

Less is More: Utility Line Clearance in Tallahassee Florida

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Tallahassee is known for its beautiful canopy of Flowering Dogwoods, Live Oaks with long descending limbs sweeping the ground, and Southern Magnolias with their aromatic blossoms. Tallahassee and Leon County are also known for the 65 miles of Canopy Roads, dedicated to preserving the old south atmosphere of the 1800s when these roads were used to carry corn, tobacco, and cotton to market. A permit is even required to cut the underbrush along these beautiful scenic roads and strong local ordinances make it next to impossible to remove a tree on any of the protected Canopy Roads. Tallahassee is also famous for its tree lovers. Coupled with a nine month growing season this gives you some idea of the challenges that the local municipal electric utility has to face in regards to line clearance tree trimming.

In the early nineties Tallahassee Electric began trying to establish a regular maintenance trim cycle. However, due to inadequate funding and the long time historical practice of “hot spotting”, where trees are trimmed only as a result of an outage, some of the lines had not been trimmed out in several years. When they were finally trimmed the 10-15 feet of clearance had quite an impact on the canopy, not to mention the residents of Tallahassee. In 1995 when I transferred from another north Florida municipal utility I was fully convinced that ten feet of clearance and a three-year trim cycle was the most efficient and cost effective way to go. Well the community had a different idea of what line clearance tree trimming was supposed to look like. So after two years of me butting heads with homeowner associations, environmental organizations, as well as individual customers about how “their” trees should be trimmed, the City Commissioners decided that a select committee of citizens appointed by them should decide how the electric utility would proceed with its line clearance tree trimming operation. So for the first seven months of 1997 this committee met once or twice each month in order to develop a policy and a set of pruning standards that the electric utility was directed to follow.

Some of the main parts of this new Commission approved policy was a standard clearance of only 4’ – 6’, an eighteen month trim cycle, a tree replacement policy that prohibited the planting of utility compatible trees under the power lines, and a requirement to begin using Tree Growth Regulators (TGRs) on “significant trees”. Oh, by the way, we had to do all this with no increase of funds or number of tree crews, (sound familiar?)

Where do we go from here?

Well the electric utility had their marching orders so to speak and the customers knew what they were because the local newspaper published an article outlining the new policies. The first thing we did was sit down with our line clearance contractor to work out a game plan. The easiest task was to put together a TGR crew and begin treating trees that were growing beneath the overhead lines. This aspect of the new policy was the only

part we received additional funds to cover. Next we had to figure out how to allocate our available bucket crews in order to get the most bang for our time and material dollars. We have since converted the line clearance contract to a firm price billing contract where the electric utility pays the contractor based on the number of line miles that are trimmed instead of an hourly rate for labor and equipment. This change has resulted in a significant cost savings over time and material billing concept. What we did was create “Super Crews”, which consisted of three – four buckets and one follow-up chipping crew. This allowed the bucket crews to trim continuously without having to stop and chip their brush. We also began using pre-inspectors, from the existing contractor workforce, to obtain permission/notification from the customers. Again, allowing the trimming crews to concentrate on trimming trees and not the administrative part of the work.

We began our “Sensitive and Gentler” tree trimming program by continuing where we had left off seven months before on our previous three year trim cycle. We monitored the tree crews more closely encouraging them to “work smarter”. Part of our task was to obtain the four – six feet of clearance while maintaining pruning standards based on ANSI A-300. These standards do not allow topping, hedging, or stubbing the limbs back to set distance. According to ANSI A-300, limbs must be pruned back to a lateral branch at least 1/3 the size of the branch being removed. This sometimes resulted in clearances of more than six feet. To help speed up the process we decided to adopt a modified “just in time trimming” style. Only those trees with branches within the pre-established clear zone would be pruned. This practice speeded up the process by reducing the number of set ups on any stretch of line. There was also less time spent chipping brush because there was less trees being trimmed and less brush taken out of each tree.

