

**ORIGINAL**

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**Sent:** Wednesday, May 31, 2006 2:30 PM  
**To:** Filings@psc.state.fl.us  
**Subject:** Tallahassee Storm Preparedness Implementation Plan  
  
**Attachments:** Tallahassee Storm Preparedness Implementation Plan.doc



Tallahassee Storm  
Preparedness...

Dear Sir/Madam,

Attached is the Implementation Plan for Ongoing Storm Preparedness for the City of Tallahassee.

Thank you,

Denise

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# **City of Tallahassee – Your Own Utilities Outline of Implementation Plan for Ongoing Storm Preparedness**

## **A. Introduction**

This report is intended to provide an outline of the City of Tallahassee's (COT) ongoing efforts to prepare for severe weather events such as hurricanes. COT operates generation and transmission facilities in Wakulla and Leon Counties and distribution facilities in Leon County serving approximately 109,000 customers.

Tallahassee is a community that is inland but has experienced the effects of hurricane events on several different occasions over the past twenty years. The last significant hurricane impact that effected COT was Hurricane Kate in November 1985.

COT has used the experience from these events to continually evaluate, modify and improve all aspects of our planning, preparation and response to major storm events. The remaining sections of this report will briefly outline some of these efforts.

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## **B. Three-Year Vegetation Management Cycle**

COT's design standards exceed the National Electric Safety Code requirements for horizontal clearances to all transmission lines. This typically dictates easement widths that provide for larger clear zones from trees and other structures. COT Line Clearance and Vegetation Management Program maintains an eighteen month trimming cycle of all overhead distribution lines targeting at least four to six feet of line clearance and the removal of hazard trees pursuant to the City Commission's established guidelines. The same eighteen-month cycle is utilized for the transmission lines but the target clearance distance is fifteen to twenty feet. COT's vegetation management program also utilizes

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directional trimming, tree growth regulators and the removal/replacement of invasive trees with “power line friendly” trees.

### **C. Transmission and Distribution Geographic Information System and Outage Management System**

COT utilizes a fully integrated GIS and Outage Management System (OMS). Transmission and distribution facilities information is maintained in the City’s GIS System and outages are tracked through our OMS. The systems provide the capability to automatically identify a customer when a call is received, post the outage to the OMS system and display the location of the customer on a geographic display. Outage data is tracked and maintained all the way down to the individual customer level including the date, time, duration and cause of the outage. Outage data can also be separated by underground or overhead sources.

- The GIS contains information concerning construction standards, facility design, inventory of materials and has the capability for connectivity that will trace from the source point to the end point of electrical service to a customer. Installation and maintenance inspection dates are entered into the GIS and tracked on a location basis.
- The OMS tracks all outages by cause, duration and provides the necessary data for reliability indices calculations. All outage causes are reviewed and followed-up for corrective action as needed. We also track multiple outage events per device (i.e. fuse, breaker, etc).
- Inspection and maintenance data will be maintained related to lines and substations and will be linked to GIS. A facilities management system is currently being developed that will house inspection data and provide a work management system for future inspections. This system will record inspection data, schedule inspections, record system analysis data, record cable failures and record vegetation management information.
- Distribution System Inspection/ Monitoring/Maintaining - Each member of the T&D Supervisory staff is assigned specific distribution circuits of the COT electric system for which they are personally responsible to monitor, patrol and maintain.
  - Each circuit must be patrolled and inspected at least one time annually and more often depending upon the number of circuit operations experienced.
  - It is standard practice after each significant storm to patrol each circuit and correct any problem identified during that patrol.
  - We actively review the configuration and protection schema of each distribution circuit to eliminate unnecessary exposure (through reconfiguration) and to mitigate the number of customers impacted by a circuit fault (impact reduction).
  - Areas that require reinvestment and/or significant maintenance have been prioritized and have been placed in our annual work plans.

- Substantial capital funding is allocated and used annually to renew and/or replace elements of our overhead and underground distribution system facilities that are obsolete or adversely impacting reliability.

