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GULF POWER
A SOUTHERN COMPANY

August 23, 2007

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

Dear Ms. Cole:

Re: Review of 2007 Electric Infrastructure Storm Hardening Plan Filed pursuant to Rule 25-6.0342, F.A.C., Submitted by Gulf Power Company.

Enclosed for official filing in Docket No. 070299-EI are an original and fifteen copies of the following:

1. Prepared direct testimony and exhibit of E. J. Battaglia.

2. Prepared direct testimony of A. G. McDaniel.

Sincerely,

Susan D. Ritenour
bnk

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

bh

Enclosures

cc w/encl: Beggs & Lane
Jeffrey A. Stone, Esq.

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

Docket No.: **070299-EI**
Date Filed: August 23, 2007

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true copy of the foregoing was furnished by regular U. S. mail, all this 23rd day of August, 2007, on the following:

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BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 070299-EI

TESTIMONY AND EXHIBIT

OF

EDWARD J. BATTAGLIA

August 24, 2007

GULF POWER

A SOUTHERN COMPANY

GULF POWER COMPANY

Before the Florida Public Service Commission
Prepared Direct Testimony of
Edward J. Battaglia
Docket No. 070299-EI
In Support of Gulf Power Company's Storm Hardening Plan
Date of Filing: August 24, 2007

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

A. My name is Edward J. Battaglia, and my business address is One Energy Place, Pensacola, Florida 32520. I am the Technical Services Manager for Gulf Power Company. My organization is responsible for providing technical support for the distribution engineering and construction personnel at Gulf. This technical support function includes the Company's Reliability, Design and Construction Specifications, Power Quality, Distribution Geographic Information System (DistGIS), Technical Applications, such as the Company's Job Estimating and Tracking System, and large project engineering.

Q. Please summarize your educational and professional background.

A. I graduated from the State University of New York at Buffalo with a Bachelor of Science Degree in Electrical Engineering in 1972 and the University of South Florida with a Master of Science Degree in Engineering Management in 1989. I joined Gulf Power Company in 1973 as a Field Engineer in Panama City. I have since held a number of positions with increasing responsibility: Construction Services Supervisor, Manager of Division Engineering, Power Delivery Manager, Principal Engineer, and Supervisor of Distribution Reliability and Power Quality. My

experience is predominately in the areas of distribution operation, maintenance, and construction. During my career, I have participated in and led multiple storm restoration teams after major storms. My first hurricane experience was as a damage evaluator and crew leader after Hurricane Eloise in 1975. My most recent experience was as an area restoration coordinator after Hurricanes Ivan, Dennis and Katrina in 2004 and 2005. In total, I have assisted with restoration work in the field for over 17 named storms ranging in strength from tropical storm to category 3 hurricanes. I am registered as a Professional Engineer in the State of Florida.

Q. Have you prepared an exhibit that contains information to which you will refer in your testimony?

A. Yes. I have one exhibit consisting of 10 schedules to which I will refer. These schedules were prepared under my supervision and direction.

Counsel: We ask that Mr. Battaglia's Exhibit EJB-1, consisting of 10 schedules, be marked for identification as Exhibit No. ___. Please refer to Schedule 1 of Exhibit EJB-1 for an Index of Schedules.

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

A. I will address Gulf Power Company's Storm Hardening Plan (the "Plan") for the period 2007 through 2009 as amended on August 14, 2007. Specifically, I will give an overview of how Gulf developed its Plan and how each part of the Plan addresses and supports the requirements set

forth in Florida Public Service Commission (FPSC) Rules 25-6.0341 and 25-6.0342, Florida Administrative Code. Further, I will discuss how Gulf will assess the ongoing effectiveness of the Plan.

Q. Please give an overview of Gulf's service area, including the number of customers, what counties are served, and a summary of Gulf's facilities.

A. Please refer to Schedule 2 for a map of Gulf Power's service area. Gulf Power's service area spans the area from the Alabama border on the west to the Apalachicola River on the east; and from the Alabama border on the north to the Gulf of Mexico on the south. Gulf Power serves approximately 427,000 retail customers in 71 towns and communities in its eight-county service area: Escambia, Santa Rosa, Okaloosa, Walton, Holmes, Bay, Washington, and Jackson. Gulf is a mixture of rural and urban customer populations with weighting towards being more rural. Please refer to Schedule 3 for a map which illustrates population densities.

Gulf Power owns approximately 2,700 MW of generation capacity. To deliver electricity to its customers, Gulf maintains 126 substations, approximately 1,600 miles of transmission line and 7,200 miles of distribution line. Approximately 1,400 miles (20 percent) of the distribution system is underground.

Q. Please describe and discuss Gulf's Storm Hardening Plan.

A. Gulf Power's Storm Hardening Plan, which consists of 12 sections and 7 appendices, addresses the requirements as set forth in FPSC Rules 25-

6.0341 and 25-6.0342. Gulf Power views this Plan as a starting point of an ongoing process to identify ways to minimize future storm damage and customer outages. Gulf plans to build on what works well and to improve in areas that do not work as well as intended. Gulf is committed to continuous improvement by building on its experiences and is supportive of research to address the potential benefits of initiatives, which could lead to less-frequent customer outages and improved continuity of service during major storm-related events. The Plan incorporates the Ten-Part Storm Preparedness Plan initiatives (Ten-Part Initiatives) in Section 2.0 that were approved in FPSC Order Nos. PSC-06-0781-PAA-EI and PSC-06-0947-PAA-EI. These initiatives have been updated to reflect FPSC approved changes and the latest company information. The Ten-Part Initiatives include the following:

1. Gulf's Vegetation Management Plan which provides for a three year trim cycle on all main line feeders and a six-year cycle on laterals, an annual inspection and corrective action program for main line feeders, and a hazard tree program.

2. Joint-use pole attachment audits which provide for a field audit every five years and a Pole Strength/Load Assessment annually through 2009.

3. Inspection cycle of transmission structures on a six-year inspection cycle.

4. Storm hardening activities for transmission structures, providing for storm guy installations and replacement of wood cross-arms with steel.

5. Geographic Information System (GIS) development, which is an electronic database for Gulf's distribution, transmission and land records data.

6. Post storm data collection and forensic analysis utilizing the GIS mentioned above.

7. Collection of outage data differentiating between overhead and underground systems.

8. Close coordination with local governments on storm preparedness and restoration efforts.

9. Participation in collaborative storm hardening research with other utilities through the Public Utility Research Center at the University of Florida.

