Progress Energy

August 7, 2007

ORIGINAL

VIA OVERNIGHT DELIVERY

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

Re: Docket No. 070298-EI

Dear Ms. Cole:

Pursuant to the ongoing staff workshop process in this Docket, please find enclosed Progress Energy Florida's supplement to its Storm Hardening Plan filed on May 7, 2007. The purpose of this supplement is to address questions and requests for further information from staff and intervenors in this Docket. Should you have any questions, please do not hesitate to contact me at 727-820-5184.

Respectfully,

John T. Burnett
Associate General Counsel

JB/sc
Enclosures

cc: Lorena Holley, Esquire
Tom Ballinger
FL Cable Telecommunications Assoc., Maria Brown/B. Keating
AT&T Florida, J. Meza/E. Edenfield/J. Kay
Verizon Florida LLC, David Christian/Dulaney L. O'Roark, III
Embarq Florida, Inc., Susan S. Masterton

299 1st Avenue North, St. Petersburg, FL 33701 • P.O. Box 14042, St. Petersburg, FL 33733
Phone: 727.820.5184 • Fax: 727.820.5249 • Email: john.burnett@pgnmail.com

ORIGINAL

Progress Energy Florida, Inc's Supplement to Storm Hardening Plan

(Docket No. 070298-EI)

Preliminary Analysis

FPSC Staff has identified the following areas in which PEF should provide additional support for its Storm Hardening Plan:

Extreme Wind Load Criteria

- Staff believes substantive support for PEF's 60 mile per hour wind speed loading criteria has not been justified.

PEF's storm hardening plan includes substantial support for the proposition that the EWL standard should not be applied to PEF's distribution poles. The NESC, the very entity that created the EWL standard, found in the 2007 version of the NESC that the EWL standard should not be applied to distribution poles less than 60 feet in height. This information is included as Exhibit C to PEF's plan filed on May 7, 2007. Thus, Staff cannot on the one hand look to the NESC for the EWL wind loading curves for Florida and then ignore the Code's explicit exception for applying those loading curves to distribution poles on the other.

PEF's plan also includes expert testimony before the FPSC showing that the EWL standard would have no appreciable benefit for PEF's distribution poles with respect to preventing wind-caused damage (Exhibits D and E). Additionally, PEF's plan includes official comments to the NESC from utilities around the country, including other coastal utilities and utilities that experience tornados, supporting the fact that the EWL standard has no appreciable wind damage prevention benefit for their distribution poles. (Exhibit F). Also, industry experts representing other industries in this docket, such as those representing the Florida Cable Television Association, have recently provided similar data to Commission Staff in the ongoing workshops in this docket which further supports PEF's position in this regard.

PEF's plan details PEF's experience with pole damage in the 2004 and 2005 hurricane seasons, which confirms, and even documents with pictures, that EWL would not have provided any appreciable benefit for wind damage prevention on distribution poles given the fact that transmission poles built to EWL failed when hit with tornados or microburst winds. (Exhibit G). Also, PEF has provided additional information along with this filing which shows that in 2004, approximately 96% of PEF's pole failures were attributable to flying debris and/or super extreme wind events such as tornados and micro-bursts. See Attachment A hereto. PEF has also provided additional data along with this filing showing that rather than preventing storm outages and costs on PEF's system, the EWL standard would cause longer restoration times and increased restoration costs when compared to PEF's current practice. See Attachments A and B hereto.

In addition to providing detailed support for not using the EWL standard on a system-wide basis within PEF's service territory, PEF's plan also specifically identifies field projects where PEF will test Grade B and EWL construction in contrast with Grade C construction to see if there is any benefit to Grade B and/or EWL in <u>real storm conditions</u> in varying cross sections of PEF's service territory. While wind simulators and other similar devices may provide some limited data, real storms vary in time and intensity and have tornados, flying debris, microburst wind, flooding, erosion, vegetation impacts, and other real world factors that cannot be tested in simulation.

Finally, PEF's policies and procedures state that the NESC is a minimum design standard. As constructed, PEF's facilities have design strengths higher than the 60 mph figure noted by Staff. For example, in urban areas such as Pinellas County and the greater Orlando area, span lengths between PEF's poles are necessarily shorter due to road crossings, density of service points, and other practical design considerations. Therefore, a large percentage of PEF's facilities have design strengths much greater that 60 mph, so it is not accurate to say that PEF is using a pure 60 mile per hour wind loading criteria throughout its system. For detail on this issue, please see Attachment C hereto.

- PEF's Storm Hardening Plan generally refers to its historical field experiences and that PEF has plans to gain more experience. However, PEF does not address any specific efforts to verify or test its proposition that a 60 mile per hour wind speed loading criteria is appropriate for all of its service area.

PEF's plan specifically identifies field projects where PEF will test Grade B and EWL construction in contrast with Grade C construction to see if there is any benefit to Grade B and/or EWL in <u>real storm conditions</u> in varying cross sections of PEF's service territory. While wind simulators and other similar devices may provide some limited data, real storms vary in time and intensity and have tornados, flying debris, microburst wind, flooding, erosion, vegetation impacts, and other real world factors that cannot be tested in simulation. PEF's plan also makes clear that PEF is continuing to take part in collaborative research projects which impact on this issue. Finally, as Commissioner Argenziano recognized at the June 19, 2007 FPSC agenda in this docket, real utility experience in real storms cannot be ignored.[1] PEF knows of no better support for the proposition that its system is and has been properly designed, constructed, and maintained than the real life experience that PEF has had with storms that have taken place within PEF's actual service territory. For example, the 2004 hurricane season shows that 96% of PEF's pole failures were due to flying debris and/or super extreme wind events that would have caused EWL constructed assets to fail. PEF cannot reasonably ignore this sort of

[1] **Agenda Transcript, Page 13, Lines 3-5**: *"When we talk about trial by experience, I mean, if you are a company that has been in business for a while, you already have experience."*

Agenda Transcript, Page 13, Lines 19-24 & Page 14, Lines 1-2: *"And Madam Chair, what I mean is they have that experience, I'm pretty sure. When you are in business, I would hope that one would want to harden on their own, as much as they could, and then what we are asking them to do in addition to that. But anything that they have come back and said, look, this is what we have done in the past, this works the best, and history shows that maybe what you're asking here may be not as cost-effective as doing it a different way."*

Agenda Transcript, Page 14, Lines 11-14: *"And Madam Chair, I guess that makes a lot of sense. Because if one company has been hit a certain way, and another has been hit a different way, we may be able to use that history from both of them."*

data and advocate charging its customers more money for more expensive construction designs such as EWL that would have also failed and would have been more costly and time consuming to replace in the hurricane restoration phase. See Attachments A and B hereto.

- Thus, our staff is not convinced that PEF's Plan adequately addresses an EWL criteria for PEF's service area. This is of specific concern because adjacent utilities, FPL and TECO, support a minimum extreme wind load criteria of 116 miles per hour in areas where PEF's service area abuts that of the other utility's service area.

PEF first notes that each utility in Florida has differing service territories within different regions of the state, and each utility has different operational experiences and practices within their systems. Also, system storm performance is influenced by the degree to which each utility in Florida has consistently executed sound and prudent maintenance programs and end-of-life equipment replacement. Thus, even with two utilities that closely border each other, one must use care in making utility-to-utility comparisons because in most instances, fair comparisons cannot be made on a true "apples-to-apples" basis.

That being said, PEF's policies and procedures state that the NESC is a minimum design standard. As constructed, PEF's facilities have design strengths higher than the 60 mph figure noted by Staff. For example, in urban areas such as Pinellas County and the greater Orlando area, span lengths between PEF's poles are necessarily shorter due to road crossings, density of service points, and other practical design considerations. Therefore, a large percentage of PEF's facilities have design strengths much greater that 60 mph, so it is not accurate to say that PEF is using a pure 60 mile per hour wind loading criteria throughout its system. In fact, PEF estimates that over 74% of its distribution system meets or exceeds Grade B construction standards. For detail on this issue, please see Attachment C hereto.

Further, as PEF has discussed in detail above, all empirical evidence that PEF has, both nationally and within its own service territory, shows that PEF's design and construction standards are effective and entirely appropriate.

- Additionally, we note that PEF sustained higher damage costs on a per customer basis than either FPL or TECO.

2004 Self-Insured Storm Damage Impact
FPL, PEF, TECO, and Gulf

	Charley (Millions)	Frances (Millions)	Ivan (Millions)	Jeanne (Millions)	Total (Millions)	Millions of Customers	Cost per Customer
FPL	$ 209	$267	$ 0	$234	$ 710	4.4	$161
PEF	$ 146	$129	$ 6	$ 86	$ 367	1.6	$229

TECO	$ 14	$ 23	$ 0	$ 28	$ 65	0.7	$93
GULF	$ 0	$ 0	$ 134	$ 0	$ 134	0.4	$335

Sources: Docket No. 041291-EI for FPL; Docket No. 041272-EI for PEF; and answers to staff data requests for TECO and Gulf.

While there are many factors contributing to the level of storm damage experienced by each of these utilities, PEF's filings do not provide conclusive support for a lower EWL criteria than neighboring utilities which serve in areas that experience equivalent extreme wind speeds.

This comparison is not appropriate. First, the comparison does not take into consideration the intensity of the storms, the length of the storms and paths, as well as other storm-specific considerations. Each storm event affects each utility differently and therefore, it is difficult, if not impossible, to accurately evaluate and compare this sort of data as being indicative of a utility's ability to withstand a storm event.

Using the methodology employed in the comparison above, Gulf Power would have had a $0 cost per customer in 2004 instead of a $335 cost per customer if Hurricane Ivan did not happen. This simple example shows that information such as that presented in the chart above has no relevance as to a utility's ability to withstand storm events because the conclusions drawn from that data will vary and show disparate and inaccurate conclusions depending on a utility's particular storm experience in a given year.

To further illustrate this point, in the recent FPSC Report to the Legislature on Enhancing the Reliability of Florida's Distribution and Transmission Grids During Extreme Weather, the FPSC reported that during the 2005 hurricane season, PEF experienced $7 million in total hurricane damage costs which results in a cost per customer of roughly $4. Thus, by simply using 2005 instead of 2004, PEF's per customer hurricane damage cost goes from $229 to $4.

Mitigation of Flood and Storm Surge Damages to Underground Facilities

- PEF's Plan appears to discourage use of underground in locations at risk for storm surge and flooding. Underground construction is promoted only in areas exposed to minor storm surge and/or short-term water intrusion.

    This is not an accurate description of PEF's plan. PEF makes clear in its plan that undergrounding is a site-specific consideration that must be evaluated based on several sets of facts, and that "one size does not fit all" when it comes to undergrounding. PEF specifically identifies 24 underground hardening projects in its storm hardening plan. PEF also specifically describes what measures PEF will use and test to mitigate flood and storm damage to UG facilities on pages 7-8 and 11-14 of its plan, and these measures include strategic storm evaluation prior to placement of UG facilities and targeted use of (1) submersible switchgear and stainless steel transformers; (2) submersible terminations; (3) raised mounting boxes; (4) cold shrink sealing tubes; and (5) submersible secondary blocks.

- While PEF generically discusses the use of its AIS to promote storm hardened underground facilities, PEF failed to state the specific scope and cost of its storm hardening activities.

PEF's plan discusses specific storm hardening activities on pages 14-20. Additionally, please see Attachment D hereto for further information.

Identification of Storm Hardening Activities Resultant Costs and Benefits

- Our staff believes the scope and costs of PEF's storm hardening activities are not clearly stated. PEF's Plan does not identify the incremental storm hardening activities, resultant costs, and benefits that PEF implements through the use of its proprietary project evaluation tool, AIS.

PEF's plan discusses cost benefit information and hardening costs on pages 21-22. Additionally, please see Attachments B and D hereto for further information regarding this issue.

