State of Florida

Public Service Commission

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-M-E-M-O-R-A-N-D-U-M-

DATE: January 26, 2006

TO: Director, Division of the Commission Clerk & Administrative Services (Bayó)

FROM: Division of Economic Regulation (McNulty, Breman, Trapp)
Division of Competitive Markets and Enforcement (Moses, Vinson, Harvey)
Office of General Counsel (Gervasi, Teitzman)

RE: Docket No. 060078-EI Proposal to Require Investor Owned Electric Utilities to Implement a Ten-Year Wood Pole Inspection Program

Docket No. 060077-TL Proposal to Require Local Exchange Companies to Implement a Ten-Year Wood Pole Inspection Program

AGENDA: 02/07/06 – Regular Agenda – Proposed Agency Action – Interested Persons May Participate

COMMISSIONERS ASSIGNED: All Commissioners

PREHEARING OFFICER: None

CRITICAL DATES: None

SPECIAL INSTRUCTIONS: None

FILE NAME AND LOCATION: S:\psc\ecr\wp\recommendations\060078.rcm.doc

Case Background

The hurricanes of 2004 and 2005 that made landfall in Florida resulted in extensive storm restoration costs and long-term electric service interruptions for millions of electric IOU customers. The hurricanes of 2004 resulted in a combined cost to Florida's four largest investor owned electric utilities (electric IOUs) of over $1.5 billion and caused 11.9 million customer service interruptions. Post-hurricane electric service restoration time in 2004 ranged from less

than one hour to 14 days. These storm impacts were spread across the state, significantly affecting each of the electric IOUs and their customers.

The hurricanes of 2005 affected FPL and Gulf Power service areas more than Progress Energy or Tampa Electric service areas. Electric service restoration in 2005 ranged from less than one hour to 18 days. The total impact of the 2005 hurricanes in terms of storm restoration dollars, while not known with precision at this time, is expected to be much the same as it was in 2004.

The impacts of these storms were also severe on the local exchange telecommunications companies. According to the reports from the major incumbent local exchange companies, over 725,000 customers experienced telecommunication outages during Hurricane Wilma. Due to its large service footprint and access line count, the impacts were particularly large for BellSouth. After Wilma struck in October 2005, over 610,000 BellSouth customers were left without telephone service. Two months after the storm, the company still had over 19,000 trouble reports to be worked.

Meteorological experts have stated that the last two storms seasons, while extremely severe, are most likely part of a long term cycle of increased hurricane activity. William Gray and Philip Klotzbach of the Department of Atmospheric Science at Colorado State University, in their extended range forecast of Atlantic seasonal hurricane activity published in December, 2005, expect the current active period of increased hurricane activity to last another 15 to 20 years. The forecast states that there is a low probability that the coming 2006 and 2007 hurricane seasons, or the seasons which follow, will have an equivalent number of major hurricane US landfall events seen in 2004 and 2005. Nonetheless, with the forecast of increased hurricane activity, hurricane conditions are expected to affect Florida's electric grid and telephone lines much more than was experienced between 1966 and 2003, when US hurricane landfall numbers were substantially below the long term average.

The severe hurricane seasons of 2004 and 2005 have underscored the importance of system maintenance activities of Florida's electric IOUs and local exchange companies. These efforts to maintain system components can reduce the impact of hurricanes and tropical storms upon companies' transmission and distribution systems. An obvious key component in electric and telephone infrastructure is the transmission and distribution poles. If a pole fails, there is high chance that the equipment on the pole will be damaged, and failure of one pole often causes other poles to fail. Thus, wooden poles must be maintained or replaced over time because they are prone to deterioration. Deteriorated poles have lost some or most of their original strength and are more prone to fail under certain environmental conditions such as high winds or ice loadings. The only way to know for sure which poles are acceptable, which poles must be treated or braced, and which poles must be replaced is through periodic inspections.

Restoration time can be significantly lengthened when a large number of poles fail due to a single meteorological event, overwhelming the ability of the electric IOU to respond quickly. A February 2005 report by the Edison Electric Institute indicated that a large number of poles throughout Florida required replacement after the storms of 2004. Florida Power and Light, Progress Energy, and Gulf Power replaced 31,700 poles due to the four hurricanes of 2004. In

addition, 22,295 transformers were replaced, along with 3,192 miles of conductor. For named storms impacting Florida in 2004 and 2005, the number of failed poles resulting from a storm are correlated with the number of days required to restore service to customers.

Due to the unforeseeable weather pattern that has emerged and the expectation of continued intense activity for the foreseeable future, the Commission's statutory authority regarding the reliability and safety of the Florida grid strongly suggests that the Commission carefully consider whether the companies are taking all reasonable actions to assure that their distribution and transmission facilities, especially their poles, are properly maintained. Wood pole inspections are critical in order to be able to assess whether strength requirements have been maintained. The Commission should be fully informed of such wood pole inspection results. With such information, the Commission may consider what actions, if any, may be necessary to ensure that wood poles are adequately maintained, including requirements such as more rapid replacement, chemical treatment, or bracing of deteriorated poles.

