Timolyn Henry 060198

From: S. Denise Hill [dhill@publicpower.com]
Sent: Wednesday, May 31, 2006 2:19 PM
To: Filings@psc.state.fl.us
Subject: Beaches Energy PSC storm Hardening reporting

Attachments: Beaches Energy PSC storm Hardening reporting 4.2006.doc

Beaches Energy
PSC storm Harde...

Dear Sir/Madam,

Attached is the Implementation Plan for Ongoing Storm Preparedness for the Beaches Energy.

Denise

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Ongoing Storm Preparedness
Beaches Energy Services Implementation Plan
May 9, 2006

A. Introduction

Beaches Energy Services (BES) is the City of Jacksonville Beach Municipal Electric Utility. This report is intended to provide an outline of BES' ongoing efforts to prepare for severe weather events such as hurricanes. BES currently serves approximately 32,000 customers in the City of Neptune Beach, City of Jacksonville Beach and Ponte Vedra Beach, Florida. BES operates transmission and distribution facilities in our Electric Service Area.

In 1964, BES suffered a direct hit from Hurricane "Dora", a Category II Hurricane. There was significant property damage to buildings and residences within the first few city blocks from the Atlantic Ocean and electric service was interrupted over most of our Service Area. Electric service was restored after an outage lasting several weeks.

In subsequent hurricanes, we've suffered "near misses" which resulted in electric service outages lasting no longer than 2 or 3 days. Most customers were back "on line" within 24 hours.

BES 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. Vegetation Management Cycle

We have tree trimming crews from the Asplundh Tree Expert Co. working year-round in our Electric Service Area. Our objective is to maintain a two to three year vegetation management cycle for transmission and distribution lines.

All transmission lines are inspected and trimmed as needed prior to the start of each hurricane season.

We also have a tractor and "bushhog" mower that our Linemen use to mow the transmission line Rights-of-Way (ROW's) in rural areas. This is done on an annual basis.

C. Transmission and Distribution Geographic Information System

a. Describe the geographic information system used by the city/utility. If none, explain why. This can be an automated system or manual one (hard-copy maps).

We currently have a manual system using hard-copy or AutoCAD based maps.

We're currently working on implementing a T&D Geographic Information System (GIS). Over the last two years, we received bids to implement a T&D GIS System and tried two different contractors for these services. To date, we have not been successful in finding a suitable vendor.

b. **Describe the performance information system used by the city/utility.**

BES utilizes a manually operated Outage Management System (OMS). This is a good system and works well, since we have a relatively small Electric Service Area and only 32,000 customers.

The system documentation provides outage data for numbers of customers affected and maintains the date, time, duration and cause of the outage. Outage data is also separated by underground or overhead.

All outages are reviewed and evaluated and corrective action is taken as needed. We also review outage data to identify devices (i.e. fuses, breakers, feeders) that have experienced multiple outages over a defined period of time. This allows us to spot potential problem areas before the problem becomes more severe.

D. Wooden Transmission vs. Concrete Transmission Structures

a. Describe any plans or efforts your utility makes to replace wooden transmission structures with either concrete or steel structures. If concrete, indicate whether you intend to use static cast poles or spun poles. If you have no such plan or efforts, explain why.

All of our transmission structures are currently static cast or spun concrete poles. (With the exception of four steel poles at two H-Frame crossings on the Intracoastal Waterway.)

We've used spun concrete poles on the last two transmission line projects and we'll continue to use them, since much stronger poles are readily available than with static-cast poles. (This is necessary to meet the NESC extreme wind conditions.)

b. Describe any plans or efforts your utility makes to replace wooden distribution structures with either concrete or steel structures. If concrete, indicate whether you intend to use static cast poles or spun poles. If you have no such plan or efforts, explain why.

BES has also recently implemented distribution design standards that include the use of concrete poles on all new main three-phase distribution feeder circuits. Concrete poles will also be used for major equipment structures such as three-phase transformer banks, main three-phase underground riser poles and crossings of major roadways. These concrete poles are being designed to handle NESC extreme wind conditions.

We have used both static cast and spun concrete poles for distribution line projects. Both spun or static-cast concrete poles are available in "distribution class" sizes with adequate strength necessary to meet the NESC extreme wind conditions.

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

a. Describe how the city/utility will, after experiencing outages related to a hurricane, conduct an analysis to determine the causes of the outages, as well as a "lessons learned" analysis with staff.

Outage reports are currently generated for every outage on our system. These outage reports contain the following information: cause of the outage, corrective actions taken, and any recommended action(s) to prevent a recurrence of the outage. These reports are City records and retained accordingly. When major outage events occur, utility staff convenes to analyze the causes and recommend equipment and/or operational changes necessary to avoid similar outages in the future.

These outage reports provide outage data for numbers of customers affected and maintains the date, time and duration of the outage. Outage data is also separated by underground or overhead. (See Item C.b., above.)

We currently have no specific "Post-Storm Data Gathering, Data Retention and Forensic Analysis" Plan in place. In the past, most storm related damage has been due to flying debris or falling trees and didn't have any relation to pole structural or wind overloads.

If we find any failures due to pole structural overloads or other unexplainable causes, we'll certainly perform an analysis to determine the failure root-cause.

F. Audit of Joint-Use Pole Attachment Agreements

a. Describe your city/utility inspection/audit plan.

