10.3.3 While AmerenUE had no difficulty mobilizing additional resources, its Divisions experienced bottlenecks in dispatching resources to work sites.

Overall the process of managing a five-fold increase in crew resources worked well, yet there were several issues uncovered. These are explained in the following sub-sections.

10.3.3.1 AmerenUE had no difficulty mobilizing AmerenUE Illinois, contract and mutual aid crews.

Based on the magnitude of major events the EOC quickly determined the severity of the events necessitated mobilizing all available in house, contract and any available mutual aid resources. AmerenUE followed industry practice in its resource mobilization priority as shown in Exhibit 10-2.

Mobilization Priority	Resource Type
1	In House/Onsite Contractor Crews
2	Off-site Contract Crews
3	Mutual Aid Crews

Exhibit 10-2: Order of Resource Acquisition and Mobilization Priority

During the first windstorm of July 19th, AmerenUE was delayed in mobilizing mutual aid crews, partly due to a lack of a clear picture as to the extent of the damage and mutual aid partners unwilling to release crews until the storm passed their service territory. Following the second windstorm of July 21st, AmerenUE immediately mobilized all available resources. During the December ice storm, AmerenUE mobilized foreign and mutual aid resources almost at the outset of the event.[47]

During the July, December, and January storms, AmerenUE used contract and mutual aid resources to supplement in house restoration resources. AmerenUE had no difficulty in contacting and mobilizing mutual aid resources.[48] Although, during the December and January ice storms, mutual aid assistance was only released to AmerenUE

[47] KEMA Interview MK09
[48] KEMA Interview MK09

once the weather front had passed without causing damage in the mutual aid utility's territory.

The mutual aid crew delays, during the July event, did not materially affect the restoration effort as approximately 600 to 700 contract resources were on site during normal day-to-day operations and were immediately diverted to storm restoration. See Exhibit 10-3.

Contract Crew Type	Onsite Prior To July Event	Onsite Prior To December Event
Vegetation Crew	390	460
Line Construction Crew	80	125
Directional Boring	30	50
Inspection Programs	37	13
Substation/Transmission Construction	50	50
Total	**587**	**698**

Exhibit 10-3: Approximate Normal Daily Contract Resources[49]

10.3.3.2 A lack of coordination of contract and mutual aid resource arrival times caused divisional level bottlenecks in dispatching resources.

Information flowing from the EOC, contract, and mutual aid managers, lacked specificity as to arrival times of restoration resources at specific divisional locations. The deployment of large numbers of crews to a division created management issues for the division. One Division Manager suggested that a more orderly staged deployment and enhanced communication from resource management would allow better integration of assigned resources into the restoration work activities. Some crews arrived 16 hours later than expected and other crews arrived without the division having prior knowledge. This resulted in lost productivity while resources waited for work dispatch assignments.[50]

[49] KEMA Interview MK09, MK19
[50] KEMA Interview HS17

The impact on public perception is significant when the public has been without service for days and observes a large number of resources waiting at staging areas or divisional depots for work assignments.

10.3.4 The January restoration effort benefited from the use of AmerenUE's new Mobile Command Center (MCC), by providing a local operational command post, but to be truly effective at coordinating regional restoration efforts during future events, AmerenUE will need more than one MCC.

A common theme across the industry during large restoration efforts is the challenge of maintaining operational oversight in the coordination of restoration work and handling the administrative burden associated with issuing work clearances to a large number of field resources. Leading practices within the industry has been to establish command centers located at staging areas within affected operating centers that can take on the following needed activities:

- Orientation and safety briefings for in-house, foreign and mutual aid resources,
- The issuance of work orders,
- The issuance of job aids, such as system and geographic maps, construction standards, and the like,
- A tactical post situated close to damaged areas, and
- A facility to track the issuance of work clearances within the affected region.

Starting in late 2006, AmerenUE researched leading practices in emergency mobile command centers from within and without the utility industry. AmerenUE's Mobile Command Center, provides office space, communications, and field interfaces to AmerenUE's Outage Analysis System. Exhibit 10-4 shows AmerenUE's single Mobile Command Center situated at AmerenUE's Dorsett facility. Its first deployment during the January 2007 ice storm assisted the restoration effort by acting as a field deployed tactical command post, providing

locally distributed system and road maps, distributing AmerenUE's work clearance procedures, and construction standards.[51]

Exhibit 10-4: Mobile Command Center

To be truly effective at alleviating administrative burdens associated with local tactical restoration efforts and issuing Workman's Protection Assurance, AmerenUE will need more than one MCC and a formalized procedure for decentralizing the issuance of work clearances.

RESOURCE DISPATCHING

10.3.5 AmerenUE benefited from the Missouri Governor's delegation of authority to MODOT to initiate emergency plans. This delegation accelerated resource mobilization by allowing easy passage of mutual aid fleets across Missouri state boundaries.

The Missouri governor has delegated the authority to the MODOT to approve requests for emergency declarations under storm conditions. This permits exemptions from driving time limits, mediates International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP) administration, and provides AmerenUE the opportunity to process the multitude of arriving fleet under a single blanket order. This reduction in administrative burden benefited the

[51] KEMA Interview MK01

restoration effort in Missouri; AmerenUE reports that other states without this benefit experienced delays in receiving mutual aid assistance due to fleet stoppages, while awaiting paperwork at state boundaries.[52]

10.3.6 The orientation of contract and mutual aid crews during the July storm event omitted critical information needed to secure line clearances from the Distribution Dispatch Office (DDO).

Even though foreign crews received orientations upon arrival on the premises that specifically included safety briefings and procedural reviews of line clearance requests, the orientation missed critical information needed to interface effectively with the Distribution Dispatch Office. Specifically, foreign crews at times lacked an assigned crew number, the OAS trouble ticket reference, and the feeder identifier. This significantly hampered the issuance of clearances during the first three days of the July restoration event.[53]

In response to this process breakdown, the distribution dispatch office is now distributing informational cards to foreign crews at staging areas or from the mobile command center.

10.3.7 AmerenUE's practice of providing 'Bird Dog'/Crew Guides and remote dispatching support was instrumental in efficiently managing the unprecedented number of contract and mutual aid crews on-site during the restoration effort.

A leading practice across the industry is to provide foreign crews with a guide to accomplish the following:

- Guide foreign crews around the system,
- Support the clearance and switching processes,
- Chase materials, and
- Relieve the foreign crews of some of the administrative burden inherent in storm restoration.

[52] KEMA Interview MK04
[53] KEMA Interview MK16

Utilities can take a number of different approaches to this including using retirees, training "Bird Dogs", and breaking up local crews to be integrated into the foreign crews. The goal in all of these options is to eliminate any AmerenUE imposed "road blocks" for the foreign crews to ensure maximum productive work time possible.

AmerenUE could not effectively dispatch the large volumes of contract and mutual aid resources with the existing divisional dispatch staffing levels. AmerenUE re-assigned centralized resources to dispatch foreign crews, and paired 'Crew Guides' from local divisions with foreign crews to assist with local knowledge of the system.[54] This practice worked well and enhanced the productivity of both contract and mutual aid crews.[55]

10.3.7.1 AmerenUE benefited by engaging retirees to assist in the dispatching of foreign and mutual aid crews but, with the exception of the Resource Management Department and one division, does not actively maintain a list of qualified retirees.

Given the scale of the restoration events, even with the mobilization of in-house remote dispatchers, AmerenUE was still stretched for crew dispatching ability and engaged the assistance of retirees with familiarity of the T&D system, knowledge of AmerenUE's OAS, and experience in dispatching field crews. AmerenUE was fortunate in accessing these retirees, as it does not formally maintain lists of retirees with these specific skill sets in all Divisions.[56]

10.3.8 During July's event, the backlog of clearance requests delayed crews in their work. In response, AmerenUE decentralized the clearance taking process in an ad-hoc fashion.

The clearance process is an essential safety tool to protect the crews from inadvertent switching actions that could cause a serious energized line contact. The leading practice by utilities facing severe weather such as hurricanes, generally provide a process for decentralizing this clearance taking process. In providing such a process, these utilities eliminate significant crew delays caused by waiting for clearance approval from system dispatchers without endangering other crews.

[54] KEMA Interviews MK01, MK05
[55] KEMA Interview MK05
[56] KEMA Interview MK05

10.3.8.1 The abundance and backlog of clearance requests significantly delayed crews in the initiation of repairs.

It is normal to expect a significant increase in line clearance requests during major event restoration efforts and AmerenUE was no exception. Industry leading practices in this area focus on two main themes:

- The goal is to minimize the processing time between field crews and system dispatchers for issuing clearances. This can be accomplished through a series of practices that include remotely pre-configuring the system during the night shift, staggering morning start times for crews to help level system dispatch office workloads, and having switching sequences pre-prepared reducing switching sequence transcription and preparation times.

- When the system damage is sufficiently severe, delegate authority for issuing clearances to field agents who formally take functional accountability for both a complete substation and its feeders, or on a feeder by feeder basis, thereby eliminating the interface with the bottlenecked system dispatch office. This agent retains the accountability for that part of the system until all restoration efforts are completed and formally returns accountability to the system dispatch office.

During AmerenUE's restoration efforts, both in-house and foreign resources experienced delays in securing line clearances from the St. Louis Distribution Dispatch Office (DDO).[57] Four factors compounded the delays in securing clearances:[58]

- The inability to scale the number of desks and the associated staff and communication channels being operated at the DDO,

- No preparation during the night shift at the DDO or at the divisions for the coming day's clearance requests,

- A lack of staggered morning start times to level the inbound clearance request work volume, and

[57] KEMA Interviews MK06,MK08, MK09, MK14 & MK16
[58] KEMA Interviews MK16, MK03

- A feeder analysis needs to be performed to create the switching sequences for each line clearance request.

At the time of the storms the DDO had three vacancies for 22 staff positions assigned to the function. During regular day-to-day operations, six desks are staffed during two-day shifts and night coverage includes two dispatchers. Exhibit 10-5 shows the shift coverage at the St. Louis DDO. During restoration efforts there is substantial overtime to go along with the opening of additional desks.

Shift	Staff on Desks
6 AM – 2PM	6
2PM-10PM	6
10PM-6AM	2

Exhibit 10-5: St. Louis Dispatch Office Shift Coverage During Normal Operations

These 22 dispatchers are dedicated to the St. Louis area and while system control activities via SCADA can be transferred to other AmerenUE dispatch offices, the issuance of line clearances to crews for the St. Louis area must be handled at the St. Louis distribution dispatch office. This created bottlenecks in processing line clearance requests for restoration resources.[59]

The dispatch office did not have prior knowledge of the planned work activities for the following day and consequently could not prepare switching orders during the night shift in advance of the morning workload for clearance requests.

