

Review of
Pole Inspection and Maintenance Practices of
BellSouth, Sprint, and Verizon

March 2006

By Authority of
The State of Florida for
The Public Service Commission
Division of Competitive Markets and Enforcement
Bureau of Performance Analysis



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BellSouth, Sprint, and Verizon**

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1.0 EXECUTIVE SUMMARY

1.0 Executive Summary

1.1 Objectives

This management review of Florida's three largest local exchange telephone companies, BellSouth Telecommunications, Inc., Sprint-Florida, Inc., and Verizon Florida, Inc., was conducted on behalf of the Florida Public Service Commission (FPSC or the Commission) by the Bureau of Performance Analysis. The purpose of the review was to learn more about the companies' management and operational practices in the area of pole maintenance and inspection during the period 2002-2005.

The review objectives were as follows:

- ◆ Review each company's internal processes for maintaining, inspecting, and repairing its pole facilities within Florida,
- ◆ Evaluate the joint-use relationships between each company and other utilities within Florida, and
- ◆ Evaluate each company's efforts and expenditures in the area of pole maintenance and inspections for the period.

1.2 Scope

This review focused on the procedures, processes, systems, programs, and activities aimed at maintaining and improving each company's pole facilities. Staff focused on the following areas:

- ◆ Company internal goals and objectives
- ◆ Operational and maintenance expenditures
- ◆ Maintenance practices and procedures
- ◆ Compliance with FPSC rules and adherence to industry-accepted standards

1.3 Methodology

This review was based upon information gathered from each company through document requests of its procedures, standards, and internal records and through teleconference interviews with company employees. This information was used by staff to assess and evaluate the companies' focus and performance regarding pole maintenance for the review period. Each company was reviewed independently.

1.4 Overall Opinion

Staff noted the following findings that apply to BellSouth, Sprint, and Verizon:

- ◆ The companies do not conduct scheduled inspections of all their poles plant as prescribed by the National Electric Safety Code.
- ◆ The companies do not evaluate or document the root causes of pole failures or assess the risks associated with potential pole failures.
- ◆ The companies do not use a central monitoring system to track the condition of poles currently in service.

Along with these findings, staff notes the following finding regarding Verizon:

- ◆ Verizon's mapping system database of pole records may contain inaccurate information.

Each of these findings is further discussed in Sections 3.4, 4.4, and 5.4 of this report. Staff's overall opinion for each company is summarized below.

1.4.1 BellSouth Telecommunications, Inc.

BellSouth does not have a program to conduct scheduled pole inspections of all poles as a means of assessing performance and service reliability. The company relies on its network forces to inspect some poles in the normal course of their responsibilities before working aloft, which leaves most poles unexamined. BellSouth utilizes a contractor to perform targeted inspection and remediation of poles identified as a result of pre-climbing inspections. However, BellSouth's expenditures and number of poles addressed in this way are minimal over the study period examined. Without scheduled inspections of all its poles over a specified period of time, BellSouth is not able to verify all of its in-service poles meet the minimum structural and loading standards set by the FPSC and the NESC.

BellSouth does not monitor or evaluate the root cause of any poles failures. The company does not track the number of pole failures per year and does not document the underlying cause of these failures. Compiling and analyzing this data would allow the company to better understand the external forces upon its system and potentially could provide information that would allow the company to make changes that could strengthen its plant facilities.

1.4.2 Sprint-Florida, Inc.

Sprint-Florida does not perform scheduled inspections of all its poles over a specified period of time. Poles are inspected in each instance prior to work being done on or near a pole, but it is an ancillary task. Poles are determined to be either fit or unfit for continued service. When deemed unfit by field service personnel, the condition is verified by supervisors and the pole is replaced. No remedial maintenance is performed on poles, which might extend their lifespans. Without scheduled inspections of all its poles over a specified period of time, Sprint

is not able to verify all of its in-service poles meet the minimum structural and loading standards set by the FPSC and the NESC.

Sprint-Florida also does not have a root cause analysis program to determine the causes of pole failures. Such information is not captured, tracked, or trended. Lacking root cause data, the company cannot identify the number of poles downed as a direct result of any particular cause (e.g. storm damage or wood deterioration.) Compiling and analyzing this data would allow the company to better understand the external forces upon its system and potentially could provide information that would allow the company to make changes that could strengthen its plant facilities.

1.4.3 Verizon-Florida, Inc.

Verizon's approach to pole inspection and maintenance is to examine each pole before any climbing is done in the course of normal work activity and to replace all defective poles that are discovered. There is no scheduled inspection program of the pole inventory over a specified cycle. Based on cost studies conducted in the 1980s, the company does not believe it is cost-effective to conduct remedial or preventative maintenance on its poles. Replacing a pole, instead of performing maintenance, may be an acceptable practice if the company were monitoring its poles at a prescribed interval to ensure all substandard poles are identified in a timely manner. Without scheduled inspections of all its poles over a specified period of time, Verizon is not able to verify all of its in-service poles meet the minimum structural and loading standards set by the FPSC and the NESC.

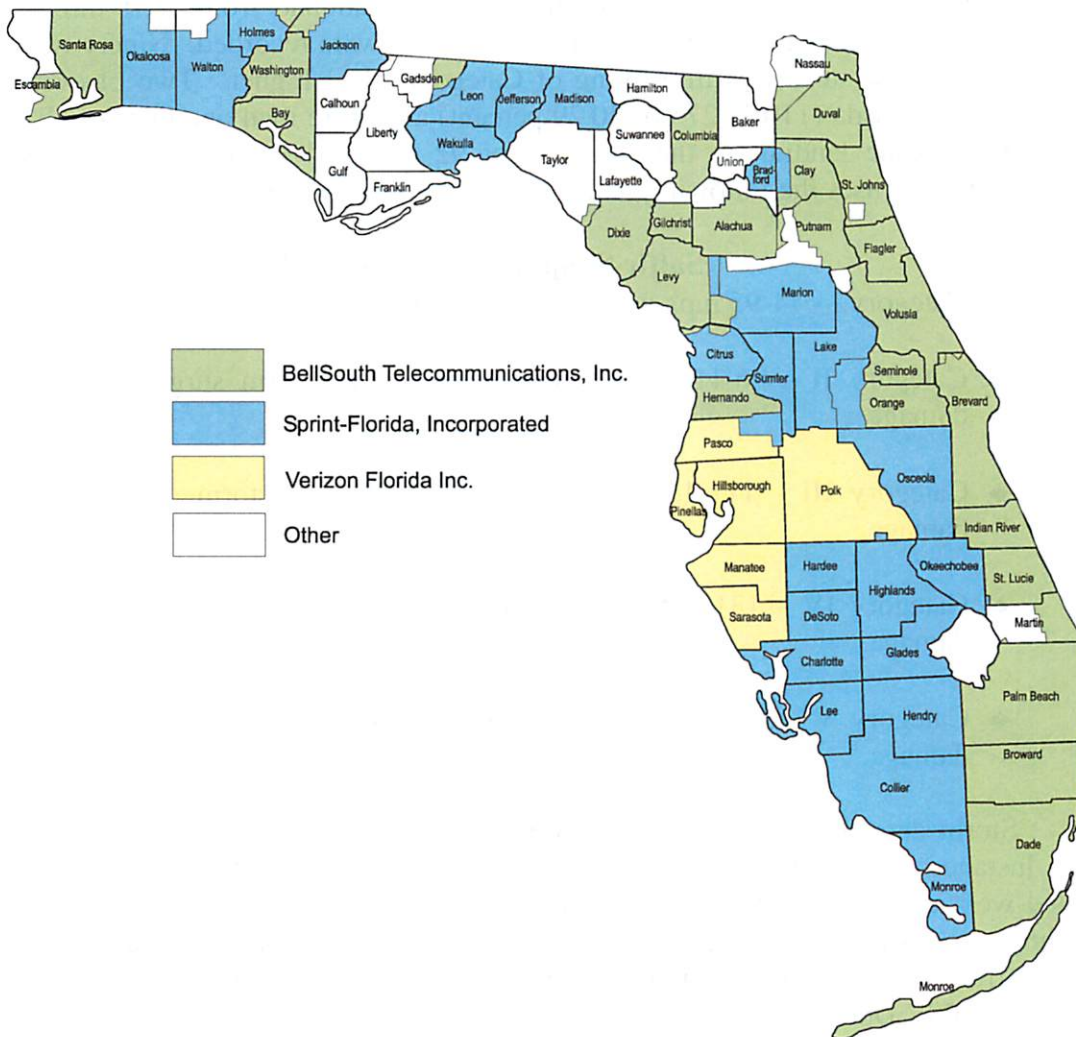
Verizon did conduct a sample audit of its pole locations and joint-use attachments to gain an understanding of the accuracy of its property records system. This survey included visual inspections for obvious physical defects. Based on the results, staff believes Verizon does not have accurate records of its poles in service. It appears that the company has not reviewed the accuracy of its pole data since the company converted its records to an electronic system in the 1980s. If the audit is representative of the overall condition of the company's territory, there could be up to 22,000 pole records with incorrect location data. While the company does currently update its system when an existing pole is replaced, the company is only replacing approximately one percent of its poles each year. With no other inspection or maintenance process in place, this incorrect information could remain on the company's database indefinitely.

Also, Verizon does not conduct any root cause or risk analysis on its poles that fail. The company does not track the number of pole failures per year and does not document the underlying cause of these failures. Compiling and analyzing this data would allow the company to better understand the external forces upon its system and potentially could provide information that would allow the company to make changes that could strengthen its plant facilities.

