

GEOGRAPHIC INFORMATION SYSTEM (GIS) BEST PRACTICES

A GUIDE ON GIS FOR ELECTRIFICATION

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FACT SHEET FOR UTILITIES

The GIS Best Practices report can help utilities and regulators to identify value propositions for GIS applications, recognize deployment challenges and trade-offs, learn from best practices, and develop a roadmap for GIS investments.

Why is GIS so vital?

GIS is integral to many utility business functions. GIS is a database-driven digital map of utility assets. The mapping capabilities and asset information data are used by many different utility departments to perform basic functions, like maintenance and asset tracking, or to provide locational or connectivity information. In addition, the GIS database is used by many other software systems across the utility business, including in operations (e.g., Advanced Distribution Management System, etc.), planning (powerflow studies), and work order management.

What are the benefits of GIS?

The specific benefits of investing in GIS depend on the starting point of the utility and the level of investment. Regardless, investing in a modern, enterprise-wide GIS implementation can provide the following:

Efficiency: GIS will be used by many different teams as a quick and reliable portal to the most up-to-date, authoritative information.

Functionality: Many advanced software capabilities, such as DERMS and ADMS, cannot realistically be implemented without a GIS backbone to provide detailed, reliable, and up-to-date information about assets.

This fact sheet was developed from the report Geographic Information System (GIS) Best Practices: A Guide on GIS for Electrification, which was developed as part of a CHARGED working group and released in January 2026.

Safety and reliability: GIS supports a host of relevant functions for safety and reliability including compliance, inspections, maintenance, vegetation management, and management of the system during emergencies such as extreme weather events.

How do you implement GIS well?

A successful GIS implementation relies on four main factors:

- ▶ **Strong IT infrastructure** – Utilities need to ensure they have the computing capabilities and devices (desktop computers, mobile devices, etc.), as well as the software, to run their GIS efficiently and with necessary system redundancy.
- ▶ **Good system data** – Getting accurate location, description, and connectivity data is critical for GIS to operate.
- ▶ **A dedicated team of GIS experts** – GIS is a highly technical field that requires subject matter experts to run effectively. A deep bench, or at least some cross-training among team members, is necessary to be prepared for contingencies.
- ▶ **A culture of error correction and continuous improvement** – Systems can be improved if all utility employees are trained and encouraged to report errors — addressing these errors in a timely manner increases employee trust in the system, leading to a virtuous cycle of error reporting and data quality improvement.

What specific lessons or recommendations should utilities consider?

The following recommendations apply to both initial GIS deployment and continuing investments:

- ▶ **Prioritize planning and phase implementation** – Before instituting any changes, spend the time to select the right vendors to partner with and carefully plan how to implement the upgrade. Take a multi-phased approach to implementation.
- ▶ **Identify, verify, and document all system assets** – Start mapping with primary distribution for overhead and start with conduit when mapping underground.
- ▶ **Plan the IT infrastructure** – Ensure the infrastructure is in place for both current and future usage. Expect growth in usage as employees gain proficiency with GIS and more systems are integrated with the GIS database.
- ▶ **Establish learning and training mechanisms for users** – Build a teaching team with experts from around the utility to ensure training aligns with user needs.
- ▶ **Develop a strong quality assurance and quality control (QA/QC) process** – Use both outside vendors and inhouse subject matter experts for QA/QC.
- ▶ **User-driven design** – To the extent possible, bring in users early on in the design/scoping process so that GIS applications are likely to be useful and usable by key stakeholders.
- ▶ **People matter** – The utilities with the most trusted GIS systems have strong communication between departments and individuals who could be readily contacted, especially for error corrections.

Upgrading software systems requires thoughtful change management that recognizes the organization's unique technical needs as well as its history and culture. To realize their full potential, GIS investments must be accompanied by resource commitments such as user training, team staffing, and IT support that ensure its success at all levels of the organization.

For much more detailed information on minimum GIS system capabilities and ways to make sure they are delivering the full potential benefits they are capable of, read our [full guide](#).



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