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September 20, 2006

Ms. Blanca S. Bayó, Director
Division of Commission Clerk and
Administrative Services
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: *Revised Wood Pole Inspection Plan; Docket No. 060531-EI*

Dear Ms. Bayó:

Please find enclosed Progress Energy Florida, Inc.'s REVISED Wood Pole Inspection Plan. The plan has been revised to incorporate the issue Staff raised with regard to inspections of concrete-encased poles.

Please call me at (727) 820-5184 should you have any questions.

Sincerely,

John T. Burnett LMS
John T. Burnett

- CMP _____
- COM S _____
- CTR _____
- ECR _____
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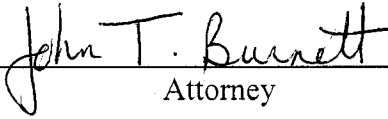
DOCUMENT NUMBER-DATE

08676 SEP 20 06

FPSC COMMISSION CLERK

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of Progress Energy Florida, Inc.'s Revised Wood Pole Inspection Plan in Docket No. 060531-EI has been furnished by regular U.S. mail to the following this 20th day of September, 2006.



Attorney

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PEF's Wood Pole Inspection Plan
Revised 9/18/06

(Clean Copy)

DOCUMENT NUMBER-DATE

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Comprehensive Wood Pole Inspection Plan

Purpose and Intent of the Plan:

To implement a revised wood pole inspection program that complies with FPSC Order No. PSC-06-0144-PAA-EI issued February 27, 2006 (the "Plan"). The Plan concerns inspection of wooden transmission and distribution poles, as well as pole inspections for strength requirements related to pole attachments. The Plan is based on the requirements of the National Electric Safety Code ("NESC") and an average eight-year inspection cycle. The Plan provides a detailed program for gathering pole-specific data, pole inspection enforcement, co-located pole inspection, and estimated program funding required to effectuate the Plan. This Plan also sets forth pole inspection standards utilized by Progress Energy Florida ("PEF") that meet or exceed the requirements of the NESC.

The Plan includes the following specific sub-plans:

- Transmission Wood Pole Inspection Plan ("Transmission Plan").
- Distribution Wood Pole Inspection Plan ("Distribution Plan").
- Joint Use Wood Pole Inspection Plan ("Joint Use Plan").

These three inspection sub-plans are outlined and described below. All of these sub-plans will be evaluated on an ongoing basis to address trends, external factors beyond the Company's control (such as storms and other weather events), and cost effectiveness.

1) Transmission Wood Pole Inspection Plan

A. Introduction

Ground-line inspection and treatment programs detect and treat decay and mechanical damage of in-service wood poles. PEF's Transmission Department will accomplish this by identifying poles that are 8 years of age or older and treating these poles as necessary in order to extend their useful life. As required, PEF will also assess poles and structures for incremental attachments that may create additional loads. Poles that can no longer maintain the safety margins required by the NESC (ANSI C2-2002) will be remediated. These inspections will result in one of four or a combination of the following actions: (1) No action required; (2) Application of treatment; (3) Repaired; (4) Replaced. PEF will also inspect poles that PEF does not own on which PEF assets are located. If such poles are in need of treatment, repair, or replacement, PEF will provide such information to the pole owner so that such action can be taken.

B. General Plan Provisions

- (i). Pole Inspection Selection Criteria

Comprehensive Wood Pole Inspection Plan

Transmission will perform ground patrols to inspect transmission system line assets to allow for the planning, scheduling, and prioritization of corrective and preventative maintenance work. These patrols will assess the overall condition of the assets including insulators, connections, grounding, and signs, as well as an assessment of pole integrity. These patrols will be done on a three-year cycle and the assessment data and reports generated from these patrols will be used to plan the ground-line inspections set forth in Section 1B(ii) below. The ground patrol inspections will categorize wood poles into four conditions or states (State 2-5). PEF will conduct ground-line inspections of State 2 and 3 poles. State 3 poles will be given priority for ground-line inspection scheduling. PEF will replace State 4 and 5 poles. PEF will no longer utilize the State 1 category.

In performing inspection and patrols, the following Transmission Line Wood Poles Inspection State Categories shall apply:

State 2 : Meeting all of the criteria listed below:

- No woodpecker holes or woodpecker holes have been repaired.
- A pole that has been cut and capped.
- Checks/cracks show no decay or insect damage.
- Ground-line inspected/treated with no data in the remarks field of the report and no noted reduction in effective pole diameter.
- Hammer test indicates a hard pole.
- No pole top deflection noted.

State 3 : Meeting one or more of the criteria listed below:

- Checks/cracks show decay or insect damage, or the presence of minimal shell cracking.
- Ground-line inspected/treated with decay noted in the remarks field of the report and a noted reduction in effective pole diameter.
- Hammer test indicates a minimal amount of ground-line decay.
- Pole has been repaired (e.g., C-truss).
- Poles with a wood bayonet or a pole that needs to be cut and capped.
- Pole can be partially hollow but with no less than 3 – 4 inches of shell thickness and cannot be caved during a hammer test.
- Pole top deflection is less than 3 feet.

State 4 : Meeting one or more of the criteria listed below and should be scheduled to be replaced:

- Woodpecker holes which have deep cavities and are not repairable.
- Checks/cracks show significant decay or insect damage, or the presence of substantial shell cracking.
- Decay in the pole top is extensive such that the pole cannot be cut and capped nor is the pole top section a candidate for a bayonet.



Comprehensive Wood Pole Inspection Plan

- Ground-line inspected/treated and identified as rejected/restorable or rejected/non-restorable.
- When hammer tested, ground-line decay pockets are found and are greater than 5 inches wide and 2 inches deep.
- Pole is hollow with less than 3 – 4 inches of shell thickness extending over more than one-quarter of the pole circumference, determined by hammer test and/or a screw driver.
- Pole top deflection is between 3 to 5 feet.

State 5 : Meeting one or more of the criteria listed below. (This pole should be scheduled to be replaced as soon as possible):

- Woodpecker holes which have deep cavities and are not repairable, severely affecting the integrity of the pole.
- Ground-line inspection indicates the pole as “priority.”
- When hammer tested, ground-line decay pockets are found and are greater than 8 inches wide by 3 inches deep.
- Pole is hollow with less than 2 inches of shell thickness extending over more than one-third of the pole circumference.
- Pole deflection exceeds 5 feet.

(ii). Ground-Line Inspections

Ground-line inspections of wood transmission poles will be conducted by qualified pole inspectors on an average 8-year cycle. This will result in, on average, approximately 12.5% of the remaining population of wood poles receiving this type of inspection on an annual basis. Treatment and inspection work shall be done or supervised by a foreman with a minimum of six months experience and shall be certified as being qualified for this work.