All restoration resources started their field activities at dawn and once arriving at the job site initiated clearance requests from the DDO. Each morning, starting at around 8AM, line clearance requests inundated the six dispatching desks crippling the DDO's ability to handle clearances and adding delays to crews commencing work.

Since the July storm, the DDO has prepared "canned" switching instructions for each isolating device in the St. Louis metropolitan area. In the future, this preparation will eliminate the need to write

[59] KEMA Interviews MK21, MK08

switching orders from scratch reducing clearance processing times. However, a caution must be included with this comment as the current system state could be different from assumed in the "canned" switching orders. Utilities that have adopted the practice of pre-preparing switching orders include a formal step of verifying the validity of the switching sequence with the current configuration of the system.

10.3.8.2 During Level III events, AmerenUE benefited from the introduction of an ad-hoc "Certified Functional Agent" process, delegating line clearance responsibility for a complete feeder or substation to a field agent, but has yet to formalize the practice.

In the future, to alleviate the growing bottlenecks experienced during the first three days of the July storm for line clearances, AmerenUE created the Certified Functional Agent role. Dispatching will delegate functional responsibility for complete feeders to "Certified Functional Agents" alleviating some of the DDO work volume. This delegation of authority assisted in dispatching restoration resources more effectively and worked well in the latter half of the July storm. However, given the safety implications and the ad-hoc fashion in which this practice was implemented, the "Certified Functional Agent" concept was not activated during the December and January events. The benefits of a "Certified Functional Agent" were proven in July. While 20-30 employees have been trained in this new role, there is no sense of urgency to formalize the "Certified Functional Agent" practice for adoption in future major events.[60]

RESTORATION and VERIFICATION

10.3.9 AmerenUE's adoption of industry leading practices in prioritizing restoration work restored the largest number of customers as quickly as possible, but in some cases, may have inadvertently reduced productive repair time.

AmerenUE adopts industry-leading practices in prioritizing and working the restoration effort on a feeder. The sequencing of restoration follows the priority, highest to lowest, of feeder backbone, laterals, and finally secondary/service

[60] KEMA Interviews MK09, MK13

connections. This approach results in the largest number of customers being restored to service as quickly as possible.[61]

While this is a leading practice, its implementation within AmerenUE during these severe storms actually made some crews less efficient by routing work based on number of customers likely to be restored. This caused crews to hop around feeders and laterals sacrificing repair time for additional windshield time. [62] Had the crews focused more on restoring a complete feeder first the windshield time would have been less. Section Six of the Electric Emergency Restoration Plan references this approach.

10.3.9.1 Limited 24-hour shift coverage by forestry contractors, allowed vegetation-clearing efforts to be conducted safely and to stay well ahead of line restoration crews.

Most of the utility industry has transitioned to provisioning vegetation management services on contract. As long as contract terms and conditions encourage vegetation contractors to support storm restoration efforts, this industry accepted practice has not had any negative material impact on vegetation clearing during major events. Generally, vegetation management resources work autonomously from line crews and ensure that clearing is done in advance of line crew restoration work at a specific location. It is usual practice for forestry resources to operate with 15% -20% of its work force active during "Off-hours" of each day during major event conditions.

AmerenUE had no difficulty mobilizing its five vegetation contractors to support clearing efforts. Vegetation resources beyond the five property contractors were easily located and mobilized as the existing contract relationships offered access to supplemental vegetation crews during the storm. Working autonomously from line crews and with 24-hour shift coverage, vegetation crews easily stayed ahead of the line crews. Even though vegetation management resources operated in shifts with 24-hour coverage, safety

[61] KEMA Interviews MK01, MK06, MK08
[62] KEMA Interviews with division managers

performance was outstanding with no major incidences and only two minor vehicle accidents reported.[63]

10.3.10 AmerenUE practices to repairing customers' weather head equipment vary between divisions affecting customer restoration and tainting the customers' perception of AmerenUE's restoration efforts.

During the latter stages of the storm event, the majority of the restoration work volume focused on restoring individual customer services. While the weather head equipment on the customer's premise is not AmerenUE's responsibility, it is integral to the restoration of service. Some region's restoration activities, Boone trail as an example, included temporarily or permanently fixing the customer's weather head equipment while restoring customer services.[64] This practice lead to two responses from customers, neither of which is in support of improved customer satisfaction:

- AmerenUE's call center staff received customer complaints located in divisions that did not restore service because of damaged weather head equipment. The customer complaints focused on incurring cost and further delay before restoring service.

- Customers from areas where field resources made temporary repairs to weather head equipment expressed frustration to call center staff when AmerenUE directed customers to third party electricians for permanent repairs.[65]

This is an issue in many utilities and the majority of companies will not repair the service entrance after the weather head because of the potential liability the companies could create. Further, there is the potential for carrying more materials associated with the repair. However, one company did authorize service crews to make the repairs, saying they wanted to minimize the inconvenience to its already inconvenienced customers.

[63] KEMA Interviews MK10, MK15
[64] KEMA Interview HS17
[65] KEMA Follow up communication with Call Center Manager

10.4 Recommendations

10.4.1 Enhance the internal informational dashboard displaying current and historical information during the progression of the restoration to provide customer outages and restoration resource levels.

Restoration dashboards are becoming increasingly popular for good reason; they put critical restoration information at the fingertips of all that need the information.

Add the high-level restoration times by overall service area and districts as the underlying data becomes available. The EOC should be prescreening the information and controlling the updating frequency to ensure a consistent messaging to all concerned.

10.4.2 Define the process and enhance the communications between the EOC, Resource Management and the Divisions relating to resource volume and arrival times to assist Divisions in improving efficient crew dispatching.

Provide the divisions with advance warning of crew arrival times so the work can be ready for the crews minimizing any waiting time. This will be more easily accomplished if the earlier recommendation of moving the crew receiving staging areas is moved to the perimeter of the service territory instead of at the local Division work staging areas. Further, with AmerenUE's mobile crew dispatchers and escorts, this adjustment should be easily accomplished.

10.4.3 Adopt a "Restoration Work Island" approach under Level III and IV emergency conditions.

The Restoration Work Island will apply only to areas of significant system damage and should be no larger than a substation and its feeders or a specific feeder. It would be no smaller than a single feeder. In essence, Division management in conjunction with the EOC will identify potential Restoration Work Islands. One field supervisor will be assigned to manage all the restoration activities inside the Restoration Work Island boundaries.

Level III or IV storm impacted areas, where there is only minor or spotty damage, will continue to have the restoration work priority set through the OAS.

Restoration Work Island clearances will be issued through either the system dispatch office or a Functional Agent. This determination will be the responsibility of the EOC manager or his designee. The EOC manager is in the best position to determine the work load of the system dispatchers and the potential crew delays.

The Restoration Work Island approach during restoration will provide the following benefits:

- Crews will work in contiguous areas reducing windshield time, consequently completing more work in the same time period,
- Areas will be restored more consistently, and
- Crews will not have to wait for work assignments as they will be assigned to work a specific feeder or set of feeders.

Achieving the above result will require the following AmerenUE actions:

- Expand Section Six in the EERP to include a description of the Restoration Work Island strategy and approach, and
- Define processes and procedures for adopting a Restoration Work Island approach under Section Six storm restoration activities.

10.4.4 Expand the number and use of Mobile Command Centers (MCC) during Level III and IV events.

The MCC is another leading practice for AmerenUE. However, in Level III and especially Level IV storms, more MCCs are necessary to reduce burden on both the Division and EOC management teams. Management should consider phasing in several more of these centers.

Ideally, when the EOC or Division identifies the need for several Restoration Work Islands in a small geographic area, bringing in an MCC to field coordinate these restoration activities will ease the burden on all restoration management.

AmerenUE management indicated that the future MCCs will have some configuration changes consistent with the evolving role the MCCs will play in future storms.

10.4.5 Continue nurturing the strong working relationship AmerenUE already has with MODOT, the State EOC and local EOC's .

The model working relationship established with the Missouri Department of Transportation should continue to be fostered with other local and state agencies.

10.4.6 Continue with the practice of issuing information cards to foreign and mutual aid crews, as part of the overall orientation package, to streamline the interface with the DDO for clearance taking and ensure that the process is formalized in the EERP.

Providing non-AmerenUE crews with information cards explaining how to communicate with the dispatchers and the Function Agents during a clearance process will hasten the overall clearance process. If possible, some of the specific crew information can be entered at the time the card is issued. Then all that would be necessary is the OAS or feeder section information, depending on whether the crew is working under the dispatcher or a Functional Agent.

10.4.7 Refine the certified functional agent program to secure more employee participation.

AmerenUE's adoption of the Functional Agent is a leading practice. This practice will greatly reduce the delays caused during the clearance granting process. To enhance the process and ensure that the individuals trained for the role remain current in their understanding of the clearance methodology, KEMA suggests the following actions be included:

- Provide work aids to ensure that the skills remain current even though there is infrequent use of the skills, and
- Participate in the DDO at some level of frequency to refresh skills.

10.4.8 Continue with the 24-hour coverage practice for vegetation restoration activities, where 20% of the tree crews work through the night on an as-needed basis.

AmerenUE has proven that tree removal work can be done safely and ready for line crews to work. KEMA believes this practice should continue as long as the safety of the crews is preserved.

10.4.9 Evaluate the benefits and risks of providing temporary repairs to customers' weather head equipment under emergency conditions.

Weather head replacement is a new leading practice being adopted by some utilities. The benefit to the customer is shorter outage time, while the benefit to the utility is customer good will. KEMA understands that there are at least two issues with this practice. First, is the liability associated with making attachments to the customers' house and potentially certifying that the internal wiring is safe to reconnect. Second, is the potential conflict with the local electrician's association, with respect to reducing their work. AmerenUE should do a thorough evaluation of how best to proceed with such a program. Specifically, AmerenUE should at a minimum:

- Analyze and evaluate alternatives to include:
  - Cost,
  - Supply chain implications,
  - Liability implications,
  - Regulatory requirements such as licenses,
  - Goodwill, and
  - The impact to local electricians needs to be assessed.