Regarding electric IOUs, Section 366.04(5), Florida Statutes, gives the Commission the jurisdiction over the planning, development, and maintenance of a coordinated electric power grid throughout Florida to assure an adequate and reliable source of energy for operational and emergency purposes in Florida. In addition, the Commission has the power to require repairs and improvements to the plant and equipment of any public utility when reasonably necessary to promote the convenience and welfare of the public and secure adequate service or facilities for those reasonably entitled thereto. Section 366.05(1), Florida Statutes. The Commission has exclusive jurisdiction to prescribe and enforce safety standards for transmission and distribution facilities of all investor owned, cooperative, and municipal electric utilities, and adopts the National Electric Safety Code as its standards. Section 366.04(6), Florida Statutes, and Rule 25-6.0345, Florida Adminstrative Code. The Commission may require reports from all electric IOUs to assure the development of adequate and reliable electric grids. Section 366.05(7), Florida Statutes.

Regarding telecommunication companies, Section 364.15, Florida Statutes, requires the Commission to direct repairs, improvements, changes, additions, or extensions whenever the Commission finds it reasonable to do so to promote the security or convenience of the public or employees or in order to secure adequate service or facilities for telecommunications services. The FPSC has also adopted The National Electric Safety Code Requirements for local exchange companies through Rule 25-4.036, Design and Construction of Plant, Florida Administrative Code. Finally, the Commission may also require telecommunication companies to file records or reports or other data directly related to matters within the Commission's jurisdiction. Section 364.183, Florida Statutes.

Discussion of Issues

Issue 1: Should the Commission require each electric IOU to implement a ten-year pole inspection cycle, utilizing the standards of the National Electric Safety Code, and to annually report to the Commission the results of the inspections of its wood transmission and distribution poles?

Recommendation: Yes. The electric IOUs are required by rule to comply with the provisions of the National Electric Safety Code (NESC), including wood pole inspections. The Commission should require each of the electric IOUs to implement a ten-year pole inspection cycle and to annually report the results of their wood pole inspections for the previous year. (McNulty, Breman, Trapp)

Staff Analysis:

There are five reasons why such an inspection program should be required:

1) The NESC identifies wood pole minimum strength requirements that electric IOUs must maintain via periodic inspections;

2) In performing inspections, the electric IOUs are required by the NESC to consider the conditions to which the poles may be expected to be exposed;

3) It is probable that Florida is experiencing an extended period of increased hurricane activity, indicating that conditions have changed and punctuating the need for systematic review of electric IOUs' transmission and distribution wood poles to assure that they are reasonably robust;

4) The electric IOUs practice widely different wood pole inspection cycles, so a uniform wood pole inspection cycle implemented by all electric IOUs is necessary in order for the Commission to be able to assess electric reliability and safety; and

5) A ten-year wood pole inspection cycle matches the cycle recommended by the United States Department of Agriculture's Rural Utilities Service for Florida's rural electric utilities.

Forecasts of Future Storm Activity and FPSC Jurisdictional Authority

The hurricanes and tropical storms of 2004 and 2005 have resulted in extremely high levels of extended electric service interruptions and storm restoration costs, profoundly affecting electric IOUs, electric IOU customers, and the state in general. The extended range forecast of Atlantic seasonal hurricane activity published by William Gray of the Department of Atmospheric Science at Colorado State University projects that the current active period of hurricane activity is expected to last another 15 to 20 years. Thus, the weather conditions

impacting the electric facilities of the state appear to have changed. The Commission has jurisdiction over the maintenance of Florida's electric transmission and distribution system. Wood poles are a primary component of that system, and are subject to deterioration over time. The NESC, which comprises the safety standards for poles required by Florida Statutes, requires that wood poles be inspected periodically. While electric IOUs have programs in place to inspect their wood poles, recent staff audits indicate that the inspections are completed based on widely varying cycles (see Page 6).

The expected continuation of high levels of storm activity over the next 15 to 20 years, in conjunction with recent information regarding the varying cycles of pole inspection practices by the electric IOUs, provides a strong basis for the Commission to require the electric IOUs to periodically report their wood pole inspection results to the Commission. Such action is consistent with the Commission's statutory authority under Section 366.05, F.S. The statute states that the Commission has the power to "require repairs, improvements, additions, and extensions to the plant and equipment of any public utility when reasonably necessary to promote the convenience and welfare of the public and secure adequate service or facilities for those reasonably entitled thereto…" Without adopting a requirement that electric IOUs conduct periodic pole inspections of reasonable frequencies and report the inspection results, it may be difficult for the Commission to have a reasonable means of assessing what repairs and improvements referenced in the statute are required and are completed. Under Section 366.05(7), F.S., the Commission is authorized to require reports from all electric IOUs to assure the development of adequate and reliable energy grids.