2.0 BACKGROUND AND PERSPECTIVE

2.0 Background and Perspective

This audit focuses on the three largest Incumbent Local Exchange Carriers (ILEC) telecommunications providers operating in the unique environment of Florida – BellSouth, Sprint, and Verizon. Specifically, the audit explores how each company conducts maintenance and replacement programs for wooden poles used in the conduct of telecommunication operations. The ILECs' service areas are shown below.



2.1 Impact of Geography and Weather on Local Exchange Carriers

There are several factors having a direct impact on ILEC operations throughout Florida. Florida is a peninsula that is surrounded by the Atlantic Ocean and the Gulf of Mexico, which have significant influence on weather. Lowlands and coastal areas predominate. Lack of coastal uplands or mountainous regions render the state largely unprotected from weather throughout its entire length and breadth.

Florida enjoys highly favorable, moderate weather but with a unique combination of negative elements – the high temperatures of summer, elevated humidity throughout the year, frequent thunderstorms, and a hurricane “season” from June through November. The bodies of water flanking Florida are breeding grounds for hurricanes. The state is centered in a “hurricane corridor” running along the eastern and southern coasts of the United States. All of these factors have a harmful effect on ILEC operations and infrastructure.

Hurricanes, which strike Florida frequently, have dramatic and devastating effects on the telephone industry’s equipment. The National Hurricane Center in Miami maintains records of all hurricanes striking the U.S. mainland from 1851 through the 2004 season. During that period, 273 hurricane strikes were recorded. Ninety-two were classified as major storms, with a rating of Category III or higher. Two of every five hurricanes hit Florida (110 of 273 or 40.29 percent) and more than one-third of all major storms have made landfall in the state (35 of 92 or 38.04 percent). The National Hurricane Center uses the following scale to categorize the strength of hurricanes.

Saffir-Simpson Hurricane Scale

- ◆ Category I - 74-95 mph winds with 4-5 ft. storm surge and minimal damage.
- ◆ Category II - 96-110 mph winds with 6-8 ft. storm surge and moderate damage.
- ◆ Category III - 111-130 mph winds with 9-12 ft. storm surge and major damage.
- ◆ Category IV - 131-155 mph winds with 13-18 ft. storm surge and severe damage.
- ◆ Category V - 155+ mph winds with 18+ ft. storm surge and catastrophic damage.¹

Storm damage was severe to telecommunication carriers and electric utilities in some instances during the 2004 and 2005 hurricane seasons. Outages from all storms totaled well above one million customers and, according to the major incumbent local exchange companies, more than 725,000 customers experienced telecommunication outages from Hurricane Wilma alone. Sprint estimated its 2004 storm damages at \$148 million in FPSC Docket No. 050374-TL.

2.2 Florida Statutes

Section 364.15 of the Florida Statutes (F.S.) directs the Public Service Commission to make and serve an order directing repairs, improvements, changes,

¹ The National Oceanic and Atmospheric Administration’s National Hurricane Center.

additions, or extensions be made in a manner specified. This is done whenever the Commission deems it reasonable and prudent to do so to promote security or convenience of the public or in order to secure adequate service or facilities for telecommunication service area.

Section 364.183 F.S. allows the Commission to require telecommunications companies to file records or reports or other data pertinent to matters within the Commission's jurisdictional authority.

2.3 FPSC Standards for Incumbent Local Exchange Carriers

Chapter 25-4 of the Florida Administrative Code (F.A.C.) provides the regulatory foundation for telephone companies operating under the jurisdiction of the Commission. The eleven part rule provides guidance for companies wishing to operate within Florida. These rules provide general service provisions, operating instructions, and reporting responsibilities. The following excerpts describe some of the FPSC Telephone Service Rules relevant to this audit.

2.3.1 FPSC Rule 25-4.036 F.A.C., Design and Construction of the Plant

(1) The plant and facilities of the utility shall be designed, constructed, installed, maintained, and operated in accordance with provisions of the 2002 Edition of the National Electric Safety Code (IEEE Cd-2—2) and the National Electric Code (NFPA 70-2002) pertaining to the construction of telecommunications facilities.

(2) Compliance with these codes and accepted practices is necessary to ensure, as far as reasonably possible, continuity of service, uniformity in the quality of service furnished, and the safety of persons and property. *Specific Authority 350.127(2), FS, Law Implemental 364.01(4), 364.03 FS. History-Revised 12-1-68, Amended 4-19-77, Amended 2-5-86, Formerly 25-4.36 FS, Amended 3-26-91, 5-3-94, 12-23-02.*

2.3.2 FPSC 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. *Specific Authority 350.127(2) FS. Law Implemental 364.01(4), 364.03 FS. History – New 12-1-86, Formerly 25-4-38, Amended 4-3-05.*

2.3.3 FPSC Rule 25-4.038 F.A.C., Maintenance of Plant and Equipment

Each telecommunications company shall adopt and pursue a maintenance program aimed at achieving efficient operation of its system so as to permit the rendering of safe, adequate, and continuous service at all times. *Specific Authority 350.127(2), FS, Law Implemental 364.03, 364.15 FS. History-Revised 12-1-68, Amended 12-13-82, 9-30-85. Formerly 25-4-69, Amended 4-16-90, 3-10-96.*

2.4 The National Electrical Safety Code Standards for Poles

The National Electrical Safety Code (NESC) is published exclusively by the Institute of Electrical and Electronics Engineers, Inc. (IEEE), a non-profit organization that conducts research and develops standards on behalf of the electric industry. The NESC establishes guidelines and fundamental rules for safety during installation, operation, or maintenance of electric supply and communication lines or ancillary equipment. Florida ILECs are required by FPSC Rule 25-40.36 to operate in accordance with the 2002 Edition of the NESC as published by the IEEE.

NESC Section 26 (Strength Requirements) provides relevant strength factors for poles. These minimums must be maintained for the service lifetime of each pole. The NESC requires that utilities repair or replace poles in excess of 18 meters (60 feet) that have lost one quarter of their original installation strength under full load bearing conditions. Section 26 also requires utilities to repair or replace poles equal to or less than 18 meters in length that have lost a third of their original strength at installation under no load bearing conditions. When loads upon a pole are increased due to added facilities, the strength of the pole must exceed the strength required at replacement or the pole must be replaced.

For poles in excess of 60 feet, the NESC requires that poles maintain sufficient strength to withstand extreme wind loading, with consideration for the loads of associated attachments. 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.

The strength requirements identified in the NESC as discussed above can only be met if a utility is conducting regular, routine inspections and at a frequency sufficient to detect compromise of 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.

There are ten grades of wooden poles used by electric and telecommunication companies, numbering 1 through 10. The strongest grade capable of supporting the greatest amount of weight and stress is a #1 pole. The most prevalent grades of telecommunication poles used in Florida by the three ILECs are #5 or #6.

Poles are also categorized by length. For example, a 35-foot grade #5 pole is commonly referred to as a 35-5 pole. This identification is branded onto the pole. The most common length is 30 to 40 feet. Poles of this length are generally required to withstand winds of 60 miles per hour.

2.5 Joint Usage of Poles

Florida's ILECs all have joint-use and license contracts with other utility, cable, and communication providers for installation and operation of equipment on utility poles. Specific details vary among the companies and between individual contracts.

In the case of ILECs operating in Florida, there are two types of joint-use agreements. The first is a contract leasing space *from* an ILEC on an ILEC-owned pole. The second is an agreement with which a municipality or utility leases pole space *to* an ILEC. Though there is cooperation and communication between joint users of poles, in all such cases of joint usage, the owning entity retains responsibility for pole repair and replacement.

2.6 Pole Inspection Methods

Though wood pole inspections vary slightly among utilities, there are three basic methodologies commonly used. The three inspection methods are listed below in order of diagnostic value and can be used in combination:

- ◆ Visual
- ◆ Employee assessment
- ◆ Sound and bore

Visual inspections are usually adequate for determination of obvious defects such as cracks in the pole or its cross arms and animal or bird damage. However, visual inspections provide a low probability of ascertaining the degree of compromise from internal rot or fungal decay.

Employee assessments are usually performed by field service technicians subsequent to a preliminary visual inspection and immediately prior to actually climbing a pole or performing work from a bucket truck. Such assessments can include sounding (striking), prodding, the pike pole test, the hand line test, and boring. These simple tests will normally detect an extensively rotted pole. Slightly or moderately damaged poles may not always be fully or accurately identified by these methods.

The pike pole test is applied by rocking the pole back and forth in a direction at right angles to that of the line by pushing the pole with a 12-foot or longer pike. If the pole withstands the test, it should also be subjected to the prod and sounding test before being climbed. If the pole cracks or breaks, the test is discontinued and the pole is regarded as unsafe for climbing.

If condition permits, a prod test is performed by using a prod or long screwdriver to detect decay on the pole between the ground line and a point about 12 inches below the ground line. The prod tests indicates the presence of extensive decay. If there is indication of decay, temporary supports are usually applied.

The hand line method consists of applying a series of pulls to a pole with the object of rocking the pole back and forth. This test is applied by looping a rope around a pole at such a height that the rope can be pulled at right angles to the line direction and at an angle of about 45 degrees with the pole. If the pole cracks or breaks, the test is discontinued and the pole is regarded as unsafe for climbing.

