

**WHEN THE
EMERGENCY
IS A**

UTILITY FAILURE

In the wake of a water main break in Chattanooga, Tennessee, public safety communications routed water and medical care where they were needed most.





By Mike McKeever
and Barbara Loveless

When a utility failure occurs, it often impacts an emergency communications center (ECC), either directly through the loss of primary utilities for the ECC or by generating additional calls for service from citizens impacted by the loss. If the utility failure is part of a larger incident such as wildfires or major storms, utility operators and emergency managers typically have time to activate emergency operations plans, while response agencies prepare for the potential loss of services to impacted areas. However, when the utility failure *is* the incident, response logistics and impact on emergency communications may be considerably different.

BACKGROUND

In the early morning hours of Friday, September 13, 2019, a water main break in Chattanooga, Tennessee, left many citizens without water and thousands with reduced water pressure. The break occurred during an overnight scheduled repair. Initial reports were routine with the potential for a small number of residents to be impacted for a few hours. By 5 a.m., however, it was evident the break was severe in a more critical location and would impact thousands of residences and businesses for an extended period. Additionally, the loss of water would likely

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impact the Hamilton County ECC, many public and private schools, Hamilton County Jail, University of Tennessee at Chattanooga and multiple health care facilities, including Erlanger Medical Center, the region's only Level 1 trauma and pediatric center.

Schools near the break were forced to close since they could not prepare lunches, provide functional restrooms or maintain adequate climate control in some locations. Businesses in this tourist-destination city were also forced to close until clean and adequate water supply was restored. The break, a primary 36-inch water main, served areas that included several major health care institutions and long-term care facilities, placing facilities at risk of closure and evacuation. When the busiest emergency departments in the region are at risk of diverting patients or closing, EMS and emergency communications suffer the impact. EMS units faced extended transport times, increased emergency department off-load time and loss of district coverage. The potential for held calls and reduced availability translated to additional challenges for the ECC. As with any large-scale incident, first responders and the responding agencies risked becoming victims of the incident.

Recognizing these risks during the early stages of the incident, Hamilton County Emergency Management Agency assessed initial reports and quickly rallied stakeholders from city, county and state agencies, as well as health care emergency managers and private contractors. The emergency operations center was opened, and emergency operations plans for impacted facilities were reviewed for options and resource needs.

Initial assessments and responses focused heavily on the availability of bottled water.

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Having potable drinking water seemed paramount. Potable water could be obtained through existing local and state resources as well as established agreements between vendors and the operator of the public utility. An early request generated thousands of cases of bottled water.

However, loss of potable water was not the most detrimental factor to continuity of operations. As critical infrastructure organizations arrived at the EOC, the vulnerability assessment shed light on a reality that had concerned emergency managers for years. The real impact was to fire sprinkler systems for on-campus housing at the college and long-care facilities, water cooling systems for hospitals and IT data centers, the school system, daycare facilities, and residents and employees of many facilities. In addition, the food service industry and restaurants were unable to conduct proper sanitation procedures.

FIRE DEPARTMENT RESPONSE

The Chattanooga Fire Department immediately assessed the impact of water loss or water pressure to hydrants. Assistance with water resources started with Tri-State Fire Mutual Aid Association. Mutual aid coordinators responded to the EOC, worked with CFD command staff, set up tanker shuttle

operations in preparation for the loss of water or pressure. Tankers were mobilized by Tri-State Mutual Aid Association and the Tennessee Statewide Mutual Aid system. In total, 24 departments responded with apparatus to Chattanooga's Fire Training Center for staging and response. Tankers needing water were assisted by the Tennessee Valley Authority's Fire and Emergency Response Training Center, which provided additional resources for effective tanker shuttles for such a unique incident. TVA and Chattanooga Fire set up drafting operations along the Tennessee River and deployed a 5,000 GPM drafting system to support the tanker shuttle operations.

A strike team deployment was configured to respond with each alarm for fire suppression in Chattanooga where mutual aid coordinators added one of six tanker strike teams to the response.

This allowed the Hamilton County ECC to maintain normal dispatch operations using predetermined CAD district assignments, adding the supplemental strike team response to the end of the dispatch. Effectively, each fire alarm response was a mutual aid response, but the coordination through the EOC limited the amount of additional work by public safety telecommunications on each call.

HEALTH CARE RESPONSE

With the immediate impact on health care, leaders from EMS, Hamilton County ECC, hospitals and Chattanooga MedComm assembled in the Hamilton County Emergency Operations Center to review primary and contingency plans for continuity of health care and emergency medical services delivery. The potential



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loss of HVAC water from the cooling towers, as well as the potential loss of both potable and mechanical system water flow brought hospital emergency managers and stakeholders from each health care system into the Hamilton County EOC to assist EMA.

Initial assessments reported reduced water pressure at the main campuses of three primary health care system campuses and complete loss of water at a smaller campus north of downtown. The smaller campus, an 18-bed facility with 11 ER beds was able to continue operations following deployment of non-potable water drums and delivery of portable restroom units for staging outside the ER. EMS services were diverted from the ER until these mitigating steps were completed, then resumed normal operations. Facilities with reduced water pressure and no immediate breakdowns developed contingency plans for the potential of complete water loss.

The primary campuses limited EMS intakes to specialty care patients that required specific services, which included stroke, trauma, severe heart attacks, high-risk OB and pediatrics. Smaller EDs outside the risk area were tasked with surging any other patient volumes to offset the downtown campuses.