10. Annual updates to Gulf's Disaster Preparedness and Recovery Plan.

Section 3.0 of the Plan describes the Wood Pole Inspection Plan approved in FPSC Order No. PSC-07-0078-PAA-EU that requires Gulf to implement an 8-year wood pole inspection cycle. Gulf had previously utilized a 10-year inspection cycle for all wood poles. Actual performance data for the initiatives in Sections 2.0 and 3.0 is included in the Distribution Reliability Report filed annually on March 1. These initiatives comprise the foundation of Gulf's Plan.

Sections 4.0 through 9.0 of Gulf's Plan address each of the new requirements contained in Rules 25-6.0341 and 25-6.0342.

In Section 4.0, concerning compliance with the National Electric Safety Code (NESC), the Plan states that Gulf will exceed NESC by

initiating a transition to Grade B construction for all new construction, major projects and maintenance work.

Section 5.0 addresses the adoption of extreme wind loading (EWL) for distribution facilities, including a specific discussion on storm hardening critical infrastructure and major thoroughfares. In this section of the Plan, Gulf proposes to adopt Grade B construction standards for new construction, major expansions, rebuilds, and relocations of distribution facilities. In addition, Gulf is continuing its storm hardening efforts regarding EWL through pilot programs targeting critical infrastructure facilities and major thoroughfares.

Section 6.0 relates to mitigation of damage to underground facilities and supporting overhead transmission and distribution facilities due to flooding and storm surges. Gulf has developed overhead and underground distribution storm hardening specifications to address this requirement of the Commission's rules.

Section 7.0 addresses placement of new and replacement of distribution facilities so as to facilitate safe and efficient access for installation and maintenance. Gulf has always recognized that easy access to its facilities is critical to efficient operation, maintenance and restoration of its facilities. Gulf has 99.998% of its overhead facilities located on road right-of-ways or easements with only 0.002% of its facilities are back lot line construction. Gulf will continue to build its facilities with this design aspect in mind and has modified company specifications to reinforce this design concept.

Section 8.0 contains other key elements such as feeder patrols and

infrared patrols. These two activities help further prepare the distribution system for storm season. The installation of Gulf's wind monitors is another key element that will provide the granular weather data needed to support the forensic data analysis and the evaluation of the effectiveness of Gulf's storm hardening projects.

Section 9.0 describes Gulf's Storm Plan deployment strategy.

Section 10.0 contains Gulf's estimate of incremental costs and benefits, which are summarized on page 2 of Appendix 7 of the Plan.

Sections 11.0 and 12.0 address storm hardening, as it relates to joint-use and third-party attachers.

Q. What sections of Gulf's Plan are you addressing in your testimony?

A. I will be addressing Section 2.0 of Gulf's Plan, Gulf's Ten-Part Storm Preparedness Plan; Section 3.0, Gulf's Wood Pole Inspection Plan; Section 4.0 concerning compliance with the National Electric Safety Code (NESC); Section 5.0 which addresses the adoption of EWL for distribution facilities; Section 6.0 concerning mitigation of damage to underground facilities and supporting overhead transmission and distribution facilities due to flooding and storm surges; Section 7.0 related to placement of new and replacement distribution facilities so as to facilitate safe and efficient access for installation and maintenance; Section 8.0 which contains other key elements such as feeder patrols, infrared patrols and installation of Gulf's own wind monitors; Section 9.0 which is Gulf's Storm Plan deployment strategy; and Section 10.0, Gulf's estimate of incremental costs and benefits.

Mr. Alan McDaniel, Gulf's Project Services Manager, will address Section 11.0, Impact to Collocation Facilities, concerning pole strength and load assessments and the new process concerning pre-notification by third-party attachers when performing overlashing of cables, along with Section 12.0, which covers third-party attachers' estimate of costs and benefits.

Q. Please summarize the process used to develop Gulf's Storm Hardening Plan.

A. The foundation of Gulf's Plan is the Ten-Part Initiatives and Wood Pole Inspection Plan already approved by this Commission. Gulf's operational, maintenance and storm restoration experience strongly support that these initiatives hold the most potential for accomplishing the objectives of reduced customer outages and reduced restoration time. The initiatives that will do the most to accomplish our goals of reducing customer outages and restoration times are: Vegetation Management, Joint-Use Pole Attachment Audits, Transmission Inspection and Storm Hardening Activities, Post Storm Data Collection and Forensic Analysis, which are part of the Ten-Part Initiatives, and the Wood Pole Inspection Program. These five "key elements" of the Ten-Part Initiatives, along with the Wood Pole Inspection Program, will help meet the desired objectives during both storm situations and on a day-to-day reliability basis. Based on their benefits and costs, these initiatives will provide the most value to our customers in regard to storm hardening.

Building on the Ten-Part Initiatives and Wood Pole Inspection

program, Gulf relied on its many years of storm restoration experience and the lessons learned from Hurricanes Ivan and Dennis to formulate a plan to meet the requirements of Rule 25-6.0341 and 25-6.0342, F.A.C. which addresses EWL. Appendix 5 and 6 of the Plan and Gulf's updated storm preparations and restoration practices contain these lessons learned. While there is no empirical forensic data showing the exact storm impacts from Hurricanes Ivan and Dennis, field observations by Gulf personnel involved in the restoration effort after these hurricanes were used as an input for determining how to storm harden Gulf's system. Along with this base of knowledge, Gulf also incorporated its experience with day-to-day operation and maintenance of its electric system.

Gulf considered transitioning to underground as a storm hardening option in the development of its Plan. In adopting a storm hardening activity, Gulf considers both cost- effectiveness and whether the activity meets the goal of reduced customer outages and restoration times. In reviewing an activity for implementation, the Company looks at how the activity would further the goal of reduced customer outages and restoration times both in the aftermath of a storm occurrence and also on a day-to-day operations basis. At this time, Gulf's experience with underground distribution does not support its use as a storm hardening activity. Although underground distribution appears to be an attractive method of avoiding wind damage during a storm event, underground construction has limitations that cause additional issues on a day-to-day operational basis and during storm restoration. For example, underground construction has increased costs both with initial installation, normal

operation and maintenance and during storm restoration situations. Finding and repairing damage to underground facilities after a storm event and on a day-to-day basis takes longer resulting in longer outages. Finally, underground is susceptible to storm surges and to damage during clean-up after storms. Based on Gulf's experience with underground construction on both a day-to-day operational basis and during storm restoration, underground construction was not adopted as a storm hardening activity. However, Gulf is conducting several distribution pilot projects in potential storm surge areas to test the effectiveness of mitigation techniques. For further description of these projects, see Section 6.0 of the Plan.

In respect to Gulf's Plan, as data continues to be gathered and research progresses, Gulf will continue to evaluate and refine its approach to storm hardening in a way that balances storm hardening with the need to maintain reasonable costs and still achieve the expected results of reduced outages and restoration times.

