



LIGHTS OUT!

By Sherry L. Baranek, Senior Editor

9-1-1 TECHNOLOGY KICKS INTO HIGH GEAR AS THE NORTHEAST IS BLANKETED IN DARKNESS DURING A RECENT BLACKOUT.

When the power went out on August 14th, portions of the Northeast, Midwest and southern Canada were left in the dark anywhere from a few hours to more than one day—leading to more than eighty thousand 9-1-1 calls in New York City alone. Call centers in each blackout area were inundated with phone calls, yet they still managed to answer questions, direct authorities to the proper places and maintain a sense of calm in a panicky situation.

Still, the power outage caused a number of problems. In some areas, 9-1-1 technology failed along with wireless technology. People had to rely on old-fashioned landlines to communicate as wireless networks were unable to handle the heavy traffic caused by large numbers of people attempting to call out of affected areas simultaneously.

At first it wasn't clear if the power outage was caused by a brownout, terrorist attack or some other phenomenon, but investigators were quickly able to attribute the loss of electricity to the nation's outdated electric grid system—opening up a whole new can of worms on emergency power testing (see **Testing 1, 2, 3 sidebar, page 49**). According to the New York Times, the power system in the Northeast has long been besieged by inadequate transmission capability and bottlenecks—particularly in the New York metropolitan area.

Taking the Calls

No matter the reason for the blackout, 9-1-1 call center operators and dispatchers rose to the occasion. According to Nick Wagner, communications shift supervisor for Cortland County Sheriff's Department (Cortland, NY)—a provider of landline and wireless 9-1-1 for the county—no matter how much an organization tries to ready itself for a disaster it cannot be fully prepared when an actual event occurs. "I watch all of these organizations preparing and drilling and *what-if-ing* and it just doesn't matter," Wagner states. "You cannot prepare for something like this ... or the World Trade Center murders. All you can do is ensure that you have the system that works for you in the best possible condition and clean up your daily messes while learning from each one—when something goes wrong today, fix it and learn from that error. Put the results in your bag of tricks and refer to it often."

Wagner cites a recent example: "We had a 1950s army surplus generator that ran on fifty cycles (rather than sixty) for years," he says. "A couple of years ago, we replaced it with a new one. Everything tested well. Every two weeks it does an automatic self-test, and we have had no problems until the power went out last week. The generator did not start! We had to jump-start it with a patrol car, and guess what picture made the front page. It proved to be a loose battery terminal connection and the system did try—and tried long enough to wear down the batteries. Test and plan all you want, Murphy's Law will prevail! It's the luck of the draw. But those centers that routinely have small problems and overcome them have dedicated, talented personnel that can think on their feet will come out ahead in the long run. It all goes back to the dispatchers and the supervisors—they have to be able to think outside the box, without drills and preplans!"

This philosophy seemed to work well in Michigan. Deborah Marshall, dispatch coordinator for Waterford Police Communications—which dispatches for Waterford Township police, fire and EMS services—says the area lost power for a two- to three-day period. "The majority of calls the first day was typical of any loss of power, citizens calling here to determine the length of the outage," she says. "We used our township cable TV system to alert citizens that their water was safe and boiling was not necessary. We used the alert system and also the public service channel. We also changed the voice attendant for the township and police phones with the same message to save the 9-1-1 operators time answering those questions. These resources made a huge difference once they were in place—as there were still thousands of citizens with power and able to receive the cable TV announcement. This feature will be installed in our dispatch center in the next few weeks, enabling the dispatch employees to initiate the announcement rather than tracking down a general township employee who is at home or unavailable."

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Business as usual prevailed in Ohio as well. Dennis Cole, director of Lucas County Emergency Services in Toledo—which has a countywide E9-1-1 system with six primary PSAPs located throughout the county—was able to provide continuous service during the blackout, which lasted about eight hours. "All of our 9-1-1 primary systems are on uninterruptible power supply (UPS) and backup power systems that provided a seamless power transition," Cole affirms. "Hence, our operation was not affected by the power blackout except as a result of increased call volume for the first couple of hours. We do weekly load testing of our backup power system—exercising the generator for a full hour."