Pole Inspection Requirements per the NESC

By Section 366.04(6), Florida Statutes and Rule 25-6.0345, F.A.C., the Commission requires electric IOUs under its jurisdiction to comply with the National Electric Safety Code (NESC) as the applicable safety standards for transmission and distribution facilities. Section 26 (Strength Requirements) of the NESC contains provisions for the strength factors of poles which must be maintained for the period that the pole is in service. The NESC requires electric IOUs to strengthen or replace poles in excess of 18 meters (60 feet) in length that have lost one quarter of their original strength at installation under full load bearing conditions. Poles greater than 18 meters in length are typically transmission poles. The NESC also requires electric IOUs to strengthen or replace poles equal to or less than 18 meters in length that have lost one third of their original strength at installation under no load bearing conditions. Poles equal to or less than 18 meters in length are typically distribution poles. In addition, when new or changed facilities add loads to existing poles, the strength of the pole must exceed the strength required at replacement. Otherwise, the pole must be replaced. The NESC also contains requirements for poles greater than 60 feet to maintain the strength to withstand extreme wind loading with consideration of the loads associated with attachments and conductors. Poles less than 60 feet are exempt from extreme wind loading requirements, but must be able to withstand winds of 60 miles per hour (as applies to the bare pole, excluding stresses resulting from wind loads on the conductors). Table 261-1A of Section 26 NESC describes the different types of installations and the strength reduction factor used to determine when the pole should be replaced or rehabilitated. A copy of this portion of the NESC is attached (Attachment A).

The strength requirements identified in the NESC as discussed above can only be met if the electric IOU in question is conducting pole inspections at a rate necessary to detect impairments to the poles. The code is not specific as to the exact schedule with which inspections must be made, but states the following: "Lines and equipment shall be inspected at such intervals as experience has shown to be necessary." (NESC, Rule 214.A.2) The utility is responsible for considering the conditions of service to which the installation reasonably can be expected to be exposed.

Inspection Requirements Related to Loadings: Pole Attachments

Factors such as electrical fixtures and non-electric pole attachments impose additional strength requirements that are considered at the time the pole is installed. Of course, many pole attachments occur well after the date of pole installation. The code states, "When new or changed facilities add loads to existing structures (a) the strength of the structure when new shall have been great enough to support the additional loads and (b) the strength of the deteriorated structure shall exceed the strength required at replacement. If either (a) or (b) cannot be met, the structure must be replaced, augmented, or rehabilitated." See Attachment A. Staff believes that third parties have completed pole attachments to electric IOU wood poles which were done without full consideration of the requirements of the NESC requirement. Staff bases its belief on the verbal representations made at the January 23, 2006 Electric Infrastructure Workshop by New Strategem Consulting's Mary Wolter Glass and findings by KEMA, a company hired by FPL to examine the performance of FPL facilities during Hurricane Wilma. Thus, wood pole strength inspections under such conditions require both remaining strength assessments as well as pole attachment loading assessments.

USDA Rural Utility Service Guidelines Regarding Pole Inspection Cycles

The United States Department of Agriculture's Rural Utility Service (RUS), formerly the Rural Electrification Administration, suggests pole-by-pole initial inspections within 10 years. The RUS suggests wood pole reinspections in Florida every 8 years. The RUS also suggests reinspections more frequently than 8 years in the event that a sampling of poles reveals advanced decay in greater than 1 percent of the poles inspected.

Electric IOUs' Pole Inspection Cycles

Recent staff management audits have been conducted to examine system component maintenance activities at Florida Power & Light Company (FPL), Progress Energy Florida, Incorporated (PEF), Tampa Electric Company (TEC) and Florida Public Utilities Corporation (FPUC). An audit of Gulf Power Company (Gulf) will be complete in early 2006.

Staff's audits of FPL and PEF maintenance activities raised questions about these companies' pole inspection practices. Management audit reports on each company were published in July 2005 and were filed as staff testimony in PEF's and PEF's recent rate cases. Regarding FPL, staff's report concluded, "FPL's sound and bore inspections do not appear to be conducted throughout every service area in sufficient number, are not completed in a timely cyclical manner, and may allow degraded poles to go unidentified." The report also stated, "FPL

has no documented distribution procedures stating the accepted company cycle time for specific [sound and bore] distribution pole inspections." The report indicated that FPL's current rate of sound and bore inspection equates to an inspection cycle of 60 years.

KEMA, Inc. (KEMA) concluded in its January 12, 2006, publication titled "Technical Report: Post Wilma Engineering Analysis" that FPL distribution pole performance during non-hurricane conditions is good, and non-hurricane pole failures have virtually no contribution to service interruptions. However, KEMA also stated "FPL does not have a systematic test-and-treat program for its older distribution wood pole population". While the report indicated that various wood pole inspection programs were utilized by FPL, it also noted that the Osmose program (FPL's sound and bore inspection program) is very small in scope.

In staff's audit report of PEF transmission and distribution wood pole inspections, staff concluded that PEF has not maintained its 10-year ground-line inspection cycle as outlined in its procedures. The report concludes "Progress Energy Florida does not currently have a fully-implemented monitoring system to track distribution ground-line inspections". Ground line inspections are similar to the sound and bore inspections completed by FPL. The report included data showing that PEF had planned 72,178 pole inspections in 2003, yet PEF completed only 10,716 such inspections.

According to the June 2005 management audit of TECO's electric service quality, TECO targets comprehensive ground line inspections on a ten year cycle. According to the March 2005 staff audit of FPUC's electric service quality, FPUC's inspection cycle varies from one year (Northeast Division) to ten years (Northwest Division), but the full extent of these pole inspections (e.g. visual, sound and bore, excavation, etc.) are not known. Gulf Power's pole inspection cycle is not known at this time but will be included in the 2006 staff management audit of that company.

Based on the results of the staff audit reports, it is apparent to staff that electric IOUs practice widely varying cycles of wood pole inspections, some longer than ten years. Cycles longer than ten years may not be sufficient to detect wood poles that have deteriorated to the point that they no longer meet the requirements of the NESC.

