

# SURVIVING HURRICANE IRMA

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Lakeland at night

Located in the humid, subtropical heart of Florida, Lakeland Electric's transmission and distribution network regularly faces storm conditions ranging from typical thunderstorms to the most powerful tropical storms in the world. When inclement weather strikes their service territory, Lakeland must work quickly and safely to re-route or restore power to customers in very difficult situations.

In 2017, Hurricane Irma – a Category 5 Atlantic hurricane with winds as high as 160 mph—reached the state. The impact was staggering. When it struck, it downed or

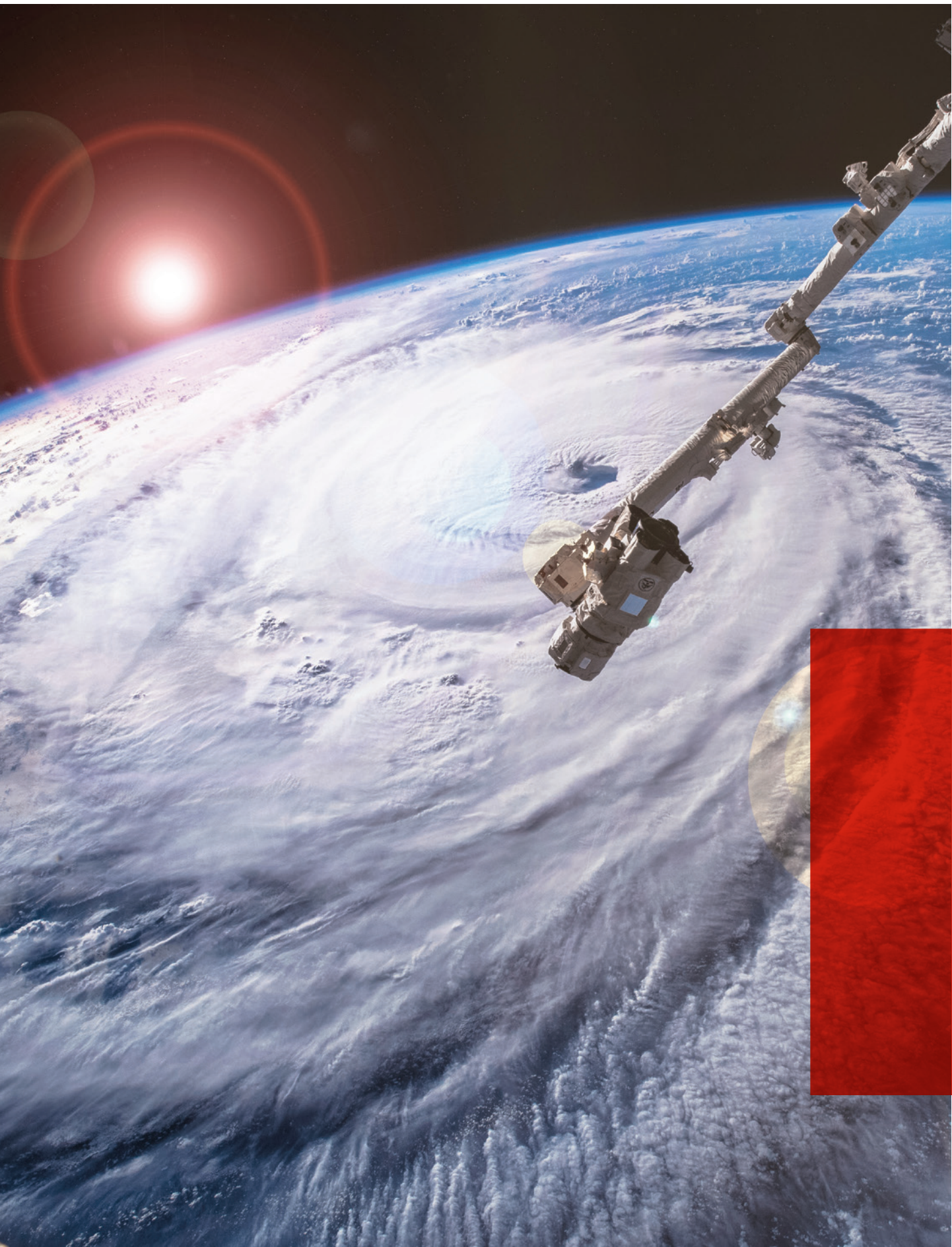
interrupted a majority of the powerlines in Lakeland's network with fallen trees and airborne debris. At the height of the storm, 90,000 customers lost power – close to 75 percent of Lakeland's customer base.

Florida residents rely on numerous critical systems to survive, from air conditioning to life-support machines. Lakeland recognized the urgency of this widespread outage: Lives hung in the balance. Fortunately for everyone in their service territory, only five-days before the arrival of Hurricane Irma, the utility went live with a real-time operating system in their control room designed to manage electric distribution outages exactly like this one.