#### **D. Wooden Transmission vs. Concrete Transmission Structures**

COT constructs all its new transmission lines with concrete and/or steel structures. Existing wood transmission structures are evaluated for replacement with spun or cast concrete or steel during any maintenance replacement or relocation project based upon economical feasibility and material availability at the time the project and work is being performed. There are cases when it becomes necessary to utilize wood structures as replacements. This typically occurs for poles under 60' in height and is due to the physical conditions, location or some other technical factor

A climbing and physical inspection of every transmission structure is completed at a minimum of every five years. A plan is developed from these inspections to make the necessary repairs and/or refurbishments during one of the two periods of the year when load conditions permit the scheduling of line outages (either in the fall and spring periods).

#### **E. Post-Storm Data Gathering, Data Retention and Forensic Analysis**

After every major outage on the COT system, Engineering & Operations Staff conduct a “post mortem” meeting to analyze the cause of the outage, the response to the outage and evaluate any changes or improvements that can be made to the system or the response process. Forensic analysis is utilized on an as-needed basis. COT has been consistently proactive in maintaining and improving the reliability and integrity of its distribution and transmission systems. In fact, most of the recommendations that the FPSC has proposed are equal to, or approach, what we have in place today. In addition to our eight-year cycle pole inspection, treatment and replacement program we have other ongoing programs such as the following that we perform for reliability purposes:

- Line Clearance and Vegetation Management Program
- Distribution, Transmission, and Substation Engineering Designs
- Distribution System Inspection/ Monitoring/Maintaining
- Infrared Inspections/Flying Inspections of Facilities
  - The Electric Utility and Tallahassee Police Department have jointly funded a Forward Looking Infrared Radar (FLIR) system that is utilized from the Leon County Sheriff's Office (LCSO) helicopters. In return for our funding the LCSO provides flight time for transmission and distribution inspections as needed.
- Geographic Information System (GIS)/Outage Management System (OMS)
- Training/Preparation
- Emergency Operations & Disaster Recovery Plan

Technical Assessments - after a significant electrical service interruption event has impacted the City of Tallahassee service territory and restoration of the City's customer has been completed, staff then initiates its technical and service related reviews:

- Crews are assigned specific circuits and areas to patrol and inspect to make sure that the system facilities are in normal operating condition.
- Assessment team personnel, engineering staff and restoration supervisory staff meet to assess, review and evaluate system performance, strength, problem-areas and prioritize issues/items that need to be addressed and/or improved upon.

Emergency Operation Review - after a significant electrical service interruption event has impacted the City of Tallahassee service territory efforts are undertaken to assess and evaluate performance:

- *Electric Utility Management staff* -will assess and evaluate its response, performance, identify areas of strength and weaknesses and develop plans for improvement.
- *City's Emergency Management Team* meets to discuss, assess, evaluate and plan for improvements to the handling of emergency operations.
- *County Emergency Management Team* and Electric Utility Staff - discuss and assess ways and means of improving the overall handling of emergencies as the Electric Utility service territory includes part of the county that is outside of the City limits.

We have also participated with joint utility storm preparation sessions conducted by the Florida Municipal Electric Association (FMEA) and at various industry conferences such as ones conducted by the American Public Power Association (APPA). These conferences have allowed us to interact with other state and national utilities to discuss best practices and lessons learned from storm response and restoration efforts.

## **F. Audit of Joint-Use Pole Attachment Agreements**

When a permit request is received from an attaching entity, engineering personnel review proposed location with regard to pole height, type of COT facilities on the pole and the number of other attachments already existing. Our GIS system has the capability and, in the future, will maintain a record for every pole in the system that shows the number and owner of all foreign attachments to the pole. A specification has been prepared to solicit services to perform an audit to collect and verify COT and foreign attachment data for every pole on the COT system with an anticipated starting date in the fall of 2006.

We currently do not run stress calculations on all attachments unless field review indicates an obvious problem. However, COT plans to further address the need

for stress/loading calculations as part of the attachment permit approval process and revise future joint use agreements as necessary.