Sound and bore assessment involves a more extensive sounding than that associated with the employee assessment and is sometimes done by an outside contractor with specialized training and equipment. Such inspections, including excavation of the base of a pole to help determine the extent of rot and wood loss, are more reliable and are the most effective form of pole inspection for qualifying the overall internal condition of a wooden pole. The sounding test consists of applying blows with a hammer or the back of a hand axe to the pole surface completely around the pole from the ground line to as high as can be reached conveniently. The presence of internal decay is usually recognized by a characteristic hollow or dull sound resulting from the blows. This test helps determine whether a hollow exists in the interior of the pole and the approximate size of the cavity.

If a hollow is believed present, the pole is then bored in several locations to determine more precisely the extent of the cavity. This drilling is used to also determine the thickness of the remaining shell for the pole. This test is done by boring a hole at a point or points in the pole where internal decay is suspected. The condition of the wood can be determined by an examination of chips or the core that is removed by the bit. The presence of a hollow heart is revealed by the bit suddenly breaking through the outer shell of the wood. If the pole is sound, the hole created by boring is filled with a plug and the pole's overall integrity is not compromised.

Records of inspections should be maintained and the poles should be permanently marked with the date and types of inspections employed. This allows for tracking and planning of inspections over a cycle that addresses all poles within a specified time period.

2.7 Maintenance of Wood Poles

When pole inspections determine that remedial action is warranted, one of three common practices is usually employed to stabilize the pole and extend its service life. These three methods are as follows:

- ◆ Chemical treatment,
- ◆ Bracing, and
- ◆ Replacement.

Bracing is employed to extend the life and increase the resiliency of weakened but otherwise serviceable poles. This practice usually takes the form of a C-shaped metal brace that fits flush against the pole. One end is driven several feet into the ground to

sufficiently anchor the brace. Metal strapping is then used to bind the compromised pole to the new brace, adding strength and stability to the compromised pole like a splint.

A pole may also be chemically treated to arrest decay. Treatment is performed by specialists licensed to handle and employ required chemicals. Fungicides can neutralize decay that has been detected during inspection. Preservatives may also be applied to arrest existing damage and to prolong pole life. Both of these methods discourage continued animal and pest incursion. Chemical treatment is used if the pole is thought to have ample viable wood remaining to safely continue in service. In addition, a physical barrier of heavy paperlike material is wrapped and stapled to the pole at and below the groundline. Pole treatment is often contracted out to specialized vendors.

Full replacement is warranted when inspection and testing determines that a pole has exhausted its serviceable lifespan or is at risk of failure. This replacement may be conducted by company employees or contractor personnel. In all instances of remedial action, detailed records of treatments should be maintained to allow for following and tracking across the inspection cycle.

**3.0 BELLSOUTH TELECOMMUNICATIONS,
INC.**

3.0 BellSouth Telecommunications, Inc.

3.1 Company Operations

BellSouth Telecommunications, Inc. (BellSouth or the company) serves 5,301,496 access lines connecting customers along the entire east coast of the state and in parts of central and north Florida. BellSouth owns 459,312 poles, with an average age of more than 28 years. The majority of BellSouth's poles are class five, with heights between 35 and 40 feet.

Employees under the General Managers of BellSouth's Florida Network Operations are responsible for inspecting and reporting the condition of the company's poles. BellSouth does not have a specific program to proactively perform pole inspections within a prescribed timeline or cycle. No scheduled sounding and bore inspections are performed to detect deterioration as a separate maintenance activity. Instead, BellSouth's network forces inspect poles in the normal course of their responsibilities before working aloft or making design changes to facilities.

Between 2002 and 2005, BellSouth used Osmose Utilities Services, Inc. to perform a limited number of pole inspections and remediation in Florida. Osmose determined whether to treat, reinforce, or to replace the designated poles. The physical inspections were performed in accordance with BellSouth's practices and procedures. BellSouth's contract with Osmose expired on May 15, 2005; however, according to BellSouth, Osmose is still available to BellSouth and efforts to renew the contract are underway.

BellSouth's contract with Osmose specified a total maximum spending cap of [REDACTED] over its life. However, over the study period 2002 through 2005 examined by staff, BellSouth's annual expenses for pole inspections and treatment conducted by Osmose were [REDACTED] and [REDACTED], respectively. Osmose's fees to remedy poles ranges from [REDACTED] to [REDACTED] to reinforce a pole. According to BellSouth, Osmose services are not generally requested unless BellSouth has identified more than ten poles in a specific area that are in need of inspection. Though BellSouth could not specify the number of poles inspected by Osmose for each year, based upon these per-pole charges, staff concluded that at most 862 to 2,483 poles were examined annually for the period 2002-2005.

There have been no significant changes to BellSouth's approach to pole inspection activities, efforts, or funding during the study period 2002-2005. However, BellSouth did note that the company is in the process of developing a graphical interface that would mechanize the reporting of its Irregular Plant Conditions forms to enhance its ability to identify and remedy defective poles.

3.2 Inspection Activities

As previously mentioned, BellSouth does not have a planned program for inspecting or maintaining each pole in its system within a prescribed timeline or cycle. As a result, BellSouth does not have procedures and practices in place that are specific to a planned, cyclical pole inspection program. BellSouth's existing policies and procedures describe various work operations and safety precautions to be performed prior to working aloft, including the requirement to inspect poles and the methods of inspecting a pole.

3.2.1 Policies, Procedures, and Training

All of BellSouth's poles are subject to NESC standards. BellSouth's network forces are trained on pole safety and precautions to be taken before climbing poles or working on pole-supported equipment. BellSouth's practices include the requirement to inspect a pole prior to working aloft or making design changes to facilities. The following methods are used by BellSouth to inspect poles to determine if they are capable of withstanding loads they are subjected to during climbing and working aloft:

- ◆ Visual Inspection
- ◆ Pike Pole Test
- ◆ Prod Test
- ◆ Sounding Test
- ◆ Boring Test
- ◆ Hand Line Test

BellSouth's practices describe various work operations that may be performed on poles. Poles found to be unsafe for climbing are marked with a B or C pole tag. Poles marked with a B pole tag do not require immediate replacement. These are defective poles that are not yet considered dangerous, but are in need of repairs. The B pole tag serves as a warning that poles should be temporarily supported before climbing or working on them. Poles marked with a C tag require immediate replacement. The C tag serves as a warning that the pole is in dangerous condition and that it should not be climbed or worked on before replacing.

Upon detection of a defective pole by a BellSouth employee, an Irregular Plant Condition form is completed and submitted to the Network Manager. In turn, the Network Manager assigns the Irregular Plant Condition report to BellSouth's Engineering Department to verify the defect. Responsibilities of the Engineering Department include checking the pole for ownership, notifying the joint-user if the pole is not owned by BellSouth, preparing engineering drawings when necessary, and preparing a work order to repair or replace with a new pole.

The work order is issued to BellSouth's outside plant construction organization, where it is scheduled for placement. The work order authorizes the addition, retirement, or transfer of poles and contain estimates of materials used. Records for work orders of BellSouth poles treated, braced, and replaced are maintained within BellSouth's

Continuing Property Records (CPR) system. The CPR system serves as a perpetual inventory of property owned by BellSouth and it maintains information on capital expenditures for these property units. The objectives of the CPR system are:

- ◆ To provide for the verification of property record units by physical examination.
- ◆ To provide for accurate accounting for retirements.
- ◆ To provide data for use in connection with depreciation studies.

BellSouth employs a computerized system to maintain its property records, but it is not used to proactively monitor the condition of its poles. As previously mentioned, the company is developing an interface that would mechanize the reporting process of its Irregular Plant Condition forms to enhance its ability to identify and remedy defective poles. All pole replacements, and some maintenance activities, are currently captured in BellSouth's CPR system.

3.2.2 Inspection Results

Exhibit 1, extracted from BellSouth's CPR system, depicts the number of BellSouth-owned poles treated, braced, and replaced by BellSouth for each year during 2002 through 2005. For the year 2004, approximately 53 percent of the total poles replaced resulted from hurricane damage. In 2005, approximately 80 percent of the total poles replaced resulted from hurricanes.

BellSouth Telecommunications Florida Poles Treated, Braced, and Replaced 2002-2005				
Year	Treated	Braced	Replaced	Total
2002	0	0	1853	1853
2003	330	115	1750	2195
2004	56	37	2081 ²	2174
2005	30	66	2276 ³	2372

EXHIBIT 1

Source: DR 2.1

In addition to the poles replaced by BellSouth due to hurricane damage, the company reports to have had approximately 2,300 BellSouth poles replaced by Florida Power & Light during 2004 recovery efforts. Although 2005 figures are still being compiled, BellSouth estimates that at least the same number (2,300) of BellSouth's poles were replaced by Florida Power & Light during 2005 recovery efforts.

3.2.3 Audits

With the exception of contracted inspection activities performed by Osmose, BellSouth does not have a specific pole inspection program to audit. However, at a

²BellSouth replaced 1,151 poles in 2004 due to hurricanes.

³BellSouth replaced 1,887 poles in 2005 due to hurricanes.

minimum, staff believes that a root cause analysis of pole failures could identify the cause of failure. Additionally, specific outage data pertaining to pole failures could be captured, which would provide some indication of the effectiveness of company maintenance efforts. The root cause analysis would help BellSouth in establishing appropriate controls to limit exposure to the company.

3.3 Joint-Use and License Agreements

The facilities of multiple companies may be attached to a single BellSouth-owned pole. The following is a breakdown of the types of companies whose equipment is attached to BellSouth poles and the total number of BellSouth-owned poles to which each are attached.

- ◆ Power Companies - [REDACTED]
- ◆ Cable Television - [REDACTED]
- ◆ Competitive Local Exchange Carriers - [REDACTED]

BellSouth occupies and leases space from electric utilities on 738,737 poles. BellSouth does not track information regarding pole inspection activities performed by the owners of the poles that BellSouth leases.