Q. How did Gulf address extreme wind loading standards in its Storm Hardening Plan?

A. For new construction, major expansions, rebuilds, and relocations of distribution facilities, Gulf is adopting the NESC standard Grade B construction. Beginning in 2007, Gulf will begin transitioning to Grade B construction. Moving to Grade B involves more than just substituting a stronger pole. While a stronger class of pole can certainly be a part of going to Grade B construction, other considerations are also involved,

including stronger anchoring and guying, and in some cases shorter span lengths with a greater number of poles. In addition, all of the attachments on a pole must be modeled and analyzed to determine what impact they have on the pole strength and whether it meets Grade B construction standards. Modeling of pole structures is an extensive process that looks at, among other items, the size of all conductors attached, the heights of all conductors, the configuration, the span lengths of every conductor, the lead length of all anchors and soil class. Pole strength analysis will be performed by both Gulf and a third-party contractor. Gulf will use an application named PoleForeman, while the third-party contractor will use a similar proprietary application. PoleForeman is an industry-recognized application for calculating the loading on a pole. PoleForeman calculates the stresses on the pole and determines which components will fail, if any. For extreme wind loading, the wind is applied 360 degrees around the pole and the worst-case scenario is modeled. Please refer to Schedules 5, 6, and 7 of Exhibit EJB-1 for an example of a pole analysis. Schedule 5 shows a photo of a main line feeder pole with power and communication attachments. Schedule 6 shows the PoleForeman analysis of the pole which under EWL analysis shows that the pole does not meet strength requirements for 140 mph wind loading. Schedule 7 shows the analysis after the needed modifications are added and that the pole now meets EWL criteria for a 140 mph wind. Gulf will continue to work with third-party attachers to ensure that necessary inputs are included in the pole strength analysis to account for all impacts from attachments to poles.

Over the next three years, Gulf will be undertaking targeted pilot

projects to upgrade certain of its critical infrastructure and interstate crossings to extreme wind loading standards specified by Figure 250-2(d) of the 2007 edition of the NESC. Gulf analyzed National Oceanic and Atmospheric Administration (NOAA) data for Northwest Florida's hurricane history as an input into the Plan. Schedule 8 of Exhibit EJB-1 shows a map of all of the storm paths for 155 years, which shows that there are few spots that have not been impacted to some degree over this time period. As a result of these storms, Gulf has gained valuable experience that has shaped Gulf's construction practices, storm preparations and restoration practices over the years. Appendices 5 and 6 of the Plan are examples of design specification changes that Gulf has adopted as a result of past storms. Some additional changes made include: improving internal communications to the field on how the restoration process is proceeding; acquiring additional evaluators, support, and staging site management teams earlier in the restoration effort; determining alternative housing options by assuming that all motels are damaged and not available; combining the distribution line and tree trimming contractor coordination to ensure administrative consistency; and decentralizing the logistics function into major field areas during storms.

The chart in Schedule 9, again from NOAA, shows the distribution by hurricane category for Northwest Florida. As you can see, category 1 storms account for approximately 50% of the storms experienced, with no category 4 or 5 storms.

The use of Grade C construction, which is equal to a 60 MPH wind design, results in an "equivalent wind" load of 83 MPH. This is Gulf's

current standard. In addition, three phase feeders and laterals can have an effective wind load up to 95 MPH. When you take into consideration that Gulf's service area storm history is nearly 50% category 1, it shows that our current system design is well-matched with the most likely storms. As discussed previously, Gulf's Plan adopts Grade B construction for all new and planned expansions, rebuilds and relocations. This design results in an "equivalent wind" load of 118 MPH. Adopting Grade B construction will now strengthen the distribution system to address approximately 80% of the storms likely to be experienced by Gulf based on past historical hurricane data. Gulf's field experience strongly indicates that pole failures on its distribution system are not the result of the wind itself during a hurricane, but rather the wind-carried debris and off right-of-way trees. Despite this, it is reasonable to adopt Grade B construction at this time given its cost-effectiveness and the potential for positive storm hardening benefits. Gulf will continue to evaluate the adoption of Grade B construction to determine its actual costs and benefits. Further, Gulf plans to compare Grade C and Grade B construction in the field post-storm to determine what benefits, if any, actually have been derived by transitioning to Grade B construction standards.

Q. Please discuss Gulf's pilot projects that upgrade certain critical infrastructure and interstate crossings to EWL standards.

A. Gulf defines critical infrastructure as feeders which serve critical loads, such as hospitals, major sewage treatment plants, and fuel depots. Gulf defines major thoroughfares as Interstates 10 and 110. As a part of the

process of developing the Plan, Gulf solicited input from a representative sample of county emergency operating centers to help determine the critical infrastructure categories on which to begin focusing its storm hardening efforts. This input was used as the basis of Gulf's definition of critical infrastructure. These contacts also served to reinforce Gulf's ongoing input from local governmental agencies as described in Section 2.8 of the Plan.

Gulf Power will adopt Grade B construction standards for all new construction and major rebuilds of existing distribution facilities that serve critical infrastructure facilities and cross major thoroughfares. In addition, as a pilot program, Gulf proposes to adopt EWL standards specified by Figure 250-2(d) of the 2007 edition of the NESC for main feeder distribution systems that serve critical facilities such as hospitals, sewer treatment plants, fuel depots, and feeders that cross major thoroughfares. Please refer to Schedule 10 for a summary by year of EWL projects. The proposed EWL pilot projects for the years 2007 through 2009 are also identified in Section 9.1 of the Plan. As a part of these pilot projects, Gulf will also install wind monitoring devices at substations nearest to the planned pilot projects. These devices will enable Gulf to collect granular wind data close to the actual projects. This granular wind data coupled with forensic data gathered after a major storm will assist in the determination of the effectiveness of the EWL pilot projects in Gulf's service area. Gulf believes this is a prudent approach to EWL given that the actual impacts of wind on Gulf's system are not clearly defined and evidence shows that pure wind impacts alone without wind blown debris

are minimal in Gulf's service area.

Q. Why did Gulf not adopt EWL standards for all of its existing overhead distribution facilities?

A. It is not cost-effective to do so. If Gulf applied EWL standards to all of its existing distribution overhead lines, the estimated cost would be approximately $437.2 million plus a yearly cost of approximately $2 million associated with new overhead construction.

Using Gulf's methodology for determining benefits associated with storm hardening initiatives, the possible avoided storm restoration cost is approximately $1.1 million. The benefits were calculated using data from Gulf's March 1, 2006, filing for "Reliability and Storm Hardening Initiatives Report". Pole losses are based on Gulf's worst hurricane to date, which was Hurricane Ivan, a Category 3 storm in 2004, where the percentage of pole loss was approximately 1.6% or 3,976 poles out of 233,897 poles. Based on NOAA weather data, Gulf has experienced approximately 80% category 1 and 2 hurricanes and approximately 20% category 3 hurricanes during this 155-year time period. The total cost/benefit analysis was derived by modeling two scenarios, one for feeder pole losses and one for lateral pole losses. While Gulf cannot predict what frequency and category of storms it may experience in the future, this analysis does show a range of potential benefits. In addition, Gulf's experience is that wind-blown debris is the predominant cause of damage versus pure wind.