The first cycle under the new program was completed in approximately 24 months. As I mentioned earlier some of the overhead lines had not been pruned in over five years which slowed down the process. The second cycle was accomplished in just over 16 months. Florida was at the end of a severe drought resulting in significantly less tree growth and we think this had a lot to do with the dramatic shortening of the trim cycle. Finally, the third cycle was completed in 18 months. We had met our goal.

Customer Reaction

For the most part our customers loved our softer gentler approach to line clearance tree trimming. There were still those few customers that did not want their trees pruned no matter how or why we wanted to prune them, (until their lights went off of course) but that is normal for any electric utility. There were times when a customer would call us in response to the door hanger notification card wondering when we were going to prune the trees on their street. They were very pleased to hear that we had already pruned all we were going to. I know it is hard to imagine (it was for me too) but for many of the streets with only a single phase of primary line you could hardly tell we had done anything to the trees. One of the reasons for this is that where the large overhanging Live Oak limbs appeared to be healthy and were high enough to not contact the conductor during wet weather, we did not adhere strictly to the minimum of four feet of clearance. Also, where other large limbs and/or the trunks of healthy trees were within the clear zone they were

left as well. One of the techniques used to soften the effect of the pruning was to intentionally leave a few small branches with foliage on the large limbs we were pruning underneath or beside the lines and only prune off the aggressively growing sprouts. This not only reduced the visual impact it also seemed to trick the tree into “thinking” that it had not been pruned therefore it did not “see” the need for prodigious sprouting in order to replace the leaf surface area we had removed. This technique combined with the application of TGRs has been the dealmaker of this program.

Effect on Reliability

I won't bore you with the previous or current SAIDI, or SAISI, of our system reliability figures. Suffice it to say that we have made many of our linemen and troubleshooters mad at us because of the way we have cut way into their overtime hours from after hour storm restoration. Seriously though we have recently had whole months go by without any tree related outages. And to do that anywhere, but especially here in Florida, is quite an accomplishment. In addition, most if not all of the tree related outages we have experienced have come as the result of tree or limb failure not from regrowth into the lines.

Engineering Alternatives

Another of the policies of this new program was to find alternatives to the old tried and true straight line engineering styles with cross arm construction. Thanks to a progressive thinking Power Engineering Staff, we have reduced the amount of pruning required by employing designs that include delta construction, which groups the three phase primary in a much tighter configuration on the pole. Vertical construction with back-to-back circuits on the poles in some locations as opposed to vertical overbuilt circuits that would negatively impact the graceful overarching Live Oak limbs. We also utilize “tree wire” especially on the Canopy Roads where tree canopies arch completely over the roadways like the ceiling in a cathedral. Approximately 25% of our system is built with tree wire. The use of tree wire does not necessarily reduce the amount of clearance we need but it does dramatically reduce momentary operations that are the pet peeves of all customers. This results in significantly improved reliability figures. In addition, there have been many occasions where limbs and even whole trees have fallen onto the tree wire conductor and not caused an operation of the circuit. Another engineering alternative used mainly on the Canopy Roads is “Zig-zagging”. As the name implies we literally design the line to zig-zag back and forth across the road leaving most of the conductor out over the middle of the road. This technique allows us to avoid large significant trees and prune the trees only where the lines attach to the poles along each side of the roadway.

Less is More: The Conclusion

What exactly does “Less is More” mean? Less pruning means more aesthetically pleasing trees along the roadways here in Tallahassee. Less pruning means more cooperation from homeowner associations and individuals when we need to construct or relocate lines for

road widening projects. Less pruning means more reliability because of the reduction of re-growth after the pruning operation. But most importantly less pruning means more happy customers.

Let me end by saying that I did not implement this new program alone. Without the support of my staff, the backing of upper management, engineers that have been willing to look at trees in a totally different way when designing new lines, and a line clearance contractor that was both flexible and accommodating to my ideas, none of the strides we have made in the last seven years would have happened. I also want to thank the Citizens Tree Committee for not listening to me when I tried to tell them for seven months that their ideas would not work.