

ACRT, NES, & Vegetation Management

By Glenn Springer, Nashville Electric Service

Like the majority of municipality-owned utilities across the United States, Nashville Electric Service (NES) faces a number of challenges in providing consistently reliable power to its coverage area. The need to effectively overcome predictable hurdles, such as budgetary constraints, to the more volatile, such as severe weather events, is just a fact of life. To be successful, delivering top-quality electrical service requires a well-planned, proactive utility vegetation management (UVM) program and the assistance of third-party professional expertise. For NES, implementing a comprehensive UVM dropped tree-related outages from 20 percent in 2002 to five percent today.

Vegetation Management History

NES has operated in Central Tennessee for more than 70 years, serving more than 355,000 customers in 5,700 line miles in Nashville's Davidson County, as well as in portions of Wilson, Williamson, Cheatham, Robertson, Sumner and Rutherford counties.

Prior to accelerating the UVM program NES commissioned a study of its line-clearance program, calculating outages for every 100 miles of line and 1,000 trees. The study revealed a remarkably high number of tree-related outages -- more than 10 times higher than outages experienced by top-ranking utilities. In some areas, it had been seven to 10 years since trees had been pruned for conductors. At that time, NES outage data for an eight-month period recorded 5,827 outages of which 2,654 were caused by trees. NES had an average of 56 tree-related outages per 100 miles.

With the goal to significantly improve service to customers across a 700-square-mile coverage area, NES approached the NES Electric Power Board for a budget increase of 35 percent. Once the budget was approved, NES began implementing the new UVM program, which included a more aggressive approach to tree removal and required better communication with residents.

A Comprehensive New Approach

As part of its new program, NES needed to understand how to more effectively perform line clearance work. In addition to contracting with several professional line-clearance vendors, NES enlisted ACRT Inc., headquartered in Akron, Ohio to help develop an effective vegetation management program. ACRT recommended major changes in pruning techniques, stump management and tree removal, as well as ramped up efforts by NES to boost data collection efforts and improve interaction with the public.

To begin, three-year prune cycles were needed to ensure vegetation management was consistent across the entire service area. This meant better management of the pruning and tree removal contractors was also required. As the public face of NES' UVM program, contractors needed to be knowledgeable about the new pruning specifications, which are based on standards set by the American National Standards Institute (ANSI) and supported by the International Society of Arboriculture (ISA). All contractors are now classroom-trained on NES guidelines for pruning and removal standards to ensure consistency across the coverage area. In addition, NES enlisted ACRT to audit all tree-pruning contractors with inspections performed on a regular basis.

Also recommended were changes in pruning techniques. Round-over or stub pruning was replaced by lateral pruning, which meets ANSI standards and keeps the overall structure of the tree strong, making it more resistant to severe weather events. Pruning clearances were based on the type of tree being pruned. Faster growing trees got more clearance, with slower growing trees requiring less clearance.

In addition, more aggressive tree and brush removal was necessary during the first prune cycle, in addition to the use of herbicides on freshly cut stumps to prevent resprouting. Before the new program, NES had removed 50 to 60 percent less trees than needed. Now, as a rule of thumb, auditors recommended taking the entire tree if more than 30 percent of the tree required pruning. Not only is tree removal equivalent to the cost of pruning, it drastically reduces the potential for tree-related problems down the line. The plan also included removing trees less than 16 inches in diameter to keep the lines clear longer.

The UVM program was aggressive from the start with as many as 200 trees-per-mile pruned or removed. The goal for each of three well-structured three-year cycles was to prune trees along an estimated 4,800 miles of power lines. In 2009, the plan changed the prune cycle from a three-year to a four-year cycle, during which about 1,200 miles of power lines are pruned during each year. Between 2002 and 2009, tree-related outages steadily declined.

Public Outreach Strengthened

Known as Music City, Nashville is a popular destination that boasts both musical aptitude and a lush, natural topography. Preserving that beauty, in addition to delivering reliable power, was essential in keeping the residents happy.

The new plan included clearer communication with the public to convey NES' responsibility to maintain vegetation that has an impact on the safety and reliability of the electrical system. Now, prior to initiating work, NES sends residents a postcard explaining the work plan. Within two weeks, residents are contacted using IVRs, which provide more information about pruning dates.

For further support, NES relied on ACRT work planners who use handheld computers to collect data in the field, which is stored on the NES network for use by the vegetation management department. The planners also mark trees and notify property owners of work identified to take place on their property. The planners visit residents' homes to explain the work, and answer any questions or concerns. When residents aren't home, door hangers are left as a form of notification requesting homeowners call NES' tree-pruning hotline to set up an appointment to meet with a planner. Because the lateral pruning is not always attractive, residents need detailed information as to why it's necessary. In some cases, NES representatives attend neighborhood meetings to explain the need for tree pruning.

To underscore its commitment to excellence in vegetation management, NES is Tree Line USA-certified by the Arbor Day Foundation for meeting three requirements: conducting a quality UVM program, providing worker training on quality tree care practices, and implementing tree planting and public education programs. These programs are a result of a partnership with the Nashville Metro Tree Advisory Council and the Nashville Tree Foundation to educate the public on an effective UVM program and to communicate that NES will replace trees that are endangering power lines and must be removed.

Impressive Results

Since the start of the new UVM program, NES has removed or pruned the proper amount of vegetation to effectively lower the cost of future maintenance, resulting in a 20 percent increase in system reliability. In addition, areas within the coverage area that were not safe to work during severe storms are now accessible and safer to work. Through a well-planned and adequately-funded vegetation management program, NES service delivery has reached the level of reliability projected, and continues to meet ongoing goals.

Glenn Springer is Nashville Electric Service Vegetation Manager. He earned a bachelor's degree in forestry and has nearly 25 years of experience in utility vegetation management.