For poles without an existing inspection hole, the pole will be bored at a 45 degree angle below the ground line to a depth that extends past the center of the pole. For previously inspected poles, the original ground-line inspection plug shall be bored out and the depth of the inspection hole measured to ensure that the pole has been bored to the required depth. Fumigant application plug(s) will be bored out and the depth of these holes measured to ensure compliance. Hammer marks should be evident to show that the pole has been adequately sounded.

All work done, materials used, and materials disposed of shall be in compliance and accordance with all local, municipal, county, state, and federal laws and regulations applicable to said work. Preservatives used shall conform to the minimum requirements as set forth in this Transmission Plan.

The inspection method used will be a sound and bore inspection that will include the following components:

Comprehensive Wood Pole Inspection Plan

- Above Ground Observations - Visual inspection of the exterior condition of the pole and visual inspection of components hanging from the pole.
- Sound with Hammer – The exterior of the pole is tested with a hammer and the inspector listens for “hollowness” of the pole.
- Bore at Ground Line – The pole is bored at a 45 degree angle below the ground line. This inspection method helps to determine internal decay at the base as well as measure the amount of “good wood” left on the interior of the pole.
- Excavate to 18 inches (Full Ground Line Inspection) – The soil is removed 18 inches below ground line. Decay pockets are identified and bored to determine the extent of decay.
- Removal of Surface Decay – Identified areas of decay are removed down to “good wood” using a sharp pick.
- Assessment of Remaining Strength – All data collected from the inspection will be used to determine effective circumference and remaining strength of the pole. In evaluating pole conditions, deductions shall be made from the original ground line circumference of a pole to account for hollow heart, internal decay pockets, and removal of external decay. The measured effective critical circumference shall be at the point of greatest decay removal in the vicinity of the ground line taking into account the above applicable deductions. A pole circumference calculator shall be used to determine the measured effective critical circumference. To remain in service “as-is,” the pole shall meet minimum NESC strength requirements. The measured effective critical circumference will be compared to the minimum acceptable circumference for the applicable class pole listed in the latest version of ANSI 05.1-1992, American National Standard for Wood Poles and NESC-C2-1990(1). Poles below the minimum acceptable circumference shall be rejected and will be marked in the field for replacement as either a State 4 or State 5 pole.
- Where excavation at the ground line cannot be achieved due to concrete or similar barriers, pole integrity will be assessed using a drilling resistance measuring device. These devices are now available on the market and are able to accurately detect voids and decay in poles at and below the ground where excavation is not possible.

(iii) Structural Integrity Evaluation

As part of the visual inspection of the poles, the inspector will note and record the type and location of non-native utility pole attachments to the pole or structure. This information will be used by the Joint Use Department to perform a loading analysis on certain poles or structures, where necessary, as more fully described in the Joint Use section of this Plan. In such cases, the loading information obtained from this analysis will be used along with the strength determined in the ground-line inspection. If the loads exceed: a) the strength of the structure when new and b) the strength of the existing structure exceeds the strength required at replacement, according to the NESC, the structure will either be braced to the required strength or will be replaced with a pole of sufficient strength. Specific information on this process is contained in the Joint Use section of this Plan.

(iv). Records and Reporting



Comprehensive Wood Pole Inspection Plan

A pole inspection report will be filed with the Division of Economic Regulation by March 1st of each year. The report shall contain the following information:

- 1) A description of the methods used for structural analysis and pole inspection.
- 2) A description of the selection criteria that was used to determine which poles would be inspected.
- 3) A summary report of the inspection data including the following:
 - a. Number of poles inspected.
 - b. Number of poles not requiring remediation.
 - c. Number of poles requiring remedial action.
 - d. Number of pole requiring minor follow up.
 - e. Number of poles requiring a change in inspection cycle.
 - f. Number of poles that were overloaded.
 - g. Number of poles that with estimated remaining life less than 8 years.
 - h. Number of inspections planned.
- 4) A pole inspection report that contains the following detailed information:
 - a. Transmission circuit name.
 - b. Pole identification number.
 - c. Inspection results.
 - d. Remediation recommendation.
 - e. Status of remediation.

C. Program Cost and Funding

- In order to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI, the number of poles inspected per year will start at approximately 4800 poles. It is expected that this program change will result in increases in pole replacements and treatments.

In order to ramp up to the average 8-year cycle, the current funding will be allocated to inspections only and replacements only for 2006. This will help PEF align with the “all wood pole” average 8-year inspection cycle. However, funding increases will be required to meet all aspects of an average 8-year pole inspection cycle as reflected in the chart below. The estimated figures in this chart are “best estimates,” given information and facts known at this time and are subject to change or modification.



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Wood Pole Program Cost Estimates

Annual Unit & Cost Estimate		
Cycle		
Years per cycle	8	
Poles inspected per year	4,800	
Assumed poles replaced*	4%	
O&M Cos		
GL inspection	\$67,200	
Treatment	\$60,480	
	\$127,680	
Capital Cos		
Pole replacements	\$2,688,000	

* Assumption is made that approximately 4% of the poles inspected will be identified for replacement.

2) Distribution Wood Pole Inspection Plan

A. Introduction

In accordance with FPSC Order No. PSC-06-0144-PAA-EI, PEF’s Distribution Department will conduct wood pole inspections on an average 8-year cycle. These inspections will determine the extent of pole decay and any associated loss of strength. The information gathered from these inspections will be used to determine pole replacements and to effectuate the extension of pole life through treatment and reinforcement. Additionally, information collected from the wood pole inspections will be used to populate regulatory reporting requirements, will provide data for loading analyses, and will be used to track the results of the inspection program over time. PEF will also inspect poles that PEF does not own on which PEF assets are located. If such poles are in need of treatment, repair, or replacement, PEF will provide such information to the pole owner so that such action can be taken.

B. General Plan Provisions

(i). Ground-line Inspection Purpose

- The ground-line inspection process is the industry standard for determining the existing condition of

Comprehensive Wood Pole Inspection Plan

wood pole assets. This inspection helps to determine extent of decay and the remaining strength of a pole. Ground-line inspections also provide insight into the remaining life of a wood pole.

- The ground-line inspection is performed at the base of the pole because the base is the location of the largest “bending moment,” as well as the area subject to the most fungal decay and insect attack. Assessing the condition of the pole at the base is the most efficient way to effectively treat and restore a wood pole.

