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August 24, 2007

HAND DELIVERY

Ms. Ann Cole, Director
Commission Clerk and Administrative Services
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Docket No. 070297-EI; Review of 2007 Electric Infrastructure Storm Hardening Plan filed pursuant to Rule 25-6.0342, Florida Administrative Code submitted by Tampa Electric Company

Dear Ms. Cole:

Enclosed herewith for filing on behalf of Tampa Electric Company are the original and fifteen (15) copies of the following:

1) Regan B. Haines Testimony; and

2) Exhibit ____ (RBH-1).

Please acknowledge receipt of this document by stamping the extra copy of this letter "filed" and returning the same to me.

Thank you for your assistance with this filing.

Sincerely,

Lee L. Willis

LLW/bjd
Enclosures

CMP 2
COM 5
CTR 1
ECR
GCL 2
OPC
RCA 1
SCR
SGA
SEC
OTH

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing Testimony and Exhibit of Regan B. Haines has been served by Hand Delivery* or U. S. Mail this 24th day of August, 2007, to the following:

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ATTORNEY

TAMPA ELECTRIC

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 070297-EI

IN RE: Petition for Approval of

Tampa Electric Company's

2007-2009 Storm Hardening Plan

TESTIMONY

OF

REGAN B. HAINES

TAMPA ELECTRIC COMPANY
DOCKET NO. 070297-EI
FILED: AUGUST 24, 2007

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

REGAN B. HAINES

Q. Please state your name, address, occupation and employer.

A. My name is Regan B. Haines. My business address is 702 North Franklin Street, Tampa, Florida 33602. I am employed by Tampa Electric Company ("Tampa Electric" or "company") as Director, Engineering in the Energy Delivery Department.

Q. Please provide a brief outline of your educational background and business experience.

A. I graduated from Clemson University in June 1989 with a Bachelor of Science degree in Electrical Engineering and again in December 1990 with a Master of Science degree in Electrical Engineering specializing in Power Systems Engineering. I have been employed at Tampa Electric since 1998. My work has included various positions in the areas of transmission and distribution system planning and engineering within the Energy Delivery Business Unit. In my current position I am responsible for directing activities associated with the designing, engineering, performance analysis, and various construction services for the electric transmission and distribution ("T&D") systems from the generator to the customer's meter as well as directing activities for Fleet (Vehicle) Services (engineering and operations) and services performed on the customer's side of the meter by Power Engineering & Construction. I also oversee all joint use activities.

Q. What is the purpose of your testimony in this proceeding?

A. My testimony supports Tampa Electric's Storm Hardening Plan filed on May 7, 2007 as required by Commission Rule 25-06.0342(2), F.A.C., which was adopted in Order No. PSC-07-0043-FOF-EU ("Order No. 07-0043") on January 16, 2007. My testimony addresses each of the issues which have been identified in Docket No. 070297-EI.

Q. Do you sponsor an exhibit in support of your testimony?

A. Yes, Exhibit No. ___ (RBH-1), consisting of three documents, was prepared under my direction and supervision. Document No. 1 is Tampa Electric's Storm 2007 - 2009 Hardening Plan filed on May 7, 2007 ("Tampa

Electric's Plan"). Document No. 2 is a matrix of the costs and benefits of Tampa Electric's storm hardening initiatives, which was provided to Florida Public Service Commission ("FPSC" or the "Commission") Staff and all parties in this docket on July 30, 2007. Document No. 3 is Tampa Electric's proposed process for providing additional information to third party attachers concerning the projects identified in Tampa Electric's Plan.

Q. Describe Tampa Electric's system.

A. Tampa Electric currently serves approximately 660,000 customers and its service area covers 2,000 square miles in West Central Florida, including all of Hillsborough County and parts of Polk, Pasco and Pinellas counties. Tampa Electric's transmission system consists of approximately 1,200 miles of overhead facilities (26,000 poles) and 14 miles of underground facilities. The company's distribution system consists of approximately 6,100 miles of overhead lines (303,000 poles) and 7,300 miles of underground lines. Tampa Electric also has approximately 330,000 authorized third party attachments on its T&D poles.

Q. Please summarize your testimony.

A. Tampa Electric's Plan, which was developed in conformance to Order No. 07-0043, is an important part of Tampa Electric's multi-pronged approach to enhance the reliability of the overhead and underground electrical T&D facilities. Tampa Electric's Plan contemplates continuing to build to National Electrical Safety Code ("NESC") Grade B construction for all new major planned expansion, rebuild or relocation of distribution facilities as the company has done since the 1970's. Grade B construction is significantly stronger than Grade C construction. Although Grade C construction is the typical minimum guidelines used for most electric systems in the United States building to Grade B construction fits with the storm profiles that have been experienced in Tampa Electric's service area for the last 150 years. The National Oceanic Atmospheric Administration ("NOAA") Coastal Service Center records over the last 150 years show that the maximum sustained wind experienced in Tampa Electric's service territory during this time frame was 115 mph. Moreover, the NESC extreme wind maps covering Tampa Electric's service area range from 100 mph in the east to 120 mph in the western edge. Grade B construction has an effective wind speed of 116 mph which is a reasonable fit for Tampa Electric's service area while Grade C construction has an effective wind speed of only 85 mph.

In addition, my testimony supports Tampa Electric's Plan to conduct several targeted pilot projects to upgrade its Grade B construction to extreme wind on two circuits serving critical facilities in the City of Tampa: the port of Tampa and St. Joseph's Hospital. Also, one of the 69kV circuits serving Tampa International Airport will be upgraded from wood pole construction to non-wood construction. Additionally, new distribution overhead crossings of interstate highways and major expressways will be constructed underground. The effect of the upgrades undertaken in the pilot projects will be evaluated after any occurrence of extreme weather in Tampa Electric's service area to determine if a more widespread application of the NESC extreme wind criteria would be cost effective.

Tampa Electric's Plan provides a reasonable, measured approach to storm hardening. The company's Plan is part of a multi-pronged approach by the Commission to improve system reliability and resiliency during and after extreme weather conditions.

Tampa Electric's Plan is incremental to the Pole Inspection Program previously approved by the Commission in Orders PSC-06-0778-PAA-EU and PSC-06-0855-CO-EU and issued on September 18, 2006 and October 13, 2006 respectively in Docket No. 060531-EU, as well as the Ten-Point Storm Preparedness Plan approved in Orders PSC-06-0947-PAA-EI and PSC-06-1012-CO-EI issued November 13, 2006 and December 8, 2006 respectively in Docket No. 060198-EI. The approved Pole Inspection Program and the Ten-Point Storm Preparedness Plan are not at issue in this proceeding; they are being implemented. Tampa Electric's Plan is filed in response to Commission Rule 25-06.0342 adopted in Order No. 07-0043. This rule provides in pertinent part:

> (1) Application and Scope. This rule is intended to ensure the provision of safe, adequate, and reliable electric transmission and distribution service for operational as well as emergency purposes; require the cost-effective strengthening of critical electric infrastructure to increase the ability of transmission and distribution facilities to withstand extreme weather conditions; and reduce restoration costs and outage times to end-

use customers associated with extreme weather conditions. This rule applies to all investor-owned electric utilities.

Tampa Electric's Plan complies with Rule 25-06.0342 by providing a reasonable and measured approach to storm hardening.

Q. Does the company's Plan reasonably address the extent to which the extreme wind loading standards specified by Figure 250-2(d) of the 2007 edition of the NESC are adopted for new distribution facility construction?

A. Yes. Tampa Electric has historically designed its distribution facilities based on Grade B construction even though Grade C construction is typically the minimum standard for most electrical distribution systems.

While Tampa Electric's Plan does not propose building to extreme wind standards for new construction, it does provide for continuing to build to NESC Grade B construction for all new overhead distribution facilities. This plan is reasonable because the maximum sustained winds experienced over the last 150 years in Tampa Electric's service area is 115 mph and construction

Grade B is designed to effectively withstand 116 mph winds. Since Grade B construction is significantly stronger than Grade C construction and Tampa Electric proposes to continue to build to Grade B construction, Tampa Electric's distribution facilities not only comply but exceed the minimum requirements of the NESC.

Q. Does the company's Plan reasonably address the extent to which the extreme wind loading standards specified by Figure 250-2(d) of the 2007 edition of the NESC are adopted for major planned work on the distribution system, including expansion, rebuild, or relocation of existing facilities, assigned on or after the effective date of this rule distribution facility construction?

A. Yes. Tampa Electric's Plan to continue building to Grade B construction for all major planned expansions, rebuilds or relocations of distribution facilities is reasonable. As indicated above, Grade B construction is a reasonable fit for Tampa Electric's service area.

Q. Does the company's Plan reasonably address the extent to which the extreme wind loading standards specified by Figure 250-2(d) of the 2007 edition of the NESC are adopted for distribution facilities serving critical infrastructure facilities and along major thoroughfares taking into account political and geographical boundaries and other applicable operational considerations?

A. Yes. Tampa Electric's Plan to continue building to NESC Grade B construction for all critical infrastructure and major thoroughfares is reasonable. Tampa Electric plan to undertake the specific pilot projects identified in its Plan is reasonable. The pilot projects, which will be built to extreme wind, will be monitored and analyzed to determine cost-effectiveness prior to consideration of wide-spread application. Tampa Electric's Plan is a reasonable measured approach to the hardening of its system.

Q. Does Tampa Electric's Plan include the replacement of poles which meet Grade C construction strength criteria but which fail Grade B construction?

A. Yes. Tampa Electric's Plan contemplates continuing the replacement of any pole which does not meet its standard of Grade B construction. However, parties in this docket have questioned whether the Commission expected Tampa Electric to continue to harden its system with the objective of having the entire system built to Grade B construction. As previously stated, Grade B construction will effectively withstand winds up to 116 mph which is consistent with the strength of storms experienced since the 1850’s in the Tampa Electric service area. Therefore, the company’s Plan provides an appropriate continuing migration of its system to Grade B construction.

Q. Does the company's Plan reasonably address the extent to which its distribution facilities are designed to mitigate damage to underground and supporting overhead transmission and distribution facilities due to flooding and storm surges?

A. Yes. Tampa Electric's proposed standard for all new and maintenance replacement of underground distribution facilities (*i.e.*, padmounted transformers, switchgear, load break cabinets and padmounted capacitors) located in Flood Zone 1 designated areas will be of stainless steel or aluminum construction with submersible connectors and bolted to the concrete pad is reasonable.

Q. Does Tampa Electric's planned hardening of underground facilities in Flood Zone 1 affect third party attachers?

A. No. Tampa Electric's Plan addresses the specific electrical equipment required for new and maintenance replacement of underground facilities in Flood Zone 1 areas. Tampa Electric's underground construction standards in Flood Zone 1 areas have no effect on any third party attacher.

Q. Does the company's Plan reasonably address the extent to which the placement of new and replacement distribution facilities facilitate safe and efficient access for installation and maintenance pursuant to Rule 25-6.0341, F.A.C.?

A. Yes. Tampa Electric's policy of placing all new distribution facilities in public right-of-way ("ROW"), which is typically in front of the customer's premise, and not building in rear lot easements to the extent practicable is reasonable. The company will also continue to evaluate community or customer requests to relocate overhead facilities from rear lot locations to the front of customer's properties on a case-by-case basis for feasibility, practicality, and cost effectiveness.

Q. Does Tampa Electric's Plan to place all new distribution facilities in public ROW to the extent practical affect third party attachers?

A. Yes, but in a positive way. Access to all facilities will be improved, thereby reducing repair and restoration time. In addition, when a customer or community requests a relocation of overhead facilities from rear lot to the ROW in front of customer's property, it is reasonable to review each case for feasibility, practicality and cost effectiveness. As required by Rule 25-6.0341, third party attachers will be notified, and an attempt in good faith will be made to accommodate concerns of third party attachers. Construction will also be coordinated.

Q. Does the company's Plan provide a detailed description of its deployment strategy including a description of the facilities affected including technical design specifications, construction standards, and construction methodologies employed?

A. Yes. The three year deployment strategy described in Tampa Electric's Plan and listed below is reasonable.

2007

Port of Tampa (extreme wind pilot project). The Port of

Tampa serves 10 petroleum distribution customers that deliver 40 percent of the gasoline in Florida. Six miles of distribution feeder will be rebuilt to meet the extreme wind requirements as shown in Fig. 6 of the Plan. This extreme wind pilot project will be deployed over three years. Specifically, the company will:

- Engineer and re-build the three-mile feeder to the north of Maritime Substation to Extreme Wind Grade B construction. This will include upgrading 111 distribution poles and replacing 38 wood transmission poles with non-wood poles at an estimated cost of $760,000.

Downtown Tampa

- Inspect and test six network protectors in low lying areas.

Convert to Uniform Distribution Voltage and Standard Construction

- Engineer the conversion of three 4kV circuits to the 13 kV standard.

Harden Interstate Crossings

- Engineer and construct the conversion of four distribution overhead interstate (I-75) crossings to underground.

<u>2008</u>

Port of Tampa (extreme wind pilot project)

- Engineer and re-build one-mile feeder to the south of the Maritime Substation to Extreme Wind Grade B construction. This will include upgrading approximately 37 distribution poles at an estimated cost of $120,000.

St. Joseph's Hospital (extreme wind pilot project)

- While there are several hospitals in Tampa Electric's service territory that are considered critical customers, St. Joseph's Hospital was chosen for this pilot program because of its Level 2 Trauma Center status, central location, high elevation and the cost effectiveness of the hardening activities. The distribution feeder serving the hospital is approximately one mile in length and will be rebuilt to meet the extreme wind requirements. The hardening measures to be employed include replacing 37 distribution poles with stronger class wood poles at an estimated cost of $120,000 and six wood transmission poles with non-wood poles at an estimated cost of $70,000.
- Engineer and rebuild the one-mile distribution feeder serving the hospital to meet the NESC Extreme Wind Grade B construction standard.

Downtown Tampa

- Inspect and test six network protectors in low-lying areas.

Convert to Uniform Distribution Voltage and Standard Construction

- Construct three 4kV circuits to the 13kV standard.

Harden Interstate Crossings

- Engineer and construct the conversion of four distribution overhead interstate (I-75) crossings to underground.

<u>2009</u>

Port of Tampa (extreme wind pilot project)

- Engineer and rebuild a two mile feeder from an alternative substation to Extreme Wind Grade B construction, to pick up three miles of a previously rebuilt (from 2007 and 2008) feeder should a flooding event at the Maritime Substation site occur. This will include upgrading 74 distribution poles at an estimated cost of $240,000. An additional benefit of this project is the fact that the Hillsborough County Sheriff's Operation Center will also be served from the hardened feeder.

Tampa International Airport

- Tampa International Airport is served by six distribution circuits which are all underground and emanate from one substation. Tampa Electric's plan is to upgrade a transmission segment feeding the

Skyway substation to current extreme wind construction standards. The project consists of replacing 62 existing wood transmission poles with steel or concrete poles. While Skyway substation has multiple transmission feeds, this project will ensure that one of them is upgraded to non-wood structures to meet current construction standards. The project will be completed in 2009 at an estimated cost of $618,000. This project enhances the reliability of the transmission system serving the Tampa International Airport, one of the most critical facilities located in Tampa Electric's service area.

Downtown Tampa

- Inspect and test six network protectors in low-lying areas.

Harden Interstate Crossings

- Engineer and construct the conversion of four distribution overhead interstate (I-275) crossings to underground.

Q. Will Tampa Electric's Plan to convert overhead distribution interstate crossings to underground affect third party attachers?

A. No, not at all. The poles on either side of the interstate will remain in place providing an option for third party attachers to continue traversing the interstate overhead.

Q. Does the company's Plan include a detailed description of the communities and areas within the utility's service area where the electric infrastructure improvements will occur, including facilities identified by the utility as critical infrastructure and along major thoroughfares?

A. Yes. All of the projects discussed above and identified in Tampa Electric's Plan are within the City of Tampa.

Q. Please describe all of the proposed changes to the company's current construction standards, policies, practices and procedures contained in its Plan that will have an incremental affect on a third party attacher?

A. Tampa Electric has proposed various enhancements to its construction standards, including the incorporation of stainless steel or aluminum equipment in all new underground construction and repairs in designated Flood Zone 1 areas and the undergrounding of interstate and major freeway distribution crossings. The company is taking a targeted pilot approach on extreme wind enhancements to its overhead system that will, along with the other standards changes mentioned, have a minimal affect on third party attachers.

Q. Is the requirement for third party attachers to notify and receive approval prior to attaching to the company's facilities a change or new requirement to the company's current construction standards, policies, practices and procedures contained in its Plan?

A. No. The requirement of a third party attacher to notify and receive approval prior to overlashing is not a new requirement. It is a contractual obligation of those third party cable attachers who wish to attach any new facilities, including overlashing. Third party attachers have the obligation to ensure that their facilities do not violate Tampa Electric's construction standards, which require that nothing be placed on a pole that is not engineered to be there. Rule 25-06.0342(5), F.A.C. provides in pertinent part:

> (5) The Attachment Standards and Procedures shall . . . assure as far as reasonably practicable, that third party facilities attached to electric transmission and

distribution poles do not impair electric safety, adequacy, or pole reliability; do not exceed pole loading capacity; and are constructed, installed, maintained and operated in accordance with generally accepted engineering practices for the utility's service area.

Q. Does the company's Plan provide a detailed description of the extent to which the electric infrastructure improvements involve joint use facilities on which third party attachments exist?

