incidents fall into one of three categories:

- Not Recordable – an incident that required no medical attention or needed only first aid.
- Recordable – an incident that resulted in an injury to the employee who required medical attention beyond first aid.
- Lost Time – an incident in which employee injury results in the employee not being able to report to work on the next scheduled work day.

³³⁵ Responses to Data Requests #747 and #753.

Vehicle safety incidents fall into one of two categories:

- Non-preventable – a vehicle accident in which the employee driver was not at fault and could not have reasonably been expected to take successful evasive action. Three examples of non-preventable accidents on this list are: limb fell out of tree and struck truck, Ameren vehicle struck from behind by another vehicle, and line truck hauling pole on pole trailer struck public vehicle when it tried to pass line truck on the right as it was attempting to make a right turn.
- Preventable – a vehicle accident in which the employee driver was at fault. Two examples from this list are: employee backed into another vehicle, and employee ran into back of public vehicle.

**Employee and Vehicle Safety Incidents
Ameren-IL - 2006 Storms**

Legend: NR – Not Recordable, R – Recordable, LT – Lost Time, NP – Not Preventable, P-Preventable

	July 2006	Nov/Dec 2006	Total
Ameren-IL Employee Safety Incidents	NR – 4 R – 1 LT – $\frac{0}{5}$	NR – 12 R – 4 LT – $\frac{1}{17}$	NR – 16 R – 5 LT – $\frac{1}{22}$
Contractor Employee Safety Incidents	NR – 2 R – 1 LT – $\frac{1}{4}$	NR – 0 R – 3 LT – $\frac{0}{3}$	NR – 2 R – 4 LT – $\frac{1}{7}$
Total Safety Incidents	NR – 6 R – 2 LT – $\frac{1}{9}$	NR – 12 R – 7 LT – $\frac{1}{20}$	NR – 18 R – 9 LT – $\frac{2}{29}$
Ameren-IL Vehicle Incidents	NP – 1 P – $\frac{0}{1}$	NP – 4 P – $\frac{3}{7}$	NP – 5 P – $\frac{3}{8}$
Contractor Vehicle Incidents	NP – 0 P – $\frac{0}{0}$	NP – 3 P – $\frac{1}{4}$	NP – 3 P – $\frac{1}{4}$
Total Vehicle Incidents	NP – 1 P – $\frac{0}{1}$	NP – 7 P – $\frac{4}{11}$	NP – 8 P – $\frac{4}{12}$

There was a significant increase in employee and vehicle safety incidents in the November/December 2006 restoration effort. Given the large increase in workers and vehicles and the more adverse weather conditions such as icing, this result was not surprising. The most significant figures are the total number of recordable and lost-time employee safety incidents and preventable vehicle incidents. For the two restoration efforts combined, there were 9 recordable employee safety incidents, and 2 lost time incidents. Electric facilities were not directly associated with any of the employee safety incidents. They were all related to falls, cuts, sprains, etc. There were only four preventable vehicle incidents for the two storms. Again, given the large

number of workers and vehicles brought into the area with which they were not familiar, under very hazardous and challenging driving and working conditions, these numbers are very good.

Liberty concluded that the safety organization in both of the 2006 restoration efforts provided good oversight and maintained a strong emphasis on safety throughout the event. Moreover, Liberty found that the field-restoration safety management and performance met or exceeded expectations given the challenging circumstances.

(4) *Length of Restoration*

In reviewing the performance of any electric utility in its response to a major outage event, an ultimate question is whether the time required to restore power to all customers was reasonable given the circumstances. Stated another way, this question is: “Was the restoration time good, fair, poor, or unacceptable, and was the restoration time longer than it should have been, and if so, by how much?”

There has never been, and never will be a perfectly executed response to a major outage event. There will always be issues that arise and opportunities for improvement. The fact that Liberty found several items that Ameren-IL needs to address does not mean that the restoration time was unacceptable or even unreasonable. Obviously, all of these items collectively had some effect on service restoration time, but often the utility response organization is able to offset some of this impact and hold the restoration time within reasonable or acceptable limits.

In making this assessment, Liberty compared the restoration time of the two 2006 Ameren-IL efforts to that of two utilities affected by Hurricane Isabel on the East Coast in 2003. Liberty used this comparative data in Section IV.C, Organizational Performance, in its review of the size of the Ameren-IL restoration workforce. Liberty selected these two utilities for comparison based on the availability of data and the comparable length of the restoration times.

In that earlier section, Liberty noted that several factors such as the type of storm, the terrain involved, and utility work rules make comparisons problematic. In addition, the November/December 2006 storm was a winter ice storm with the significant restraints on travel and working conditions inherent with this type storm. The July 2006 storm was actually two storms. One hit the Ameren-IL area on July 19, 2006, and the second one, of similar in intensity to the first, hit the Ameren-IL area on July 21. In some locations, the second storm caused restoration re-work.³³⁶ In addition, to be considered when comparing the performance of different electric utilities in responding to different storms are factors such as customer density of the affected area and the amount of available outside help within a certain travel time. Notwithstanding these comparison difficulties, Liberty made the following observations:

1. The restoration rates for Companies A and B are twice as great as the rate for Ameren-IL in the July 2006 response.
2. The type of storm experienced by Ameren-IL in July 2006 compares favorably to the impact of a hurricane – absent the storm surge and torrential rains – so the working conditions in the response to the July 2006 storm and Hurricane Isabel are comparable.

³³⁶ Interviews #13 (October 3, 2007), #15 (November 14, 2007), #18 and #19 (October 25, 2007).

3. The reasons for the difference in the restoration rates as noted in (1) above are primarily the much smaller Ameren-IL workforce and the impact of the July 21, 2006 storm.
4. The restoration rates for Companies A and B were 20 percent to 25 percent greater than that of the Ameren-IL response to the November/December 2006 major outage event.
5. Even with a larger workforce than Companies A and B when compared to customer outages, Ameren-IL was not able to match the restoration rate of those two companies due to the significantly more difficult working conditions found in the November/December 2006 winter storm compared to those faced in the wake of a hurricane or windstorm.
6. The length of the restoration by Ameren-IL in response to the July 2006 storm, even considering the second storm on July 21, was too long. A restoration length of eight days would meet what one should expect for this type of outage event. Ameren-IL took ten days.
7. The length of the restoration by Ameren-IL in response to the November/December 2006 winter storm was reasonable. To restore over 370,000 customers in eight days under the type of severe working and traveling conditions that Ameren-IL encountered is well within expectations for this type of outage event.

The dedication and persistence of the entire Ameren-IL emergency response organization is commendable. Employees worked long hours for many days in very difficult conditions. If it were not for this type dedication and hard work, the restoration effort would have taken longer and all Ameren-IL stakeholders would have suffered. While Liberty found that the July 2006 restoration effort took too long, it was not due to the lack of hard work by the employees involved.

In Chapter III dealing with emergency plans, and in this chapter, which addresses storm restoration performance, Liberty has reached a number of conclusions and made recommendations addressing issues that affected the restoration time and performance in these two events. Ameren-IL should address these in order to improve as an emergency response organization. The single biggest factor that caused the July 2006 restoration to run too long was the small size of the workforce. Ameren-IL should carefully review the issues that caused the lengthy restoration time to improve future performance.

(5) *Quality of Repair Work*

To help ensure the quality of the restoration repair work, Ameren-IL indicated that its construction supervisors, construction superintendents, or qualified journeymen accompanied foreign contractor crews and Mutual Assistance utility crews “a majority of the time.”³³⁷ In some cases, Ameren-IL gave foreign crews copies of standards books and generally instructed them to rebuild according to the pre-damaged configuration. Ameren-IL’s field engineering performed post-storm reviews to check that foreign crews used proper construction methods. Ameren-IL noted that it has not identified any major outages since the 2006 storms directly attributable to the repairs made during the restoration from those storms.

³³⁷ Response to Data Request #760.

According to Ameren-IL, the Transmission Maintenance Engineering staff directed all repairs to the transmission system. Transmission maintenance engineers were on site prior to beginning restoration work, were on site during a large portion of the actual restoration work, and performed on-site inspections after work completion.³³⁸

During interviews with many individuals knowledgeable of the quality of repair work, none mentioned the issue of repair work quality.³³⁹ Liberty's interview questions generated many comments and Ameren-IL's employees were very open in their responses. Given this openness and the large number of interviewees, the absence of input concerning an issue can be as significant as input that identifies an issue. Moreover, Ameren's post-event critiques never mentioned the quality of repair work as an issue.³⁴⁰ The critique of the November/December restoration took place more than four months after completion of the repair work for the July 2006 storm. It is reasonable to assume that if there had been any significant problems in the quality of the July repairs, those matters would have been apparent by then and Ameren-IL would have mentioned such issues in the critique notes.