(ii). Pole Inspection Process

When a wood distribution pole is inspected, the following tasks will be performed:

- Above Ground Observations - Visual inspection of the exterior condition of the pole and visual inspection of components hanging from the pole.
- Partial Excavation – The soil is removed around the base of the pole and the pole is inspected for signs of decay.
- Sound with Hammer – The exterior of the pole is tested with a hammer and the inspector listens for “hollowness” of the pole.
- Bore at Ground Line – The pole is bored at a 45 degree angle below the ground line. This inspection method helps to determine internal decay at the base as well as measure the amount of “good wood” left on the interior of the pole.
- Excavate to 18 Inches (Full Ground Line Inspection) – If significant decay is found during the full excavation, the soil is removed 18 inches below ground line. Decay pockets are identified and bored to determine the extent of decay.
- Removal of Surface Decay – Identified areas of decay are removed down to “good wood” using a sharp pick.
- Assessment of Remaining Strength – All data collected from the inspection is used to determine effective circumference and remaining strength of the pole.
 - If the effective pole circumference has been reduced by 25% in comparison to the original effective pole circumference, then the pole is classified as a Priority 2 (One Tag) pole. This 25% reduction in effective circumference results in a 58% reduction in pole strength.
 - If the effective pole circumference has been reduced by 50% in comparison to the original effective pole circumference, then the pole is classified as a Priority 1 (Two Tag) pole. This 50% reduction in effective circumference results in an 87% reduction in pole strength.
 - Priority 1 poles will take precedent over Priority 2 poles during replacement.
- Using current inspection data, approximately 3% of the Distribution pole population cannot be excavated due to obstruction from concrete. If 3% of the poles inspected out of the 95,624 inspections per year are assumed to be encased in concrete, 2,869 wood poles would not otherwise be subject to excavation each year. If sound and bore is the only ground line inspection method used for these poles, it is estimated that potentially 18 poles out of the 2,869 concrete encased poles inspected in one wood pole inspection year would go undiscovered as “reject poles.” In order to improve the results

Comprehensive Wood Pole Inspection Plan

provided by traditional sound and bore on such poles, PEF plans to use a drilling resistance measuring device where excavation at the ground line cannot be achieved. These devices are now available on the market and are able to accurately detect voids and decay in poles at and below the ground where excavation is not possible.

(iii) Data Collection

All data collected through the inspection process will be submitted to PEF's Distribution Department in electronic format by inspection personnel. This data will be used to determine effective circumference and remaining strength of the pole. In evaluating pole conditions, deductions shall be made from the original ground line circumference of a pole to account for hollow heart, internal decay pockets, and removal of external decay. The measured effective critical circumference shall be at the point of greatest decay removal in the vicinity of the ground line taking into account the above applicable deductions. A pole circumference calculator shall be used to determine the measured effective critical circumference. To remain in service "as-is," the pole shall meet minimum NESC strength requirements. The measured effective critical circumference will be compared to the applicable minimum acceptable circumference listed in the most current versions of ANSI 05.1-1992, American National Standard for Wood Poles, and NESC-C2-1990(1). Poles below the minimum acceptable circumference shall be rejected and will be marked in the field for replacement.

(iv). Structural Integrity Evaluation

- As part of the visual inspection of the poles, the inspector will note the type and location of non-native utility pole attachments to the pole or structure. This information will be used by the Joint Use Department to perform, as necessary, a loading analysis on certain poles or structures as more fully described in the Joint Use section of this Plan. In such instances, the loading information obtained from this analysis will be used along with the strength determined in the ground-line inspection. If the loads exceed: a) the strength of the structure when new and b) the strength of the existing structure exceeds the strength required at replacement, according to the NESC, the structure will either be braced to the required strength or will be replaced with a pole of sufficient strength. Specific information on this process is contained in the Joint Use section of this plan.
- Poles not meeting the required strength for loading will be processed in the same manner as loss of strength due to decay.

(v). Records and Reporting

A pole inspection report will be filed with the Division of Economic Regulation by March 1st of each year. The report shall contain the following information:

- 1) A description of the methods used for structural analysis and pole inspection.



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- 2) A description of the selection criteria that was used to determine which poles would be inspected.
- 3) A summary report of the inspection data including the following:
 - a. Number of poles inspected.
 - b. Number of poles not requiring remediation.
 - c. Number of poles requiring remedial action.
 - d. Number of pole requiring minor follow up.
 - e. Number of poles requiring a change in inspection cycle.
 - f. Number of poles that were overloaded.
 - g. Number of poles that with estimated remaining life less than 8 years.
 - h. Number of inspections planned.
- 4) A pole inspection report that contains the following detailed information:
 - a. Distribution circuit name.
 - b. Pole identification number.
 - c. Inspection results.
 - d. Remediation recommendation.
 - e. Status of remediation.

C. Program Cost and Funding

(i). Poles Program Cost Estimates

In order to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI, the number of poles inspected per year will have to increase. This increase will also result in increases in pole replacements, bracings, and treatments. In order to ramp up to the average 8-year cycle, the current funding will be allocated to inspections only and replacements only for 2006. This will help PEF align with the “all wood pole” average 8-year inspection cycle. However, funding increases will be required to meet all aspects of an average 8-year pole inspection cycle as reflected in the charts below. The estimated figures in these charts are “best estimates,” given information and facts known at this time and are subject to change or modification.

Annual Unit Estimate							
Inspection Cycle	Poles	Replacements	Replacements	Bracings	Bracings	Treatments	Treatments
8	95,624	1,641	83	947	48	16,410	821



Comprehensive Wood Pole Inspection Plan

Annual Cost Estimate

Years to Complete	O&M Costs		Capital		O&M Total	Capital Total	Program Total Cost
	Inspections (S&P Excavation)	Treatment's (add'l to inspection)	Replacements	Braces			
8	\$2,486,224	\$206,772	\$5,172,000	\$278,600	\$2,692,996	\$5,450,600	8,143,596

3) Joint Use Pole Inspection Plan

A. Introduction

PEF currently has approximately 700,000 joint use attachments on distribution poles and approximately 5,000 joint use attachments on transmission poles. On average, PEF receives approximately 12,000 new attachment requests per year. All new attachment requests are reviewed in the field to assure the new attachments meet NESC and company clearance and structural guidelines. The information provided below outlines PEF's attachment permitting process and how PEF intends to gather structural information on certain existing joint use poles over an average 8-year inspection cycle to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI.

B. General Plan Provisions

(i). Structural Analysis for a Distribution Pole New Joint Use Attachment

When the Joint Use Department receives a request to attach a new communication line to a distribution pole, the following will be done to ensure that NESC clearance and loading requirements are met before permitting the new attachment:

- Each pole is field inspected, and the attachment heights of all electric and communication cables and equipment are collected. The pole number, pole size and class (type) are noted as well as span lengths of cables and wires on all sides of the pole.
- For each group of poles in a tangent line, the pole that has the most visible loading, line angle and longest or uneven span length is selected to be modeled for wind loading analysis.
- The selected pole's information is loaded into a software program called "Pole Foreman" from PowerLine Technologies. The pole information is analyzed and modeled under the NESC Light District settings of 9psf, no ice, 30° F, at 60 MPH winds to determine current loading percentages.
- If that one pole fails, the next worst case pole in that group of tangent poles is analyzed as well.
- Each pole is analyzed to determine existing pole loading and the proposed loading with the new attachment.