A. Yes. Tampa Electric has met with third party attachers, accompanied attachers to the physical location and rode the routes of the pilot projects with all interested third party attachers. The attachers have been provided sufficient details of the proposed pilot projects. They know the routes involved, the number of poles affected, and Tampa Electric's projected costs for all of the projects included in Tampa Electric's Plan.

Q. Does the company's Plan provide a reasonable estimate of the costs and benefits to the utility of making the electric infrastructure improvements, including the effect on reducing storm restoration costs and customer outages?

A. Yes. As shown on Exhibit No. ___ (RBH-1), Document No. 2, Tampa Electric's Plan cost estimates, which were developed utilizing current work methods, products and equipment, are: $1.022 million in 2007, $1.01 million in 2008 and $1.078 million in 2009. Detailed plans for all three years have been provided. The pilot projects Tampa Electric proposes, will provide for upgrades from NESC Grade B construction to Extreme Wind Grade B construction, and they may also provide societal benefits in excess of costs if these projects decrease the chance of outages in storm conditions or reduce restoration times after a storm. While the precise calculation of benefits depends on the actual occurrence of a storm and an evaluation of how the hardened facilities perform during and after storm conditions, the primary benefit of these pilot projects is that they will provide valuable information as a comparison to those facilities built to NESC Grade B construction and on the feasibility of upgrading other facilities should they demonstrate superior performance.

In addition, the other projects and construction standard upgrades proposed by Tampa Electric for 2007, 2008 and 2009 are reasonable. These other projects include: (1) Downtown Tampa, the major business center in Tampa Electric's service area; (2) Tampa International Airport; (3) conversion of overhead distribution interstate crossings to underground; (4) mitigation of damage due to flood and storm surge with upgrades to improve restoration times after submersion by flood or storm surge; and (5) conversion to uniform distribution voltage and standard construction to improve restoration times. While the precise calculation of benefits depends on the actual occurrence of a storm and an evaluation of how the hardened facilities performed during and after storm conditions, it is assumed that if a named storm hits the Tampa Bay area, the critical facilities identified here are more likely to remain in service longer and be restored quicker if the proposed hardening activities are completed. A calculation of these benefits is shown on Exhibit No. ___ (RBH-1), Document No. 2, which was previously furnished to Commission Staff and third party attachers.

Q. Does the company's Plan provide a reasonable estimate of the costs and benefits to third party attachers affected by the electric infrastructure improvements, including the effect on reducing storm restoration costs and customer outages realized by the third party attachers?

A. With the information provided in Tampa Electric's Plan filed, the additional information provided in Document No. 2 to my Exhibit No. ___ (RBH-1), Tampa Electric's cost benefit matrix, and company responses to Commission Staff's interrogatories filed August 13, 2007 as well as information provided in meetings and accompanying third party attachers on rides along the affected routes of pilot projects, third party attachers should be able to estimate their costs resulting from the implementation of the pilot projects identified in Tampa Electric's Storm Hardening Plan. While it is difficult to calculate the exact benefits to the third party attachers, the implementation of the pilot projects will provide data that will enable third party attachers to provide better estimates of their benefits. Consequently, it is reasonable for Tampa Electric to proceed with the pilot projects identified in its Plan.

Q. Does the company's Plan include reasonable written Attachment Standards and Procedures addressing safety, reliability, pole loading capacity, and engineering standards and procedures for attachments by others to the utility's electric transmission and distribution poles that meet or exceed the current edition of the NESC that is applicable pursuant to Rule 25-6.034, F.A.C.?

A. Yes. Tampa Electric's Plan includes Attachment Standards and Procedures as required by Rule 25-6.0342. Specifically, sections 8.1, 8.2, 8.4.1, 8.5, 8.7, and 8.8 of Document No. 1 of my Exhibit No. ____ (RBH-1) set out the attachment standards and procedures for which Tampa Electric seeks approval in this proceeding. The balance of the standards included in the company's Plan is provided for information and completeness.

Q. Based on the resolution of the preceding issues, should the Commission find that the company's Plan meets the desired objectives of enhancing reliability and reducing restoration costs and outage times in a prudent, practical, and cost-effective manner to the affected parties?

A. Yes. Tampa Electric's Plan should result in less storm damage to the electrical infrastructure and, therefore, less restoration time and cost. More generally, Tampa Electric's Plan, pole inspections, and increased vegetation management activities, can be reasonably expected to reduce future storm restoration costs compared to what they would be without those initiatives. Tampa Electric's continuing to build to Grade B construction while undertaking specific pilot projects to be constructed to NESC extreme wind provides a reasonable measured approach to storm hardening. Hardening the system, increasing pole inspections, enhancing line clearing activities, hardening underground, along with various pilot projects will all have an impact on reducing storm damage, reducing or preventing outages, and reducing the overall storm restoration times and costs. Additionally, there will be day-to-day reliability benefits realized. Finally, improved systems and processes, including improved storm forensics, will allow for more and better data to be collected, evaluated and analyzed. It will take many years of sustained effort to achieve the full benefits of storm hardening.

By utilizing its pilot project approach (targeting specific critical infrastructure for extreme wind loading), Tampa Electric is hardening its system efficiently and economically. As a result Tampa Electric's Plan is prudent, practical and is being implemented in a cost-effective manner.

Q. Does this conclude your testimony?

A. Yes it does.

EXHIBIT OF

REGAN B. HAINES

INDEX

Document 1	Tampa Electric's Storm Hardening Plan Filed May 7, 2007
Document 2	Cost and Benefits Matrix filed July 30, 2007
Document 3	Process to Engage Third Party Attachers

TAMPA ELECTRIC COMPANY
DOCKET NO. 070297-EI
DOCUMENT 1
EXHIBIT ____ (RBH-1)

TAMPA ELECTRIC

2007 – 2009
Storm Hardening Plan

Docket No. 060172-EI
Docket No. 060173-EI

Filed: May 7, 2007

Table of Contents

1 INTRODUCTION

Tampa Electric's 2007 - 2009 Storm Hardening Plan is an important part of Tampa Electric's multi-pronged approach to enhance the reliability of the overhead and underground electrical transmission and distribution facilities and has been developed in conformance to Florida Public Service Commission ("FPSC") Order No. PSC-07-0043-FOF-EU issued January 16, 2007.

Tampa Electric serves 654,000 customers and its service area covers 2,000 square miles in West Central Florida, including all of Hillsborough County and parts of Polk, Pasco and Pinellas Counties. Tampa Electric's transmission system consists of approximately 1,200 miles of overhead facilities (26,000 poles) and 14 miles of underground facilities. The company's distribution system consists of approximately 6,100 miles of overhead lines (303,000 poles) and 7,300 miles of underground lines. Tampa Electric also has approximately 330,000 authorized third party attachments on its transmission and distribution poles.

2 PURPOSE

The purpose of this plan is to define the design criteria, construction standards, policies and procedures utilized for all new transmission, distribution and substation facilities constructed in Tampa Electric's service territory. This plan will also describe in detail the company's deployment strategy to achieve the plan's objectives, which include the costs and benefits expected, and the benefits and impacts to third party attachers. Finally, the plan will outline the company's pole attachment standards and procedures for third party attachers ("joint users").

3 SCOPE

This plan is intended to apply to all new construction and maintenance of transmission, distribution and substation facilities by Tampa Electric in its service territory and all third parties who access and attach to Tampa Electric facilities subsequent to the Commission-approved date of the plan.

4 REFERENCES

The following resources are referenced in this plan:

- 2007 National Electrical Safety Code ("NESC")
- National Hurricane Center Database
- Florida State Building Code
- Hillsborough County Wind Maps
- Tampa Electric's 2006 Storm Implementation Plan
- *Distribution Engineering Technical Manual ("DETM")*
- *Standard Electrical Service Requirements ("SESR")*
- *General Rules and Specifications ("GR&S")*
- *General Rules and Specifications Underground ("GR&S-UG")*
- *Approved Materials Catalog ("AMC")*
- *Hillsborough County Flood Hazard Maps*

5 DEFINITIONS

Transmission – electric facilities operating at 69 kV or above.

Distribution – electric facilities operating below 69 kV.

Chromated copper arsenate ("CCA") - A chemical wood preservative containing chromium, copper and arsenic. CCA is used in pressure treated wood to protect wood from rotting due to insects and microbial agents.

ACSR (aluminum conductor, steel reinforced) - ACSR conductor, a stranded steel core carries the mechanical load, and layers of stranded aluminum surrounding the core carry the current.

AAAC - All aluminum alloy conductor.

Attachers – Any entity that has placed any facility on a Tampa Electric owned pole. Facilities may include but are not limited to cables, messenger wires, centenary support wires, power supplies, equipment boxes, grounding wires or lugs, brackets, guys, etc.

6 CONSTRUCTION STANDARDS, POLICIES, PRACTICES and PROCEDURES

6.1 Design Philosophy

A basis of Tampa Electric's construction standards, policies, practices and procedures is the NESC. From this foundation, the company's philosophy is to implement the safest, reliable and most cost effective service possible to its customers. The two main elements of the NESC address minimum clearances and loading criteria required to maintain a safe system for both the public and the workers who construct and maintain the system. Tampa Electric's construction standards and policies meet or exceed all minimum NESC clearance requirements. In addition, as part of the NESC Rule 250 which addresses pole loading requirements, the United States is divided into three loading districts; Heavy, Medium and Light (see Fig. 1). The Tampa Electric service area is located in the Light loading district, which assumes no ice build up and with a wind pressure of nine pounds per square foot. The nine pound wind corresponds to approximately 60 mph. The Light loading district wind speed corresponds to a wind pressure of more than twice that in the Heavy or Medium districts due to the strong (non-linear) dependence of the wind force on wind speed (The wind pressure is proportional to the square of the wind speed.). Another part of the NESC Rule 250B requires overload factors to be applied to the calculated wind forces to provide a conservative margin of safety when selecting appropriate pole sizes. A factor of two to one is applied to Grade C construction and a factor of four to one is applied to Grade B construction. The effective wind speed of Grade B new construction is approximately 116 mph. According to the NESC, Grade B wind loading criteria must be applied when constructing facilities less than 60 feet in height when crossing railroads, bridges and highways.

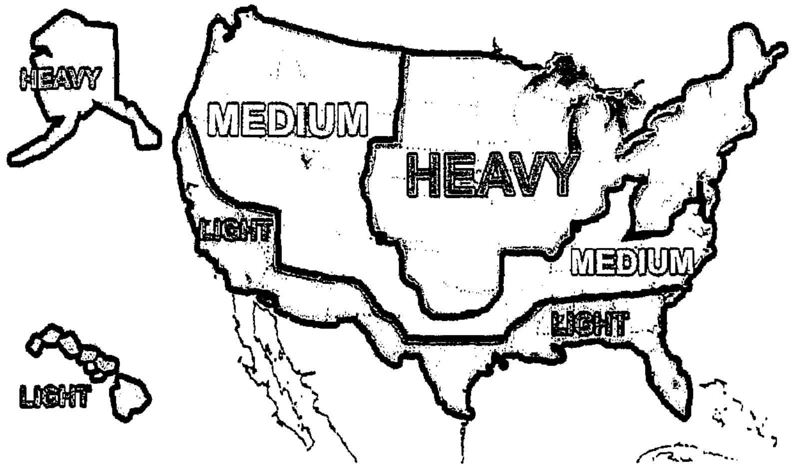


Fig.1- NESC General loading map of United States with respect to loading of overhead lines

The NESC also specifies an extreme wind pole loading criteria for all facilities constructed that are 60 feet in height or greater. The NESC provides a wind loading map that indicates the wind speed criteria for each area of the country. This same criteria and regional boundaries, developed by the American Society of Civil Engineers ("ASCE"), are utilized by the state of Florida and Hillsborough County for building code requirements. Tampa Electric's service territory is divided into two wind regions (see Fig. 2). The western half is in 120 mph zone and the eastern half is

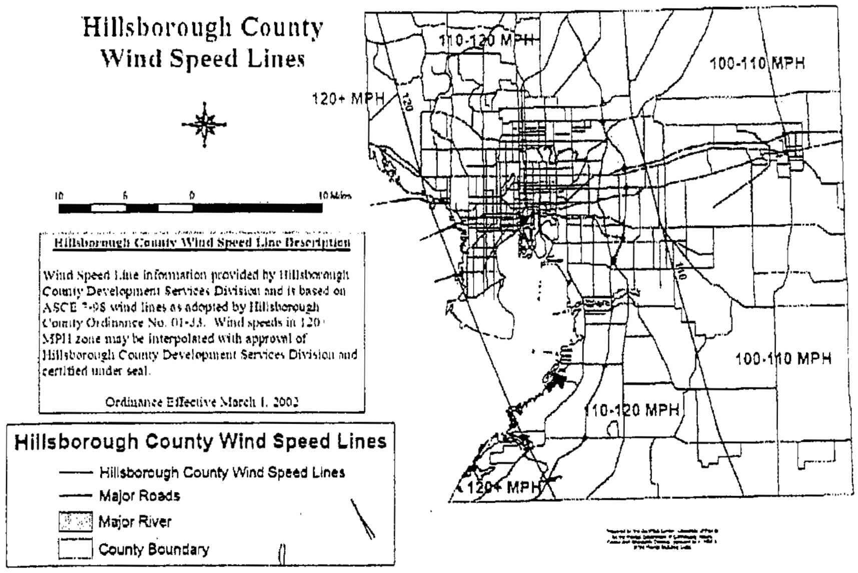


Fig. 2 - Hillsborough Wind-Borne Debris Region

in the 110 mph zone. It should also be noted that the Florida Building Code wind-borne debris region shown in Fig. 3 is the area where winds are greater than 120 mph. This wind-borne debris region is located outside of Tampa Electric's service territory.

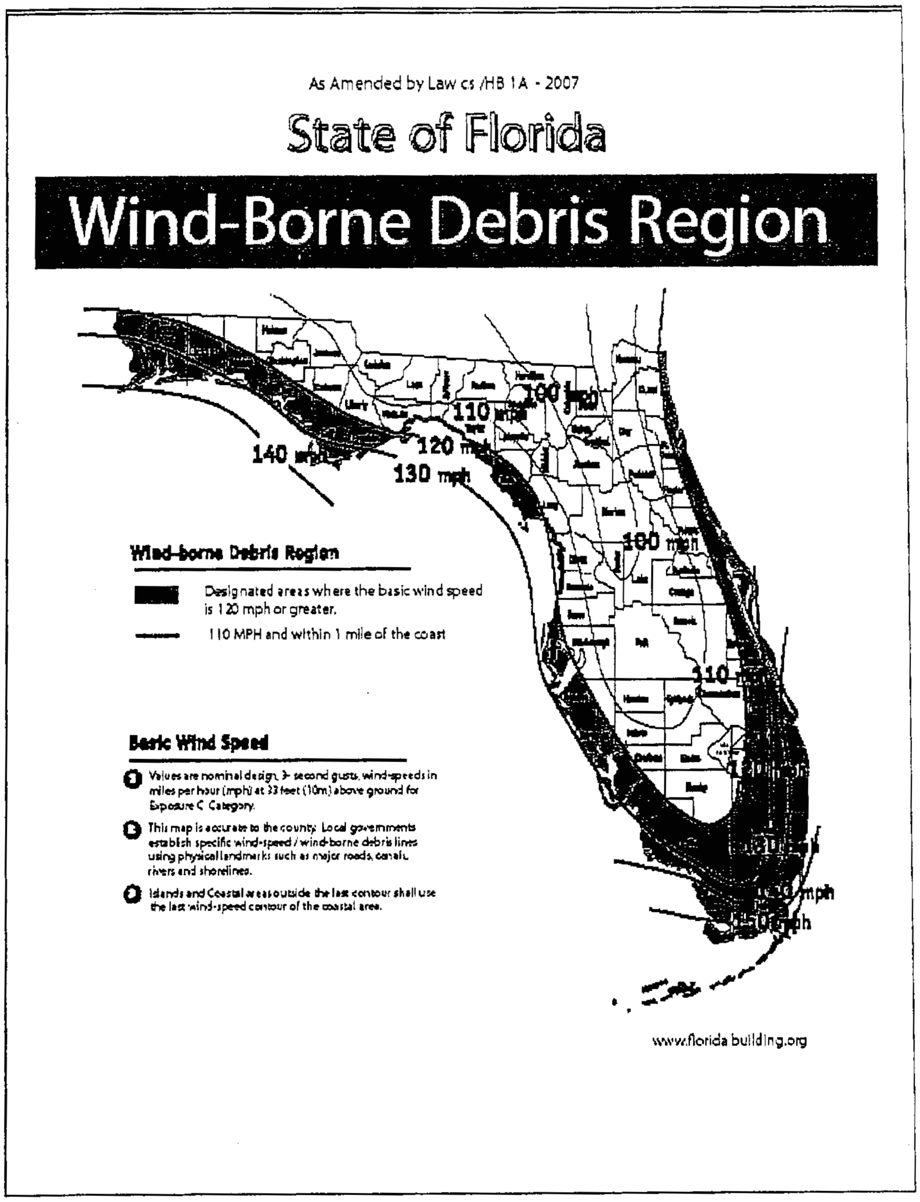


Fig. 3 - Florida Wind-Borne Debris Region

6.1.1 Experience with Major Storm Events

The company relies heavily on its experiences when developing and modifying its construction standards, policies, practices and procedures. A major component of this philosophy is experiences gained from major storm events and evaluations of system performance and the following restoration activities. In the last 150 years, the company has experienced 14 major storm events, including five tropical storms, four category one hurricanes, three category two hurricanes, and two category three hurricanes (see Table 1). The highest sustained hurricane winds the Tampa Electric service area has experienced over this time is the 115 mph winds produced by the category 3 storms in 1949 and again in 1960.