Liberty concluded that Ameren-IL had an appropriate approach in managing the quality of repair work during the two 2006 restoration efforts, and that repair work quality during these two restoration efforts was acceptable.

4. Conclusions

1. There is a need for clarity and consistency in defining the role of the Ameren-IL Division Manager in the emergency response organization, especially concerning the issue of direct responsibility for the field operating centers. (Recommendation IV-12, Section IV.C, Organizational Performance)

In interviewing all seven of the Illinois Division Managers, Liberty noted that the actual role of that manager in the division emergency organization varied from division to division. Some of them were very "hands on" in running the restoration effort, spending the large majority of their time at the division storm command center. Other division managers saw their role as supporting the Division Superintendent who actually ran the restoration effort in the division. These division managers spent a large portion of their time visiting crews and operating centers, and making contacts with key citizens and elected officials. This difference in approach is not uncommon among mid-level utility management, and there are advantages to each approach. Because of the talent and experience level of the incumbents in these division manager positions, Ameren-IL should make an effort to determine the optimal role for the Division Manager during major outage events, and seek consistency in their storm assignment.

The issue of who has direct responsibility for the field operating centers is crucial to the effective performance of field restoration. There is a need for clarity and consistency among all of the

³³⁸ Response to Data Request #760.

³³⁹ For example, Interviews #17 (October 25, 2007), #21 (October 24, 2007), #69 (November 29, 2007), #72 (October 30, 2007), #73 (October 29, 2007), #74 (October 29, 2007), #82 (November 29, 2007), #88 (January 9, 2008), #95 and (January 11, 2008).

³⁴⁰ Response to Data Request #8, Attachments 8C – 8H; and Data Request #85.

Ameren-IL divisions to facilitate the training and preparation of the emergency response organization and to ensure an effective response to major outages.

2. The Ameren-IL field operating center organization was well designed and appropriate to manage the restoration effort for the two 2006 storms.

The field operating center organization in place for the two 2006 storms provided flexibility that allowed the staffing to be expanded or reduced depending on the situation. Support and direction ensured that the field workers had what they needed and that they performed work in a safe and effective manner. This included support from the corporate Emergency Operations Center (EOC) and the Distribution Dispatch Operations (DDO) center, as well as support and direction from the division command center. Ameren-IL personnel also provided appropriate supervision for the Mutual Assistance utility and contractor personnel. The field-operating center provided the coordination and dispatch functions necessary to prioritize the restoration work and coordinate the different functions and work groups.

3. The Ameren-IL employees used to head up the local field operating centers and to coordinate and direct the restoration workforce in the field were seasoned utility operating veterans with many years' experience in storm response.

Ameren-IL used experienced construction supervisors normally assigned to that specific operating center to head up the storm effort or brought in division superintendents from other divisions not heavily affected by the storm. In addition to these supervisors, the other supervisory personnel used in the field operations to coordinate and direct the restoration workforce were well experienced in storm response.

4. In at least one instance during the July 2006 storm response, one individual headed up the restoration effort at both the division level and at the local operating center at the division headquarters. This was too large of an assignment for one person. (Recommendation IV-34)

Liberty found that the individual assigned this dual role in the July 2006 storm was an extremely talented and well-experience employee in storm response. However, his assigned role was too much for one person, and the general practice among utilities in major outage response is to avoid such dual roles. Ameren-IL addressed this situation for the November/December 2006 storm, but Ameren-IL should address it in their Electric Emergency Restoration Plan (EERP).

5. Ameren-IL field command center facilities used during the two 2006 storms were adequate, but there are opportunities for improvement. (Recommendation IV-35)

Liberty toured six Ameren-IL facilities used as storm centers during the 2006 storms and conducted interviews with employees assigned to work at those location. Liberty assessed the accessibility of the storm room and how quickly it could be made operational, the back-up power arrangement protecting the facility, the access to support groups at the facility, the available necessary equipment to support the storm room activities, and the control of traffic in and around the storm room. Of the 30 ratings given (five assessment areas for six facilities), 22 were "good," 6 were "acceptable," and only 2 rated "needs improvement." The primary areas of improvement

were in the location and accessibility of the storm room. Liberty found no indication that the situations noted had a negative effect on command center performance. Liberty found that Ameren-IL's field command-center facilities were adequate to good overall, with some improvement opportunities.

6. Ameren-IL's use of staging sites during the response to the two 2006 storms accomplished the intended purpose for material storage and handling. Ameren-IL can make better use of these sites. Ameren-IL obtained some sites only after it needed them. (Recommendations IV-36 below and IV-32 above)

Ameren-IL used two staging sites in the July 2006 storm, and two in the November/December 2006 storm. The primary purpose of the staging sites as employed by Ameren-IL was for the storage and handling of material and equipment needed for storm repair. Ameren-IL located the staging sites to get the needed supplies as close to the work site as possible and minimize crew travel. The performance of the staging site personnel was effective in accomplishing the intended purpose. Even though the corporate Electric Emergency Restoration Plan (EERP) mentions the possible need for arrangements for meals and fuel, and recommends consideration be given to bussing crew personnel to and from the staging sites to the hotel, Ameren-IL did not use the staging sites to feed crews or to park and fuel vehicles. Using staging sites for these purposes is a widely accepted electric utility best practice during major outage events, and has proven to be quite efficient. The utility saves time and money in traveling and feeding crews, fueling vehicles at a few staging sites rather than multiple lodging establishments, and providing security for these vehicles after hours. Ameren-IL also reported that it secured sites not owned by them only at the time of need by face-to-face communications. This approach runs a very real risk of creating bottlenecks and delays in securing and opening these sites that are critical to the effective response to a major outage event.

7. Ameren-IL's radio systems could not all communicate with each other. Communications between field workers and between the field command centers and field workers during the 2006 storms were almost entirely by cellular telephone. (Recommendation IV-37)

Section 13.4 of the Ameren corporate Electric Emergency Restoration Plan (EERP) in use at the time of the 2006 storms detailed the limitation of the existing voice radio system in which there was no interoperability between any of the four separate radio systems in use in the Ameren-IL service area. As Ameren-IL brought in repair crews using these different radio systems to affected areas, the field command centers could not communicate with them, nor could local crew guides. For this reason, Ameren-IL almost exclusively used cellular telephones for communications during the restoration efforts. This is not desirable because cellular telephone towers can be damaged or otherwise lose service during major storms. In addition, in urban areas in times of emergencies, cellular traffic can be extremely heavy causing problems getting a call through. Ameren-IL is actively pursuing the installation of a new radio system for its service area and expects the project to be complete by November 1, 2008.

8. The communications between the Ameren-IL field command centers and the support groups during the two 2006 storm restoration efforts was good.

The communications between the field command centers and key support groups such as logistics, engineering / field checking, and forestry (tree crews) were good during the Ameren-IL restoration effort following the two 2006 storms. Some support group coordinators were located in the same facility with the field “storm room.” Where this was not the case, there were regular communications by telephone between the field command centers and support coordinators or the coordinators would make frequent visits to the field command-center facility. Liberty found no negative effect on the restoration efforts resulting from communications (or problems in communications) with the field command centers and the support groups.

9. The communications between the Ameren-IL division and field command centers worked well during the two 2006 restoration efforts, but there is an opportunity for improvement. (Recommendation IV-38)

The upward communications from the field command centers to the division command center normally used telephone conversations numerous times during the day as the need arose. Some divisions held conference calls on an occasional, as-needed basis, but this was not a common practice at Ameren-IL. Liberty found that these communications worked well, but recommends that Ameren-IL consider a more structured, scheduled approach to the telephone communications between the division and field command centers. There will always be the need for unscheduled communications between these command centers, but by scheduling regular conference calls and/or specific times for status calls, there is an opportunity to gain efficiency in the operation of the division and field command centers. This more structured and scheduled approach to communications is widely used by electric utilities to good effect, and is best practice.