Inspection and Reporting Cost Estimate

The incremental costs of maintaining a ten year sound and bore inspection cycle will vary by electric IOU because some electric IOUs are currently performing inspections at that rate while other electric IOUs are not and because different electric IOUs have different quantities of poles. For example, FPL's sound and bore pole inspection costs between 1999 and 2004 averaged $45.20 per pole. The number of poles annually inspected for FPL consistent with a ten year inspection cycle would be approximately 109,000 poles (1,090,000 wood poles/10 years). Thus, the annual cost to FPL for conducting such inspections, based on historical costs, is approximately $4,926,800 (109,000 poles x $45.20). Since FPL already conducts an average of 16,629 sound and bore inspections per year, the incremental cost of inspecting the larger number of poles suggested by staff's recommendation is $4,175,178 ((109,000 - 16,629) x $45.20)). Additional costs for inspecting wood poles for other factors affecting the strength of the pole,

such as the addition of pole attachments as well as certain professional and administrative costs to prepare and file the reports for each electric IOU will be required. Those costs are not quantified but are expected to be relatively small compared to the costs of the increased inspection programs electric IOUs would be required to conduct.

The cost of conducting these inspections, while not insignificant, must be compared to the storm restoration costs incurred in 2004 and 2005. FPL's estimated storm restoration costs in 2004 were $999 million, and its storm restoration costs in 2005 as requested for cost recovery in Docket No. 060038-EU are $906 million.

The incremental costs for other electric IOUs, such as TECO, which are performing sound and bore inspections consistent with or close to a ten year cycle, should be relatively small. If the Commission, in the future, adopts more stringent pole strength standards than those required in the NESC, these costs could change according to the additional requirements imposed.

Concrete Poles

Specific action unique to the inspection of concrete poles is not included in this recommendation because the strength of concrete poles does not diminish over time like wood poles. Any deterioration of a concrete pole is generally observed by cracks and surface blemishes. Therefore, the adequacy and frequency of visual inspections is not a specific concern at this time. More information is necessary before a recommendation can be made concerning concrete pole inspections.

Conclusion

The specific standards of the NESC require inspection of electric IOU's wood poles based upon the conditions reasonably expected to be imposed on them. The last two hurricane seasons and the meteorological forecasts for the 2006 hurricane season and beyond provide clear indications that conditions have changed. Commission rules require that electric IOUs must inspect their poles on a periodic basis, yet there exist no systematic wood pole inspection reporting requirement at this time. Staff believes the Commission should require each of the electric IOUs to annually report to the Commission the results of its prior calendar year inspections of its wooden transmission and distribution poles. Such inspection should be based on the requirements of the NESC and a ten-year inspection cycle.

Issue 2: Should the Commission require each local exchange company to implement a ten-year pole inspection cycle, utilizing the standards of the requirements of the National Electric Safety Code, and to annually report to the Commission the results of the inspections of wood poles?

Staff Recommendation: Yes. The local exchange companies are required by rule to comply with the provisions of the National Electric Safety Code, including wood pole inspections. The Commission should require each of the companies to implement a ten-year pole inspection cycle and to annually report the results of their wood pole inspections for the previous year. (Moses, Vinson, Harvey)

Staff Analysis:

As noted in the discussion of Issue 1, there are five reasons why such an inspection program should be required:

1) The NESC identifies wood pole minimum strength requirements that must be maintained via periodic inspections;

2) In performing inspections, the local exchange companies are required by the NESC to consider the conditions to which the poles can be expected to be exposed;

3) It is probable that Florida is experiencing an extended period of increased hurricane activity, indicating that conditions have changed and punctuating the need for systematic review of local exchange companies' wood poles to assure that they are reasonably robust;

4) Local exchange companies do not practice planned cyclical inspections of their installed wood pole inventory. A uniform wood pole inspection cycle implemented by all local exchange companies is necessary in order for the Commission to be able to assess telephone service reliability and safety, and;

5) A ten-year inspection cycle matches the cycle recommended by the United States Department of Agriculture's Rural Utilities Service for Florida rural electric utilities.

Forecast of Future Storm Activity and FPSC Jurisdictional Authority

Similar to the electric industry, Florida local exchange companies were severely impacted by the storms of 2004 and 2005, with hundreds of thousands of service interruptions to customers and millions of dollars of damage incurred. For example, over 725,000 local exchange customers experienced service outages during Hurricane Wilma in October 2005. BellSouth reports to have lost 3,451 poles to storm damage in 2004 and about 4,187 in 2005 according to a preliminary estimate which is subject to revision. Verizon lost 1,690 poles to storms in 2004. Sprint does not separately track pole replacement by event.

As noted above, Section 364.15, Florida Statutes, requires the Commission to make and serve an order directing repairs, improvements, changes, additions, or extensions whenever the Commission finds it reasonable to do so to promote the security or convenience of the public or employees or in order to secure adequate service or facilities for telecommunications services. The FPSC has also adopted The National Electric Safety Code Requirements for local exchange companies through Rule 25-4.036, Design and Construction of Plant, Florida Administrative Code. The Commission may also require telecommunication companies to file records or reports or other data directly related to matters within the Commission's jurisdiction. Section 364.183, Florida Statutes.

