

STATEMENT OF Mr. Callen Hays

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BEFORE THE AD HOC SUBCOMMITTEE ON STATE, LOCAL, AND PRIVATE
SECTOR PREPAREDNESS AND INTEGRATION COMMITTEE ON HOMELAND
SECURITY AND GOVERNMENT AFFAIRS

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Memphis Light Gas & Water is the municipal utility supplier of electricity and gas for all of Memphis/Shelby County and the supplier of water to the majority of it. MLGW recognizes that a large magnitude earthquake threat exists for all areas within the New Madrid Seismic Zone. For MLGW to be a responsible steward to our customers, we know we cannot ignore this potential risk, and must take steps to strengthen and harden our utility systems to lessen the extent of damage to our infrastructure should this event take place.

MLGW just completed an all-hazards mitigation study on all three of its utility networks. This was MLGW's second mitigation study. The first was conducted back in 1989 by Allan and Hoshall and started MLGW down the path of seismic mitigation efforts. MLGW's Water Engineering Department has spent a little over \$16 million in various upgrades to our water production facilities. MLGW has been awarded a total of almost \$4 million in FEMA grants to retrofit and strengthen four out of eight major water pumping facilities and nearly 60 water production wells. Given the past success of these efforts, MLGW felt that there certainly could be other opportunities for our gas and electric systems to improve their resiliency against an earthquake event. Determining the most effective spending of limited budget dollars relative to the seismic strengthening of electric, gas, and water system components is a question not many utilities have the personnel with the expertise to handle. In early 2006, MLGW budgeted for and contracted this Hazard Mitigation Study to R.W. Howe and Associates to analyze our systems. This report would recommend where each network is most vulnerable to various natural hazards. The report helped us focus on where the most effective spending of retrofit dollars would occur, and would

also identify where would be the best opportunities to seek federal funding to assist in this effort. This study helped MLGW submit its first electric-based pre-mitigation grant application to FEMA seeking \$1.98 million (with MLGW contributing \$660,000) to help seismically retrofitting fifteen existing high voltage (161 & 115 kV) substation transformers at eleven electric substations in Memphis.

The study focused primarily on the earthquake threat. Earthquakes, although very infrequent, pose the greatest system-wide risk for all three utilities – electric, gas, and water – with the highest potential for damages and long duration service outages for substantial numbers of customers. For some MLGW buildings, earthquakes also pose life safety risks to occupants. Many of the other natural hazards considered occur more frequently, but with much lower, often very limited localized impacts.

I am often asked to paint a picture of what a large earthquake would do to the utility infrastructure in the Memphis region, and the cost associated with such an event. No one can predict the exact amount of damage. I do believe that the majority of damage taking the longest amount of time to restore would be the water treatment plants that have yet to be seismically mitigated and underground pipelines on both the gas and water distribution systems. On the electric side, damage to unanchored transformers at substations and unanchored network system transformers would take a long time to repair/replace as well. There is no economically feasible way to mitigate underground pipelines. Strengthening the above-ground collection/control/distribution points of all three systems will greatly reduce the system operation downtime, although it will still be a lengthy restoration process for customers which certainly will take months, not weeks to restore. I cannot put a realistic price tag on the dollars associated with physical damages plus the loss associated with business interruption for the Memphis metropolitan region. I have seen numbers from the 1994 Northridge earthquake in California that showed \$40 billion in damages plus another \$5.6 billion in estimated business interruption losses. I certainly don't think anyone will be surprised if this region suffers the same level of total economic losses.

With relation to our recent hazard mitigation study, we did not ask for a total price tag to be estimated for losses. Instead, we focused on what parts of our system were most vulnerable to this type of event and how to best mitigate those weaknesses. For our customers, widespread outages of all three systems varying in restoration time will occur. The outage time will be based on many factors that are difficult to quantify: 1) a customer's physical location relative to MLGW's system failures, 2) condition of overpasses and bridges that may prevent easy access of materials, equipment, and mutual aid labor forces from arriving in the region quickly, 3) the ability of MLGW's remote monitoring of system operations to remain intact, and 4) the amount of downtime of our wholesale suppliers of electricity and gas--MLGW can work on fixing our systems, but if TVA's transmission system is down or if there are several breaks along the natural gas pipelines of our suppliers, then the rigidity and strength of our systems will be inconsequential if we have to wait for our suppliers to fix their systems.

Being consistent with all emergency response plans, MLGW's restoration priorities are to preserve life safety first and foremost. This means re-establishing services to hospitals, water pumping stations, and sewer treatment plants are the highest priority. After this is accomplished, MLGW would focus on the stabilization and functionality of all gas gate stations, gas regulator stations and a damage report for the functionality of each electric substation. MLGW's customer restoration philosophy is to make repairs on each system in a prioritized order that restores the greatest number of customers per repair. We are also working on the development of mutual aid agreements to bring in additional resources for assistance.