Local EMS, ED directors, Chattanooga MedComm and Hamilton County ECC used previously developed plans for mass casualty patients to transport patients to the most appropriate facilities, excluding the downtown campuses. Air medical transports from the region, when equal distance to other tertiary care hospitals, were routed away from the downtown campuses. These changes placed additional workload on both the ECC and LIFE FORCE flight communications; however, using already-developed processes for mass casualty management proved successful with very little modification.

Hospitals affected by reduced water pressure established a fire watch to mitigate any potential automatic sprinkler system loss of pressure. Chattanooga Fire Department and East Ridge Fire Department worked with hospitals to provide secondary tanker supplies to replenish evaporation of cooling tower water.

The emergency response coordinator and regional healthcare coordinator from the Chattanooga Hamilton County Health Department worked with hospitals, skilled nursing facilities and long-term care facilities in the city and surrounding areas to provide bottled and non-potable water when needed. Tennessee Emergency Management Agency, Hamilton County Emergency Management Agency and Chattanooga Parks and Recreation personnel assisted in delivery of bottled water to these facilities.

Chattanooga Fire Department and Chattanooga Police Academy cadets moved pallets of water between drop-off and staging locations, facilitated distribution of bottled water to the public at community support locations and assisted operation of the mutual aid staging location.

EMERGENCY COMMUNICATIONS RESPONSE

From the onset of the incident, telecommunicators with the Hamilton County ECC were handling calls related to the water loss. As the incident expanded, ECC leaders worked with the Chattanooga Fire Department to facilitate efficient responses of mutual aid fire companies, establish strike team deployment processes, facilitate additional support resources for each alarm in the district, and maintain coordination and provide liaisons with the Hamilton County EOC. Throughout the incident, members of the Hamilton County ECC Incident Dispatch Unit were deployed to the EOC to support EOC operations. They worked as scribes to document all activities while coordinating efforts between all agencies and on-duty staff at ECC.

Calls for assistance from sick and elderly citizens in need of water increased during the water outage.

As health care services were impacted, ECC personnel worked closely with leaders from Hamilton County Emergency Medical Services, area hospitals and Chattanooga MedComm to facilitate effective use of resources with the modified transport destination protocols.

CONCLUSION

The loss of utility water began early on Friday, September 13, with restoration beginning mid-day September 14 and

spanned three operational periods in the Hamilton County Emergency Operations Center. Due to the potential of contamination, the Chattanooga Hamilton County Health Department issued a boil-water advisory that remained in effect for several days.

Hamilton County ECC regularly provides communications unit leader and incident dispatch support, establishing communications plans and support for the operations of the EOC and serves agencies for planned events and incidents. The response to the water utility loss was not substantially different from past incidents. Well-defined operational processes and multidisciplinary leadership work well together in the EOC. A major challenge in the response to a utility loss without an accompanying larger incident is that other resources are not already in motion. Early recognition that the utility loss would impact so many critical resources and areas of the community was crucial to an effective response. This early recognition and the response process was the result of years of planning and exercising between the ECC and local emergency management, fire services, law enforcement and EMS, along with emergency managers from the University of Tennessee at Chattanooga, the hospitals and long term care facilities from the Southeast Tennessee Regional Healthcare Coalition and industry partners.

These teams work hard to prepare for the next incident or event. During the weekends following this incident, the city of Chattanooga hosted its 13th Ironman Triathlon, the Chattanooga Motorcar Festival and the Head of the Hooch Regatta. The same teams from the ECC and the public safety and health care disciplines would again successfully staff the EOC in support of these events. ●

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CDE EXAM #54571

1. During a utility water loss event, key facility stakeholders are impacted differently; however, of the many issues faced, which is *least* critical?
 - a. Loss of water-cooled air conditioning units in hospitals and IT data centers
 - b. Loss of fire sprinkler systems in dorms
 - c. Potable drinking water for employees
 - d. Loss of water or decreased pressure in hydrants
2. Hospitals and other facilities with on-site housing should initiate this safety measure during a critical water outage:
 - a. Establish a fire watch
 - b. Hand out bottled water
 - c. Set up relief stations
 - d. Evacuate the buildings
3. An important factor in mitigating the impact of a critical infrastructure utility outage is to coordinate with local leaders and establish the response through an emergency operations center.
 - a. True
 - b. False
4. Loss of water to hospital facilities and the need to divert patients to other facilities relied on what existing plans to accomplish the diversion?
 - a. Normal transport plans
 - b. In-field triage plans
 - c. Mass casualty patient distribution plans
 - d. Utility loss plans
5. Staffing drop off and staging locations for distribution of bottled water to the public is best handled by fully trained, certified police or fire personnel.
 - a. True
 - b. False
6. Whenever possible, it is important for 9-1-1 staff to fill their position in an EOC during a critical incident in the role of:
 - a. 9-1-1 (or ECC) liaison
 - b. Incident commander
 - c. PIO
 - d. Operations chief
7. What is a critical piece of fire apparatus when dealing with loss of water to a response district?
 - a. Tanker
 - b. Ladder truck
 - c. Squad
 - d. Brush truck
8. When dealing with a widespread utility water outage, continuity of operations plans for a fire department might include which of the following:
 - a. Stockpiling of bottled water
 - b. Purchase of porta-potty facilities
 - c. Boiling water
 - d. Pre-determined viable locations for drafting water from lakes, ponds or other natural sources
9. Widespread water outages can impact a school district because schools have no means of following proper sanitation procedures for food preparation.
 - a. True
 - b. False
10. Key roles for 9-1-1 personnel in an EOC during a utility emergency are to:
 - a. Tell the fire department how to prioritize their response
 - b. Determine where critical patients should go
 - c. Document activities and help coordinate efforts
 - d. Assume the role of incident command

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