- Instead, PEF's storm hardening activities appear to include all projects and resultant company incurred costs for customer requests, governmental improvements, purchases of other utility facilities, growth spurred conductor upgrades, and new facilities required to address growth.

- ***This statement is not accurate. PEF identifies all of its new hardening projects for distribution on pages 14-15, and all of its new projects for transmission on pages 17-20. PEF also identifies project costs on page 21. This statement is also inaccurate to the extent it suggests that PEF is claiming "normal" work projects as hardening projects. For example, several transmission pole relocations in PEF's plan have been initiated by the DOT or local governments. However, the hardening aspect of these projects is not the relocation but rather is PEF's choice to build the new relocated line with steel or concrete transmission poles. Thus, the comment above focuses on the impetus for the relocation and not the actual resultant hardening project that PEF chose to initiate as part of the relocation.***

- Our staff believes PEF has the skills, expertise, and data to make estimates of potential reduction in storm restoration costs and outages that may occur in response to increases in various storm hardening options. Therefore, our staff believes excluding estimated benefit data and assessment of an EWL criterion does not appear to be reasonable because PEF has the opportunity and the resources to make estimates of reduced storm restoration costs and outages.

- ***As stated in other dockets such as the distribution vegetation management docket and the distribution wood pole inspection docket, PEF cannot reasonably and accurately predict future storm activity and storm impacts, nor can PEF accurately predict how new hardening programs will perform in those storms. This is the major reason that PEF has taken a methodical, scientific approach to potential hardening options through the use of its AIS system and its work with PURC and other utilities. In its***

plan, PEF is testing applications in real storms and is gathering real data so PEF can properly evaluate the efficacy of different hardening options prior to implementing system-wide applications that may or may not provide storm hardening benefits. For additional information on PEF's AIS system, please see Attachment E hereto.

With these caveats stated, please see Attachments A and B hereto.

Cost-Effective Reduction of Storm Damage Costs and Outages

- As noted, PEF is not proposing any changes to its EWL criteria and has not identified substantive increases promoting underground facilities. Nevertheless, PEF's cost estimates, on a per customer basis, of $56 exceed that of FPL ($36-$46) and TECO ($37). Both FPL and TECO are promoting a more robust wind standard than PEF. Therefore, it appears that PEF may be proposing higher cost programs to achieve a less robust electric infrastructure system compared to other utilities.

This statement does not fairly characterize PEF's plan. This statement does not account for the fact that PEF: (1) is hardening all its transmission poles to concrete and steel; (2) is using front-lot construction for new, rebuilt, and relocated distribution assets; (3) has developed and implemented the AIS system to identify, evaluate, and deploy storm hardening techniques; and (4) has identified 36 distribution hardening projects to include OH to UG conversions, submersible UG devices, reconductoring, and alternative NESC applications.

Additionally, this statement assumes, despite all evidence to the contrary, that the EWL provides a hardening benefit when applied to distribution poles in PEF's service territory. As discussed above, all evidence and information that PEF has shows that it does not. The comment above additionally does not account for the fact that PEF is upgrading all of its transmission poles to concrete and steel. This cost constitutes a significant portion of PEF's hardening costs which leads to the $56/per customer figure.

Further, the dollar-per-customer comparison above also does not acknowledge PEF's wood pole inspection plan, vegetation management plan, and 10-point Ongoing Storm Preparedness Plan. The comparison also does not account for other initiatives that PEF has included in its hardening plan such as the AIS system and the 36 distribution hardening projects slated for 2007-2009.

- In general, certain aspects of verifying customer benefits depend on future storm experiences. Nevertheless, it is also possible to test elements of PEF's planned activities through simulated extreme weather events and thereby avoiding complete reliance on a "trial-by-experience" approach. Thus, our staff believes PEF's Plan does not adequately discuss a feed-back mechanism that ensures that the overarching goals of lower storm restoration costs and fewer storm outages are achieved economically.

PEF's plan specifically identifies field projects where PEF will test Grade B and EWL construction in contrast with Grade C construction to see if there is any benefit to Grade B and/or EWL in real storm conditions in varying cross sections of PEF's service territory.

While wind simulators and other similar devices may provide some limited data, real storms vary in time and intensity and have tornados, flying debris, microburst wind, flooding, erosion, vegetation impacts, and other real world factors that cannot be tested in simulation. PEF's plan also makes clear that PEF is continuing to take part in collaborative research projects which impact on this issue. Finally, as Commissioner Argenziano recognized at the June 19, 2007 FPSC agenda in this docket, real utility experience in real storms cannot be ignored.[2] PEF knows of no better support for the proposition that its system is and has been properly designed, constructed, and maintained than the real life experience that PEF has had with storms that have taken place within PEF's actual service territory. For example, the 2004 hurricane season shows that 96% of PEF's pole failures were due to flying debris and/or super extreme wind events that would have caused EWL constructed assets to fail. PEF cannot reasonably ignore this sort of data and advocate charging its customers more money for more expensive construction designs such as EWL that would have also failed and would have been more costly and time consuming to replace in the hurricane restoration phase. See Attachments A and B hereto.

Finally, PEF's 10-Point Storm Preparedness Plan and its subsequent Storm Hardening Plan both discuss how PEF will use its integrated systems and data collection efforts to ensure that the overarching goals of lower storm restoration costs and fewer storm outages are achieved economically. This includes PEF's AIS System, its intergrated GIS systems, its forensic storm analysis process, and other related activity as outlined in those plans.

<u>Details of Storm Hardening Activities</u>

- Like the other utilities, PEF has not explicitly provided all cost components for deploying the Plan. While PEF provided cost estimates of its activities through 2009, PEF failed to separately identify ongoing costs to mitigate flood and storm surge impacts on underground systems and costs for extreme wind criteria.

PEF's plan discusses cost benefit information and hardening costs on pages 21-22. Additionally, please see Attachments B and D hereto for further information regarding this issue.

- Staff believes PEF needs to provide site-specific details for its proposed storm hardening activities. At a minimum, PEF should specifically show the location, scope, and cost of each storm hardening project scheduled for 2007 as well as the criteria for selecting that site for storm hardening.

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[2] **Agenda Transcript, Page 13, Lines 3-5**: *"When we talk about trial by experience, I mean, if you are a company that has been in business for a while, you already have experience."*

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PEF's plan discusses specific storm hardening activities on pages 14-20. Additionally, please see Attachments B, D, and E hereto for further information.

Consideration of Input from Interested Parties

- PEF solicited and considered input from collocated utilities and third-party attachers. Comments by these affected parties suggests that the 90-day period set by rule may have limited the level of dialog between PEF and affected parties. PEF asserts that dialog with these parties is ongoing. However, the nature of that dialog focuses on aspects of the pole owner/attacher processes, which is not expected to materially impact the scope of PEF's storm hardening activities.

PEF's agrees that the comments it has received from interested parties to date either consist of requests for additional information that are addressed above or deal with issues that do not necessarily deal with PEF's hardening activities. PEF believes that these issues can be resolved with these parties without the need for a hearing.

It is also noteworthy that third party attachers consistently support PEF's position on NESC construction and the unproven nature of EWL, both in written comments and in presentations at workshops.

Operational Expense Differential Between Overhead and Underground Distribution Systems required for Calculation of Contribution-In-Aid-of-Construction (CIAC) pursuant to Rules 25-6.078 and 25-6.115, Florida Administrative Code

- PEF's filed Plan contains no support for assessing the operational expense differential between overhead and underground distribution systems. PEF asserts it has proposed a cost-effective plan. Thus, our staff believes PEF has the information necessary to determine the operational expense differential between PEF's overhead and underground systems.

PEF is not aware of any section in Rule 25-6.0342 that requires such information to be provided with PEF's Storm Hardening Plan. Additionally, PEF has provided information to the Commission regarding CIAC issues in separate CIAC dockets which the Commission has issued orders in.

Definition of Critical Infrastructure and Major Thoroughfares

Critical Infrastructure

Critical infrastructure is defined as infrastructure that is vital to the community's welfare. Examples include 911 Call Centers, Emergency Operations Centers (EOC), fire and police services, hospitals, emergency shelters, sewage pumping stations, schools, and gas stations.

Major Thoroughfares

Major thoroughfares are defined as major transportation arteries (such as interstate highways, major state highways and significant local roads) that are vital to first responder movement, the delivery of critical resources to communities, and evacuation.

2004 Hurricane Season Extreme Wind Example

Number of Poles Replaced in 2004 (4 storms)	85% Poles Replaced for Flying Debris and Trees	11 % Poles Replaced for Tornado and Mircoburst	4% Poles Replaced for Hurricane Wind Effect
7,151	6,079	804	268

During 2004 Hurricane Season

Number of Poles Replaced	Replacement Cost per Pole	Total Replacement Cost
7,151	$1,803	$12,893,253

Extreme Wind Cost

Number poles for EW vs. Grade C
per Spec Book 02.02-03

For 3 phase 795 AAC Line	Class Pole for 45'	Span Length	Poles per Mile Circuit	Comments
Grade C	C4	250	21.12	795 Single Circuit with JU
EW (150 MPH)	H2	150	35.20	795 Single Circuit with JU

Number of Poles Factor to EW (150 MPH)	1.67

Poles Replaced if Built to EW	Replacement Cost per Pole	Total Replacement Cost	Incremental Cost
11,494	$2,116	$24,321,304	$11,428,051

Estimate Increase in Restoration Time if Built to Extreme Wind

Increase in Poles if Built to EW	Average Manhours to Replace Pole	Total Increment Manhours
4,343	11.5	49,945

Estimate Increase in Restoration Days if Built to Extreme Wind

Number of Men	Hours Worked per Day	Manhours per Day	Increase in Restoration Days
6,337	10	63,370	0.8

ATTACHMENT A

PEF's Storm Hardening Plan Cost Matrix
Rule 25-6.0342, F.A.C.
(Dollars in Millions)