10. The Ameren-IL field organization did not report the status of outage repair and update the Outage Analysis System in a timely, complete, and accurate manner during the two 2006 storm restoration efforts. (Recommendations IV-14, IV-15, and IV-16 above)

The issue of restoration or outage status reporting proved to be one of the most challenging facets of the overall Ameren-IL response to the two 2006 storms. Many of the Ameren-IL employees involved in the response to the two 2006 storms were not adequately trained or properly equipped to use OAS during a major outage event. Contributing factors were the process of “sweeping” electric feeder circuits (completing all repairs and restoring all power on a given circuit rather than working individual OAS orders), the demands on the field supervisors’ time, and a misunderstanding on the part of some supervisors as to how to close the OAS orders. Ameren-IL has already undertaken an aggressive training regimen in the use of OAS for appropriate employees. It should also take steps adequately equip those employees who will have the responsibility of updating OAS from the field. Ameren-IL should also dedicate more human resources to handle adequately the workload associated with this important function during a major outage event.

11. Ameren-IL employees directing the field restoration effort did a good job in work prioritization and crew deployment during the two 2006 storm restoration

efforts. There are opportunities for improvement by better advance identification of circuits serving critical loads and by wider use of the circuit “sweep” approach to restoration during a major outage event. (Recommendation IV-39)

The employees directing the field restoration effort did a good job in prioritizing the work and deploying the workers assigned to them. These employees were, without exception, experienced and knowledgeable utility “storm veterans” who knew what needed to be done and did it. Ameren-IL followed the utility best practice of “collapsing” crews into areas still without power when released from other locations. It can be challenging for field command-centers to manage effectively the additional resources received many times with short notice. Liberty found that Ameren-IL managed this process without any noticeable problems. Ameren-IL failed to identify “critical customers” in the Outage Analysis System prior to the July or November storms. As a result, each division had to identify and prioritize critical customers on their own as the storm progressed. Ameren-IL used the circuit “sweep” approach in several different field command centers during the two 2006 restoration efforts. Liberty recommends a more frequent use of this widely accepted utility work approach that is a best practice during major outage response.

12. Ameren-IL did not have enough help in the deployment and coordination of the large number of outside workers brought in to assist in the two 2006 major outage restorations. (Recommendation IV-39)

In the November/December 2006 restoration effort, Ameren-IL needed more help in managing the large numbers of outside crews. Ameren-IL used retired employees and some employees from the power generating plants, but it needed more. Ameren-IL should implement a much more aggressive process to identify in advance and train employees not normally assigned a role in major outage response in order to assist in this area.

13. The practice of using members of local crews to serve as guides and coordinators for outside crews was successful but not widely implemented. (Recommendation IV-39)

In this technique, rather than using local crews strictly for “hands on” restoration work, the utility breaks local crews and assigns individual members as guides and coordinators for the outside crews. Ameren-IL used this practice in some locations. This practice is widespread among electric utilities and is a best practice by those who use it.

14. Some labor contract provisions constrained Ameren-IL’s ability to deploy restoration workers effectively. (Recommendation IV-40)

One provision affected Ameren-IL’s ability to relocate personnel from one legacy company into the service area of another legacy company unless all line personnel in the target area had been called out to work. A labor provision dealing with “numbered crews” puts restrictions on how Ameren-IL could use personnel on those crews, even during major outage events. Another labor contract provision specified that employees could “volunteer” to go to a work assignment in another legacy company, but they could not be required to go. For the most part, these provisions did not negatively affect the availability and performance of Ameren-IL workers during the response to these two major outage events.

Such labor provisions represent restrictions on a utility's ability to respond adequately to a major outage event. It is commendable that Ameren-IL management and labor worked through these provisions and minimized the potential negative effect on service response. Ameren-IL should place a high priority on negotiating more flexibility in their labor contracts in the area of emergency response.

15. Ameren-IL did a good job in coordinating with other emergency response agencies during the two 2006 major outage events. Communications problems hampered the receipt of wires down reports from fire and police departments.
(Several recommendations in section IV.E above and Recommendation IV-41 below)

During the July 2006 storm, the Illinois Emergency Management Agency (IEMA) set up a Unified Command Center in Alorton, IL. Ameren-IL provided update briefings at scheduled times during each day to IEMA and various other state agencies (Illinois State Police, Illinois Department of Transportation, Illinois Department of Public Health and others). County officials were also located at the center. Additionally, the IEMA staff at the center was in constant communications with the Ameren-IL liaisons to resolve concerns over a number of issues. In addition, coordinated information was forwarded to the IEMA Springfield location and to the Illinois Commerce Commission (ICC) staff at the IEMA office. According to Ameren-IL, this arrangement worked so well that Ameren-IL adopted it as a best practice for major outage events such as the July 2006 storm. Liberty did not receive a confirmation that the IEMA remote center was used during the November/December 2006 restoration effort. Ameren-IL should continue to pursue this with IEMA and establish a clear understanding of when this remote center will be used and the procedure to coordinate Ameren-IL's role in its opening and operation.

As reported in Section IV.E, Communications, Ameren had serious telephony problems during the storms that, among other things, delayed the receipt of wires down reports from fire and police departments.

16. The July 2006 restoration workforce was too small. The December 2006 restoration workforce size was adequate but lacked adequate line supervision.
(Recommendations IV-5 and IV-13 above)

With regard to the size of the Ameren-IL field restoration workforce in the response to the two 2006 storms:

- The Ameren-IL field restoration workforce was much smaller than needed to respond adequately to the July 2006 storm, due in large part to the limited availability of outside resources at the time.
- The Ameren-IL field restoration workforce was of adequate size to respond appropriately to the November/December 2006 storm.
- Several factors delayed the arrival of the outside help in the response to both the July 2006 and the November / December 2006 storms.
- The amount of Ameren-IL line supervision between July 2006 and December 2006 did not increase even though the total workforce increased almost 200 percent.

There was a significant disparity in the numbers of the total line and tree restoration workers for the July 2006 and December 2006 storms. The data also reflected the delay of several days in getting outside help into the impacted area.

There were delays in getting outside help. In the case of the November/December 2006 restoration effort, one division did not receive any outside help until Monday, December 4, even though it made a request for help on Friday morning, December 1. There was a report from one individual that even though the amount of outside help in the November/December 2006 storm response met his expectations, there was not enough help available in one operating center area in his division.

Ameren-IL reported that the number of its line supervisors (not including supervision furnished with Mutual Assistance utilities and line contractors) was 49 in the July 2006 restoration and 48 in December 2006. These numbers reflect the normal Ameren-IL complement of line supervisors. Ameren-IL did not furnish any information concerning numbers of Ameren-IL personnel assigned to guide/coordinate outside crews. With an increase in total workforce between July and December of almost 200 percent, more help of this nature would be important.

17. The field restoration workforce had good qualifications. Some outside contractors may have assigned too many “non-climbing” personnel.
(Recommendation IV-42)

The experience and knowledge of Ameren-IL personnel involved in a variety of field restoration functions during the 2006 storms was impressive. Ameren-IL has a good reservoir of experienced, knowledgeable, and dedicated employees to call upon to respond to major outages. Liberty also based its conclusion on a review of the Mutual Assistance utilities and interviews with the Ameren-IL employees who managed contractors and who recruited the outside contractors for assistance during the storms.

Ameren-IL raised a possible issue that new contractors may have brought in too many “non-climbing” personnel (*e.g.*, equipment operators, support personnel). Ameren-IL was in the process of investigating this matter. This issue is familiar to all utilities that have had to bring in large numbers of outside contractors. Ameren should follow through to ensure that this is not a problem for them in the future.

Liberty found no evidence of any deficiency in field restoration performance in the Ameren-IL response to the two 2006 storms resulting from unqualified personnel, whether Ameren employees, Mutual Assistance utility personnel, or contractors.

18. Ameren-IL management, employees, and union leadership cooperated to allow the use of non-union contract personnel to work on Ameren-IL property during the restoration effort following the two 2006 storms.

In responding to these two major outage events, it was necessary for Ameren-IL to bring in non-union contractors to assist. This is a very sensitive issue with the union employees at Ameren and with the unions themselves. Ameren has typically avoided bringing in non-union personnel to work on their property. Due to the severe nature of these outage events, Ameren-IL made the decision to bring in non-union help. Management held discussions with union representatives,

and, to the credit of the union leadership, Ameren-IL employees, and Ameren-IL management, they handled this issue with very little difficulty. The non-union personnel were the first that Ameren-IL released at the end of the restoration effort.