BellSouth has established joint-use and license agreements with other utilities within its service territory. BellSouth has agreements in place with 62 companies and government agencies that allow these companies to attach equipment to BellSouth-owned poles. Similarly, BellSouth has joint-use agreements in place with 38 companies and government agencies that allow BellSouth to attach equipment to other utility-owned poles.

Under the terms of these agreements, the companies that attach to BellSouth-owned poles are required to notify the company whenever a pole is relocated or a new pole is erected within the territory covered by the agreement. As a general policy and practice, joint users do not perform maintenance on BellSouth-owned poles. If a joint user identifies a BellSouth pole in need of repair or replacement, the joint-user should notify BellSouth. BellSouth, in turn, creates a work order for pole repair or replacement.

Many joint-use agreements allow joint users, such as power companies, to replace BellSouth's poles in emergency situations in order to protect the public and enable quicker service restoration. Pursuant to the joint use agreements, the joint user should notify BellSouth and render appropriate billing for the replacement so that ownership of the new pole can be assumed by BellSouth. Similarly, as a general policy and practice, BellSouth does not perform maintenance on poles owned by others. However, during emergency situations, a pole owned by another company may be replaced by BellSouth and, upon payment of the replacement costs, the other company will assume ownership of the new pole.

BellSouth's CPR system is used to inventory all BellSouth poles replaced; however, BellSouth does not have a mechanized system to keep records of any emergency pole replacement that may have been conducted on its poles by joint users.

The rising number of multiple joint users on each pole carries with it increased risk of creating more stress than a pole can sustain. Multiple attachments can increase the potential for failures due to unbalanced or overweight conditions. This potential risk makes it prudent and necessary for companies to concurrently increase the number and type of inspections so that all wood poles can be accurately assessed for overloading.

3.4 Conclusions

Given that hurricanes drastically impacted the state of Florida over the past two years and the number of electric utility pole attachment, staff contends that BellSouth's pole inspection process should be escalated beyond conducting pre-climbing inspections whenever a repair or addition of facilities is necessitated.

The following findings were made based on staff's evaluation of BellSouth's current pole inspection practices:

Finding 1

BellSouth does not conduct scheduled inspections of its entire wood pole inventory for deterioration and overloading as prescribed by the National Electric Safety Code.

The National Electric Safety Code (NESC) establishes standards and acceptable practices for utilities to ensure the safety of employees and the general public. These standards include safety rules for overhead electrical lines. BellSouth states that all of its 459,312 poles are installed and maintained in accordance with the NESC standards. While BellSouth provides telecommunication services to its customers, the company allows electric utilities to attach overhead electric distribution conductor cable and their components to its poles. Approximately [REDACTED] BellSouth-owned poles carry electric conductor cable and other distribution components.

The Florida Public Service Commission has adopted the NESC requirements to govern telephone plant construction, safety, and maintenance. Rule 25-4.036, Florida Administrative Code (Design and Construction of Plant), states facilities "shall be designed, constructed, installed, maintained, and operated in accordance with provisions of the 2002 Edition of the National Electric Safety Code (IEEE C2-2002) and the National Electrical Code (NFPA 70-2005), pertaining to the construction of telecommunications facilities." In Section 26 of the NESC (Strength Requirements), the standards state that all poles equal to or less than 18 meters (60 feet) must be maintained to a strength standard of two-thirds its original strength at installation. If the pole's

strength falls below this standard, the pole should be strengthened or replaced. Also, in Section 21, Subsection 214a, the code states that all "lines and equipment shall be inspected at such intervals as experience has shown to be necessary."

BellSouth does not conduct routine or scheduled inspections of its entire inventory of installed poles. Instead, the company states that Bellsouth's employees are responsible for verifying the condition of any pole where work is being performed. However, when an employee verifies the condition of a pole, a complete sounding and boring test is not required.

Through the use of a contractor, BellSouth performs a limited number of targeted pole inspections. The contractor is responsible for treatment, bracing and replacing when multiple pole deterioration cases are detected in an area. Staff notes that the number of poles inspected in this manner appears to be very small.

Under BellSouth's current approach to pole inspection, only poles whose components require servicing receive a limited inspection. This allows the vast majority of the poles to go unmonitored for extended periods of time. Without a scheduled, cyclical inspection program, BellSouth cannot assume that all poles are in good and safe condition and it cannot know whether it is complying with NESC requirements.

Given the lack of scheduled, cyclical inspections, the condition of the overall plant cannot be known with any specificity. It is critical for a company to monitor and inspect its plant facilities. In light of the recent weather phenomenon in Florida which is expected to continue in future years, not placing the necessary focus on pole infrastructure exposes the company to potential service interruptions and possible public safety concerns. If BellSouth does not inspect and maintain poles to industry standards, the services of joint users could be compromised. Failure to establish a scheduled, cyclical pole inspection program may result in preventable and prolonged out-of-service conditions and may constitute less than full compliance with NESC standards.

NESC requirements can only be met if BellSouth is conducting pole inspections of a sufficiently detailed nature to detect the specific degree of pole impairment. Inspections must be conducted on a number of poles such that the results are statistically reliable. Neither visual nor sounding inspections provide the level of data necessary to determine a percentage of strength loss.

Company Response:

BellSouth disagrees with Staff's finding that the National Electric Safety Code ("NESC") requires scheduled pole inspections. The NESC does not prescribe scheduled inspections. Rather, it requires that "all lines and equipment shall be inspected at such intervals as experience has shown to be necessary." BellSouth's experience has determined that its current inspection process is reasonable and adequate. There is no empirical evidence that a problem with BellSouth's infrastructure exists. IN fact,

during the 2005 hurricane season, more than 80% of BellSouth's customers maintained service and approximately 98% of BellSouth's poles remained intact. This demonstrates that BellSouth's pole inspection policies and practices comport with the NESC and that BellSouth's infrastructure works well.

Finding 2

BellSouth does not evaluate or document the root causes of its pole failures or assess the risks associated with potential pole failures.

Assessing the risk of potential failure and conducting root cause analysis are valuable management practices. Currently, BellSouth does not monitor or document the cause of any pole failure. When an in-service pole fails, the company replaces the pole under its normal pole replacement process. The company does not document or track the reasons for each failure. Collecting this data and conducting root cause analysis would allow the company to identify the cause of failure, to collect applicable outage data resulting from failures (i.e., total customer interruptions by cause), and to assess the risks associated with failure or potential failures.

The root cause analysis pertaining to pole failures provides some indication of the effectiveness of company maintenance efforts. This analysis would assist the company in establishing appropriate controls to limit its exposure, such as planned inspections of its entire pole inventory on a specific cycle.

Risk assessment, if coupled with a parallel maintenance program, could prolong the service lifetime of BellSouth-owned poles in Florida and improve the overall storm resistance of its plant. Lack of risk assessment and a proactive approach to maintenance can lead to increased pole failures in a storm and to a corresponding increase in customer disruptions. The company may experience pole failures that could have been prevented if a program existed to identify risk and to correct recurring issues which compromise its poles. In the case of joint-use poles, such service disruptions are magnified by a factor of at least two.

Company Response:

BellSouth disagrees with Staff's conclusion that BellSouth does not document the cause of pole failures. In connection with repairing or replacing poles, BellSouth documents pole failures. For example, if a BellSouth employee discovers a defective pole, the pole failure is documented in an Irregular Plant Condition form so that the pole can be evaluated and repaired or replaced.

BellSouth admits that it does not monitor or track pole failures for purposes of conducting root cause analyses. BellSouth disputes the

implication, however, that the failure to perform root cause analyses lessens the effectiveness of BellSouth's maintenance efforts. There is no substantial competent evidence that a root cause analysis would prolong the service lifetime of BellSouth-owned poles in Florida and improve the overall storm resistance of BellSouth's plant. Rather, the fact that approximately 98% of BellSouth's poles remained intact during the 2005 hurricane season shows that BellSouth's maintenance efforts, relative to poles, are effective.

Finding 3

BellSouth does not use a central monitoring system to track the condition of poles currently in service.

BellSouth uses a computerized system to maintain its property records, but does not employ it to proactively record or track results of inspections and the condition of poles. A limited number of outsourced pole inspection and repair activities are currently captured in BellSouth's Continuing Property Records (CPR) system. However, the CPR system primarily serves as a perpetual inventory of property owned by BellSouth and to maintain information on capital expenditures for these property units. A centralized system to monitor poles' locations and conditions would allow the company to adequately maintain records and to accurately schedule and prioritize the inspection process.

Without a centralized monitoring system, BellSouth cannot ensure its system's condition complies with NESC guidelines. The company cannot verify that each pole has been inspected within a reasonable, regular, and recurring time frame and meets strength standards. A monitoring system coupled with a comprehensive inspection process could enable the company to better maintain oversight records on each pole and to more accurately predict its life cycle.

Company Response:

BellSouth disagrees with Staff's finding that BellSouth needs a centralized monitoring system to track pole conditions in order to ensure NESC compliance. As previously stated, the fact that approximately 98% of BellSouth's poles remained intact during the 2005 hurricane season demonstrates that BellSouth's pole inspection policies and practices comport with the NESC, which only requires inspections "at such intervals as experience has shown to be necessary."

