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Subject: Docket Nos. 070297-EI, 070298-EI, 070299-EI and 070301-EI - Florida Power & Light Company 's Post Hearing Brief and Statement of Issues and Positions (Docket No. 070301-EI)
Attachments: storm hardening brief FINAL 11-2-07.doc

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(See attached file: storm hardening brief FINAL 11-2-07.doc)

DOCUMENT NUMBER-DATE

10000 NOV-25

FPSC-COMMISSION CLERK

11/2/2007

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Review of 2007 Electric Infrastructure) DOCKET NO. 070297-EI
Storm Hardening Plan Filed pursuant to Rule)
25-6.0342, F.A.C., submitted by Tampa)
Electric Company.)

In re: Review of 2007 Electric Infrastructure) DOCKET NO. 070298-EI
Storm Hardening Plan Filed pursuant to Rule)
25-6.0342, F.A.C., submitted by Progress)
Energy Florida, Inc.)

In re: Review of 2007 Electric Infrastructure) DOCKET NO. 070299-EI
Storm Hardening Plan Filed pursuant to Rule)
25-6.0342, F.A.C., submitted by Gulf Power)
Company.)

In re: Review of 2007 Electric Infrastructure) DOCKET NO. 070301-EI
Storm Hardening Plan Filed pursuant to Rule)
25-6.0342, F.A.C., submitted by Florida) FILED: NOVEMBER 2, 2007

FLORIDA POWER & LIGHT COMPANY'S POST-HEARING BRIEF
AND STATEMENT OF ISSUES AND POSITIONS (DOCKET NO. 070301-EI)

Florida Power & Light Company ("FPL"), pursuant to Order No. PSC-07-0796-PHO-EI, issued September 28, 2007 in the above-referenced docket (the "Prehearing Order"), hereby submits its Post-Hearing Brief and Statement of Issues and Positions.

ISSUES 1-39: FPL takes no position on the issues addressing the plans of the other three IOUs.

ISSUE 40: Does the Company's Plan address the extent to which, at a minimum, the Plan complies with the National Electric Safety Code (ANSI C-2) [NESC] that is applicable pursuant to subsection 25-6.0345(2), F.A.C.? [Rule 25-6.0342(3)(a)]

FPL: This following position was approved as a stipulation for this issue: "Yes. FPL's distribution facilities comply with, and in most cases exceed, the minimum requirements of the NESC. FPL's transmission structures also comply with the NESC." Prehearing Order at 55; Tr. 19.

DOCUMENT NUMBER - DATE

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FPSC-COMMISSION CLERK

ISSUE 41: Does the Company’s Plan 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? [Rule 25-6.0342(3)(b)1]

FPL: Yes. FPL’s Plan applies extreme wind loading (“EWL”) standards to new distribution critical infrastructure facilities (“CIF”) and targeted critical poles, and to other new construction and daily work activities where feasible, practical and cost-effective. It uses extreme wind regions of 105, 130, and 145 mph (150 mph in the extreme south).

ISSUE 42: Does the Company’s Plan 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? [Rule 25-6.0342(3)(b)2]

FPL: Yes. FPL will apply EWL for all distribution major planned work, including expansion, rebuild, or relocation of existing facilities, using the extreme wind regions described in Issue 41.

ISSUE 43: Does the Company’s Plan 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? [Rule 25-6.0342(3)(b)3]

FPL: Yes. FPL’s Plan will apply EWL to all distribution CIFs, using the extreme wind regions described in Issue 41. FPL’s Plan will apply Incremental Hardening to feeders serving community-needs businesses, such as grocery stores, gas stations, and pharmacies, which are typically located along or near major thoroughfares.

ISSUE 44: Does the Company’s Plan 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? [Rule 25-6.0342(3)(c)]

FPL: Yes. For new URD construction, FPL utilizes “dead front” equipment that is more resistant to weathering, corrosion and flooding. Due to previous reliability concerns, FPL has not adopted submersible equipment as a standard but offers customers an optional submersible switch. FPL participates in research to identify other improvement opportunities.

ISSUE 45: Does the Company’s Plan 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? [Rule 25-6.0342(3)(d)]

FPL: The following position was approved as a stipulation of this issue: “FPL’s Distribution Guidelines, set forth in its Storm Hardening Plan, together with FPL’s policy, set forth in its Storm Secure Plan, facilitating the location of overhead and underground distribution facilities in public rights-of-way, addresses this issue and can be expected to facilitate safe and efficient access for distribution facilities in accordance with Rule 25-6.0341, F.A.C.” Tr. 19.

ISSUE 46: 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? [Rule 25-6.0342(4)(a)]

FPL: Yes. FPL’s Plan includes its three-prong deployment strategy. FPL provided engineering drawings for all 2007 CIF and Incremental Hardening projects, as well as a listing and primary maps of 2008-2009 CIF projects. Further 2008-2009 details will be provided pursuant to the stipulated Process to Engage Third Party Attachers.