19. The working hours and meals practices as employed by Ameren-IL in the field restoration effort was in keeping with practices common to a number of utilities. Ameren-IL should review these practices for possible opportunities to improve. (Recommendation IV-43)

The meal provisions employed during the two restoration efforts are in keeping with widely accepted practices in the utility industry. The box lunch arrangement is very important and is a utility best practice. This provides the personnel with nourishment at the midpoint of their workday without the lost time associated with getting them to some eating location. The working hours employed by Ameren-IL during the 2006 restoration efforts align with the practice of other utilities. Liberty suggests that Ameren-IL review this practice to ensure that it serves the best interests of the employees and customers during major outage restorations.

20. Ameren-IL adequately managed the daily crew reporting process during the two 2006 restoration efforts. There is an opportunity to establish a specific process and ensure that Ameren-IL handles this important task more consistently in future major outage restorations. (Recommendation IV-44)

Ameren-IL followed no set procedure in the daily reporting process during the two 2006 restoration efforts. There is no specific procedure detailed in the Ameren corporate Electric Emergency Restoration Plan (EERP) or in the two Ameren-IL division plans reviewed by Liberty. In some locations, crew leaders came in to the field command center to make reports, and at other locations telephone calls served. The Ameren-IL field restoration organization had construction supervisors assigned to coordinate repair crew work in certain areas. These supervisors maintained ongoing communications with crew leaders during the day and therefore had the information normally covered in daily reports.

21. Ameren-IL's performance in receiving and orienting outside crews arriving to assist in the 2006 restoration efforts could have been better. (Recommendation IV-45)

In most instances in the two 2006 restoration efforts, Ameren-IL did not use Checkpoints to receive and orient the arriving outside crews as set forth in the corporate Electric Emergency Restoration Plan (EERP). Ameren-IL indicated that the main intent of the Checkpoint is to establish a separation of the arriving outside crews from the restoration work centers, and that it maintained this separation by either meeting the outside crews at their lodging upon arrival, or meeting with them separately at staging sites. By following the Checkpoint provisions in the corporate Electric Emergency Restoration Plan (EERP), Ameren-IL could have handled this in a more consistent manner to ensure a smooth, safe, and effective transition of the outside crews into the restoration workforce.

22. The timing, quantity, and quality of materials and repair items served the storm restoration work well.

Ameren-IL issued over 2,200 poles, nearly 4,500 cross arms, over 2 million feet of wire and cable, and over 1,400 transformers during the two restoration efforts. The Stores/Material Support group fulfilled its role during both storms. Ameren-IL had reasonable processes in place with regard to the quality control of repair materials. Liberty found no evidence that availability or quality of repair materials delayed the restoration.

23. Aspects of Ameren's Field Checking (Damage Assessment) process are utility best practices. However, during the 2006 storm restorations, staffing of Field Checkers was inadequate and some damage assessment took too long. (Recommendation IV-46)

Field Checkers have several important duties including the initial inspection of outage sites to assess the type and degree of damage. Ameren's definition and use of Filed Checkers, Public Safety Advisors, and Cut-and-Clear crews are utility best practices. However, the responsibilities of Field Checkers during the 2006 storm restorations were too much for the number of individuals assigned. Ameren-IL did not complete damage assessment in some divisions until the last few days of the restoration.

24. During the 2006 restorations, Ameren-IL's strong commitment to worker and public safety was evident from its management of switching, clearance, and tagging. However, the Workman Protection Assurance (WPA) switching process caused delays in the restoration work. (Recommendation IV-47)

Ameren-IL's approach to controlling switching during the two 2006 restoration efforts demonstrated its strong commitment to worker and public safety. The WPA switching process caused some delays in the July storms. Ameren-IL sought to address this with the limited use of a concept known as "functional agent" that would move control of some switching out to qualified and trained personnel in the field. This met with some success.

25. Ameren-IL's safety management and performance during the 2006 storm restorations was very good.

Ameren-IL maintained a strong safety orientation throughout the 2006 storm restorations. There were nine recordable employee safety incidents and two lost time incidents. None of these incidents related directly to electric facilities. There were only four preventable vehicle incidents during the restorations. Considering the number of field workers and hazardous condition, this safety performance was very good.

26. The length of the restoration to the July 2006 storm was too long. The length of the restoration to the November/December 2006 storm was reasonable. (Recommendations IV-5 and IV-13)

The length of the restoration following the July 2006 storms was ten days. Even considering the effects of the second storm, this was too long by about two days. The time required to restore all

power following the November/December storm was eight days. Considering the number of customers affected and the working and travel conditions, this performance was reasonable.

The dedication and persistence of the entire Ameren-IL emergency response organization during both of the 2006 events is commendable. Employees worked long hours for many days in very difficult conditions. While Liberty found that the July 2006 restoration effort took too long, it was not due to the lack of hard work by the employees involved.

In Chapter III dealing with emergency plans, and in this chapter addressing storm restoration performance, Liberty made recommendations addressing issues that affected the restoration performance in these two events. Ameren-IL should address these in order to improve as an emergency response organization. The single biggest factor that caused the July 2006 restoration to run too long was the small size of the workforce. Ameren-IL should carefully review the issues that caused the inadequate workforce size and take steps to improve future performance.

27. The approach taken by Ameren-IL in the area of quality control of repair work during the two 2006 restoration efforts was appropriate.

Construction supervisors, construction superintendents, or qualified journeymen accompanied foreign contractor crews and Mutual Assistance utility crews. Ameren-IL used standards books and general instructions to workers not familiar with Ameren-IL methods. Ameren-IL's field engineering performed post-storm reviews to check that foreign crews used proper construction methods. The Transmission Maintenance Engineering staff directed all repairs to the transmission system and performed on-site inspections after work completion. Neither interviewees nor Ameren's post-storm critiques mentioned the quality of repair work as a problem.

5. Recommendations

IV-34 Revise corporate Electric Emergency Restoration Plan (EERP) to ensure that Ameren-IL assigns separate individuals to head up the division storm response and the response at a local operating center.

As part of the overall effort to improve the corporate Electric Emergency Restoration Plan (EERP), and clarify the different storm roles in the division response organization, Ameren should clearly communicate that the roles of heading up the division response and heading up the local operating center response at division headquarters will be with separate individuals. Ameren-IL should incorporate this change in the EERP and clearly communicate it to affected employees within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-35 Inspect all Ameren-IL divisions to ensure that the facilities to be used as command centers can be transitioned from normal business operations to emergency response quickly and effectively so as to facilitate a timely ramp-up of emergency response within the organization.

Some possible items to consider include, but are not limited to the following:

- provide quick accessibility to and set-up of the storm room
- provide the protection of all sensitive storm-room computer equipment on an Uninterruptible Power Supply (UPS)
- locate all key support function coordinators in close proximity to the storm room staff
- furnish all necessary equipment such as computers, fax machines, printers/plotters, land-line telephones, cellular telephones, satellite telephones, company radio, and commercial radios and televisions
- isolate the storm room from unnecessary traffic (personnel located at that facility or those from outside)

Ameren-IL should complete the inspection of these facilities within six months and accomplish the necessary modifications/improvements within twelve months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-36 Identify and contractually secure potential-staging sites not owned by Ameren for each operating center area.

Ameren-IL should change the EERP to reflect these practices within three months of the date of this report. It should secure contracts for potential staging sites within nine months of the date of this report. As part of the changes to the EERP, Ameren-IL should require a semi-annual review of these contracts to ensure that they remain current and that the sites will be available when Ameren-IL needs them.

In its comments on the draft report, Ameren-IL accepted this recommendation but proposed a longer implementation schedule and less frequent review of the contracts.

IV-37 Install the new voice radio system that will have all of the Ameren-IL service area operating on the same system.

Ameren-IL has already acquired the new system and expects the installation to be complete by November 1, 2008.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-38 Establish as normal operating procedure regularly scheduled conference calls between the division and field command centers during major outage events. Revise the corporate Electric Emergency Restoration Plan (EERP) accordingly.

