

Outage Management Systems Bring High-Tech Sophistication to Service Restoration

By William Atkinson
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Technological advances over the last decade have elevated the status of outage management systems from “nice to have” to “must have” for most utilities.

Customer expectations for high reliability and rapid restoration of power when outages occur have led to more widespread adoption of “OMS” among utilities, said Phil Carroll, vice president of the Power Group of Finley Engineering in Lamar, Mo. The rising cost of labor is another driver behind the industry’s greater adoption of outage management systems. Reducing callouts and callout times translates into lower operating costs, Carroll said. As OMS technology has improved, the cost of entry for the technology has fallen, he said.

But introducing OMS is not without its challenges; it typically entails changing staff procedures for addressing an outage. “You need to get the operations folks to trust the technology, instead of doing it the same way they have done it for the last 100 years,” Carroll said.

The most effective outage management systems are integrated with the utility’s software for the call center, interactive voice response, customer information system and distribution management systems, such as SCADA (supervisory control and data acquisition), he said.

When Omaha Public Power District installed an OMS in 1999, the Nebraska utility wanted something that would model its transmission and distribution system effectively and that would accept and respond to high volumes of phone calls.

“We designed the system for 40,000 calls per hour,” said Blaine Dinwiddie, manager of OPPD’s T&D Operations Division. The utility serves 350,000 retail customers. OPPD’s implementation of outage management was bundled with introduction of advanced interactive voice response capabilities in its call center. “We needed something that could handle a high volume of calls, process those calls and effectively identify the likely fault locations or isolation device, whether that would be a fuse, breaker, switch or other device,” he said.

The ability to keep customers informed about progress on outage repairs is a vital feature of OPPD’s OMS. Customer satisfaction increases dramatically when the utility relies on the OMS to process and communicate outage information to customers. Key account representatives get electronic alerts from the OMS each time there is a status change. The account executive can get in touch with large customers to share information, Dinwiddie said. Residential and smaller commercial customers can get information from the interactive voice response system with updates on when an outage occurred, what caused it, the estimated time for making repairs, whether crews have been dispatched and the boundaries of the outage.

The technology was relatively easy to implement, but changing employee habits proved more challenging, Dinwiddie said. OPPD crews once managed each day’s work with a stack of papers, detailing various jobs that needed attention.

“Now, they don’t get any paper,” he said. Calls are dispatched either to a mobile workforce device or over the radio. Crews complete a job and then call in for their next assignment. It took crews some time to adjust to the changed routine, he said. During storm events in the past, the utility would send

a crew out and tell them to work within a certain geographic boundary and fix everything in that area before leaving.

“This meant crews might end up working on downed services when we might still have primary circuits locked out,” Dinwiddie said. With the OMS, crews may work one location to restore a downed circuit, then move to another downed circuit, despite continued individual service outages at the first location. Customers would ask crews why they were leaving when power was not back on their homes. Today, crews understand the big picture and can explain why they need to fix bigger problems first.

The ability to integrate outage management software with its geographic information system was a primary goal for Nebraska Public Power District when it implemented OMS in 2003. Utility engineers use the GIS system to design work, said David Dubowsky, asset master data supervisor for the utility, which serves 90,000 retail customers.

NPPD rolled out its outage management system incrementally and, like OPPD, confronted the need for change management in the process. The system makes it easier to get crews to trouble locations faster, allows dispatchers to track crews and facilitates feedback for customers. It also supports a real-time online map so customers can see where outages are.

Another benefit is asset management. “We can take our outage history data and analyze it to see what kind of reliability problem we are having and where we should be spending our money,” said Dubowsky.

Clinton Utilities Board in Tennessee also uses its OMS for planning system improvements. Historical data about outages allow the utility to identify areas with repetitive outages and make improvements to stressed areas of the distribution system, said Todd Loggins, technical operations supervisor. Clinton’s OMS system interfaces with the utility’s SCADA, GIS, interactive voice response system and advanced metering infrastructure. The extensive integration allows the utility to pinpoint outage locations and make repairs quickly.

The Clinton system is easy to use, Loggins said. “Anyone who can operate a PC can operate the system,” he said.

An outage management system rolled out in 2004 for Ocala Utility Services dramatically transformed the way the utility dealt with outages. When an outage occurred, staff members would have to dial in a number, listen to a customer’s voice message, write it out, print it out on a ticket and rip the ticket off a perforated roll, said Chad Lynch, information systems analyst for the 48,000-customer Florida utility.

“During large outages, this was quite tedious,” he said. “We had to organize the tickets by substation, by feeder, then by line segment. During an afternoon thunderstorm, there were a lot of people in the room sorting tickets. This also meant customers were without power longer.” The outage management system enabled Ocala to streamline the work order process, reduce outage durations and improve reliability, he said.

After nearly 10 years, Lynch cannot imagine operating with OMS. “If and when you implement OMS, and then think back to the days before you had it, you will kick yourself for not having it sooner,” he said.