ISSUE 47: Does the Company’s Plan provide a detailed description of the communities and areas within the utility’s service area where the electric infrastructure improvements, including facilities identified by the utility as critical infrastructure and along major thoroughfares pursuant to subparagraph (3)(b)3. are to be made? [Rule 25-6.0342(4)(b)]

FPL: Yes. FPL’s Plan included the following for 2007: the customer, name, county and region for each CIF project; and the feeder number, county and region for each Incremental Hardening project. FPL has also provided a listing and primary maps showing the location of 2008-2009 CIF projects.

ISSUE 48: 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? [Rule 25-6.0342(4)(c)]

FPL: Yes. For 2007, all Attachers were provided engineering drawings and line diagrams for all CIF and Incremental Hardening Projects. Similar details are not yet available for 2008 - 2009 but will be provided pursuant to the stipulated Process to Engage Third Party Attachers.

ISSUE 49: Does the Company’s Plan provide an 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? [Rule 25-6.0342(4)(d)]

FPL: Yes. FPL estimates the following costs: \$48.5 million - \$61.5 million for 2007; \$75 million - \$125 million for 2008; and \$100 million - \$150 million for 2009. FPL estimates restoration cost savings of approximately 45% - 70% of the hardening costs, with savings equaling costs with more frequent storms. FPL’s Plan should reduce the frequency and duration of storm outages.

ISSUE 50: Does the Company’s Plan provide an estimate of the costs and benefits, obtained pursuant to subsection (6) below, 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? [Rule 25-6.0342(4)(e)]

FPL: Yes. FPL’s Plan includes Attachers’ costs and benefits, to the extent they were provided.

ISSUE 51: Does the Company’s Plan include 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 edition of the National Electrical Safety Code (ANSI C-2) that is applicable pursuant to Rule 25-6.034, F.A.C.? [Rule 25-6.0342(5)]

FPL: The following position was approved as a stipulation of this issue: “Yes. FPL is not seeking approval of the standards and procedures, but instead is stating that it has attachment standards and procedures for third-party attachers that meet or exceed the NESC.” Tr. 20.

ISSUE 52: 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? [Rule 25-6.0342(1) and (2)]

FPL: Yes. Unlike FPL’s and the Commission’s other storm initiatives, the Plan directly addresses “wind only” damage, which accounted for more than half the distribution pole failures in Hurricane Wilma. Based on FPL’s storm experience and forensics data, the Plan is prudent, practical and cost-effective in FPL’s service territory.

BRIEF IN SUPPORT OF FPL'S POST-HEARING POSITIONS ON ISSUES

I. Introduction

Following the 2005 storm season, two things became very clear to FPL.

First, FPL's customers -- and public officials representing them -- were unhappy with the number, and especially the length, of the power outages following hurricanes. This concern reached a peak following Hurricane Wilma in October 2005, when FPL needed 18 days to fully return service to all customers. These outages were not lengthy because of any limitations on FPL's restoration efforts. Rather, they were lengthy because the damage to FPL's electric distribution system was substantial. Tr. 171, 584, 588-89, 601-02 (Miranda); Ex. 22, p.1 (Miranda MBM-3). One significant complicating factor in FPL's restoration efforts was the number of broken poles. Replacing broken poles is time consuming and expensive, but restoration work on the affected facilities cannot progress until broken poles are replaced. Tr. 176-77, 584-86, 588-89 (Miranda); Ex. 22, p. 1 (Miranda MBM-3).

Second, FPL's newly developed storm forensics team found that one factor unexpectedly caused over half of the broken distribution poles in Hurricane Wilma: "wind only" damage. Tr. 173, 177, 184-85, 585-86, 589 (Miranda); Tr. 549-50 (McEvoy). These poles failed not because anything fell on them or because they were deteriorated, but simply because the wind forces on the poles exceeded their design strength. Tr. 585-86, 589 (Miranda); Tr. 549-50, 554-55 (McEvoy). This was true even though the great majority of FPL's distribution poles were designed for the NESC's highest normal standard of construction -- Grade B -- and KEMA concluded that FPL's system performed as designed. Tr. 185 (Miranda); Tr. 557-58 (McEvoy).