Ameren-IL should make these changes to the EERP and communicate them to all appropriate parties within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-39 Improve field restoration practices.

a. Establish as normal procedure for major outage response the advanced identification of circuits serving critical customers. This process should be included in the Ameren-IL Emergency

Response Plan. Ameren-IL should have established lists, and periodic reviews, of the circuit designations for critical customers and loads, and should complete implementation within six months of the date of this report.

b. Ameren-IL should make better use of the “sweeping” of circuits approach to power restoration. Ameren-IL should define this process in the Emergency Response Plan and complete implementation within nine months of the date of this report.

c. Ameren-IL should have advanced identification of and training for employees who do not have a role in major outage response to assist in the deployment and coordination of outside crews. It should include this provision in the Emergency Response Plan and complete implementation within nine months of the date of this report

d. Ameren-IL should make more use of members of local crews as guides and coordinators for outside crews, include this in the Emergency Response Plan, and complete implementation within six months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-40 Negotiate changes in labor contracts to allow more flexibility in responding to major outage events.

Ameren-IL has only recently completed labor negotiations on the existing contracts between the legacy companies and the unions. Any gains made in these negotiations in the area of more flexibility in emergency response should be managed carefully in order to realize the maximum benefit possible in improved service response. Ameren-IL should continue discussions with the unions to address issues affecting the ability to respond to major emergencies. If possible, Ameren-IL should seek mid-term agreements to gain more flexibility prior to renegotiating the contracts. Ameren-IL should report to the Illinois Commerce Commission (ICC) on the results of the recently negotiated changes in improving service response, and on the status of ongoing discussions with the unions to gain more flexibility. Ameren-IL should make the report to the ICC within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-41 Work with the Illinois Emergency Management Agency (IEMA) to use the remote Unified Command Center during major outage events.

Ameren-IL should work with IEMA and establish a clear understanding when they will use this remote center and the procedure to coordinate Ameren-IL’s role in its opening and operation. Ameren-IL should report to the Illinois Commerce Commission (ICC) providing details of the understanding reached between Ameren-IL and IEMA. Ameren-IL should complete this report to the ICC, the revision of the corporate and division Electric Emergency Restoration Plans, and the communication of the changes to the plan within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-42 Implement the necessary procedures to ensure that outside contractors brought in to assist in the response to major outage events do not have a disproportionate number of “non-climbing” personnel.

The appropriate Ameren-IL department should take steps to communicate the company’s expectations in advance to all contractors who have assisted in the past or could be used in future major outage restorations. During the actual recruitment process in a major outage restoration, this group should require information on each crewmember indicating whether each is qualified to do electric journeyman work. Ameren-IL should formalize the procedure and contact contractors within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-43 Review the practice of managing the work and rest hours of field restoration workers that results in employees remaining on premium pay during the entire major emergency restoration.

Ameren-IL should review this practice to ensure that it serves the best interests of both employees and customers during major outage restoration efforts. Ameren-IL should report the results of this review as well as planned action (if any) to the Illinois Commerce Commission (ICC) within six months from the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-44 Establish and implement a specific procedure for daily reports from field restoration repair crews during major outage events.

Ameren-IL should review the practices used to gather information from and give information to field-restoration repair crews during major outage events. Ameren-IL should decide on the best procedure to follow to ensure that this daily reporting is timely, accurate, and effective. Ameren-IL should then establish the procedure in the corporate and division Electric Emergency Restoration Plans (EERPs) and communicate it to all appropriate employees. Ameren-IL should complete these steps within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-45 Implement the Checkpoint provisions in the corporate Electric Emergency Restoration Plan (EERP) during major outage restoration efforts.

Ameren-IL should identify and secure Checkpoint sites in advance for use during major outage events. Ameren-IL should pre-identify and train employees to perform the various Checkpoint roles. Ameren-IL should use annual drills and refresher training on these roles. Ameren-IL should complete the initial steps of this recommendation within six months of the date of this report and keep the designations and training current each year.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-46 Identify and train in advance an adequate number of employees to serve as Field Checkers and Public Safety Advisors (PSAs) during a major outage restoration.

Ameren-IL should thoroughly review the number of personnel that it may need to fill the roles of Field Checkers and Public Safety Advisors. Ameren-IL should identify in advance people who could fill these roles and train them to do so. In addition, Ameren-IL should review and respond to the issues concerning field checking and damage assessment noted in the critiques of the 2006 storm restorations. Ameren-IL should complete this recommendation within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-47 Design and implement acceptable options that are compatible with Workman Protection Assurance for more timely switching during major outage restorations.

Ameren-IL should review the procedures followed by other utilities, design, and provide for alternative switching and clearance options that will protect worker and public safety and minimize switching delays during major outage restoration. Ameren-IL should implement this recommendation within one year of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

H. Post-Storm Activities

1. Objectives

This section provides a description and Liberty's evaluation of Ameren's activities after the 2006 storms. More specifically, it covers the ramp-down, cleanup, and post-storm critique activities and performance. Liberty evaluated the effect of each of these activities on restoration of service and the potential effect on Ameren-IL's response to future, major outage events. The report addresses the following item in the ICC's Request for Proposals for this investigation:

- **4.3.2.5.36** An evaluation of the utilities' post-event processes such as ramp-down, clean-up and post-event critiques.

2. Background

In analyzing performance in athletic contests, two common phrases are the ability to "finish well," and "it's not over 'til it's over." These two phrases also apply to an analysis of an electric utility's response to a major outage event. The goal of a utility in such an event is to restore power to the customers as safely, promptly, and efficiently as possible. In the interest of speeding the recovery effort, the utility assembles a large workforce and makes repairs as expeditiously as possible. At some point in time—as the utility restores power to more and more customers—the utility reduces the workforce, de-activates command centers, and re-deploys workers to areas

still having restoration problems. This “ramp-down” of the emergency response organization requires the same orderly process as the activation of restoration effort.

After restoring the last customer and “declaring victory,” the utility still has work to do. In the course of trimming and removing damaged trees and repairing or replacing damaged facilities, the utility may decide to temporarily forego some work that it will need to do soon but that is not necessary to safely restore service to an area. The “clean up” phase of post-event activities involves the important task of coming back and performing the work that it left undone. This phase also requires an orderly, safe, timely, and effective process.

Finally, to ignore past mistakes and opportunities for improvement is a sure way to continue to make the same mistakes and to fail to improve in restoration performance. Hopefully, the utility made notes throughout the event to capture things that worked well and things that did not. The utility should hold post-event critiques as soon as possible after the conclusion of the restoration effort while the issues are still fresh in mind. The fact that the two major outage events affected Ameren-IL in slightly more than four months underscores the importance of a timely, comprehensive post-event critique with prompt and thorough follow-up. To the extent that Ameren-IL did this following the July 2006 event, the response to the November/December 2006 event should have shown some improvement.

3. Findings and Analysis

This section presents Liberty’s findings and analysis of the post-event activities of Ameren-IL in the two 2006 storms as contained within the three basic processes:

- a. Ramp-Down
- b. Clean-Up
- c. Post-event critiques

Liberty analyzed the content of these three processes as well as Ameren-IL’s performance of each activity and each overall process.

a. Ramp-Down Process

The tables below help to show the challenge facing Ameren-IL in the ramp-down process. They show the number of personnel in the Ameren-IL restoration workforce for the two 2006 storms:³⁴¹

³⁴¹ Response to Data Request #76.

**Total Restoration Resources in Illinois
July 2006 Storm**

(Total Customer Outages: 302,112)

Ameren Linemen	423
Contractor Linemen	271
Mutual Assistance Linemen	140
Vegetation Clearing Personnel	349
Field Checkers/Damage Assessors	95
Stores/Material Management	50
Distribution Dispatch	45
Crew Supervision/Crew Dispatch	100
Fleet Services	35
Safety Professionals	10
Total Defined	1518
Field and Logistics Support	≈225
Grand Total	1740+

**Total Restoration Resources in Illinois
Nov/Dec. 2006 Storm**

(Total Customer Outages 370,322)

Ameren Linemen	444
Contractor Linemen	1870
Mutual Assistance Linemen	301
Vegetation Clearing Personnel	613
Field Checkers/Damage Assessors	169
Stores/Material Management	50
Dispatch (Damage Assessment & Vegetation Management)	63
Fleet Services	35
Safety Professionals	8
Total Defined	3553
Field and Logistics Support	≈250
Grand Total	3800+

(1) *Ramp-Down Process Content*

Ameren-IL had no formal written plan for the ramp down process for the two 2006 storms. Ameren-IL described its ramp-down process as follows:³⁴²

As the numbers of customers affected in a division are being reduced and restoration of all customers is expected in the next 24 hours, the Emergency Operations Center (EOC) and the local division will develop a resource release plan. The EOC will determine whether any other Ameren location will require the