KEY
N/A = Not Applicable
U = Unknown
UA = Unavailable

									Estimated Benefits to Utility Customers									Estimated Benefits to Third Party Attachers					
			Actual/Estimated Utility Costs						Impact on Storm Restoration Costs			Impact on Storm Caused Outages			Other Estimated Company Benefits			Impact on Storm Restoration Costs			Impact on Storm Caused Outages		
	Activity	Docket No.	2004	2005	2006	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
(a)	**Wooden Pole Inspections.**	060078-EI	$0.351	$0.155	$2.300	$2.490	$2.490	$2.490	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	Ten Storm Hardening Initiatives.	060198-EI																					
(b) 1	A Three-Year Vegetation Management Cycle for Distribution Circuits	060198-EI	N/A	N/A	$19.549	$19.549	$21.046	$21.046	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(c) 2	An Audit of Joint-Use Attachment Agreements	060198-EI	UA	$0.870	$1.200	$0.430	$0.443	$0.456	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(d) 3	A Six-Year Transmission Structure Inspection Program	060198-EI	N/A	N/A	$3.527	$2.996	$3.071	$3.148	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(e) 4	Hardening of Existing Transmission Structures	060198-EI	N/A	N/A	$43.300	$38.000	$45.000	$45.000	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(f) 5	Transmission and Distribution GIS	060198-EI	N/A	N/A	N/A	$0.200	UA	UA	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(g) 6	Post-Storm Data Collection and Forensic Analysis	060198-EI	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(h) 7	Collection of Detailed Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems	060198-EI	C	C	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(i) 8	Increased Utility Coordination with Local Governments	060198-EI	N/A	N/A	C	C	C	C	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(j) 9	Collaborative Research on Effects of Hurricane Winds and Storm Surge	060198-EI	N/A	N/A	$0.005	$0.073	$0.073	$0.073	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
(k) 10	A Natural Disaster Preparedness and Recovery Program	060198-EI	N/A	$0.065	$0.075	$0.090	$0.095	$0.095	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	Compliance with National Electric Safety Code's adoption of Extreme Wind Loading Standards.	070298-EI																					
(l) 1	New Distribution Facilities	070298-EI	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000
(m) 2	Major planned expansion, rebuild, or relocation of distribution facilities	070298-EI	$0.000	$0.000	$0.000	$0.600	$1.000	$1.000	($0.032)	($0.023)	($0.093)	(173 Manhours)	(127 Manhours)	(506 Manhours)	N/A	N/A	N/A	U	U	U	U	U	U
(n) 3	Critical infrasturture and major thoroughfares	070298-EI	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000
	Mitigating flood and storm surge damage to underground and supporting overhead facilities.	070298-EI																					
(o) 1	Transmission	070298-EI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(p) 2	Distribution	070298-EI	N/A	N/A	N/A	$0.430	$0.250	$0.500	$0.017	$0.004	$0.038	27 Manhours	7 Manhours	60 Manhours	N/A	N/A	N/A	U	U	U	U	U	U
(q)	**Placement of new and replacement distribution facilities to facilitate safe and efficient access for installation and maintenance.**	070298-EI	N/A	N/A	N/A	$0.170	$0.400	$0.347	$0.009	$0.008	$0.031	103 Manhours	88 Manhours	352 Manhours	N/A	N/A	N/A	U	U	U	U	U	U
	Other Distribution Hardending Activities																						
	Small Wire Reconductor	070298-EI	UA	UA	$1.100	$2.100	$2.100	$2.000	$0.017	$0.015	$0.029	211 Manhours	92 Manhours	356 Manhours	N/A	N/A	N/A	U	U	U	U	U	U
	OH to UG Conversions	070298-EI	UA	UA	UA	$0.900	$0.725	$0.900	$0.001	$0.001	$0.003	16 Manhours	8 Manhours	12 Manhours	N/A	N/A	N/A	U	U	U	U	U	U
	Midfeeder Electronic Sectionalizing	070298-EI	UA	UA	$0.600	UA	UA	UA	D	D	D	D	D	D	N/A	N/A	N/A	U	U	U	U	U	U
	Wood Pole Replacements	070298-EI	UA	UA	$3.500	$2.480	$2.500	$2.500	D	D	D	D	D	D	N/A	N/A	N/A	U	U	U	U	U	U
	Padmount Transformer Inspections	070298-EI	UA	UA	$0.600	$1.095	UA	UA	D	D	D	D	D	D	N/A	N/A	N/A	U	U	U	U	U	U
	Padmount Transformer Replacements	070298-EI	UA	UA	$4.400	$2.190	$2.200	$2.200	D	D	D	D	D	D	N/A	N/A	N/A	U	U	U	U	U	U
	AIS Model (Davies Consulting)	070298-EI	N/A	N/A	N/A	$0.040	UA	UA	D	D	D	D	D	D	N/A	N/A	N/A	U	U	U	U	U	U
	Network Maintenance	070298-EI	UA	UA	UA	$1.700	$1.700	$1.700	D	D	D	D	D	D	N/A	N/A	N/A	U	U	U	U	U	U
	TOTALS																						

* PEF Transmission uses either steel or concrete poles in new construction, rebuilds or replacements. New construction and relocations are designed to the NESC Extreme Wind Standard. Steel and concrete transmission poles are approximately 15% stronger than wood. These poles also are more homogeneous and have more reserve strength than wood. Steel and concrete does not deteriorate at the same rate as wood nor are they subject to insects or woodpecker damage. These factors logically will have benefits for both restoration costs and outage avoidance, but PEF cannot accurately estimate and quantify those benefits in the manner requested.

A These issues are addressed in Docket No. 060078-EI (Wood Pole Inspection Plan).

B These issues are addressed in Docket No. 060198-EI (EIW Storm Preparedness Plan).

C Money spent in these categories comes from different budget sources and delineated spending for these sub-categories is not available at this time.

D These replacement, inspection and maintenance activities logically will have benefits for both restoration costs and outage avoidance, but PEF cannot accurately estimate and quantify these benefits in the manner requested.

Lines M, P and Q - Please see "Attachment A" for narrative explanation.

ATTACHMENT B

Methodology for Storm Restoration Benefits Forecast

A forecast model for hurricane type activity was used for the AIS projects of EWL, Submersible UG facilities, Small Wire Reconductor, Back lot to Front lot conversions and OH to UG conversions. The 2004 hurricane season was a high year of activity for PEF. That year was used as a base year to forecast the storm activity through 2014. Three storm levels were used: High, Medium and Low. The medium level was 50% of the high level while the low level was 25% of the high level. The assumption was that the High storm level would occur every 5 years. The medium year was also assumed to occur every 5 years. Below is the forecast of storm levels for 2004-2014:

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
High	Low	Low	Medium	Low	High	Low	Low	Medium	Low	High

This forecast was used to estimate the potential benefits to PEF for each of the Hardening activities. The storm level was applied to the units of each hardening activity for the years 2007 - 2009. Cost and man hour benefits reflect either fewer units to repair or shorter time to repair damage units.

The following addresses assumptions for each hardening activity in PEF's cost benefit matrix:

EWL

To build to EWL the average span lengths will need to be decreased and therefore more poles will be used. The poles used are larger and will be designed and built to different standards. The incremental increased cost to replace EWL poles and the incremental increased restoration times were used to estimate negative effects of EWL on PEF's system.

Submersible Facilities

The assumption of benefits is that fewer padmount transformers and switchgear would fail and/or be replaced where targeted submersible facilities are used.

Small Wire Reconductor

The assumption of benefits is that fewer spans would fail and/or be replaced due to trees and other debris based on the increased mechanical strength of the larger wire.

Back Lot to Front Lot Conversions

The assumption of benefits is that it will generally take less time and money to repair a span down in area that is easily accessible then in the back lot or inaccessible area.

OH to UG Conversions

The assumption of benefits is that fewer overhead spans of wire will be down or fail due to debris and vegetation impact since converted facilities will be underground.

Progress Energy Florida
System Construction Grade Analysis

For efficiency in purchasing, handling, and project logistics, Progress Energy Florida ("PEF") has standardized poles stocked for its standard types of field construction. It is not cost effective nor is it operationally effective to stock multiple types of poles from different pole classes, so PEF has narrowed the types of poles in its inventory to the lowest number practically possible. The poles that PEF keeps in its inventory are suitable to meet Grade C construction in all cases, but oftentimes, these poles result in facilities meeting Grade B standards or above for certain types of construction.

The standard poles stocked in PEF's inventory include the following:

30 foot class 6
35 foot class 5
40 foot class 5
45 foot class 4
45 foot class 2
50 foot class 3

The class of the pole is relative to its strength as defined by ANSI 05.1. Poles with lower class numbers are stronger than ones with higher class numbers. For example, a 40 foot class 4 pole is stronger than a 40 foot class 5. A 50 foot class 3 pole is stronger than a 40 foot class 4 poles.

Each of the poles listed above have a maximum bending moment, and the amount and size of equipment on the pole determines how "loaded" the pole is. Depending on the load applied to a pole, a particular line of poles may meet Grade B construction or better. In all cases, however, PEF's designs meet or exceed Grade C construction.

For lighting and secondary voltage applications, 30 foot class 6 poles are used. For single phase lines with no joint users (telephone or CATV) 35 foot class 5 poles are used. For single phase lines with joint users, 40 foot class 5 poles are used. 45 foot class 4, 45 foot class 2 and 50 foot class 3 poles are used for three phase lines. The pole is selected based on height requirements and whether joint users exist on the pole line in question.

Analysis indicates that for most lines designed on PEF's system, Grade B construction is achieved. This is because a standard pole from PEF's inventory is used as opposed to a lower class pole that could be used to meet Grade C construction. Lighting poles, secondary voltage poles, single and two phase primary voltage poles typically meet Grade B construction because the "loading" on the pole is not too great for the standard class pole being used.

The relationship between strength, expressed in pounds per square foot, and wind speed expressed in mile per hour is as follows:

ATTACHMENT C

$$\sqrt{\frac{Load}{0.00256}} = Windspeed$$ For round object such as poles and wires.

The NESC zone load for Florida is 9 lbs/sqft. Taking into consideration the applied overload factors (OLF) and strength factors (SF) for wood, and assuming that a given pole meets the average strength requirements of ANSI 05.1, one can use the above formula to equate the strength of a pole in to a wind speed.

$$\sqrt{\frac{Load \times OLF \div SF}{0.00256}} = Windspeed$$

For Grade B $\sqrt{\frac{9 \times 2.5 \div 0.65}{0.00256}} = 116$ mph and for Grade C $\sqrt{\frac{9 \times 1.75 \div 0.85}{0.00256}} = 85$ mph

These equations assume a fully loaded pole. Due to standardization of pole sizes, however, PEF's poles are rarely fully loaded. PEF's typical 3 phase pole is a 45' class 4, supporting 795 AAC primary and 1/0 AAAC neutral in maximum 250' spans. There will also typically be a transformer and a communication conductor attachment on a pole. Assuming a 100 kVA transformer and a 1" diameter communication conductor will result in this typical pole being loaded to 84% at Grade C. Equating this to a wind speed:

$$\sqrt{\frac{9 \times 1.75 \div 0.85 \div 0.84}{0.00256}} = 93\,\text{mph}$$

A typical 2 phase line consists of 1/0 AAAC primary and neutral with maximum 250' spans on a 45' class 4 pole. Assuming there is also a 100kVA transformer and a 1" communication conductor will result in the pole loaded to 51% at Grade C. Equating this to a wind speed:

$$\sqrt{\frac{9 \times 1.75 \div 0.85 \div 0.51}{0.00256}} = 119\,\text{mph}$$

A typical single phase line consists of 1/0 AAAC primary and neutral with maximum 250' spans on a 40' class 5 pole. Assuming a 50kVA transformer and a 1" communication conductor will result in the pole being loaded to 52%. Equating this to a wind speed:

$$\sqrt{\frac{9 \times 1.75 \div 0.85 \div 0.52}{0.00256}} = 118\,\text{mph}$$

And finally, a typical 30' class 6 service lift pole supporting a 100' span of 1/0 Al triplex and 50' Al triplex service drop at 90 degrees will result in the pole loaded to 70% at Grade C. Equating this to a wind speed:

$$\sqrt{\frac{9 \times 1.75 \div 0.85 \div 0.70}{0.00256}} = 102\,\text{mph}$$

One can see that the strength of a typical PEF pole significantly exceeds the requirements of Grade C and often exceeds the requirements of Grade B.

Primary construction on the PEF distribution system breaks down as follows:

Type Construction	% System	Miles
1 phase	66.0%	12,066
2 phase	8.2%	1,499
3 phase	25.8%	4,717

Therefore, based on typical construction applications using standard poles, approximately 74.2% of primary distribution plant meets or exceeds the requirements of Grade B when installed.