Q. In the Plan, does Gulf reasonably address the extent to which its distribution facilities are designed to mitigate damage to underground and supporting overhead transmission and distribution facilities due to flooding and storm surges?

A. Yes. Gulf has developed overhead and underground distribution storm hardening specifications to mitigate damage due to flooding and storm surges. These specifications are shown in Appendices 5 and 6 of Gulf's Plan. In addition, Gulf is currently working on several distribution pilot projects in potential storm surge areas to test the effectiveness of mitigation techniques. Current pilot projects include the installation of below-grade gear, along with heavy lids and anchoring systems on flush-mounted switch enclosures. Gulf will continue to utilize stainless steel equipment in all coastal areas as it has done for many years.

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

A. Yes. Gulf Power has always recognized that accessibility to distribution facilities is essential to safe and efficient maintenance and storm restoration. Gulf continues to promote placement of facilities adjacent to public roads; to utilize easements, public streets, roads and highways; to obtain easements for underground facilities; and to use right-of-ways for conversions of overhead to underground. Gulf has 99.998% of its facilities on road right-of ways or easements.

Q. In the Plan, does Gulf provide a detailed description of its deployment strategy including a description of the facilities affected, technical design specifications, construction standards, and construction methodologies employed?

A. Yes. Section 9.1 of the Plan describes the 3-year deployment strategy for the proposed EWL critical infrastructure pilot projects. Appendices 5 and 6 of the Plan contain the design and construction specifications for the overhead and underground distribution facilities.

Q. In the Plan, does Gulf provide a detailed description of the communities and areas within the utility's service area where the electric infrastructure improvements, including facilities identified by the utility as critical infrastructure and along major thoroughfares, are to be made?

A. Yes. Section 9.1 of the Plan identifies the proposed critical infrastructure project locations. In addition, Appendix 1 of the Plan is a map that shows the location of the proposed critical infrastructure projects in relation to the communities in Northwest Florida.

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

A. Yes. Total storm hardening costs for the 2007 to 2009 time period are estimated at approximately $20 million per year. Schedule 4 is a summary sheet of the total costs and benefits, which indicates a 2007 cost

per customer of $46.00.

The incremental costs of Gulf's storm hardening activities are shown on page 2 of Appendix 7 of the Plan, as amended. The estimated revenue requirement for incremental storm hardening costs over the 2007 to 2009 time period is approximately $8.3 million or $0.28 for the cost of 1,000 kWh on Gulf's residential rate RS. Gulf continues to evaluate the possible benefits associated with its storm hardening activities. The items contained in this Plan are likely to result in some mitigation of storm damage, though it will take years to determine their true effect and resulting benefits.

Q. How will Gulf assess the ongoing effectiveness of its Plan?

A. Gulf will assess the effectiveness of its storm hardening efforts with a two-part approach. First, Gulf will address the effectiveness of the Plan on a "non-storm" basis or how the initiatives affect normal daily operations. The second part addresses the effectiveness of initiatives during named storm events, which involves forensic data collection post-storm. In both parts, Gulf will use new and existing internal work processes, which include reporting tools and procedures. This will involve using existing accounting systems with some modifications and existing applications, such as Gulf's Job Estimating and Tracking System (JETS) and Trouble Call Management Systems (TCMS), to collect data. The data obtained through these systems, along with the internal work processes, will provide cost information and reliability data for the ongoing evaluation of the effectiveness of initiatives and projects contained in the Plan.

Q. How does Gulf plan to address communications with interested parties related to storm hardening activities?

A. As described in Section 2.8 of the Plan, Coordination with Local Governments, Gulf Power has several employees whose responsibility during storm restoration is to serve as liaison with local governments and customers in Northwest Florida. In addition, district managers located in Pensacola, Ft. Walton, and Panama City, along with local managers located in Milton, Crestview, Niceville, and Chipley, interact with city and county personnel and customers on a daily/weekly basis as needed regarding numerous issues, including emergency preparedness. These Gulf Power employees are also actively involved in joint government and business committees that focus on local development and emergency preparedness needs in Northwest Florida.

Q. Does Gulf's Plan comply with all applicable sections of the National Electric Safety Code (ANSI C-2) [NESC] 2007 Edition?

A. Yes. Gulf's Plan fully complies with the National Electric Safety Code.

Q. Does Gulf's Plan meet the desired objectives of enhancing reliability and reducing restoration costs and outage times in a prudent, practical, and cost-effective manner to the affected parties?

A. Yes. Gulf's Plan can reasonably be expected to enhance the reliability and reduce restoration cost and customer outage times in a cost-effective manner. By adopting Grade B construction standards on all new and major distribution rebuilds, along with utilizing an EWL pilot project

approach on critical infrastructure facilities and performing underground storm hardening projects where appropriate, Gulf's Plan is prudent, practical, and cost-effective.

Q. Does this conclude your direct testimony?

A. Yes.

AFFIDAVIT

STATE OF FLORIDA)
)
COUNTY OF ESCAMBIA)

Docket No. 070299-EI

Before me the undersigned authority, personally appeared Edward J. Battaglia, who being first duly sworn, deposes, and says that he is the Manager of Technical Services of Gulf Power Company, a Florida corporation, that the foregoing is true and correct to the best of his knowledge, information, and belief. He is personally known to me.

Edward J. Battaglia
Manager of Technical Services

Sworn to and subscribed before me this 23RD day of August, 2007.