Over the past year and a half, the Commission and the IOUs have collaborated to develop several programs to address the public concern over hurricane-related outages. Consistent with the Commission's 10-point storm initiative, FPL now has a program in place to increase tree trimming, which should help reduce the downed wires and broken poles caused by vegetation. Pursuant to the Commission's pole inspection order, FPL has an aggressive pole inspection program, which should help identify and repair or replace poles that are deteriorated and/or have excessive loading. And the Commission has approved FPL's GAF tariff, which helps local governments pay for underground conversion when this is the way they choose to protect their communities against hurricane-related outages. Tr. 172-74 (Miranda). However, none of these programs addresses the more than 50% of all distribution pole failures in Hurricane Wilma that were "wind only." Tr. 177 (Miranda). FPL cannot consider its response to the lessons of the 2004-2005 storm seasons to be complete without addressing "wind only" pole breakage. *Id.*

The Electric Infrastructure Storm Hardening Plan (the "Plan") is FPL's response to "wind only" pole breakage. Basically, it starts with the premise that even building to the NESC's highest normal construction standard has proven inadequate to protect FPL's distribution system against "wind only" pole breakage. Based on the 2005 forensics data, the KEMA Report, and analysis of industry pole breakage experience by Davies Consulting, FPL proposes to move FPL's distribution system toward the NESC's extreme wind loading ("EWL") standard. Tr. 176-78 (Miranda). The EWL standard has served extremely well for years as the basis for designing FPL's transmission system, but previously has not been applied to FPL's distribution system. Tr. 177 (Miranda). FPL plans to focus EWL hardening initially on the distribution circuits serving facilities that are the most critical to have operating during and after a hurricane, such as 911 centers and acute care hospitals. Tr. 177-78 (Miranda). FPL has worked with the emergency

operations centers (“EOCs”) in each county to identify and prioritize these critical infrastructure facilities (“CIFs”). Tr. 179 (Miranda). FPL’s Plan also recognizes the importance of having key commercial establishments available after a hurricane, such as grocery stores, gasoline stations and restaurants. Tr. 180 (Miranda). FPL intends to apply a highly targeted, cost-effective technique called Incremental Hardening to the circuits serving those commercial establishments. Tr. 179-80, 187-188 (Miranda). Finally, FPL’s Plan calls for all new facilities and major rework of existing facilities to be built to EWL standards, consistent with its ultimate goal of EWL hardening all of the distribution system. Tr. 180 (Miranda).

Because of the size and complexity of FPL’s distribution system, fully implementing FPL’s Plan will take many years. Tr. 174-75, 601-02 (Miranda). There will be many opportunities along the way for FPL, the Commission and interested parties, including third-party attachers, to revisit our approach. FPL welcomes this continued review and is prepared to adjust both the direction and deployment of the Plan where appropriate. Tr. 175, 188, 601-02 (Miranda). FPL cannot agree, however, with the position of the FCTA that FPL should not even begin to implement EWL hardening until more data has been collected. Tr. 583-84 (Miranda). The lessons of the 2004-2005 storm seasons are clear enough to compel action now. Tr. 583 (Miranda). Waiting for more data will simply mean lost opportunities to start protecting customers against the disruptions that became all too familiar in 2004 and 2005. Tr. 583-84 (Miranda).

II. FPL’s Plan Satisfies Rule 25-6.115 And Is Appropriate For FPL’s System

In February 2007, the Commission adopted Rule 25-6.0432, which directed FPL and other investor-owned utilities to file detailed electric infrastructure hardening plans by May 7,

2007. Tr. 172 (Miranda). The Commission's requirement for electric utilities to file hardening plans is intended to strengthen the overhead electric infrastructure to better withstand the strong winds generated by hurricanes and tropical storms. Tr. 173 (Miranda). FPL filed the Plan in compliance with Rule 25-6.0432. As explained below, the Plan addresses Rule 25-6.0432 in a manner that is appropriate for FPL's system, taking into account FPL's experience during the 2004 and 2005 hurricane seasons.

A. The Plan is Founded on FPL's Direct Storm Experience and Solid Forensics Data.

Following the 2004 storm season, FPL recognized the need to develop a forensic storm follow-up process so that future hurricane damage could be investigated more rigorously. Tr. 553-54 (McEvoy); Ex. 5, pp. 10-20 (McEvoy deposition). During the later part of 2004 and the beginning of 2005, FPL formed a forensic team comprised of experienced distribution engineers. Tr. 553-54 (McEvoy). Procedures and processes were developed that were used to perform forensic evaluations of Hurricanes Katrina and Wilma in 2005. Tr. 554 (McEvoy). The intent was to determine objectively why equipment failed and to use this data to help FPL improve system performance and restoration time when exposed to future storms. *Id.* The forensics team used a standardized check sheet to collect specific data, pictures were taken at each observation, and notes were made to determine failure causes. Tr. 553-54 (McEvoy); Ex. 5, pp. 10-20 (McEvoy deposition). As detailed in the KEMA Report, the forensics effort found that more than 50% of the broken distribution poles experienced during Hurricane Wilma were the direct result of extreme wind forces. *Id.* Thus, the forensics team characterized these pole failures as being due to "wind only" damage. *Id.*

