

Imagery Gives Utility a Clear View of Its Transmission System

A prominent international gas and electric utility company that serves the northeastern United States turned to Pictometry imagery provided by EagleView® for solutions in their struggle to effectively validate assets. The company has thousands of transmission towers and more than 2,800 miles of overhead lines to accurately classify in order to ensure proper maintenance and avoid interruptions in service to customers.

Although they all perform the same function, the transmission towers that support overhead lines are not uniform throughout the network. Some are made of wood, while others are formed from steel latticework or tubular steel poles. According to the company data manager, “This patchwork is a result of varying ages and geographic locations. For example, in Massachusetts it’s easy to get wood poles, but in New York it’s a little tougher.”

The different composition makes accurately classifying towers essential. Just as you wouldn’t maintain a wooden fence the same way you would a metal one, the towers must be handled differently in terms of maintenance, allocation of costs and replacement schedule.

Having undergone several mergers over the last six years, the company needed to organize its information and incorporate existing as-built records about the types of towers into its Smallworld geographic information system (GIS). A project team comprised of an internal project manager, a contractor project manager and six GIS contractors was assembled but the group quickly discovered the project was much more challenging than anyone had anticipated.

Not only were many of the records in the form of old CAD drawings, many more were simply missing or had never actually been acquired during the mergers. Four months into the effort, the team found their \$650,000 budget was exhausted, and only 30 percent of the towers in the network were classified. The remaining 70 percent were either unknown or had conflicting data.



A fresh angle on the problem

The company decided to turn to web-based orthogonal imagery — top-down aerial photographs that have been geometrically corrected to reduce distortion — to fill in the data gaps.

Two internal GIS analysts were charged with identifying the locations and materials of the towers. Unfortunately, three months and \$50,000 into the effort, little progress had been made. As the analyst discovered, the straight-down imagery on which they were relying simply did not allow for an accurate assessment of the materials used in the towers' construction.

The company enlisted a consultant to examine the high-resolution Pictometry aerial oblique imagery.

Unlike orthogonal imagery, which has a straight-down perspective, Pictometry imagery is taken at an angle to the earth's surface, producing a scene that's more easily comprehensible. In fact, Pictometry images allow users to view scenes from any of the four cardinal points. Because they are also geo-referenced to the locations of the objects they depict, users can extract measurements from the images.

The new effort made use of Pictometry imagery for AutoCAD Map 3D enabling the consultant to access high-resolution imagery from Pictometry's image library while working within the AutoCAD Map 3D environment. The company's consultant was able to launch an AutoCAD Map 3D file depicting transmission towers, click the plug-in button to open an aerial image of the same area, and examine the image to identify the corresponding tower in the Map 3D file.

With just six weeks of training on standard AutoCAD, the consultant was quickly able to incorporate the Pictometry images and analytical tools into her efforts. Within three days she was using Map 3D to bring data in, turn layers off, and knocking her way through the work to assess the towers.



When the project concluded in February 2013, the percentage of unknown towers had been reduced from 70 percent to eight percent. The remaining unknowns will be classified by on-site visits or flyovers as conducted as part of their regular inspection schedule.

Applications beyond tower verification

In addition to creating their first-ever set of complete and accurate tower verification records, the utility has identified other ways that Pictometry images and applications can be used to resolve additional operational challenges.

For example, the property department can now access assessor data to evaluate possible encroachments. The forestry department, too, has been comparing images from different years to look for increases in vegetation that require intervention.

Plans are already in the works to use Pictometry imagery in a new as-built verification effort of substations in the utility's network.

The Pictometry images and tools provided a method to greatly reduce the cost and time for their classification project by easily integrating into their existing workflow and by reducing the dependency on manual field visits. ~~✂~~