Project Name	Const. Due Date	Hardening Activity	Beginning Pole #	Middle Pole #	End Pole #	Joint Users	Est. Proj. Length	County
In Construction								
Coquina Key	August	Small Reconductor	49208	48648	B202513	*Beginning Pole* 1) Bright House Networks 2) Knology *Middle Pole* 1) Bright House Networks 2) Knology *End Pole* 1) Bright House Networks 2) Knology	5.68 miles	Pinellas
SR-408 @ Woodbury Rd	September	OH – 2 UG Conversion	6593065	NA	840855	*Beginning Pole* 1) Bright House Networks 2) Comcast 3) BellSouth *Middle Pole* 1) Bright House Networks 2) Comcast 3) BellSouth *End Pole* 1) Bright House Networks 2) Comcast 3) BellSouth	383 feet	Orange
St George Is – Plantation	August	Submersible UG	NA	NA	NA	NA	NA	Franklin
US 98 – Brooksville	August	Small Reconductor	B163198	465249	420798	*Beginning Pole* 1) BellSouth *Middle Pole* 1) BellSouth *End Pole* 1) BellSouth	2 miles	Hernando
In Permitting / Easements								
Calle De Sol	October	OH – 2 UG Conversion	792636	792644	810069	*Beginning Pole* 1) BellSouth *Middle Pole* 1) BellSouth *End Pole* 1) BellSouth	.82 miles	Orange

ATTACHMENT D

US 441 west of Hwy 19	September	OH – 2 UG Conversion	6937131	NA	A91068	*Beginning Pole* 1) NONE *Middle Pole* 1) NONE *End Pole* 1) NONE	400 feet	Lake
OH Crossing of Turnpike (K1025 @ K1025 & K1028 @ K128)	September	OH – 2 UG Conversion	*Ckt #1* A39478 *Ckt #2* 783152	NA	A16211 783153	*Beginning Pole* 1) Bright House Networks *Middle Pole* 1) Bright House Networks *End Pole* 1) Bright House Networks	470 feet	Orange
OH Cross of Trnpke 2 (K1780 @ K6434991 and K1775 @ K5021)	September	OH – 2 UG Conversion	*Ckt #1* 5388156 *Ckt #2* 5380611	NA	5388145 5380647	*Beginning Pole* 1) NONE *Middle Pole* 1) NONE *End Pole* 1) NONE	700 feet	Orange
In Design								
A192 – Luraville	September	Small Reconductor	B261888	46845	4015271	*Beginning Pole* 1) NONE *Middle Pole* 1) NONE *End Pole* 1) NONE	2 miles	Suwannee
Feeder X220	September	Extreme Wind Upgrade	4938164	120167	127818	*Beginning Pole* 1) Bright House Networks 2) Knology *Middle Pole* 1) Bright House Networks 2) Knology *End Pole* 1) Bright House Networks 2) Knology	1.5 miles	Pinellas
R448 – Dunnellon	October	Back lot – 2- Front Lot Conversion	B162834	466752	467177	*Beginning Pole* 1) NONE *Middle Pole* 1) NONE *End Pole* 1) NONE	1.5 miles	Marion

In the Queue								
OH Crossing of Turnpike (K68@K5255)	October	OH – 2 UG Conversion	B65162	NA	B65164	*Beginning Pole* 1) NONE *Middle Pole* 1) NONE *End Pole* 1) NONE	450 feet	Orange
US 301 – Citra	December	Small Reconductor	6042333	37G951 R	B170985	*Beginning Pole* 1) NONE *Middle Pole* 1) NONE *End Pole* 1) NONE	1 mile	Marion
OH Crossing of Turnpike (K1780 @K2379)	November	OH – 2 UG Conversion	5380854 *Equip-ID – Trans Pole*	NA	5380855 *Equip-ID – Trans Pole*	*Beginning Pole* 1) NONE *Middle Pole* 1) NONE *End Pole* 1) NONE	420 feet	Orange
2008								
Florida Turnpike @ Sandlake Rd (485')	November	OH – 2 UG Conversion	B229341	NA	B229340	*Beginning Pole* 1) FPL FiberNet 2) Orange County 3) Bright House Networks 4) BellSouth *Middle Pole* 1) FPL FiberNet 2) Orange County 3) Bright House Networks 4) BellSouth *End Pole* 1) FPL FiberNet 2) Orange County 3) Bright House Networks 4) BellSouth	485 feet	Orange
Winderlakes	October	OH – 2 UG Conversion	82696	82689	803936	*Beginning Pole* 1) Bright House Networks *Middle Pole* 1) NONE *End Pole* 1) Pole not in field	1 mile	Orange

Florida Turnpike @ Sandlake Rd (746')	October	OH – 2 UG Conversion	718318	NA	765231	*Beginning Pole* 1) FPL FiberNet 2) Orange County 3) Bright House Networks 4) BellSouth *Middle Pole* *End Pole* 1) FPL FiberNet 2) Orange County 3) Bright House Networks 4) BellSouth	746 feet	Orange

JOINT ATTACHER COST IMPACTS

OH to UG Conversions

If a joint attacher relocates its facilities underground with PEF, the joint attacher would incur costs associated with relocating and undergrounding its facilities.

Small Wire Reconductor

Since these projects should not involve changing or relocating poles, the cost impacts to joint attachers should be $0.

Extreme Wind Pilot Projects

If a joint attacher relocates its facilities to an extreme wind pilot pole with PEF, the joint attacher would incur costs associated with relocating its facilities.

Submersible Underground

These projects should have a $0 cost impact on joint attachers.

Rear to Front Lot Relocations

If a joint attacher relocates its facilities to front lot with PEF, the joint attacher would incur costs associated with relocating its facilities.

PEF Region	PEF OpCenter	Fla County	Project Name	Project Type	Estimated Cost
South Central	Buena Vista	Orange	Calle De Sol	OH to UG Conversion	$544,472.35
North Coastal	Monticello	Franklin	St Geroge Is - Plantation	Submersible UG	$485,621.00
North Central	Jamestown	Orange	SR-408 @ Woodbury Rd	OH to UG Conversion	$28,725.00
South Central	Buena Vista	Orange	Winderlakes	OH to UG Conversion	$159,296.00
North Coastal	Inverness	Marion	R448 - Dunnellon	Back lot to Front lot conversion	$175,000.00
North Coastal	Inverness	Hernando	US 98 - Brooksville	Small Reconductor	$240,000.00
North Central	Apopka	Lake	US 441 west of Hwy 19	OH to UG Conversion	$42,750.00
South Coastal	St Petersburg	Pinellas	Coquina Key	Small Reconductor	$1,372,000.00
South Central	SE Orlando	Orange	Florida Turnpike @ Sandlake Rd (746')	OH to UG Conversion	$55,950.00
South Central	Buena Vista	Orange	OH Crossing of Turnpike (K68 @K5255)	OH to UG Conversion	$41,000.00
North Coastal	Monticello	Suwannee	A192 - Luraville	Small Reconductor	$300,000.00
South Coastal	Clearwater	Pinellas	Indigo	Small Reconductor	$129,500.00
South Central	SE Orlando	Orange	OH Cross of Trnpke 2 (K1780 @ K6434991 and K1775 @ K5021)	OH to UG Conversion	$82,302.00
South Central	SE Orlando	Orange	Florida Turnpike @ Sandlake Rd (485')	OH to UG Conversion	$36,375.00
South Central	SE Orlando	Orange	OH Crossing of Turnpike (K1780 @K2379)	OH to UG Conversion	$39,000.00
North Coastal	Ocala	Marion	US 301 - Citra	Small Reconductor	$100,000.00
South Coastal	St Petersburg	Pinellas	Feeder X220	Extreme Wind Upgrades	$662,400.00
South Central	SE Orlando	Orange	OH Crossing of Turnpike (K1025 @ K1025 & K1028 @ K128)	OH to UG Conversion	$68,199.62
North Central	SE Orlando	Orange	Sprint Earth Station & Cocoa Water Wells	Small Reconductor	$794,784.00
North Central	Longwood	Seminole	I-4 @ SR-436	OH to UG Conversion	$172,650.00
South Central	SE Orlando	Orange	Florida Turnpike @ Orange Blossom Trail	OH to UG Conversion	$13,650.00
South Coastal	Seven Springs	Pasco	Floramar Subdivision	Submersible UG	$150,000.00
South Central	SE Orlando	Orange	Hoffner Ave and feeder Tie	Small Reconductor	$194,662.00
North Central	Longwood	Orange	I-4 @ Oranole Road/Lake Destiny Dr.	OH to UG Conversion	$26,025.00
South Central	SE Orlando	Orange	Holden Ave E) Orange Blossom Trail	Small Reconductor	$182,000.00
North Coastal	Inverness	Citrus	Homosassa - Riverhaven	Submersible UG	$100,000.00
North Central	Longwood	Seminole	I-4 @ EE-Wiliamson Rd	OH to UG Conversion	$33,675.00
North Central	Longwood	Seminole	I-4 @ SR-434	OH to UG Conversion	$40,575.00
North Central	Eustis	Orange	I-4 @ Lee Rd	OH to UG Conversion	$49,800.00
North Central	Longwood	Orange	I-4 @ Kennedy Blvd	OH to UG Conversion	$17,700.00
South Central	Lake Wales	Polk	Highland Park	Small Reconductor	$110,450.00
South Central	Lake Wales	Polk	Hibiscus Feeder Tie	Small Reconductor	$353,920.00
North Central	Longwood	Seminole	I-4 @ North St	OH to UG Conversion	$32,250.00
North Central	Longwood	Orange	I-4 @ Fairbanks Ave	OH to UG Conversion	$53,550.00
North Central	Longwood	Seminole	I-4 @ Orange St.	OH to UG Conversion	$25,950.00
North Central	Longwood	Seminole	Us 17/92 & SR-436	OH to UG Conversion	$53,475.00

Florida Public Service Commission (PSC)

Asset Investment Strategy (AIS) Model

Summary Report

Prepared by

Progress Energy Florida (PEF)

Work Performed
January – March 2007

Report Date:
July 30, 2007

Progress Energy

ATTACHMENT E

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Davies Consulting – AIS Background

The Asset Investment Strategy (AIS) is a comprehensive process and web-enabled decision support tool developed by Davies Consulting, Inc. AIS has been used to optimize capital investments and O&M projects within and across business units including: Electric Distribution, Transmission, Power Supply, Customer Care, Gas, Water, and Business Services (e.g., IT, HR, Fleet, and Facilities). Currently in use by nearly twenty U.S. and Canadian utilities, AIS integrates process, people and technology to optimize spending. Refer to Exhibit A for a more detailed description of this product.

PEF Approach

The approach used to complete this task focused on learning from past analysis and leveraging readily available information to prioritize projects.

1. *Developed the evaluation template* – Workshops were held to identify key strategic indicators of project merit and attributes that describe the value for each criterion. The team also defined the initial set of questions and answers as well as weights and values that were used to prioritize projects.

2. *Identified hardening projects* – PEF staff worked to determine a set of discrete hardening projects that would produce a diverse portfolio reaching all sections of PEF power delivery systems (e.g., relocations, upgrades, OH to UG conversions, etc.) The final set of projects included 38 projects that break down as follows:

Sub-Categories	**Description**	**Number of Projects**
OH to UG conversions	Placing existing overhead (OH) electric lines and facilities underground (UG) via the use of specialized UG equipment and materials. The primary purpose of this hardening activity is to attempt to eliminate tree and debris related outages in the area of exposure. When applied to crossings on major highways, this hardening activity can also mitigate potential interference with first responders and other emergency response personnel caused by fallen lines.	21
Small Wire Upgrade	The upgrade of an existing overhead line currently with either #4 or #6 conductor to a thicker gauge conductor of 1/0 or greater. The primary purpose of this hardening activity is to attempt to utilize stronger conductor that may be better able to resist breakage from falling tree branches and debris.	10

Back lot to Front lot conversion	Relocation of an existing overhead line located in the rear of a customer's property to the front of the customers property. This involves the removal of the existing line in the rear of the property and construction of a new line in the front of the property along with re-routing service drops to individual customer meters. The primary purpose of this hardening activity is to minimize the number of tree exposures to the line to prevent outages and to expedite the restoration process by allowing faster access in the event an outage occurs.	1
Submersible UG	Installing PEF flood resistant equipment to existing UG line and equipment to better withstand a storm surge. This involves the use of specialized stainless steel equipment and submersible connections. The primary purpose of this hardening activity is to attempt to minimize the damage caused by a storm surge to the equipment and thus expedite the restoration after the storm surge has receded.	3
Alternative to NESC Construction Standards	Building OH line and equipment segments to grade B construction or the extreme wind standard as shown in the NESC extreme wind contour lines of figure 250-2(d). This will be done via the use of the current PEF grade B and extreme wind standards which call for the use of the industry accepted Pole Foreman program to calculate the necessary changes. Typical changes include shorter span lengths and higher class (stronger poles). The primary purpose of this hardening activity is to attempt to reduce the damage caused by elevated winds during a major storm. Locations have been chosen to provide contrasting performance data between open costal and inland heavily treed environments.	1

3. *Loaded projects into AIS and agreed to priorities* – DCI worked with the PEF staff to enter all of the projects that needed to be analyzed into AIS, utilizing the template that was developed in the previous step. The objective here was to ensure completeness and consistency in the evaluation of these alternatives. The team met to review the template and make any adjustments to ensure consistency and relevance of all questions in the template based on the various "what-if" scenarios. The team also evaluated the rankings and agreed on the final set of projects to be funded for 2007 work. Selection criteria was chosen to create a structure that best represents the most important factors, regardless of current data accuracy or precision. It is expected that weighting and data measurements will be adjusted over time based on feedback and experience.