Brame Nye Holsinger
Notary Public, State of Florida at Large

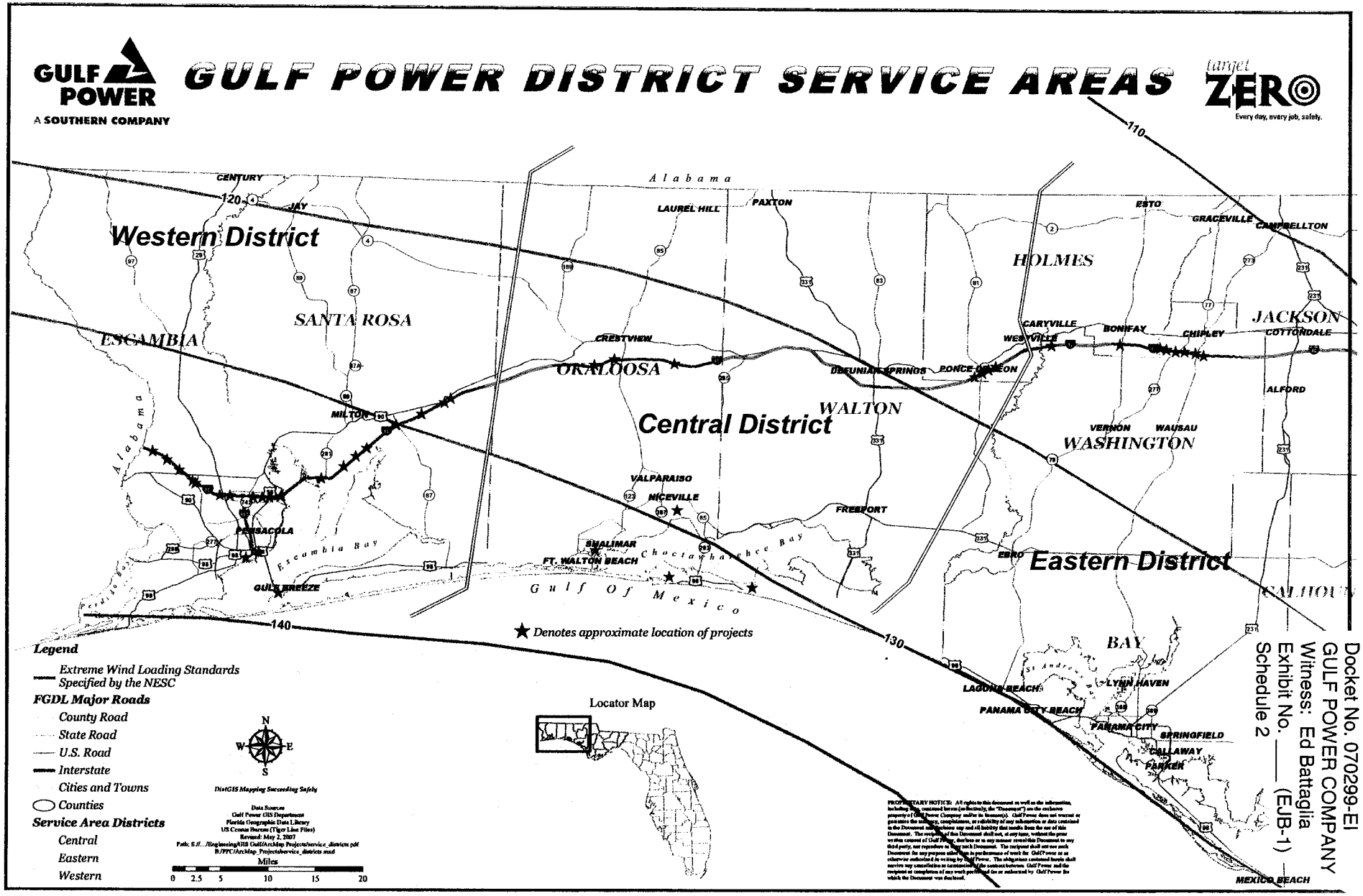
Commission No. DD 401210

My Commission Expires April 10, 2009

BRAME NYE HOLSINGER
MY COMMISSION # DD 401210
EXPIRES: April 10, 2009
Bonded Thru Notary Public Underwriters

Florida Public Service Commission
Docket No. 070299-EI
GULF POWER COMPANY
Witness: E. J. Battaglia
Exhibit No. ____ (EJB-1)
Schedule 1

Index	Schedule Number

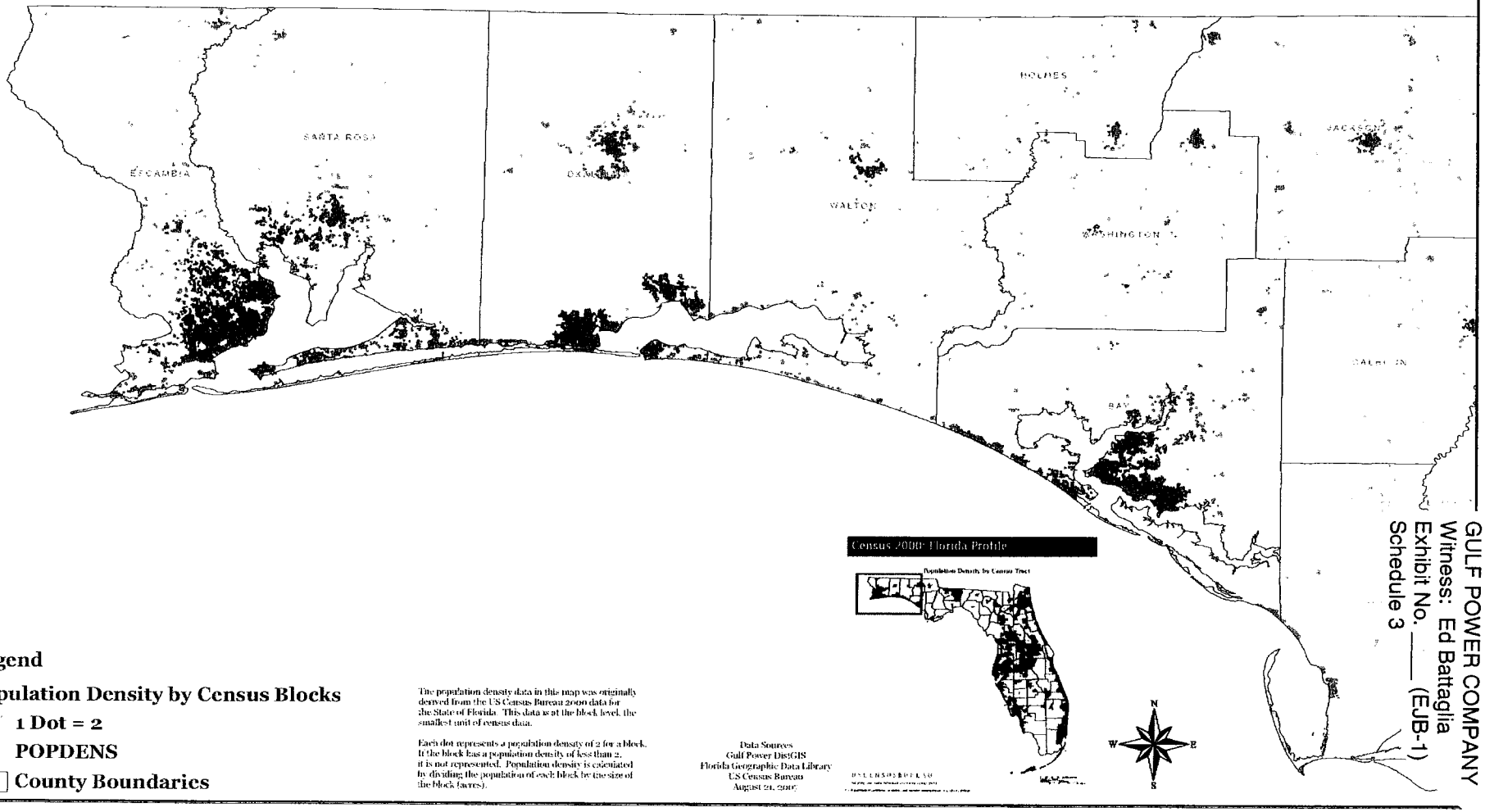


Florida Public Service Commission
Docket No. 070299-EI
GULF POWER COMPANY
Witness: Ed Battaglia
Exhibit No. ____ (EJB-1)
Schedule 2

