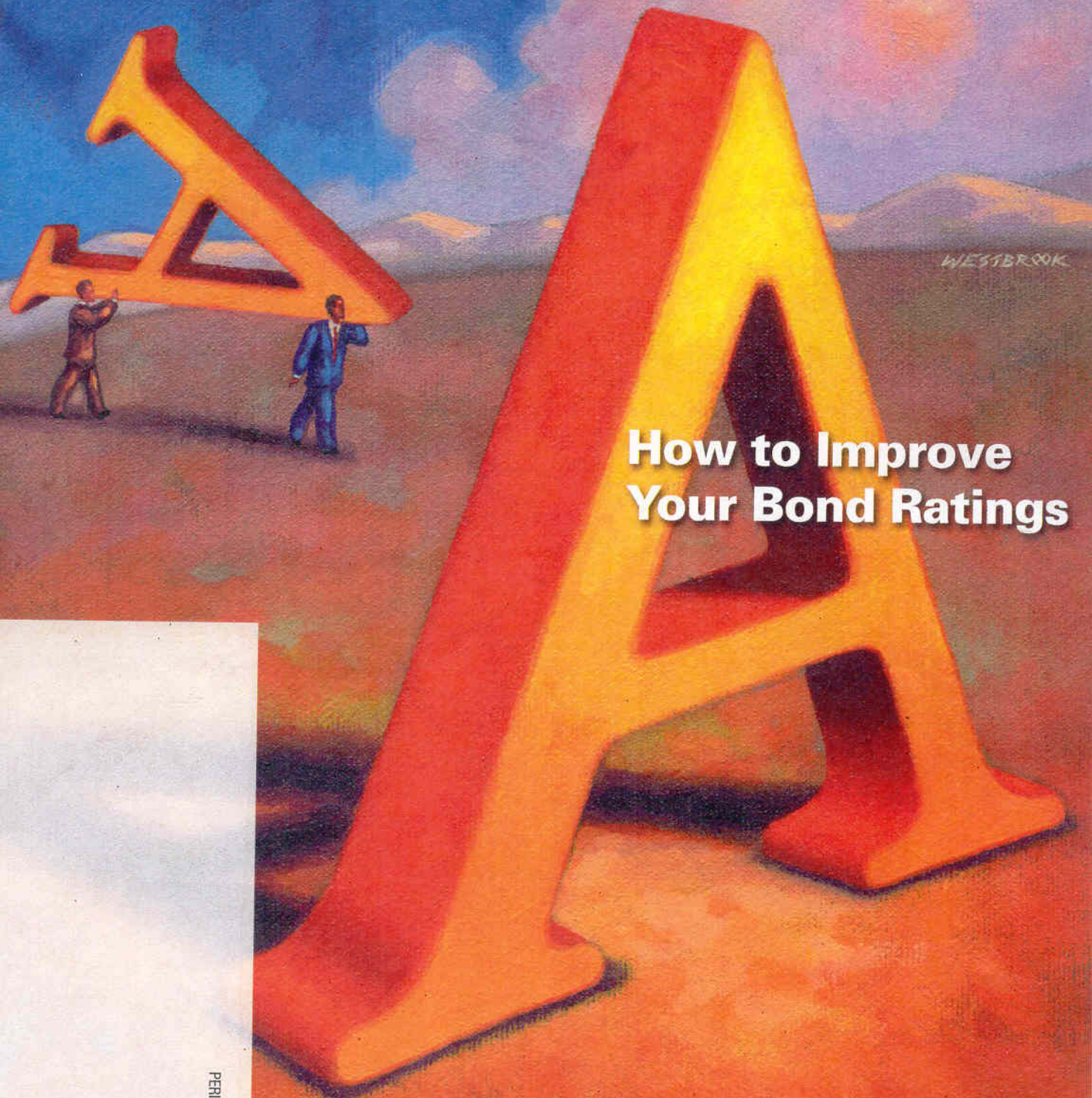


# Public POWER

November-December 2009  
Volume 67, Number 8



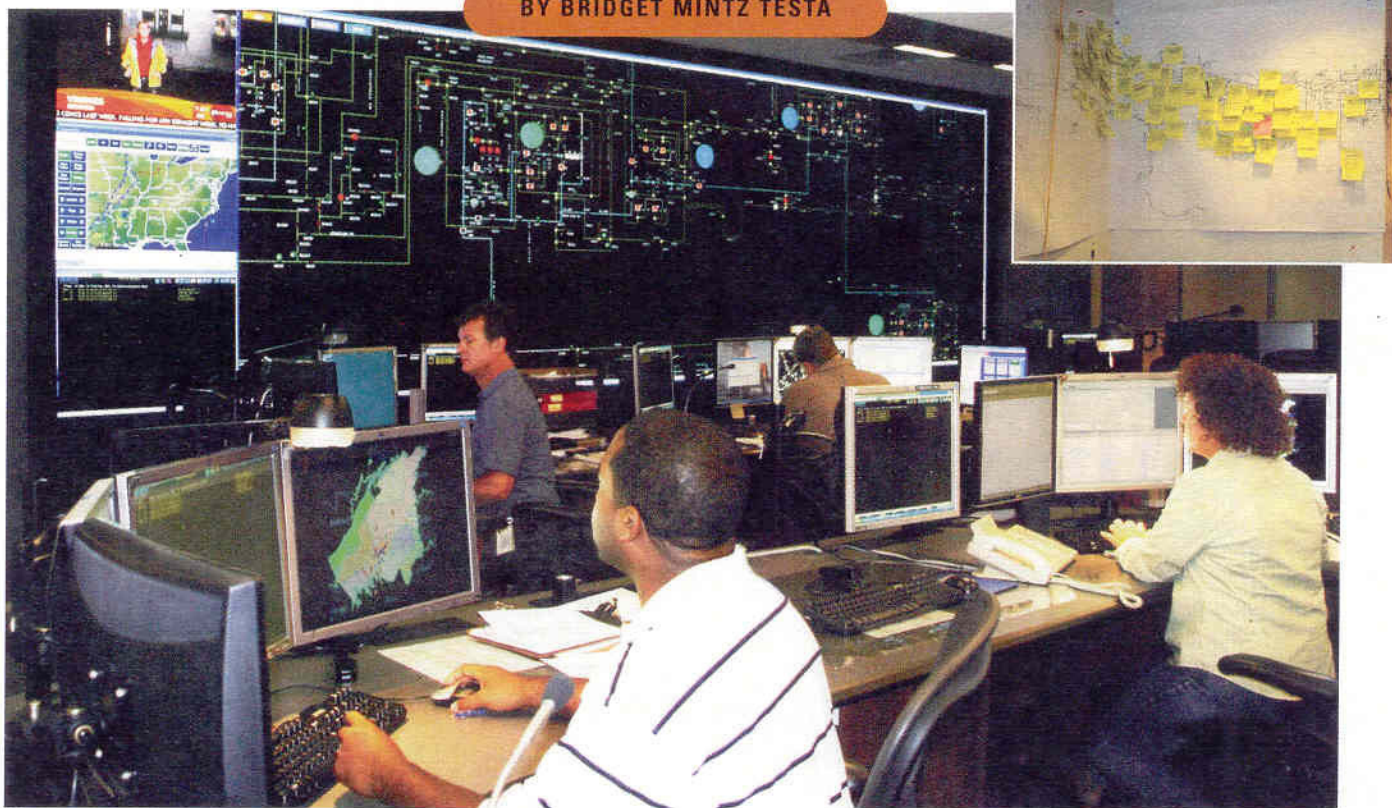
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# No More Stickies

With computerized outage management systems integrated with customer information systems, utilities reduce the time it takes to repair damage after storms.

BY BRIDGET MINTZ TESTA



Above right, before installing outage management systems, utility crews tracked problems with notes tacked onto a system map. Computerized tracking systems integrated with utility maps make recovery efforts faster and more precise. Stickies on the wall photo, courtesy Clallam Public Utility District. Above, Knoxville Utilities Board uses an outage management system that integrates with its geographic information system, giving control room personnel one dispatch view and tool. Pictured, clockwise from lower left, are John Phelps, Gene Bailey, Mike Vandergriff and Michelle Reimert. Photo by Coy Bays, KUB.

**D**espite the excitement of being first, adopting technology late is often the smarter move. Although outage management systems entered the utility scene at least 20 years ago, many municipal utilities are just now starting to take advantage of them. That's smart, since the newest, latest tools have much greater capabilities than those first systems.

Modern OM systems can be integrated with other utility software, providing far more detailed information, predictions and analysis in determining the causes of outages. They let everyone involved in an outage have exactly the same view of what's going on, and they enable tactical and strategic planning in ways that couldn't be imagined previously.

Of course, all of this comes with a cost.

System costs are typically straightforward, but there are plenty of hidden expenses in terms of months of work and the difficulty and complexity of all that integration. A year to implement and test is very normal. Nevertheless, benefits seem to far outweigh the difficulties, as this snapshot of the experience of four public power utilities shows.

When Doug Nass came to Clallam Public Utility District in Washington state in November 2006 and became general manager, he was not expecting to face three major storms in the next two and a half months. Nass, who headed the municipal utility in Denison, Iowa, before moving to Washington, was unaccustomed to multiple storms in a single season, (despite the Midwest's notorious tornadoes). Neither was John Purvis,

who came from Memphis in June 2007 to be a district manager with the utility.