MLGW has taken many steps to try to ready itself for this possible seismic event. In addition to this recent hazard mitigation study and water production strengthening measures, MLGW has been actively replacing its aging cast iron gas distribution system in the downtown and midtown districts of Memphis since 1991. This project helps the earthquake mitigation process relative to gas service restoration in the older parts of Memphis. Cast Iron gas pipe is more subject to failure with sudden ground motion than polyethylene pipe, which is much more flexible. Also, the older cast iron system has inline control valves spaced very far apart, which would reduce MLGW's ability to sectionalize gas system breaks and repairs. From 1991 through 2006, MLGW has spent \$48 million dollars to replace 206 miles of cast iron gas pipe. MLGW has recognized and is adopting the National Incident Management System (NIMS) and the Incident Command Structure (ICS) into its emergency response protocol. We require all members of our crisis response teams to be NIMS/ICS trained and certified. MLGW bought a new business building back in 2003 that was seismically retrofitted for immediate occupancy and operability following a magnitude 7.0 earthquake. We placed all critical telecommunications, computer network servers, and built a new emergency operations center in this building. The increased awareness of the constant work that has to be done for business continuity and disaster recovery planning for MLGW's operations has justified the process of creating an area department focused on Crisis Management.

MLGW works hard to integrate itself with other local, state, and federal governments, as well as private sector partners to discuss ways of improving this area's emergency response readiness. I work closely with the local EMA officials and have open communications with them about how to improve our emergency response measures. MLGW has upper management employees that serve on several local business continuity and disaster recovery planning committee boards such as: the Mid South Area of Contingency Planners (MSACP) <http://www.msacp.org/>, the Community And Regional Resilience Initiative (CARRI) <http://resilientus.org/>, the Urban Area Security Initiative (UASI) <http://www.staysafemidsouth.us/3.html>, and the Local Emergency Planning Committee (LEPC) <http://www.msaclepc.org/>, to list only a few, there are others. MLGW participates in drills meant to test our response readiness to various emergency events. We participated in the Spills of National Significance (SONS) 2007 exercise this past June along with the state of Tennessee's accompanying TNCAT 07 exercise that were both based on a large scale earthquake in this region. We coordinated communications through our local EMA department and practiced our response plans accordingly.

MLGW's efforts to educate the community on how it can be more self-reliant in an earthquake event are one of the most effective ways we can increase this area's resiliency against a catastrophic event such as this. We have partnered with our local PBS station, Library Channel, etc. to broadcast a show called "Memphis Energized". On one of the shows, MLGW gave an educational clip to teach our customers how to simply shut off their gas and water services to their homes in case of an emergency, how to strap down their gas-heated hot water heaters to the house framework, and to have a personal emergency plan ready for themselves. The training that our local EMA office has done in regards to teaching Community Emergency Response Team (CERT) classes help teach residents how to be more self-reliant in emergency situations. The public needs to be aware that it can and will be months, not days, before many utility services are restored and they need to be educated on how they can be ready. MLGW helped the Central United States Earthquake Consortium (CUSEC) host an educational seminar for utilities back in 1995 called "Earthquake Preparedness for Electric Utility Systems". This workshop helped show other utilities how to take steps to strengthen their own systems. A success story that demonstrates the payoff for mitigation strategies occurred in the summer of 2003, when the Memphis area was hit with straight line winds in excess of 100 mph on July 22nd. We had installed backup emergency generators at many of our water treatment plants as part of our seismic mitigation plan. Because these generators were in place, these water stations remained operational throughout the event, although the electrical services surrounding the area had gone down.

There is still a lot of work to be done. Planning for damage assessment strategies on all three utility systems will be a logistical hardship. Damage assessment deployment and communications will be the biggest challenges in the planning process. Like larger utilities, MLGW relies on a system of checkpoints on all three systems to give real time operating statuses to a control room area. In the event of a large magnitude earthquake, these radio transmitting devices and this methodology for automatically receiving an electronic report of the damage suffered by the electric, gas, and water system will be somewhat disabled. Knowing where we need to send resources and supplies to fix our systems will take a considerable amount of time when we will have to rely on a manual effort of visually inspecting all three systems. Underground problems on gas and water pipelines will sometimes not be evident by aerial surveillance assistance.

I sincerely appreciate the attention the federal government is giving to this potential catastrophic event facing the central United States. I would like to mention a couple of areas where improvements can be made to help utilities in this area prepare for an earthquake. The only Federal mitigation money regularly available to support seismic retrofits for public utility infrastructure is the annual Pre-Disaster Mitigation program. For 2008, the program only has \$100 million available nationwide, of which perhaps 10% may be allocated to utility projects. Given the criticality of utilities to life preservation and economic well being of this region and the nation, more funding earmarked for seismic utility retrofit work, as well as giving priority to all utilities located in the impacted areas of the New Madrid Seismic Zone is needed. MLGW has been fortunate to have the resources to fund the type of hazard mitigation study that we conducted. Many rural and smaller utility companies cannot afford this type of analysis. Funding for these types of studies to help guide the smaller utilities on their mitigation strategies could also be helpful. Enhancing public education concerning residential emergency preparedness is needed. Perhaps the type of CERT training that EMA offers to the public could be incorporated into the high school curriculum under health studies. Many groups, such as the Mid American Earthquake Group and others, are working towards coming up with predictive damage assessment models to help shape mitigation strategies. Many utilities (public and private) have been unwilling to share infrastructure data with groups such as this due to the fear of exposing themselves to terrorist activity. Perhaps the government can create a clearinghouse area for the collection and dissemination of sharing this type of information, thus relieving those data owners of any liability issues. MLGW voluntarily began mitigating its utility systems back in 1989. Many utilities and energy suppliers may not be taking the threat of the New Madrid earthquake event seriously. Energy distributors are dependent on other sources of supply for electricity and gas. The government needs to ensure that both public and private wholesale suppliers of electricity and gas in the New Madrid Zone area have considered this threat and are taking steps to mitigate the places in their systems that may need attention.

Thank you.

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