Year	Storm Name	Size	Wind Speed (mph)
1852	Not Named	TS	69
1894	Not Named	Cat 1	86
1910	Not Named	Cat 1	80
1921	Not Named	Cat 2	97
1925	Not Named	TS	69
1933	Not Named	TS	63
1945	Not Named	Cat 2	97
1946	Not Named	TS	46
1949	Not Named	Cat 3	115
1960	Donna	Cat 3	115
1995	Erin	TS	57
2004	Charley	Cat 2	86
2004	Francis	Cat 1	63
2004	Jeanne	Cat 1	63

Table 1. Storms affecting Tampa Electric Service area since 1850 (From the National Hurricane Center Database)

6.1.1.1 2004 Hurricane Season

As demonstrated by the graphic in Fig. 4, Tampa Electric was clearly in an unenviable geographic location during the 2004 hurricane season, directly in the path of hurricanes Charley, Frances and Jeanne. Hurricane Ivan, while it did not pass over Tampa Electric's area, posed significant challenges for the company's fuels management operations, with major natural gas supplies effectively shut down on the Gulf of Mexico. This unprecedented hurricane season was the most devastating in Tampa Electric's 105-year history, both in terms of structural damage to the company's system and in terms of customer outages. Records were made and broken, day after day, as three successive hurricanes ravaged the company's 2,000 square-mile service territory.

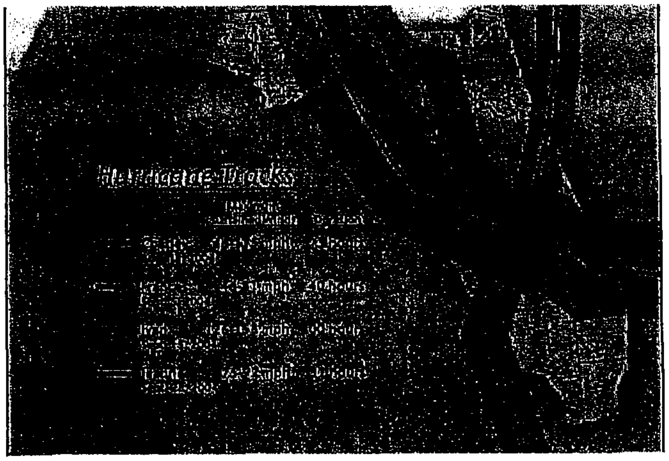


Fig. 4 – 2004 hurricanes impacting Tampa Electric's service territory

It started August 13, 2004 as the company's Polk County service area endured a substantial lashing from Hurricane Charley. Tampa Electric had been spared many direct hits from storms of this severity and for most involved in restoration, it was the first time the incident command system had been fully implemented. Operationally, the prognosis for Hurricane Charley was even more complicated – unusual amounts of rainfall earlier in the season had weakened the ground and made it unstable, inviting increased damage. Ultimately, the peak outages numbered 78,000 and the company restored its customers within five days. Hurricane Frances, which struck Tampa Electric on September 5, 2004, posed a different and more significant threat, as it passed over the more populous areas within Tampa Electric's service territory. Making matters worse, the storm lingered, staying over the company's territory for 39 hours. The outage toll was much higher than that of Charley – 268,000 peak outages and the company restored all 268,000 customers within seven days. Hurricane Frances' impact was approximately 95 percent tree- or limb-related. The most impact of any storm, however, came from the third and most unexpected storm of the season – Hurricane Jeanne. Jeanne made a late turn, changing its path substantially in the last hours before landfall. The late turn put Tampa Electric's entire service territory within the storm's reach. Jeanne caused the most extensive structural damage to Tampa Electric's system, with 64 transmission structures down, compared with 31 during Hurricane Charley and 14 during Hurricane Frances. The company was faced with restoring 55 percent of its transmission system. Further complicating Hurricane Jeanne was the initial unavailability of foreign linemen and tree trimmers, who were tapped out working on continued restoration from the previous storms in Florida and throughout the Southeast. Overall, Hurricane Jeanne presented the most outages experienced at a single time in Tampa Electric's history. Thanks to the early and determined response of Tampa Electric's workers and the additional assistance the company received mid-restoration, the 285,000 customers were all restored within seven days.

As a result of these three hurricanes; a total of 2,721 distribution poles were replaced or an average of 0.3% per storm and a total of 110 transmission poles were replaced or an average of 0.14% per storm.

6.1.2 Distribution

This section of the plan builds upon the design philosophy discussed above and provides an overview of the design criteria, construction standards and practices applicable to all new distribution facilities. This section also presents a broad discussion of distribution materials and structure types utilized.

Tampa Electric has developed and maintains a *DETM* which provides corporate and field personnel the policies, procedures and technical data related to the design of distribution facilities owned and operated by the company. Information contained in this manual along with the *SESR*, *GR&S*, *GR&S-UG* and *AMC*, provide guidelines for designing, constructing and maintaining Tampa Electric's distribution system.

6.1.2.1 Overhead System

Voltage

Tampa Electric's standard distribution feeder system operates at 13.2 kV three-phase primary voltage. The company does have three circuits operating at 4 kV primary voltage.

Clearances

Primary voltage conductors are located in the power space on the pole which is the upper most portion of the pole as defined by the NESC. Secondary and service conductors along with the neutral are located approximately six feet lower than the primary conductors. Joint attachers are located in the communication space on the pole which is approximately 40 inches below the neutral cable or Tampa Electric communication cable. Additional facilities may also exist on the same pole (i.e., in the form of a second distribution circuit) in which case the company adheres to all NESC clearance and loading requirements. For typical clearances applicable to joint use attachments, see Attachment A.

Pole Loading

Tampa Electric utilizes NESC Grade B loading criteria as the basis for its construction standard for all new construction, major planned work, expansions, rebuilds and relocations on the overhead distribution system. As described in Section 6.1 above, the safety factors considered in the NESC Grade B criteria provide for a system that is twice as strong as the NESC Grade C criteria which results in a robust design that the company's experience has shown to provide safe, reliable and cost effective service. This standard exceeds the minimum requirement of the NESC, which requires distribution poles to be designed based on a minimum of 60 mph wind speeds. Tampa Electric requires that all distribution facilities be designed to the highest applicable NESC requirement, which is 50 percent stronger than the minimum NESC requirements. While the NESC has requirements related to extreme wind conditions, these requirements are only for structures over 60 feet in height and rarely apply to distribution structures.

Tampa Electric's experience continues to show that there is no substantial evidence that building distribution structures to extreme wind construction grades will prevent damage from falling trees, tree limbs and flying debris during major storm events. Tampa Electric has concluded from its storm restoration experience and historical hurricane exposure that Grade B construction, which will withstand an effective wind speed between 116 mph (new construction) and 95 mph (at replacement), is the most cost effective and reliable standard for the company's service area.

Materials

There are several types of poles that are used for distribution structures. Tampa Electric's distribution system consists of wood, concrete, steel and fiberglass poles. The standard for all new construction is wood poles that are treated with CCA or Penta poles for rear lot maintenance pole replacements.

The company's standard conductor for circuit feeders is 336 kcmil ACSR with a 2/0 AAAC neutral. Conductor sizes utilized for distribution laterals (overhead takeoffs from feeders) may either be #2, 2/0 or 4/0 AAAC with some older existing facilities containing #6 copper conductor.

Construction Types

Proper configuration selection is emphasized for maintenance, safety and economics. The existing line configuration should be maintained on multi-phase line extensions. Distribution facilities shall not be rebuilt or replaced for the sole purpose of appearance, unless paid for by the customer.

Triangular line configuration using fiberglass brackets is the preferred construction standard. It is the most economical to install and is particularly suited to situations involving restrictive rights-of-way, easements and clearances. Because of its narrow profile, it should be used for locations with numerous trees. Other construction types that may be used include vertical, modified vertical and wood crossarm.

Pole Loading Compliance

A new process was implemented in 2007 that will assure Tampa Electric is in compliance with all NESC loading requirements and company construction standards. Tampa Electric adopted the use of a pole loading software program, "PoleForeman", as part of this implementation. The program utilizes the company's construction standards (templates) to model each pole and assist company field engineering technicians. The technician inputs the appropriate template, conductor, pole size and class, which the program uses to determine all loads on the pole. The program applies them to the structure and calculates the resulting stresses as a percent loaded.

6.1.2.2 Underground Facilities

Standard Design

Tampa Electric's standard underground distribution system consists of normally looped circuits operating at 13.2 kV three-phase or 7.6 kV single-phase primary voltages. The standard cable is 15 kV strand filled jacketed tree retardant cross-linked polyethylene (TRXLPE) insulated aluminum cable with a copper concentric neutral. Tampa Electric's standard is to place all underground distribution cables in a conduit system buried with 24 to 36 inches of ground cover. Since 2004, all primary switchgear has been specified using stainless steel enclosures to reduce the corrosion effects from salt spray and affluent irrigation spray. All padmounted transformers have been specified utilizing stainless steel in the skirt, door and hinges while the tank is made of a mild steel material.

Network Service

Tampa Electric has two types of underground facilities: standard underground facilities used in residential subdivisions and commercial areas described above and network service. Network service provides a high level of reliability and operating flexibility. The company utilizes two types of network service: an integrated secondary grid network that serves the high-density load area in downtown Tampa, and spot network systems that serve high-density load in the downtown Tampa network area and the Tampa International Airport. The network system provides redundant feeds and thus is designed to maintain service during a first contingency outage. The network system is somewhat waterproof and can be located in vaults, some of which are below grade. However, the customer owned electrical panels are not waterproof and will likely be severely impacted by saltwater intrusion.

Construction Standards in Coastal Areas

Part of Tampa Electric's service area is bounded by Tampa Bay and has approximately 60 square miles of land in the Flood Zone 1 designated area as defined in Hillsborough County's Hazard Flood Maps. Along these coastal areas, there is increased risk of storm surge, flooding and saltwater contamination. While a good portion of this land is wetlands and is not build-able, the company has instituted higher design and construction standards in this area. The company's proposed standard is that all new underground distribution facilities (padmounted transformer, switchgear, load break cabinets and padmounted capacitors), located in the Flood Zone 1 designated area, shall be of stainless steel or aluminum construction and bolted to the concrete pad. Upgrading the material from mild steel to stainless steel or aluminum is more durable and typically extends equipment life after saltwater contamination; however, the equipment is not waterproof and will require cleaning following a flooding event prior to re-energizing. Any maintenance replacements in this designated area shall also be replaced with a stainless steel or aluminum equivalent.

Procedures Following Flooding Events

The company has considered two scenarios that could occur in these flood prone areas. The first scenario, and the most catastrophic event, would be a Category 3 hurricane or greater with a storm surge of 12 feet or greater producing high crushing water, sand and debris. In this event, the company anticipates everything in the storm surges path would be moved or buried, as was the case in the aftermath of Hurricane Ivan in Gulf Power's utility system. The result was no load to serve for an extended time after the storm surge. In light of this experience, Tampa Electric has concluded that it is not practical or cost effective to attempt the design of an underground system to withstand such an event.

The second scenario is a flooding event where the water rises up to five feet during a Category 1 hurricane. In this event, there is simply the high water without the accompanying storm surge. In most cases and depending on the level of water, there may not be any load to serve immediately; however, the buildings, houses, etc., will still be standing and may or may not be habitable.

Tampa Electric recognizes there is a significant chance that some equipment may become submerged or flooded during a storm. Although specific locations and severity of flooding cannot be pre-determined, Tampa Electric may choose to de-energize portions of its system if it is in the public's best interest and can be done safely. Tampa Electric will also de-energize portions of its system if directed by the appropriate governing authorities. Prior to re-energizing flooded switchgear and padmounted transformers, the underground equipment will be visually inspected and cleaned with fresh water if saltwater intrusion has occurred. The switchgear fuses will be replaced if the flood levels exceeded the height of the fused barrels. All meters that have been submerged will be replaced prior to re-energizing. If a replacement is not immediately available, the customer's meter may be bypassed. The service can be re-energized after the customer requests it and only after the water has receded and the meter socket and main disconnect have been visually inspected. Tampa Electric's inspection jurisdiction is limited to the meter, meter socket and main disconnect.

Major storms can cause damage to customer owned equipment as well, such as pipe mast, switchgear, or meter socket, and to the degree that service is discontinued. In this case, Tampa Electric will notify the affected customer that service cannot be restored until the customer secures the services of an electrical contractor to make the appropriate repairs.

6.1.2.3 Location of Facilities

Tampa Electric's policy is to place all new distribution facilities in public right-of-way ("ROW"), which is typically in the front of the customer premises, and not to build in rear lot easements. The company clearly recognizes that limited access to facilities located behind the customer's premises significantly increases restoration time. This frontal approach facilitates efficient access during installation and maintenance of the facilities. Prior to 1970 and this policy, distribution facilities were constructed in rear lot easements. From time to time, communities or homeowner associations make inquiries regarding the relocation of overhead facilities from rear lot locations to the front of customers' properties. Tampa Electric evaluates each inquiry on a case-by-case basis for feasibility, practicality and cost effectiveness. Consideration is given to the impact of any tree trimming required along the front of the property (aesthetics), conversion costs, joint attacher cost impacts and scheduling, ROW availability, customer's service main locations and the availability of front access to the dwelling or building.

Should a major storm impact Tampa Electric's service area, the company will evaluate opportunities that may present themselves to relocate rear lot facilities to the front of property as a better alternative than attempting to replace downed facilities in the original rear lot easement. In this situation, customer and third party attacher (if present) consensus must be quickly collected so as not to delay restoration.

6.1.2.4 Critical Infrastructure

Tampa Electric has identified its critical infrastructure as those circuits feeding loads which are critical to the maintenance of basic services that include: public health (water and sewage, fire, hospitals), distilled fuels (refinery, tank farm) and transport hubs (airports). These circuits have the highest restoration priority level. Examples of these types of customers in Tampa Electric's service territory include the Tampa

International Airport, hospitals, Port of Tampa, County and City Emergency Operations Centers, key police and fire stations, and major water and sewage pumping facilities. Over the next three years, Tampa Electric plans to harden three circuits which feed some of the most critical customers on the company's system to extreme wind criteria. These projects will be part of a pilot program, set up to evaluate the benefits of utilizing the NESC extreme wind loading requirements on the distribution system, and are described in more detail in the Deployment Strategy section of the plan.

6.1.2.5 Overhead to Underground Conversions

Tampa Electric will evaluate community, governmental agency and homeowner association requests to convert existing overhead power lines to underground. Each inquiry will be evaluated on a case by case basis for feasibility, practicality and cost impact. Consideration will be given to conversion costs, ROW availability for underground facilities, physical constraints, additional customer cost associated with service main conversion from overhead to underground, joint attacher impact cost, scheduling and coordination.

Tampa Electric developed Table 2 to illustrate the benefits and drawbacks associated with both overhead and underground electric service.

Overhead		Underground	
Benefits	**Drawbacks**	**Benefits**	**Drawbacks**
Lower cost to install and maintain	Overhead lines tend to have more power outages primarily due to trees coming in contact	Better aesthetics	Difficult and longer to trouble shoot outages
Easier to restore and locate faults	Higher exposure due to wind impact	Less exposure to high winds and reduced outages due to animals	More costly to restore/repair outages (four times)[1]
Shorter duration of power outages	Accidental contacts from antennas and aluminum gutter installations	No tree trimming expense	More exposure due to storm surge or flooding
Overhead facilities have more operational flexibility, e.g.,	High exposure in traffic areas, roadways, easements	Property values tend to be higher	More costly to install and maintain. Up to ten times the cost of new overhead power line[2] and

Overhead		Underground	
Benefits	Drawbacks	Benefits	Drawbacks
adding transformer, tapping lateral			higher cost upgrading existing underground facilities due to expansion
Higher life expectancy	Poor aesthetics	Reduce risk of electrocutions due to antennas and aluminum gutter installations	40 year old overhead lines have better reliability than 20 year old underground lines[1]

Table 2. Summary of benefits and drawbacks of overhead and underground electric service

1. From the North Carolina Utilities Commission, November 2003, Feasibility of Placing Electric Distribution Facilities Underground
2. From the Edison Electric Institute, 2004, ***Out of Sight, Out of Mind, A study on the costs and benefits of undergrounding overhead lines.***

6.1.3 Transmission

This section of the plan provides an overview of design considerations and references when performing a transmission structure analysis for new and existing facilities. This section is a broad discussion of transmission structure types, foundation design and design criteria.

6.1.3.1 Transmission Structures

Voltage levels

Tampa Electric's transmission system consists of circuits operating at 230 kV, 138 kV and 69 kV voltages. These circuits constitute a minimum of three-phase conductors and a static wire (ground). Additional facilities may exist or be incorporated in the design of a transmission structure. These include additional transmission circuits, optical ground wire, distribution circuits and a conglomeration of wire attachments by joint attachers.

Material types

There are several types of materials that are utilized for transmission structures. Tampa Electric's transmission system consists of wood, concrete, aluminum and steel support structures. Past practices utilized wood pole, aluminum and lattice steel structure design. Pre-stressed spun concrete and tubular steel technology is now the preferred method. Since 1991, Tampa Electric has adopted a standard that all new construction, line relocations and maintenance replacements will require a pre-stressed spun concrete or steel pole replacement.