11. Emergency Restoration – Information Systems and Processes

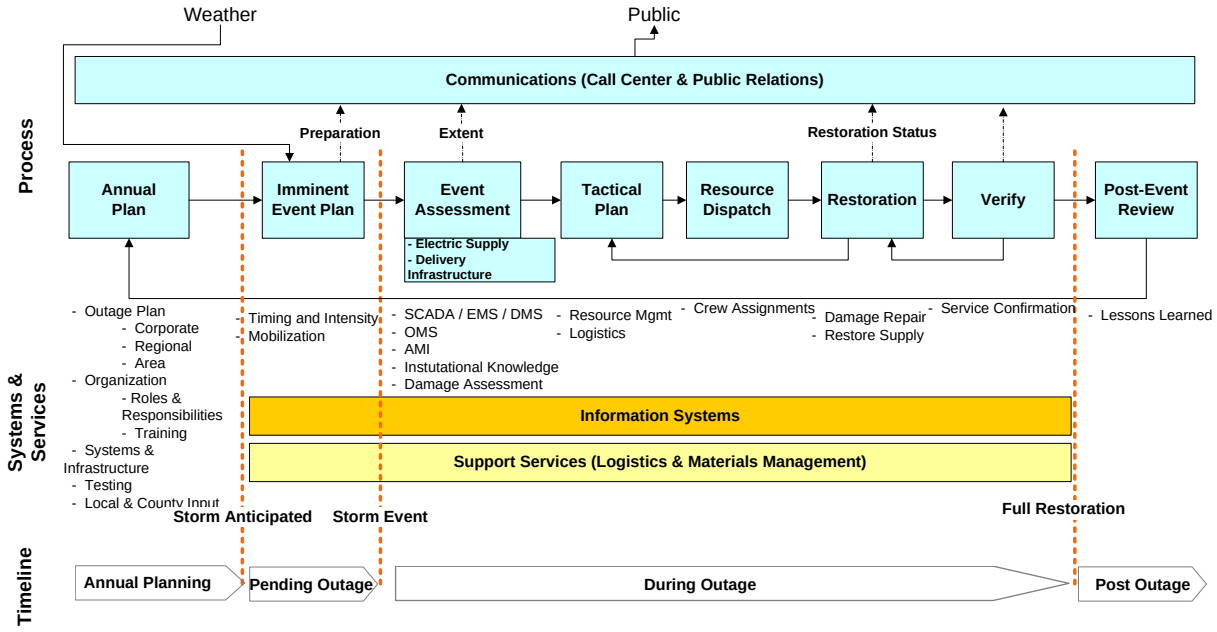

Exhibit 11-1: Outage Management Process – Information Systems

11.1.1 Industry Practices

Exhibit 11-2 below illustrates a leading set of integrated information systems for supporting outage management processes.

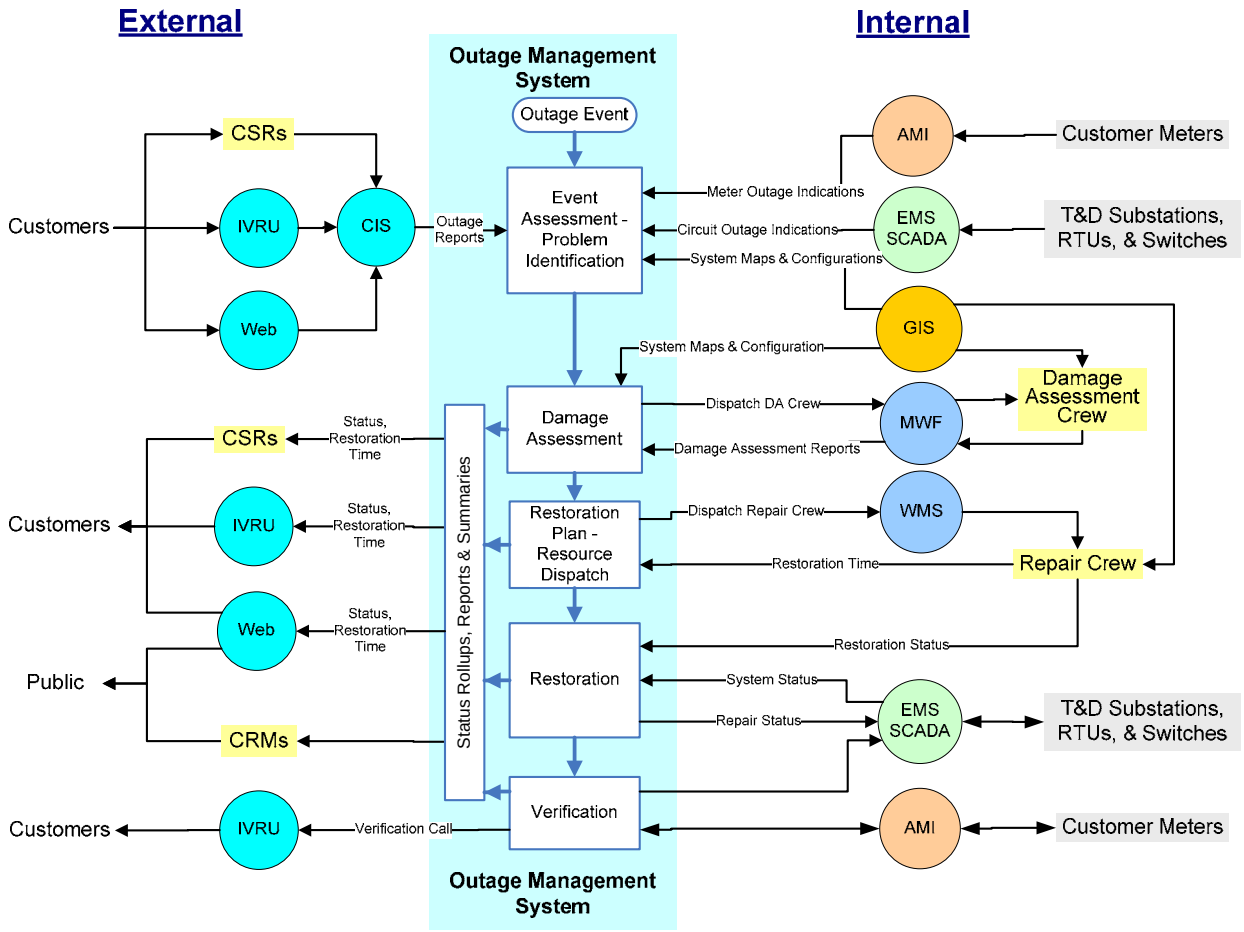

Exhibit 11-2: Leading Practice Integrated Systems for Outage Management Processes[66]

The key components of this solution include:

- **Customer Information System (CIS):** Managing information about customers, customer services, metering and billing, with supporting Interactive Voice Recognition Unit (IVRU), web posting and other customer and public communications.

- **Outage Management System (OMS):** Managing trouble tickets, outage analysis and assessment, crew dispatch and restoration process.

- **Advanced Metering Infrastructure (AMI):** Automated meter reading, meter data management, meter "last gasp" outage reporting and processing,

[66] KEMA IT Thought Leader

and automated remote interrogation of the AMI network for power restoration verification.

- **Systems Operations Supervisory Control and Data Acquisition (SCADA), Energy Management System (EMS) and Distribution Management System (DMS):** Real-time monitoring of the electric transmission and distribution network, energy supply, equipment operating status, and remote switching and control.

- **Geographic Information System (GIS):** Detailed geographic mapping of utility transmission and distribution facilities and equipment, network connectivity, equipment information and field configuration.

- **Work Management System (WMS):** Work order processing and management, resource assignment, job status and completion tracking

- **Mobile Workforce Management (MWF):** Automates field crew operations with mobile workforce dispatch, scheduling and routing, remote electronic connectivity, and automatic vehicle location.

- **Interactive Voice Response Unit (IVRU):** In the context of outage management, the IVRU routes calls to CSRs and enables allows customers to self-report and receive outage information.

A leading OMS maintains an up-to-date distribution system connectivity model that reflects the current configuration of the electric system. Reported outages are analyzed against the physical system model compared to the current operating status of key equipment, e.g., substations, transformers, and switches.

A leading OMS has business rules that allow the efficient management of large-scale outages and restoration efforts. Proper integration of key systems, including CIS, IVRU, EMS, and MWF significantly reduces the need for manual and redundant data entry, and allows efficient transfer of data to those who need it.

The SCADA/EMS systems supply valuable real-time information about operating conditions and system configuration. When combined with the OMS connectivity model, circuit outages can be quickly identified and outage reports mapped and analyzed.

A leading OMS provides a library of planned switching scenarios the switching coordinator uses to manage outages. Restoration procedures and processes can

also be defined in the OMS to help with large-scale distribution outage restorations. The procedure defines the correct sequence of events to safely and effectively restore circuits. The sequencing is coordinated with the real-time system status from the EMS.

Integration between the OMS and a mobile workforce management (MWF) system allows dispatching of OMS analysis results to field personnel. Field information, such as outage validation, cause, and estimated time to restore are sent back electronically to the OMS, passing seamlessly to the CIS for call center notification and IVR message updates.

Integrating GIS to the OMS allows electric connectivity data to regularly pass to the OMS for developing the model that reflects the as-operated configuration of the electric system in the field.

A leading AMI system when integrated with OMS provides for automated reporting of customer outages using the "last gasp" capability of the meters. OMS can automatically determine if a customer's meter matches a specific outage report and then provide a specific outage status. This function can be operative within the utility's IVRU or implemented within the local carrier network for maximum volume.[67]

The AMI system is an effective tool for outage restoration verification. The process interrogates the AMI network to determine whether selected meters have power and are once again sending information. While this technology has some inherent limitations (it is not designed for this primary purpose), this application can provide an automated capability for systematically verifying power restoration at some customer sites.

11.2 AmerenUE Practices

AmerenUE has made a significant investment in its systems infrastructure and is on the leading edge of technology adoption within the industry. Exhibit 11-3 summarizes AmerenUE's systems infrastructure as it supports outage restoration.