Two key conclusions drawn by FPL from the 2004 and 2005 hurricane seasons and forensic data form the basis for FPL's Plan: 1) a large part of the storm damage to FPL's system (over 50% of the distribution pole failures in Hurricane Wilma according to the KEMA Report) was due to "wind only" damage; and 2) FPL's transmission structures, which are already built to the NESC's established EWL standards, performed well overall in the 2004 and 2005 storm seasons. Tr. 176 (Miranda). According to the KEMA Report, "wind only" as a cause of distribution wood pole failures was two and one-half times greater than any other cause of failure identified, such as trees, presence of deterioration and possible design overload. Tr. 177 (Miranda). The KEMA Report also showed that Hurricane Wilma caused only about 0.1% of the total transmission structures in FPL's system to fail. This failure rate for transmission structures was significantly lower than the failure rate for distribution poles during Hurricane Wilma (approximately 1%). Because FPL's transmission system is already built to the NESC's EWL standard, this low failure rate suggested that the extra strength of the EWL standard helped the transmission system to weather the storms better than the distribution system. *Id.*

While programs to improve vegetation management and increase pole inspections are valuable to address other causes of storm damage, they do nothing for "wind only" damage. Tr. 173-74 (Miranda). FPL's and the Commission's storm hardening efforts will be incomplete, and will not meet the expectations of customers and public officials, unless the vulnerability to "wind only" damage is addressed. *Id.*

B. FPL's Plan Takes a Targeted, Focused Approach to Hardening.

FPL's Plan addresses "wind only" damage effectively and efficiently, targeting certain distribution facilities and utilizing various engineering tools and options to cost-effectively

harden FPL's distribution overhead infrastructure to better withstand strong winds. Tr. 178 (Miranda). The Plan uses a three-prong approach to hardening: (1) apply EWL criteria proactively to existing infrastructure that serves CIFs such as hospitals and 911 centers, as well as to Targeted Critical Poles ("TCPs"); (2) apply targeted Incremental Hardening (up to and including EWL standards) to existing infrastructure that serves community needs such as gas stations and grocery stores, with optimal modifications using various cost-effective engineering tools; and (3) employ revised Design Guidelines to apply EWL to new overhead construction, major planned work, relocation projects and daily work activities, in order to move FPL's system toward overall EWL hardening gradually over time. Tr. 177-78 (Miranda).

EWL hardening of CIFs is a high priority because these facilities are essential to the health, safety, welfare and security of the public. Tr. 179 (Miranda). Additionally, EWL will be applied to TCPs, which are poles associated with overhead limited access highway crossings and poles with "01 switches" (*i.e.*, the first pole outside of a substation, which is critical to FPL's restoration process). *Id.* Hardening TCPs is important to rapid storm restoration, because if those poles fail, restoration efforts can be significantly delayed. *Id.* To apply EWL hardening, FPL has divided its service territory into three wind regions, based on NESC wind contours, in order to focus the most extensive hardening work in the areas likely to have the highest winds. Tr. 178 (Miranda).

Incremental Hardening, the second prong of FPL's Plan, is used to achieve extremely efficient hardening for facilities serving important commercial establishments such as grocery stores, gas stations and pharmacies. The objective of Incremental Hardening is to optimize the existing distribution infrastructure and increase the overall wind profile of a feeder to a higher wind rating (up to and including EWL) by utilizing cost-effective engineering options to

eliminate poles with the lowest wind ratings in the feeder. For instance, a feeder's overall wind rating can be increased by utilizing cost-effective options in FPL's "design toolkit" (e.g., storm guying, relocating equipment, installing an intermediate pole, upgrading the pole class, undergrounding facilities) to target improvements in individual poles with the lowest wind ratings, thus helping protect the entire line against interruptions that could result from damage to the "weak link." Tr. 179-180 (Miranda).

The third prong of FPL's Plan, revised Design Guidelines, primarily is associated with changes in pole class, pole type, and desired span lengths. Standardizing these processes will ensure this type of construction work aligns with FPL's overall hardening strategy. Depending on the scope of work performed in a particular project, this can result in EWL hardening for an entire circuit or for just one or a small number of poles. The purpose of this prong of FPL's Plan is to help ensure that FPL continues to move toward the ultimate goal of a fully hardened distribution system and avoids the need to replace facilities later at considerable expense that have been rebuilt to lesser standards. Tr. 180 (Miranda).

FPL has provided detailed plans for deployment of EWL in 2007. Tr. 180-81 (Miranda); Ex. 20, p. 41 (Miranda MBM-1); Tr. 402-03 (Harrelson). It plans to harden 34 critical infrastructure feeders and associated laterals to serve 28 acute care facilities, 43 highway crossings and the first pole out of a substation for 78 feeders. Tr. 180-81 (Miranda); Ex. 20, p.41 (Miranda MBM-1). Additionally, FPL will complete Incremental Hardening on feeders serving 34 community projects located primarily in Miami-Dade, Broward and Palm Beach Counties where FPL has its highest density of customers. Tr. 181 (Miranda); Ex.20, p. 42 (Miranda MBM-1). In total, FPL's deployment plan in 2007 will result in hardening approximately 145

overhead circuit miles, including replacing 2,100 existing poles and installing 700 intermediate poles. Tr. 181 (Miranda).

