



Utilities Find New Ways to Cope

December 22, 2008

From winter's ice and heavy snow to summer's tropical storms and hurricanes, extreme weather has been offering North America's electric utilities repeated lessons in emergency preparedness. Further, it has raised questions in state after state about whether utility companies are adequately prepared to respond to the storm-related outages, and what additional measures need to be taken in the future to improve reliability.

Disaster preparedness breaks down into two distinct camps. One side favors a "hardening" approach that clears vegetation near wires and replaces wood poles with concrete, steel or composite structures, or by burying the entire system below ground. The other side looks to developing intelligent grid technology to better focus the efforts of its on-the-ground restoration crews, thereby decreasing electricity outage time to a larger volume of its customers. Both camps cite cost versus benefits, as their customers ultimately bear the brunt of these costs.

After Hurricane Wilma in 2005, Florida regulators moved quickly to impose new standards, which took effect in 2006, requiring tree trimming on a three-year cycle and facility inspections every six to eight years. In the wake of Hurricane Rita in the same year, the Public Utility Commission of Texas began looking at similar measures, but industry there argued for a cost-benefit analysis before making wholesale changes.

The Texas PUC agreed and went back to the drawing board at the end of August. Less than a week later, Hurricane Gustav hit the Gulf Coast, with Hurricane Ike barreling into Texas just 12 days later. And that was only the beginning: Once inland, Ike mixed with a cold front, knocking out power in Pennsylvania, Ohio and parts of New York State.

Cleco Power, which serves 265,000 customers in Louisiana, was hit by both of September's hurricanes. The utility was three days short of completing its Gustav cleanup and restoration efforts when Ike hit land. "The biggest thing is planning and preparing," says James Lass, Cleco's general manager of emergency management.

Lass says Cleco, like other utilities in extreme weather areas, constantly updates its storm preparedness plan, adapting it using the experience it gleans from one storm to better prepare for the next. After Hurricanes Katrina and Rita, the company brought in a consultant to try to fix the bumps and build more teams to solve the storm-related issues the company faces each storm season. Today, the company's storm-response organizational chart targets specific teams within Cleco, clearly defining each team's responsibilities. "These responsibilities are sharpened and honed after every storm."

"We're designing to a higher standard with new construction. Where we used to build with wood, we're now building with steel," says Steve Gauthier, manager of transmission design and construction, noting such a transition adds greatly to the overall cost. Cleco is also affecting other

upgrades designed to make its lines and conductor assemblies more flexible against breakage by falling trees.

Exceeding Expectations

Any disaster requires a three-pronged approach, the company adds. The first is to restore service quickly and safely. The second is to lessen restoration costs and the third to minimize the expenses passed on to customers.

"We're trying to find the right balance between cost and benefits," Cleco's Gauthier says. "In the past six years, we've had five major storms." Transmission repair costs have been only \$25 million. This cost, he says, is comparable to only 15 or 20 miles of burying lines. "There is no way our customers can afford it." And Hurricane Katrina's legacy leaves other questions about the advisability of burying lines. "You can leave them overhead where they are going to blow down, or bury them where they'll flood."

In Texas, CenterPoint Energy says that although it routinely buries lines in new developments, the physical and emotional costs to customers of retrofitting, or burying existing lines in existing neighborhoods, is too high. "We're okay with undergrounding, but it's an expense that's going to be borne by the customers," says Floyd LeBlanc, CenterPoint's vice president of communications. Instead, the company, which serves almost 5 million metered customers in Arkansas, Louisiana, Minnesota, Mississippi, Oklahoma and Texas, is moving forward with its plans to build a "smart grid."

Currently, CenterPoint already builds its electrical infrastructure to meet or exceed National Electric Safety Code standards and has placed its substations at or above 100-year flood plains. After Ike, 100 percent of the company's concrete and steel transmission structures were still standing. Further, 99.2 percent of CenterPoint's wooden poles in backyards remained standing. Nevertheless, 2.15 million of its customers were affected by the hurricane.

In Houston, CenterPoint has been focused since 2005 on testing and deployment of intelligent grid technology that will automate a large portion of the emergency response work now undertaken by its mobile workforce. Instead, using sensors on switches to gather information, the new technology can allow the system to automatically identify damage to the lines, isolate it and even identify what type of damage has occurred -- vegetation on lines or uprooted poles, for example -- and route the appropriate mobile workforce directly to the source of the damage.

In the meantime, this technology also enables the grid to automatically reroute power around the affected lines and self-heal. "It will reroute power around the damaged area in seconds, with an understanding of what kind of damage we're dealing with. This makes power restoration in routine events much faster," LeBlanc says.

State regulators are now assessing how well their domestic utilities performed with respect to the Hurricanes that lashed out this past summer. The power companies are not only doing the necessary leg work to get customers back on line. Many are also updating their grid technologies.