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- If the existing analysis determines the pole is overloaded, a work order is issued to replace the pole with a larger class pole. If the pole fails only when the new attachment is considered, a work order estimate is made and presented to the communication company wishing to attach.
- The results of the analysis and the new attachment are entered into the FRAME system.

(ii). Structural Analysis for a Transmission Pole New Joint Use Attachment

When the Joint Use Department receives a request to attach a new communication line to a transmission pole with distribution underbuild, the following will be done to ensure that NESC clearance and loading requirements are met before permitting the new attachment:

- Each pole is field inspected, and the attachment heights of all electric and communication cables and equipment are collected. The pole number, pole size and class (type) are noted as well as span lengths of cables and wires on all sides of the pole.
- All pole information including structural plan and profiles are sent to the engineering company, Morrison & Hershfield in Plantation, Florida, to be modeled in PLS-CADD/LITE and PLS-POLE for structural analysis.
- Morrison and Hershfield engineers determine the worst case structures in a tangent line and request the structural drawings and attachment information on those selected poles. Typically, transmission poles with line angle and uneven span lengths are the poles considered for wind loading analysis.
- The selected pole information is loaded into the PLS-CADD and PLS-POLE software. Depending on the pole location per the NESC wind charts, one of the following load cases is run. **NESC Light District:** 9psf, no ice, 30° F, 60mph; **NESC Extreme:** 3 sec gust for the specific county, no ice, 60° F (Ex: Orange County is 110 mph); or **PEF Extreme** at 36psf, 75° F, wind chart mph
- If that one pole fails, the next worst case pole in that group of tangent poles is analyzed as well.
- Each pole is analyzed to determine existing pole loading and the proposed loading with the new attachment.
- If the existing analysis determines the pole is overloaded, a work order is issued to replace the pole with a larger class pole. If the pole fails only when the new attachment is considered, a work order estimate is made and presented to the communication company wishing to attach.
- The results of the analysis and the new attachment are entered into the FRAME system.

(iii). Analysis of Existing Joint Use Attachments On Distribution Poles

There are approximately 700,000 joint use attachments on approximately 500,000 distribution poles in the PEF system. All distribution poles with joint use attachments will be inspected on an average 8-year audit cycle to determine existing structural analysis for wind loading. These audits will start at the sub-station where the feeder originates. For each group of poles in a tangent line, the pole that has the most visible loading, line angle, and longest or uneven span length will be selected to be modeled for

Comprehensive Wood Pole Inspection Plan

wind loading analysis. Each pole modeled will be field inspected. The attachment heights of all electric and communication cables and equipment will be collected. The pole age, pole type, pole number, pole size / class, span lengths of cables and wires, and the size of all cables and wires on all sides of the pole will be collected.

The selected pole's information will then be loaded into a software program called "Pole Foreman" from PowerLine Technologies. The pole information will be analyzed and modeled under the NESC Light District settings of 9psf, no ice, 30° F, at 60 MPH winds to determine current loading percentages. If that one pole fails, the next worst case pole in that group of tangent poles will be analyzed as well. Each pole analyzed will determine the existing pole loading of all electric and communication attachments on that pole. If the existing analysis determines the pole is overloaded, a work order will be issued to replace the pole with a larger class pole. Should the original pole analyzed meet the NESC loading requirements, all similar poles in that tangent line of poles will be noted as structurally sound and entered into the database as "PASSED" structural analysis. The results of the analysis and all communication attachments will be entered into the FRAMME system. Reporting from the FRAMME system will indicate the date and results of the analysis. Poles rated at 100% or lower will be designated as "PASSED." Poles that are analyzed and determined to be more than 100% loaded will be designated as "FAILED," and scheduled to be changed out. Once the pole is changed out, FRAMME will be updated to reflect the date the new pole was installed with the new loading analysis indicated.

(iv). Analysis of Existing Joint Use Attachments On Transmission Poles

There are approximately 5,000 joint use attachments on approximately 2,500 transmission poles in the PEF system. All transmission poles with joint use attachments will be inspected on an average 8-year audit cycle to determine existing structural analysis for wind loading. Audits will start at the sub-station where the feeder originates. All pole information (pole size, class, type, age, pole number, cable, wire, equipment attachment heights, span lengths) including structural plan and profiles will be sent to the engineering company, Morrison & Hershfield in Plantation, Florida, to be modeled in PLS-CADD/LITE and PLS-POLE for structural analysis. Morrison and Hershfield engineers will determine the worst case structures in a tangent line and request the structural drawings and attachment information on those selected poles. Typically, transmission poles with line angle and uneven span lengths are the poles considered for wind loading analysis.

The selected pole information will be loaded into the PLS-CADD and PLS-POLE software. Depending on the pole location per the NESC wind charts, one of the following load cases is run. **NESC Light District:** 9psf, no ice, 30° F, 60mph; **NESC Extreme:** 3 sec gust for the specific county, no ice, 60° F (Ex: Orange County is 110 mph); or **PEF Extreme** at 36psf, 75° F, wind chart mph. If that one transmission pole fails, the next worst case pole in that group of tangent poles will be analyzed as well. Each transmission pole analyzed will determine the existing pole loading of all electric and communication attachments on that pole. If the existing analysis determines the transmission pole is overloaded, a work order will be issued to replace the pole with a larger class pole. Should the original pole analyzed meet the NESC loading



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requirements, all similar poles in that tangent line of poles will be noted as structurally sound and entered into the database as "PASSED" structural analysis.

The results of the analysis and all communication attachments will be entered into the FRAMME system.

Reporting from the FRAMME system will indicate the date and results of the analysis. Transmission poles rated at 100% or lower will be designated as "PASSED." Transmission poles that are analyzed and determined to be more than 100% loaded will be designated as "FAILED," and scheduled to be changed out. Once the transmission pole is changed out, FRAMME will be updated to reflect the date the new pole was installed with the new loading analysis indicated.

(v). Records and Reporting

A pole inspection report will be filed with the Division of Economic Regulation by March 1st of each year. The report shall contain the following information:

- 1) A description of the methods used for structural analysis and pole inspection.
- 2) A description of the selection criteria that was used to determine which poles would be inspected.
- 3) A summary report of the inspection data including the following:
 - a. Number of poles inspected.
 - b. Number of poles not requiring remediation.
 - c. Number of poles requiring remedial action.
 - d. Number of pole requiring minor follow up.
 - e. Number of poles requiring a change in inspection cycle.
 - f. Number of poles that were overloaded.
 - g. Number of inspections planned.

C. Program Cost and Funding

(i). Pole Analysis Funding

As stated above, there are currently approximately 700,000 joint use attachments on approximately 500,000 distribution poles and approximately 5,000 joint use attachments on approximately 2,500 transmission poles. PEF will analyze the "worst case" poles in a tangent line of similar poles as deemed appropriate during field inspections.

