

**Ruth Nettles**

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**Sent:** Wednesday, July 11, 2007 5:11 PM  
**To:** Filings@psc.state.fl.us  
**Subject:** Docket No. 070229-EI  
**Attachments:** Storm Hardening - List of Issues.pdf

**ORIGINAL**

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- B. 070229-EI
- C. Gulf Power Company
- D. Document consists of 9 pages.
- E. The attached document is Gulf Power Company's Storm Hardening Plan – List of Issues.

*Brame Holsinger*

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FPSC-COMMISSION CLERK

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July 11, 2007

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

Dear Ms. Cole:

Re: Docket No. 070229-EI

Attached is Gulf Power Company's Storm Hardening Plan – List of Issues, to be filed in the above referenced docket.

Sincerely,

*Susan D. Ritenour*

bh

Enclosures

cc: Beggs & Lane  
Jeffrey A. Stone, Esq.

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FPSC-COMMISSION CLERK

## Electric Infrastructure Storm Hardening Issues and Areas of Concern

### 1.0 Plan Content

#### 1.1 Compliance with National Electrical Safety Code

##### **Distribution**

Gulf Power's distribution system complies with all applicable sections of the National Electric Safety Code and will exceed the NESC by applying the extreme wind criteria to targeted facilities serving critical loads.

##### **Transmission**

Gulf Power's transmission system complies with all applicable sections of the National Electric Safety Code.

##### **Substation**

Gulf Power uses the ASCE 7 extreme wind criteria for structure design and selection, which complies with the National Electric Safety Code extreme wind loading requirements for Gulf's service area.

#### 1.2.A Extreme Wind Loading Standards - New Distribution Facilities

Gulf's position is to move cautiously into the application of the extreme wind loading standards until it is better able to determine the cost and outage benefits. Gulf's May 7, 2007 Storm Hardening Plan lays out a 3-year timeline to collect more detailed data that will allow an accurate evaluation of the application of extreme wind loading standards. This 3-year plan will focus on targeted, critical infrastructure facilities and major thoroughfares. As storm forensic data is gathered to help determine the benefits and effectiveness of the targeted storm hardening initiatives, Gulf will review its plan to address new distribution construction. In addition, Gulf will incorporate any new data which results from collaborative research through the Public Utility Research Center (PURC), or the industry in general to allow a more accurate evaluation of the application of extreme wind loading standards. It is anticipated that key PURC data will be available within this 3-year timeline.

#### 1.2.B Extreme Wind Loading Standards - Major Planned Expansion, Rebuild, or Relocation of Distribution Facilities

Gulf's position is to move cautiously into the application of the extreme wind loading standards until it is better able to determine the cost and outage benefits. Gulf's May 7, 2007 Storm Hardening Plan lays out a 3-year timeline to collect more detailed data that will allow an accurate evaluation of the

application of extreme wind loading standards. This 3-year plan will focus on targeted, critical infrastructure facilities and major thoroughfares. As storm forensic data is gathered to help determine the benefits and effectiveness of the targeted storm hardening initiatives, Gulf will review its plan to address major planned work, including expansion, rebuilding, or relocation of existing facilities.

In addition, Gulf will incorporate any new data which results from collaborative research through the Public Utility Research Center (PURC), or the industry in general to allow a more accurate evaluation of the application of extreme wind loading standards. It is anticipated that key PURC data will be available within this 3-year timeline.

### **1.2.C Extreme Wind Loading Standards - Critical Infrastructure and Major Thoroughfares**

Appendix 1 of Gulf's May 7, 2007 Storm Hardening Plan shows the communities within Gulf's service area and the extreme wind loading standards as specified by Figure 250-2(d) of the NESC. Gulf Power Company intends to apply the extreme wind loading standards to targeted facilities serving critical loads. As a part of this process, Gulf solicited input from the County Emergency Operating Centers to help determine where to begin focusing its storm hardening efforts.

Gulf's position is to move cautiously into the application of the extreme wind loading standards until it is able to determine the cost and outage benefits. Gulf's May 7, 2007 Storm Hardening Plan lays out a 3-year timeline to complete the design and construction of targeted distribution facilities to extreme wind loading standards that feed critical infrastructure facilities. Section 8.3 of the Plan also discusses the placement of meteorological data-collecting stations near the targeted facilities to better determine the effectiveness and benefits associated with the application of extreme wind loading standards to distribution facilities. Gulf's plan focuses on those feeders which serve critical loads, such as hospitals, major sewage treatment plants, fuel depots, and Interstate road crossings.

In addition, Gulf will incorporate any new data which results from collaborative research through the Public Utility Research Center (PURC), or the industry in general to allow a more accurate evaluation of the benefits from extreme wind loading standards.