[67] KEMA Principals' call center experience

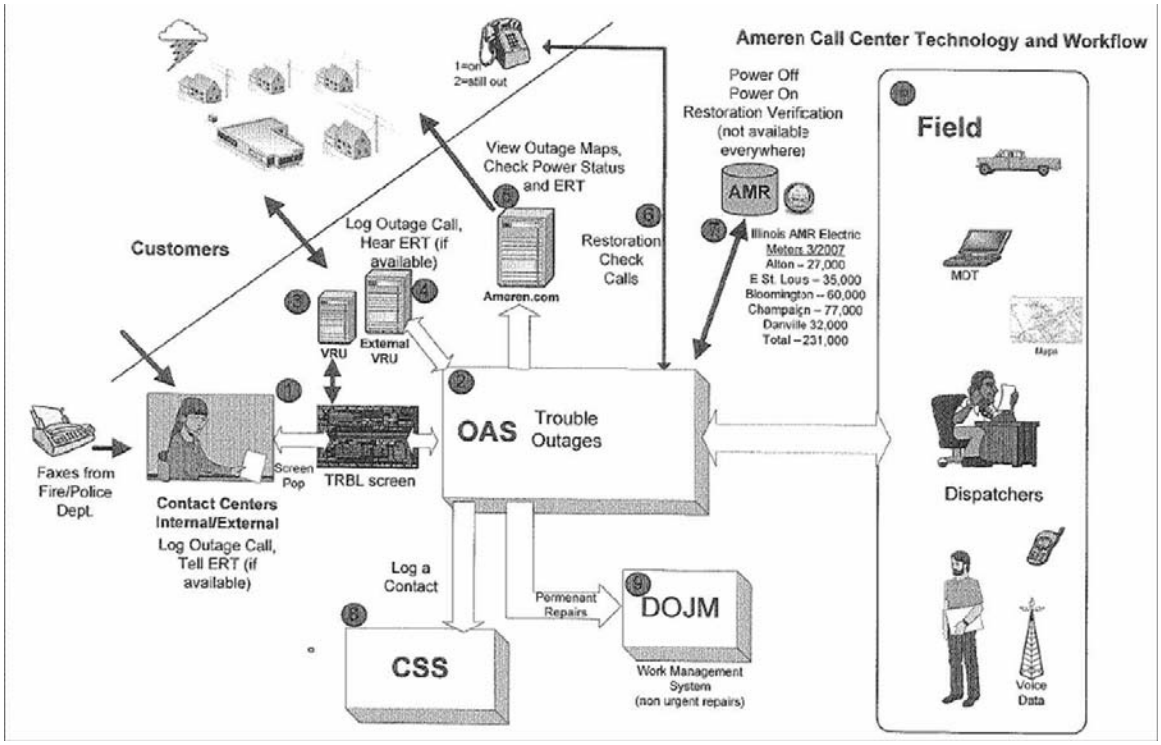

Exhibit 11-3: AmerenUE Call Center Technology and Workflow[68]

The following is a description of how outage events are handled on a day-to-day basis at AmerenUE.[69]

1. Customer Service Representative (CSR) receive calls and logs outage reports into the Outage Analysis System (OAS) trouble screen. The OAS provides an Estimated Restoration Time to the CSR as well as the dispatching status of the trouble ticket.

The OAS, a mainframe based technology, was installed in 1993. Since that time, AmerenUE implemented continuous improvements/enhancements to the effectiveness of the system. In addition, AmerenUE has greatly extended the system functionality through interfaces to other AmerenUE systems.

2. The OAS analyzes customer calls to determine the most likely failed system device, automatically creates a restoration work order, and records specific details of an outage event.

[68] KEMA Interview MK13
[69] AmerenUE Systems and work flow.pdf

The OAS system implements business logic to determine the most likely failed system component. This logic identifies the most likely upstream isolating device for a group of customers reporting an outage event and assigns a single trouble order to this customer group.

3. Inbound customers outage calls are handled by Call takers (CSRs), and the Voice Response Unit (VRU). When available, the estimated restoration times are communicated.

4. Outage call overflows are handled by a third party VRU, which accepts outage calls, and interfaces directly with the OAS. OAS data is extracted every ten minutes to provide the external VRU with updated Estimated Restoration times, offering customer's handled by the third part VRU current restoration estimates.

5. The AmerenUE.com website provides customers an overview of AmerenUE's current system outages and restoration effort by zip code, and offers a means to determine the power status at their residence or business.

Exhibit 11-4 and Exhibit 11-5 are examples of how this information is displayed on AmerenUE's website.

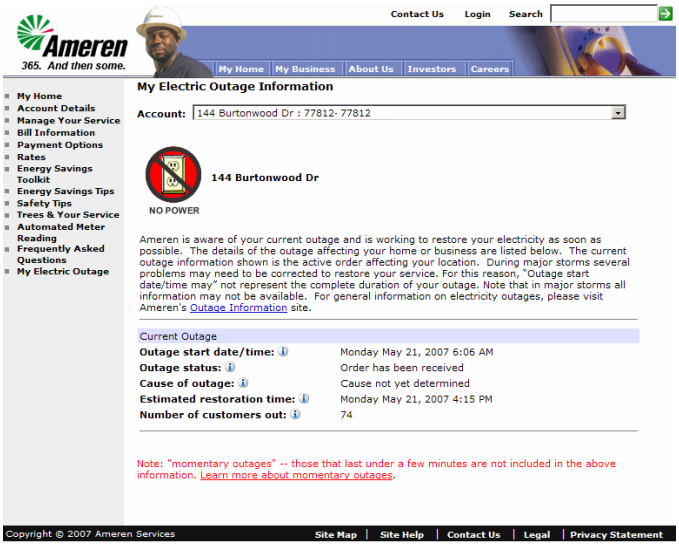

Exhibit 11-4: Example 1 of AmerenUE's web based outage information

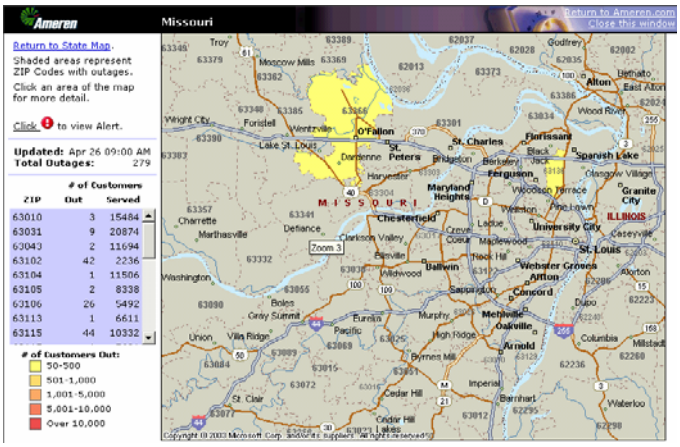

Exhibit 11-5: Example 2 of AmerenUE's web based outage information

6. When outage orders are completed, the OAS system automatically initiates outbound customer calls to confirm service restoration. Customers are only called between the hours of 7am and 10pm.

7. AmerenUE's AMI system automatically reports power outages and power restoration for some of the affected meters to OAS. In order to eliminate false outages from momentary interruptions the AMI system delays sending its information for 12 minutes. Outages sensed by the AMI meters are batch processed into OAS every five minutes. As a result, there can be a 12 to 17 minute delay from the occurrence of the event to being available to AmerenUE employees in the OAS.

In the event a feeder locks out, SCADA will automatically update OAS within seconds.

8. The Customer Service System is updated with the record of the customer's outage call. Customer outage history and reliability improvements, such as recent tree trimming, line maintenance, etc., are recorded in OAS, and made available to Call Center Representatives while addressing a customer's inquiry or complaint.

9. When a trouble event requires permanent repair after service restoration, OAS automatically generates a work order in the DOJM (Distribution Operations Job Management) system.

10. Troublemen and construction resources can access critical information systems including the OAS and Geographic Information System (GIS) system through field deployed hardened laptops with wireless connections.

In addition to the functionality described in the above paragraphs relating directly to outage handling, AmerenUE provides additional functionality by integrating systems with the OAS platform. This includes:

1. GIS Maps and Visual Dispatch – Through the integration of GIS Map viewing software with OAS, AmerenUE employees can easily identify the geographic location of a failed system device or outage orders. Additionally, AmerenUE employees can easily review the geographic location of service outages, wires down, and other service problems. The visual representation assists in quicker problem analysis and improvement management of field resources.

2. Outage E-mails and Paging Service – Outage volumes are periodically monitored and e-mails and pages are automatically generated for operations employees at a set customer outage volume thresholds.

3. Distribution Dispatch Office (DDO) storm management intranet site – An intranet site provides reporting of customer outage counts and outage orders by geographic location to the DDO and the Emergency Operations Center.

4. FOCUS Reports – A collection of ad-hoc reports are available to monitor outage volume and activity. These reports include hourly call volume, feeder damage summaries, a listing of open orders, alerts on excessively long restoration orders and a summary of estimated restoration times.

Similar to many other electric companies in the industry, AmerenUE employs staff to monitor and service these systems during day-to-day and emergency events.

11.3 Conclusions

11.3.1 The OAS outage determination logic and business reporting did not perform well under Level III events.

OAS functions extremely well in Level I and II restoration efforts. OAS handled the full volume of calls and orders experienced during the July and December 2006 storms and provided critical insights into the extent and location of the storm damage. However, the OAS Estimated Restoration time calculation module was not designed to fully support the magnitude of damage experienced during this level of storms. OAS's calculations of Estimated Restoration times are known to be unreliable under these circumstances. Following the August 2005 Missouri Public Service Commission (MOPSC) storm review, AmerenUE

implemented logic to disable the automatic reporting of Estimated Restoration times to customers, unfortunately this is the information that is most needed and desired by customers. Two findings support our conclusion.

11.3.2 Misinterpretation of OAS information led to incorrect information being manually summarized and reported to the public through press releases and press conferences. Due to the severity of the damage and the magnitude of restoration effort, inflated customer outage/restoration numbers were reported through media channels.

AmerenUE's OAS has two inherent weaknesses that result in the system producing misleading information major outage events. Both issues stem from the breakdown of applying outage analysis logic originally designed for routine outage volumes to major event. The two issues are:

- The system's business logic groups in bound outage information, whether from customer calls, or CellNet, into a prediction of a single system failure, generally identified as the most likely upstream isolating device on the feeder or lateral. The logic does not take into consideration that, during large-scale events, system damage has most likely occurred at additional downstream locations and is not isolated to the systems predicted single location. The systems predicted restoration time estimates. The repair time is the sum of repair times for a single damage location and does not factor in the non-linear relationship that repairs to downstream damage has on estimated restoration times.[70] As a result, AmerenUE quickly turns off the Estimated Restoration Time function in OAS.

- Once the system damage is repaired, field resources clear the OAS trouble ticket entry. If the OAS has grouped multiple customers to this trouble ticket, upon clearing, the system assumes that all the grouped customers are restored. During Level III events, this is rarely the case, as downstream damage is yet to be repaired or for that matter even identified.[71] As Field checkers continue to identify downstream damage, or customers call for a second time, OAS issues new trouble orders. This can result in double counting customer outage counts even though the customers were never originally restored to service.

[70] KEMA Interviews MK13, KEMA Call Center Observation
[71] KEMA Interview MK19

11.3.2.1 AmerenUE's mainframe based outage analysis system allows incomplete entries and lacks quantity information of damaged assets, handicapping AmerenUE's ability to summarize damage information into actionable management reports of resource and materials requirements for restoration efforts.