In order to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI, PEF would require incremental funding annually to successfully gather data and enter it into the required reporting format. See calculation that follows. The estimated figures in these charts are "best estimates," given information



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and facts known at this time and are subject to change or modification.

Annual Unit & Cost Estimate

Distribution poles with on-base	Annual Inspected (on-base)	Distribution poles analyzed	Distribution poles replaced	Transmission poles with on-base	Annual Inspected (on-base)	Transmission poles analyzed	Transmission poles replaced	Total cost to analyze poles (OTM)	Total cost to replace poles (capital)
500,000	62,500	6,250	630	2,500	313	94	63	\$479,800	\$2,772,000

PEF's Wood Pole Inspection Plan

Revised 9/18/06

(Legislative version)

Comprehensive Wood Pole Inspection Plan

Purpose and Intent of the Plan:

To implement a revised wood pole inspection program that complies with FPSC Order No. PSC-06-0144-PAA-EI issued February 27, 2006 (the "Plan"). The Plan concerns inspection of wooden transmission and distribution poles, as well as pole inspections for strength requirements related to pole attachments. The Plan is based on the requirements of the National Electric Safety Code ("NESC") and an average eight-year inspection cycle. The Plan provides a detailed program for gathering pole-specific data, pole inspection enforcement, co-located pole inspection, and estimated program funding required to effectuate the Plan. This Plan also sets forth pole inspection standards utilized by Progress Energy Florida ("PEF") that meet or exceed the requirements of the NESC.

The Plan includes the following specific sub-plans:

- Transmission Wood Pole Inspection Plan ("Transmission Plan").
- Distribution Wood Pole Inspection Plan ("Distribution Plan").
- Joint Use Wood Pole Inspection Plan ("Joint Use Plan").

These three inspection sub-plans are outlined and described below. All of these sub-plans will be evaluated on an ongoing basis to address trends, external factors beyond the Company's control (such as storms and other weather events), and cost effectiveness.

1) Transmission Wood Pole Inspection Plan

A. Introduction

Ground-line inspection and treatment programs detect and treat decay and mechanical damage of in-service wood poles. PEF's Transmission Department will accomplish this by identifying poles that are 8 years of age or older and treating these poles as necessary in order to extend their useful life. As required, PEF will also assess poles and structures for incremental attachments that may create additional loads. Poles that can no longer maintain the safety margins required by the NESC (ANSI C2-2002) will be remediated. These inspections will result in one of four or a combination of the following actions: (1) No action required; (2) Application of treatment; (3) Repaired; (4) Replaced. PEF will also inspect poles that PEF does not own on which PEF assets are located. If such poles are in need of treatment, repair, or replacement, PEF will provide such information to the pole owner so that such action can be taken.

B. General Plan Provisions

- (i). Pole Inspection Selection Criteria



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Transmission will perform ground patrols to inspect transmission system line assets to allow for the planning, scheduling, and prioritization of corrective and preventative maintenance work. These patrols will assess the overall condition of the assets including insulators, connections, grounding, and signs, as well as an assessment of pole integrity. These patrols will be done on a three-year cycle and the assessment data and reports generated from these patrols will be used to plan the ground-line inspections set forth in Section 1B(ii) below. The ground patrol inspections will categorize wood poles into four conditions or states (State 2-5). PEF will conduct ground-line inspections of State 2 and 3 poles. State 3 poles will be given priority for ground-line inspection scheduling. PEF will replace State 4 and 5 poles. PEF will no longer utilize the State 1 category.

In performing inspection and patrols, the following Transmission Line Wood Poles Inspection State Categories shall apply:

State 2 : Meeting all of the criteria listed below:

- No woodpecker holes or woodpecker holes have been repaired.
- A pole that has been cut and capped.
- Checks/cracks show no decay or insect damage.
- Ground-line inspected/treated with no data in the remarks field of the report and no noted reduction in effective pole diameter.
- Hammer test indicates a hard pole.
- No pole top deflection noted.

State 3 : Meeting one or more of the criteria listed below:

- Checks/cracks show decay or insect damage, or the presence of minimal shell cracking.
- Ground-line inspected/treated with decay noted in the remarks field of the report and a noted reduction in effective pole diameter.
- Hammer test indicates a minimal amount of ground-line decay.
- Pole has been repaired (e.g., C-truss).
- Poles with a wood bayonet or a pole that needs to be cut and capped.
- Pole can be partially hollow but with no less than 3 – 4 inches of shell thickness and cannot be caved during a hammer test.
- Pole top deflection is less than 3 feet.

State 4 : Meeting one or more of the criteria listed below and should be scheduled to be replaced:

- Woodpecker holes which have deep cavities and are not repairable.
- Checks/cracks show significant decay or insect damage, or the presence of substantial shell cracking.
- Decay in the pole top is extensive such that the pole cannot be cut and capped nor is the pole top section a candidate for a bayonet.

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- Ground-line inspected/treated and identified as rejected/restorable or rejected/non-restorable.
- When hammer tested, ground-line decay pockets are found and are greater than 5 inches wide and 2 inches deep.
- Pole is hollow with less than 3 – 4 inches of shell thickness extending over more than one-quarter of the pole circumference, determined by hammer test and/or a screw driver.
- Pole top deflection is between 3 to 5 feet.

State 5 : Meeting one or more of the criteria listed below. (This pole should be scheduled to be replaced as soon as possible):

- Woodpecker holes which have deep cavities and are not repairable, severely affecting the integrity of the pole.
- Ground-line inspection indicates the pole as “priority.”
- When hammer tested, ground-line decay pockets are found and are greater than 8 inches wide by 3 inches deep.
- Pole is hollow with less than 2 inches of shell thickness extending over more than one-third of the pole circumference.
- Pole deflection exceeds 5 feet.

(ii). Ground-Line Inspections

Ground-line inspections of wood transmission poles will be conducted by qualified pole inspectors on an average 8-year cycle. This will result in, on average, approximately 12.5% of the remaining population of wood poles receiving this type of inspection on an annual basis. Treatment and inspection work shall be done or supervised by a foreman with a minimum of six months experience and shall be certified as being qualified for this work.

For poles without an existing inspection hole, the pole will be bored at a 45 degree angle below the ground line to a depth that extends past the center of the pole. For previously inspected poles, the original ground-line inspection plug shall be bored out and the depth of the inspection hole measured to ensure that the pole has been bored to the required depth. Fumigant application plug(s) will be bored out and the depth of these holes measured to ensure compliance. Hammer marks should be evident to show that the pole has been adequately sounded.

All work done, materials used, and materials disposed of shall be in compliance and accordance with all local, municipal, county, state, and federal laws and regulations applicable to said work. Preservatives used shall conform to the minimum requirements as set forth in this Transmission Plan.