Configuration Types

There are multiple transmission structure configurations utilized. Prior to pre-stressed spun concrete and tubular steel technology, typical structure configurations commonly consisted of single wood structures, multi wood structures, wood H-frames, lattice aluminum H-frames and lattice steel towers. The advent of pre-stressed spun concrete and tubular steel poles has permitted a more cost effective, low maintenance and high strength option. The pre-stressed spun concrete poles and tubular steel poles are utilized in multiple configurations. Typical configurations utilizing these poles are single pole, multi pole and H-frame structures.

The configurations will vary widely when considering the many variables attributed to transmission facilities. Some of these variables are: number of circuits, conductor size, span length, soil conditions, ROW width, potential permitting requirements, utilization of adjacent land, environmental impacts, electric and magnetic field criteria, aesthetics, economics and community input. Single pre-stressed spun concrete or tubular steel structure configurations have proven to be the most economical and maintainable choice given the work environment and constraints encountered while engineering and constructing transmission facilities.

6.1.3.2 Foundations

Drilled shaft and direct embedment are the two preferred foundation types utilized for pre-stressed spun concrete or tubular steel structures. A drilled shaft typically has a specified depth, diameter, steel rebar cage, poured concrete and bolted flange plate for the pole base. A direct embedded foundation typically has a specified depth and diameter. The direct embedded foundation also requires that a segment of the superstructure to be embedded below ground, acting as part of the foundation, with natural backfill, crushed rock backfill or poured concrete backfill.

Tampa Electric uses a modified Broms foundation analysis for overturning foundation design. It is imperative that soil borings are collected or standard penetration tests are conducted to compile the appropriate soil data for foundation analysis. Tampa Electric's service area is regional and ground conditions are considered to be mostly sandy soil; however, soil is non-homogeneous and can very greatly. It is also assumed that the water table is at grade which has a significant impact on soil strength, but remains a good assumption given the environment of Tampa Electric's service area.

6.1.3.3 Design Criteria

There are two types of methodologies used to analyze pole strength. Tampa Electric uses the ultimate strength analysis for all wood and non-wood structures. However, it is acceptable and often recommended to use the working stress method for wood poles.

Tampa Electric designs and specifies all transmission facilities in accordance with the latest version of the NESC. All designs address extreme wind, Grade B construction. The extreme wind loads are applied to all attachments on the transmission structure regardless of attachment height.

Tampa Electric's service area is largely within the 100 mph to 120 mph extreme wind contours referenced in the NESC. The company has concluded that the 120 mph wind standard will be applied on all 69 kV and 138 kV structures throughout Tampa Electric's service area. It has also been determined to continue the past practice of applying a 133 mph wind standard to all 230 kV structures throughout Tampa Electric's service area. The 133 mph wind standard exceeds the NESC requirements for extreme wind loading. This standard was adopted when Tampa Electric commissioned the first 230 kV line in its service area and the company continues to support the 133 mph wind standard as the best practice for 230 kV construction.

Since the inception of the NESC extreme wind standard, it has been applied to all Tampa Electric transmission facilities. However, the company has always applied a 133 mph wind standard to all 230 kV facilities.

6.1.4 Substation

Tampa Electric designs, constructs and maintains transmission and distribution substations and switchyards ranging from 13.2 kV to 230 kV with 217 existing substations. This includes performing siting studies, physical design, grading and drainage, foundation design, layout and design of control buildings, structure design and analysis, protection and control systems, and preparation of complete specifications for material, equipment and construction.

6.1.4.1 Design Philosophy

Wind Strength Requirements

Tampa Electric designs its substations in accordance with the latest approved version of the NESC. Currently, all distribution substation structures are designed to withstand a wind load of 120 mph.

At 230 kV generation facilities and 230 kV transmission stations, current design standards call for terminal line structures to withstand 133 mph wind loading along with the line tension of the transmission circuit.

The design standards summarized above meet the NESC loading criteria for extreme wind, Grade B construction. As previously stated, Tampa Electric's service area is within the 100 to 120 mph extreme wind contours referenced in the NESC.

Protection

Animal protection covers are installed on all 13 kV bushings, lightning arrestors, switches and leads. This helps prevent outages caused by animals and will also reduce damage from debris that may get inside the substation during a major storm event. Tampa Electric uses circuit switchers instead of fuses or ground switches on new and upgraded transformer installations. This design will clear a fault much quicker, which minimizes damage and greatly reduces restoration time.

Other

Equipment elevations will be carefully evaluated when building on existing sites or when selecting future sites in the Flood Zone 1 designated area. Information on past flooding and potential future storm surge levels will be evaluated. Much equipment is built on steel supports and is above expected flood levels. Some equipment such as transformers can be submerged up to the point of attached cabinets and controls. Therefore the major focus will be on the elevation and water resistance of the control cabinets and related equipment. The sites and/or equipment will be elevated based on the overall site permitting that must be done with the governmental and environmental agencies taking into consideration the surrounding area.

6.1.4.2 Construction Standards

In a typical new distribution substation, the structures are of a galvanized tubular steel design. The tallest structure is approximately 24 feet above grade, with the majority of the structures and equipment being below 17 feet. Distribution feeder circuits are designed to exit the substation via underground cables installed inside six-inch conduit.

Control buildings are installed in 230 kV substations and 69 kV switching stations. These buildings are typically of concrete block construction with poured concrete columns and concrete roof panels, which are designed to withstand winds of 120 mph without any damage to the building or the equipment, housed inside. Recently the company design standard has been increased to 150 mph.

Chain link perimeter fences, depending on height and type of construction, have been designed to withstand 100 to 120 mph winds. Current fences are being designed for 120 mph. Perimeter walls are designed in accordance with the Florida Building Code, 125 mph wind load, Exposure B. Tampa Electric installs eight-foot tall perimeter chain link fences or walls, which exceed the NESC minimum height of seven feet. This provides additional protection from wind-blown debris. Tampa Electric is also evaluating alternative types of fences that may be more effective in blocking debris.

7 DEPLOYMENT STRATEGY

Tampa Electric's storm hardening plan's deployment strategy will enhance system reliability and reduce storm restoration costs. The deployment strategy includes: 1) the implementation of the construction standards outlined above for all new transmission, distribution and substation facilities, 2) various maintenance programs that will strengthen and upgrade the system to current standards, 3) other storm hardening initiatives as outlined in Tampa Electric's 2006 Storm Implementation Plan filed March 2, 2007 and 4) establishment of a three-year program that will pilot the extreme wind loading standard for select targeted distribution facilities serving critical infrastructure within the company's service territory.

7.1 Construction Standards

The transmission, distribution and substation design and construction standards described in Section 6 are in affect and apply to all new facilities as well as all rebuilds, relocations and maintenance.

A majority of new distribution facilities Tampa Electric constructs each year is placed underground, however the company has averaged 20 miles of new overhead distribution construction over the last few years. The company also has multiple new transmission line construction projects starting within the next three years. There will be approximately 45 miles of 230 kV construction and approximately 36 miles of 69 kV construction occurring by 2010. These transmission projects will add a significant amount of capacity and redundancy to the state transmission grid.

7.2 Maintenance programs

7.2.1 Vegetation Management

Tampa Electric's Transmission and Distribution Vegetation Management Program includes a balanced approach to improve the quality of line clearance while adhering to the American National Standards Institute ("ANSI") A300 pruning standards. The company manages over 6,100 miles of distribution and 1,200 miles of transmission lines over five counties within Florida. The company's vegetation management plan calls for every circuit to be trimmed every three years with a special emphasis on critical trimming based in areas identified by Tampa Electric's reliability base methodology. Established vegetation management program funding levels are estimated at $9.3 million annually for 2007 through 2009.

7.2.2 Distribution Maintenance

7.2.2.1 Pole Replacements

Tampa Electric's Wood Pole Groundline Inspection Program is part of a comprehensive program initiated by the FPSC for Florida investor-owned electric utilities to harden the electric system against severe weather and unauthorized and unnoticed non-electric pole attachments which affect the loadings on poles.

This inspection program complies with Order No. PSC-06-0144-PAA-EI, issued February 27, 2006 in Docket No. 060078-EI which requires each investor-owned electric utility to implement an inspection program of its wooden transmission and distribution poles on an eight-year cycle based on the requirements of the NESC. This program provides a systematic identification of poles that require repair or replacement to meet strength requirements of NESC.

Pole inspection targets by service area are established with a goal of completing approximately 12.5 percent of the entire system each year. The 2007-2009 groundline pole inspections program goals/targets include approximately 38,000 distribution pole inspections at an estimated annual cost of $1.5 million.

Tampa Electric will conduct a pole loading analysis and data collection on poles having third party attachments. The analysis will ensure that the condition of the pole meets the requirements in Table 261-1A of the NESC and Tampa Electric Construction Standards.

Tampa Electric sets an aggressive goal to complete all the required replacements prior to hurricane season the year following the inspection. Tampa Electric's Groundline Inspections Program strategy takes a balanced approach and has produced excellent results in a cost effective manner. The future inspections coupled with its pole replacement program will ultimately harden Tampa Electric's transmission and distribution poles.

In 2007, Tampa Electric will replace an estimated 1,420 distribution poles at a total cost of $3.3 million. The 2007 goals were developed using historical failure rates scaled to the increased inspection cycles.

7.2.3 Transmission Maintenance

The Tampa Electric transmission system inspection program identifies potential system issues along the entire transmission circuit by analyzing the structural conditions at the groundline and above ground as well as the conductor spans. The inspection program is a multi-pronged approach with inspection cycles of one, six or eight years depending on the goals or requirements of the individual inspection activity. Formal inspection activities included in the program are groundline inspection, ground patrol, aerial infrared patrol, above ground inspection and substation inspections. The ground patrol, aerial infrared patrol and substation inspections are performed on one-year cycles, the above ground inspection is performed on a six-year cycle and the groundline inspection is performed on an eight-year cycle. Additionally, pre-climb inspections are performed prior to commencing work on any structure.

7.2.3.1 Groundline Inspection

Tampa Electric has implemented a groundline inspection program that complies with the Commission's order requiring groundline inspection of wooden transmission structures. In addition, Tampa Electric has included provisions in the groundline inspection program to identify deficiencies with non-wood structures. Groundline inspections are performed on an eight-year cycle. Each year approximately 12.5 percent of all transmission structures are scheduled for inspection. These inspections will also include a wind load analysis that will be performed on the structures where third party attachments are present. In 2007, groundline inspections are planned on 3,412 transmission structures. This represents approximately 12.5 percent of the company's transmission structures. The 2007 estimated cost for this activity is $135,000 and it is anticipated that the annual number of inspections and budget for 2008 and 2009 will be similar.

7.2.3.2 Ground Patrol

The ground patrol is a visual inspection for deficiencies including poles, insulators, switches, conductors, static wire and grounding provisions, crossarms, guying, hardware and encroachment. The ground patrol will include identification of vegetation encroachment as well as all circuit deficiencies. All transmission circuits are patrolled by ground at least once prior to the beginning of storm season each year. The budget for the ground patrol is estimated to be $46,000 annually.

7.2.3.3 Aerial Infrared Patrol

The aerial infrared patrol is performed annually on the entire transmission system. It is performed by helicopter with a contractor specializing in thermographic power line inspections and a company employee serving as navigator and observer. This inspection identifies areas of concern that are not readily identifiable by normal visual methods as well as splices and other connections that are heating abnormally and may result in premature failure of the component. This inspection also identifies obvious system deficiencies such as broken crossarms and visibly damaged poles. Since many of these structures are on limited access ROW, this aerial inspection provides a frequent review of the entire transmission system and helps identify potential reliability issues in a timely manner. The infrared patrol is planned for 100 percent of the transmission circuits with an annual budget of $53,000.

7.2.3.4 Above Ground Inspection

Above ground inspections are performed on transmission structures on a six-year cycle; therefore, each year approximately 17 percent or one-sixth of transmission structures are inspected. This inspection is typically performed by a contractor specializing in above ground power pole inspection and may be performed by climbers, bucket truck or helicopter. The above ground inspection is a comprehensive inspection that includes assessment of poles, insulators, switches, conductors, static wire, grounding provisions, crossarms, guying, hardware and encroachment issues. This program provides a detailed review of the above ground condition of the pole and the associated hardware on the structure. Above ground inspections are planned annually for approximately 17 percent of the company's transmission structures or, 3,784 structures comprising 22 circuits. The annual spending for this activity is estimated at $200,000.

7.2.3.5 Pre-Climb Inspections

While not a part of the formal inspection program outlined above, Tampa Electric crews are required to inspect poles prior to climbing. As part of these inspections, the employee is required to visually inspect each pole prior to climbing and sound each pole with a hammer if deemed necessary. These pre-climbing inspections serve to provide an additional integrity check of poles prior to the employee ascending the pole and may also result in the identification of any structural deterioration issues.

7.2.3.6 Reporting

Standardized reports are provided for each of the formal inspections. Deficiencies identified during the inspections are entered into a database. This maintenance database is used to prioritize and manage required remediation. Deficiencies identified during the pre-climb inspections are assessed by the on-site crew and reported to supervisory personnel for determination of next steps.

7.2.3.7 Pole Replacements

Tampa Electric is hardening the existing transmission system in a prudent, cost effective manner utilizing its inspection and maintenance program to systematically replace wood structures with non-wood structures. The company has approximately 26,000 transmission poles in service today with wood poles accounting for approximately 17,000 of the total. In 2007, it is estimated that Tampa Electric will harden 623 transmission structures with a budget of $6.9 million. This includes 421 structure replacements with steel or concrete poles and 202 sets of insulators replaced with polymer insulators. The 2007 hardening goals were developed using historical failure rates scaled to the increased inspection cycles. It is anticipated that 2008 and 2009 will have a similar amounts of replacements and expenditures.

In addition to the pole replacements discussed above, Tampa Electric is aware of approximately 40 transmission line relocation projects within the next three years.

These projects are a combination of road construction and new development. The timing of these projects is primarily based on the governmental agencies' and the developer's schedule. It is estimated that approximately 250 wood poles will be replaced with 250 non-wood poles during the next three years due to these projects at an annual cost of approximately $1 million.

Community outreach has already begun for most of these projects and will continue until construction is complete. Tampa Electric's community outreach program involves informational mailings to all customers in the vicinity of the project, multiple community meetings, communication to governing agencies, project information on the internet and notifications in local newspapers.

7.2.4 Substation Maintenance

Flood zones are carefully evaluated when building on existing sites or when selecting future sites. Over the next three years, the company will review existing sites in the Flood Zone 1 designated area. The major focus will be on the elevation and water resistance of control cabinets and related equipment. Prudent modifications will be made. Consideration will be given to whether there will be load to be served in the area of the substation immediately after a storm and if any load can be picked up from adjacent substations that are outside the flooded area.

When transformers are added to an existing substation or a transformer is upgraded, existing fences are removed and new fences are installed to current NESC wind and height standards. At the same time, animal protection covers are installed on all 13 kV bushings, lightning arrestors, switches and leads. This will help prevent damage from debris that does get inside the substation. This type of work will be done in about five substations per year based on current expansion plans. These improvements cost an average of $75,000 per substation and the total estimated cost for 2007 through 2009 is $1.1 million.

Tampa Electric also plans to convert from fuses or ground switch protection to circuit switchers at four locations per year over the next three years based on current expansion plans. These improvements cost an average of $100,000 per location and the total estimated cost for 2007 through 2009 is $1.2 million.

7.3 Other Storm Hardening Initiatives

7.3.1 Downtown Network

The Tampa downtown network is a small area of dense loads made up mostly of high-rise office buildings. This area is considered critical infrastructure because of the high concentration of business and governmental buildings in this area. The types of businesses include telecommunications switching center, banking, city and county governmental offices, federal and county courthouses as well are approximately 2500 hotel rooms and 6.5 million square foot of office space. The Marion Street substation serves the downtown network with six underground distribution circuits. The boundaries shown in Fig. 5 are as follows: Interstate 275 on the north, Morgan Street to Cass Street to Jefferson Street to Zack Street to Governor Street to Whiting Street on the east; Whiting Street on the south and the Hillsborough River on the west.

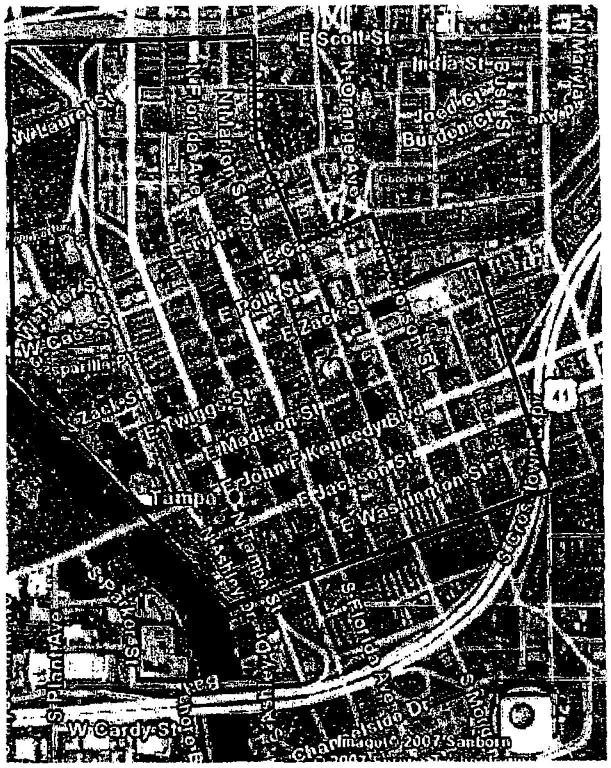


Fig. 5 - Downtown Network Boundaries

The downtown network consists of 361 manholes and 56 network vaults. Most contain two network transformers and two network protectors. The typical elevation in the downtown area is twelve feet or greater, however, there are a few areas with lower elevation. These areas are west of Ashley Street and south of the Crosstown Expressway. In these areas, there are eight below grade vaults and two additional vaults that have historical flooding tendencies. Although network protectors are thought to be waterproof, Tampa Electric has put into its storm hardening plans the pressure testing of the 18 network protectors located in the 10 low lying manholes and vaults. If the results of the tests show any signs of leakage, all the pertinent gaskets will be replaced. The total three-year costs for this project are estimated to be $60,000.