Clallam PUD, which is both a distribution and a transmission utility, serves a territory that covers 2,000 square miles from the Pacific Ocean on the west nearly to Puget Sound on the east and from the Straits of San Juan De Fuca on the north to the Olympic National Park on the south. It's mountainous, rural and covered with trees.

"We started with loads of tall, tall trees," Nass said. "They like rain, they like to grow, and they like to get on top of lines. From October to January, we get high winds, snowstorms and wet ground, which means trees falling on lines. Because of the territory and the winter weather, we get lots of outages."

During those first storms, "We had a map on the wall, and people calling in, and we used pins and Post-It Notes to show outages," Nass said. "We had a wall of Post-It Notes." Immediately after those storms were over, Nass started looking into an OMS. When Purvis came, he joined the effort.

"Our biggest project challenge was getting a schematically and geographically correct mapping system," Purvis said. "We chose the ESRI mapping system. It's data-driven, not just an image."

For outage management, the distribution system had to be mapped into the ESRI GIS, too. Part of this enormous mapping task was erroneous customer information—the customer information system did not correctly map what had been in the utility's previous AutoCAD-based mapping system. "When we started out, we showed 21,000 customers in the system, but we really had 30,000," Purvis said. The billing system showed 30,000 customers, "but it had the locations wrong," Purvis said. "It showed no connection or the wrong transformer or the wrong phase. We had to correct a lot of customer information and maps."

Clallam PUD installed the ESRI GIS and the Responder OMS by Telvent Miner and Miner in the fall of 2007, and the systems went "live" about six months later. An interactive voice response system was simultaneously implemented.

The new suite of tools lets Clallam PUD know when lines are getting overloaded, when trees grow over lines, when a particular device repeatedly causes problems, where there's an outage, what caused it, how many people have lost power, and much more. "It lets us track assets, crews, who's closest to a new outage, who has the equipment for certain tasks," Purvis said. "In the past, we had to call everyone to find this out."

Purvis estimated that return on investment is easily more than 20 percent at this stage, with the SCADA system still to be integrated, and the transmission side of the electrical system yet to be included. "General productivity enhancement is more than 10 percent, and outage notification and expense has decreased by as much as eight

times in some cases with greatly increased accuracy," he said.

"Only an automated meter information system would work better," Nass said, "but that's five or six years from now."

The Knoxville Utility Board in Tennessee covers 750 square miles across eight counties and serves more than 200,000 customers. In 2003, the utility replaced its text-based mainframe-based OMS and customer information system with Intergraph InService. Among other reasons for its selection, InService worked with KUB's existing GIS, which has 20 years of mapping information in it.

"InService let us have one dispatch view and tool for all the utilities," said Barry Jones, a business management analyst in charge of KUB's Information Services Division. "All the connectivity is published in the GIS and carries directly over to the OMS. The integration is semi-automatic. We publish the data once a month to the OMS." KUB plans to adopt ESRI's GIS, which has rules-based maps and will let KUB publish the maps once a

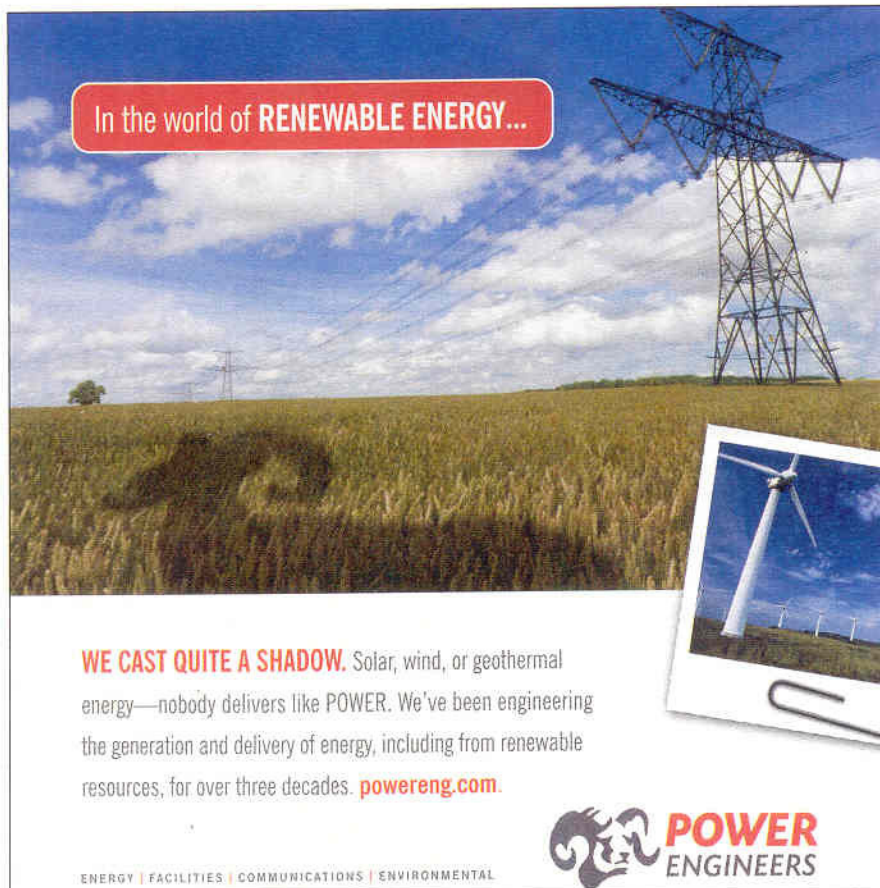
week to the OMS.