The OAS supported the dispatch of construction and restoration crews during the storm events. First responders, field checkers, and crews fleshed out each outage ticket with a detailed description of field damage facilitating efficient restoration resource dispatching. Each outage ticket in OAS was coded with the major classification of equipment damage such as pole, or transformer, etc. This damage information is supplemented with a free form text input format field in OAS and resulted in a wide variation in the specificity of the Field checkers' comments.

The coded fields in the OAS system indicate the type of damage but do not provide quantity information. An example of this would be for a location with pole damage where the OAS ticket indicates pole damage but does not indicate that three poles need repair. This information may or not be entered in the free form text entry field, is not required, and cannot be easily summarized.

Additionally, the specificity of the entries in the free form text field varied in the content of the entered information. Some ticket entries had detailed information about the damage location while other entries only had cursory information if any at all.

As a result, Divisional resources and the EOC management were somewhat handicapped in their ability to produce automatic reports of the extent of system damage. Each division and the EOC uses different spreadsheet formats to collect, synthesize, and report high-level system damage.[72]

11.3.3 AmerenUE improved its determination of restoration time estimates, for Level III events, integrating the information across several delivery channels.

AmerenUE recognizes the limitation of its OAS in accurately representing customer outage statistics and in providing estimated restoration times during

[72] KEMA Interviews MK03, MK06, MK19

Level III events. This significantly handicapped effective public communication during the three restoration efforts. In response, AmerenUE initiated a process review team to improve the field reporting and synthesis of area wide estimated restoration times during Level III events. The major elements of the initiative include:

- To provide more specific "area wide" estimated restoration time (ERT) information to supplement Corporate Communications information utilizing existing OAS functionality,
- To provide ERT information through AmerenUE's customer service channels (CSR's, VRU, and Web), and
- To execute a process that has clearly defined roles and responsibilities with the emergency Operations Center (EOC) as the process owner.

The team has made significant progress in defining this process to circumvent the limitations in OAS restoration time reporting under Level III conditions. This progress includes:

- AmerenUE has expanded its use of Mobile Data Terminals and hardened laptops with remote connectivity capability directly to the OAS, to employees who have been trained for field damage assessment duties during major events,
- The AmerenUE.com website's My Electric Outage functionality was enhanced in the spring of 2007 to provide additional clarification to customers of the many alerts and area restoration notifications, and
- The alerts were also integrated into the OAS screens used by Customer Service Representatives when answering customer outage calls.

In addition, all outage statistics and reporting are now extracted from OAS and housed in the same database to ensure consistent customer outage counts and restoration progress numbers are available to all internal and external stakeholders.

These improvements have been proven and tested during a small outage event in August of 2007. While AmerenUE has not experienced a Level III event since

implementing these improvements, AmerenUE believes they will be able to perform well in future major events.[73]

11.3.4 AMI technology in place at AmerenUE could offer slight improvements in support of storm restoration activities.

AmerenUE's CellNet system is an early generation Automated Metering Infrastructure (AMI) solution, originally purchased for the primary goal of reading meters for revenue purposes. Individual meters have a function to provide a "Last gasp" report when power is lost as well as a "Power Up" report when power returns. AmerenUE has been using these features since the initial implementation of AMI. This "Last Gasp" and "Power Up" functionality is fed into OAS; however, there are a number of inherent limitations in AMI technologies in this regard. Regardless, AmerenUE is taking steps to integrate the system into outage restoration verification more effectively. The following findings amplify the issues.

11.3.4.1 During Level III events, AmerenUE does not interrogate the AMI network to determine the extent of customer outages nor to verify successful restoration of individual customers instead relying on a combination of pro-active customer callback procedures and passive public advisories to confirm service restoration.

AmerenUE is one of a handful of utilities that have gone to a fully AMI solution and has made a significant investment of approximately 1.2M electric and 130k gas AMR meters in Missouri alone.[74] The CellNet technology's major purpose is to automate meter reading and is not designed as a primary system in support of outage analysis, management, or restoration. Some features inherent in the CellNet system can support the outage management process, but must be considered a secondary benefit.[75]

The CellNet technology allows AmerenUE to read its meters through a fixed radio network. Meter information is fed back through a network of pole top collectors, distributed throughout the AmerenUE system, and ultimately fed to CellNet servers in Kansas City. CellNet aggregates the meter information, processes and filters the reports,

[73] Ameren document ERT Storm Approach – MO General.ppt
[74] KEMA Interview MK13
[75] KEMA Interview BS02

and forwards the information to AmerenUE's OAS system. Logic filters applied to the raw information parse momentary interruptions and failing AMI meters from the data stream.

A secondary benefit of the AMR system is the meter's "Last gasp" function. When power is lost at the meter, the meter sends a signal over the same network ultimately producing an entry in OAS indicating a loss of power flow. OAS treats this information in the same manner as if a customer called in an outage at their location.

For small-scale outage events, the system is automated and provides outage reports for some of the affected meters. However, several inherent issues have been identified with the outage reporting application in AMI technologies. First, during outage events that affect hundreds or thousands of meters, the "last gasp" from many affected meters all at once create radio contention. The signals clash and only a small subset of the events are heard on the system. This one aspect renders the AMI outage reporting application as an ancillary benefit, providing additional information for the OMS analysis application, as opposed to a primary communication system to detect outage events.

Major storm events are by definition associated with widespread power outages and are often associated with severe lightning. Widespread power outages and lightning contribute to loss of third-party data communication providers, as well as interruption in the AMI network. These interruptions can last many hours following a storm, prohibiting the normal functioning of the AMI network during this timeframe. AMI networks rely on battery back-up support designed for only several hours. These constraints, with respect to equipment damage, communication pathway loss, and limited battery back up, are inherent to the AMI system and further limit its ability to function as a primary tool in storm restoration management.

During the severe storms of last July and December, there were also various parameters not set properly in the CellNet application. The application locked up, rendering the AMI solution useless for a time.

Additionally, AmerenUE has not integrated its AMI system's capability into routine Level I and larger Level II events. The system

does not automatically check the AMI network to confirm service restoration. AmerenUE's only confirmation that service is restored occurs through a call back process to customers that had previously reported an outage as well as through public advisories asking customers to call in again if their service is not restored.[76]

In the view of AmerenUE management, the AMI application has potential value during some restoration efforts to identify the remaining single outages after both feeder backbones and laterals have been restored. AmerenUE is currently working with CellNet on an automated, batch application for restoration verification. The system would interrogate a sample of meters at the distribution transformer level, i.e., one or two meters behind each transformer in an outage area to verify power restoration.[77]

11.3.4.2 The AMI infrastructure had a difficult time handling the volume of outage data created during the storms.

During the July event, the large number of AMI meters reporting service outages, and "Last Gasp" reports, bottlenecked the data flow from individual meters, through CellNet's Kansas City data aggregation server, to OAS.[78] The bottleneck resulted in the cessation of near real time AMI reporting to AmerenUE. Upon service restoration, the system usually took up to 36 hours to clear the event history before the network became usable again.[79] By this time, the backup batteries in the pole top collectors were exhausted. This situation did not instill confidence in EOC personnel that the AMI system could be a valuable tool during outages. This issue originated from poorly tuned system parameters compounded by a lack of consistent monitoring of the system by both CellNet and AmerenUE. Since the July 2006 event, both CellNet and AmerenUE have been working to resolve these issues. Another utility experienced similar issues during a recent major storm.

Even on a normal day, there are a number of delays both inherent and incorporated by design into the collection and processing of

[76] KEMA Interviews MK03, MK13, MK19
[77] KEMA Interview BS01
[78] KEMA Interview RG01
[79] KEMA Interview MK13

"Last Gasp" data resulting in delays of 12-17 minutes before AmerenUE's OAS sees the data. In the interim, during these major outage events, the SCADA system, where it is available, will have reported the feeder out and the DDO already taken corrective action. In those cases, the AMI data is now providing old information. Fortunately, the dispatchers have identified this data problem and manually ignored OAS entries originating from delayed AMI information in such cases. Recently AmerenUE installed filters in OAS to ignore old AMI information.

11.3.5 AmerenUE depends on its communications Network Operations Center (NOC) to support its internal information network. However, due to a lack of experience in handling Level III events, the NOC did not proactively monitor voice systems performance, nor was 24/7 coverage provided by voice network specialists for the call center during the July 2006 storm.

The NOC supports AmerenUE's operational systems through remote monitoring and on site trouble response. The NOC has developed a storm operations plan since the July 2006 storm. The plan calls for various levels of mobilization depending on the severity of the major event and includes the possible activation of 24-hour coverage and on premise support for resolving voice system issues.

AmerenUE reported incidences where incoming customer calls were lost between exiting the Voice Response Unit and being answered by a call center representative. During its 24-hour operation, the call center requested support from the NOC but was handicapped in resolving the issue due to a lack of 24-hour support.[80]

11.4 Recommendations

11.4.1 Continue enhancing the outage determination business logic in the OAS to improve the estimation of Expected Restoration Times and resource requirements during Level III and Level IV restorations.

Continue the enhancements to the OAS to further improve the determination of estimation of restoration times during Level II events. This should include:

[80] KEMA Interviews MK02, MK11

- Refining the handling of trouble tickets to avoid clearing entries associated with downstream damage on the feeders by amending the original outage ticket with Field Checker data on downstream events,
- Ensure the logic provides a means for reassigning customers to the closest known fault and decoupling the customers from the farthest upstream fault,
- Amending the OAS screens 62 and 63 to include counts of the damaged assets, spans down, poles down, etc., to support the estimation of resource requirements under Level III events,
- Improving OAS reporting functionality to support a quick damage assessment process for the EOC during its initial (0-6 hours) assessment of system damage and required resource requirements for restoration, and
- Test the recent enhancements to the OAS under simulated Level III and IV conditions to ensure it is functioning.

11.4.2 Integrate the CellNet system into the restoration verification process during Level III and IV events to the extent of the current AMI technology's capabilities.

Continue to develop a batch verification process to automatically verify service restoration of distribution circuits and some groups of single outages.

11.4.3 Evaluate the AMI (Advanced Metering Infrastructure) system ability to support large scale restoration events.

Continue the work between CellNet and AmerenUE to further identify and tune system parameters to alleviate bottlenecks associated with large data volumes during large-scale events.

12. Emergency Restoration – Customer Service

12.1 Industry Practices

The leading practice in electric utility customer service functions is to provide the first two-way communication with the customer before, during, and after outage events. As an outage event unfolds, the call center shifts from its initial role of receiving outage information from customers to providing restoration estimates designed to help customers cope with or react to the outage event. Near the expected end of the restoration period, the call center shifts to receiving outage information from individual customers still without power.

