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From: S. Denise Hill [dhill@publicpower.com]
Sent: Wednesday, May 31, 2006 2:29 PM
To: Filings@psc.state.fl.us
Subject: Ocala Storm Preparedness Report

Attachments: Ocala Storm Preparedness Report final.doc

Ocala Storm reparedness Repor.

Dear Sir/Madam,

Attached is the Implementation Plan for Ongoing Storm Preparedness for the Ocala Electric Utility.

Thank you,

Denise

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Storm Preparedness Implementation Plan
Ocala Electric Utility
May 2006

A. Introduction

Ocala Electric Utility (OEU), owned by the City of Ocala, Florida, is located in north central Florida in Marion County. The electric utility supplies transmission and distribution service, both inside and outside the city limits of Ocala, to approximately 48,300 customers in a 161 square mile area. OEU is an all-requirements project and purchases all of its power from the Florida Municipal Power Association (FMPA). The electric system is fed from 230 kV ties at Florida Progress Silver Springs Station and Seminole Electric Silver Springs North Station. Ocala operates one, 12.9 mile 230 kV transmission line, 55 miles of 69 kV transmission line, and 1050 miles of 12 kV distribution lines. Ocala distributes power via a 69 kV transmission system linking seventeen 69/12.47 kV substations.

In 2004, during Hurricane Francis, Ocala Electric Utility experienced sustained winds of 50 to 55 mph with gusts in excess of 70 mph over a 30 hour period. A total of 38,000 customers lost power. The 230 kV system was unaffected, six sections of the 69 kV system were damaged, and 41 of the 60 distribution circuits were locked out during the storm.

Restoration of power took 12 days to complete. The majority of the damage was broken conductors due to trees and limbs falling into the lines. 71 poles and 121 transformers were replaced during the restoration.

Again in 2004, during Hurricane Jeanne, OEU experienced sustained winds of 40 to 50 mph with gusts in excess of 70 mph over a 5 hour period. A total of 26,000 customers lost power. The 230 kV system was unaffected, one section of the 69 kV system was damaged, and 21 of the 60 distribution circuits were locked out during the storm.

Restoration of power took 9 days to complete. The majority of the damage was broken conductors due to trees and limbs falling into the lines. 35 poles and 71 transformers were replaced during the restoration.

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B. Three-Year Vegetation Management Cycle

An effective vegetation management program is essential to ensure that OEU is providing safe and reliable service. The utility employs a certified ISA / Utility Arborist to oversee and implement its vegetation management program. The arborist, working with in-house and contract tree crews, has attempted to maintain a three-year trimming cycle. System growth and reactive trimming have held the actual cycle to four years. Additional funding has been budgeted to add contract crews to increase the workload capability of trimming the 460 circuit miles necessary to facilitate a four year cycle.

C. Transmission and Distribution Geographic Information System

The OEU electric system was mapped from substation to individual service meter with GPS in 2002. A five-person GIS team maintains the accuracy of the system information and mapping. The integration of GIS in the day to day operation of the utility has enabled improved reliability by tracking information such as, but not limited to, pole installation dates, transformer maintenance information, and vegetation overgrowth.

The GIS system proved invaluable during the restoration process for Hurricanes Francis and Jeanne. Maps were generated prior to the storms indicating critical facilities, i.e. hospitals, lift stations, shelters. Line crews were able to be immediately dispatched to those critical areas to assess damage and restore power when able. Throughout the restoration process, maps were generated based on actual field conditions reported by the engineering staff. The process allowed a streamlined flow of information from system control to the line and substation restoration crews.

An Outage Management System (OMS) capable of tracking outage calls and predicting outage locations based on system configuration has been implemented since the 2004 hurricanes. This system's data model is produced and updated from the GIS data on a weekly basis. All new construction and connectivity is reflected for accurate outage prediction. It is also capable of tracking crew location and assignment, allowing system operators to better allocate resources through visualization of a digital map system.

Another system reliant on GIS date is the Engineering Analysis software implemented in 2006. This software allows engineering staff to calculate load balancing, which in turn improves efficiency and reliability.

D. Wooden Transmission vs. Concrete Transmission Structures

The OEU 230 kV transmission line is built on spun concrete poles and steel structures. The 69 kV transmission system has 256 spun or pre-stressed concrete poles, 84 steel, and 692 wooden poles, totaling 1032 structures. All OEU facilities are designed to meet the NESC loading criteria in effect at the time of construction. Although OEU experienced no problems with wood transmission poles during the 2004 hurricane season, future design standards will require steel rather than wood poles for transmission relocation projects and new transmission lines. The NESC extreme wind loading criteria will continue to be used for design of all facilities.

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

Major storms, such as those experienced during the 2004 hurricane season, were an indication that the utility could improve restoration time by a more coordinated effort using GIS. Consequently, the Outage management System and Engineering Analysis software were integrated into the mix of technology available.

Additionally, internal consultation and coordination among the utility divisions revealed that improved accuracy of mapping the damage assessments performed by engineering staff could provide the line and substation restorations crews with critical information that could speed the process.

Post Francis storm analysis revealed the need for additional service personnel capable of restoring single service lines, which was implemented prior to the next storm.

OEU will continue to conduct post storm analysis to improve response time, minimize restoration time, and implement designs and procedures that will improve the electric system's ability to withstand storms.

F. Audit of Joint-Use Pole Attachment Agreements

OEU owns and maintains 37,244 poles with 41,423 joint use attachments. The attachments were audited in 2002 and are scheduled to be audited again in 2007. Pole attachment records are maintained in the GIS and contain the attachee name and the number of attachments on each pole.

Traditionally, OEU pole design standards have a design factor of safety adequate to allow enough strength to accommodate attachments. However, based on the changes for wind loading proposed in the 2007 NESC and the PSC Storm

Hardening criteria, the OEU design team will perform wind loading calculations in concert with the 2007 audit and incorporate the new standards in all new pole calculations.

G. Six-year transmission Inspection Program

The FY 2007 OEU budget includes funding for implementation of a transmission and distribution pole inspection and treatment program. The new program is consistent with recent PSC recommendations.

In addition, the Transmission & Distribution Division has implemented a quarterly visual inspection procedure for poles, which will include vegetation management and ROW issues.

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

Outage collection data includes:

- Overhead or underground designation
- Cause determination
- Duration of outage
- Number of customers affected
- Weather conditions
- Operation of protective devices
- Action taken

Data is tracked using a database and used by engineering staff for analysis and reporting reliability indices. Future plans are to use the OMS system for outage reporting and to integrate SCADA to the OMS for breaker operation tracking.

I. Coordination with Local Governments

OEU actively participates in the local Emergency Operations Center (EOC) during major storm events. Two OEU personnel are rotated on a 12-hour schedule to maintain contact with local authorities and participate in community information meetings.

During the first 24 hours post-storm, OEU staffs a team of qualified electric personnel to escort the Ocala Fire Search and Rescue Team, the Ocala Police Department (OPD), and the Public Works Department, to facilitate a safe search and rescue effort in the storm effected areas.

OEU engineering and T&D staff work closely with the OPD to facilitate communication of traffic signal failures during storms. Additionally, Water and Sewer staff have emergency contact information for OEU in the event critical sewer lift station facilities are affected.

Every effort is made to quickly restore facilities within the OEU service territory that affect the health and safety of the public, i.e. hospitals, clinics, water facilities, nursing homes, and shelters.

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

Ocala Electric Utility participates in PURC activities related to storm hardening research through membership in the Florida Municipal Electric Association and its involvement with PURC.