FPL will continue to implement its overall three-prong approach in 2008 and 2009. Tr. 181-82, 591-92 (Miranda); Ex. 21 (Miranda MBM-2). Detailed plans have not been finalized, but it is FPL's intent to complete extreme wind hardening for all hospitals and 911 centers by the end of 2009. *Id.* Consistent with the Process to Engage Third Party Attachers to which all parties stipulated (the "Attacher Process"), FPL will annually provide detailed updates to its Plan for these "out years" consistent with the Rule 25-6.0432. *Id.*; *see* Prehearing Order at 41.

C. FPL's Plan is Cost-Effective and Cost Justified.

FPL's cost range estimates for its hardening efforts are \$48.5 to \$61.5 million in 2007; \$75 to \$125 million in 2008; and \$100 to \$150 million in 2009. Tr. 182-83 (Miranda). FPL is still providing ranges of cost estimates for 2007, because some projects are still in the construction and final design stages. Tr. 182-83 (Miranda). FPL will provide updates to the 2008 and 2009 cost projections when it files its annual updates to the Plan. Tr. 183 (Miranda).

The cost of FPL's Plan is justified, because (1) it is projected to save a substantial portion of the hardening costs in reduced storm and non-storm restoration costs ("Restoration Cost Savings"); and (2) it will also help reduce both the frequency and duration of storm outages, which was the focus of customers' and public officials' concerns in 2004 and 2005. Tr. 183-84 (Miranda). FPL's analysis indicates that the Restoration Cost Savings per mile of hardened feeder are estimated to range from 45% to 70% of the cost to harden that feeder, conservatively assuming a storm frequency of once every 3-5 years, respectively. Tr. 186 (Miranda); Ex. 5, pp. 20-21 (Miranda deposition). Moreover, if FPL's service territory were to experience more

frequent storms, the Restoration Cost Savings could exceed the hardening costs. *Id.* For example, if a storm of Hurricane Wilma's intensity occurred once every three years, the Restoration Cost Savings would then become about equal to the hardening costs. *Id.*

The implementation of FPL's Plan and the other storm preparedness initiatives will result in fewer customer outages, reduced overall distribution restoration time, quicker return of essential community services, as well as improved day-to-day reliability. Tr. 186-87, 586 (Miranda). This is a significant benefit for customers beyond the anticipated savings on restoration costs. Tr. 187 (Miranda). Most of these benefits will also work to the advantage of the third parties that attach their facilities to FPL's poles. Tr. 586 (Miranda).

FPL's plan is prudent, practical and cost-effective. Tr. 188 (Miranda). By conventional definition, a process is "cost-effective" if it achieves a desired outcome as efficiently as possible. Tr. 187, 219 (Miranda); Ex. 5, pp. 534-35 (FPL's Answer to Staff Int. 38). FPL's Plan is clearly cost-effective by this measure. It prioritizes the EWL hardening activities on those distribution facilities that matter most to helping communities recover after a storm, by helping to ensure that CIFs will be available as soon after the storm as possible, and on maintaining the integrity of the TCPs that facilitate prompt restoration. It uses the highly efficient Incremental Hardening approach to increase the storm resilience of major commercial facilities that, while less essential than the CIFs, are also very important to helping communities get back on their feet. And in all instances, FPL will implement its hardening with the most efficient, least costly hardening tools available, utilizing three distinct wind zones that help tailor the extent of hardening to the extreme wind speeds that can realistically be expected in specific geographic areas within FPL's service territory. Tr. 590 (Miranda).

D. No Valid Objections Have Been Raised to FPL's EWL Approach.

Only one party expressed opposition at the hearing to the use of EWL in FPL's Plan: the FCTA. The criticism of FPL's Plan by FCTA witness Harrelson provided no valid basis to disapprove it, for the following several reasons:

1. Mr. Harrelson should not be relied upon as an expert in storm hardening or storm forensics. He is not a legitimate expert in storm forensics or in designing a storm-hardened system. He has never been qualified as an expert in either discipline. Tr. 399 (Harrelson). His forensic experience as it relates to storm damage to electric distribution systems is limited to observing and verbally commenting on damage to the Glades Electric Cooperative's facilities following hurricanes in 2004 and 2005 and personal excursions into hurricane-damaged areas, as well as "a week or ten days of experience in South Carolina with Hurricane Hugo." Tr. 400 (Harrelson); Ex. 6, pp. 16-17, 23-24 (Harrelson deposition). His conclusions concerning the causes of pole failures were based on anecdotal evidence and are not documented. Tr. 401 (Harrelson); Ex. 6, pp. 19-20 (Harrelson deposition).