GULF POWER
A SOUTHERN COMPANY

Population Density of Northwest Florida by Census Blocks

target ZERO
Every day, every job, safely.



Legend

Population Density by Census Blocks

- 1 Dot = 2
- POPDENS
- County Boundaries

The population density data in this map was originally derived from the US Census Bureau 2000 data for the State of Florida. This data is at the block level, the smallest unit of census data.

Each dot represents a population density of 2 for a block. If the block has a population density of less than 2, it is not represented. Population density is calculated by dividing the population of each block by the size of the block (acres).

Data Sources
Gulf Power DistGIS
Florida Geographic Data Library
US Census Bureau
August 21, 2007

Florida Public Service Commission
Docket No. 070299-EI
GULF POWER COMPANY
Witness: Ed Battaglia
Exhibit No. ____ (EJB-1)
Schedule 3

Rule 25-6.0342 - **Gulf Power Company** Storm Hardening Plan

		Activity	Docket No.	Actual/Estimated Utility Costs 2004	2005	2006	2007	2008	2009	Estimated Benefits to Utility Customers: Impact on Storm Restoration Costs 2007	2008	2009	Impact on Storm Caused Outages - avoided CMI 2007	2008	2009	Other Estimated Company Benefits 2007	2008	2009	Estimated Benefits to Third Party Attachers: Impact on Storm Restoration Costs 2007	2008	2009	Impact on Storm Caused Outages 2007	2008	2009
(a)		**Wooden Pole Inspections.**	060078-EI	$288,109	$988,971	$595,146	$830,000	$850,000	$850,000	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
		Ten Storm Hardening Initiatives.	060198-EI																					
(b)	1	A Three-Year Vegetation Management Cycle for Distribution Circuits		$2,821,245	$3,617,018	$2,180,416	$4,638,139	$4,907,005	$4,906,189	$500,000	$500,000	$500,000	4,425,000	8,850,000	13,275,000	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(c)	2	An Audit of Joint-Use Attachment Agreements	See Note 6	$0	$0	$0	$384,000	$420,000	$460,000	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(d)	3	A Six-Year Transmission Structure Inspection Program		$330,974	$78,346	$245,181	$475,552	$481,335	$485,086	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 12	See Note 12	See Note 12	See Note 12	See Note 12	See Note 12
(e)	4	Hardening of Existing Transmission Structures		$1,797,840	$2,052,497	$1,829,361	$3,900,000	$3,000,000	$3,000,000	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 12	See Note 12	See Note 12	See Note 12	See Note 12	See Note 12
(f)	5	Transmission and Distribution GIS		$0	$0	$0	$75,000	$75,000	$75,000	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(g)	6	Post-Storm Data Collection and Forensic Analysis	See Note 5	$0	$0	$0	$205,000	$100,000	$100,000	0	0	See Note 5	See Note 7	See Note 7	See Note 7	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(h)	7	Collection of Detailed Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems		$0	$0	$0	$0	$0	$0	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(i)	8	Increased Utility Coordination with Local Governments		$0	$0	$0	$0	$0	$0	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(j)	9	Collaborative Research on Effects of Hurricane Winds and Storm Surge		$0	$0	$0	$15,000	$17,000	$17,000	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(k)	10	A Natural Disaster Preparedness and Recovery Program		$0	$0	$0	$0	$0	$0	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
		Compliance with National Electric Safety Code's adoption of Extreme Wind Loading Standards.	070xxx-EI																					
(l)	1	New Distribution Facilities - incremental	See Note 8	0	0	0	$30,400	$121,500	$121,500	$611,891	$611,891	$611,891	35,975	35,975	35,975	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
		Base amount		$4,583,494	$4,995,443	$5,594,281	$4,558,770	$4,152,510	$4,145,850	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
(m)	2	Major planned expansion, rebuild, or relocation of distribution facilities	See Note 8	0	0	0	$25,900	$103,500	$103,500	$510,241	$510,241	$510,241	30,646	30,646	30,646	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
		Base amount		$2,802,490	$3,884,056	$4,930,651	$2,159,000	$3,978,000	$4,108,000	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
(n)	3	Critical infrastructure and major thoroughfares	See Note 10	0	0	0	$523,610	$499,229	$563,479	$271,180	$254,800	$293,020	23,095	21,700	24,955	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
		Wind Monitors to provide needed wind data		0	0	0	$43,000	$36,000	$45,000	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 2	See Note 2	See Note 2	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
		Mitigating flood and storm surge damage to underground and supporting overhead facilities.	070xxx-EI																					
(o)	1	Transmission		See Note 3																				
(p)	2	Distribution - piloted project incremental costs	See Note 4	$0	$71,680	$446,000	$181,000	$100,000	$100,000	See Note 4	See Note 4	See Note 4	See Note 4	See Note 4	See Note 4	See Note 4	See Note 4	See Note 4	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
		Distribution - use of SS equipment	See Note 9	$993,555	$1,057,308	$1,380,338	$1,143,733	$1,143,733	$1,143,733	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 7	See Note 4	See Note 4	See Note 4	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11	See Note 11
(q)		**Placement of new and replacement distribution facilities to facilitate safe and efficient access for installation and maintenance.**	070xxx-EI	See Note 1																				
		TOTALS		$13,617,707	$16,745,319	$17,201,374	$19,218,504	$20,106,312	$20,345,837	$1,893,312	$1,876,932	$1,915,152	4,514,716	8,938,321	13,366,576									
		SH Cost per customer using 2006 YE customers of 418,892					**$46 per customer**																	

Notes:

1 Gulf has always recognized that accessibity to distribution facilities is essential to safe and efficient maintenance and storm restoration. Since this activity is already integral to our construction practices, there is no added cost impact nor can these costs be determined. There is no incremental cost impact or benefits associated with this activity.