## Outage Management System

An outage management system (OMS) becomes integral to a utility's electric service when storms or disasters that cause significant outages occur in their service territory. →

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Lakeland's OMS — supplied by a Minneapolis-based provider of open solutions — allowed Lakeland's operators critical access to the accurate, real-time status of their network, enabling them to efficiently manage outages and systematically restore power quickly and safely. With four operators and two field crew dispatchers working around the clock, Lakeland was able to restore power to about 60,000 customers within 48 hours and the remaining 30,000 customers within 12 days of Hurricane Irma.

Lakeland's OMS was implemented to better manage all areas of Lakeland's outage response times while keeping customers, management and regulators well informed about the scope, status and forecast of restoration efforts. The system utilizes a powerful outage analysis engine and Big Data database technology for processing thousands of inputs per minute, producing real-time, actionable information about the number, location and extent of power outages within the distribution system.

"The OMS provides our operators with a highly configurable and intuitive user interface to see what is most important at any given time, especially during a severe storm," said Scott Bishop, manager of system operations at Lakeland Electric. "Operators are able to quickly identify the highest-priority outage work and the nearest qualified response crew, then assign work with a click of a button."

Some of the key benefits of the OMS software used while responding to Hurricane Irma included:

- Timely and accurate awareness of customers without power including prioritization of VIP customers (e.g., medical) via AMI, SCADA and other data
- Fast processing of outage calls, network electrical data and job management via Big Data database technology
- Geographic network model mapping of outages with visualization (e.g., highlighting, etc.)
- Damage assessment information and hazards visible on network model map and attached to corresponding outage jobs
- Ability to efficiently locate and isolate faults
- Ability to assign available field crews to jobs with accurate information
- Ability to document damage notes and hazards on the outage job as it is being worked
- Integrated electronic switch orders with outage job steps
- Communication of timely and reliable information to internal and external stakeholders via text messaging, online outage maps and read-only OMS web access



An OMS dashboard like that in use by Lakeland Electric





### Risk versus reward

Just days before Hurricane Irma, Lakeland had a difficult decision to make: go live with a new OMS or keep the existing business processes and systems in place. The storm was rapidly approaching, forcing them to weigh the benefits versus the risks of going live. Potential risks of implementing the new system included:

- Operator learning curve – would they be prepared with the provided training?
- System reliability – would there be any system issues during cutover?
- System performance – would there be any performance issues given the inevitable flood of calls and outages resulting from such a major storm event?

After a brief deliberation, they agreed: The benefits of going live with the OMS far outweighed the risks. Extensive system testing, operator training, and business process training had occurred during the project implementation period, providing confidence that the system would be reliable and perform to the designed specifications. Lakeland was ready for the OMS to go live and needed the system's capabilities to manage the upcoming hurricane.

### Conclusion

Lakeland's implementation of the advanced OMS proved to be an invaluable and immediately useful investment during Hurricane Irma, just days after go-live. Lakeland and the vendor worked collaboratively to ensure not only a smooth product go-live, but that the system performed as expected during the storm. That OMS continues to provide Lakeland's operators with an easy-to-use, single operational system in which to efficiently manage all aspects of energy delivery, enabling them to better serve their customers while ensuring their network will recover quickly from any future outages.



**ABOUT THE AUTHORS:**

**Hormoz Kazemzadeh** is a senior member of OSI's technical leadership team and has more than 25 years of experience in the utility industry. As the vice president of OSI's Distribution and Smart Grid Business Unit, Kazemzadeh oversees the overall direction of the company's distribution- and smart grid-related products and services, as well as the implementation of distribution and smart grid projects. He holds a Bachelor of Science in electrical engineering from Youngstown State University and a Master of Science in electrical engineering from Ohio State University.



Responsible for Lakeland's system control, reliability committee and crews, energy management and smart grid, **Scott Bishop** has 20+ years of operations, protection and control, and technology experience. Before joining Lakeland Electric, he held various positions at Georgia Power and Advanced Control Systems. Bishop has an associate degree in mechanical design, a bachelor's degree in technology management from Clayton University, and an MBA from Columbus State University in Georgia. In 1904, Lakeland Electric (lakelandelectric.com) was established as one of the first utilities to provide power in the Sunshine State. Today, Lakeland Electric is a fully integrated utility, generating more than 1,100 MWs of power, managing high-voltage transmission and low-voltage distribution over a span of 246 square miles, making it Florida's third-largest municipal utility and the 25th largest in the USA. With some of the most economically priced electricity in the state, Lakeland Electric is committed to providing safe, reliable, and competitive solutions to more than 120,000 customers. Through consistent and reliable investments in employees and technology, Lakeland Electric provides services that aim to meet busy consumer demands as well as encourage greater environmental consciousness, ultimately helping to enrich customers' quality of life.



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