### **1.3 Mitigation of Damage to Underground and Supporting Overhead Distribution Facilities Due to Flooding and Storm Damage**

#### **Distribution**

Gulf Power has developed overhead and underground storm hardening specifications (Appendices 5 and 6 of Gulf's Storm Hardening Plan) to address minimization of this type of damage in areas subject to flooding and storm surges. These specifications will continue to evolve as Gulf continues to seek out best practices and learns from the review of gathered forensic data. Gulf will be systematically training engineering personnel on the application of these new specifications in 2007.

At this time, although Gulf is not proposing any specific underground projects, Gulf has completed and has several overhead to underground conversion projects underway. Typically, these projects have been in those areas with the most exposure to storm surge such as the Pensacola Beach Conversion project. The storm hardening projects incorporate underground designs such as flush-mounted switchgear, fortifying equipment vaults and using natural and manmade barriers to protect equipment. These projects will provide data going forward to help with the determination of their effectiveness.

In addition, Gulf will incorporate any new data which results from collaborative research through the Public Utility Research Center (PURC), or the industry in general.

#### **Transmission**

Gulf Power transmission utilizes overload and strength factors greater than or equal to those required in Section 26 of the National Electric Safety Code. Gulf's loading criteria for new line design is derived from Section 25 of the National Electric Safety Code. At this time, Gulf is not designing transmission for any type of storm surge or flooding damage.

All future Gulf Power underground transmission projects located within the possible storm surge area will be engineered to consider the impact of flooding or storm surge from weather events. Gulf Power does not currently have any such new projects planned.

#### **1.4 Placement of New and Replacement Distribution Facilities to Facilitate Safe and Efficient Access (Rule 25-6.0341)**

Gulf Power has always recognized that accessibility to distribution facilities is essential to safe and efficient maintenance and storm restoration. Therefore, Gulf continues to strive to promote placement of facilities adjacent to public roads; to use easements, public streets, roads and highways; obtain easements for underground facilities; and to use road right-of-ways for conversions of overhead to underground.

## 2.0 Deployment Strategy

### 2.1 Description of Facilities Affected

#### Distribution

Gulf Power has developed overhead and underground storm hardening specifications which are contained in Appendices 5 and 6 of Gulf's Storm Hardening Plan. These specifications will continue to evolve as Gulf continues to seek out best practices and learns from the review of gathered forensic data. Gulf Power will apply these specifications to areas subject to flooding and storm surges. In addition, Gulf will train engineering personnel on the application of these new specifications during 2007.

With respect to applying extreme wind loading standards, Gulf's plan focuses on main feeders which serve targeted, critical loads such as hospitals, major sewage treatment plants, fuel depots, and Interstate road crossings. The chart below lists the projects, the district locations and estimated number of poles to be impacted from the proposed critical infrastructure hardening projects.

2007	District	Critical Load	Feeder ID	Total Main Miles	# of poles - assuming 150 Ft. spacing
	Central	Hospital	8162	0.27	9
	Eastern	I-10 Crossings	Various	N.A.	16
	Central	I-10 Crossings	Various	N.A.	14
	Western	Sewage Plant	5912	0.37	13
	Western	Sewage Plant	7402	1.36	48
	Western	Fuel Depot	6522	1.38	49
<b>TOTAL 2007</b>					<b>149</b>
2008	District	Critical Load	Feeder ID	Total Main Miles	# of poles - assuming 150 Ft. spacing
	Central	Hospital	9132	1.13	40
	Central	Fuel Depot	9252	2.83	100
<b>TOTAL 2008</b>					<b>140</b>
2009	District	Critical Load	Feeder ID	Total Main Miles	# of poles - assuming 150 Ft. spacing
	Western	Hospital	7512 & 7522	1.06	37
	Central	Sewage Plant	9342	2.43	86
	Western	I-10 Crossings	Various	N.A.	38
<b>TOTAL 2009</b>					<b>161</b>
	<b>Company</b>	<b>Three Year Plan Totals</b>			<b>450</b>

The total estimated poles which may be subject to replacement based on applying the extreme wind loading standards and possible impact from Joint-Use Assessments are as follows:

Year	Extreme Wind Loading	Joint-Use Assessments	Total Estimated Poles Impacted
2007	149	500	649
2008	140	500	640
2009	161	500	661

#### **Transmission**

Gulf Power transmission utilizes overload and strength factors greater than or equal to those required in Section 26 of the National Electric Safety Code. Gulf's loading criteria for new line design is derived from Section 25 of the National Electric Safety Code. These design criteria are used on all new installation and complete rebuild projects throughout Gulf's service area.

#### **Substation**

The evaluation of all Gulf Power substations in relation to storm surge using the SLOSH program has been completed. Gulf identified one critical substation and has begun the evaluation of equipment heights to determine possible storm hardening options and any needed restoration response plan. Gulf anticipates completing the process by the end of 2007.