4.0 SPRINT-FLORIDA, INC.

4.0 Sprint-Florida, Incorporated

4.1 Company Operations

Sprint-Florida, Incorporated (Sprint or the company) offers telecommunication service throughout 38 counties in Florida. The company has approximately 2 million access lines and 1.6 million customers. The company owns and maintains approximately 38,731 poles in its Florida operation. Sprint states the average age of its poles in service is 28.7 years.

Sprint does not have a specific program to inspect or maintain all wood poles over a specified period of time. The company states, however, that all management team members, technicians, line crew associates and outside plant engineers are responsible for identifying and reporting maintenance issues through the use of the Irregular Plant Condition reports. Each field service technician is responsible for testing the stability and structural integrity of a pole before performing required work or attempting to climb it.

Sprint does not separately budget for inspections or other pole-related activities. The company includes all such authorizations and subsequent expenditures as part of the overall network services budget without line item specificity. Sprint could not furnish specifics on budgeted or actual expenditures for pole inspection activities, efforts and programs, by year and by district, during the period of this review.

4.2 Inspection Activities

Sprint requires field service technicians to perform a pole inspection or evaluation prior to each instance in which work is performed on a pole. But such inspection of either Sprint-owned or poles on which Sprint leases space is a coincidence of field work. It is an ancillary task, subordinate to another need or service that requires a field technician to visit the pole site. Poles get inspected only if another cause prompts the service technician to be there. Sprint does not capture and maintain information on when or how often each pole in its Florida area of operations was inspected.

The company does not have a comprehensive, planned program for monitoring the condition of all poles within a specified time period to ensure they are stable and possess structural integrity meeting or exceeding accepted NESC standards. There are no defined procedures, objectives, and standards for collecting data to determine strength loss of poles over time.

The telecommunications industry in Florida, like electric utilities, is subject to NESC standards and generally acknowledges that there are ways to prolong the serviceable lifespan for wooden poles. The use of preservatives and/or fungicides may prevent or delay wood decay or arrest existing rot found during routine inspection. Such treatment provides a chemical barrier to infestation by pests or damage from birds.

Bracing may also be employed to add strength to a compromised pole that has lost some of its structural integrity but is not yet in need of replacement.

Sprint does not conduct preventive, remedial maintenance on its company-owned poles. The company chooses to replace poles rather than perform remedial maintenance. Sprint waits until a field service technician who needs to climb the pole determines that a pole must be replaced.

Sprint owns 38,769 poles in Florida. A total of 748 new poles were ordered and placed throughout the company's area of operations during the period of 2002 – 2005. The average number of poles placed during the four years of this review is 187 per year, an average of 0.482 percent per year.

Specifically, the number of poles placed each year during the period of this review was:

- ◆ 2002 - 166 poles
- ◆ 2003 - 175 poles
- ◆ 2004 - 184 poles
- ◆ 2005 - 223 poles

Of these poles, the company could not clarify or specify the number which were replacement poles. Additionally, Sprint could not delineate which were replacements for poles felled by traffic accidents, hurricanes, fire damage, or any other causes. Sprint did infer that the majority of the poles placed during 2004 were the result of storm damage but had no statistics with which to substantiate the claim.

Sprint-Florida does not perform root cause analysis for down or replaced poles. The company does not capture, track or trend root cause data for pole failures.

4.2.1 Policies and Procedures and Training

Sprint-Florida employs training materials and a series of established procedures that instruct field service technicians in determination of pole soundness and integrity. Such inspection is a requirement each time before climbing any pole. Sprint training materials provide a step-by-step process for pole inspection, furnishing a framework with which the technician can make a reasonable determination of pole serviceability. These steps include a complete visual assessment of the pole, a sounding test, and inspection for internal cavities or extensive decay with a screwdriver or prod. If any field service technician ascertains that a pole is structurally unsound and unsuitable to climb, he or she is required to appropriately mark the pole as unsafe. The pole is then reported via the Irregular Plant Condition report for replacement. A supervisor double checks the pole before requesting replacement.

4.2.2 Inspection Results

Sprint does not have in its organization either a program or process for universal planned inspections of company-owned poles within a prescribed period of time. The company does not track, monitor, trend, or report inspection results.

Poles are determined upon inspection to be either fit or unfit for continued service. Sprint does not attempt to perform maintenance or repairs on poles. An unfit pole is replaced.

Though field service technicians are required by Sprint policy to perform an inspection prior to climbing or performing tasks upon a pole, no records are kept and no verification procedures exist to affirm that inspections were actually conducted.

4.2.3 Audits

The company has not undertaken any internal or external audits of its pole inspection process. Additionally, Sprint does not perform root cause analysis on poles replaced. At a minimum, staff believes that a root cause analysis of pole failures could identify the causes of failure. Specific outage data pertaining to pole failures could be captured and provide some indication of effectiveness of company maintenance efforts. Root cause analyses would help Sprint to establish appropriate controls to limit exposure to the company.

4.3 Joint-Use and License Agreements

Sprint has joint-use and license contracts with electric utilities, competitive local exchange carriers and cable providers within its service area footprint. Some companies have multiple joint-use contracts. These agreements allow multiple companies to place attachments upon a pole which will convey service or functionality to customers. Such agreements and joint usage of poles eliminates the requirement for each party to place poles along a common corridor each uses to provide service.

Sprint currently has joint-use agreements with 30 electric power companies that allow Sprint to attach equipment to poles belonging to those companies. The total number of poles leased from electric companies is 258,156. Additionally, the also company leases space on 9,673 Sprint-owned poles for use by electric companies.

The company also has agreements with eight competitive local exchange carriers and cable providers allowing these entities to attach equipment to Sprint-owned poles. Within the competitive local exchange carrier and cable provider body of contracts, Sprint has multiple agreements with [REDACTED]. The total number of Sprint-owned poles in this category is 13,774.

The rising number of multiple joint users on each pole carries with it increased risk of creating more stress than a pole can sustain. Multiple attachments can increase the potential for failures due to unbalanced or overweight conditions. This potential risk

makes it prudent and necessary for companies to concurrently increase the number and type of inspections so that all wood poles can be accurately assessed for overloading.

Most of the joint-use agreements are years old, some originally signed decades ago. Changes have been amended to contracts through the years as situations and business arrangements change between the parties. Sprint-Florida states that company representatives routinely review and update the contracts as needed.

Every agreement contains specific language addressing the type and grade of poles employed. Additional language outlines specific responsibilities for poles and attachments on a going forward basis.

Joint-use agreements contain specific language to identify responsibility for maintenance of poles. Sprint believes that the owner of a pole is ultimately responsible for the maintenance of poles, keeping them in a safe and reliable service state in accordance with the standards of the NESC. Each joint-use contract also addresses how companies are to handle replacements and/or relocation of poles and the financial ramifications of such operations.

Joint usage contracts stipulate proper process and procedures for routine maintenance during normal and extraordinary times. Since Sprint-Florida does not have a maintenance program for poles, the extent of their action is to replace a pole when either party reports an unsafe condition which warrants a new pole be placed.

In the normal course of day-to-day operations, if a Sprint-Florida field service technician inspects a joint-use pole belonging to another company and determines that the pole is unsafe or in need of maintenance, he or she is required to notice supervisory personal. The supervisor will notify the owning company so that required work can be performed. This contact is normally telephonic and with established points of contact at each company. Sprint-Florida does not maintain records of such contacts.

In extraordinary situations, such as storm recovery operations in Florida, it might become necessary for a joint-use company to make immediate repairs to a pole or to replace it in order to reestablish customer service. At such times, the necessary work or replacement is done by the company with crews on the scene. This may or may not be crews representing the actual owner of the pole. But, in the interest of public safety or the general good, such work is performed to reinitiate service. The company performing the requisite tasks will report the work to the owning company. In the case of Sprint, a maintenance verification team will check the work and make any required modifications to Sprint-Florida equipment. Sprint will then update its system to include any new components or poles that were installed by the joint-user.

Sprint's first concern is always the reestablishment of service to its customers and throughout its service area. In extraordinary times, ownership of poles is of secondary concern and Sprint-Florida field service personnel act appropriately to reestablish service, without regard to ownership of poles and in the quickest time possible for the greatest

number of customers. For example, if an electric-owned pole is downed but a crew from that company is unavailable to reset or replace it, Sprint will replace the pole. The joint use company is then notified by Sprint replacing company so that specialized crews can be dispatched to reattach joint use plant to the pole. It is a reciprocal arrangement, all companies usually responding in a similar manner in situations when various services have suffered widespread disruption.

If a joint user replaces a Sprint pole, the company does not track information other than the date of replacement and type of pole used. Sprint does not maintain a database that tracks either the total number of poles replaced by non-Sprint parties or the root causes of failure. Sprint normally assumes ownership of the pole.

Sprint-Florida is a member of the National Joint Utilities System (NJUNS), a national voluntary organization promoting cooperation and partnering between affiliated companies. This cooperation focuses on the management of pole transfers, joint trench construction, pole attachments, and project notification. The organization was formed specifically for the purpose of improving such coordination in joint-use ventures. NJUNS is an industry leader in providing efficient communication and work coordination between companies, offering member companies a method and clearinghouse for obtaining up-to-date information on a variety of shared concerns.

4.4 Conclusions

Given that hurricanes drastically impacted the state of Florida over the past two years and the number of electric utility pole attachments, staff contends that Sprint's pole inspection process should be escalated beyond conducting pre-climbing inspections whenever a repair or addition of facilities is necessitated.

The following findings were made based on staff's evaluation of Sprint-Florida's current poles inspection practices:

Finding 1

Sprint does not conduct scheduled inspections of its entire wood pole inventory for pole deterioration and overloading as prescribed by the National Electric Safety Code.