We currently have no specific "Joint-Use Pole Attachment Inspection/Audit" Plan in place. We are currently planning to do this audit as part of our T&D GIS System, so we can assure we have a proper tally for rental fee purposes.

During this field audit, our facilities will be examined by knowledgeable field personnel to identify obviously overloaded poles. Furthermore, the City has not experienced any failures of poles due to overloading.

i. Include poles owned by the city/utility and poles owned by others upon which the city/utility has attached facilities.

Almost all City electric utility equipment and lines are on city-owned poles; however, we do have a small number of overhead secondary service conductors "Joint-Use" on Bell Telephone Co. poles.

ii. Include that stress calculations will be made on each joint-use pole to ensure that it is not overloaded

1. **One calculation may be made for a line of similarly connected poles.**

As we mentioned above, we currently have no specific "Joint-Use Pole Attachment Inspection/Audit" Plan in place. If this is going to be a requirement imposed upon us by the Florida Public Service Commission, we will certainly comply with the program in every respect.

iii. If the city/utility does not follow these procedures, describe the process used to determine that poles are properly loaded, or that loading is not a cause for concern for storm restoration.

We don't believe the additional structural loading due to joint use attachments has created any problems for our utility. In the past, overhead transmission and distribution lines at BES have been designed with adequate overload safety factors necessary *to meet the NESC in effect at the time of the line construction*, for a specific "ruling span."

However, in actual practice:
a) overhead transmission lines on rural ROW's have no joint use attachments, so this is not an issue; and,
b) overhead transmission and distribution line structures, in urban areas with joint use attachments, are typically sited to accommodate streets, roads, driveways and other siting hindrances, so we almost never actually install poles to meet any optimum ruling span. With the much shorter installed span lengths, we believe we should have more than adequate overload margin for safety necessary to meet the wind loading from various joint use attachments.

G. Six-year transmission Inspection Program

Note: The PSC is requiring IOUs to conduct transmission inspections of every transmission pole and circuit every six year.

a. Describe the inspection program the utility uses for transmission facilities (69 kV and above).

Currently, as part of our ongoing transmission ROW clearing program, we conduct a visual inspection of all transmission facilities on an annual cycle. As an example of the results of our inspection program, last year, we replaced all of our transmission structure Resistance-Glazed (RG) porcelain post-insulators with new silicon-polymer post-insulators.

In addition to the ongoing visual inspections, we have plans to start performing infrared scanning of the transmission system lines.

We also have plans for aerial inspection of our 138kV kV transmission facilities. The inspections will be performed via helicopter fly-over in close proximity to the line.

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

Note: The PSC is requiring IOUs collect separate outage data for underground and overhead facilities.

a. Describe the data collection the city/utility uses for outages, including differentiating underground and overhead outages. Discuss any changes the city/utility plans to make to this process.

Although we do track all outages via our Outage Management System (see Item C.b., above.) we do not currently calculate reliability indices for overhead vs. underground. However, the data is readily available and can be calculated and evaluated rather easily.

Our standard distribution voltage is 15.2/26.4kV. From experience, we do know overhead lines at this voltage won't operate reliably within about 3 city blocks of the Atlantic Ocean because of tracking and arcing due to salt contaminated insulators. For this reason, many years ago, we installed lower voltage 2.4/4.16kV overhead lines in these areas north of Beach Blvd. (U.S. 90) and 7.2/12.47kV overhead lines in these areas south of U.S. 90.

These older areas of our distribution system are currently in need of rebuilding and upgrading due to load growth. But, instead of spending capital funds to rebuild and upgrade them, we've elected to remove them and install 15.2/26.4kV underground lines and equipment.

We've currently started or completed the following undergrounding projects:

- All of the City of Neptune Beach between the Atlantic Ocean and 3rd Street;
- All of the City of Jacksonville Beach between the Atlantic Ocean and 3rd Street;
- Ponte Vedra Blvd. between Solano Rd. south to Sawgrass;
- Ponte Vedra Blvd. between Solano Rd. north to the Duval County Line; and,
- A1A, south of Miklers to the southern end of our service area at the Guana State Park.

Although this work was accomplished because of needs for rebuilding and upgrading, it's also performing the service of "storm hardening."

I. Coordination with Local Governments

a. Describe how the city/utility coordinates with its local governments on vegetation management and other activities that impact reliability and storm preparedness/recovery.

We do not particularly coordinate with city/county governments with regard to vegetation management outside of compliance with local tree removal ordinances, when applicable. To date we have a good working relationship with these agencies that enables us to conduct both routine and emergency vegetation management without prior agency permits or approvals.

With regard to storm preparedness/recovery, we are active participants in the local Jacksonville Emergency Operations Center (EOC) for both the City of Jacksonville Beach and the City of Jacksonville. If the EOC is activated, a BES representative is stationed at the EOC throughout the storm/recovery period. This person provides a direct contact between the EOC, other response agencies and BES.

We also have a City of Jacksonville Beach EOC, located at City Hall in Jacksonville Beach, which would be manned by staff from BES, local government, Police and Fire Depts. during an emergency. The City of Jacksonville Beach City Hall, Police Station, Fire Stations, Water Plants, Wastewater Plants, BES Operations and Maintenance Facility and BES System Dispatch Center all have local diesel back-up generators.

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

Through our membership in the Florida Municipal Electric Association (FMEA) and its involvement with the Public Utility Research Center (PURC) at the University of Florida, our utility participates in PURC activities related to storm hardening research.