Evaluation Template Overview

Key strategic criteria include:

Strategic Criteria	Description	Weighting
Financial Cost	Provides the financial value of the proposed project based on Net Present Value (NPV) of total costs associated with the project (Capital and O&M) and associated potential benefits such as avoided O&M costs, avoided outages, etc.	20%
Major Storm Impact	Determines the potential benefits that the project provides during a major storm based on reduced damages or the ability to restore power more rapidly.	35%
Community Storm Impact	Evaluates the potential benefits that the proposed project will have on a community's ability to cope with damage.	10%
Third Party Impact	Captures complexities of proposed projects in terms of coordination with third parties such as telecommunication, Cable TV, permitting, costs, etc.	5%
Overall Reliability	Captures the overall potential reliability benefits that the project provides on an on-going basis in terms of reduced customer interruptions and outage duration.	30%

Required basic project information includes:

- **Project Name -** Enter a unique identifier for the proposed hardening project
- **Brief Description of Project -** Include scope of work, distance, and starting and ending device numbers
- **Project Sponsor -** Name of person requesting hardening project
- **Operating Unit -** PEF distribution region project resides in
- **Project Type -** Proposed hardening solution to be implemented

Each strategic criterion is evaluated based on the answers to a set of specific questions. Exhibit B is a detailed overview of the questions within each strategic criterion, including the description of the assumptions and available answers for each question.

Data Collection Method and Assumptions by Question

In order to ensure consistency in the responses to specific questions for each project, the team agreed on specific sources of information and created common assumptions which are described in the tables below by each question.

Major Storm Outage Reduction Impact – 35%

<table>
<tr><th>Template Question</th><th colspan="2">Data Collection Method</th></tr>
<tr><td>At the end of this project, what percent of the exposure will be hardened?</td><td colspan="2">This question attempts to assign priority based on the total completion of hardening activities around a particular geographical boundary.

If a project has certain completion significance that percentage is indicated. For example if project calls for the relocation of the final remaining back lot line in a neighborhood, 100% would be entered as the value in this question since at the end of the project, this neighborhood will be considered completely hardened.</td></tr>
<tr><td>How many customers are served from this device?</td><td colspan="2">This question attempts to assign priority based on the number of customers served downstream of the upstream protecting device of the proposed hardening section.

Protecting devices include Fuses, Sectionalizers, Reclosers, and Breakers.</td></tr>
<tr><td rowspan="5">What will be the impact of this project on the restoration time during major storm?</td><td colspan="2">This question attempts to assign priority based on the potential impact of reducing restoration time if a major storm were to occur.

The possible values for this question are based on the type of proposed hardening activity:</td></tr>
<tr><td>OH-to-UG Conversion</td><td>Significant Reduction</td></tr>
<tr><td>Backlot-to-Frontlot Relocation</td><td>Moderate Reduction</td></tr>
<tr><td>Small Wire Upgrades</td><td>Moderate Reduction</td></tr>
<tr><td>All Others</td><td>Minimal Reduction</td></tr>
</table>

Template Question	Data Collection Method
What is the annual probability of wind over 70 mph in the area served by this device?	This question attempts to assign priority based on the probability of winds exceeding 70mph striking the project area. The probability is determined utilizing data from the Federal Emergency Management Agency's (FEMA) multi-hazard risk assessment and loss estimation software package. FEMA's HAZUS® $_{MH}$ software package is used for Earthquake, Wind, & Flood damage estimation. The HAZUS® $_{MH}$ program categorizes this probability by census track for all of the United States. PEF extracted pertinent information for the state of Florida from the software and assumed that the entire service territory would see 30 mph winds on an annual basis to build the probability table. PEF then used existing utility software to determine the geographical location of the proposed hardening project in terms of its census track and matched it against the HAZUS® $_{MH}$ tables to determine what the probability of winds exceeding 70 mph would be.
At what level of hurricane will the area served by this feeder flood due to storm surges?	This question attempts to assign priority based on the project area's exposure to flooding from a tropical storm or hurricane. The flood level boundaries were obtained from the Division of Emergency Management at the Department of Community Affairs of Florida. These boundaries, used in conjunction with internal software, were used by PEF to geographically plot the proposed hardening projects against the flood zones and determine the level of flooding.
What is the tree density in the area served by this device?	This question attempts to assign priority based on the project area's exposure to trees. Increased tree density around overhead distribution lines results in increased outages. Utilizing the project sponsor's knowledge of the proposed hardening project, the approximate tree density around the project is determined.
What level of tree damage will this project mitigate during a major storm?	This question attempts to assign priority based on the potential of reducing restoration time if a major storm were to occur. The possible values for this question are based on the type of proposed hardening activity: OH-to-UG Conversion: Significant Reduction Backlot-to-Frontlot Relocation: Small Reduction Small Wire Upgrades: Small Reduction All Others: None

Community Storm Impact – 10%

<table>
<tr><th>Template Question</th><th colspan="2">Data Collection Method</th></tr>
<tr><td>How many critical customers does this project address?</td><td colspan="2">This question attempts to assign priority based on the potential number critical customers that will be positively impacted by the proposed project. Creates a placeholder for potential consideration of critical infrastructure.

The Critical Customer list is created and maintained by our Commercial Industrial Governmental (CIG) group and includes a list of customer accounts for shelters, public works buildings, police / fire stations, street signals, and others.

All accounts are classified by the CIG group in four categories. Priority 1 is the most critical and includes accounts such as shelters & hospitals.</td></tr>
<tr><td>How many priority 1 critical customers does this project address?</td><td colspan="2">This question attempts to assign priority based on the potential number of priority 1 critical customers that will be positively impacted by the proposed project.

This questioned is answered utilizing the same list mentioned above created by the CIG group. Of those projects which contained critical customers as dictated by the list, the amount of those accounts which have been further classified by the CIG group as a priority 1 account are identified.</td></tr>
<tr><td rowspan="4">How valuable will the project be to the community?</td><td colspan="2">This question attempts to assign priority based on the potential perceived value of the proposed project by the community.

The possible values for this question are based on a combination of the type of proposed hardening activity and the project sponsor's knowledge of the proposed hardening project:</td></tr>
<tr><td>Rebuild in Place</td><td>No Impact</td></tr>
<tr><td>Relocation</td><td>Negative or Positive</td></tr>
<tr><td>Conversion</td><td>Negative or Positive</td></tr>
</table>

Third Party Impact – 5%

<table>
<tr><th>Template Question</th><th colspan="2">Data Collection Method</th></tr>
<tr><td>What are the major obstacles/risks for completing the project this year?</td><td colspan="2">This question attempts to assign priority based on potential delays that may be caused by the acquisition of permits or easements or any other relevant obstacle.

This is determined utilizing the project sponsor's knowledge of the proposed hardening project:</td></tr>
<tr><td rowspan="6">What type of investment, if any, is required by joint users to complete this project?</td><td colspan="2">This question attempts to assign priority based on potential impact that may be caused on third party attachers such as telecom and cable joint users.

The possible values for this question are based on the type of proposed hardening activity:</td></tr>
<tr><td>Submersible UG</td><td>None</td></tr>
<tr><td>Small Wire Upgrade</td><td>Transfer at Same Location</td></tr>
<tr><td>Backlot-to-Frontlot Relocation</td><td>OH Relocation</td></tr>
<tr><td>OH to UG Conversion</td><td>OH to UG Conversion</td></tr>
<tr><td>Extreme Wind Upgrade</td><td>Transfer at Same Location</td></tr>
</table>

Overall Reliability – 30%

Template Question	Data Collection Method
What is the three year average $CEMI_4$ number of customers on this feeder?	This question attempts to assign priority based on potential reduction in the number of $CEMI_4$ customers impacted by the proposed project. The structure of our reliability maintenance programs is such that the customers that compose the $CEMI_4$ index vary from year to year. Because of this, a three year average of the $CEMI_4$ customers is utilized in determining the potential benefit of the proposed project.

<table>
<tr><th>Template Question</th><th colspan="2">Data Collection Method</th></tr>
<tr><td>How many customer outages will this project potentially eliminate annually?</td><td colspan="2">This question attempts to assign priority based on potential reduction in the number of customers outages provided by the proposed project.

Historical data is obtained over the previous three years indicating the number of customer interruptions (CI) in the proposed project as dictated by the upstream protecting device.

The CI is determined from adjusted (non-severe weather) data as this category is intended to identify the day to day reliability benefits of the proposed hardening project. The CI is also filtered according to certain cause codes which have been identified as those cause codes for which the proposed hardening activities can have a positive impact on.

The 3 year average of the identified CI under each particular cause code is taken and filtered against the internally developed <u>"Rules of Thumb"</u> matrix in Exhibit D. The Rules of Thumb matrix assigns a certain reduction percentage to the amount of CI based on the proposed hardening activity and the cause code it is intended to mitigate.</td></tr>
<tr><td rowspan="5">What is the potential change in the annual CAIDI that this project will result in?</td><td colspan="2">This question attempts to assign priority based on potential reduction in the annual CAIDI the proposed project will bring.

The possible values for this question are based on the type of proposed hardening activity:</td></tr>
<tr><td>OH-to-UG Conversion</td><td>Increase</td></tr>
<tr><td>Highway Crossing OH-to-UG conversion</td><td>Decrease</td></tr>
<tr><td>Backlot-to-Frontlot Relocation</td><td>Decrease</td></tr>
<tr><td>All Others</td><td>No Change</td></tr>
<tr><td rowspan="5">Will this project reduce the number of momentary customer interruptions on this section?</td><td colspan="2">This question attempts to assign priority based on potential reduction in the annual MAIFI the proposed project will bring.

The possible values for this question are based on the type of proposed hardening activity:</td></tr>
<tr><td>OH-to-UG Conversion</td><td>Yes</td></tr>
<tr><td>Backlot-to-Frontlot Relocation</td><td>Yes</td></tr>
<tr><td>OH-to-Spacer Cable Conversion</td><td>Yes</td></tr>
<tr><td>All Others</td><td>No</td></tr>
</table>

Template Question	Data Collection Method
What will be the change in the number of customers experiencing outages longer than 3 hours as a result of this project?	This question attempts to assign priority based on potential reduction in the number of $CELID_3$ customers impacted by the proposed project. The structure of our reliability maintenance programs is such that the customers that compose the $CELID_3$ index vary from year to year. Because of this, a three year average of the $CELID_3$ customers is utilized in determining the potential benefit of the proposed project. The number of customers experiencing an outage lasting longer than three hours is determined from adjusted (non-severe weather) data as this category is intended to identify the day to day reliability benefits of the proposed hardening project. This number is also filtered according to certain cause codes which have been identified as those cause codes for which the proposed hardening activities can have a positive impact on. The 3 year average of the identified customers under each particular cause code is taken and filtered against the internally developed "Rules of Thumb" matrix in Exhibit D. The Rules of Thumb matrix assigns a certain reduction percentage to the amount of customers based on the proposed hardening activity and the cause code it is intended to mitigate.