The National Electric Safety Code (NESC) establishes standards and acceptable practices for utilities to ensure the safety of employees and the general public. These standards include safety rules for overhead electrical lines. Sprint states that all of its 38,731 poles are installed and maintained in accordance with the NESC standards. While Sprint provides telecommunication services to its customers, the company allows electric utilities to attach overhead electric distribution, conductor cable and other components to its poles. Approximately 9,673 Sprint-owned poles carry electric conductor cable and other distribution components.

The Florida Public Service Commission has adopted the NESC requirements to govern telephone plant construction, safety, and maintenance. Rule 25-4.036, Florida Administrative Code (Design and Construction of Plant), states facilities "shall be designed, constructed, installed, maintained, and operated in accordance with provisions of the 2002 Edition of the National Electric Safety Code (IEEE C2-2002) and the National Electrical Code (NFPA 70-2005), pertaining to the construction of telecommunications facilities." In NESC Section 26 (Strength Requirements), the standards state that all poles equal to or less than 18 meters (60 feet) must be maintained to a strength standard of two-thirds its original strength at installation. If the pole's strength falls below this standard, the pole should be strengthened or replaced. Also, in Section 21, Subsection 214a, the code states that all "lines and equipment shall be inspected at such intervals as experience has shown to be necessary."

Sprint does not conduct routine or scheduled inspections of its entire inventory of installed poles. Instead, the company states that every Sprint employee is to verify the condition of any pole where work is being performed. However, when an employee verifies the condition of a pole, a complete sounding and boring test is not required.

Under this approach, only poles whose components require servicing receive this limited inspection. This allows the vast majority of the poles to go unmonitored for extended periods of time. Without a scheduled, cyclical inspection program of its entire inventory Sprint cannot assume that all poles are in good and safe condition and cannot know whether it is complying with NESC requirements.

Given the lack of routine inspections, the condition of the overall plant cannot be known with any specificity. It is critical for a utility to monitor and inspect its plant facilities. In light of the recent weather phenomenon in Florida which is expected to continue in future years, not placing the necessary focus on pole infrastructure exposes the company to potential service interruptions and possible public safety concerns. If Sprint does not inspect and maintain poles to industry standards, the services of joint users could be compromise. Failure to establish a scheduled inspection of all poles over a specified period of time may also result in preventable and prolonged out-of-service conditions and may constitute less than full compliance with NESC standards.

NESC requirements can only be met if Sprint is conducting pole inspections of a sufficiently detailed nature to detect the specific degree of pole impairment. Inspections must be conducted on a number of poles such that the results are statistically reliable. Neither visual nor sounding inspections provide the level of data necessary to determine a percentage of strength loss.

Company Response:

Sprint takes exception to the portrayal that it currently does not meet NESC requirements for pole inspections. The NESC states that inspection intervals should be established "as experience has shown to be necessary." Sprint's experience has been that very few poles have failed:

in fact, on average 187 poles were set (including new and/or replaced due to accidents, road construction, deterioration and natural disaster) in each of the last four years on a base of 38,000 poles, even in the face of extraordinary hurricane activity. That means that even if all of the poles set in the past four years were replacements for deteriorated poles, then less than 1/2 of 1 per cent of the poles in Sprint's network would have needed replacement due to deterioration. Therefore, any implication that Sprint was not in conformance with the NESC has no basis in fact, given that the current low failure experience does not call for an augmented inspection program and the fact Sprint does comply with Section 422 of the NESC on a daily basis.

The current as-you-go pole inspections being performed by Sprint are considered to be generally accepted for telecommunications companies based on the Bell System practices and NESC Part 4 Section 422 (see excerpt below). Due to the nature or type of facilities Sprint normally attaches to many of its poles, i.e. service drops, these as-you-go inspections are empirically more than adequate. Data indicates that, compared to electric utilities, telecommunication facilities are not as susceptible to catastrophic damage. In most instances of telephone pole failure, poles with telephone cables attached will lean but remain supported by the cable supports.

Sprint's feeder, distribution, and interoffice cable is 94% underground, leaving only 6% of its cable on pole lines. The majority of Sprint's poles are only required for customer service drop wires. Because service drop wire is light in weight, a great many Sprint-owned poles are of a small size – typically 30 ft tall. If the FPSC nonetheless imposes a greater inspection burden upon Sprint, it is requested that these 30 ft and shorter drop poles be exempted from inspection; their light-load characteristics do not present the same breakage risks of a more heavily loaded pole. Of Sprint's 38,000 poles, 30 ft and shorter poles number 30,000. Exempting drop poles would result in lower inspection costs, while at the same time focusing resources on inspecting taller, load bearing poles since they are far more likely to have room for electric facility attachments and are more crucial to telecommunications and electric service

Following initial contacts by FPSC Staff, Sprint began researching the feasibility of expanding its current pole inspection process to include more detailed physical inspection of Sprint-owned poles. The inspections would be completed during the placement of cable facilities and/or replacement of poles and information, such as assessment information and the root cause of pole replacements, i.e. road construction, vehicular accident, storm damage recorded.

For reference, the NESC provides specifications in Part 4 Section 422 regarding how a pole should be tested prior to climbing, to which Sprint strictly adheres.

Section 422

Checking Structures Before Climbing

- 1. Before climbing poles, ladders, scaffolds, or other elevated structures, employees shall determine, to the extent practical, that the structures are capable of sustaining the additional or unbalanced stresses to which they will be subjected.*
- 2. Where there are indications that poles and structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing, or other means.*

Finding 2

Sprint does not evaluate or document the root causes of its pole failures or assess the risks associated with potential pole failures.

Assessing risk of potential failure and conducting root cause analysis are valuable management practices. Currently, Sprint does not monitor or document the cause of any pole failure. When an in-service pole fails, the company replaces the pole under its normal pole replacement process. The company does not document or track the reasons for each failure. Collecting this data and conducting root cause analysis would allow the company to identify the cause of failure, collect applicable outage data resulting from failures (i.e., total customer interruptions by cause), and assess the risks associated with failure or potential failures.

The root cause analysis pertaining to pole failures provides some indication of the effectiveness of company maintenance efforts. This analysis would assist the company in establishing appropriate controls to limit its exposure, such as planned inspections of its entire pole inventory on a specified cycle.

Risk assessment, if coupled with a parallel maintenance program, could prolong the service lifetime of Sprint-owned poles in Florida and improve the overall storm resistance of its plant. Lack of risk assessment and a proactive approach to maintenance can lead to increased pole failures in a storm and a corresponding increase in customer disruptions. The company may experience pole failures that could have been prevented if a program existed to identify risk and to correct recurring issues that compromise its poles. In the case of joint usage poles, such service disruptions are magnified by a factor of at least two.

Company Response:

Historically, Sprint-owned pole failures have not risen to the level sufficient to justify documentation of such and there is no specific data

that points to pole fatigue, deterioration or damage as a root cause of pole replacement. Given Sprint Florida's concerted effort to place its facilities underground, there is no appreciable value to Sprint or its customers in collecting and maintaining assessment information. However as noted in our response to Finding 1, following initial contacts by FPSC Staff, Sprint began researching the feasibility of expanding its current pole inspection process to include the recording of key finding information. The population of the findings would be made in the "comments" panels of the continuing property record (CPR) system, known as the Engineering Work Order (EWO) system as noted in the response below.

Finding 3

Sprint does not use a central monitoring system to track the condition of poles currently in service.

Sprint uses a computerized mapping system to maintain its property records but does not employ it to record or track results of inspections and the condition of poles. A centralized system to monitor poles' locations and conditions would allow the company to adequately maintain records and to accurately schedule and prioritize the inspection process.

Without a centralized monitoring system, Sprint cannot ensure its system's condition complies with NESC guidelines. The company cannot verify that each pole has been inspected within a reasonable, regular, and recurring time frame and meets strength standards. A monitoring system coupled with a comprehensive inspection process could enable the company to better maintain oversight records on each pole and to more accurately predict its life cycle.

Company Response:

As noted in the response to Finding 2, Sprint has developed a process utilizing a "comment" panel associated with pole placement and will comply with the FPSC request going forward. Inspection information such as date, inspection type and inspector ID can be populated in this panel and later extracted through queries. Reports can then be generated and provided on an as needed basis.

5.0 VERIZON FLORIDA, INC.

5.0 Verizon Florida

5.1 Company Operations

Verizon Communications, Inc. (Verizon or the company) provides domestic wireline telecommunication services to customers in 29 states including Florida. In Florida, the company provides service within six counties in and around the Tampa metropolitan area. The company services approximately 1,998,995 business and residential access lines within the state.

The company owns approximately 107,863 poles in Florida and leases space on approximately 381,303 poles owned by electric utilities. Verizon also leases space on 29,632 of its poles to electric utilities and 36,634 of its poles to competitive local exchange carriers and cable companies under joint-use and license agreements. The majority of Verizon's poles are class [REDACTED] and are [REDACTED] feet in length with an average age of [REDACTED] years in service.

The company's pole facility and maintenance responsibilities fall within its Construction and Customer Operations group. In Florida, the company has 1,642 employees within the construction and operations divisions that are involved in routine outside field work, of these 559 are in in Construction and 1,083 are in Customer Operations. The company does not have a specific group or division whose responsibility is pole maintenance and upkeep. Each operation and maintenance employee is directed to monitor the pole's stability when work is being performed on a pole or its attached facilities. The company's Outside Plant Engineering group has 97 employees who are involved in pole design and management support activities. Of these, 59 are Plant Engineers who conduct visual pole inspections in preparation of area construction projects.