Cell Phone Mayhem

Unfortunately, cellular technology did not fare as well as 9-1-1 technology. High demand caused busy signals for some users, while others were not able to call into—or out of—the disaster area. According to Charles Fleckenstein, a spokesperson for wireless carrier Sprint PCS (Overland Park, KS), this is common during any kind of significant event. "It's standard operating procedure for any carrier to block a certain amount of calls going into the area to keep equipment up and running and to handle the calls going out. I can't speak for other carriers, but Sprint does not block calls going out of the area."

During the blackout, Sprint drove around and put small generators in various cell tower sites in affected areas and charged batteries on the backup generators to keep cell phones working. "There are a lot of mitigating circumstances during a disaster, but we are doing everything we can to ensure that as many calls go through as possible," Fleckenstein states. "That was a very busy time for us."

Sprint also analyzes each incident for lessons learned. "We look at what happened, what the processes were and how we can improve those processes," Fleckenstein comments. "Our Emergency Management Team (EMT)—who meets after a major crisis—looks at how we are going to process calls and

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move equipment around. The EMT frees up budget dollars so that employees working around the clock can have cash on hand to get something to eat, that type of stuff."

Over at Cingular Wireless (Atlanta, GA)—another big wireless carrier—spokesperson Jennifer Bowcock says, "In the event of a network disruption, the network operations team implements an established protocol to diagnose problems and implement resolution and recovery procedures." Cell sites switch automatically to backup power, and technicians are dispatched as necessary. Like Sprint, the company uses backup generators to cell sites.

"During the August 14th outage, Cingular's network was significantly disrupted for a brief time in certain areas—primarily metropolitan New York City and parts of Michigan," Bowcock says. "All service in upstate New York, Connecticut and Ohio was restored by Saturday morning August 16th, and all service in Michigan and metropolitan New York City was restored by August 17th. We had deployed additional generators to power many of the impacted sites in Michigan to hasten the restoration time. Cingular is reviewing its current policies on standby power to determine if there are opportunities for improvement."

LANDLINE Not Yet Dead



Photo courtesy of Textamerica.

According to CNN Money, the Blackout of 2003 proved one thing to many cell phone users: the death of the traditional landline may be greatly exaggerated.

Many wireless customers in the New York metropolitan area, parts of the Midwest and Canada were unable to use their cell phones during the blackout, but landlines, including pay phones, worked just fine for the most part. So what went wrong?

Surge in Volume

In most cases, the biggest problem was a huge surge in volume that flooded the wireless spectrum, leading to many busy signals.

"Spectrum is a scarce resource and wireless companies build out their networks based on average expected usage levels," said Greg Gorbatenko, an analyst with Loop Capital Markets, an independent research firm focusing on telecom and cable. "A spike in demand can blow up the network and most cannot handle an emergency."

Dependency on External Power

Dan Wilinsky, a spokesman for Sprint said that although wireless carriers have ample power backup to protect their switches, that is not the case for all of the cell sites, which house the antennas that transmit the calls across a network.

Cingular said that the day after the blackout about 25 percent of its cell sites in Cleveland and New York City were still not operational and that more than 75 percent were out of commission in Detroit due to power outages.

"Wireless is too dependent on the external power supply. And since wireless phones are becoming the main phone line for many people, the industry has to make sure that customers have the same kind of reliability as with landlines," said Jeff Kagan, an independent telecom analyst.

—www.money.cnn.com

As always, the 9-1-1 industry continues to learn as it successfully deals with the unexpected twists and turns that come with any crisis situation. Communications and technology—constantly improving—allow call center operators to keep cool heads in a crisis and guide callers through frightening and unsure times.

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Testing 1, 2, 3

The recent blackout has brought to light a number of issues, including emergency power testing. How often should a call center test its emergency generators, automatic transfer switches, etc. and for what duration of time?

Section 8.3 in the NFPA 1221 Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems states:

8-3.1

Manual test of wired dispatch circuits shall be made and recorded at least once every twenty-four hours.

8-3.4

Manual tests of the power supply for wired dispatch circuits shall be made and recorded at least once every twenty-four hours.

8-4.1

Emergency and standby power systems shall be tested in accordance with NFPA 110, Standard for Emergency and Standby Power Systems.
—www.nfpa.org



Photo courtesy of Textamerica.