The customer service function includes the call center and its supporting technology. Generally, the supporting technology includes an Automatic Call Director (ACD), an Interactive Voice Response Unit (IVRU), and the utility's network telecommunications provider's network ("cloud") and related contracted-for overflow or backup capabilities. Utilities typically use various customer service and/or outage reporting systems to manage interaction with customers.

The volume of calls received is dependent on the:

- Severity of the outage,
- Customers' emergency preparations,
- Quality of the utility's external communications,
- Visibility and progression of the restoration,
- Availability and accuracy of restoration estimates, and
- Customers' communications capability during the outage event.

The call center should have access to information requested by customers. During outages, customers want specific actionable information to make their decisions. Each customer call that does not provide requested information may increase future call volume, as well as the frustration levels of customers and Customer Service Representatives (CSRs). At the same time, the utility may not have yet completed damage assessment or developed a specific restoration estimate for each area or outage.

12.2 AmerenUE Practices

AmerenUE's 250-seat virtual call center is consistent with industry leading designs. The call center provides two-way communication with the customer before, during, and after outage events. The call center is equipped with an ACD and IVRU. The call center is designed to support and augment the CSRs and can handle 150 calls while the remainder of the inbound calls will be queued for CSRs or queued for the IVR ports when they become available. AmerenUE provides both local and "800" numbers for customer contact, plus a dedicated number for police and fire calls. The AmerenUE call centers are designed to be "virtual" with the ability to shift calls among AmerenUE facilities in Missouri and Illinois, home located CSRs, and, if necessary, to a 3rd party staff augmentation firm located in North Carolina. AmerenUE also contracts for automated backup (overflow) service with the capacity of handling 30,000 calls per hour, shared among the Missouri and Illinois call centers. This service uses a bank of IVR equipment with a script and logic similar to AmerenUE's VRU. Information is shared from OAS every 10 minutes to ensure the Vendor IVR has information to communicate to customers. Exhibit 12-1 shows the inbound call flows.

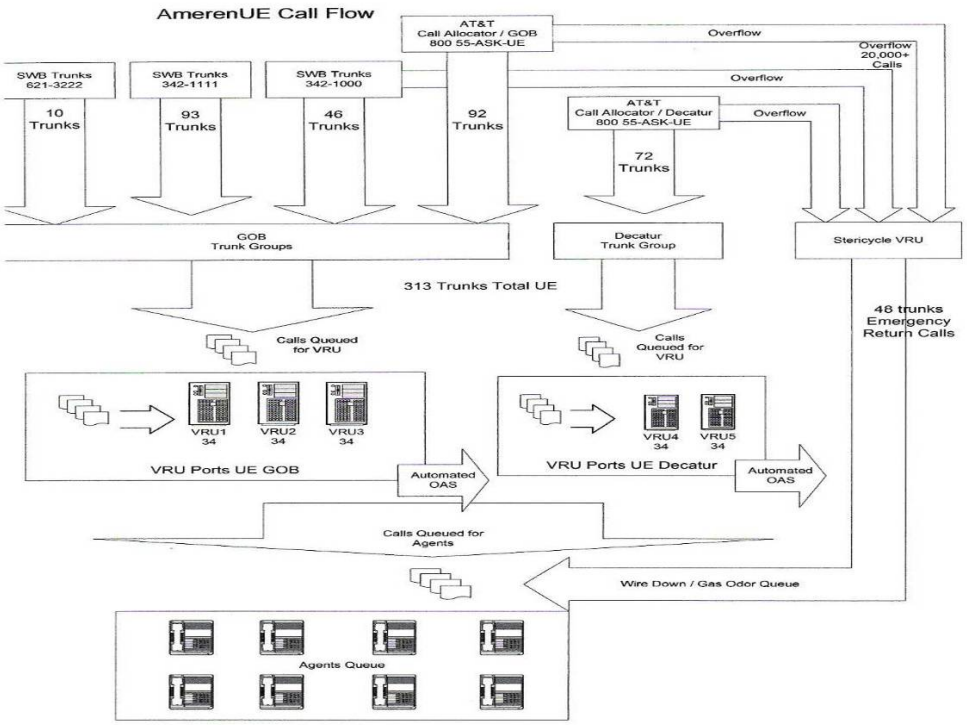

Exhibit 12-1: AmerenUE Inbound Call Flow

12.3 Conclusions

12.3.1 AmerenUE's OAS for limited restorations (Level I and II) effectively communicates the status and provides estimated restoration times to customers.

CSRs and other AmerenUE personnel are trained in the use of OAS and training is offered often. The CSRs reviewed by KEMA were well versed in the use of OAS; and OAS performs in a timely manner.[81] Customers can provide a notice of a service interruption by their entries into AmerenUE's IVRU or through contact with a CSR. Customers can access outage and restoration information over the Internet during limited outages and review storm status by zip code or by direct entry based on service location account number or telephone number.[82]

Customers cannot use the IVRU to get restoration status. If a customer who has had a recently restored outage calls in, their call is automatically directed to a call-taker rather than allow them to log another "false" outage call. Customers have learned that they can call the IVRU to get an updated ERT. However, doing so, logs an outage call if they have been restored. The routing of this call to the CSR helps prevent this issue.

12.3.2 Because AmerenUE's OAS can take interruption data and provide timely restoration information from/to customers rapidly and effectively, during Level I and II restorations, AmerenUE has inadvertently raised customers' expectations during Level III restorations.

As discussed elsewhere, the OAS's capability to generate an estimated restoration time is not accurate or effective during a major storm (Level III), while damage is still being assessed and incremental foreign resources are being obtained. AmerenUE does shutdown the automated capability when a storm is determined to be major.[83] Additionally, during the July storm, AmerenUE was unprepared for the high volume on its Outage Map website resulting from the magnitude of the Level III storm and customers' desire for "real time" information.[84]

[81] KEMA Call Observations HS10
[82] KEMA Capability Review
[83] KEMA Interviews HS01, HS09, MK11
[84] KEMA Review of press clippings (St. Louis Post Dispatch, July 21, 2006) and KEMA review of Outage Information web page (7/24/06)

12.3.3 Customer service has established backup procedures to ensure that its call centers can continue to operate under a variety of potential problems.

The Call Center described its plans and procedures to operate without the support of OAS, if needed. AmerenUE has prepared for the loss of the OAS by readying paper outage "tickets" procedures to respond to "wire down" or "gas leak" calls and expeditiously "running" the paper tickets to the DDO.[85]

AmerenUE's virtual call center design further protects its operations if one call center should lose power, or otherwise become inoperable.[86] As described above, AmerenUE has designed its call centers to operate in tandem and has the capability of transferring or redirecting calls between its call centers in Missouri and Illinois and its North Carolina collection contractor. Further, AmerenUE's call centers are on one system and the employees have been cross trained (for outage information) between Missouri and Illinois.[87] This "virtual" call center design provides the flexibility to response to outages that might affect one or more AmerenUE call centers.

AmerenUE trains its CAD department employees annually to act as a resource for additional call center support.[88] Additionally, AmerenUE can use former call center employees; however, their training may not be up to date.[89]

AmerenUE's North Carolina service provider is trained to take certain calls, including outages. AmerenUE has contracted for automated overflow service, which can provide further backup capabilities.

12.3.4 AmerenUE reported two instances of the loss of calls during the storms.

During the July 2006 storm, AmerenUE's telecommunications network provider dumped calls due to its concern about overloading the public telecommunications network. AmerenUE has reviewed this situation with the provider and steps have been taken to avoid a recurrence.[90] During the January 2007 storm, AmerenUE's Automatic Call Director (ACD) placed approximately 4,275 calls in a dead queue

[85] KEMA Interview HS09
[86] KEMA Interviews HS01, HS09, MK11
[87] KEMA Interview HS01
[88] KEMA Interview HS01
[89] KEMA Interview HS01
[90] KEMA Interviews HS01, MK02, MK11

due to an equipment software failure. Customer Service and IT are reviewing that situation and will be implementing a fix to remedy the software failure.[91]

12.4 Recommendations

12.4.1 Complete the review of the loss of customer call situations.

AmerenUE should review the structure of its communications to determine opportunities for better service and avoid potential sources of lost calls. Specifically, AmerenUE should:

- Determine the needs of inbound communications stakeholders within and external to AmerenUE,
- Review potential call volumes during Level III and Level IV restorations,
- Determine the existing capabilities of its network provider and its virtual call center,
- Develop a series of realistic test scenarios for the external network and virtual call center, including appropriate loading on the network,
- Working with the external network provider, run the test scenarios under realistic conditions, and
- Evaluate the test results, and make appropriate changes.

12.4.2 Use the 800 network in front of Customer Service System/IVRU to enhance call-taking capacity and capabilities.

Using the 800 network in front of the call center and IVRU will allow AmerenUE to handle a greater volume of calls. This will eliminate the phone company's practice of pegging AmerenUE's incoming calls. The increased call volume can then, through Automated Number Identification (ANI), have a unique restoration message while allowing non-emergency calls to proceed to the call center. AmerenUE will be able to create real time messages for each of the ANI numbers and update as necessary. An added benefit to this configuration, as shown in Exhibit 12-2, is a potential reduction in the number of trunk lines coming into the call center.