2. FPL is already addressing the hardening measures Mr. Harrelson proposes. FPL is already implementing most of the alternative hardening measures favored by Mr. Harrelson and has agreed to explore the other theoretical engineering approaches he proposed. Tr. 179-80 (Miranda); Tr. 550-53 (McEvoy); Tr. 402 (Harrelson) Mr. Harrelson contended in his testimony that FPL should consider the guying effects of either power lines or cable attachment lines when designing for EWL, but he acknowledged at the hearing that FPL has had further discussions with him and has agreed to formally consider such guying effects. Tr. 372, 383, 402, 410

(Harrelson).¹ Mr. Harrelson also asserts that the KEMA findings validate the fact that trees and buildings shelter lines from winds. Tr. 368 (Harrelson). While FPL is investigating what effect trees or buildings have on shielding our facilities or the possible guying effect of crossing lines, as the NESC states, in the absence of a detailed statistical loading analysis, no reduction in the loadings specified shall be made. Tr. 551 (McEvoy); Ex. 5, pp. 42-43 (McEvoy deposition). FPL is interested in investigating what changes can be made to the NESC EWL formulas, but it is not reasonable to make adjustments to the calculations shown for EWL in the NESC without supporting data and still expect to deliver the level of wind loading these formulas provide. Tr. 551-53 (McEvoy).

Mr. Harrelson acknowledged that he is unaware of any deficiencies in FPL's plans to address the "prudent, practical and cost effective" storm hardening initiatives that he proposed in his pre-filed testimony. Tr. 382-83, 408-13 (Harrelson). For example:

- Mr. Harrelson recommended small conductor replacement projects to decrease line breakage during storms, and he agreed at the hearing that FPL is implementing small conductor replacement as part of its Storm Hardening Plan. Tr. 382, 409 (Harrelson) .
- Mr. Harrelson suggested the use of specialized equipment or contractors for work in difficult right-of-way conditions, and he agreed at the hearing that FPL is already doing this as part of its recovery plan. Tr. 382, 409-10 (Harrelson).
- Mr. Harrelson also recommended that FPL use pole inspections as an opportunity to strengthen, replace or guy deteriorated or overloaded poles, and he acknowledged at the

¹ In addition, Mr. Harrelson agreed at the hearing that FPL's storm hardening design guidelines include the use of storm guys for, among other purposes to shore up poles along pole lines to try to minimize the potential for cascading. Tr. 407-08 (Harrelson).

hearing that FPL has substantially increased its spending on this sort of remediation in connection with pole inspections. Tr. 383, 410 (Harrelson).

- Mr. Harrelson proposed enhanced use of sectionalizing the electric system to enable FPL to restore a portion of the system while other portions are still damaged, and he agreed at the hearing that FPL is actively pursuing the practice of sectionalizing of its system. Tr. 383, 410-11 (Harrelson).
- Mr. Harrelson suggested converting selected portions of the distribution systems' voltage from 12 or 13 kV to 25 kV. Tr. 383, 411 (Harrelson). Mr. Harrelson agreed that this recommendation is only applicable to rural areas where there is a significant opportunity to increase the power-carrying capability of that line, and that most of FPL's service territory is not in the rural conditions where this particular measure would be applicable. Tr. 412 (Harrelson). He also agreed that FPL is already converting the voltage of selected distribution systems where that practice is applicable. *Id.*
- Finally, Mr. Harrelson recommended improved procedures to avoid cutting of fiber-optic cables by debris clearing and electric repair crews, but he said he is personally unaware of instances where FPL's storm restoration activities have resulted in cutting or otherwise damaging fiber-optic cables in a way that could have been avoided. Tr. 383, 412-13 (Harrelson).

In short, there are no prudent, practical, or cost-effective storm hardening measures proposed by Mr. Harrelson that FPL is not already pursuing where appropriate.

3. Mr. Harrelson's recommendation that EWL be focused on coastal areas is effectively addressed by FPL's Plan. FPL's use of three EWL wind zones effectively addresses Mr.

Harrelson's recommendation that EWL hardening be focused on coastal areas.² As previously discussed, while FPL's Plan will apply EWL system-wide, it differentiates the application based on three EWL wind zone areas. Tr. 590 (Miranda). These wind zone areas generally result in the highest wind-speed designs being used in the southeastern portions of FPL's service territory, where history has shown that the risk of severe storms is the greatest. *Id.* In contrast, the more northerly and inland portions of FPL's system generally will have lower wind-speed designs for EWL hardening, reflecting the somewhat lower risk of severe storms in those areas. *Id.*

The following exchange during cross-examination of Mr. Harrelson by FPL illustrates the effectiveness of the wind zones in differentiating the extent of hardening required in different geographic areas:

Q. Okay. Is it your understanding that FPL's Storm Hardening Plan has three separate wind zones that have different wind speeds to which the EWL hardening is designed in each respective zone?