Pole Inspection Requirements per the NESC

Staff believes the Commission has authority to require the incumbent local exchange companies to implement a comprehensive inspection of its telephone poles as a means of complying with NESC. This is similar to the Commission's authority with respect to electric IOUs. The authority for such a program is listed below.

> Rule 25-4.036, Florida Administrative Code (F.A.C.), Design and Construction of Plant.
>
> (1) The plan and facilities of the utility shall be designed, constructed, installed, maintained and operated in accordance with provisions of the 2002 Edition of the National Electrical Safety Code (IEEE C2-2002) and the National Electrical Code (NFPA 70-2005), pertaining to the construction of telecommunications facilities.
>
> (2) Compliance with these codes and accepted good practice is necessary to insure as far as reasonably possible continuity of service, uniformity in the quality of service furnished and the safety of persons and property.

Rule 25-4.038, F.A.C., Safety, is another rule staff believes is applicable regarding the safety of telephone poles. The rule is stated below in pertinent part.

> Rule 25-4.038, F.A.C., Safety.
>
> Each utility shall at all times use reasonable efforts to properly warn and protect the public from danger, and shall exercise due care to reduce the hazards to which employees, customers, and the public may be subjected by reason of its equipment and facilities…

In addition, staff believes that a routine pole inspection program would ensure compliance with the NESC and minimize service disruption.

As noted in the discussion of Issue 1, Section 26 (Strength Requirements) of the NESC prescribes strength factors for poles which must be maintained for the period poles are in service. The NESC requires the company to strengthen or replace poles equal to or less than 18 meters in

length (which would include most telephone poles) that have lost one-third of their original strength at installation under no-load conditions. In addition, when new or changed facilities add loads to existing poles, the strength of the pole must exceed the strength required at replacement. If this is not the case, the pole must be replaced with a stronger one. As noted previously, a copy of this portion of the NESC is attached (Attachment A).

Staff believes these requirements identified in the NESC can only be met if the company in question is conducting pole inspections of a detailed nature necessary to detect the specific degree of impairment to poles. Further, these inspections must be conducted on a number of poles that is sufficient to be statistically reliable. Neither visual nor sounding inspections of poles alone will provide the data necessary to determine a percentage of strength loss. The code is not specific as to the exact schedule with which inspections must be made, but states the following: "Lines and equipment shall be inspected at such intervals as experience has shown to be necessary." (NESC, Rule 214.A.2) The company is responsible for considering the conditions of service to which the installation reasonably can be expected to be exposed.

USDA Rural Utility Service Guidelines Regarding Pole Inspection Cycles

The United States Department of Agriculture's Rural Utility Service (RUS), formerly the Rural Electrification Administration, suggests pole-by-pole initial inspections over a cycle of ten years. The RUS suggests wood pole reinspections in Florida every eight years. The RUS also suggests reinspections more frequently than eight years in the event that a sampling of poles reveals advanced decay in greater than 1 percent of the poles inspected. The RUS suggests that sound and bore inspections should include excavations, especially for Southern Pine poles, because it greatly increases the effectiveness of the inspection. Staff believes that the Florida local exchange companies' pole inspection cycles should not exceed the suggested wood pole inspection cycle which applies to the rural utilities of Florida (electric cooperatives), especially during periods when heightened hurricane activity is expected.

Since many local exchange companies and electric IOU facilities are collocated on the same poles, inspection of both electric IOU poles and local exchange company poles provides the benefit of protecting the electric and telephone infrastructure in the event of severe storm conditions.

Local Exchange Company Pole Inspection Cycles: Deterioration and Overloading

Just as local exchange telephone companies attach lines and equipment to electric IOUs' poles, a large part of electric distribution in Florida is accomplished through attachment of electrical conductor cable, transformers and other components to poles owned by local exchange companies. BellSouth owns and maintains 459,312 poles in Florida, with 307,459 of these bearing attachments (lines, transformers, etc.), by electric utilities. Verizon owns and maintains 107,863 Florida poles, with 29,632 bearing attachments by electric utilities. Sprint-Florida owns and maintains 38,731 poles, of which 9,673 bear electric utilities attachments.

Because of this collocation, staff believes it is as important for local exchange companies to thoroughly inspect poles as it is for electric IOUs.

Staff is currently conducting a management audit of major local exchange companies' pole inspection and maintenance programs. The audit report will be published in March 2006. It is staff's understanding that unlike Florida's electric IOUs, the major incumbent local exchange companies do not conduct planned inspections of their entire wood pole population on a cyclical basis. The three largest local exchange companies do, however, have a policy of inspecting telephone poles when repair or addition of facilities necessitates a telephone company employee or contractor climb or make attachments to telephone poles. However, in these instances, the type of inspection performed does not involve drilling the pole to identify slight to moderate rot or deterioration.

Additionally, BellSouth performs targeted remedial pole inspections, treatment, bracing and replacing when multiple pole deterioration cases are detected in an area. However, the number of poles involved appears to be very small. BellSouth's statewide expenditures for its outsourced inspection activities were minimal over the period 2002 to 2005. The number of poles covered by BellSouth in these years by such efforts is estimated by staff to have been at most about 2,500 poles. To complete a ten-year cycle, on the other hand, BellSouth would have to average about 45,000 planned pole inspections per year.