³⁴² Response to Data Request #83.

use of these resources and they should be transferred or they can be released. If they can be released the following order is typically used:

- 1. Mutual Aid Resources³⁴³ are released first.*
- 2. Outside Contract Crews, based on where they came from (i.e. furthest away released first).*
- 3. Outside Ameren resources. These are crews from other Ameren divisions. They are usually released such that they are available in their own area the next business day to perform work.*
- 4. Local Contract crews are released next. In Ameren Illinois, the normal work force is complemented with contractors on a daily basis. These are contractors who when released will be back in the same division performing normal construction and maintenance activities.*
- 5. Last to be released are the local division resources. They usually will require rest, therefore the decision to hold a small contingent of contractors over is sometimes made. In particular, although the distribution system outages were all restored, there was the need for several following days to re-connect customers who had their service wires down with damage to their own facilities which required customer repairs to be completed first.*

The EOC generally doesn't shut down while resource ramp down is occurring, but once it's determined no significant business value is being obtained and all areas are restored then it ceases it's (sic) function. Even though the EOC may have formally shut down, members of the EOC still may be performing a subset of the EOC duties in coordinating various activities. As part of the shut down process, the EOC will notify the appropriate governmental agencies as well as complete all event documentation.

The local division field centers also don't ramp down until the outside resources have been released and all distribution outages have been restored. A formal transfer is then made between the affected division and the appropriate Distribution Dispatch office."

The ramp-down process described above is appropriate and in keeping with typical industry practices. A key part of the Mutual Assistance agreement among utilities is that the receiving utility will be sensitive to the needs of the sending utilities and release their resources as soon as possible. Since the Mutual Assistance utilities are providing assistance on a non-profit basis, it is appropriate to release these resources before releasing contractor resources from other areas that are obviously making a profit on the work and therefore are more willing to stay longer. The plan for closing the corporate Emergency Operations Center (EOC) and division and local operating centers likewise follows a logical and practical course of action.

The obvious concern was that Ameren did not have this written policy beforehand; it was not contained within the Electric Emergency Restoration Plan (EERP). It appeared that Ameren-IL

³⁴³ "Mutual Aid Resources" refers to personnel and resources sent to aid Ameren under the Mutual Assistance agreement. This informal agreement between electric utilities provides that participating utilities will come to the aid of impacted utilities to the extent they are able on a "not for profit" basis.

prepared this good description only because Liberty requested it. Without such a formal written plan, there is no assurance that Ameren-IL will remember it and follow it at the close of the next major outage event.

(2) *Ramp-Down Process Performance*

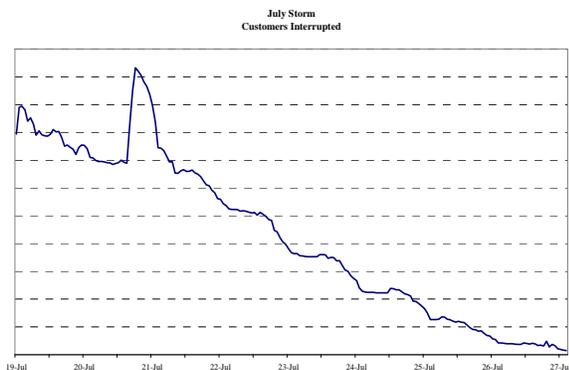
Ameren-IL followed the ramp-down process described above during the two 2006 storms. In assessing Ameren-IL's performance, Liberty considered:

- The reduction in numbers of customers still without power in the final days of the restoration effort shows whether Ameren-IL released resources too soon.
- Input received from those assisting concerning the release of their resources in the final days of the restoration effort shows whether Ameren-IL held resources too long.
- Input received during interviews with Ameren-IL management personnel concerning the closing of command centers describes the ramp-down of the command centers.

Reduction in number of customers without power – final days of restoration effort

Liberty examined the pattern of customer restoration during the 2006 storms, focusing on the final few days of restoration. The charts below show this pattern for the July storms.³⁴⁴

³⁴⁴ Response to Data Request #265.



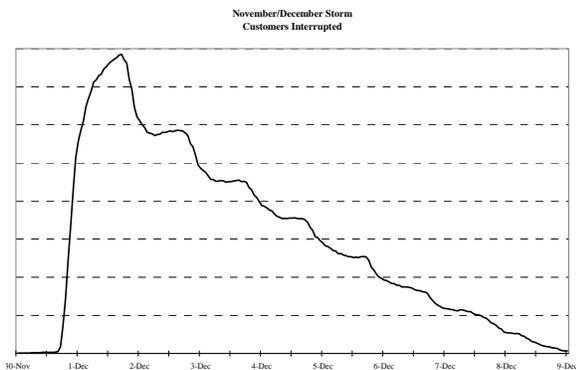
July Storm
July 24-27



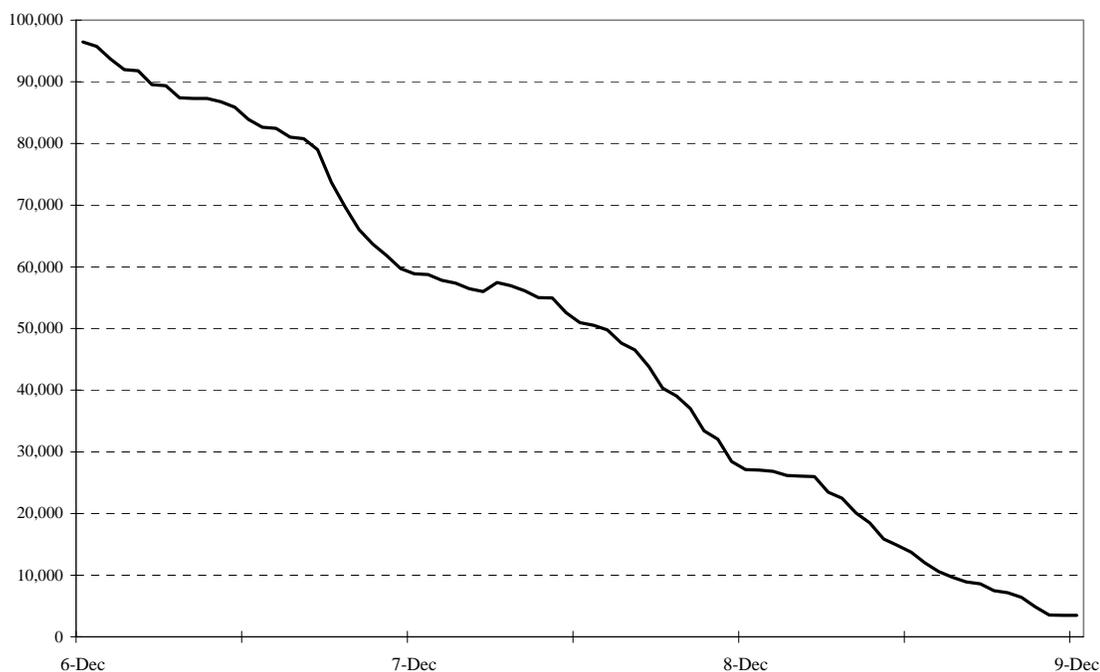
Section G (Field Restoration) of this chapter covers the overall rate of reduction of customers without service. The question here is whether the ramp-down negatively affected the rate of reduction in the final stages of the restoration. Releasing work forces too soon could cause a flattening of the curve beyond that expected. For the July storms, there was some flattening of the curve in the last days of restoration, but Liberty found the pattern to be typical of large storm restoration.

The next charts show the overall pattern and the final days of restoration for the November 2006 storm.³⁴⁵

³⁴⁵ Response to Data Request #265.



November/December Storm
December 6-9



Liberty found very little flattening of the restoration curve and concluded that Ameren-IL’s ramp-down did not negatively affect the restoration of service to customers for either of the 2006 storms.

Input from those assisting Ameren-IL concerning the release of their resources in the final days of the restoration effort

Ameren had no formal procedure to solicit feedback from those sending resources to help from outside during the two 2006 storms, either Mutual Assistance utilities or outside contractors.³⁴⁶ In the absence of any formal effort to seek and capture feedback, Ameren was unable to learn from any mistakes or oversights or to act on any suggestions for improvement. Ameren advised

³⁴⁶ Interview Requests #82 (November 29, 2007) and #95 (January 10, 2008).

that it recently developed and implemented a questionnaire for contractors.³⁴⁷ From interviews with Ameren representative responsible for the Mutual Assistance utility contacts, Liberty learned that Ameren made some informal contacts with some Mutual Assistance utilities seeking feedback, but they recalled nothing significant from those contacts.³⁴⁸ In addition, Liberty received no negative input from any of the Ameren-IL division management personnel interviewed regarding the release of outside resources. Based on these interviews, Liberty found no evidence of any negative effect on restoration of the manner in which Ameren released resources in the final days of the restoration efforts.

