



Vermont Electric Power Company

Mobile GIS Delivers Environmental and Efficiency Benefits for Transmission Utility

CASE STUDY



CHALLENGE

VELCO needed a vegetation management system that would save the company time and money, assist in meeting compliance, and significantly improve accuracy of treatment of its rights-of-way.

RESULTS

By using the Vegetation Inventory Program, developed with Esri® technology, VELCO saves \$20,000 and 50 person hours per year. The utility is also better able to meet compliance goals and improve the accuracy of right-of-way treatment to help protect the environment.

“The vegetation management solution, based on GIS from Esri, has far exceeded expectations and is a powerful tool that helps VELCO continue to serve as Vermont’s transmission reliability resource.”

Jarrod Harper, VELCO Team Lead for CAD/GIS

The Vermont Electric Power Company (VELCO) maintains 688 miles of high-voltage electric transmission lines and 12,000 acres of rights-of-way.

VELCO’s infrastructure shares its right-of-way space with maples, cedars, laurels, blackberry bushes, ferns, and more than 70 other different types of plant life. The vegetation must be managed, and any plant that exceeds a mature height of 12 feet must be trimmed or removed.

Challenge

To save time and money on vegetation management, VELCO crews needed to upgrade from handwritten sheets to interactive, digital maps. The staff also wanted field access to orthophotographs—geometrically corrected aerial photos. To help meet compliance, utility staff had to be able to access environmentally sensitive data for the entire system and show state regulators precisely how the rights-of-way would be treated. To improve accuracy of treatment of its rights-of-way, VELCO crews required map books containing field data.

Solution

VELCO employed geographic information system (GIS) technology from Esri to create an innovative solution called the Vegetation Inventory Program (VIP). The solution enables VELCO to facilitate the creation of map books of the entire system, deliver orthophotographs and field data, and make information seamlessly accessible to workers in the field and the office.

To equip field crews with access to the most accurate data, the utility invested in Tablet PCs. Within ArcGIS® Mobile software, VELCO was able to create a tool that automatically loads orthophotographs wherever the user clicks the screen without the requirement to browse through a directory of images for the correct file. Field staff can now update digital maps and view orthophotographs.

The VIP application is designed to help VELCO meet compliance by providing field access to environmentally sensitive data and prescribed right-of-way treatment.

With the map book to assist communication with contractors and expedite the state herbicide permit process, VELCO can improve its right-of-way treatment.



The VIP solution displays a section of transmission line with right-of-way points and lines along with dangerous trees and areas to be treated.

Learn more at esri.com/electric.

Vermont Electric Power Company

Esri SOFTWARE USED

ArcGIS Desktop
ArcPad®/Application
Developer

OTHER SOFTWARE USED

Custom ArcPad application
developed in-house

DATA USED

VELCO's own proprietary data
Data from Vermont's
spatial data clearinghouse,
the Vermont Center for
Geographic Information
(VCGI)

HARDWARE

Tablet PCs with internal GPS
receivers

FOR MORE INFORMATION



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Results

By using the VIP solution, VELCO reports an annual savings of \$20,000 and 50 person hours. In addition, the utility is better able to meet compliance goals and improve the accuracy of right-of-way treatment to help protect the environment.

"The vegetation management solution, based on GIS from Esri, has far exceeded expectations and is a powerful tool that helps VELCO continue to serve as Vermont's transmission reliability resource," says Jarrod Harper, VELCO team lead for CAD/GIS. "We are saving days of office time, and thereby money, by eliminating the need to retype printed maps. We also save fieldwork hours and expenses because crews don't have to guess where and what they are supposed to be doing to treat the rights-of-way."

VIP allows VELCO's vegetation management team to map the right-of-way areas that are to be treated. Collected field data is downloaded from Tablet PCs to ArcGIS to create map books. The use of map books enables VELCO to facilitate communication with contractors and expedite the State of Vermont's herbicide permit process.



Vegetation management is especially critical for VELCO, as the utility's transmission lines run through rural areas of Vermont.

code that corresponds with a data table detailing height class, vegetation type, treatment type, restrictions, comments, area in acres, and transmission line number. Trees that must be cut show up in red on the map, along with a data table that includes diameter class, species, longitude, latitude, altitude, and line number.

The VIP system can be queried from the field to reveal information about each tree. Crews can ascertain whether the tree is a threat, which method was used to mark the tree, and what type of treatment the tree has received. The system also shows each tree's GPS points or indicates that the coordinates have not yet been logged. For private and public water wells, the application automatically adds a 100- or 200-foot buffer.

"As crews walk the rights-of-way, they have an idea of how it will look as they move forward, which helps them navigate more effectively," Harper concludes.



VELCO field crews use tablet computers with up-to-date line clearing activities and utility data.

Learn more at esri.com/electric.