Financial (Cash Flow) Value – 20%

Template Question	Data Collection Method
Construction Costs	This question attempts to assign priority based on the expected construction costs of the proposed project. Internally developed costs estimated based on historical data are used in the construction cost estimation. The final result is shown as a cost to the utility

Template Question	Data Collection Method
Removal Equipment	This question attempts to assign priority based on the expected Removal costs of the proposed project. The estimated construction costs detailed above include minimal removal costs. This category is intended to capture the removal costs associated with major projects such as converting a line to underground or changing and entire pole line to a different pole class. If the proposed project does not fit any of these categories, the entered value is zero dollars. If the proposed project does fit under one of the above mentioned categories, the removal costs are estimated utilizing the STORMS system used internally for tracking work orders. Either case, the result shown should be a cost to the utility.
Vegetation Clearing	This question attempts to assign priority based on the annual vegetation management savings of the proposed project. The result shown in this section should represent a savings to the utility and is estimated by taking the per mile cost of vegetation management for rear lot and front lot lines and dividing it by the approved trimming cycle. If the proposed project does not involve an UG conversion or relocation of a line, the vegetation savings should be noted as zero dollars since this implies an existing overhead line will remain in place which would still require the same amount of vegetation management care.
Cost of future Maintenance	This question attempts to assign priority based on the annual maintenance costs of the proposed project. Maintenance costs are associated with on-going reliability maintenance programs such as wood pole and pad-mounted transformer inspections. The result shown in this section should represent a cost to the utility. Any net positive cash flow from the project should be entered as a negative number.

Template Question	Data Collection Method
Residual Value	This question attempts to assign priority based on the expected residual value of equipment removed by the proposed project. All equipment is assumed to have zero residual value unless it is considered major equipment that can be deployed somewhere else. Examples of major equipment include ABB reclosers and switchgears. Assigned residual values are equal to the full value of the unit at purchase. The result shown in this section should represent a savings to the utility.
Decrease in outage events	This question attempts to assign priority based on the potential reduction of in outage restoration costs gained by the proposed project. The structure of our reliability maintenance programs is such that the number of outages varies from year to year. Because of this, a three year average of the number of outages is utilized in determining the potential benefit of the proposed project. The number of outages is determined from adjusted (non-severe weather) data as this category is intended to identify the day to day cost benefits of the proposed hardening project. This number is also filtered according to certain cause codes which have been identified as those cause codes for which the proposed hardening activities can have a positive impact on. The 3 year average of the identified outages under each particular cause code is taken and filtered against the internally developed "Rules of Thumb" matrix in Exhibit D. The Rules of Thumb matrix assigns a certain reduction percentage to the amount of outages based on the proposed hardening activity and the cause code it is intended to mitigate. The number of outages obtained (represents the decrease in number of outages) is then multiplied by the most current weighted restoration cost matrix (represents average system restoration costs by device) to obtain the decrease outage dollar savings. The result shown in this section should represent a savings to the utility.

Results

PEF followed the above process for each of the identified projects. The final project data sheet contained thirty six un-prioritized projects. This can be found in Exhibit E.

After collection the data for each project, PEF then conducted a detailed analysis of different prioritization scenarios to help assess whether the proposed set of projects were maximizing the total value of the portfolio.

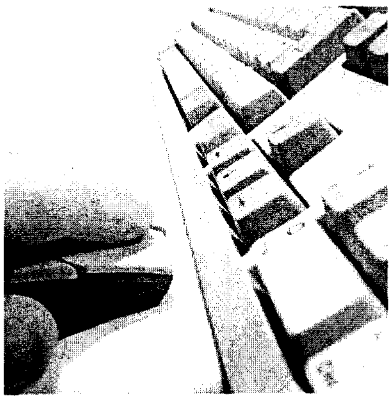
To reach this goal three objectives were met: (1) developed an evaluation template that would allow Progress Energy to represent each project in a standardized way and to remove bias (2) identified a number of hardening projects that would reach all sections of their power delivery systems; and (3) load and analyze all hardening projects using AIS to come up with a prioritized list of hardening projects. Ultimately, PEF came up with the prioritized list found in Exhibit F.

Exhibit A

Asset Investment Strategy™ (AIS™) Enhances the Strategic Decision-Making Process

Since Davies Consulting, Inc.'s (DCI) founding in 1991, the firm has been helping its utility clients implement asset management solutions. This evolution culminated in the development of the Asset Investment Strategy™ (AIS™), in collaboration with multiple utilities, in 2003. Today, AIS is the only fully-integrated, web-based, and effective asset management portfolio optimization tool on the market. Through constant client feedback, user groups, and a rigorous development process, DCI continues to enhance AIS while ensuring that it remains useful, usable, and used.

Use of the AIS process and tool facilitates management's selection of an optimal investment portfolio and provides a dynamic mechanism for ongoing evaluation and update of that portfolio. AIS is driven by an organization's business strategy, integrates risk assessment into scenario analysis, ties strategic objectives to projected portfolio performance, and allows for mid-course reallocation of resources. The combination of AIS's structured process and roles and an objective and validated decision-support tool results in a robust, broadly-supported outcome.



About Davies Consulting, Inc.

Davies Consulting, Inc. (DCI) is an international strategy and management consulting firm dedicated to working with clients to establish sustainable competitive advantage and deliver superior value to their shareholders and customers.

The AIS™ Process

DCI's AIS approach includes three equally important and dependent elements:

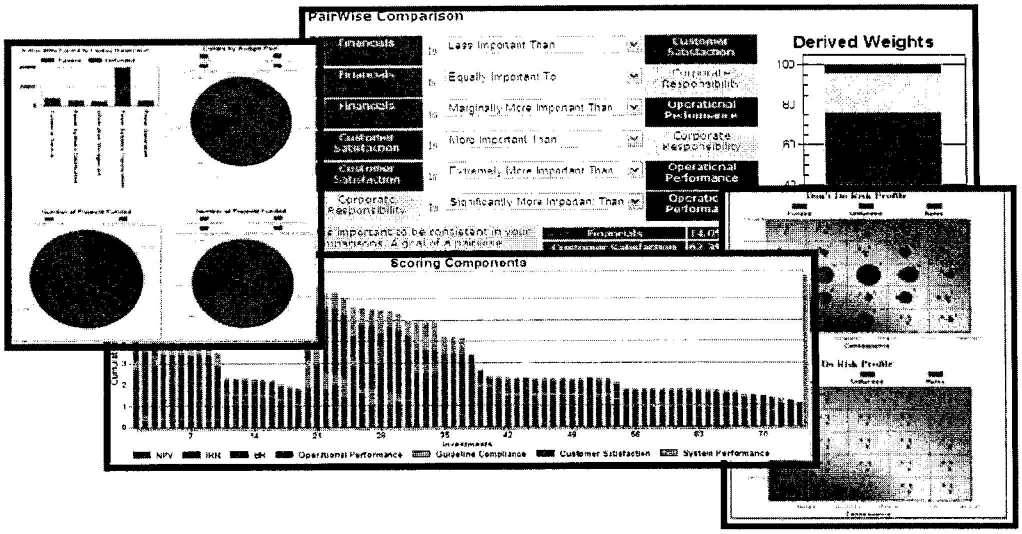
1. Implementation of a dynamic, criteria-based process that facilitates decision-making and ongoing evaluation;
2. Formulation of a set of roles and responsibilities that supports the process; and
3. Adoption of a web-based decision support software tool that enables analysis and reporting.

The AIS process includes development of a strategic framework for evaluating investment projects, review and analysis of multiple scenarios, and ongoing monitoring and evaluation. A critical component of the AIS approach is the process for challenging investment assumptions at multiple stages of the approach.

davies consulting inc.

6935 Wisconsin Avenue, Suite 600 Chevy Chase, MD 20815-6109 Tel: 301-652-4535 Fax: 301-907-9355 www.daviescon.com

Figure 1: AIS™ Process



The AIS™ Tool

A critical component of AIS is the web-based decision-support tool, which optimizes an investment portfolio within or across business units. Using value functions, AIS evaluates projects on specific client-determined and weighted criteria, which may include financial, operational, strategic, and public responsibility. These criteria are then used to optimize the portfolio and determine the appropriate level of funding.

AIS's user-friendly web-interface brings decision-making closer to stakeholders and facilitates consistency in investment evaluation. It also allows decision makers across the organization to set scenario parameters and analyze their own portfolios. This builds greater understanding of the process, enhances business savvy, and creates broader support for the outcome. AIS is a flexible tool that can easily be customized to meet specific client requirements. Below are some examples of interfaces and reports available in the web-AIS tool.

For further information on Davies Consulting, Inc. and our AIS Program, or any other DCI energy services, please contact Miki Deric at 301-652-4535, or by e-mail at energy@daviescon.com. You may also want to visit our website at www.daviescon.com.

		Questions	Weight	Available Response	Expln Reqrd	Responses Criteria	Answer Value
Major Storm Outage Reduction Impact - 35%	1	At the end of this project, what percent of the exposure will be hardened?	15.00%	Direct		Linear Function with a Range Between (1-100)	
	2	How many customers are served from this device?	15.00%	Direct		Linear Function with a Range Between (1-2000)	
	3	What will be the impact of this project on the restoration time during major storm?	20.00%	Minimal Reduction	N	Open wire to triplex	0
				Moderate Reduction	N	Back-lot to front lot or small wire	5
				Significant Reduction	N	OH - UG conversion	10
	4	At what level of hurricane will the area served by this feeder flood due to storm surges?	10.00%	Tropical Storm	N		10
				Cat 1/Cat 2	N		8
				Cat 3	N		6
				Cat 4/5	N		3
				No flood	N		0
	5a	What is the tree density (trees per mile) in the area served by this feeder or section?	20.00%	Open Spans	N		0
				Low Density	N		0
				Medium Density	N		0
				High Density	N		0
	5b	What level of tree damage will this project mitigate during a major storm?	20.00%	Increase Exposure	N		0
				No Change	N		0
				Slightly Decrease Exposure	N		0
				Significantly Decrease Exposure	N		0
	6	What is the annual probability of extreme wind (over 70 mph) (HAZUS probability) in the area served by this feeder or section?	20.00%	Direct		Linear Function with a Range Between (5-12)	
Community Storm Impact - 10%	1	How many priority 1 customers are on feeder?	30.00%	None	N		0
				1	N		3
				2-3	N		7
				>3	N		10
	2	How many critical customers does this project address? (911 call centers, etc.)	60.00%	None	N		0
				1	N		3
				2-3	N		7
				>3	N		10
	3	How valuable will the project be perceived by the community? - Rebuild in place (no notice) - no impact - Relocation - negative or positive. - Conversion - negative or positive	10.00%	High Negative	N		0
				Low negative	N		2
				No Impact	Y		5
				Low positive	N		7
				High Positive	N		10
Third Party Impact - 5%	1	What are the major obstacles/risks for completing the project this year? I.e. Easements, permits, etc.	80.00%	None	N		10
				Medium	N		5
				High	N		0
	2	What type of investment is required by joint users (telecoms and cable) to complete this project?	20.00%	None	N		10
				Transfer at same location	N		7
				OH relocation	N		3
				OH to UG	N		0
Overall Reliability - 30%	1	What is the 3-year average CEMI4 customers on this feeder?	25.00%	Direct		Linear Function with a Range Between (0-500)	
	2	How many customer outages will this project eliminate annually in regards to CI?	30.00%	Direct		Linear Function with a Range Between (0-1000)	
	3	What is the change in the annual outage duration that this project will result in (on the feeder or section)?	10.00%	Increase	N		0
				No change	N		5
				Decrease	N		10
	4	Will this project reduce the number of momentary customer interruptions on this section?	10.00%	Yes	N		10
				No	N		0
	5	Based on a 3-year average, what will be the change in the number of customers experiencing outages longer than 3 hours as a result of this project?	25.00%	Direct		Linear Function with a Range Between (0-50)	

FEMA's Latest Multi-Hazard Software

HAZUS® MH

EARTHQUAKE • WIND • FLOOD

What Could Happen?