Another potential cause of pole failure is overloading of poles. This can result from ineffective communication or exchange of information between the pole owner and non-owner attachers. Staff notes that most communication between local exchange companies and electric IOUs regarding increased weight and stress loads to poles is informal, either by telephone or e-mail. There is inherent difficulty and complexity for each party in knowing the current load on poles and in communicating changes to each other. Without accurate tracking and exchange of information, overloads can result which may not become apparent until factors such as storm winds, auto accidents, or wood deterioration ultimately cause failures.

Inspection and Reporting Cost Estimate

The incremental cost of maintaining a ten-year inspection cycle will vary depending on each local exchange company's current level of expenditures and the number of poles owned. Additional costs for inspecting loading, as well as certain professional and administrative costs, will be required to maintain the data and file the reports for each company. These costs are not quantified but are expected to be small in comparison with the costs of the increased inspection activity.

The cost of conducting these inspections, while not insignificant, must be considered in the context of storm restoration costs. For example, Sprint estimated its 2004 storm damages at $148 million in Docket No. 050374-TL. As noted in Issue 1, FPL's sound and bore inspection costs per pole averaged $45.20 per pole. Assuming a ten-year inspection cycle, this would require Sprint to inspect about 3,800 poles per year. At an estimated cost of $45.20 each, this would total less than $172,000 annually for the inspections and pole treatment, bracing or replacement. Since the quantity of remedial actions needed will necessarily vary based upon the failure rate encountered, the weighted cost per pole used here to provide a rough estimate may be different from the actual cost incurred. The annual inspection of one-tenth of BellSouth's poles

would require about 45,000 sound-and-bore inspections each year. Based upon an average cost of $45.20 per pole, the inspection and remediation costs would be just over $2,000,000. Staff believes an effective pole inspection program can be expected to reduce future storm damage restoration costs.

Concrete Poles

Specific action unique to the inspection of concrete poles is not included in this recommendation because the strength of concrete poles does not diminish over time like wood poles. Any deterioration of a concrete pole is generally observed by cracks and surface blemishes. Therefore, the adequacy and frequency of visual inspections is not a specific concern at this time. More information is necessary before a recommendation can be made concerning concrete pole inspections.

Conclusion

The specific standards of the NESC require inspection of local exchange companies' wood poles based upon the conditions reasonably expected to be imposed on them. The last two hurricane seasons and the meteorological forecasts for the 2006 hurricane season and beyond provide clear indications that conditions have changed. Commission rules require that local exchange companies must inspect their poles on a periodic basis. However, there exists no systematic wood pole inspection reporting requirement at this time. Thus, Staff believes the Commission should require each major local exchange company to annually report to the Commission the results of its prior calendar year inspections of its wooden poles. Such inspection should be based on the requirements of the National Electric Safety Code and a ten-year pole inspection cycle.

Issue 3: If the Commission determines in Issues 1 and 2 that the electric IOUs and local exchange companies should annually report the results of pole inspections reflecting a ten year pole inspection cycle, what method of pole inspection should the electric IOUs and local exchange companies be required to implement?

Staff Recommendation: The inspections should be based on the sound and bore technique for all wood poles, and should include excavation for all Southern Pine poles and other wood pole types as appropriate. The inspections should include strength impact assessments of pole attachments. (McNulty, Breman, Trapp, Moses, Vinson, Harvey)

Staff Analysis:

Wood Pole Inspection Methods

Wood pole inspection methods vary, but three basic methods are used, usually in combination, in order to assess the condition of wood poles. These methods include:

1) Visual inspections which may be completed in conjunction with thermo vision (infrared) pole attachment inspections;
2) Employee assessments completed prior to climbing poles in conjunction with field work; and
3) Sound and bore pole inspections, often performed by outsourced contractors, which often includes excavation of the pole to a depth of 18 inches.

Visual inspections provide little value for determining the loss in strength caused by internal rot and fungal decay within poles, though some defects such as woodpecker holes or broken cross arms may be detected. The climbing inspections involve sounding the pole with a hammer and probing it with a screwdriver, a method which may be adequate for detecting a severely rotten pole. However, slight or moderate rot could not be detected using this method.

Sound and bore inspections are performed by contractors such as Osmose Corporation. Sound and bore inspections, including excavation, are by far the most effective form of inspection for determining the internal condition of the wood poles. In these inspections, the pole is sounded (hammered) to determine whether any hollows exist. If so, the pole is drilled in several locations to determine the extent of the hollow cavity. The drilling can be used to determine the thickness of the remaining shell. The soil is excavated around the pole below ground level to determine the extent of exterior pole rot and wood loss. At this point, fungicide treatment of the pole is an option if the pole has sufficient remaining good wood. Detailed records are kept of these inspections, and the poles are marked by the contractor with the date of and type(s) of inspection and mitigation performed.

Wood pole inspections conducted using one of the three methods may result in one of three remedial actions: treatment (as specified above), bracing, or replacement.