As with Clallam PUD, integrating the OMS and the customer integration system was one of the biggest challenges. "We had to perform lots of validation regarding people's meters and billing," Jones says. "There were layers and layers of validation."

The level of testing required to implement the new systems was unexpected. "If we'd doubled our estimate, it would have been better," said Larry Boggs, a KUB business management analyst with operations and dispatch. "It took about a year to be comfortable with the numbers."

"We were new at putting in large enterprise systems and didn't understand the amount of planning, testing and training," Jones said, "so some of that wound up getting done when the system was operating."

The system is used for maintenance scheduling and outage resource planning. "We look at predicted restoration time to plan resources, such as the need to call more people in," Boggs said. "We use it for maintenance like tree-trimming, failures of



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## No More Stickies

assets and repair and replacement. We gather all this data so it can be used for decision-making. We don't model line loads yet, but when we upgrade, we'll do that."

Fayetteville Public Utilities in Tennessee consolidated its electrical, gas, water and wastewater utility operations into one organization in 2002. Afterwards, CEO Britt Dye also wanted to consolidate outage information to achieve better customer service. "I wanted to get all the utilities on the same technology page to respond with a better view of what's going on," he said. "The problems now are with response time and knowing all of the affected areas."

FPU's OMS was expected to go live by mid- or late October this year. "Customer service representatives can look at the affected area because the OMS will be integrated with the billing system, the GIS, the automatic vehicle location system and the field foremen's laptops," Dye said.

He expects to integrate FPU's SCADA system with the OMS sometime in 2010. This and other integration will take time, and even when everything is integrated,

connections won't all be automatic.

"If we have a substation trip out, we can see it on the SCADA map, and we can go to the map manually to see the number of customers affected," Dye said. "The OMS and the billing system will be integrated, and we'll be able to see distribution information in the OMS, but not automatically."

Dye expects the new OMS to provide many benefits. "We hope to get a lot out of it in terms of keeping up with maintenance for water, wastewater and electric," he said. "We can take photos and video and incorporate them into the map. We can get a good look at the physical situation, so we don't have to guess what it looks like."

In Florida, an OMS was installed for the city of Lake Worth's Utilities in 2004, but due to the limited integration ability of the system Rebecca Matthey decided to replace it almost as soon as she became utilities director in 2008. "We're replacing the whole OMS and SCADA," she said. "We need to get an OMS with 'multi-speak' capabilities that will communicate with all of our systems, specifically the customer information

system, the GIS and a future automobile vehicle locator system."

The water/sewer SCADA system was evaluated and is meeting current needs. Therefore, Matthey is proceeding with tools for only the electric side. Requests for proposals should be released by late November or early December. "We have about \$100,000 for SCADA and about \$310,000 for the rest," she said. "I hope that by the next hurricane season, we'll have it installed and working."

She hopes the new tools will speed up response time during outages. "I have 5,000 calls coming into my call center," she said. "Normally the operators wouldn't know where a circuit is damaged. Right now, linemen are out scouting for downed lines when the calls come in. They have to go out and find the location of the problem. When the system can identify where the calls are, then an operator can likely identify the location of the problem. The OMS will improve response time." ■

Bridget Mintz Testa is a writer in Houston.



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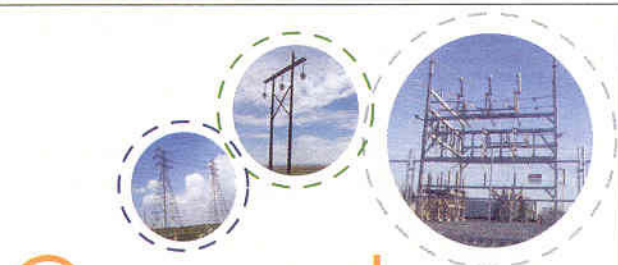
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