2 Until the program is complete and a storm hits it is not possible to estimate benefits resulting from this activity.

3 Gulf does not have underground transmission/substation facilities.

4 Gulf recognized and piloted underground system storm hardening design changes in response to lessons learned from Ivan in 2004. Gulf has not determined a methodology at this time for determining the benefits of undergrounding in coastal areas as a storm hardening technique.

5 Cost for 2007 includes setting up the computer code, the database, and testing. Post storm forensic data collection and analysis will initially increase the cost of the storm due to cost associated with collection and analysis of data. System storm hardening improvements identified through data analysis will not occur until improvements can be budgeted the year after the storm strikes and implemented during the year in which they are budgeted. This time lag for initiating system improvements will be approximately two years after a storm strike. Cost fo Forensic data collection will vary greatly depending on the size of the storm and extent of storm damage.

6 Gulf performs these audits every five years across the system, therefore no dollars are shown for 2004 to 2006.

7 It is not possible to estimate benefits at this time.

8 Transitioning to Grade B construction.

9 Gulf has historically used stainless steel transformers within coastal areas which mitigates damage after a storm surge. Estimates for 07, 08, and 09 based on 3 year average of actuals.

10 Applying Extreme Wind Loading to targeted projects.

11 Estimates to be determined and provided by Third Party Attachers.

12 There are no Third Party Attachers on transmission structures.

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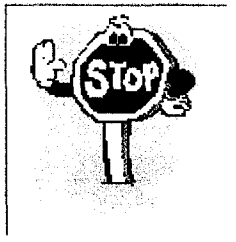
Pole Loading Analysis

Pole Loading Percentage

Pole Size 60/3 Grade B

Horizontal Loading 250C

Vertical Loading 3% 250C



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Graphs

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Span Guy Strand Data

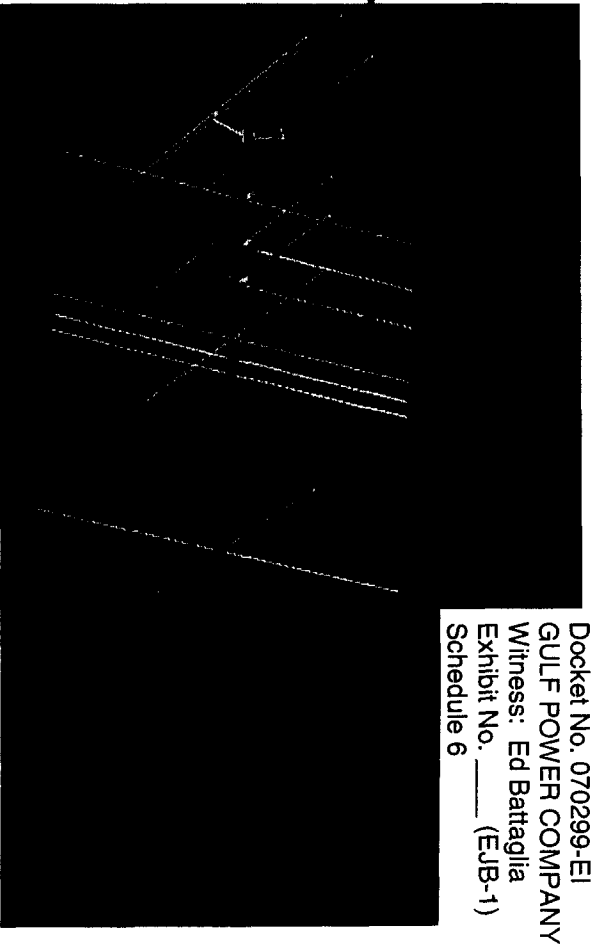
Span Number	Strand Size	Strand Tension	Attach Height	Span Length	Span Direction	Strand Strength	Strand Loading
3	3/8" UG	3,435	108"	373'	0°	10,350	33%
3	3/8" UG	2,178	150"	373'	0°	10,350	21%
3	3/8" UG	827	382"	373'	0°	10,350	8%

Arm / Bracket Data

Arm/Bracket	Attach	Vert Loading	Horz Loading
18" Steel PTP	8"	5%	34%
26" 1Ø FG 2.0"	32"	26%	29%
26" 1Ø FG 2.0"	32"	26%	29%
Spool Rack	208"		

Insulator Data

Insulator	Attach	Loading	Angle
15KV Pin	8"	72%	0°
15KV Pin	32"	72%	0°
15KV Pin	32"	72%	0°
15KV Dead End	90"	16%	0°



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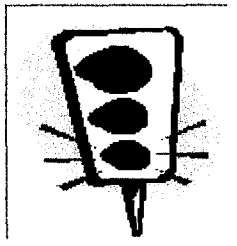
Pole Loading Analysis

Pole Loading Percentage

Pole Size 60/3 Grade B

Horizontal Loading 71% 250C

Vertical Loading 9% 250C



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Guy Strand Data

Anchor Number	Strand Size	Strand Tension	Strand Strength	Attach Point	Lead Length	Guy Direction	Strand Loading	NESC Rule
1	3/8" UG	7,669	10,350	100"	20'	269°	74%	250C

Span Guy Strand Data

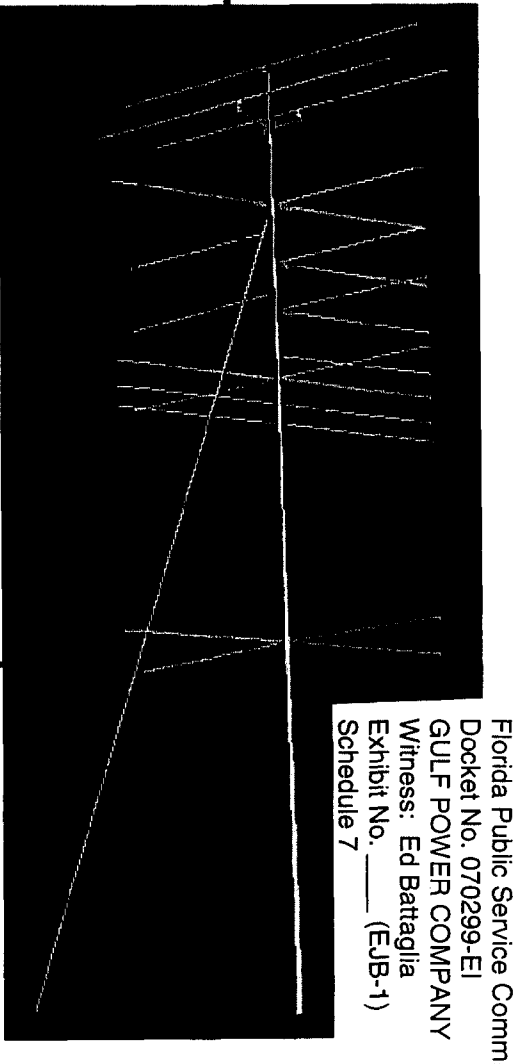
Span Number	Strand Size	Strand Tension	Attach Height	Span Length	Span Direction	Strand Strength	Strand Loading
3	3/8" UG	3,030	108"	166'	0°	10,350	29%
3	3/8" UG	1,558	150"	166'	0°	10,350	15%
3	3/8" UG	1,150	382"	166'	0°	10,350	11%
6	3/8" UG	3,949	192"	85'	90°	10,350	38%