How can we plan to minimize damage and loss of life in order to prevent natural hazard events from becoming natural disasters? Which buildings, roads, and bridges may be damaged and how great would the damage be? Which roads may be closed? Which areas may be affected if utilities failed? Which businesses will shut down?

How Can HAZUS®MH Help?

An important part of comprehensive community planning is understanding risks that may affect the physical, social, and economic components of a community. Communities who understand their vulnerability to natural hazards can make development decisions in light of those hazards and the risks associated with them.

FEMA introduces its latest risk assessment and loss estimation software package, **HAZUSMH** (Multi-Hazard – earthquake, hurricane wind, and flood), that can help answer complex questions about the consequences of a hazard event.

What Are the Impacts of a Hazard Event?

HAZUSMH helps states, communities, and businesses, prepare for, mitigate the effects of, respond to, and recover from a hazard event. One of the great strengths of **HAZUSMH** is that it provides estimates of hazard-related damage before a disaster occurs and takes into account various impacts of a hazard event such as:

- Physical damage: damage to residential and commercial buildings, schools, critical facilities, and infrastructure
- Economic loss: lost jobs, business interruptions, repair and reconstruction costs
- Social impacts: impacts to people, including requirements for shelters and medical aid

HAZUSMH and Its Unique Features

HAZUSMH can quantify the risk for a study area of any size: region, state, community, neighborhood, or an individual site. **HAZUSMH** uses GIS technology to combine hazard layers with national databases and applies a standardized loss estimation and risk assessment methodology. The GIS-based environment allows users to create graphics to help communities visualize and understand their hazard risks and solutions. The nationwide databases built into **HAZUSMH** include datasets on demographics, building stock, essential facilities, transportation, utilities, and high-potential-loss facilities.

HAZUSMH can estimate losses from earthquakes, hurricane winds, and floods. **HAZUSMH** uses:

- Ground motion and ground failure information to calculate losses for earthquakes
- Information on wind pressure, windborne missiles, and rain for hurricane winds
- Flood frequency, depth, discharge, and velocity for floods

Exhibit D

Storm Hardening Specification "Rules of Thumb" % Reductions	Trees 004 / 008	Storm 014	Lightning 001	Animal 003	Unknown 000	Connector 007	Wind 010	Birds 040	Vehicle 005	Corrosion 012	UG Cable 032	Dig In 017	OH / Sec Services 030
OH to UG Conversions	90%	90%	95%	95%	90%	95%	95%	100%	90%	-10%	-5%	-10%	100%
Small Wire Reconductor	10%	10%	25%	0%	25%	75%	25%	0%	0%	0%	0%	0%	0%
Submersible UG	0%	5%	0%	0%	0%	50%	0%	0%	0%	100%	50%	0%	0%
Extreme Wind Upgrades	25%	50%	0%	0%	25%	95%	95%	-10%	-25%	0%	0%	0%	0%
Open Wire Secondary to Triplex TX Level Outages	90%	90%	0%	90%	90%	90%	50%	75%	0%	0%	0%	0%	75%
Rear lot Relocations	75%	75%	0%	50%	50%	50%	75%	25%	-10%	0%	0%	0%	50%
Horizontal to Vertical Construction	50%	50%	0%	0%	0%	0%	-5%	-10%	0%	0%	0%	0%	0%
OH Spacer Cable Conversions	25%	25%	0%	0%	0%	25%	25%	75%	0%	0%	0%	0%	0%

Instructions
1) Enter data for each project in rows below Column B - U. Enter cashflows for the project in the adjacent worksheet labeled "cashflows"

	Numerical Entry
	Drop down selection

	Project Name	Description	Sponsor	Operating Regions	Project Type	Major Storm Outage Reduction Impact - 35%							Community Storm Impact - 20%			Third Party Impact - 5%		Day to Day Reliability - 20%				
	Please Enter the project name below	Please enter a brief description of the project (miles to be completed, scope of work etc.)	Please enter the name of the project sponsor	Please select the Operating unit (Regions) below	Please select the project type	At the end of this project, what percent of the exposure will be hardened (in percentage %)?	How many customers are served from this device?	What will be the impact of this project on the restoration time during major storm?	What is the annual probability of extreme wind (over 70 mph) (HAZUS probability) in the area served by this feeder or section?	At what level of hurricane will the area served by this feeder flood due to storm surges?	What is the tree density (trees per mile) in the area served by this feeder or section?	What level of tree damage will this project mitigate during a major storm?	How many critical infrastructure components from the EOC list (lift stations and intersections) does this project address (at the feeder level)?	How many critical customers does this project address? (911 call centers, etc.)	How valuable will the project be perceived by the community? Rebuild in place (no notice) - no impact; Relocation -negative or positive; Conversion negative or positive	What are the major obstacles/risks for completing the project this year? i.e. Easements, permits, etc.	What type of investment is required by joint users (telecoms and cable) to complete this project?	What is the 3-year average CEMI4 customers on this feeder?	How many customer outages will this project eliminate annually?	What is the change in the annual CAIDI that this project will result in (on the feeder or section)?	Will this project reduce the number of momentary customer interruptions on this section?	What will be the change in the number of customers experiencing outages longer than 3 hours as a result of this project?
1	Coquina Key	Twenty one listed branch lines, 30K feet of wire, 175 inaccessible poles, 140 accessible poles	Jeanne Talhouk	South Coastal	Small Reconductor	100%	532	Small Reduction	11.80%	Cat 1/Cat 2	Medium Density	No Change	none	1	High Positive	None	Transfer at same location	7	13	No change	No	10
2	Flemmer Subdivision	Feeder C4022	Jeanne Talhouk	South Coastal	Submersible UG	100%	195	None	9.70%	Cat 1/Cat 2	Open Spans	No Change	none	2 or 3	Low negative	None	None	79	0	No change	No	0
3	Feeder K220	7200' of #795 that runs along Pasadena Blvd	Jeanne Talhouk	South Coastal	Extreme Wind Upgrades	100%	1714	None	10.70%	Cat 3	Low Density	No Change	none	2 or 3	Low positive	Medium	Transfer at same location	0	0	No change	No	0
4	Indigo	3-Phase Rear Lot branch line 2800' Long that has fallen many times including the 2004 storms	Jeanne Talhouk	South Coastal	Small Reconductor	25%	712	Small Reduction	9.60%	No flood	High Density	No Change	none	None	High Positive	None	Transfer at same location	28	100	No change	Yes	0
5	Calle De Sol	4368' of Feeder K307 @ MO#K9	Doug Ellerbe	South Central	Back lot to Front lot conversion	40%	290	Small Reduction	8.20%	No flood	High Density	Significantly Decrease Exposure	none	1	Low positive	Medium	OH to UG	0	348	Decrease	Yes	0
6	Wanderlakes	5206' of Feeder K307 @ K5412268	Doug Ellerbe	South Central	Back lot to Front lot conversion	40%	353	Small Reduction	8.20%	No flood	High Density	Significantly Decrease Exposure	none	1	Low positive	Medium	OH to UG	0	0	Decrease	Yes	0
7	Hibiscus Feeder Tie	7973' reconductor #6 to 336 on Feeders K57 and K1447 @ K4341	Doug Ellerbe	South Central	Small Reconductor	N/A	787	Small Reduction	8.30%	No flood	Low Density	Slightly Decrease Exposure	none	2 or 3	High Positive	None	Transfer at same location	0	26	No change	No	0
8	Highland Park	6630' on Feeder K1196@R15ABC	Doug Ellerbe	South Central	Small Reconductor	N/A	114	Small Reduction	8.80%	No flood	Low Density	Slightly Decrease Exposure	1	2 or 3	High Positive	None	Transfer at same location	2	1	No change	No	17
9	OH Crossing of Turnpike (K68 @K5256)	450' of Feeder K68 @K5255	Doug Ellerbe	South Central	OH to UG Conversion	N/A	1100	Significant Reduction	8.10%	No flood	Open Spans	No Change	none	2 or 3	High Positive	None	OH to UG	0	0	Increase	Yes	0
10	OH Cross of Turnpike 2 (K1780 @ K6434981 and K1775 @ K5021)	700' of Feeder K1780 @ K6434981 and K1775 @ K5021 (shared trench)	Doug Ellerbe	South Central	OH to UG Conversion	N/A	950	Significant Reduction	8.40%	No flood	Open Spans	No Change	1	>3	High Positive	None	OH to UG	0	48	Increase	Yes	0
11	OH Crossing of Turnpike (K1780 @K2379)	420' of Feeder K1780 @K2379	Doug Ellerbe	South Central	OH to UG Conversion	N/A	1118	Significant Reduction	8.50%	No flood	Open Spans	No Change	none	None	High Positive	None	OH to UG	0	13	Increase	Yes	0
12	OH Crossing of Turnpike (K1025 @ K1025 & K1028 @ K128)	470' of Feeder K1025 @ K1025 & K1028 @ K128 (shared trench)	Doug Ellerbe	South Central	OH to UG Conversion	N/A	608	Significant Reduction	8.50%	No flood	Open Spans	No Change	none	1	High Positive	None	OH to UG	6	26	Increase	Yes	0
13	Sprint Earth Station & Cocoa Water Wells	Reconductor small wire double circuit. Repl 1/0 AAAC 4k with 795 AAC. Replace #4 Al matured circuit with 1/0 AAAC 3.6 miles	Rich Weidel	North Central	Small Reconductor	100%	393	Small Reduction	8.40%	No flood	Medium Density	Slightly Decrease Exposure	none	None	High Positive	None	Transfer at same location	1	4	No change	Yes	0
14	Holden Ave El Orange Blossom Trail	Reconductor small wire feeder tie (7000')	Charlene Rubano	North Central	Small Reconductor	46%	453	Small Reduction	8.40%	No flood	Low Density	Slightly Decrease Exposure	none	2 or 3	Low positive	None	OH relocation	60	16	No change	No	5
15	Hollifer Ave and feeder Tie	Reconductor small wire feeder tie (6900')	Charlene Rubano	North Central	Small Reconductor	20%	294	Small Reduction	9.50%	No flood	High Density	Significantly Decrease Exposure	1	1	Low positive	None	OH relocation	17	25	No change	No	0
16	SR-408 @ Woodbury Rd	Convert long 795/336 AAC OH span crossing SR-408 to 1000 MCM UG (380)	Rich Weidel	North Central	OH to UG Conversion	19%	2,075	Significant Reduction	9.00%	No flood	Open Spans	No Change	none	2 or 3	High Positive	None	OH to UG	6	0	Increase	Yes	0
17	Us 17/92 & SR-436	Convert long 795/336 AAC OH span crossing intersection to 1000 MCM UG (713)	Rich Weidel	North Central	OH to UG Conversion	38%	744	Significant Reduction	8.30%	No flood	Open Spans	No Change	1	2 or 3	High Positive	None	OH to UG	5	0	Increase	Yes	0
18	I-4 @ SR-434	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (541)	Rich Weidel	North Central	OH to UG Conversion	8%	632	Significant Reduction	8.20%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	1	215	Increase	Yes	0
19	I-4 @ EE Williamson Rd	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (449)	Rich Weidel	North Central	OH to UG Conversion	13%	571	Significant Reduction	8.10%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	0	0	Increase	Yes	0
20	I-4 @ Fairbanks Ave	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (714)	Rich Weidel	North Central	OH to UG Conversion	16%	1721	Significant Reduction	8.30%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	0	840	Increase	Yes	0
21	I-4 @ Kennedy Blvd	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (236)	Rich Weidel	North Central	OH to UG Conversion	6%	440	Significant Reduction	8.30%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	0	0	Increase	Yes	0
22	I-4 @ Osceola Road/Lake Destiny Dr.	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (347)	Rich Weidel	North Central	OH to UG Conversion	10%	712	Significant Reduction	8.30%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	0	0	Increase	Yes	0
23	I-4 @ SR-436	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (2302)	Rich Weidel	North Central	OH to UG Conversion	38%	1787	Significant Reduction	8.20%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	0	0	Increase	Yes	0
24	I-4 @ Orange St	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (946)	Rich Weidel	North Central	OH to UG Conversion	25%	1151	Significant Reduction	8.20%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	40	0	Increase	Yes	19
25	I-4 @ North St	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (430)	Rich Weidel	North Central	OH to UG Conversion	6%	2009	Significant Reduction	8.20%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	385	480	Increase	Yes	0
26	US 441 west of Hwy 19	Convert long 795/336 AAC OH span crossing US 441/intersection to 1000 MCM UG (285) X2 Feeders same trench)	Charlene Rubano	North Central	OH to UG Conversion	NA	4207	Significant Reduction	7.10%	No flood	Open Spans	No Change	>3	>3	High Positive	Medium	None	1	0	Increase	Yes	0
27	Florida Turnpike @ Sandlake Rd (485)	Convert long 795/336 AAC OH span crossing Florida Turnpike to 1000 MCM UG (485) K499	Rich Weidel	North Central	OH to UG Conversion	30%	57	Significant Reduction	8.30%	No flood	Open Spans	No Change	none	>3	High Positive	None	OH to UG	6	0	Increase	Yes	0
28	Florida Turnpike @ Sandlake Rd (746)	Convert long 795/336 AAC OH span crossing Florida Turnpike to 1000 MCM UG (746) K496	Rich Weidel	North Central	OH to UG Conversion	20%	1043	Significant Reduction	8.30%	No flood	Open Spans	No Change	none	1	High Positive	None	OH to UG	0	22	Increase	Yes	0
29	Florida Turnpike @ Orange Blossom Trail	Convert long 795/336 AAC OH span crossing Florida Turnpike to 1000 MCM UG (182) K1028	Rich Weidel	North Central	OH to UG Conversion	5%	325	Significant Reduction	8.50%	No flood	Open Spans	No Change	none	1	High Positive	None	OH to UG	0	26	Increase	Yes	0
30	I-4 @ Lee Rd	Convert long 795/336 AAC OH span crossing I-4 to 1000 MCM UG (664)	Rich Weidel	North Central	OH to UG Conversion	10%	440	Significant Reduction	8.30%	No flood	Open Spans	No Change	none	None	High Positive	High	OH to UG	0	0	Increase	Yes	0
31	St George Is - Plantation	Convert SWGR (127) to submersible (and URD)	Gary Bitter	North Coastal	Submersible UG	100%	494	None	9.90%	Tropical Storm	High Density	No Change	1	1	No Impact	None	None	50	39	No change	No	30
32	Homosassa - Riverhaven	Convert URD to submersible	Gary Bitter	North Coastal	Submersible UG	100%	306	None	8.20%	Tropical Storm	Open Spans	No Change	none	None	No Impact	None	None	18	0	No change	No	1
33	US 90 - Brooksville	Reconductor old 3-ph #4A to 1/0 - inaccessible - need tree canopy removal - 2 mi	Gary Bitter	North Coastal	Small Reconductor	100%	148	Small Reduction	9.20%	No flood	High Density	Slightly Decrease Exposure	none	2 or 3	Low positive	None	None	57	12	No change	No	18
34	US 301 - Citra	Reconductor old 3-ph #6CU to 1/0 - inaccessible - swamp - 1 mi	Gary Bitter	North Coastal	Small Reconductor	100%	111	Small Reduction	6.20%	No flood	Low Density	No Change	none	None	Low positive	Medium	None	386	51	No change	No	2
35	R448 - Donnellon	Rebuild old 1-ph #4A to 3 ph 1/0 - inaccessible - move to road - 1.5 mi	Gary Bitter	North Coastal	Back lot to Front lot conversion	100%	159	Small Reduction	7.30%	No flood	High Density	Significantly Decrease Exposure	none	None	Low positive	None	None	2	0	Decrease	Yes	0
36	A192 - Lunnville	Reconductor old 2/0 Cu to 336 - other half of project complete - 2 mi	Gary Bitter	North Coastal	Small Reconductor	100%	686	Small Reduction	5.50%	No flood	High Density	Slightly Decrease Exposure	2 or 3	2 or 3	Low positive	None	None	13	45	No change	No	0

