

GRID MODERNIZATION

Are your company's reliability indices being negatively affected by an outdated distribution system? Are you prepared for Solar, Battery Storage, and other distributed energy resources being installed on your grid? Ulteig's team of Grid Modernization experts offers an array of innovative solutions to fit your utility's unique needs.

GRID MODERNIZATION TECHNICAL EXPERTS

**JOSEPH FOX**

Market Director - Power
720.873.5873
joseph.fox@ulteig.com

**JEFF HEINEMANN**

Technical Director - Substation
701.280.8641
jeff.heinemann@ulteig.com

**JOSH GUCK**

Engineer
218.846.7778
josh.guck@ulteig.com

**JOHN BARKSDALE**

Engineer
651.415.6626
john.barksdale@ulteig.com

With today's society more dependent on uninterrupted electricity than ever before, it is crucial that electrical distribution systems are prepared to keep up with that demand.

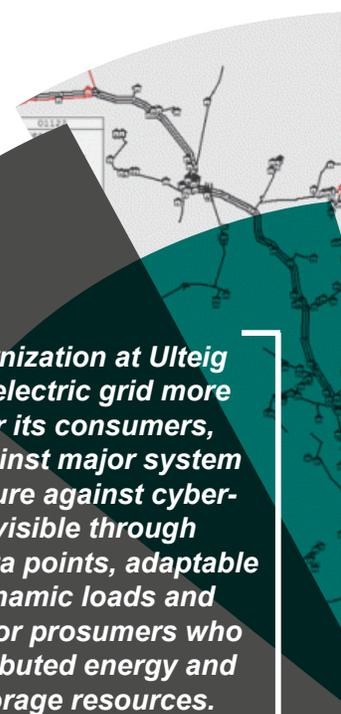
We understand that every utility defines grid modernization differently and is at a different phase in their strategy. However, most utilities have one thing in common when developing and implementing their grid modernization strategy; improve overall system reliability. There is not a single solution set that fits every utility or even every feeder within a single utility. When implementing a strategy to address system reliability concerns it is important to evaluate the uniqueness of individual feeders based on the following criteria:

- Historical Reliability Indices
- Feeder Type
 - *Overhead*
 - *Underground*
 - *Hybrid*
- Customer Profile
 - *Primarily Residential*
 - *Primarily Commercial*
 - *Mixed Residential and Commercial*
 - *Primarily Industrial*
- Location
 - *Urban*
 - *Rural*

- Loading
 - *Current Peaks*
 - *Future Growth*

Ulteig will use this information along with an electric system model to develop a unique solution set to address your reliability concerns. These solutions are typically comprised of one or more of the following principles:

- **Resiliency**
- **Visibility**
- **Adaptability**
- **Systems Integration**



Grid Modernization at Ulteig makes the electric grid more reliable for its consumers, resilient against major system events, secure against cyber-attacks, visible through increased data points, adaptable to new dynamic loads and accessible for prosumers who install distributed energy and energy storage resources.

RESILIENCY

The ability to minimize customer interruptions and bounce back after the ever-increasing occurrences of weather-related events is crucial to improving reliability numbers and keeping customers satisfied with their service. Identifying key system components that can be upgraded, developing asset maintenance strategies, implementing a vegetation management program, and utilizing the latest emerging technology can all play a key role in ensuring optimal reliability of the electric distribution system. Having switches open and close as designed when restoration crews are attempting to isolate a fault can save valuable time during an outage situation. Using emerging technology to design a system that can automatically locate a fault, isolate the fault through device operation and restore service (FLISR) to the unaffected customers in a matter of seconds can drastically improve reliability metrics.

VISIBILITY

Knowing feeder information downstream of the substation is crucial when attempting to identify, locate, and restore a fault. With solutions like Advanced Metering Infrastructure (AMI), intelligent line sensors, Faulted Circuit Indicators (FCI), and intelligent digital relays outage response teams can quickly be made aware of a fault and its location. Implementing these types of solutions can eliminate the need to patrol an entire feeder, a task that can take hours, therefore saving valuable Customer Minutes of Interruption (CMI). Having the knowledge of load on a segment of line is also critical when attempting to make restoration efforts through switching. This can prevent additional outages caused by overloading another feeder.

ADAPTABILITY

Having a system prepared for the implementation of emerging technology and Distributed Energy Resources (DERs) can also play a key role in improving reliability. It is important to have an accurate Geographic Information System (GIS) and electric system model in place to ensure that adequate system analyses can be performed when evaluating the implementation of new facilities. It is also valuable to have adequate communications infrastructure in place to ensure that data being collected in the field can be brought back to the SCADA system as it is being deployed. Ulteig can help build your GIS, construct an electric system model, perform system studies, and design communication infrastructure to meet your grid modernization needs.

SYSTEMS INTEGRATION

With the implementation of emerging technology whether it be Distributed Energy Resource Management Systems (DERMS), Line Sensors, AMI, remote operable switches and recloser or other smart technology it is imperative these devices communicate to a central system to be able to utilize them to their full capacity. One platform for this is an Advanced Distribution Management System (ADMS). Our team will help integrate your devices to an ADMS to optimize your distribution system.

ABOUT ULTEIG



We listen. We solve.®

Ulteig delivers comprehensive design engineering, program management and technical and field services that strengthen infrastructure vital to everyday life. Ulteig's footprint spans the nation and provides its expertise in multiple Lifeline Sectors®, including power (both electric utilities and renewables), transportation and water to a wide range of public and private clients. To learn more about Ulteig and how we can enhance the quality and efficiency of your next project, **call us at 888.858.3441 or visit www.ulteig.com**.