Anchor Data

Anchor Number	Rod Tension	Rod Strength	Rod Size	Anchor Strength	Soil Class	Anchor Type
1	7,669	58,000	1-1/4" Rod	8,000	Class - 7	10" Single Heli

Arm / Bracket Data

Arm/Bracket Attach Vert Loading Horz Loading



Solution for example shown. In order to meet 140MPH. The modifications include the following:

1) set 2 additional poles to shorten the span to the north and the span to the south
2) add 1 additional anchor to the West.
3) add one span guy to the east and an anchor.

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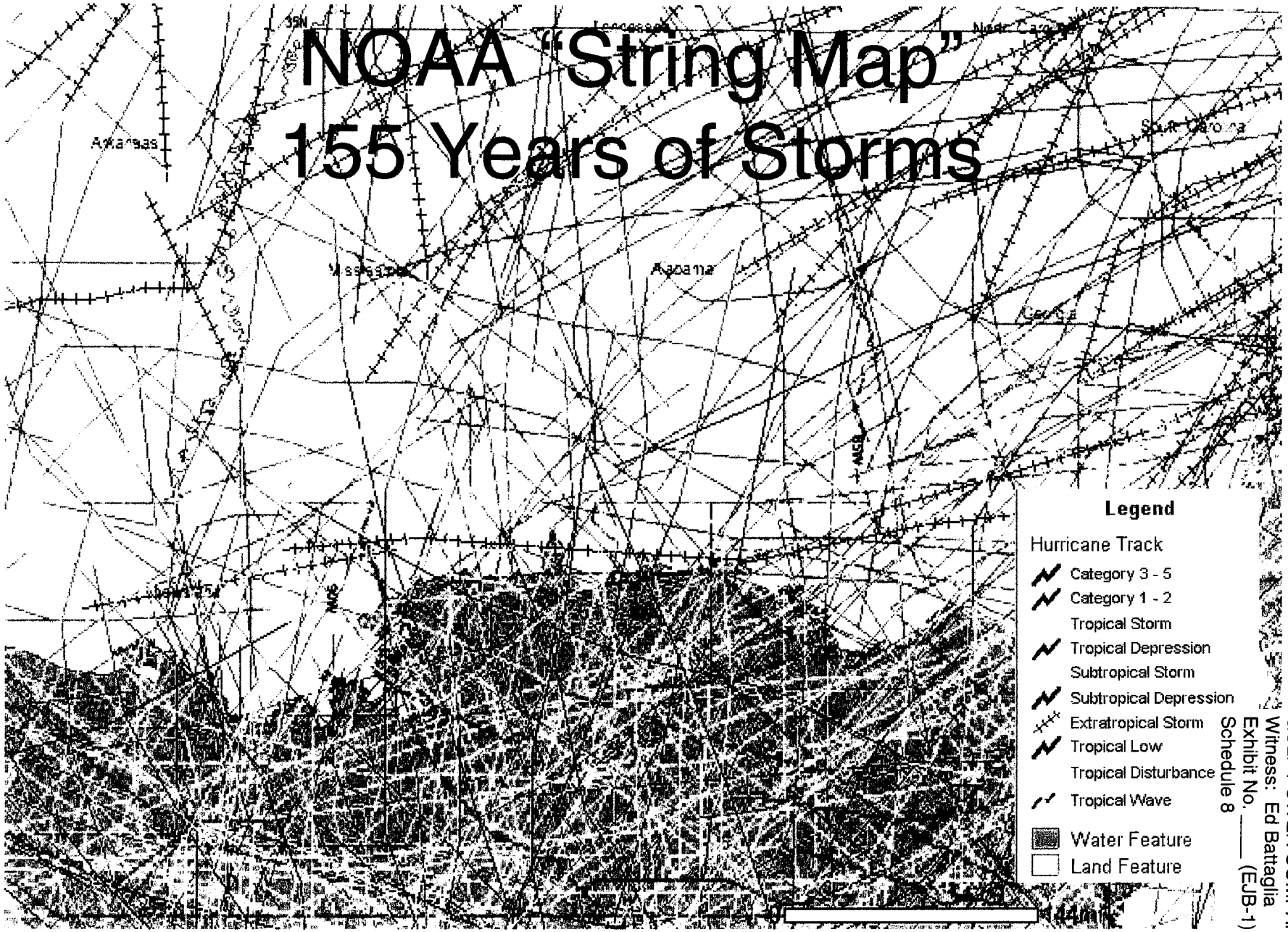
Schedule 7

NOAA "String Map" 155 Years of Storms



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Schedule 8

Hurricane Direct Hits on NW Florida
1851 to 2006
Data Source NOAA

Area	CAT 1 Winds 74-94 mph	CAT 2 Winds 96-110 mph	CAT 3 Winds 111-130 mph	CAT 4 Winds 131-155 mph	CAT 5 Winds >155 mph	ALL	Major Hurricanes
NW Florida	27	16	12	0	0	55	12
Percentage of Total	49%	29%	22%	0%	0%	-	22%

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Summary of Extreme Wind Loading Projects by Year

2007	District	Critical Load	Feeder ID	Total Main Miles	Estimated Cost
	Central	Hospital	8162	0.27	$34,038
	Eastern	I-10 Crossings	Various	N.A.	$52,000
	Central	I-10 Crossings	Various	N.A.	$45,500
	Western	Sewage Plant	5912	0.37	$46,645
	Western	Sewage Plant	7402	1.36	$171,453
	Western	Fuel Depot	6522	1.38	$173,974
TOTAL 2007					$523,610
2008	District	Critical Load	Feeder ID	Total Main Miles	Estimated Cost
	Central	Hospital	9132	1.13	$142,457
	Central	Fuel Depot	9252	2.83	$356,772
TOTAL 2008					$499,229
2009	District	Critical Load	Feeder ID	Total Main Miles	Estimated Cost
	Western	Hospital	7512 & 7522	1.06	$133,633
	Central	Sewage Plant	9342	2.43	$306,346
	Western	I-10 Crossings	Various	N.A.	$123,500
TOTAL 2009					$563,479
	Company	Three Year Plan Totals			$1,586,318