#### **G. Six-year transmission Inspection Program**

COT performs a climbing and physical inspection of every transmission structure on its system at least every five years. A plan is developed from these inspections to make all the necessary repairs and/or refurbishments during the two periods of the year when load conditions permit the scheduling of line outages that being in the fall and spring periods. The eight-year cycle pole inspection program identify all poles that need to be replaced and those that need to be re-enforced to provide an extension of its useful life. Re-enforcements are completed within as soon as practical. Pole replacements are schedule as soon as load conditions allow outages to occur and materials are available to do the work.

#### **H. Collection of Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems**

Although we do track all outages via our OMS (see article C above) we do not currently calculate reliability indices for overhead vs. underground. However, we are working towards utilizing the data and developing the necessary assessment to be able to calculate and evaluate it.

The City of Tallahassee's OMS is capable of tracking all transmission and distribution facilities outages and the causes of these facility outages. Due to the interfacing of the OMS and GIS it tracks outages through the OMS identifying the cause as being overhead or underground.

- The GIS contains information concerning the system construction and thus has the capability for connectivity that will trace from the source point to the end point of service to a customer. This will aid in assessment of outage causes for the differentiation between overhead and underground.
- The City's OMS was placed into service last year but due to several performance issues it has required that several refinements and enhancement modifications be developed and retrofitted into the system. These modifications have enhanced performance and should now provide the capability to start tracking information to differentiate between overhead and underground outage and their causes.
- Trial assessments and evaluation of monthly data has been initiated for review and evaluation of OMS's differentiation between overhead and underground.

#### **I. Coordination with Local Governments**

The City of Tallahassee Electric Utility is a Department of the City of Tallahassee and performs its responsibilities under the direction of the City Manager and City

Commission. The Electric Utility's goals have historically focused on providing safe, high quality, reliable electric service to all of its customers by constructing, operating and maintaining its generation, transmission and distribution facilities to meet these goals. We participate in the development review process for all new developments in both the City and County and use the process to point out any potential problems that we can identify with regard to vegetation being planted too close to the power lines and other potential impacts to the electric system.

The Electric Utility participates and cooperates with both the City of Tallahassee and the Leon County governments striving to provide high quality reliable electric service to all its customers in the Leon/Tallahassee area.

Emergency Operation Review - after a significant electrical service interruption event has impacted the City of Tallahassee service territory efforts are undertaken to assess and evaluate performance:

- *The City's Emergency Management Team* that includes staff from all City Departments including Police and Fire along with the Electric Utility meet to discuss, assess, evaluate and plan for improvements to the handling of emergency operations.
- *County Emergency Management Team including the County Sheriff's Office, the City Fire Department and the Electric Utility Staff* - discuss and assess ways and means of improving the overall handling of emergencies related to the Electric Utility service territory that is outside of the City limits.
- *COT Electric, the City Emergency Management Team and the County Emergency Management Team* work cooperatively to coordinate and cooperate with other organizations such as the local hospitals and critical medical facilities, State Agencies and critical State operations and other critical customers with back-up/standby generation. Communications between these parties are a key as recovery/restoration plans are developed.

Vegetation Management and other Activities – the City of Tallahassee and Leon County governments both have ordinances and processes that impact Line Clearance and vegetation management practices of the Electric Utility.

- The City of Tallahassee City Commission's established guidelines for an eighteen-month trimming cycle of all overhead distribution lines with a minimum four to six foot of line clearance and allows for the removal of hazard trees. We use the same eighteen-month cycle period for our transmission lines but the target clearance distance is fifteen to twenty feet. We use directional trimming with tree growth regulators, and remove invasive trees replacing them with a power line-friendly trees.
- Leon County has a Canopy Road ordinance that specifically address and protects trees along Canopy Roads.
- Both the City and County have Growth Management Environmental Ordinances that limit tree trimming and in some circumstances requires replacement of trees in other locations if removed

**J. Collaborative Research Through the Public Utility Research Center (PURC) at the University of Florida**

COT through its membership in the Florida Municipal Electric Association and its involvement with Public Utility Research Center (PURC) at the University of Florida is participating in PURC activities related to storm hardening research.

In addition to this effort COT has worked with FSU Staff and others at the Center for Advanced Power Systems (CAPS) and the National High Magnetic Field Laboratory providing information and data to support research projects that will provide future benefits to the electric utility industry.