Pole Inspection for Strength Requirements Related to Pole Attachments

Factors such as incremental pole attachments impose additional strength requirements that are considered at the time the pole is installed. Of course, many pole attachments occur well after the date of pole installation. The code states, "When new or changed facilities add loads to existing structures (a) the strength of the structure when new shall have been great enough to support the additional loads and (b) the strength of the deteriorated structure shall exceed the strength required at replacement. If either (a) or (b) cannot be met, the structure must be replaced, augmented, or rehabilitated." See Attachment A. Staff believes that third parties have completed pole attachments to wood poles which were done without full consideration of the requirements of the NESC requirement. Staff bases its belief on the verbal representations made at the January 23, 2006 Electric Infrastructure Workshop by New Strategem Consulting's Mary Wolter Glass and findings by KEMA, a company hired by FPL to examine the performance of FPL facilities during Hurricane Wilma. Thus, wood pole strength inspections under such conditions require both remaining strength assessments as well as pole attachment loading assessments.

USDA Rural Utility Service Guidelines

Of the three inspections, only sound and bore inspections provide the quantitative data allowing for meaningful evaluations of remaining pole strength. The RUS suggests that sound and bore inspections are the minimum acceptable inspection method. The RUS indicates that visual inspection methods lack the recommended accuracy. According to the RUS, the sound and bore inspections should include excavations, especially for Southern Pine poles, because excavations greatly increases the effectiveness of the inspection.

Conclusion

Staff believes the wood pole inspections should be based on the sound and bore technique for all poles. This method produces information about remaining pole strength requirements as required by the NESC, whereas the visual and thermovision inspection methods cannot provide such information. In addition, staff believes that the sound and bore technique should include excavation for all Southern Pine poles and other pole types as appropriate, in accordance with the suggestions of the RUS.

Staff believes that third parties have completed pole attachments to companies' wood poles without full consideration of the requirements of the NESC requirement. If a company does not maintain records of the strength impact assessments of pole attachments affixed to the pole after the time of original pole installation, staff believes that poles with additional attachments should be inspected for strength impacts in order to determine whether the company has complied with the code (i.e., when new or changed facilities add load to existing structures, the strength of the structure when new shall have been great enough to support the additional loads). In those specific cases, staff believes this type of assessment should be completed in addition to the wood pole sound and bore inspections in order to ensure that the pole is not overloaded.

Issue 4: If the Commission determines in Issues 1 and 2 that the electric IOUs and local exchange companies should annually report the results of pole inspections reflecting a ten year pole inspection cycle, what should be the filing requirements of the reports?

Recommendation: Preliminary to filing any such reports, and by no later than April 1, 2006, the electric IOUs should submit a comprehensive wood pole inspection plan to the Director of the Division of Economic Regulation. Likewise, the local exchange companies should submit a comprehensive wood pole inspection plan to the Director of the Division of Competitive Markets and Enforcement by April 1, 2006. In their filings, each electric IOU and local exchange company should include their plan for pole-specific data gathering, pole inspection program enforcement, and how poles shared by two or more companies will be inspected. The plans should also identify any pole inspection standards utilized by the electric IOU or local exchange company that supersede those of the NESC and any other details necessary to understand its pole inspection program.

The annual report of pole inspections, hereafter referred to as the Pole Inspection Report, should be filed by March 1 of each year with the Division of Economic Regulation and the Division of Competitive Markets and Enforcement. It should contain the information listed below for the previous calendar year. The first report should be provided March 1, 2007, but it should contain inspection data for May, 2006, through December, 2006, rather than a full twelve month period, given the timing of this recommendation. All annual inspection reports, including the 2006 Pole Inspection Report, should contain the following informational sections:

1) A review of the methods the company used to determine National Electric Safety Code compliance for strength and structural integrity of the wood poles included in the previous year's annual inspections, taking into account pole loadings where required;

2) An explanation of the inspected poles selection criteria, including among other things geographic location age, and the rationale for including each such selection criteria;

3) Summary data and results of the companies' previous year's transmission and distribution wood pole inspections, addressing the strength, structural integrity, and loading requirements of the National Electric Safety Code (See Attachment B for proposed data reporting requirements in a sample format); and

4) Identification of the cause(s) of each pole failure for those poles failing the inspection, to the extent that such cause(s) can be discerned. Also, the specific actions the company has taken or will take to correct each pole failure.

(McNulty, Breman, Trapp, Moses, Vinson, Harvey)

Staff Analysis:

The Commission needs to understand the nature of each electric IOU's and local exchange company's pole inspection program on a going-forward basis. By requiring that such programs be provided in advance of the pole inspection data collection period, the Commission

can be assured that any issues that may arise out of staff's review of the pole inspection programs can be brought to the Commission's immediate attention. Thus, the electric IOUs should submit a comprehensive wood pole inspection plan to the Director of the Division of Economic Regulation. Likewise, the local exchange companies should submit a comprehensive wood pole inspection plan to the Director of the Division of Competitive Markets and Enforcement by April 1, 2006. In their filings, each electric IOU and local exchange company should include their plan for pole-specific data gathering, pole inspection program enforcement, and collocated poles inspections (how poles shared by two or more companies will be inspected). The plans should also identify any pole inspection standards utilized by the electric IOU or local exchange company that supersede those of the NESC and any other details necessary to understand its pole inspection program.