[91] KEMA Interviews HS01, HS09, MK11

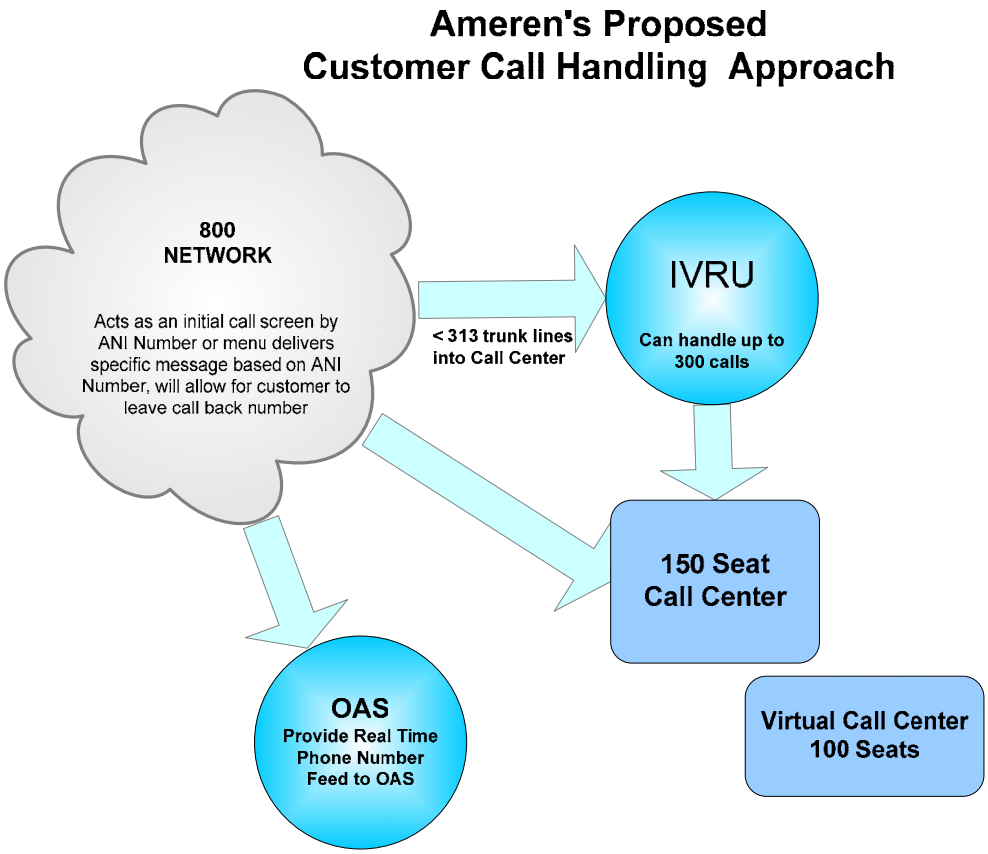

Exhibit 12-2: Using the 800 network as Front-end during Emergencies

13. Emergency Restoration – External Communications

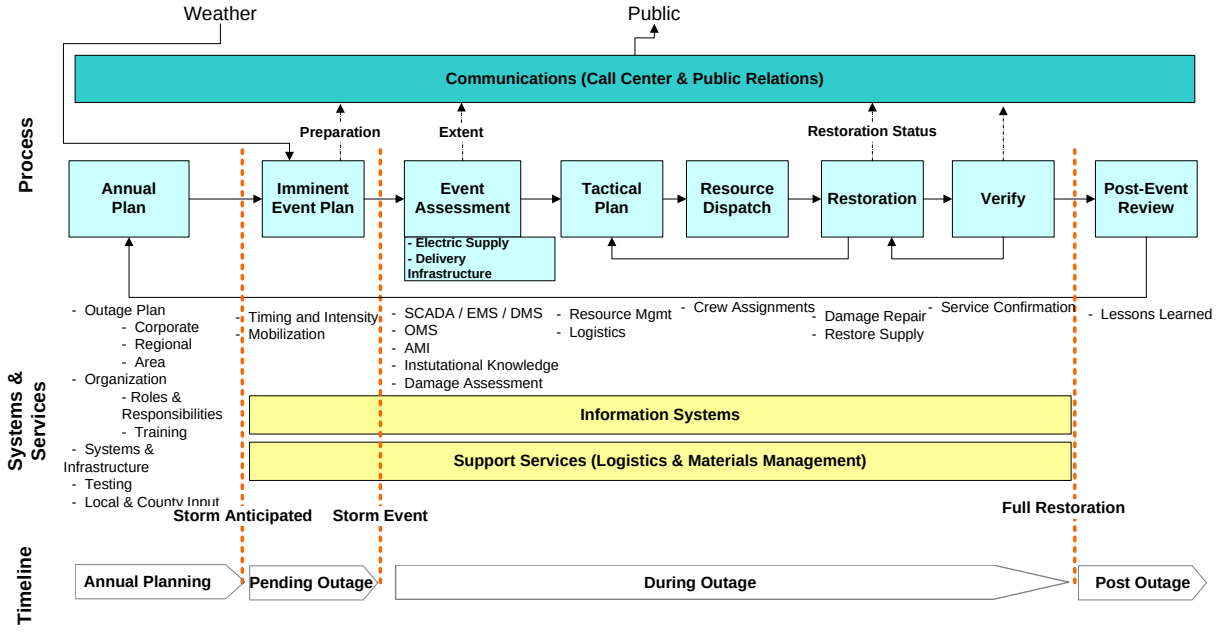

Exhibit 13-1: Outage Management Process – Communications

13.1 Industry Practices

A typical utility's external communications function provides information to customers before, during, and after outage events. External communications must also address the business community's needs to predict when service, and therefore, business, will be resumed. Government bodies such as local, county, state and regional authorities need restoration information to support public functions such as shelters, traffic control, food transportation and other essential public safety services such as healthcare and law enforcement. While it has similar functions as the call center, external communications is subject to customers' ability to receive TV, radio, print and internet media during outage events. Additionally, the media may act as a filter or interpreter, or even report news that dilutes the utility's intended message. Some utilities have messages pre-placed with radio stations to be played during storms to ensure the purity and clarity of its message gets to its customers. During restoration, the utility may decide to purchase radio time to send specific updated messages to its customers.

13.2 AmerenUE Practices

AmerenUE has a Corporate Communications organization, a Community Relations organization (functioning primarily in the metro St. Louis area) and a Key Accounts organization that are positioned to deliver messages and local information to affected customers, communities and other governmental organizations and major accounts during emergency events. All three departments rely on the twice-daily conference call initiated and managed by the EOC for timely and reliable information. In the suburban and rural areas, Division management also has a significant communications function including Customer Service Advisors (CSA).

AmerenUE has developed a (2007) Corporate Emergency Communications Plan and Manual.

13.3 Conclusions

13.3.1 The AmerenUE 2007 Corporate Emergency Communications Plan is comprehensive, well detailed and demonstrates that AmerenUE can develop appropriate communications processes.

The 2007 Corporate Emergency Communications Plan is detailed and defines key principles, the evaluation of emergencies, specific responsibilities, the establishment of the emergency news center (including the required support equipment), backup plans for loss of telecommunications capability, a step by step sequence of response actions to be made and detailed responsibility for the maintenance, distribution of the Plan.[92] However, the Plan has not been integrated with the Electric Emergency Restoration Plan.[93] The EOC provided, as an example, a less formal Emergency Communications Plan that dated from 1999. The 1999 version is very similar to the more polished and formal 2007 Corporate Emergency Communications Plan. AmerenUE updates its Emergency Communications Plan every three to five years.

[92] KEMA review of the Plan document
[93] KEMA Interview RG1 and KEMA review of Electric Emergency Restoration Plan

13.3.2 The EOC and its twice-daily conference calls are viewed as responsive to the information needs of the various communications functions, however during the first two storms actionable information for customers, such as estimated restoration times, was not provided.

The twice-daily conference calls are viewed as a very important, useful intra-company communications method by Corporate Communications, Key Accounts, Community Relations, Customer Service, Regulatory, and the Divisions.[94] The EOC also provides information directly to state and county EOC and some localities upon request.[95]

Although Corporate Communications attended the twice daily conference calls and visited the EOC often, restoration information was not forthcoming or was inaccurate, due again to its having been difficult to ascertain given the magnitude of the storms.[96] During the July and December 2006 storms, no restoration time estimates were recorded as issued by the EOC. This limited the information that could be provided to customers (see below).

13.3.3 Key Accounts was able to leverage its relationships with major customers and provide them with actionable information.

Key Accounts followed the restoration process by attending the twice-daily EOC conference calls and using the company's press releases. Working as a team, Key Accounts contacted its customers twice daily and was able to provide key account customers with specific information about the overall timing of the restoration. This allowed those customers to use this information to determine if they should obtain generators or plan for further facility shutdowns. AmerenUE received many letters of thanks from key accounts.[97]

[94] KEMA Interviews HS01, HS03, HS09, HS13, HS17, HS18
[95] KEMA Interviews MK19, HS16
[96] KEMA Interview RG1 and KEMA Data Request
[97] KEMA Document Request HS03-01

13.3.4 During the first two storms, AmerenUE's initial communications to customers lacked specificity and provided limited actionable information during the restoration. AmerenUE did not provide localized estimated restoration times. However, in the second half of the January storm, AmerenUE did provide this needed information to customers.

Instead of waiting for a definitive damage estimate, AmerenUE should have communicated the severity of the outage to its customers sooner. Lacking specific information to communicate the severity of the outage in terms such as the expected length of the restoration (number of days), AmerenUE added additional stress to its customers during the restoration.[98] Some concern was expressed that AmerenUE senior management was unwilling to release estimates of the full extent of the storm.[99]

It is reasonable to expect that customers be informed of the potential extent of the storm event outage, even if a customer or area specific estimate cannot be provided early in the restoration process. This information would have allowed customers to make better decisions about how to best cope with the outage. Their options included staying in place, moving to relatives or friends with utility service, moving to a motel or hotel, or leaving the area. The public is encouraged by government agencies[100] to plan for self -sufficiency for up to 72 hours before mobilization of governmental assistance.

KEMA's review of AmerenUE's press releases for the three major storms indicate that terms such as number of customers out were used inconsistently by reporting numbers from different geographic focus.[101] Similar press releases used differing numbers on the same day and further confused the issue by not including a specific time.[102] There was no consistent format used to present the information to the public. Some press releases did not include the release time although all did include the release date. While AmerenUE did provide frequent press updates during the restoration process, its communications during that period did not use clear language nor provide a specific estimate of the number of days it may take to restore power. The information necessary was simply not available. AmerenUE should consider whether it issued too many press releases.

[98] KEMA Interviews HS03, HS13, HS16, HS18, MK11, MK12
[99] KEMA Interview MK11
[100] http://www.ready.gov/america/getakit/index.html
[101] KEMA Interview HS04
[102] KEMA review of communications materials and press releases (December storm)

Examples from the July storm include:

- "will take at least 72 hours (7/20)",
- "may be out as long as 72 hours-and some could be out longer than that (7/21)",
- No restoration estimates were provided (7/21 @2 PM), (7/22 @10 AM & 4:30 PM), (7/23 @noon),
- "restoration time may slip into Tuesday or Wednesday" (7/23 @4:30 PM),
- "AmerenUE officials originally estimated that the majority of the affected customers will be restored by Tuesday night, with the remainder Wednesday and the very last customers on Thursday" (Monday 7/24 @4:30 PM),
- No restoration estimate (7/25 @9 PM), (7/26 @9 PM), (7/27 @9 PM), and
- There was no evidence of localized or tailored restoration estimates during the July storm.[103]

Examples from the December storm include:

- "Lengthy outages are expected" (12/1 no time on press release),
- No restoration estimates were provided (12/1 @5 PM) and (12/1 no time on press release),
- "Bulk expected to be restored by end of day Wednesday, Dec. 6 with remainder Thursday and Friday" (12/5 @10 AM), and
- "Storm wrapping up today" (no date or time on press release).[104]

Examples from the January storm include:

- "AmerenUE Illinois Utilities Prepare for predicted winter weather watch", (1/12)
- "A restoration update will be provided later today. Lengthy outages are expected." (1/13 @8 AM), and

[103] KEMA review of communications materials and press releases
[104] KEMA review of communications materials and press releases

- No restoration estimate (1/13 @5 PM).