The inspection method used will be a sound and bore inspection that will include the following components:

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- Above Ground Observations - Visual inspection of the exterior condition of the pole and visual inspection of components hanging from the pole.
- Sound with Hammer – The exterior of the pole is tested with a hammer and the inspector listens for “hollowness” of the pole.
- Bore at Ground Line – The pole is bored at a 45 degree angle below the ground line. This inspection method helps to determine internal decay at the base as well as measure the amount of “good wood” left on the interior of the pole.
- Excavate to 18 inches (Full Ground Line Inspection) – The soil is removed 18 inches below ground line. Decay pockets are identified and bored to determine the extent of decay.
- Removal of Surface Decay – Identified areas of decay are removed down to “good wood” using a sharp pick.
- Assessment of Remaining Strength – All data collected from the inspection will be used to determine effective circumference and remaining strength of the pole. In evaluating pole conditions, deductions shall be made from the original ground line circumference of a pole to account for hollow heart, internal decay pockets, and removal of external decay. The measured effective critical circumference shall be at the point of greatest decay removal in the vicinity of the ground line taking into account the above applicable deductions. A pole circumference calculator shall be used to determine the measured effective critical circumference. To remain in service “as-is,” the pole shall meet minimum NESC strength requirements. The measured effective critical circumference will be compared to the minimum acceptable circumference for the applicable class pole listed in the latest version of ANSI 05.1-1992, American National Standard for Wood Poles and NESC-C2-1990(1). Poles below the minimum acceptable circumference shall be rejected and will be marked in the field for replacement as either a State 4 or State 5 pole.
- Where excavation at the ground line cannot be achieved due to concrete or similar barriers, pole integrity will be assessed using a drilling resistance measuring device. These devices are now available on the market and are able to accurately detect voids and decay in poles at and below the ground where excavation is not possible.

(iii) Structural Integrity Evaluation

As part of the visual inspection of the poles, the inspector will note and record the type and location of non-native utility pole attachments to the pole or structure. This information will be used by the Joint Use Department to perform a loading analysis on certain poles or structures, where necessary, as more fully described in the Joint Use section of this Plan. In such cases, the loading information obtained from this analysis will be used along with the strength determined in the ground-line inspection. If the loads exceed: a) the strength of the structure when new and b) the strength of the existing structure exceeds the strength required at replacement, according to the NESC, the structure will either be braced to the required strength or will be replaced with a pole of sufficient strength. Specific information on this process is contained in the Joint Use section of this Plan.

(iv). Records and Reporting



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A pole inspection report will be filed with the Division of Economic Regulation by March 1st of each year. The report shall contain the following information:

- 1) A description of the methods used for structural analysis and pole inspection.
- 2) A description of the selection criteria that was used to determine which poles would be inspected.
- 3) A summary report of the inspection data including the following:
 - a. Number of poles inspected.
 - b. Number of poles not requiring remediation.
 - c. Number of poles requiring remedial action.
 - d. Number of pole requiring minor follow up.
 - e. Number of poles requiring a change in inspection cycle.
 - f. Number of poles that were overloaded.
 - g. Number of poles that with estimated remaining life less than 8 years.
 - h. Number of inspections planned.
- 4) A pole inspection report that contains the following detailed information:
 - a. Transmission circuit name.
 - b. Pole identification number.
 - c. Inspection results.
 - d. Remediation recommendation.
 - e. Status of remediation.

C. Program Cost and Funding

- In order to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI, the number of poles inspected per year will start at approximately 4800 poles. It is expected that this program change will result in increases in pole replacements and treatments.

In order to ramp up to the average 8-year cycle, the current funding will be allocated to inspections only and replacements only for 2006. This will help PEF align with the “all wood pole” average 8-year inspection cycle. However, funding increases will be required to meet all aspects of an average 8-year pole inspection cycle as reflected in the chart below. The estimated figures in this chart are “best estimates,” given information and facts known at this time and are subject to change or modification.



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Wood Pole Program Cost Estimates

Annual Unit & Cost Estimate		
Cycle		
Years per cycle	8	
Poles inspected per year	4,800	
Assumed poles replaced*	4%	
O&M Cos		
GL inspection	\$67,200	
Treatment	\$60,480	
	\$127,680	
Capital Cos		
Pole replacements	\$2,688,000	

* Assumption is made that approximately 4% of the poles inspected will be identified for replacement.

2) Distribution Wood Pole Inspection Plan

A. Introduction

In accordance with FPSC Order No. PSC-06-0144-PAA-EI, PEF's Distribution Department will conduct wood pole inspections on an average 8-year cycle. These inspections will determine the extent of pole decay and any associated loss of strength. The information gathered from these inspections will be used to determine pole replacements and to effectuate the extension of pole life through treatment and reinforcement. Additionally, information collected from the wood pole inspections will be used to populate regulatory reporting requirements, will provide data for loading analyses, and will be used to track the results of the inspection program over time. PEF will also inspect poles that PEF does not own on which PEF assets are located. If such poles are in need of treatment, repair, or replacement, PEF will provide such information to the pole owner so that such action can be taken.

B. General Plan Provisions

(i). Ground-line Inspection Purpose

- The ground-line inspection process is the industry standard for determining the existing condition of

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wood pole assets. This inspection helps to determine extent of decay and the remaining strength of a pole. Ground-line inspections also provide insight into the remaining life of a wood pole.

- The ground-line inspection is performed at the base of the pole because the base is the location of the largest “bending moment,” as well as the area subject to the most fungal decay and insect attack. Assessing the condition of the pole at the base is the most efficient way to effectively treat and restore a wood pole.

(ii). Pole Inspection Process

When a wood distribution pole is inspected, the following tasks will be performed:

- Above Ground Observations - Visual inspection of the exterior condition of the pole and visual inspection of components hanging from the pole.
- Partial Excavation – The soil is removed around the base of the pole and the pole is inspected for signs of decay.
- Sound with Hammer – The exterior of the pole is tested with a hammer and the inspector listens for “hollowness” of the pole.
- Bore at Ground Line – The pole is bored at a 45 degree angle below the ground line. This inspection method helps to determine internal decay at the base as well as measure the amount of “good wood” left on the interior of the pole.
- Excavate to 18 Inches (Full Ground Line Inspection) – If significant decay is found during the full excavation, the soil is removed 18 inches below ground line. Decay pockets are identified and bored to determine the extent of decay.
- Removal of Surface Decay – Identified areas of decay are removed down to “good wood” using a sharp pick.
- Assessment of Remaining Strength – All data collected from the inspection is used to determine effective circumference and remaining strength of the pole.
 - If the effective pole circumference has been reduced by 25% in comparison to the original effective pole circumference, then the pole is classified as a Priority 2 (One Tag) pole. This 25% reduction in effective circumference results in a 58% reduction in pole strength.
 - If the effective pole circumference has been reduced by 50% in comparison to the original effective pole circumference, then the pole is classified as a Priority 1 (Two Tag) pole. This 50% reduction in effective circumference results in an 87% reduction in pole strength.
 - Priority 1 poles will take precedent over Priority 2 poles during replacement.
- Using current inspection data, approximately 3% of the Distribution pole population cannot be excavated due to obstruction from concrete. If 3% of the poles inspected out of the 95,624 inspections per year are assumed to be encased in concrete, 2,869 wood poles would not otherwise be subject to excavation each year. If sound and bore is the only ground line inspection method used for these poles, it is estimated that potentially 18 poles out of the 2,869 concrete encased poles inspected in one wood pole inspection year would go undiscovered as “reject poles.” In order to improve the results

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provided by traditional sound and bore on such poles, PEF plans to use a drilling resistance measuring device where excavation at the ground line cannot be achieved. These devices are now available on the market and are able to accurately detect voids and decay in poles at and below the ground where excavation is not possible.