7.3.2 Tampa International Airport

Tampa International Airport is served by six distribution circuits which are all underground and emanate from one substation. Tampa Electric's plan is to upgrade a transmission segment feeding the Skyway substation to today's extreme wind construction standards. The project consists of replacing 62 existing wood transmission poles with steel or concrete poles. While Skyway substation has multiple transmission feeds, this project will ensure that one of them is upgraded to non-wood structures that meet today's construction standards. The project will be completed in 2009 at an estimated cost of $618,000.

7.3.3 Conversion of remaining 4 kV distribution circuits

Tampa Electric is proposing to convert the remaining three 4 kV distribution circuits as part of its hardening plans. The benefits are in the form of standardizing the distribution voltage to only 13.2 kV. This will eliminate the confusion of dual distribution voltages and the need to have different construction standards and critical spare material, which will result in faster restoration. The plan is to complete the engineering in 2007 and construction in 2008 at an estimated cost of $582,000.

7.3.4 Overhead to Underground Conversion of Interstate Highway Crossings

This activity focuses on hardening limited access highway crossings which will prevent the hindrance of first responders, emergency vehicles and others due to fallen distribution lines blocking traffic. The restoration of downed overhead power lines over interstate highways can be lengthy because of heavy traffic congestion. Tampa Electric's current preferred construction standard requires all distribution line interstate crossings to be underground. Therefore, the company's hardening plan calls for converting several overhead distribution line crossings on interstates I-75, I-4 and the East-West section of I-275 to underground. The three year plan is to underground 12 distribution line crossings at a total estimated cost of $600,000 or four crossings at an annual cost of $200,000.

7.3.5 Post-Storm Data Collection and Forensic Analysis

As outlined in Tampa Electric's 2006 Storm Implementation Plan filed March 2, 2007, Tampa Electric plans to implement a formal process to randomly sample system damage following a major weather event in a statistically significant manner. This information will be used to perform forensic analysis in an attempt to categorize the root cause of equipment failure. From these reports, recommendations and possible changes will be made regarding engineering, equipment and construction standards and specifications. Data Collection Operations personnel will patrol a representative sample of the damaged areas of the electric system following a major storm event and perform the data collection process. At a minimum, the following types of information will be collected:

- Pole/Structure - type of damage, size and type of pole, and likely cause of damage.
- Conductor - type of damage, conductor type and size, and likely cause of damage.
- Equipment - type of damage, overhead or underground, size, and likely cause of damage.
- Hardware - type of damage, size and likely cause of damage.

Engineering personnel will perform the forensic analysis of a representative sample of the data obtained to evaluate the root cause of failure and assess future preventive measures where possible and practical. This will include evaluating the type of material used, the type of construction and the environment where the damage occurred including existing vegetation and elevations. Changes will be recommended and implemented, if more effective solutions are identified by the analysis team.

7.4 Extreme Wind Pilot Program

Tampa Electric's three-year strategy for piloting the extreme wind loading criteria on distribution facilities focuses on targeting two critical customers. These include a local hospital and the Port of Tampa gasoline tank storage area. The circuits feeding the hospital and the Port of Tampa will be rebuilt to meet extreme wind loading and their performance will closely be monitored during and after hurricane events and compared to the performance of other circuits in the same area built to the current standard.

7.4.1 Port of Tampa

The Port of Tampa is a critical facility as it serves 10 petroleum distribution customers that deliver 40 percent of the gasoline in the state of Florida. Six miles of distribution feeder will be rebuilt to meet the extreme wind requirements as shown in Fig. 6.

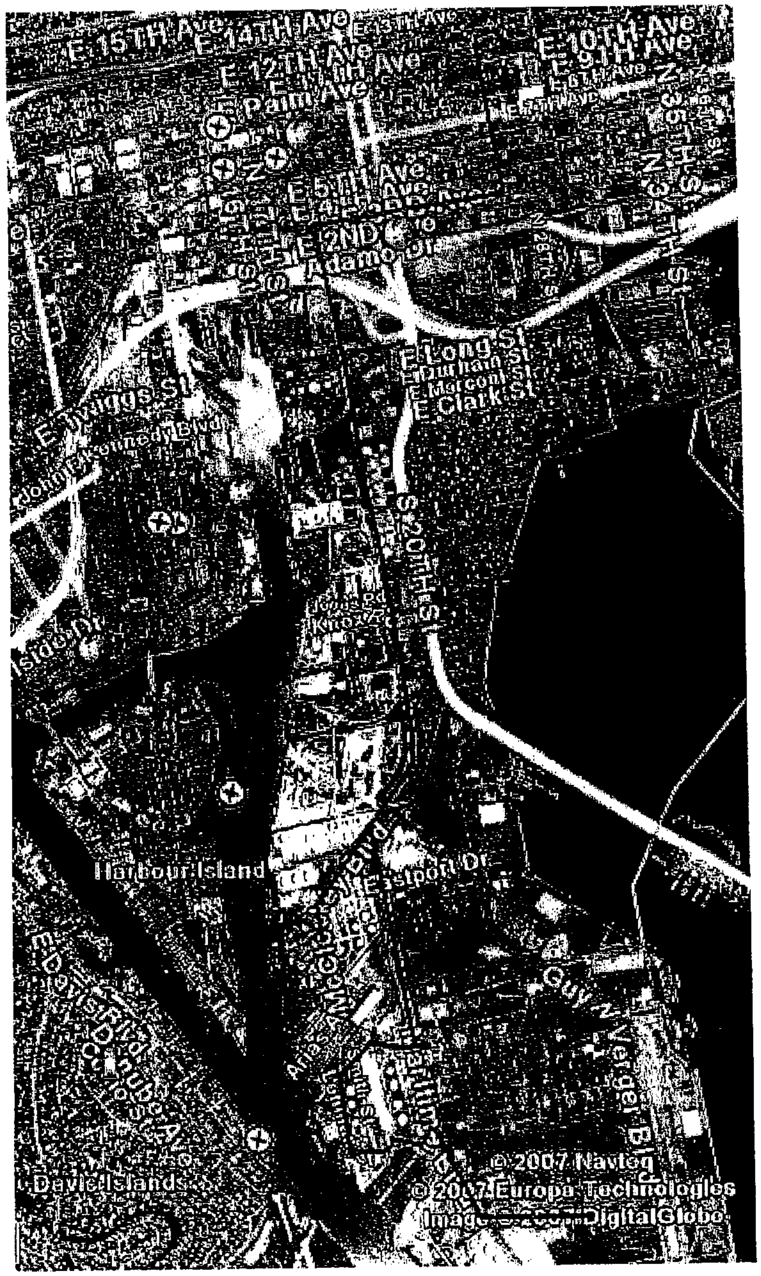


Fig. 6 – Aerial photograph of Port of Tampa with outlined distribution route

The three-year deployment strategy for this extreme wind upgrade project is as follows:

2007 – Rebuild a three-mile feeder to the north of the Maritime substation. This will include upgrading approximately 111 distribution poles and replacing 38 wood transmission poles with non-wood poles at an estimated cost of $760,000.

2008 - Rebuild the one-mile feeder to the south of the Maritime substation. This will include upgrading approximately 37 distribution poles estimated cost $120,000.

2009 – Rebuild a two-mile feeder from an alternative substation to pick up three miles of a previously rebuilt (from 2007 and 2008) feeder should a flooding event at the Maritime substation site occur. This will include upgrading approximately 74 distribution poles at an estimated cost of $240,000. As a side benefit, the Hillsborough County Sheriffs Operation Center will also be served from the hardened feeder.

7.4.2 Saint Joseph's Hospital

While there are several hospitals in Tampa Electric's service territory that are considered critical customers, Saint Joseph's Hospital was chosen for this pilot program because of its Level 2 Trauma Center status, central location, high elevation and the cost effectiveness of the hardening activities. The distribution feeder serving the hospital is approximately one-mile in length and will be rebuilt to meet the extreme wind requirements. The hardening measures to be employed include replacing 37 distribution poles and with a stronger class wood poles estimated cost of $120,000 and six wood transmission poles with non-wood pole at an estimated cost of $70,000. This project location is shown in Fig. 7 and is planned for 2008.

Fig. 7 – Aerial photograph of Saint Joseph's Hospital with outlined distribution route

7.5 2007-2009 Deployment and Costs

The storm hardening projects planned by Tampa Electric through 2009 with their estimated costs are summarized below in Table 3.

Project	2007	2008	2009
Port of Tampa	$760,000	$120,000	$240,000
Saint Joseph's Hospital	0	190,000	0
Tampa International Airport	0	0	618,000
Downtown Tampa Network	20,000	20,000	20,000
Conversion of 4 kV Circuits	42,000	480,000	0
Hardening of Interstate Crossings	200,000	200,000	200,000
Transmission pole inspections	135,000	147,000	152,000
Transmission above ground inspections	182,000	211,000	217,000
Transmission pole replacements	6,854,000	7,010,000	7,220,000
Distribution pole inspections	1,627,000	2,074,000	2,136,000
Distribution pole replacements	3,300,000	5,750,000	6,040,000
Pole reinforcements	1,004,000	894,000	920,000
Substation enhancements	775,000	775,000	775,000
Vegetation management	9,300,000	9,600,000	9,900,000
Total	**$24,199,000**	**$27,471,000**	**$28,438,000**

Table 3. Estimated 2007-2009 Storm Hardening Costs

7.5.1 Third Party Attacher Benefits and Impacts

Tampa Electric's 2007 – 2009 Storm Hardening Plan is expected to provide benefit to all third party attachers and have minimal impact on third parties attached to our system. The facilities that are planned to be rebuilt to extreme wind loading criteria will utilize the same route and require that the attachers merely transfer from the old poles to the new poles. The largest impacts will come from the increased pole inspections, which now include a pole loading analysis and the annual pole attachment audit that Tampa Electric will perform.

Pole loading calculations will be conducted as part of the pole inspection program on any joint use pole to ensure that each pole is not overloaded or approaching overloading. Any pole that fails a preliminary stress test will be flagged and a comprehensive pole loading analysis will be conducted to determine if the pole is overloaded and, if it is, which attachment is actually causing the overload. If the responsible party is a joint use attaching entity that has not permitted with Tampa Electric to be on that pole, Tampa Electric will notify the joint use entity which will have the choice of removing their attachment(s) or paying for the cost of any needed corrective action. Comprehensive loading analysis results will indicate the percent of utilization by each attaching entity. If it is determined that a Tampa Electric attachment caused the pole to be overloaded, the pole will be replaced and the attaching entities will be notified of the need to transfer their attachments to the new pole. If it is determined that an attaching entity overloaded the pole, Tampa Electric will work with attaching entities to determine when an attachment was placed and whether the attachment was approved by Tampa Electric prior to being placed on the pole. Once it is determined which entity overloaded the pole, that entity will be responsible for any corrective measures required to mitigate the overload. Each situation will be evaluated on a case by case basis with consideration given to the circumstances of the particular pole being evaluated.

Tampa Electric will also conduct an audit of all pole attachments on an eight-year cycle at a minimum. The purpose of this attachment audit is to identify the location of each pole; the facilities attached and to obtain verification that such attachments are pursuant to a current joint use agreement. Costs of this audit will be shared by all attaching entities. Following the audit, if any unauthorized attachments are found, Tampa Electric will true-up its pole attachment count and back bill to the last audit unless attacher can provide documentation of an approved permit authorizing the attachment. Unauthorized attachment fees may also be assessed for any attachments not previously approved. Additionally, the attacher will be responsible to pay for a complete engineering study and for any corrective action required to meet NESC and/or Tampa Electric construction standard requirements.

8 ATTACHMENT STANDARDS AND PROCEDURES

Tampa Electric has approximately 330,000 third party attachments on its transmission and distribution poles throughout its service territory. This includes attachments made by telecommunications companies, cable TV companies and governmental entities. This section of the plan outlines the standards, procedures and policies that must be adhered to by all third party attaching entities.

8.1 Access to Tampa Electric poles

Access to Tampa Electric poles is granted only to those companies who have an attachment agreement with the company. Licensee must also secure any necessary permit, consent, or certification from state, county or municipal authorities or private property owners prior to attaching. If an attaching entity does not currently have an agreement with Tampa Electric, it is necessary to contact the Pole Attachment and Contract Administration Department at the company (see Attachment B).

8.2 Permit Application Procedure

Prior to permit application submittal; the licensee should take the time to review it's attachment agreement with Tampa Electric, including the Tampa Electric construction standards as outlined in Section 6.

Prior to attaching, a completed permit application (see Attachment C) shall be submitted to Tampa Electric for all new attachment requests or overlashing to existing attachments requests on Tampa Electric owned distribution and transmission poles.

No access will be granted for attachment to any poles that are specifically used for private and street lighting systems only. Access to transmission poles is not mandated by the Telecommunications Act of 1996 and is typically not granted due to excessive make ready construction costs. It is recommended that the licensee should avoid permitting to attach to transmission poles whenever possible. A complete engineering study for transmission facilities may take much longer than the 45 days it takes for distribution pole access.

8.2.1 Permit Application Documentation

Licensee's completed permit application shall also include the documentation listed below. Additionally, a deposit may be required for the engineering study and any make ready construction activities. Omission of any required documentation may result in the rejection of licensee's permit application delaying the permit approval.

- Attachment C must be completed in its entirety
- Legible map showing entire route highlighted, along with identification to correlate poles on map to poles identified in Attachment C
- Overall county or city site map highlighted and identifying the proposed construction area
- Required documents must be submitted in duplicate
- Deposit fee in the amount of $200.00 per pole (This may be based on credit worthiness and/or contract terms and conditions.)

8.2.2 Permit Engineering Study Review

Once Tampa Electric has received and accepted licensee's completed permit application, the company will review the proposed pole attachments and conduct a complete engineering study to ensure compliance of the NESC and Tampa Electric's construction standards. This study will include a structural loading and a clearance analysis on each pole. This study may take up to 45 days to complete for distribution poles and typically longer for transmission poles. Therefore, permit applications should be submitted a minimum of 90 days in advance of the expected installation date and an additional 45 days for make ready construction involving transmission. For joint use parties (e.g., Verizon, Embarq), Tampa Electric will determine whether joint use is excluded on any pole application within 10 days.

8.3 Make Ready

8.3.1 Make Ready Construction Not Required

If the results of the engineering study find no existing or proposed violations with the NESC and Tampa Electric construction standards, the company will return a signed copy of licensee's permit request (see Attachment C) approving the installation of the proposed attachments. The licensee has 120 days from the approved permit date to complete attachment construction.

8.3.2 Make Ready Construction Required by Tampa Electric

If it is determined that make ready construction by Tampa Electric is necessary to accommodate the proposed attachments, the company will notify licensee in writing of the required work along with an estimate of the construction costs. Upon licensee's acceptance of the estimate and submittal of any additional payments over and beyond the initial deposit, Tampa Electric will schedule and complete the required make ready work. Upon completion of the make ready construction, Tampa Electric will return a signed copy of licensee's permit request (see Attachment C) approving the installation of the proposed attachments. The licensee has 120 days from the approved permit date to complete attachment construction.

8.3.3 Make Ready Construction Required by Existing Third Party Attacher

If it is determined that make ready construction by a third party attacher is necessary (lower or raise attachments) to accommodate the proposed attachments, Tampa Electric will notify licensee via the National Joint Utilities Notification System ("NJUNS") describing the re-arrangement work required. The NJUNS system is internet based and is located at www.njuns.com. This system is used by Tampa Electric to communicate with its pole attachment licensees of the need to perform work. The licensee must contact the responsible third party directly to negotiate work schedules and/or costs. Upon completion of this work, Tampa Electric shall be notified via the completion of the NJUNS ticket which will prompt the company to schedule an inspection to confirm all make ready construction has been completed. Once approved, Tampa Electric will return a signed copy of Licensee's permit request (see Attachment C) approving the installation of the proposed attachments. The licensee has 120 days from the approved permit date to complete attachment construction.

8.4 Tampa Electric Post Inspection Process

Upon completion of licensee's attachment installation, licensee shall forward a completed copy of the Attachment D identifying the poles attached to with either the 10 digit geographic location number ("GLN") which is typically white numbers on a green background secured to the pole, or if no GLN exists, the six digit asset tag number located on a silver tag secured to the pole as well as the date attached and return to Tampa Electric. The company will perform a post inspection of licensee's construction. If Tampa Electric finds licensee's construction to meet all NESC and Tampa Electric standards, the company will authorize the installation, close the job and reconcile the final costs.

8.4.1 Code Violations

If the company finds any violations of Tampa Electric construction standards, licensee will be notified via NJUNS to make immediate corrections. The licensee will be given 30 days to correct the violations before Tampa Electric will schedule a second post inspection. If licensee fails the second post inspection, Tampa Electric will complete the work for licensee at licensee's expense. Repeated failure to correct any code violations within the 30 day time period may result in suspension of future attachment rights.