A. Yes, it does. And additionally I think that's very reasonable.

Q. Okay. And do you happen to recall what the three wind speeds for those zones are?

A. I believe it's 145, 130 and 105.

Q. Okay. And would you agree that the wind speed ... or the wind force to which poles would have to be designed in the 145-mile-per-hour zone is approximately twice as strong as the wind force in the 105-mile-per-hour zone?

A. It is as required by the National Electrical Safety Code for poles and attachments greater than 60 feet in height. So in general the answer is yes, but the code applies it to 60 feet and greater.

Q. Okay. Now do you recall from FPL's wind zones, are the ... areas that are within the 145-mile-per-hour zone predominantly on the east and sort of lower southwestern coastal areas of Florida?

A. That's correct.

Q. Okay. And the area of the 105-mile-per-hour wind zone is pretty much in the north central part of FPL's service territory?

² In addition, it is important to recognize that FPL's Hurricane Wilma forensic data does not support the theory that non-coastal areas and sheltered areas will not also be exposed to strong storm winds. Tr. 590 (Miranda). There is no defining line to suggest limiting the application of EWL to just coastal areas. *Id.* Mr. Harrelson acknowledged in cross-examination that he had witnessed substantial damage from Hurricane Charley in Arcadia, which is at least 20 miles inland, and Lake Wales, which is at least 50 miles inland. Tr. 404-05 (Harrelson).

A. Yes.

Q. So the design of FPL's poles for EWL hardening purposes in this north central inland area would only have to withstand approximately half as much wind force as the poles designed for the coastal areas that are in the 145-mile-per-hour wind zone; correct?

A. Yes, I think that's correct. ...

Tr. 405-06 (Harrelson). Mr. Harrelson's criticism that FPL's plan does not differentiate between coastal and inland areas with respect to EWL hardening is, therefore, unwarranted.

4. Mr. Harrelson's criticisms of FPL's forensics data are without merit, and he has no valid forensics data contrary to FPL's. Indeed, Mr. Harrelson said he was unaware of any entity other than FPL that has conducted the sort of forensic analysis of storm damage to electric distribution systems in Florida that FPL conducted during the 2005 storm season. Tr. 401 (Harrelson). Mr. Harrelson comments that many of the broken distribution poles during Hurricane Wilma were multiple failures known as cascading and that these events can be started by trees or flying debris. Tr. 368 (Harrelson). He fails to mention that cascading can also start by one pole breaking due to the effect of wind only, but he agreed at the hearing that he has seen instances of cascading poles where it appeared the events were initiated by wind only. Tr. 406-07 (Harrelson); *see also* Tr. 561 (McEvoy). In the cases of multiple failures, the FPL forensic team looked at the entire set of broken poles to determine what caused any one of the poles to break. Tr. 561 (McEvoy). If the cause for the cascading event was determined to be wind only, those poles were classified as such. *Id.* Also, as stronger poles are used for EWL, they are more likely to stop a cascading failure once it has started. *Id.*

Mr. Harrelson also misunderstood the import of the KEMA Report's finding that FPL's Grade C construction performed as well as its Grade B construction. He incorrectly concludes from this finding that the use of a higher construction standard did not improve storm resilience.

See Tr. 369 (Harrelson). In fact, FPL's analysis of the areas where it had been building to Grade C showed that the construction in those areas was actually the effective equivalent of the higher Grade B construction. Ex. 5, pp. 23-31 (McEvoy deposition). This was because the size of the poles being used and the placement of the poles on shorter span lengths were similar if not identical to Grade B and, thus, FPL was building facilities that were equal in strength to Grade B in most cases. Ex. 5, pp. 23-24 (McEvoy deposition). KEMA agreed with FPL that it had effectively achieved Grade B construction standards in the areas that had been nominally built to Grade C, and hence its report was simply confirming the unsurprising conclusion that facilities effectively built to Grade B will perform like Grade B. *Id.*

5. FPL may properly apply EWL to distribution poles shorter than 60 feet, even though the NESC has declined to adopt it as a national standard. Contrary to Mr. Harrelson's suggestion, simply because the NESC has considered and rejected proposals to impose a national standard of using EWL loading criteria to distribution poles 60 feet or less in height does not mean that FPL cannot or should not adopt EWL for such poles if that is warranted by the expected storm activity in its service territory. Tr. 589 (Miranda); 549-50 (McEvoy). The NESC clearly gives utilities the discretion to build to higher standards when they conclude it is warranted. Tr. 550 (McEvoy).

III. FPL Should Begin to Implement EWL Hardening Now

As discussed above, FPL's forensics data and the conclusions of the KEMA Report, as well as the expectations of FPL's customers and others, compelled FPL to propose EWL hardening for its system. Tr. 589 (Miranda); Ex. 5, pp. 18-19 (Miranda deposition). FPL is not unsympathetic to the position taken by the NESC as well as other utilities. *Id.* It is the same

position taken by FPL until Hurricane Wilma, the seventh storm to impact FPL over a 15-month period. Tr. 589 (Miranda); Tr. 549 (McEvoy). While other utilities may conclude that EWL hardening is not needed for their systems, FPL cannot ignore direct data relevant to its system, indicating that “wind only” was the predominant root cause of distribution pole breakage. Tr. 589 (Miranda); Tr. 549 (McEvoy); Ex. 5, p. 19 (Miranda deposition). FPL must address the effects of extreme wind damage to its distribution facilities in any plan for improved future hurricane system performance. Tr. 589 (Miranda); Tr. 549-50 (McEvoy); Ex. 5, pp. 18-19 (Miranda deposition).