(iii) Data Collection

All data collected through the inspection process will be submitted to PEF's Distribution Department in electronic format by inspection personnel. This data will be used to determine effective circumference and remaining strength of the pole. In evaluating pole conditions, deductions shall be made from the original ground line circumference of a pole to account for hollow heart, internal decay pockets, and removal of external decay. The measured effective critical circumference shall be at the point of greatest decay removal in the vicinity of the ground line taking into account the above applicable deductions. A pole circumference calculator shall be used to determine the measured effective critical circumference. To remain in service "as-is," the pole shall meet minimum NESC strength requirements. The measured effective critical circumference will be compared to the applicable minimum acceptable circumference listed in the most current versions of ANSI 05.1-1992, American National Standard for Wood Poles, and NESC-C2-1990(1). Poles below the minimum acceptable circumference shall be rejected and will be marked in the field for replacement.

(iv). Structural Integrity Evaluation

- As part of the visual inspection of the poles, the inspector will note the type and location of non-native utility pole attachments to the pole or structure. This information will be used by the Joint Use Department to perform, as necessary, a loading analysis on certain poles or structures as more fully described in the Joint Use section of this Plan. In such instances, the loading information obtained from this analysis will be used along with the strength determined in the ground-line inspection. If the loads exceed: a) the strength of the structure when new and b) the strength of the existing structure exceeds the strength required at replacement, according to the NESC, the structure will either be braced to the required strength or will be replaced with a pole of sufficient strength. Specific information on this process is contained in the Joint Use section of this plan.
- Poles not meeting the required strength for loading will be processed in the same manner as loss of strength due to decay.

(v). Records and Reporting

A pole inspection report will be filed with the Division of Economic Regulation by March 1st of each year. The report shall contain the following information:

- 1) A description of the methods used for structural analysis and pole inspection.

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- 2) A description of the selection criteria that was used to determine which poles would be inspected.

- 3) A summary report of the inspection data including the following:
 - a. Number of poles inspected.
 - b. Number of poles not requiring remediation.
 - c. Number of poles requiring remedial action.
 - d. Number of pole requiring minor follow up.
 - e. Number of poles requiring a change in inspection cycle.
 - f. Number of poles that were overloaded.
 - g. Number of poles that with estimated remaining life less than 8 years.
 - h. Number of inspections planned.

- 4) A pole inspection report that contains the following detailed information:
 - a. Distribution circuit name.
 - b. Pole identification number.
 - c. Inspection results.
 - d. Remediation recommendation.
 - e. Status of remediation.

C. Program Cost and Funding

(i). Poles Program Cost Estimates

In order to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI, the number of poles inspected per year will have to increase. This increase will also result in increases in pole replacements, bracings, and treatments. In order to ramp up to the average 8-year cycle, the current funding will be allocated to inspections only and replacements only for 2006. This will help PEF align with the “all wood pole” average 8-year inspection cycle. However, funding increases will be required to meet all aspects of an average 8-year pole inspection cycle as reflected in the charts below. The estimated figures in these charts are “best estimates,” given information and facts known at this time and are subject to change or modification.

Annual Unit Estimate							
Years per Cycle	Poles to be Inspected	Replacements	Replacements	Bracing	Bracing	Treatments	Treatments
8	95,624	1,641	83	947	48	16,410	821



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Annual Cost Estimate							
PEF Cycle	O&M Costs		Capital		O&M Total	Capital Total	Program Total Cost
	Inspections (S&P Excavation)	Treatments (add'l inspection)	Replacements	Bridges			
8	\$2,486,224	\$206,772	\$5,172,000	\$278,600	\$2,692,996	\$5,450,600	8,143,596

3) Joint Use Pole Inspection Plan

A. Introduction

PEF currently has approximately 700,000 joint use attachments on distribution poles and approximately 5,000 joint use attachments on transmission poles. On average, PEF receives approximately 12,000 new attachment requests per year. All new attachment requests are reviewed in the field to assure the new attachments meet NESC and company clearance and structural guidelines. The information provided below outlines PEF’s attachment permitting process and how PEF intends to gather structural information on certain existing joint use poles over an average 8-year inspection cycle to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI.

B. General Plan Provisions

(i) Structural Analysis for a Distribution Pole New Joint Use Attachment

When the Joint Use Department receives a request to attach a new communication line to a distribution pole, the following will be done to ensure that NESC clearance and loading requirements are met before permitting the new attachment:

- Each pole is field inspected, and the attachment heights of all electric and communication cables and equipment are collected. The pole number, pole size and class (type) are noted as well as span lengths of cables and wires on all sides of the pole.
- For each group of poles in a tangent line, the pole that has the most visible loading, line angle and longest or uneven span length is selected to be modeled for wind loading analysis.
- The selected pole’s information is loaded into a software program called “Pole Foreman” from PowerLine Technologies. The pole information is analyzed and modeled under the NESC Light District settings of 9psf, no ice, 30° F, at 60 MPH winds to determine current loading percentages.
- If that one pole fails, the next worst case pole in that group of tangent poles is analyzed as well.
- Each pole is analyzed to determine existing pole loading and the proposed loading with the new attachment.

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- If the existing analysis determines the pole is overloaded, a work order is issued to replace the pole with a larger class pole. If the pole fails only when the new attachment is considered, a work order estimate is made and presented to the communication company wishing to attach.
- The results of the analysis and the new attachment are entered into the FRAME system.