8.5 National Joint Utility Notification System

NJUNS (www.njuns.com) is an electronic notification tool used to notify licensee of any code violations found during the post inspection process. The use of this tool is paid for by Tampa Electric and does not cost licensee anything to use. The licensee will be required to communicate with Tampa Electric via this tool regarding all permit applications per its attachment agreement. Prior to submitting any permit application, licensee must have created an NJUNS account. Additionally, as part of its normal construction process, Tampa Electric will use NJUNS to notify licensees of the need to perform cable or equipment transfers when poles are being replaced or are being relocated. The licensee should contact Tampa Electric for assistance if necessary.

8.6 Permit Closeout and Final Billing

Upon completion of licensee's permit application, Tampa Electric will complete the final billing within 60 days of the completion date. Tampa Electric will reconcile the estimated pre-paid costs and the actual incurred costs. Tampa Electric will issue a refund check for any over payments or an invoice for any additional monies owed to the company. The invoice will include the total costs of the engineering conducted to process licensee's permit application and any construction costs due to make ready. If licensee's permit resulted in new attachments to Tampa Electric poles, licensee will also receive an invoice for the advanced pole rental due for the total of the new pole attachments.

8.7 Pole Inspection Program

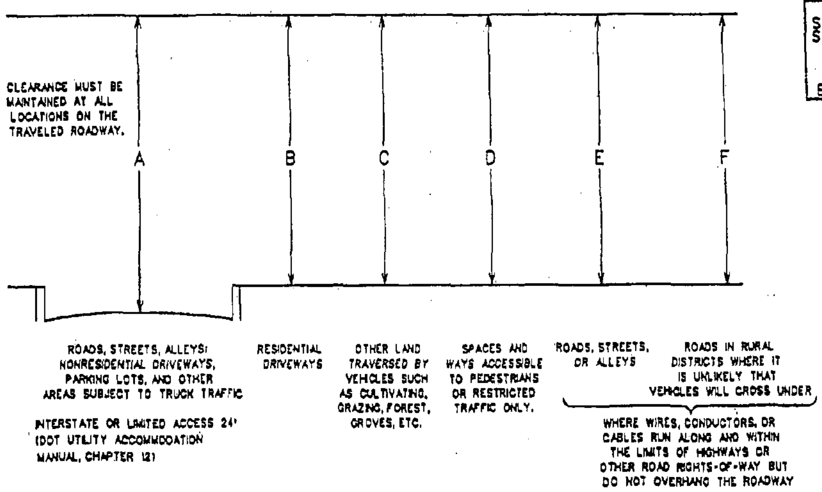
Pursuant to FPSC Order No. PSC-06-0144-PAA-EI (eight-year pole inspection requirement), Tampa Electric will conduct an inspection of all poles on its system on an eight-year cycle for distribution poles and a six-year cycle for transmission poles to evaluate the condition of each pole. Additionally, stress calculations will be conducted on any joint use pole to ensure that each pole is not overloaded or approaching overloading for instances not already addressed by Order No. PSC-06-0144-PAA-EI. Any pole that fails a preliminary stress test will be flagged and a comprehensive pole loading analysis will be conducted to determine two things: 1) confirm if the pole is in fact overloaded and 2) if overloaded, which attachment is actually causing the overload. If the responsible party is a joint use attaching entity that has not permitted with Tampa Electric to be on that pole, Tampa Electric will notify said party. The joint use entity will have the choice to remove their attachment(s) or pay for the cost of corrective action. Corrective action will typically require either a pole replacement or the installation of an Osmose extended steel truss (E-truss).

8.8 Joint Use Pole Attachment Audit

Pursuant to FPSC Order No. PSC-06-0351-PAA-EI, Tampa Electric will conduct an audit of all pole attachments on an eight-year cycle at a minimum. For some licensees, Tampa Electric reserves the right to complete this audit annually. The decision to perform an audit on an annual basis will be made by Tampa Electric based on need and cost effectiveness. The purpose of this audit of joint use attachments is to identify the location of each pole and the facilities attached and verification that such attachments are pursuant to a current joint use agreement. The cost of this audit is shared amongst all attaching entities. Tampa Electric tags and identifies all pole locations using a geographical positioning system. If any unauthorized attachments are found, Tampa Electric reserves the right to true-up its pole attachment count and back bill to the last audit unless licensee can provide documentation of an approved permit authorizing the attachment (see Attachment C). Unauthorized attachment fees will also be assessed for any attachments not previously approved. Additionally, licensee will be responsible to pay for a complete engineering study and for any corrective action required to meet Tampa Electric construction standards.

Attachment A

REFERENCES
GR & S STD 3-1 STD 3-13
DETM PERMITS & EASEMENTS



(VOLTAGES ARE PHASE-TO-GROUND FOR EFFECTIVELY GROUNDED CIRCUITS AND THOSE OTHER CIRCUITS WHERE ALL GROUND FAULTS ARE CLEARED BY PROMPTLY DE-ENERGIZING THE FAULTED SECTION, BOTH INITIALLY AND FOLLOWING SUBSEQUENT BREAKER OPERATIONS.)

* CLEARANCE CODE (SEE ABOVE ILLUSTRATION.)	INSULATED COMMUNICATION CONDUCTORS AND CABLE; MESSENGERS; SURGE-PROTECTION WIRES; GROUNDED GUYS; UNGROUNDED GUYS EXPOSED TO 0 TO 300V; NEUTRAL CONDUCTORS MEETING RULE 230E1; SUPPLY CABLES MEETING RULE 230C1 (FT)	NONINSULATED COMMUNICATION CONDUCTORS; SUPPLY CABLES OF 0 TO 750 V MEETING RULES 230C2 OR 230C3 (FT)	SUPPLY CABLES OVER 750 V MEETING RULES 230C2 OR 230C3; OPEN SUPPLY CONDUCTORS, 0 TO 750 V; UNGROUNDED GUYS EXPOSED TO OVER 300 V TO 750 V (FT)	OPEN SUPPLY CONDUCTORS, OVER 750 V TO 22kV; UNGROUNDED GUYS EXPOSED TO 750 V TO 22kV (FT)	OPEN SUPPLY CONDUCTORS ABOVE 22KV. (SEE NOTE 2)
A	18.0	18.0	18.0	18.5	SEE NOTE 2
B	15.5	16.0 ①	16.5 ①	18.5	
C	15.5	16.0 ③	16.5	18.5 ③	
D	9.5	12.0 ①	12.5 ①	14.5	
E	15.5	16.0	16.5	18.5	
F	13.5	14.0	14.5	16.5	

* THE CLEARANCES REQUIRED BY THE UTILITY ACCOMODATION GUIDE (DEPARTMENT OF TRANSPORTATION), CITY, COUNTY OR MUNICIPAL AUTHORITY SHALL GOVERN WHERE MORE CONSERVATIVE.

NOTES:

➤ (1.) WHERE THE HEIGHT OF A BUILDING OR OTHER INSTALLATION DOES NOT PERMIT SERVICE DROPS TO MEET THESE VALUES, THE CLEARANCES MAY BE REDUCED TO THE FOLLOWING (REF. 2002 NESC, TABLE 232-1, NOTE 7&8):

	B	D
INSULATED SERVICE DROPS 300V OR LESS TO GROUND	12.5	10.5
INSULATED DRIP LOOPS OF SERVICE DROPS 300V TO GROUND	10.5	10.5
SERVICE DROPS LESS THAN 150V TO GROUND	12.0	10.0
INSULATED DRIP LOOPS OF SERVICE DROPS 150V TO GROUND	10.0	10.0
INSULATED COMMUNICATION SERVICE DROPS	11.5	—

COLUMN "B" APPLIES TO RESIDENTIAL DRIVEWAYS AND COLUMN "D" APPLIES TO SPACES ACCESSIBLE TO PEDESTRIAN TRAFFIC ONLY.

2. THE TRANSMISSION ENGINEERING DEPARTMENT SHOULD BE CONSULTED FOR CLEARANCE CONSIDERATIONS INVOLVING VOLTAGES EXCEEDING 22KV TO GROUND

(3.) SEE SPEC. 3-13 FOR CLEARANCE REQUIREMENTS IN GROVES.

REF. 2002 NESC 232

NO.	CK'D	DATE	REVISION
3			
2			
1	REM	8-18-05	REVISED NOTE 1

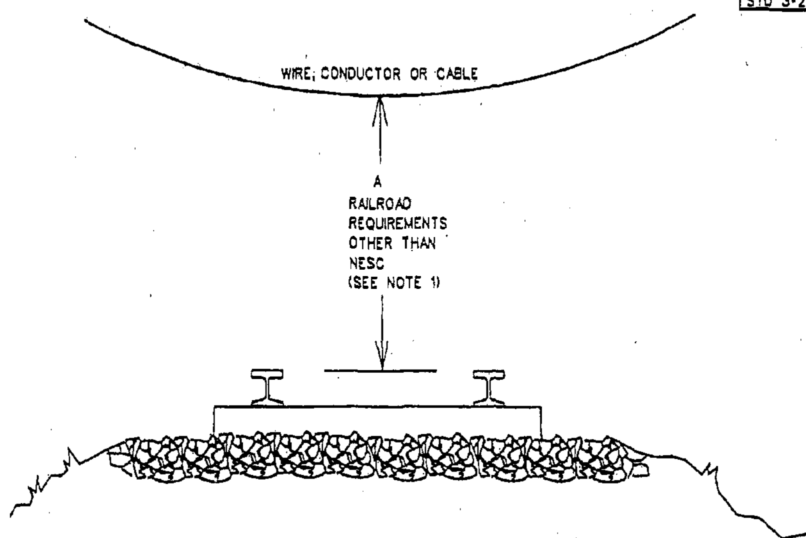
➤ DENOTES LATEST REVISION

D.E. SUPR. [signature]
APPR. DATE 8-18-05
SUPERSEDES 3-4/5-16-02

VERTICAL CLEARANCE OVER AND ADJACENT TO ROADS, DRIVEWAYS AND OTHER LAND AREAS

3-4 | TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS

REFERENCES
GR & S
STD 3-3
STD 3-22



CLEARANCE REQUIRED OVER RAILROAD TRACKS

(VOLTAGES ARE PHASE-TO-GROUND FOR EFFECTIVELY GROUNDED CIRCUITS AND THOSE OTHER CIRCUITS WHERE ALL GROUND FAULTS ARE CLEARED BY PROMPTLY DE-ENERGIZING THE FAULTED SECTION, BOTH INITIALLY AND FOLLOWING SUBSEQUENT BREAKER OPERATIONS.)

CLEARANCE CODE (SEE ABOVE ILLUSTRATION.)	INSULATED COMMUNICATION CONDUCTORS; SURGE PROTECTION WIRES; GROUNDED GUYS; MESSENGERS; EFFECTIVELY GROUNDED NEUTRALS ASSOCIATED WITH CIRCUITS OF LESS THAN 22kV TO GROUND. (FT)	OPEN SUPPLY CONDUCTORS 0 TO 750V (FT)	NON-INSULATED COMMUNICATION CONDUCTORS; INSULATED CABLED SUPPLY CONDUCTORS OF 0 TO 750V WHEN SUPPORTED BY AN EFFECTIVELY GROUNDED BARE MESSENGER (FT)	PRIMARY CONDUCTORS OF 750V TO 15kV TO GROUND. (CIRCUIT MUST BE EFFECTIVELY GROUNDED) (FT)	OPEN SUPPLY CONDUCTORS ABOVE 15kV
A	28.0	28.0	28.0	28.0	SEE NOTE 2

NOTES:

1. CROSSING REQUIREMENTS OF RAILROADS IN OUR SERVICE AREA ARE IN EXCESS OF AND SHALL TAKE PRECEDENT OVER NESC CODE REQUIREMENTS. CROSSING PERMITS AND APPROVAL MUST BE OBTAINED FROM THE RAILROAD INVOLVED. CONTACT PERMITS SECTION. SEE STANDARD 3-3.
2. THE TRANSMISSION ENGINEERING DEPARTMENT SHOULD BE CONSULTED FOR CLEARANCE CONSIDERATIONS INVOLVING VOLTAGES EXCEEDING 15kV TO GROUND.

➤ REF. CSX TRANSPORTATION INC., DESIGN & CONSTRUCTION STANDARD SPECIFICATION, PLATE V, REVISED 9-15-03

NO.	CK'D	DATE	REVISION
3			
2			
1	REM	8-18-05	REVISED CSX REFERENCE DOCUMENT

◄ DENOTES LATEST REVISION

VERTICAL CLEARANCE OVER RAILROADS

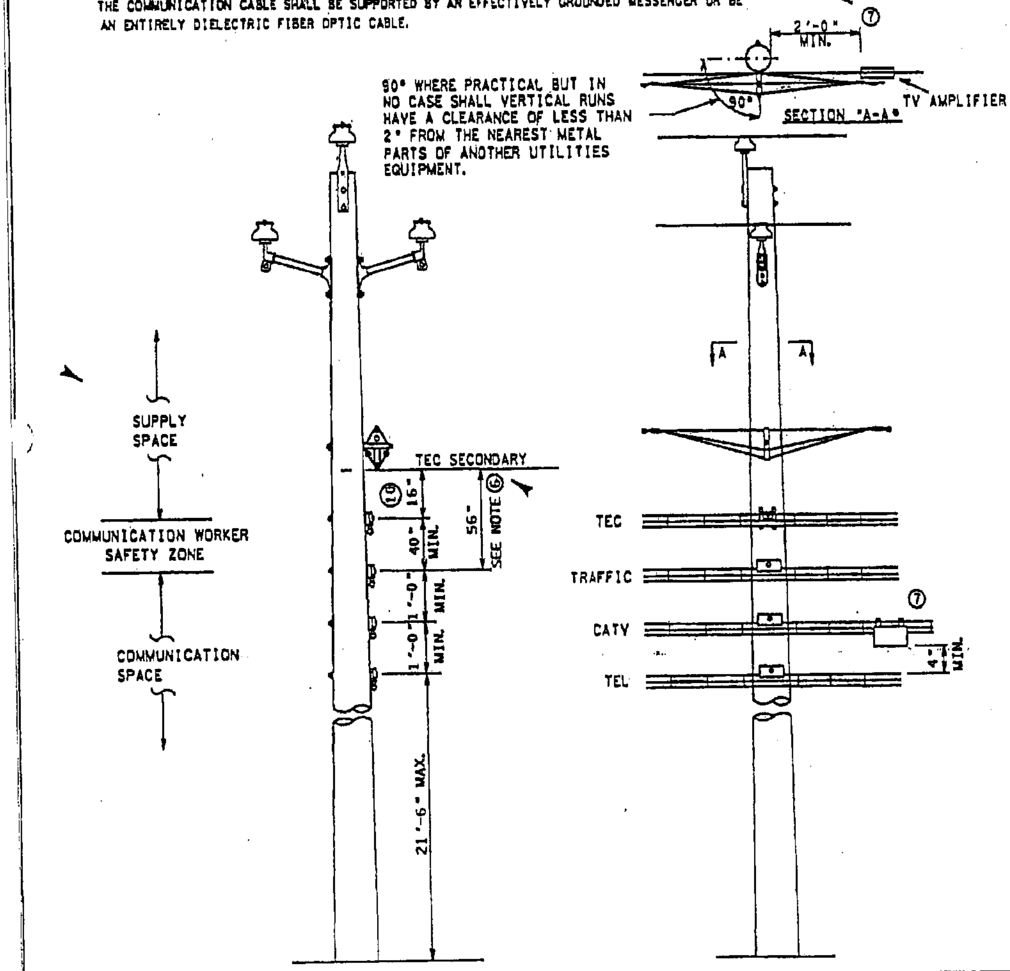
D.E. SUPR. Bob Shirley
APPR. DATE 8-18-05
SUPERSEDES 3-5/5-16-02

TAMPA ELECTRIC CO. STANDARDS | GENERAL RULES & SPECIFICATIONS | 3-5

REFERENCES
GR&S SEC. 8

NOTES:

1. CABLE CLEARANCE MEASUREMENTS SHALL BE TAKEN FROM THE HIGHEST COMMUNICATION CABLE TO THE LOWEST CABLE/CONDUCTOR IN THE SUPPLY SPACE. GROUND CLEARANCE MEASUREMENTS SHALL BE TAKEN FROM THE LOWEST CABLE TO GROUND.
2. THE CATV CABLE ELEVATION MAY BE LOWER WHEN APPROVED BY THE TELEPHONE COMPANY.
3. ELEVATIONS MAY BE LOWERED IF CODE CLEARANCE PERMITS AND UPON THE MUTUAL AGREEMENT OF ALL CABLE OWNERS.
4. ALL COMMUNICATION VERTICAL RUNS OF ALL TYPES SHALL BE PROTECTED AS PER NESC.
5. REFER TO 2002 NESC 235 C (2) (b) (1) (a) FOR SAG RELATED CLEARANCES.
6. IF TEC COMMUNICATION CABLE IS NOT PRESENT, THE 40" DIMENSION IS ALLOWED.
7. ALL CATV EQUIPMENT (SUCH AS AMPLIFIERS, SERVICE DROPS, ETC.) SHALL BE PLACED NO LESS THAN 2'-0" FROM OUTER EDGE OF POLE.
8. ALL GROUNDING AND OVERCURRENT PROTECTION SHALL BE PER APPLICABLE CODES.
9. TEC COMMUNICATIONS CABLE, CATV CABLE, TEL CABLE, AND TRAFFIC CONTROL CABLE, SHALL BE MOUNTED ON THE SAME SIDE OF POLE AS TEC SECONDARY.
10. WHEN THE CONDUCTOR DIRECTLY ABOVE A COMMUNICATION WIRE IN THE SUPPLY SPACE IS A NEUTRAL (NEUTRAL ONLY), THEN THE CLEARANCE MAY BE REDUCED WITH APPROVAL FROM DISTRIBUTION SERVICES. THE COMMUNICATION CABLE SHALL BE SUPPORTED BY AN EFFECTIVELY GROUNDED MESSENGER OR BE AN ENTIRELY DIELECTRIC FIBER OPTIC CABLE.



