



ASSET MANAGEMENT: THE IMPORTANCE OF QUALITY DATA

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More and more these days, utilities are in the process of converting their records and maps to a more sophisticated platform that incorporates many aspects of mapping, location, customer data, electric model, outage management, meter information, facilities, and property records into a single system. In so doing, these utilities are getting better data - data that is more complete, more "real-time" and more accurate, on what they have in the field and at their various locations.

Most of this activity falls under the umbrella of what is called a geographic information system or geospatial information system (GIS), a computer system designed to capture, store, manipulate, analyze, manage, and present virtually all types of spatial/geographic data.

According to a 2012 Technical Report by the Electric Power Research Institute (EPRI), titled "Monetizing the Geospatial Information System (GIS): The Value of GIS Data Quality for Electric Utilities," GIS is no longer just a novel technology for utilities. It is actually becoming a necessity. "It has been in place for two decades at some utilities and is entering its third generation of functionality," said the report. "The mystique is long gone, and GIS is viewed as another enterprise system."

However, many utilities are behind the curve when it comes to implementing GIS, especially with the advent of smart grid. "The smart grid is dramatically changing the way we deliver electrical energy," said the report. "What has historically been a uni-directional flow of energy from generation to customer is now increasingly paralleled with a bi-directional communication network to optimize the use and flow of electricity." There are many challenges to overcome as distributed generation becomes more prolific from both a communications perspective as well as system operation and power flow. Computer models will rely on highly accurate and up to date

information to process the data effectively and accommodate those needs.

So why is GIS so important with the smart grid? The intelligence of the smart grid relies on geospatial data to represent and track the locations of numerous devices within the connectivity model of the distribution system, and GIS fills this role.

Not only is GIS itself required to effectively manage the smart grid, but GIS data must be of the highest quality. "With the advent of the smart grid and advanced metering infrastructure, utilities are facing increased pressure to resolve data quality issues," said the report.

The report continued, "Smart grid technologies have received great fanfare and investment in the preceding decade and have overshadowed investment in GIS data as a foundation for the smart grid. Recently, the proliferation of smart grid systems has made the centrality and importance of GIS data quality more obvious."

In addition, "The quality of GIS data has become increasingly important as the smart grid matures. Although conceptually understood to be a vital enabler of smart grid functionality, the true value of quality data is not widely understood. Poor quality data can be a frustration, an impediment, or even a danger to the utility and its staff."

While the actual cost of poor GIS data quality is elusive, the cost to improve the data quality is a known quantity. However, according to the report, data improvement can be a lengthy and expansive undertaking, so it is important to quantify the potential impacts and benefits of data improvement initiatives. management, as well as informs other applications for system planning and engineering," noted the report.

In other words, despite the importance of high quality GIS data, many electric utilities have not invested significantly in its improvement, often due to an inability to cost-justify the effort. The report noted that, “Intuitively, better data should beget improved business process and efficiency. However, a true cost-benefit analysis and business case were often difficult to substantiate the potentially significant expenditure of time and money to cleanse and improve data.”

Why is GIS data quality so important? There are many reasons. For example, GIS provides the foundational data for the smart grid through the connectivity model of the distribution system linking customer to transformer to feeder to substation. “Precise knowledge of relative spatial location of devices along this path enables the proper operation of smart grid components, such as the Outage Management System (OMS) and Distribution Management System (DMS) for real-time system management, as well as informs other applications for system planning and engineering,” noted the report.

For utilities interested in improving their GIS data quality, the report noted seven specific areas that should receive focus.

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- Gaps in the system: For example, certain key data is missing.
- Redundancies with other systems. For example, data is captured in many systems and is inconsistent or requires duplicate data entry to update.
- Lack of currency with system “as built.” For example, there are problems with untimely work order completion/backlog.
- Inaccuracies with the field. For example, the GIS has data, but it does not represent the actual system in the field.
- Inaccurate or unavailable land-base: For example, there are varying degrees of accuracy of land-base data based on the source.
- Customer-to-transformer connectivity by phase is in doubt.
- The GIS model itself allows for “bad” data.

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