5.2 Inspection Activities

The company does not conduct scheduled inspections of all its poles over a specific period of time. The company also does not have a program for maintaining poles in its system within a prescribed timeline. Each employee is responsible for testing the structural stability of the pole prior to climbing or performing maintenance.

There are accepted industry practices for extending the life of a utility pole. A pole can be treated with preservatives or fungicide to assist in deterring wood rot. Also, bracing can be added to provide additional support to a pole that has lost a portion of its structural soundness. Verizon does not conduct this type of remedial or preventative maintenance on its poles. Rather, company management states that when it determines a pole no longer meets its strength standards, the pole is replaced.

Company management stated that it conducted a study in the mid-1980s and determined that the cost of preventative pole maintenance did not warrant the limited benefits received. The company states that it is not as costly to transfer telecommunication components when a telephone pole is replaced as it is to transfer electric lines and components. Therefore, the telephone company has less cause to perform inspections and treat or brace poles. Verizon also stated that poles that do not have electrical components attached do not pose as great of a public safety risk. Verizon states that each electric utility regularly monitors and inspects both its own poles and any Verizon-owned poles that carry its electric components.

The company does not have defined objectives and standards in place to guarantee that its pole system is structurally sound. Also, the company does not monitor the condition of each pole to ensure the structural integrity is maintained to the standards of the NESC. When a technician is scheduled to work on a pole and does not believe that the pole is structurally sound to climb, the technician marks the pole identifying it as unsound and reports the pole for replacement to management. When a pole has been marked as needing to be replaced, a manager reevaluates the pole prior to requesting replacement.

The company does not itemize its budget to include maintenance, monitoring, or inspection of its poles. The company includes its pole maintenance expenditures within its overall operations and maintenance budgets. Staff is not able to determine the amount the company has spent in the areas of pole inspection and maintenance during the review period.

5.2.1 Policies, Procedures and Training

The company has safety procedures in place that instruct technicians on how to determine the structural integrity of a pole prior to climbing. These procedures outline the when and how an employee makes this determination. This includes visual assessment, sounding assessment, and testing for internal voids or decay with a prod or screwdriver.

Verizon stated that these procedures are universal for all states in which Verizon operates in and are not Florida specific and, in some cases, are not how Florida technicians handle a defective pole. The procedures contain a section on "Handling Defective Poles" which outlines, for example, how to tag a pole as defective. The procedures state that there are two classes of defective poles: "B class" and "C class." The B class poles are poles that are defective but not requiring immediate replacement and a C class pole requires immediate replacement. The procedures do not differentiate what criteria are used to determine if a pole is "B class" or "C class." However, Verizon management states that technicians in Florida do not use this classification and that all defective poles are tagged to be replaced. Also, the tag illustrations shown in the procedures are not the same as the current tags being used within the state.

5.2.2 Inspection Results

Verizon does not maintain records or a database of any inspections conducted by field technicians on its poles. The company does track the number of poles its replaces

annually for various causes such as deterioration or new placed poles. For the review period, Verizon replaced 1,004 poles in 2002; 1,056 poles in 2003; 1,064 poles in 2004; and 858 poles through December 16, 2005. This represents approximately one percent of its poles per year.

5.2.3 Internal Audits

Verizon does not perform root cause analysis on poles replaced. At a minimum, staff believes that a root cause analysis of pole failures could identify the causes of failure. This specific outage data on pole failures could be captured and provide some indication of effectiveness of company maintenance efforts. Root cause analyses would help Verizon to establish appropriate controls to limit exposure to the company.

With no organized or routine pole inspection or maintenance program, the company does not have a specific process to monitor or audit these activities internally. In 2002, however, Verizon did have an outside consultant group perform a sample review of its pole records.

Verizon contracted with an outside firm, [REDACTED], to conduct an audit of its poles within a sample portion of its territory in and around metropolitan Tampa. This audit reviewed a sampling of Verizon's poles to be located, visited, and visually inspected for obvious problems and safety issues. These inspections did not include sounding or boring. Verizon provided the audit group a sampling of [REDACTED] exchanges.

[REDACTED] was unable to locate [REDACTED] of the [REDACTED] poles identified by Verizon for the review, representing approximately [REDACTED] percent of the poles mapped by Verizon. Additionally, [REDACTED] located an additional [REDACTED] poles not originally mapped by Verizon as being in the territory. Of the poles located, [REDACTED] determined [REDACTED] [REDACTED] were freestanding with no components or attachments. These were poles that the company had removed from service but not from the ground.

[REDACTED] determined that [REDACTED] of the [REDACTED] poles located [REDACTED] were defective and needed to be replaced. Verizon did not have [REDACTED] make any determinations about whether any of the sampled poles could be improved by either treating or bracing. Also, the company did not make a determination regarding how much structural life of each pole still retained.

Verizon states that it has updated its records and database to reflect the [REDACTED] poles that were located and that it has deleted the [REDACTED] poles [REDACTED] could not locate. Verizon management states its pole facilities were transitioned from a paper recordkeeping system to an electronic database in the 1980s. Verizon believes that the incorrect pole information occurred during the conversion.

Verizon management states that it does not believe all aspects of the review by [REDACTED] are representative of its entire territory. The [REDACTED] exchanges represented in this sample represent some older, urban areas and, because of the older system, there is more opportunity for incorrect data in the company's records. Verizon does, however, believe

that the low number of defective poles does show that its overall pole system is structurally sound.

5.3 Joint-Use and License Agreements

Verizon has established joint-use and license agreements with utilities and companies within its service territory. This allows each company to jointly use the same pole to serve its customers. This arrangement eliminates the need for multiple utility poles along the same corridors. Each agreement allows both companies to attach facilities to either company's poles.

Verizon has an agreement with seven electric utilities, nine cable companies, and six telecommunication companies. Currently, Verizon leases space on 381,303 poles from seven different electric utilities. Verizon also leases space on 29,632 poles to these seven utilities. Along with the electric utilities, Verizon leases space on 36,634 of its poles to cable providers.

Verizon has two groups that manage its joint-use relationships with other utilities. One group is responsible for negotiating its contracts, and the second group is the liaison for each utility to make sure all maintenance and installation work is done in accordance with the contracts.

The contracts with the electric utilities were signed in the 1960s and 1970s. Several of the companies have made additions or deletions to the agreements through the years, but the major components are universal among the electric utility agreements. Verizon management states it periodically works with each utility to review the structure of its agreements and makes additions or deletions to the agreements as needed, usually every five years. Currently, the company is in negotiations with three utilities to update joint-use agreements. The result of these negotiations will be a completely new joint-use agreement for each company.

Each contract contains specifics on the types of poles used, the standards by installing and maintaining each pole, and each company's liability in the use of each pole. Specifically, the agreements state the owner of each pole must maintain its poles in a safe and serviceable condition as set forth in the NESC. The contracts also state how each company must handle the replacement or relocation of a pole or series of poles.

Verizon uses the services of the National Joint Utilities Notification System (NJUNS) to assist in notifying its joint-users of a pole replacement. This is a voluntary electronic system that allows companies to report when a new pole has been placed or an existing pole has been replaced within its facility. This allows its joint-users (if they choose to use this service) to receive transfer information and allows the user to more quickly remove or reattach its components. Verizon states that most of its major joint-use utilities subscribe to this service. For the utilities that do not subscribe, Verizon's construction group notifies those utilities directly when a pole has been placed.

During normal working conditions, Verizon conducts all of the maintenance on its poles. If a joint-user identifies a problem pole, the utility notifies Verizon of the problem. Verizon will create an electronic work order within its work order database system and an employee will be dispatched to make any necessary repairs. If a pole is replaced, the maintenance group will update Verizon's Continuing Property Records system to reflect the new pole data. The information is also added to the NJUNS system for its joint-users.

There are times when an emergency situation requires joint-users to make necessary repairs to, or replacement of, a Verizon pole, such as post-hurricane or during storm recovery periods. If a joint-use utility repairs or replaces a Verizon pole, the company notifies Verizon's joint-use group of these changes, and Verizon retains possession of the new pole. Verizon will send its maintenance group to the pole to verify the work and to make any changes to Verizon's components. Verizon then updates its systems to reflect the newly installed pole. Verizon does not, however, track the number of poles its joint-users replaced on Verizon's behalf. Each new pole is recorded into its system as if a Verizon employee conducted the work.

The rising number of multiple joint users on each pole carries with it increased risk of creating more stress than a pole can sustain. Multiple attachments can increase the potential for failures due to unbalanced or overweight conditions. This potential risk makes it prudent and necessary for companies to concurrently increase the number and type of inspections so that all wood poles can be accurately assessed for overloading.

5.4 Conclusions

Given that hurricanes drastically impacted the state of Florida over the past two years and the number of electric utility pole attachment, staff contends that Verizon's pole inspection process should be escalated beyond conducting pre-climbing inspections whenever a repair or addition of facilities is necessitated.

The following findings were made based on staff's evaluation of Verizon's current pole inspection practices:

Finding 1

Verizon does not conduct scheduled inspections of its entire wood pole inventory for deterioration and overloading as prescribed by the National Electric Safety Code.

The National Electric Safety Code (NESC) establishes standards and acceptable practices for utilities to ensure the safety of employees and the general public. These standards include safety rules for overhead electrical lines. Verizon states that all of its 107,863 poles are installed and maintained in accordance with the NESC standards. While Verizon provides telecommunication services to its customers, the company allows electric utilities to attach overhead electric distribution conductor cable and other

components to its poles. As of December 2005, approximately 29,632 Verizon-owned poles carried electric conductor cable and other distribution components.