➤ REF. 2002 NESC 235
◄ DENOTES LATEST REVISION

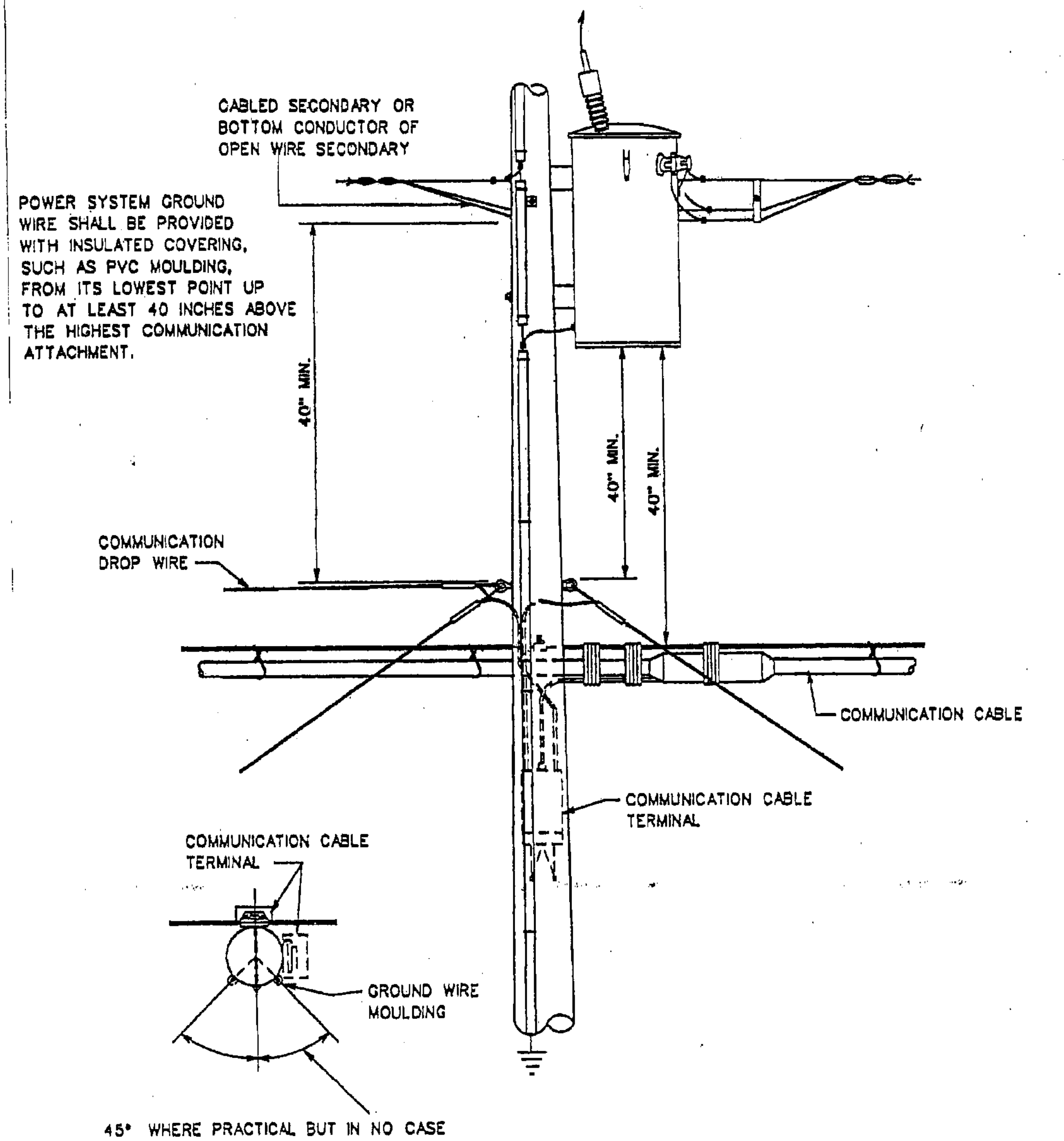
NO.	CK'D	DATE	REVISION
3	REM	10-20-05	REVISED TO MEET 2002 NESC
2	REM	8-18-05	ADDED SPACE DISCRIPTIONS
1	REM	8-18-05	REVISED NOTES 1, 4, 5, 6, & 7

CLEARANCE FOR JOINT CONSTRUCTION

D.S. SUPR.: [signature]
APPR. DATE: 10-20-05
SUPERSEDES: 3-31/8-18-05

3-31

TAMPA ELECTRIC CO. STANDARDS | GENERAL RULES & SPECIFICATIONS



➤ REF. 2002 NESC 93, 238 & 239

NO.	CK'D	DATE	REVISION
3			
2			
1	REM	8-18-05	REVISED SHOWING ADDED 93 & 239 TO REF. 2002

◄ DENOTES LATEST REVISION

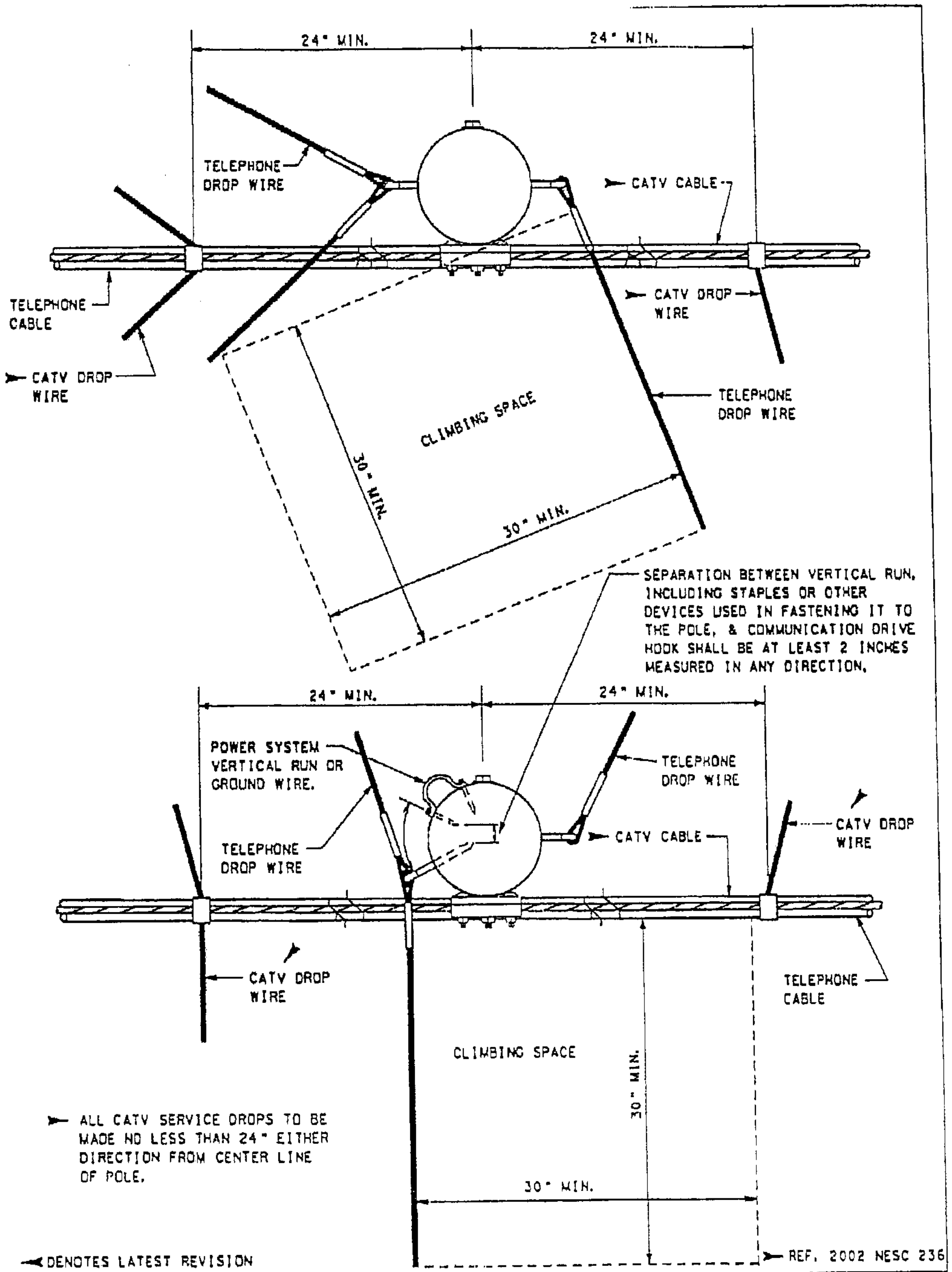
D.E. SUPR: [signature]
APPR. DATE 8-18-05
SUPERSEDES 3-32/5-16-02

CLEARANCE FOR JOINT CONSTRUCTION

TRANSFORMER POLE

3-32

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS



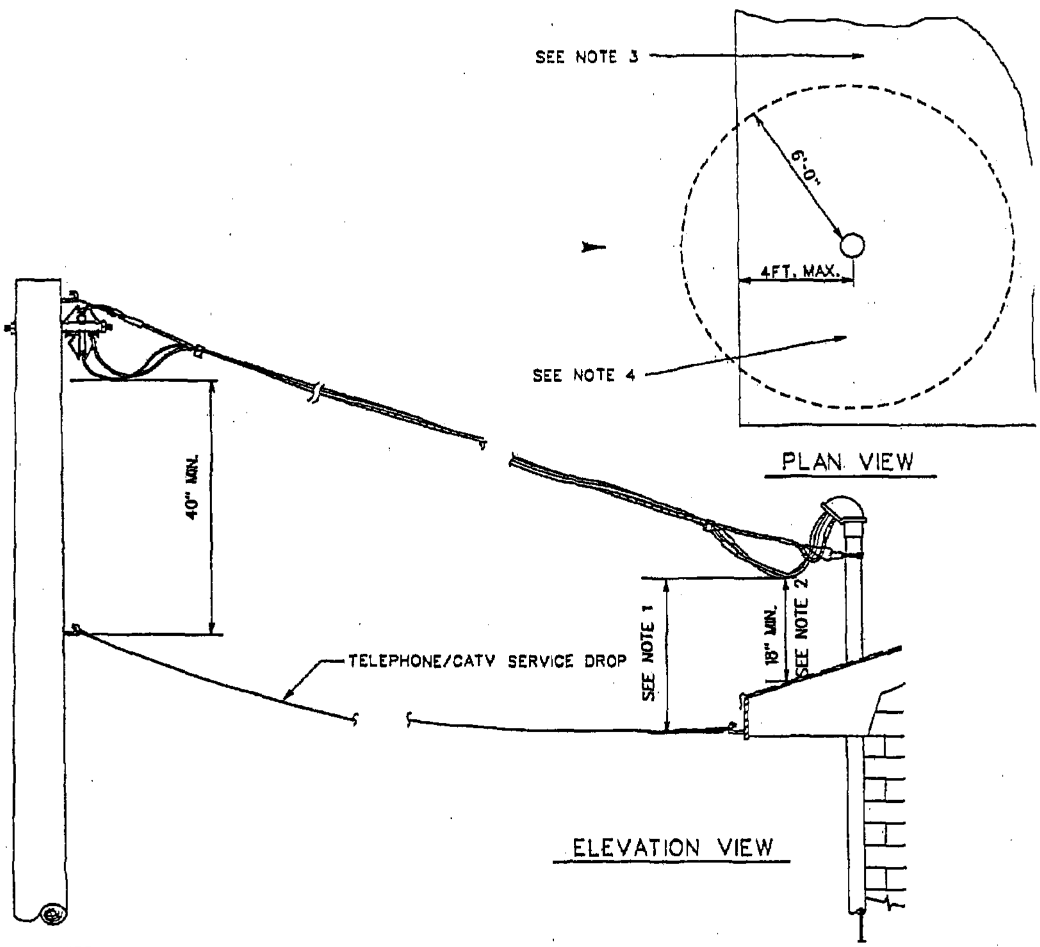
CLIMBING SPACE

THROUGH TELEPHONE AND CATV DROP WIRES

TAMPA ELECTRIC CO.	STANDARDS	GENERAL RULES & SPECIFICATIONS

APPR. DATE 5-16-02
SUPERSEDES 3-33/1-16-97

3-33



NOTES:

1. SUPPLY SERVICE DROPS OF 0 TO 750 VOLTS, RUNNING ABOVE AND PARALLEL TO COMMUNICATION SERVICE DROPS, MAY HAVE A CLEARANCE OF NOT LESS THAN 12 IN. AT ANY POINT IN THE SPAN. THIS INCLUDES THE POINT OF ATTACHMENT TO THE BUILDING OR STRUCTURE BEING SERVED, PROVIDED THAT THE NONGROUNDED CONDUCTORS ARE INSULATED AND THAT THE CLEARANCE, AS OTHERWISE REQUIRED BY RULE 235C1 (2002 NESC), IS MAINTAINED BETWEEN THE TWO SERVICE DROPS AT THE POLE.
2. REF. 2002 NESC FIG. 234-2
3. MAINTAIN NOT LESS THAN 3'-0" VERTICAL CLEARANCE ABOVE ROOF OUTSIDE 6'-0" RADIUS FROM THE SERVICE MAST.
4. MAINTAIN NOT LESS THAN 18" VERTICAL CLEARANCE ABOVE ROOF WITHIN 6'-0" RADIUS FROM THE SERVICE MAST.

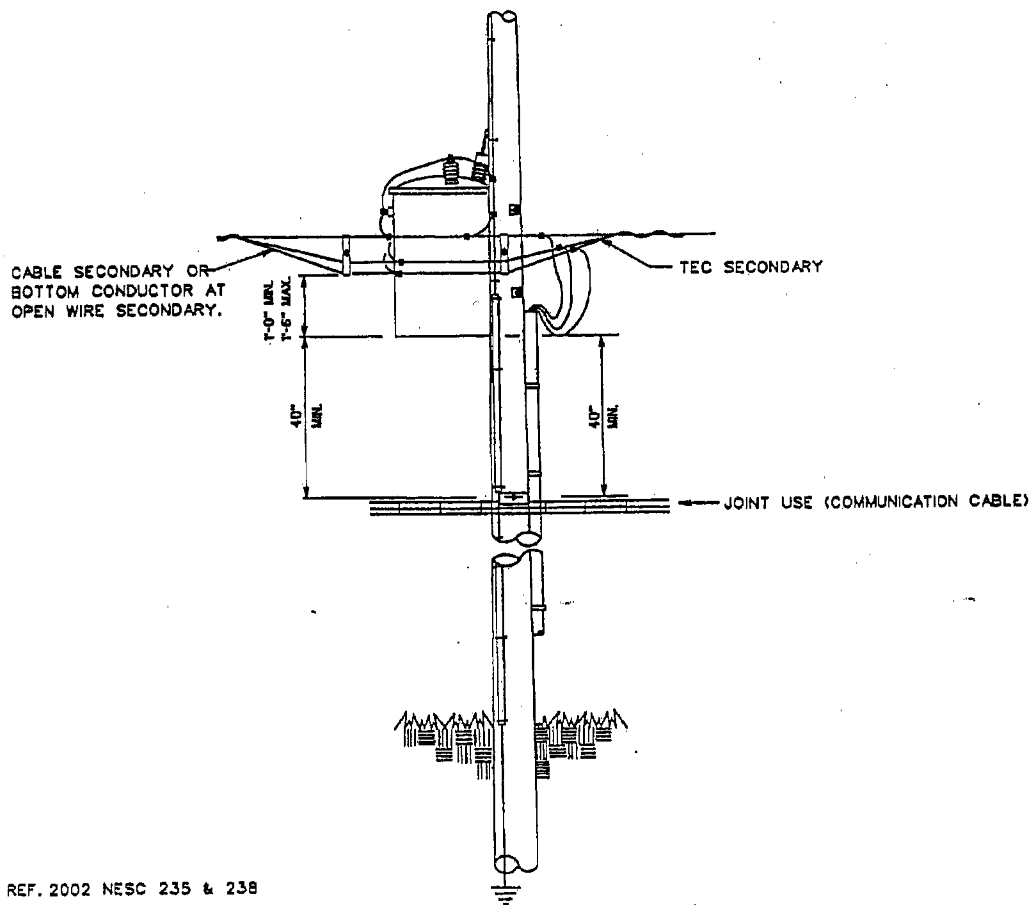
DENOTES LATEST REVISION

NO.	CK'D	DATE	REVISION
3			
2			
1	REN	8-18-05	ADDED PLAN VIEW & NOTES 3 & 4, REV. NOTE 1

D.S. SUPR. / APPR. DATE 8-18-05 / SUPERSEDES 3-34/5-16-02	CLEARANCES FOR JOINT CONSTRUCTION SERVICES
3-34	TAMPA ELECTRIC CO. STANDARDS | GENERAL RULES & SPECIFICATIONS

NOTES:

1. CABLE CLEARANCE MEASUREMENTS SHALL BE TAKEN FROM THE HIGHEST COMMUNICATION CABLE TO THE LOWEST CABLE/CONDUCTOR IN THE SUPPLY SPACE. GROUND CLEARANCE MEASUREMENTS SHALL BE TAKEN FROM THE LOWEST CABLE TO GROUND.