The pole inspection reporting requirement to allow the Commission to assess whether poles have been properly inspected and related remedial activities completed should include the following sections:

1) A review of the methods the company used to determine National Electric Safety Code compliance for strength and structural integrity of the wood poles included in the previous year's annual inspections, taking into account pole loadings where required;

2) An explanation of the inspected poles selection criteria, including among other things geographic location, and the rationale for including each such selection criterion;

3) Summary data and results of the companies' previous year's transmission and distribution wood pole inspections, addressing the strength, structural integrity, and loading requirements of the National Electric Safety Code (See Attachment B); and

4) The cause(s) of each pole failure for poles failing inspection, to the extent that such cause(s) can be discerned in the inspection. Also, the specific actions the company has taken or will take to correct each pole failure.

Staff believes this reporting requirement is the appropriate action to take at this time for the Commission. Staff notes that in the event the Commission should at any point in the future adopt reliability standards related to pole inspections that supersede the safety requirements reflected in the NESC, it may modify the reporting requirements accordingly to reflect the new standards.

Furthermore, Staff believes that March 1 is the optimal date for annual Pole Inspection Report filing because it matches the filing deadline of the Annual Distribution Reliability Report requirement per Rule 25-6.0455, F.A.C. A requirement to file by March 1 allows the companies adequate time to prepare the report and also allows the Commission the ability to respond to the information contained in the report in a timely fashion. Reporting requirements for 2006 should be abbreviated to include only May 2006 through December 2006. This would allow the electric IOUs and the local exchange companies time to coordinate their inspection programs and provide the Commission with details about their individual inspection program plans prior to the initiation of the inspection program.

Issue 5: Should these dockets be closed?

Staff Recommendation: Yes. If no protest is filed by a person whose interests are substantially affected within 21 days of the Commission order, the dockets should be closed upon the issuance of a consummating order. If a timely protest is filed by a person whose substantial interests are affected within 21 days of the Commission Order, these dockets should remain open pending the resolution of the protest. Any protest of the Commission's decision in this matter should identify with specificity the item or measure being protested, and any such protest should not prevent the remainder of the Order from becoming final and effective. (Gervasi, Teitzman)

Staff Analysis: If no protest is filed by a person whose interests are substantially affected within 21 days of the Commission order, the dockets should be closed upon the issuance of a consummating order. If a timely protest is filed by a person whose substantial interests are affected within 21 days of the Commission Order, these dockets should remain open pending the resolution of the protest.

Table 261-1A

Strength Factors for Structures,[1] Crossarms, Support Hardware, Guys, Foundations, and Anchors for Use with Overload Factors of Table 253-1

[It is recognized that structures will experience some level of deterioration after installation, depending upon materials, maintenance, and service conditions. The table values specify strengths required at installation. Footnotes specify deterioration allowed, if any. When new or changed facilities add loads to existing structures (a) the strength of the structure when new shall have been great enough to support the additional loads and (b) the strength of the deteriorated structure shall exceed the strength required at replacement. If either (a) or (b) cannot be met, the structure must be replaced, augmented, or rehabilitated.]

	Grade B	Grade C
Strength factors for use with loads of Rule 250B		
Metal and Prestressed-Concrete Structures[6]	1.0	1.0
Wood and Reinforced-Concrete Structures[2, 4]	0.65	0.85
Support Hardware	1.0	1.0
Guy Wire[5, 6]	0.9	0.9
Guy Anchor and Foundation[6]	1.0	1.0
Strength factors for use with loads of Rule 250C		
Metal and Prestressed-Concrete Structures[6]	1.0	1.0
Wood and Reinforced-Concrete Structures[3, 4]	0.75	0.75
Support Hardware	1.0	1.0
Guy Wire[5, 6]	0.9	0.9
Guy Anchor and Foundation[6]	1.0	1.0

[1] Includes poles.

[2] Wood and reinforced concrete structures shall be replaced or rehabilitated when deterioration reduces the structure strength to 2/3 of that required when installed. If a structure is replaced, it shall meet the strength required by Table 261-1A. Rehabilitated portions of structures shall have strength greater than 2/3 of that required when installed.

[3] Wood and reinforced concrete structures shall be replaced or rehabilitated when deterioration reduces the structure strength to 3/4 of that required when installed. If a structure is replaced, it shall meet the strength required by Table 261-1A. Rehabilitated portions of structures shall have strength greater than 3/4 of that required when installed.

[4] Where a wood or reinforced concrete structure is built for temporary service, the structure strength may be reduced to values as low as those permitted by footnotes (2) and (3) provided the structure strength does not decrease below the minimum required during the planned life of the structure.

[5] For guy insulator requirements, see Rule 279.

[6] Deterioration during service shall not reduce strength capability below the required strength.

Attachment B

POLE INSPECTION REPORT

Company: _____

Summary of Pole Inspections
Period: _____

Type of Inspection: _____

Type of Pole: Class ____ Material _____ Vintage _____ Installed Population _____

Number of inspections planned and number completed _____/_____. Include reason for any variance between planned and completed pole inspections. All variances justification should address resultant backlog, if any, and plans to address any backlog.

Number of inspected poles addressing a prior backlog _____.

Number of poles failing the inspection _____ .

Number of poles requiring minor follow-up _____.

Number of poles requiring a change in inspection cycle ____.

Number of poles that required no change in inspection cycle or remediation ____.

Number of poles that were overloaded _____.

Number of poles with estimated remaining pole life of less than 10 years _____.