Input from management personnel concerning the closing of command centers

Other than the actual staff of the Emergency Operations Center (EOC), there are two key constituent groups affected by the process of the closing of command centers. These are the Ameren-IL division and field management and the management of the Distribution Dispatch Operations (DDO) centers. The closing of command centers affects the first group if the closing occurs too soon or too late. In the case of closing too early, division and field management have to reactivate and take charge of command centers again. In the case of closing too late, there is an unnecessary tying up experienced operations management personnel. For the Distribution Dispatch Operations (DDO) centers, an early closing puts an extra workload on dispatch centers not staffed for the increase. If Ameren did not conduct the closings in a well-coordinated manner, DDO centers may not have the status of the restoration in each area.

Liberty interviewed management personnel from both of these groups and explored the issues of closing command centers and transferring dispatch responsibilities back to the DDO centers. Liberty found no evidence of any deficiencies in the performance of the closing of Ameren-IL command centers at the end of the two 2006 storms.

b. Clean-Up Process

Liberty defines the clean-up process as the work done after all customers have had service restored. This work includes:

- repair all hazards and potential outage-causing damage on electric facilities left undone during the actual restoration
- cut or trim all potentially hazardous and outage-causing damaged trees left undone during the actual restoration
- perform additional tree trimming in the affected area

(1) Clean-Up Process Content

Ameren did not provide Liberty with any information concerning a post storm clean-up process, either formal or informal. In response to a specific data request, Ameren suggested that Liberty seek this information in interviews with the appropriate Ameren personnel.³⁴⁹ Liberty found no

³⁴⁷ Interview Request #95 (January 10, 2008).

³⁴⁸ Interview Request #82 (November 29, 2007).

³⁴⁹ Response to Data Request #83.

evidence of any written clean-up process, either formal or informal. This is not to say that some clean-up as defined above was not done, but that Ameren had no written plan for such clean-up at the close of the restoration efforts following the two 2006 storms.

The clean-up process is an important part of the post-event activities of any electric utility following a major outage event. Ameren-IL should develop a specific clean-up plan and include it in their corporate Electric Emergency Restoration Plan (EERP).

(2) *Clean-Up Process Performance*

In interviews conducted with Ameren field operations management personnel and with those overseeing the tree-trimming crews, Liberty found that Ameren-IL followed a reasonable and effective approach to clean up and repair of damaged electric facilities as well as to trim and cut potentially hazardous or outage-causing damaged trees and tree limbs. Liberty found that Ameren-IL did not consider additional tree trimming in the impacted area beyond that of the damaged trees and limbs.³⁵⁰ While this latter issue is obviously a business decision, part of a comprehensive clean-up effort is to at least consider whether the utility should conduct additional tree trimming in the affected area in the aftermath of a major outage event.

c. **Post-Event Critique Process**

(1) *Post-Event Critique Process Content*

Post-event critiques form an important element in the post-event activities of an electric utility following a major outage event. Liberty covered Ameren-IL's post-event critique process in detail in Chapter III of this report. The comments below are excerpts from Chapter III dealing with post-event critiques.

- “A storm critique should be performed for every major restoration effort.”
- Those items that “helped improve safety or shorten the restoration” should be continued and “shared with and implemented in other areas.”
- Those items “that did not provide the expected benefit” should be modified or eliminated.
- “As soon as practical after the completion of an event, each Division/Department should perform a critique.” It lists examples of issues, including “crew movements, crew support, field checking, staging sites or other logistics... (and) interaction with other departments, the EOC, or other Divisions.”
- The responsibility for scheduling the organization-wide critique lies with the EOC. Participants in this critique should include “one or two individuals from each Division, Dispatch, Asset Management, Stores, and other support groups involved in the Operation.”
- The EOC is also responsible for the management of the organization-wide critique meeting “and ensuring that all the ideas from the meeting are captured, documented, and distributed to affected departments.”

³⁵⁰ Interview #94 (January 14, 2008).

- Ameren enters information from this critique into an information web site, and EOC has the responsibility to see that personnel complete this task.
- “When storm activity is very high and frequent, one critique may serve to address issues on several restoration efforts.”³⁵¹

Although the wording of this subsection stresses the importance of these critiques as well as the goal of ensuring that Ameren captures and implements the positive items throughout the organization and the negative items are either improved or eliminated, the plan does not provide any detail of the necessary actions to get that done. The wording says that these items should be “discussed” and that the Emergency Operations Center (EOC) should make sure that the “ideas...are captured, documented, and distributed.” (See 6th bullet above.) Missing are the process to assign specific responsibility and a tracking process to verify that those responsible take the necessary steps in a timely manner.

Ameren should revise the EERP to establish the process that will ensure that it performs post-event critiques and captures and tracks action items to completion.

(2) *Post-Event Critique Process Performance*

Ameren reported that it held critiques for the overall Ameren-IL response for both the July 2006 and the November/December 2006 storms. In addition, Ameren reported that three divisions – Division IV, V, and VI – held post-storm critiques, as did the Ameren-IL Field Checkers, Supply Chain, and Logistics functions.³⁵²

Based on this information, as well as responses gained through other Liberty interviews with key Ameren-IL division and functional area representatives, Liberty found that Ameren-IL did not consistently follow the process for post-event critiques for the 2006 storms. Only three of the seven Ameren-IL divisions submitted critiques, even though at least one more division had significant outages during the November/December 2006 storm, and all divisions participated in the restoration effort. In addition, several key functional areas did not perform critiques, most notably the Emergency Operations Center.³⁵³

In response to Liberty’s data request concerning updates to emergency plans as a result of “lessons learned” in the subject restoration efforts, Ameren reported that it put significant changes in place since 2006 including “the split of the Distribution Operations function into a Missouri organization and an Illinois organization.” In addition, Ameren-IL reported that it had created an Ameren Illinois Emergency Operations Center in Decatur, Illinois, and that this change “will be leading to changes in the emergency response plan for Illinois as well as the divisional storm response plans.”³⁵⁴ However, in a subsequent interview with the Ameren-IL CEO, it became clear that Ameren-IL did not make these particular changes because of

³⁵¹ Response to Data Request #64, Subsection 2.7, page 7.

³⁵² Response to Data Request #8, attachment DR8 Summary.

³⁵³ Interviews #84 (November 28, 2007), #88 (January 9, 2008), #92 (November 15, 2007), and #95 (January 1, 2008).

³⁵⁴ Response to Data Request #65, attachment DR65 Summary.

Ameren's experience in the 2006 storms. Rather, Ameren-IL began planning these changes in the spring of 2006, before the July 2006 storm.³⁵⁵

In summary, even though the EERP sets out a post-event critique process, Ameren-IL did not consistently perform critiques.

4. Conclusions

1. Although Ameren-IL followed an appropriate procedure in managing its ramp-down process at the conclusion of the two 2006 storms, there was no formal written plan to provide guidance and ensure that it handled the ramp-down process in an appropriate, safe, timely, and effective manner. (Recommendation IV-48)

Liberty reviewed the steps taken by Ameren as outlined in its response to a data request and found that they were appropriate and in keeping with industry practice. Ameren acknowledged that they had no formal written plan, either in the Ameren corporate Electric Emergency Restoration Plan (EERP) or as a separate plan. Without such formal written guidance, there is no assurance that the procedure followed in the 2006 storms will be followed in subsequent major outage events.

2. The ramp-down process as performed by Ameren-IL in the two 2006 storms did not negatively affect the restoration of customers in the last days of the storm.

Liberty analyzed the data furnished by Ameren that showed the number of customers still without power during the last days of each restoration effort. The restoration rate curves showed little or no "flattening" or lessening in restoration progress during the last days of either restoration. This indicates that Ameren performed the ramping down of restoration forces in such a way as to avoid any negative impact on the restoring of customers.