(ii). Structural Analysis for a Transmission Pole New Joint Use Attachment

When the Joint Use Department receives a request to attach a new communication line to a transmission pole with distribution underbuild, the following will be done to ensure that NESC clearance and loading requirements are met before permitting the new attachment:

- Each pole is field inspected, and the attachment heights of all electric and communication cables and equipment are collected. The pole number, pole size and class (type) are noted as well as span lengths of cables and wires on all sides of the pole.
- All pole information including structural plan and profiles are sent to the engineering company, Morrison & Hershfield in Plantation, Florida, to be modeled in PLS-CADD/LITE and PLS-POLE for structural analysis.
- Morrison and Hershfield engineers determine the worst case structures in a tangent line and request the structural drawings and attachment information on those selected poles. Typically, transmission poles with line angle and uneven span lengths are the poles considered for wind loading analysis.
- The selected pole information is loaded into the PLS-CADD and PLS-POLE software. Depending on the pole location per the NESC wind charts, one of the following load cases is run. **NESC Light District:** 9psf, no ice, 30° F, 60mph; **NESC Extreme:** 3 sec gust for the specific county, no ice, 60° F (Ex: Orange County is 110 mph); or **PEF Extreme** at 36psf, 75° F, wind chart mph
- If that one pole fails, the next worst case pole in that group of tangent poles is analyzed as well.
- Each pole is analyzed to determine existing pole loading and the proposed loading with the new attachment.
- If the existing analysis determines the pole is overloaded, a work order is issued to replace the pole with a larger class pole. If the pole fails only when the new attachment is considered, a work order estimate is made and presented to the communication company wishing to attach.
- The results of the analysis and the new attachment are entered into the FRAME system.

(iii). Analysis of Existing Joint Use Attachments On Distribution Poles

There are approximately 700,000 joint use attachments on approximately 500,000 distribution poles in the PEF system. All distribution poles with joint use attachments will be inspected on an average 8-year audit cycle to determine existing structural analysis for wind loading. These audits will start at the sub-station where the feeder originates. For each group of poles in a tangent line, the pole that has the most visible loading, line angle, and longest or uneven span length will be selected to be modeled for

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wind loading analysis. Each pole modeled will be field inspected. The attachment heights of all electric and communication cables and equipment will be collected. The pole age, pole type, pole number, pole size / class, span lengths of cables and wires, and the size of all cables and wires on all sides of the pole will be collected.

The selected pole's information will then be loaded into a software program called "Pole Foreman" from PowerLine Technologies. The pole information will be analyzed and modeled under the NESC Light District settings of 9psf, no ice, 30° F, at 60 MPH winds to determine current loading percentages. If that one pole fails, the next worst case pole in that group of tangent poles will be analyzed as well. Each pole analyzed will determine the existing pole loading of all electric and communication attachments on that pole. If the existing analysis determines the pole is overloaded, a work order will be issued to replace the pole with a larger class pole. Should the original pole analyzed meet the NESC loading requirements, all similar poles in that tangent line of poles will be noted as structurally sound and entered into the database as "PASSED" structural analysis. The results of the analysis and all communication attachments will be entered into the FRAMME system. Reporting from the FRAMME system will indicate the date and results of the analysis. Poles rated at 100% or lower will be designated as "PASSED." Poles that are analyzed and determined to be more than 100% loaded will be designated as "FAILED," and scheduled to be changed out. Once the pole is changed out, FRAMME will be updated to reflect the date the new pole was installed with the new loading analysis indicated.

(iv). Analysis of Existing Joint Use Attachments On Transmission Poles

There are approximately 5,000 joint use attachments on approximately 2,500 transmission poles in the PEF system. All transmission poles with joint use attachments will be inspected on an average 8-year audit cycle to determine existing structural analysis for wind loading. Audits will start at the sub-station where the feeder originates. All pole information (pole size, class, type, age, pole number, cable, wire, equipment attachment heights, span lengths) including structural plan and profiles will be sent to the engineering company, Morrison & Hershfield in Plantation, Florida, to be modeled in PLS-CADD/LITE and PLS-POLE for structural analysis. Morrison and Hershfield engineers will determine the worst case structures in a tangent line and request the structural drawings and attachment information on those selected poles. Typically, transmission poles with line angle and uneven span lengths are the poles considered for wind loading analysis.

The selected pole information will be loaded into the PLS-CADD and PLS-POLE software. Depending on the pole location per the NESC wind charts, one of the following load cases is run. **NESC Light District:** 9psf, no ice, 30° F, 60mph; **NESC Extreme:** 3 sec gust for the specific county, no ice, 60° F (Ex: Orange County is 110 mph); or **PEF Extreme** at 36psf, 75° F, wind chart mph. If that one transmission pole fails, the next worst case pole in that group of tangent poles will be analyzed as well. Each transmission pole analyzed will determine the existing pole loading of all electric and communication attachments on that pole. If the existing analysis determines the transmission pole is overloaded, a work order will be issued to replace the pole with a larger class pole. Should the original pole analyzed meet the NESC loading



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requirements, all similar poles in that tangent line of poles will be noted as structurally sound and entered into the database as "PASSED" structural analysis.

The results of the analysis and all communication attachments will be entered into the FRAMME system. Reporting from the FRAMME system will indicate the date and results of the analysis. Transmission poles rated at 100% or lower will be designated as "PASSED." Transmission poles that are analyzed and determined to be more than 100% loaded will be designated as "FAILED," and scheduled to be changed out. Once the transmission pole is changed out, FRAMME will be updated to reflect the date the new pole was installed with the new loading analysis indicated.

(v). Records and Reporting

A pole inspection report will be filed with the Division of Economic Regulation by March 1st of each year. The report shall contain the following information:

- 1) A description of the methods used for structural analysis and pole inspection.
- 2) A description of the selection criteria that was used to determine which poles would be inspected.
- 3) A summary report of the inspection data including the following:
 - a. Number of poles inspected.
 - b. Number of poles not requiring remediation.
 - c. Number of poles requiring remedial action.
 - d. Number of pole requiring minor follow up.
 - e. Number of poles requiring a change in inspection cycle.
 - f. Number of poles that were overloaded.
 - g. Number of inspections planned.

C. Program Cost and Funding

(i). Pole Analysis Funding

As stated above, there are currently approximately 700,000 joint use attachments on approximately 500,000 distribution poles and approximately 5,000 joint use attachments on approximately 2,500 transmission poles. PEF will analyze the "worst case" poles in a tangent line of similar poles as deemed appropriate during field inspections.

In order to meet the obligations set forth in Order No. PCS-06-0144-PAA-EI, PEF would require incremental funding annually to successfully gather data and enter it into the required reporting format. See calculation that follows. The estimated figures in these charts are "best estimates," given information



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and facts known at this time and are subject to change or modification.

Annual Unit & Cost Estimate

Distribution poles with joint use	Annual inspections (6 yr cycle)	% of Distribution poles analyzed	% of Distribution poles replaced	Transmission poles with joint use	Annual Inspections (6 yr cycle)	% of Transmission poles analyzed	% of Transmission poles replaced	Total cost to analyze poles (O&M)	Total cost to replace poles (capital)
500,000	62,500	6,250	630	2,500	313	94	63	\$479,800	\$2,772,000