## **2.2 Communities and Areas Where Electric Infrastructure Improvements are to be made**

#### **Distribution**

Please see Appendix 1 of Gulf's Storm Hardening Plan for communities and areas affected and critical infrastructure.

#### **Transmission**

The storm hardening steps of installing storm guying on un-guyed structures and the replacement of wooden cross arms with steel cross arms on H-frame structures will be implemented on the entire Gulf Power transmission system.

## **2.3 Utility's Definition of Critical Infrastructure and Major Thoroughfares**

Gulf's current definition includes feeders which serve critical loads, such as hospitals, major sewage treatment plants, fuel depots, and Interstate road crossings. Input from the County Emergency Operating Centers helped determine these categories. Gulf's major thoroughfares include Interstate 10

and 110 and Highway 98. These thoroughfares are critical to moving supplies and manpower following a major storm.

Gulf will continue to evaluate other possible facilities to include in the definition of critical infrastructure and major thoroughfares.

#### **2.4.A Estimate of Costs and Benefits - Electric Utility**

The total estimated incremental cost for Gulf Power's three-year Storm Hardening Plan is approximately \$12.8 million. The 10 initiatives described in Section 2.0 of Gulf's Storm Hardening Plan, along with the eight year wood pole inspection initiative discussed in Section 3.0, represent a \$10.8 million incremental cost.

Section 5.0 and Section 8.0 address the adoption of extreme wind loading for distribution facilities and other key elements. Gulf's proposed extreme wind loading plan projects, feeder patrols and wind monitors are expected to cost \$2 million from 2007 through 2009.

Gulf does not have hard data that provides conclusive support either for its current construction practices or any proposed storm hardening initiatives by the FPSC. Due to the lack of hard data at this time, Gulf Power cannot estimate the reductions in storm restoration cost and outages that will result from the proposed storm hardening initiatives. The effectiveness of the proposed critical infrastructure storm hardening projects will be evaluated following future major storm events to better make those determinations.

See Appendix 8 in Gulf's Storm Hardening Plan for an itemized summary of Gulf's incremental storm hardening costs.

#### **2.4.B Estimate of Costs and Benefits - Third-party Attachers**

See Section 12.0 of Gulf's May 7, 2007 Storm Hardening Plan for a discussion of Third-party Attachers' costs and benefits.

#### **2.5.A Estimate of the Effect on Reducing Storm Restoration Costs and Customer Outages - Electric Utility**

Prior to 2006, Gulf did not gather specific data to support its current construction practices or overhead and underground systems. Therefore, Gulf does not have hard data that provides conclusive support either for its current construction practices or any proposed storm hardening initiatives by the FPSC. Gulf does possess "soft data" which is composed of years of



experience in storm restoration and associated post-storm field observations. It is this soft data which Gulf based its proposed Storm Hardening Plan.

Gulf did provide an analysis of savings in respect to its Storm Hardening Annual Removal Program (SHARP) which is a part of its Vegetation Management Program. Gulf was able to do this because it is supported by Gulf's years of experience in storm restoration and associated field observations which we referred to as "soft data". This soft data pointed out that the majority of Gulf's tree related problems after a major storm were due to those which were on the customer side of the right-of-way line.

In respect to applying Extreme Wind Loading (EWL) standards to distribution, Gulf's experience and post-storm field observations do not support the adoption of EWL standards system-wide. Gulf's soft data points out that the majority of the line damage experienced after a major storm is due to trees on the customer side of the right-of-way line and wind blown debris. Gulf is being proactive by applying EWL standards to targeted distribution projects. By taking an "experimental" approach, this would enable Gulf to perform some research and to gather "hard data".

#### **2.5.B Estimate of the Effect on Reducing Storm Restoration Costs and Customer Outages - Third-party Attachments**

See Sections 11.0 and 12.0 of Gulf's Storm Hardening Plan.

#### **2.6 Attachment Standards and Procedures which Address Safety, Reliability, Pole Loading Capacity, and Engineering Standards**

See Appendix 3 of Gulf's Storm Hardening Plan for the Company's Attachment Standards and Procedures Outline, Appendix 4 for the Attachment Permit and Overlapping Notification Procedure, and Appendices 2 and 7 for information governing safety, reliability, pole loading capacity and engineering standards and procedures for third party attachments. Each company should refer to the contract they have with Gulf Power Company for details on notification protocol and construction coordination. Gulf Power Company uses the National Joint Use Notification System, or NJUNS, for joint use notifications and helps coordinate construction with affected parties as necessary.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: Review of 2007 Electric Infrastructure )  
Storm Hardening Plan filed pursuant to )  
Rule 25-6.0342, Florida Administrative )  
Code, submitted by Gulf Power Company )

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Docket No.: 070299-EI

**CERTIFICATE OF SERVICE**

I HEREBY CERTIFY that a true copy of the foregoing was furnished by electronic transmission this 11th day of July, 2007, on the following:

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