REF. 2002 NESC 235 & 238

◄ DENOTES LATEST REVISION

NO.	CK'D	DATE	REVISION
3			
2	REM	8-18-05	REVISED NOTE 1
1	SAW	7-22-04	REMOVAL UNDERGROUND CONDUIT, TITLE BLOCK

CLEARANCE FROM SERVICE RISER TO JOINT USE ATTACHMENT

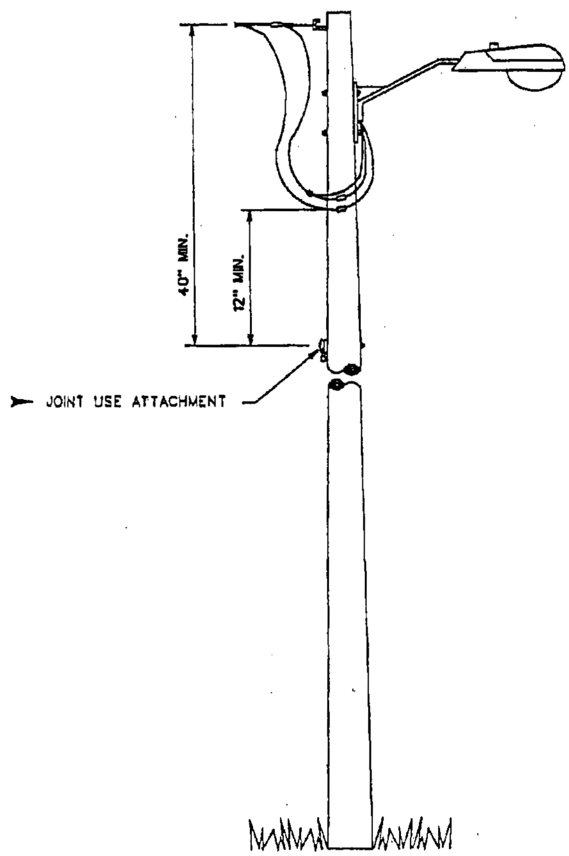
D.E. SUPR. Bob Shindler
APPR. DATE 8-18-05
SUPERSEDES 3-35/7-22-04

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS

3-35

NOTE:

➤ 1. THE SERVICE TO A LIGHT REQUIRES A 40" CLEARANCE TO THE JOINT USE ATTACHMENT. THE DRIP LOOP REQUIRES ONLY A 12" CLEARANCE TO THE JOINT USE ATTACHMENT.



REF. 2002 NESC 238

NO.	CK'D	DATE	REVISION
3			
2	REM	8-18-05	REVISED NOTE 1
1	REM	8-18-05	REVISED JOINT USE BRACKET TO JOINT USE ATTACHMENT

◄ DENOTES LATEST REVISION

D.S. SUPR. Bob Shinley
APP'L DATE 8-18-05
SUPERSEDES 3-36/8-15-02

3-36

CLEARANCE FROM LIGHTS TO JOINT USE ATTACHMENT

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS

Attachment B

Authorized Representatives:

Tampa Electric Company
Kristina Angiulli
Manager, E.D. Construction Services
P.O. Box 111
Tampa, Fl., 33601
Phone- 813-275-3022
Fax- 813-275-3409

Tampa Electric Company
Karen Laney
Lead Joint Use Field Technician
P.O. Box 111
Tampa, Fl., 33601
Phone- 813-610-1168
Fax- 813-275-3409

Tampa Electric Company
Eric O'Brien
Joint Use Field Technician
P.O. Box 111
Tampa, Fl., 33601
Phone- 813-610-2476
Fax- 813-275-3005

Tampa Electric Company
Nichole Hogan
Joint Use Billing
P.O. Box 111
Tampa, Fl., 33601
Phone-813-275-3072
Fax-813-275-3409

Attachment C

TECO ENERGY

TAMPA ELECTRIC COMPANY **DATE** ______________

Check all that apply:

( )New
( )Overlash
( )Rebuild
( )Service Drop

( )CATV
( )Phone/Telecommunications
( )Traffic

Licensee Company Name ______________________________
Permit Address (street name and number)
Permit Number (licensee's unique permit ID)
Total # of Poles ______________________________

TECO tracking # ______________
Job Order # ______________
Date permit received: ______________

In accordance with the terms and conditions of the Attachment Agreement between us, dated (date of executed attachment agreement) application is hearby made for a permit to make attachments and to modify agreement by this Exhibit "A" to Tampa Electric Company poles.

Licensee Pole ID Reference # on map	POLE NUMBER (gln or asset tag)	POLE LOCATION (address)	POWER (check if applicable)		Existing ATTACHMENTS (top of pole to bottom)			Licensee Attachment action: N/O/R/S	COMMENTS/SPECIAL INSTRUCTIONS (Photo # if applicable)
			Transmission pole	Distribution pole	Co. "A" (name)	Co. "B" (name)	Co. "C" (name)		
(ID to	(10 digit GLN preferred	(as specific as possible)						(N=New)	
correlate	if none, then note the							(O=Overlash	
poles on map)	6 digit asset tag #)							(R=Rebuild)	
								(S=Service	
Cable type:	( ) Coaxial	( )Fiber Optic	**Specs:**	Cable Size: ______		Cable Wt: ______		Msgr Size: ______	Msgr Wt: ______

LICENSEE INFORMATION:		**TAMPA ELECTRIC USE ONLY:**	
Permit Submitted by:		**Date Permit Approved:**	
Phone:		Approved by: (Signature):	
fax:		Print name:	
Address:		Title:	

DOCKET NO. 060172-EI & 060173-EI
TECO STORM HARDENING PLAN
FILED: MAY 7, 2007

Attachment D

Approved TEC tracking #: (Number found on approved Exhibit A) ______
Company Name: ______
Contact Name: ______
Phone Number: ______
Address: ______

Tampa Electric Company
Pole Attachment and Contract
Administration Department
813-275-3072
P.O. Box 111
Tampa , FL 33601

Addition or Removal date (please circle addition or removal)	(date of addition or removal) ______	**Addition or Removal date** (please circle addition or removal)	______
Grid or Pole ID#:	(10 digit GLN preferred if available)	**Grid or Pole ID#:**	______
Asset Tag#	______	**Asset Tag#**	______
Location/address of attachment:	______ ______	**Location/address of attachment:**	______ ______
Type of attachment:		**Type of attachment:**	
Addition or Removal date (please circle addition or removal)	______	**Addition or Removal date** (please circle addition or removal)	______
Grid or Pole ID#:	______	**Grid or Pole ID#:**	______
Asset Tag#	______	**Asset Tag#**	______
Location/address of attachment:	______ ______	**Location/address of attachment:**	______ ______
Type of attachment:		**Type of attachment:**	
Addition or Removal date (please circle addition or removal)	______	**Addition or Removal date** (please circle addition or removal)	______
Grid or Pole ID#:	______	**Grid or Pole ID#:**	______
Asset Tag#	______	**Asset Tag#**	______
Location/address of attachment:	______ ______	**Location/address of attachment:**	______ ______
Type of attachment:		**Type of attachment:**	

TAMPA ELECTRIC COMPANY
DOCKET NO. 070297-EI
DOCUMENT 2
EXHIBIT ____ (RBH-1)

		Activity	Docket No.	Actual/Estimated Utility Costs						Estimated Benefits to Utility Customers: Impact on Storm Restoration Costs			Estimated Benefits to Utility Customers: Impact on Storm Caused Outages			Other Estimated Company Benefits			Estimated Benefits to Third Party Attachers: Impact on Storm Restoration Costs			Estimated Benefits to Third Party Attachers: Impact on Storm Caused Outages		
				2004	2005	2006	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
(a)		Wooden Pole Inspections.	060078-EI	2.375	3.368	4.714	13.019	16.735	17.551	0.000	0.000	1.539	NQ	NQ	NQ	NQ	NQ	NQ	N/A	N/A	N/A	N/A	N/A	N/A
		Ten Storm Hardening Initiatives.	060198-EI																					
(b)	1	A Three-Year Vegetation Management Cycle for Distribution Circuits		4.832	5.345	9.219	9.577	9.600	9.900	0.000	0.000	10.560	NQ	NQ	NQ	NQ	NQ	NQ	N/A	N/A	N/A	N/A	N/A	N/A
(c)	2	An Audit of Joint-Use Attachment Agreements		0.000	0.000	0.000	0.260	0.260	0.260	0.000	0.000	0.594	NQ	NQ	NQ	0.000	0.059	0.119	N/A	N/A	N/A	N/A	N/A	N/A
(d)	3	A Six-Year Transmission Structure Inspection Program		0.415	0.456	0.567	0.765	1.224	1.266	0.000	0.000	0.519	NQ	NQ	NQ	0.000	0.000	0.017	N/A	N/A	N/A	N/A	N/A	N/A
(e)	4.	Hardening of Existing Transmission Structures		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N/A	N/A	N/A	N/A	N/A	N/A
(f)	5	Transmission and Distribution GIS		0.000	0.655	1.878	2.044	4.644	0.000	0.000	0.000	NQ	0.000	0.000	0.000	0.000	0.000	NQ	N/A	N/A	N/A	N/A	N/A	N/A
(g)	6	Post-Storm Data Collection and Forensic Analysis		0.000	0.000	0.000	0.040	0.000	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N/A	N/A	N/A	N/A	N/A	N/A
(h)	7	Collection of Detailed Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems		0.000	0.000	0.000	0.000	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N/A	N/A	N/A	N/A	N/A	N/A
(i)	8	Increased Utility Coordination with Local Governments		0.000	0.007	0.014	0.021	0.028	0.030	NQ	NQ	NQ	0.000	0.000	0.000	NQ	NQ	NQ	N/A	N/A	N/A	N/A	N/A	N/A
(j)	9	Collaborative Research on Effects of Hurricane Winds and Storm Surge		0.000	0.000	0.005	0.020	0.010	0.010	0.000	0.000	0.000	0.000	0.000	0.000	NQ	NQ	NQ	N/A	N/A	N/A	N/A	N/A	N/A
(k)	10	A Natural Disaster Preparedness and Recovery Program		0.000	0.489	0.496	0.476	0.490	0.505	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N/A	N/A	N/A	N/A	N/A	N/A
		Compliance with National Electric Safety Code's adoption of Extreme Wind Loading Standards.	070297-EI																					
(l)	1	New Distribution Facilities		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(m)	2	Major planned expansion, rebuild, or relocation of distribution facilities		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(n)	3	Critical infrasturture and major thoroughfares		0.000	0.000	0.000	1.002	0.990	1.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		Mitigating flood and storm surge damage to underground and supporting overhead facilities.	070297-EI																					
(o)	1	Transmission		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(p)	2	Distribution		0.000	0.000	0.000	0.166	0.170	0.174	0.000	0.000	0.675	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(q)		Placement of new and replacement distribution facilities to facilitate safe and efficient access for installation and maintenance.	070297-EI	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		TOTALS		$7.622	$10.320	$16.893	$27.390	$34.151	$31.624	$0.000	$0.000	$13.887				$0.000	$0.059	$0.136						

Notes: All dollars in millions

NQ: Not Quantified - While there are some benefits, Tampa Electric has not been able to quantify these benefits at this time.

NA: Not Available - The information needed to quantify these benefits have not been made available to Tampa Electric at this time.

Assumptions/Notes

LINE ITEM

A Assuming a Cat 3 Hurricane impacting Tampa Electric service area in 2009.
Incremental savings based on a reduction in distribution pole failure rate.

B Assuming a Cat 3 Hurricane impacting Tampa Electric service area in 2009.
CAT 3 hurricane has a severity factor of 16 times CAT 1.
Cost savings based on a reduction in tree related outages due to increased vegetation management.

C Assuming a Cat 3 Hurricane impacting Tampa Electric service area in 2009.
All contracts have been audited and a physical attachment audit is performed on 33% of Tampa Electric's system annually.
Cost savings based on reduction in pole failures due to fewer unauthorized attachments overloading poles and causing failures.

D Assuming a Cat 3 Hurricane impacting Tampa Electric service area in 2009.
Incremental savings based on a reduction in transmission pole failure rate.

E Costs and benefits of hardening the existing transmission system is included in the Wood Pole Inspection line (a).

F New GIS system in-service by year end 2008.
While there will be some soft benefits associated with the new GIS system both following a major storm and day to day, the dollars savings has not been quantified.

G Assuming a Cat 3 Hurricane impacting Tampa Electric service area in 2009.
Initial pole database setup cost in 2007 and costs to perform field data collection and analysis in 2009.
Benefits will come in years following forensic analysis.

H Benefits will come in years following the collection and comparison of data.
Tampa Electric will also utilize current PURC joint research underground study to quantify benefits.

I Assuming a Cat 3 Hurricane impacting TECO service area in 2009.
While there will be benefits to improved coordination, the dollar savings has not been quantified.

J Costs based on Tampa Electric's cost allocation of current three PURC joint research projects.
Benefits will come in years following study results and implementation of any actions from research.

K Tampa Electric had a substantial Natural Disaster Preparedness and Recovery Program in place prior to the new FPSC storm hardening rules, therefore, no major changes have been implemented and thus there are no incremental costs or benefits.

L All distribution facilities are and have been built to NESC Construction Grade B.
No changes have been implemented and thus there are no incremental costs or benefits.

M All new, planned expansion, rebuild, and relocation of distribution facilities are built to NESC Construction Grade B.
No changes have been implemented and thus there are no incremental costs or benefits.

N Tampa Electric will convert several OH interstate crossings to underground and will rebuild circuits feeding the Port of Tampa and the Saint Joseph's Hospital as part of its pilot program to evaluate the NESC Extreme Wind criteria.

O No changes have been implemented and thus there are no incremental costs or benefits.

P Test and repair, if needed, 18 network protector seals in flood prone submersible vaults.
Assuming a Cat 3 Hurricane impacting Tampa Electric service area in 2009.
Costs include incremental increases for the installation of new stainless switchgear and maintenance replacements.
Savings based on reduction in failures during Cat 3.

Q Tampa Electric has been placing its new distribution facilities in locations, typically front of properties in public ROW, to facilitate safe and efficient access for installation and maintenance of the system prior to FPSC storm hardening initiatives.
Tampa Electric will evaluate the replacement and relocation of rear lot facilities during maintenance or storm repairs with input and agreement from homeowners and third party attachers.
No major projects are anticipated, thus there are no incremental costs or benefits.

PROCESS TO ENGAGE THIRD PARTY ATTACHERS

1. The electric utility and third party attachers will engage in a continuous dialogue on the status of the electric utility's storm hardening plans. A third party attacher who wishes to be part of this process shall provide a one-time notification in writing to the electric utility, providing the name and address of the person designated to receive communications from the electric utility. This continuous dialogue shall, at a minimum, include:

   A. The electric utility shall provide notification to third party attachers by June 30 of specific storm hardening projects that the electric utility contemplates undertaking in the following calendar year. This notification shall include the project name, physical location (maps and routes) and general description of extent and type of work to be done. The most current engineering plans and diagrams should be provided as soon as they are available. Conferences on the proposed projects will be held if requested by any party.

   B. Third party attachers shall submit their respective cost-benefit analyses and any suggested modifications to the storm hardening projects identified to the electric utilities as contemplated by Rule 25-6.0342 by September 30.

   C. The electric utility will update third party attachers by November 15 of storm hardening projects proposed to be implemented in the following calendar year. This update shall include all of the descriptions of the projects (including, but not limited to, the most current engineering plans and diagrams and whether the electric utility plans to replace poles, change from wood poles to concrete or steel poles, place poles in locations different from the existing poles, relocate aerial facilities or underground existing aerial facilities) and costs proposed to be included in the electric utility's budget for the next calendar year. Third party attachers shall provide the electric utility any further comments on the proposed projects by December 5. Further conferences on the proposed projects will be held if requested by any party.

D. By December 15, the electric utility shall file with the Director of the Commission's Division of Economic Regulation and interested parties who have provided written notice requesting to be notified: the project name; physical location (maps and routes and a general description of extent and type of work to be done); allowable cost range; and cost benefit analysis for storm hardening projects to be implemented in the following calendar year.

E. Interested parties or the Commission Staff shall state any specific objections to the plan by February 1 and request that the specific objections be brought before the Commission for review. Only that portion of the plan which is the subject of an objection shall be brought before the Commission for review.

F. Extensions of time may be granted by Staff of any of the deadlines provided herein in the event of hurricanes, other catastrophes or other good cause stated.

2. The electric utility will file with the Florida Public Service Commission by March 1 each year a status report of its implementation of its Storm Hardening Plan, and any project modifications to its storm hardening plans that are planned to be undertaken in the remaining years of its filed plan. Included in the status report for storm hardening

projects undertaken in the current calendar year shall be the project name, the routes and circuits affected, any comments on the project received from third party attachers, the costs and benefits of the project and whether the project was previously identified in the company's storm hardening plan.

3. Within 30-days after an electric utility's identification of any new storm hardening projects not listed in the electric utility's three-year Storm Hardening Plan filed in accordance with Rule 25-06.0342(2), Fla. Admin. Code, the electric utility will provide third party attachers a general description of any new projects under consideration and seek comment on the project.