3. Ameren had no formal procedure to solicit feedback from those sending resources to help from outside during the two 2006 storms, either Mutual Assistance utilities or outside contractors. The absence of such a formal procedure is a deficiency in Ameren-IL's post-event activities process. (Recommendation IV-49)

Ameren had no procedure for soliciting feedback from those sending outside resources to help in restoration.³⁵⁶ In the absence of any formal effort to seek and capture feedback, a utility is obviously unable to learn from any mistakes or oversights or to act on any suggestions for improvement. Ameren advises that a questionnaire for contractors has now been developed and implemented.³⁵⁷ From interviews, Liberty learned that Ameren made some informal contacts with some Mutual Assistance utilities seeking feedback, but they recalled nothing significant from those contacts.³⁵⁸

³⁵⁵ Interview #15, November 14, 2007.

³⁵⁶ Interview Requests #82 (November 29, 2007) and #95 (January 10, 2008).

³⁵⁷ Interview Request #95 (January 10, 2008).

³⁵⁸ Interview Request #82 (November 29, 2007).

4. Ameren-IL performed the process of closing command centers at the end of the two 2006 storm restoration efforts in a manner that avoided negative impact on operations.

Liberty interviewed management personnel from Ameren-IL division and field operations and Distribution Dispatch Operations (DDO) centers. A deficient closing of command centers would affect these two groups. The division and field operations would be impacted by either having to re-activate the centers if closed too soon, or by having key operations management personnel tied up unnecessarily if closed too late. The DDO centers would be impacted if command centers were closed too soon by having extra workload fall on their dispatch personnel when not staffed for it, or by a poorly-coordinated closing of command centers with insufficient or erroneous information received concerning the status of the restoration in each area. Liberty found no evidence of any deficiency in any of these areas in the closing of the command centers at the end of the restoration efforts in the two 2006 storms.

5. Ameren-IL had no clean-up plan, either formal or informal in place during the restoration efforts following the two 2006 storms. (Recommendation IV-50)

Ameren did not provide Liberty with any information concerning a post storm clean-up process, either formal or informal. In response to a specific data request, Ameren suggested that Liberty seek this information in interviews with the appropriate Ameren personnel.³⁵⁹ Liberty found no evidence of any specific clean-up process. This is not to say that some “clean-up” was not done, but that Ameren had no specific plan for such clean-up at the close of the restoration efforts following the two 2006 storms. The clean-up process is an important part of the post-event activities of any electric utility following a major outage event. Ameren-IL should develop a specific clean-up plan and include it in their corporate Electric Emergency Restoration Plan (EERP).

6. Ameren-IL followed a reasonable and effective approach to post-event clean up and repair of damaged electric facilities as well as the trimming and cutting of potentially hazardous or outage-causing damaged trees and tree limbs.

Liberty conducted interviews with Ameren field operations management personnel and with those overseeing the tree-trimming crews. Although there was no clean-up plan, Ameren-IL field operations management, working with the support organizations coordinating tree trimming and line crews, performed a reasonable and effective clean-up of damaged electric facilities, trees and tree limbs.

³⁵⁹ Response to Data Request #83.

7. The Ameren-IL post-event critique process as contained in the corporate Electric Emergency Restoration Plan (EERP) during the two 2006 major outage events did not ensure that Ameren-IL would perform these post-event critiques. There was no process to ensure capturing and tracking action items to completion. Ameren-IL did not consistently follow the process for post-event critiques for the 2006 storms. (See Chapter III of Liberty's report, Recommendation III-3 and Recommendation IV-51)

Although the wording in the EERP stresses the importance of these critiques as well as the goal of ensuring that Ameren captures and implements the positive items throughout the organization and the negative items are either improved or eliminated, the plan did not provide any detail of the necessary actions to get that done. The wording says that these items should be "discussed" and that the Emergency Operations Center (EOC) should make sure that the "ideas...are captured, documented, and distributed." Missing are the process to assign specific responsibility and a tracking process to verify that those responsible take the necessary steps in a timely manner.

In response to a Liberty data request, Ameren reported that it held critiques for the overall Ameren-IL response for both the July 2006 and the November/December 2006 storms. In addition, Ameren reported that post-storm critiques were held by three divisions – Division IV, V, and VI – and Ameren-IL Field Checkers, Supply Chain, and Logistics functions.³⁶⁰

Based on this information, as well as responses gained through other Liberty interviews with key Ameren-IL division and functional area representatives, Liberty found that Ameren-IL did not consistently follow the process for post-event critiques for the 2006 storms. Only three of the seven Ameren-IL divisions submitted critiques, even though at least one more division had significant outages during the November/December 2006 storm, and all divisions participated in the restoration effort. In addition, several key functional areas did not perform critiques, most notably the Emergency Operations Center.³⁶¹

In response to Liberty's data request concerning updates to emergency plans as a result of "lessons learned" in the subject restoration efforts, Ameren reported that significant changes have been put in place since 2006 including "the split of the Distribution Operations function into a Missouri organization and an Illinois organization." In addition, Ameren-IL reported that it had created an Ameren Illinois Emergency Operations Center in Decatur, Illinois, and that this change "will be leading to changes in the emergency response plan for Illinois as well as the divisional storm response plans."³⁶² However, in a subsequent interview with the Ameren-IL CEO, it became clear that Ameren-IL did not make these particular changes because of Ameren's experience in the 2006 storms. Rather, Ameren-IL began planning these changes in the spring of 2006, before the July 2006 storm.³⁶³

³⁶⁰ Response to Data Request #8, attachment DR8 Summary.

³⁶¹ Interviews #84 (November 28, 2007), #88 (January 9, 2008), #92 (November 15, 2007), and #95 (January 1, 2008).

³⁶² Response to Data Request #65, attachment DR65 Summary.

³⁶³ Interview #15, November 14, 2007.

In summary, even though the EERP sets out a post-event critique process, Ameren-IL did not consistently perform critiques.

5. Recommendations

The following recommendations are applicable to all three Ameren-IL companies.

IV-48 Develop a formal written ramp-down plan to provide guidance in releasing resources and de-activating command centers and include it in the corporate Electric Emergency Restoration Plan (EERP). (Also, see Recommendation III-3)

The EERP should include specific steps Ameren-IL will take with responsibility assigned by position for carrying out these steps. A specific priority order for the release of outside resources should be included in this plan. The plan should address the steps Ameren-IL will take in the closing down of command centers to ensure that this is properly communicated to the appropriate individuals and groups and that off-hours on-call individuals are identified for each deactivated command center. This plan should be completed and included in the Electric Emergency Restoration Plan (EERP) within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-49 Develop a formal process to solicit feedback from contractors and Mutual Assistance utilities furnishing outside resources concerning all aspects of their experience with the Ameren-IL restoration effort, but especially the ramp-down process in which their resources were released. (Also, see Recommendation III-3)

Specific forms to be sent to contractors and Mutual Assistance utilities should be a part of this plan, as well as the assigned responsibility to send out these forms and follow up to ensure that responses are received. This plan should also include the resolution process whereby feedback gained is analyzed, action steps developed and assigned and final resolution reached timely and completely. Any questionnaires or other forms developed and implemented since the two 2006 storms should be incorporated in this plan. Ameren-IL should complete this within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-50 Develop a formal written clean-up plan to guide activities in the aftermath of all major outage events. Incorporate this plan into the Ameren-IL Electric Emergency Restoration Plan (EERP). (Also, see Recommendation III-3)

This plan should specifically define the different aspects of the clean-up process with assigned responsibilities and general timelines for accomplishment. The plan should provide some guidance to help determine what should be considered appropriate as “clean-up” of damaged facilities, trees, and tree limbs. Additionally, the plan should provide guidance as to the possible use of additional tree-trimming resources in the aftermath of the storm beyond the clean-up of damaged and potentially outage-causing trees and tree limbs. Ameren-IL should complete this within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.

IV-51 Revise the EERP to establish the process that will ensure that it performs post-event critiques and captures and tracks action items to completion. (Also, see Recommendation III-3)

The EERP should clearly communicate the expectation of Ameren-IL top management that every individual emergency response function at the corporate, state, and division level should hold a critique with notes from those critiques submitted in writing to a designated coordinator, and that this should be done within a time specified in the EERP. Furthermore, the process as outlined in the EERP should clearly set out how Ameren-IL will collect critique items in a database and track action items to completion. Ameren-IL should complete this recommendation within nine months of the date of this report.

In its comments on the draft report, Ameren-IL accepted this recommendation.