The Florida Public Service Commission has adopted the NESC requirements to govern telephone plant construction, safety, and maintenance. Rule 25-4.036, Florida Administrative Code (Design and Construction of Plant), states facilities "shall be designed, constructed, installed, maintained, and operated in accordance with provisions of the 2002 Edition of the National Electric Safety Code (IEEE C2-2002) and the National Electrical Code (NFPA 70-2005), pertaining to the construction of telecommunications facilities." In NESC Section 26 (Strength Requirements), the standards state that all poles equal to or less than 18 meters (60 feet) must be maintained to a strength standard of two-thirds its original strength at installation. If the pole's strength falls below this standard, the pole should be strengthened or replaced. Also, in Section 21, Subsection 214a, the code states that all "lines and equipment shall be inspected at such intervals as experience has shown to be necessary."

Verizon does not conduct routine or scheduled inspections of its entire inventory of installed poles. Instead, the company states that every Verizon employee is to verify the condition of any pole where work is being performed. However, when an employee verifies the condition of a pole, a complete sounding and boring test is not required.

Under this approach, only poles whose components require servicing receive this limited inspection. This allows the vast majority of the poles to go unmonitored for extended periods of time. Without a scheduled, cyclical inspection program of the entire inventory, Verizon cannot assume that all poles are in good and safe condition and cannot know whether it is complying with the above NESC requirements.

Given the lack of scheduled inspections, the condition of the overall plant cannot be known with any specificity. It is critical for a utility to monitor and inspect its plant facilities. In light of the recent weather phenomenon in Florida which is expected to continue in future years, not placing the necessary focus on pole infrastructure exposes the company to potential service interruptions and possible public safety concerns. If Verizon does not inspect and maintain poles to industry standards, the services of joint users could be compromised. Failure to establish a routine pole inspection program may result in preventable and prolonged out-of-service conditions and may constitute less than full compliance with NESC standards.

NESC requirements can only be met if Sprint is conducting pole inspections of a sufficiently detailed nature to detect the specific degree of pole impairment. Inspections must be conducted on a number of poles such that the results are statistically reliable. Neither visual nor sounding inspections provide the level of data necessary to determine a percentage of strength loss.

Company Response:

Contrary to Staff's conclusion, Verizon fully complies with the requirements within the National Electric Safety Code (NESC). Verizon designs and maintains its pole infrastructure according the NESC industry standards and conducts inspections of its wood pole inventory during the normal course of its work operations.

Rule 214A of the NESC requires that inspections be conducted "at such intervals as experience has shown to be necessary." The NESC further states that "In general, the 'experience' referred to is that of the utility responsible for operation and safety of facilities in a manner to secure adequate and reliable results." The 2002 Edition of the NESC clarifies in a note to Rule 214A2 "that inspections may be performed while performing other duties; separate inspections are not required."

It has been Verizon's experience that its current pole inspection procedures prevent system deterioration or unsafe conditions from materializing; Staff has not identified any evidence to the contrary. Under Verizon's current pole inspection practices, which are described in detail in materials presented to Staff in the course of this audit, Verizon conducts test and inspections on poles during the normal course of performing work operations such as plant replacement, maintenance and service installation. In view of this work activity, Verizon's experience is that separate "scheduled" pole inspections are not necessary to maintain its plant in safe condition.

Finding 2

Verizon does not evaluate or document the root causes of its pole failures or assess the risks associated with potential pole failures.

Assessing risk of potential failure and conducting root cause analysis are valuable management practices. Currently, Verizon does not monitor or document the cause of any pole failure. When an in-service pole fails, the company replaces the pole under its normal pole replacement process. The company does not document or track the reasons for each failure. Collecting this data and conducting root cause analysis would allow the company to identify the cause of failure, collect applicable outage data resulting from failures (i.e., total customer interruptions by cause), and assess the risks associated with failure or potential failures.

The root cause analysis pertaining to pole failures provides some indication of the effectiveness of company maintenance efforts. This analysis would assist the company in establishing appropriate controls to limit its exposure, such as planned inspections of its entire pole inventory on a specified cycle.

Risk assessment, if coupled with a parallel maintenance program, could prolong the service lifetime of Verizon-owned poles in Florida and improve the overall storm resistance of its plant. Lack of risk assessment and a proactive approach to maintenance can lead to increased pole failures in a storm and a corresponding increase in customer disruptions. The company may experience pole failures that could have been prevented if a program existed to identify risk and to correct recurring issues that compromise its poles. In the case of joint usage poles, such service disruptions are magnified by a factor of at least two.

Company Response:

Verizon fully complies with the requirements of the NESC with regard to documenting the “root cause” of pole failures. Verizon maintains relevant pole information—including the age, location, and size/class of pole—in an electronic database and maintains appropriate accounting records for its pole inventory. Root cause analysis, while it may sound like a useful exercise, has not been shown to provide useful information for predicting when and where the next pole will fail. In addition, environmental or other factors may cause one pole to deteriorate at twice the rate as pole sitting right next to it. When inspections or tests identify that a defect in a pole is reported, Verizon takes corrective action immediately and replaces [emphasis in original] the pole. There is no reason to track the condition of an old pole that is no longer in service. Under the NESC, no after-the-fact records regarding the reason the pole was replaced are required.

Verizon also disagrees that it is not “proactive” in its maintenance of the network. To the contrary, Verizon invests substantial capital resources in the maintenance of its network to ensure network reliability; this is an absolute necessity in the highly competitive market in which Verizon operates today. Verizon is also highly proactive in making improvements to its network, including spending hundreds of millions of dollars in underground fiber-to-the-premises facilities, which deliver substantial benefits to consumers as well as increased ability to withstand storm conditions. Concentrating on pole inspection in a vacuum ignores all of the other proactive measures that Verizon takes to maintain and improve network reliability and safety.

Finding 3

Verizon does not use a central monitoring system to track the condition of poles currently in service.

Verizon uses a computerized mapping system to maintain its property records but does not employ it to record or track results of inspections and the condition of poles. A centralized system to monitor poles' locations and conditions would allow the company

to adequately maintain records and to accurately schedule and prioritize the inspection process.

Without a centralized monitoring system, Verizon cannot ensure its system's condition complies with NESC guidelines. The company cannot verify that each pole has been inspected within a reasonable, regular, and recurring time frame and meets strength standards. A monitoring system coupled with a comprehensive inspection process could enable the company to better maintain oversight records on each pole and to more accurately predict its life cycle.

Company Response:

During the course of this audit, Verizon informed Staff it uses a system called Integrated Computer Graphics System (ICGS) that shows the date the pole was placed, the location of the pole, and the size/class of the pole. While it is true that the system does not monitor pole condition (other than age), as stated in Verizon's response to Finding No. 2, the NESC does not require Verizon to record the condition of a pole that is no longer in service because it has been replaced, and as Verizon explained the Staff, a pole that does not meet appropriate standards is replaced immediately. It is speculative to conclude that a monitoring system coupled with an inspection program will be more effective in accurately predicting the life cycle of a pole. To the contrary, Verizon's experience is that scheduled inspections are not necessary to maintain pole plant in safe condition and that inspections conducted during the normal course of business are sufficient for this purpose. This is borne out by the fact that since [REDACTED] Verizon has received only [REDACTED] claims related to poles for small property damage totaling less than [REDACTED]. Moreover, no inspection policy can prevent poles from falling or being damaged due to Acts of God, falling trees, or motor vehicle related accidents, which do not discriminate based on the age or condition of poles.

Finding 4

Verizon's mapping system database of pole records may contain inaccurate information.

Verizon has a mapping system database that houses the location of each of its 107,863 poles within Florida. Verizon transitioned from a paper-based recordkeeping structure to an electronic database in the mid-1980s. In [REDACTED], Verizon contracted with an outside auditor to conduct a sample audit of its pole infrastructure for a portion of its territory around the Tampa area. The audit staff visited [REDACTED] poles [REDACTED] in the Tampa, Florida area to verify Verizon's property records. The audit group also conducted visual assessments of the overall condition of each pole.

The audit stated that, of the [REDACTED] poles on the data sheet and record maps, [REDACTED] [REDACTED] could not be located. Verizon management stated that these [REDACTED] poles were removed from the company's records as a result of the audit. The audit also located an additional [REDACTED] poles within the territory that were not listed in the database.

The audit verified that Verizon did not have accurate pole records and maps. The company used this sample audit to gain an understanding of its poles infrastructure. The company updated its records to reflect the audit findings, but has not conducted any further review of its remaining territory. If this audit is representative of the overall service territory, approximately 20 percent of the company's pole records could be inaccurate.

Without an accurate pole database and mapping system, Verizon may not be able to respond in a timely manner to service continuity issues. Further, its accounting and depreciation records could be incorrect.

Company Response:

Staff's finding is based on a single pole audit that was conducted in 2002 at Verizon's request. Verizon admits that the audit identified some inaccuracies in Verizon's pole records; cleaning up records was one of the reasons Verizon performed the audit in the first place. Verizon strives to maintain accurate records and when errors are found they are corrected. Since records are continually updated, and have been in the four years since the audit at issue, Staff's claim that up to 20% of Verizon's pole records could be inaccurate is highly speculative.

More importantly, Verizon has not had any problems responding to service issues because of inaccuracies in pole records or the mapping database. Instead, Verizon relies on physical reviews and inspections to determine the best method to correct problems reported in the field, not pole records. [Emphasis added in original.]