FPL’s Plan will be implemented gradually, so there is plenty of opportunity to refine it over time. Tr. 601-02 (Miranda). More storm experience, improved processes, better products and materials (for example, composite poles) as well as the continuing collaborative process for updating and reviewing future hardening plans will allow for the review, evaluation and implementation of more cost-effective hardening solutions as they emerge. Tr. 601-02 (Miranda). Waiting to get started until more information is gathered would be wrong, however, because there is no certainty as to when better data will be available, and an opportunity would be lost to start taking steps to provide the added storm resilience that customers and public officials have said they want. Tr. 588-89, 601-02 (Miranda).

IV. FPL Has Fully and Openly Communicated With Third Party Attachers

FPL has had an open dialog with attachers, starting before the Plan was filed. This dialog has largely been a success, as witnessed by the agreement of all parties to the Attacher Process, and the substantial number of full and partial settlements FPL reached with the attachers.

FPL has conducted meetings with all attachers, first in a joint meeting held at FPL’s

offices in April 2007 (which FCTA attended) as well as individually meeting with all interested parties (including FCTA). Tr. 599 (Miranda). Additionally, FPL has participated in the FPSC workshops held in conjunction with this proceeding, where various issues were repeatedly discussed, both formally during the workshop as well as informally during breaks and before/after each workshop. *Id.*

As FPL has made clear since the rulemaking proceedings on the storm hardening rules, it is not possible for FPL to provide three years of detail about specific hardening projects at the outset of a three-year plan because FPL's internal budget process will not be completed for the out years at the time that each three-year hardening plan is initially filed. Tr. 591 (Miranda). FPL has always expected that it would have to provide updated information on an annual basis and the rule provides for that option. *Id.*

To the extent that FPL has had specific details available on its EWL and Incremental Hardening projects, those details have been provided. Tr. 591-92, 599-600 (Miranda); Exs. 21, 23-25 (Miranda MBM-2, MBM-4 through MBM-6). The information provided by FPL should be more than sufficient for all of the intervenors, including FCTA, to form an opinion on the appropriateness of the 2008-2009 CIF projects. Tr. 592 (Miranda).

FPL also will hold pre-design and pre-construction meetings with affected attachers, not only to provide them with the final details on particular projects, but also to solicit their input and reconfigure the construction details where possible to minimize the impact and cost for their facilities.

In his pre-filed testimony, Mr. Harrelson suggested that FPL has not provided adequate descriptions of the communities and areas where improvements are to be made and has not sought input and attempted in good faith to accommodate concerns raised by third-party

attachers. However, as demonstrated by the many full and partial settlements in this proceeding, including a partial settlement with FCTA, FPL has gone out of its way to seek input from and accommodate concerns raised by third-party attachers. Indeed, Mr. Harrelson said that he attended multiple meetings with FPL concerning its Storm Hardening Plan, some in person and some via telephone; that FPL has provided him detailed information on actual construction projects in 2007, as well as route maps for its planned 2008 and 2009 projects; and that FPL has accommodated his requests within reason. Tr. 402-03 (Harrelson). Mr. Harrelson said he had no reason to believe that FPL has not provided FCTA information on hardening projects as soon as that information becomes available. He also said that FPL has dealt with FCTA in good faith regarding the coordination of third-party attachments to its hardening projects.³ Tr. 403-04 (Harrelson). He agreed that the Attacher Process, which the Commission approved, provides a useful mechanism for dialog between electric utilities and third-party attachers about future hardening projects. Tr. 403 (Harrelson).

³ Mr. Harrelson said that he felt FPL was slow in responding to e-mails, but he understood and appreciated FPL's efforts to respond. Tr. 404 (Harrelson); Ex. 6, pp. 38-39 (Harrelson deposition).

Conclusion

For all the foregoing reasons, the Commission should approve the FPL Plan, so that FPL can continue moving forward with providing the added protection against future hurricanes that customers and public officials have said is important to them.

Respectfully submitted this 2nd day of November, 2007.

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CERTIFICATE OF SERVICE
(Docket Nos. 070297-EI, 070298-EI, 070299-EI and 070301-EI)

I HEREBY CERTIFY that a true copy of Florida Power & Light Company's Post-Hearing Brief and Statement of Issues and Positions (Docket No. 070301-EI) was furnished to the following by electronic delivery this 2nd day of November, 2007:

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