On January 14th at 5 PM AmerenUE began to provide specific restoration estimates by geographic areas and the information was provided on the subsequent press releases.[105]

13.3.5 AmerenUE does not have a well defined media process to convey restoration information directly to customers and thus was subject to the media's discretion, editing and juxtaposing of AmerenUE's intended message.

Utilities have considered whether message boards or postings in places of public assembly would be useful during mass outages. Some utilities purchase radio airtime to ensure their exact messages are delivered at specified times. AmerenUE did not use or consider this method of communicating with customers.[106] On occasion, AmerenUE has used existing media time or newspaper advertisements to communicate with customers during an outage.

AmerenUE does use press releases, press conferences and the management interview to communicate with customers. AmerenUE also uses email "Blasts" to share information. Presently, 386,000 customers are registered to receive these email messages.

By relying on the media's discretion to transmit AmerenUE's restoration messaging to customers, AmerenUE created the possibility that it would lose control of its intended message. KEMA's review of press clippings indicated that preceding negative events such as restoration from storms in 2004 and 2005 and inadequate tree trimming expenditures were mentioned along with AmerenUE's storm messaging,[107] thus diluting AmerenUE's intended message and reducing the public's confidence in AmerenUE capabilities and outage restoration efforts.

13.3.6 AmerenUE did not have a critical facility list or a methodology to define a critical customer facility. Therefore, it was not clear whether critical facilities receive the information they need.

Key Accounts and Community Relations have varying definitions of critical facilities and they can overlap in responsibilities for critical public service

[105] KEMA review of communications materials and press releases
[106] KEMA Data Request HS04, HS13, HS16 Fox, Gallagher, Cowan
[107] KEMA Review of press clippings (St. Louis Post Dispatch, July 21, 2006, also July 22, 2006)

facilities such as water and sewer service.[108] When requested, no one in the communications area produced a critical facilities list.[109] Individual customers can self-report medical needs and AmerenUE tracks that information in its customer information system.[110]

The EOC maintains two lists of priority customers, the first within OAS/CSS and covers all customer classes. The Distribution Dispatch Office maintains a very short list of priority customers fed from the 34kV system (major hospitals, fire, and police) that can be restored by a troubleman. The Divisions are responsible for prioritizing high priority customers not fed from the 34kV system.[111]

13.3.7 Community Relations has offered tours of the EOC and meetings with Company personnel were well received. However, when offered an opportunity to be on AmerenUE's e-mail list for storm updates, interest was low.

To foster communications with Metro St. Louis area communities, prior to the storm season AmerenUE's Community Relations manager arranged tours of the EOC to provide details of the restoration process. In addition, maps showing the specific AmerenUE District boundaries and listing the names and phone numbers of key District personnel to contact on service related issues was distributed to St. Louis metropolitan communities. As a follow-up to all this AmerenUE offered to provide e-mail restoration updates during major outages. Little interest was expressed by the participants. Interest in the e-mail updates may have been low because many municipalities are accustomed to contacting AmerenUE's EOC directly by telephone as their information needs develop.[112]

13.3.8 While a draft AmerenUE communications plan exists, there appears to be no corporate wide focus on communications.

A Communications Plan for Severe Storms[113] and a Corporate Emergency Communications Plan does exist (described above).[114] Without a defined corporate communications strategy, the efforts of Corporate Communications, Employee Communications, Key Accounts, Community Relations, Customer

[108] KEMA Interviews HS03, HS16
[109] KEMA Interviews HS03, HS11, HS16, HS17
[110] KEMA Data Request HS01, HS09, MK11
[111] KEMA Interviews HS17, MK19
[112] KEMA Interviews MK19, HS16
[113] KEMA Data Request HS13-1
[114] KEMA Data Request HS13-2

Service, Regulatory and Customer Service Advisors located at the Divisions appear unevenly supported and unevenly executed. Effective communications with customers begins during periods of normal business and the relationship thus developed adds support during times of stress such as emergency restoration.

13.3.9 Over a number of years, AmerenUE has reduced its outreach to the community. This reduction appears to have affected the level of goodwill and communications between AmerenUE and its customers.

During periods of adversity and operating performance problems, AmerenUE has limited or no "banked" goodwill and relationships to offset customers' perception of current events. No formal program to encourage active participation by AmerenUE employees in charitable, community, volunteer activities, and appointment to governmental bodies exists.[115] AmerenUE no longer has a Speaker's Bureau.[116]

13.3.10 Division management augments its CSA by encouraging and supporting employees that volunteer to join and support groups such as the local chambers of commerce.

KEMA analyzed the coverage of local governmental meetings, participation in local and county EOC, boards and authorities, chambers of commerce and community organizations and found the coverage uneven across the divisions.[117] To overcome limited communications resources, Division management encourages its employees to participate in community meetings, boards and chambers.[118] This practice can provide important benefits to AmerenUE and career development opportunities to the employee. Additionally, it creates a sense of goodwill and opportunities to explain restoration practices in advance of a storm. However, because AmerenUE does not have a Corporate Communications Strategy or Plan the efforts within the Divisions differ in breadth and level of intensity.[119]

[115] KEMA Data Request Gallagher, Davis, Cowan, General
[116] KEMA Interview HS16
[117] KEMA Data Request Division Manager Survey
[118] KEMA Interview HS17
[119] KEMA Data Request Division Manager Survey

13.3.11 While the recent J.D. Powers survey confirmed that AmerenUE is not viewed positively by its customers, many employees report that their immediate neighbors have a much better view of AmerenUE and its storm restoration efforts.

The recent survey ranked AmerenUE second worst in the Midwest.[120] Anecdotally, AmerenUE employees report that their neighbors understand and recognize their extended efforts to minimize storm restoration times.[121] This different level of customer opinion indicates that a broader or more intensive communications strategy may provide benefits to AmerenUE.

13.3.12 While the Missouri Public Service Commission received a large number of customers' comments about AmerenUE during and after the three storms, the volume was not unusual or excessive considering the magnitude of the storms and the on-going rate case and other issues.

The Missouri Commission provided a detailed listing of AmerenUE customers' calls received by the Commission from 2002, with specific customer names and other identifying information removed. The calls covered a wide range of issues important to customers. For a significant number of calls the caller's concern could not be ascertained from the information provided. As expected, call frequency increased during and after the three storms. The notations provided by the Commission support the conclusions within this report relating to estimates of restoration times, communications and operations. KEMA analyzed the call data provided and considering the magnitude of the three storms, the number of calls received by the Commission do not appear to be excessive.[122]

[120] KEMA Interview MK12, KEMA Data Request MK12-01
[121] KEMA Interviews HS05, HS08, HS09, HS12, HS15
[122] KEMA review of Commission supplied data

13.4 Recommendations

13.4.1 Develop a restoration communications process that uses the EOC informational dashboard and twice daily conference calls to obtain and provide timely and consistent information to all external communications stakeholders.

AmerenUE must create public messages in line with the EOC restoration dashboard information. Specifically, AmerenUE should:

- Determine the needs of stakeholders (senior management, restoration employees, regular employees, suppliers, customers, key accounts, governmental entities, state and county EOC, regulators, etc.) within and external to AmerenUE, including frequency of updates, format and content,
- Determine and arrange for reliable and timely sources for the information,
- Determine which AmerenUE communication function (Corporate Communications, Community Relations, Key Accounts, regulatory, Division Management, senior management, etc.) is responsible for the delivery of information to a specific external stakeholder in the manner and format that meets their needs (phone, fax, e-mail, radio, other),
- Document the communications process including specific responsibilities,
- Develop and run realistic test scenarios that includes external stakeholders,
- Evaluate the test results and make appropriate adjustments, and
- Document the communications process and integrate within the ERP.

13.4.2 Develop a process to deliver AmerenUE's restoration information and estimates directly to customers in a form under AmerenUE's control.

AmerenUE must control the message content to its customers and other stakeholders, to the extent possible. Consider implementing the following actions:

- Evaluate media and other delivery methods (radio, text messaging, web, posting boards at mass assembly locations, dynamic billboards etc.),

- Structure a trial process,
- Develop communications partners (radio stations (limited number with specific coverage), text, web and mass assembly locations),
- Document the communications process including specific responsibilities,
- Develop and run realistic test scenarios that includes external delivery methods,
- Evaluate the test results including penetration and timeliness and make adjustments, and
- Document the communications delivery process and integrate within the EERP.

13.4.3 Enhance the newly created critical facility list and define responsibilities and expected outcomes.

For an effective restoration, and to minimize public inconvenience, AmerenUE must communicate with the operators of critical facilities and therefore needs to have a structured process to identify those facilities and determine the optimum communications method and the information required by the operators. AmerenUE should undertake the following actions with regard to critical facilities:

- Define critical facilities in conjunction with stakeholders (senior management, suppliers, customers, key accounts, healthcare, other utilities, cellular providers, governmental entities, state and county EOC, disaster recovery (Red Cross and other shelters), regulators, etc.) within and external to AmerenUE,
- Identify critical facilities,
- Cross reference critical facilities to OAS, SCADA, CellNet, etc.,
- Determine specific information needs and delivery methods by type of critical facility,
- Assign specific responsibilities by type of critical facility to specific internal AmerenUE organizations,

- Document the critical facilities communications process including specific responsibilities,
- Develop and test realistic test scenarios that includes external stakeholders,
- Evaluate the test results and make adjustments, and
- Document the critical facilities communications process and integrate within the EERP.

13.4.4 Refine the Corporate Communications Strategy.

AmerenUE's relationship with customers, regulators, and public officials' goodwill has been severely strained by the three storms. AmerenUE should rebuild those relationships to ensure that the restoration process for future storms and outages are not impacted by poor relationships or unnecessary public comments. AmerenUE should undertake the following actions with regard to a Corporate Communications Strategy:

- Develop over arching goals for the Corporate Communications Strategy including performance measures,
- Document the needs of stakeholders within and external to AmerenUE,
- Consider alternative methodologies to reach goals (including strategies used by utilities and non- utility organizations),
- Determine a reasonable, sustainable long-term budget (including staffing additions), also consider reduction of unproductive or unrelated activities,
- Define which AmerenUE function (senior management, Corporate Communications, Community Relations, Key Accounts, Regulatory, Division Management, governmental relations, etc.) is responsible for the communications with each specific external stakeholder in the manner and format that meets their needs,
- Document the Corporate Communications process including specific responsibilities and performance measures,
- Measure results, and
- Adjust the Corporate Communications Strategy as appropriate.