Total Rank	Total Value	Quartile	Project Name	Sub Category	Op Unit	Major Storm Outage Reduction Impact Rank	Major Storm Outage Reduction Impact Results	Community Storm Impact Rank	Community Storm Impact Results	Third Party Impact Rank	Third Party Impact Results	Overall Reliability Rank	Overall Reliability Results	Total Financial Value Rank	Total Financial Value
1	6.9811	Q1	Calle De Sol	OH to UG Conversion	South Central	1	3.5	20	0.25	25	0.2	3	1.3632	17	1.66794
2	6.1025	Q1	St Geroge Is - Plantation	Submersible UG	North Coastal	5	3.07398	15	0.32	1	0.5	2	1.428	30	0.78052
3	6.0727	Q1	SR-408 @ Woodbury Rd	OH to UG Conversion	North Central	8	2.699235	7	0.52	14	0.4	10	0.6	5	1.85346
4	6.0636	Q1	Winderlakes	OH to UG Conversion	South Central	1	3.5	20	0.25	25	0.2	10	0.6	21	1.51356
5	5.8747	Q1	R448 - Dunnellon	Back lot to Front lot conversion	North Coastal	9	2.64292	34	0.07	11	0.43	4	1.206	20	1.52574
6	5.6675	Q1	US 98 - Brooksville	Small Reconductor	North Coastal	6	2.91515	12	0.47	4	0.47	5	1.0326	31	0.77974
7	5.4757	Q1	US 441 west of Hwy 19	OH to UG Conversion	North Central	16	1.79375	1	1	22	0.3	10	0.6	12	1.78192
8	4.8944	Q1	Coquina Key	Small Reconductor	South Coastal	1	3.5	16	0.28	4	0.47	9	0.6444	35	0
9	4.82	Q1	I-4 @ North St	OH to UG Conversion	North Central	12	2.268735	22	0.1	27	0	10	0.6	6	1.85122
10	4.7095	Q2	Florida Turnpike @ Sandlake Rd (746')	OH to UG Conversion	North Central	17	1.71185	16	0.28	14	0.4	10	0.6	16	1.7177
11	4.6788	Q2	OH Crossing of Turnpike (K68 @K5255)	OH to UG Conversion	South Central	22	1.367975	7	0.52	14	0.4	10	0.6	11	1.79084
12	4.6353	Q2	I-4 @ Fairbanks Ave	OH to UG Conversion	North Central	13	2.202375	22	0.1	27	0	10	0.6	14	1.73292
13	4.5518	Q2	A192 - Luraville	Small Reconductor	North Coastal	10	2.511915	4	0.68	4	0.47	31	0.42	32	0.4699
14	4.535	Q2	Us 17/92 & SR-436	OH to UG Conversion	North Central	18	1.59782	5	0.61	27	0	10	0.6	15	1.7272
15	4.5034	Q2	Indigo	Small Reconductor	South Coastal	19	1.51844	22	0.1	4	0.47	7	0.864	19	1.551
16	4.4816	Q2	OH Crossing of Turnpike 2 (K1780 @ K6434991 and K1775 @ K5021)	OH to UG Conversion	South Central	23	1.33868	2	0.79	14	0.4	10	0.6	25	1.35296
17	4.4188	Q2	I-4 @ Orange St.	OH to UG Conversion	North Central	14	1.85122	22	0.1	27	0	10	0.6	3	1.86762
18	4.4174	Q2	Florida Turnpike @ Sandlake Rd (485')	OH to UG Conversion	North Central	34	0.903	3	0.7	14	0.4	10	0.6	8	1.81444
19	4.4118	Q3	OH Crossing of Turnpike (K1780 @K2379)	OH to UG Conversion	South Central	20	1.50773	22	0.1	14	0.4	10	0.6	10	1.80402
20	4.3708	Q3	US 301 - Citra	Small Reconductor	North Coastal	32	0.94731	35	0.05	23	0.27	1	1.6098	22	1.49372
21	4.3267	Q3	Feeder X220	Extreme Wind Upgrades	South Coastal	4	3.231025	10	0.49	23	0.27	36	0.3	34	0.0357
22	4.3151	Q3	Sprint Earth Station & Cocoa Water Wells	Small Reconductor	North Central	7	2.834895	22	0.1	4	0.47	6	0.9102	36	0
23	4.307	Q3	I-4 @ SR-436	OH to UG Conversion	North Central	11	2.487765	22	0.1	27	0	10	0.6	27	1.11924
24	4.1526	Q3	Florida Turnpike @ Orange Blossom Trail	OH to UG Conversion	North Central	33	0.93926	16	0.28	14	0.4	10	0.6	1	1.93334
25	4.0112	Q3	Floramar Subdivision	Submersible UG	South Coastal	24	1.29745	13	0.44	1	0.5	30	0.537	26	1.23676
26	3.99	Q3	Hoffner Ave and feeder Tie	Small Reconductor	North Central	15	1.816185	14	0.34	11	0.43	32	0.396	29	1.0078
27	3.9747	Q3	I-4 @ Oranole Road/Lake Destiny Dr.	OH to UG Conversion	North Central	21	1.40749	22	0.1	27	0	10	0.6	4	1.86724
28	3.9336	Q4	OH Crossing of Turnpike (K1025 @ K1025 & K1028 @ K128)	OH to UG Conversion	South Central	30	1.089375	16	0.28	14	0.4	10	0.6	18	1.56426
29	3.8994	Q4	Holden Ave E) Orange Blossom Trail	Small Reconductor	North Central	26	1.24817	10	0.49	11	0.43	8	0.6588	28	1.0724
30	3.6886	Q4	Homosassa - Riverhaven	Submersible UG	North Coastal	25	1.294755	35	0.05	1	0.5	33	0.354	23	1.48986
31	3.6755	Q4	I-4 @ EE-Wiliamson Rd	OH to UG Conversion	North Central	28	1.1473	22	0.1	27	0	10	0.6	7	1.8282
32	3.6512	Q4	I-4 @ SR-434	OH to UG Conversion	North Central	29	1.146565	22	0.1	27	0	10	0.6	9	1.80462
33	3.6303	Q4	I-4 @ Lee Rd	OH to UG Conversion	North Central	27	1.184365	22	0.1	27	0	10	0.6	13	1.74594
34	3.5972	Q4	I-4 @ Kennedy Blvd	OH to UG Conversion	North Central	31	0.98749	22	0.1	27	0	10	0.6	2	1.9097
35	3.1964	Q4	Highland Park	Small Reconductor	South Central	36	0.37163	5	0.61	4	0.47	35	0.3078	24	1.437
36	2.2727	Q4	Hibiscus Feeder Tie	Small Reconductor	South Central	35	0.736225	7	0.52	4	0.47	34	0.3468	33	0.19974