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GULF POWER
A SOUTHERN COMPANY

January 14, 2011

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

Dear Ms. Cole:

RE: Rule 25-6.0143, F.A.C.; Undocketed

Dear Ms. Cole:

Enclosed for filing is Gulf Power Company's Hurricane Loss and Reserve Performance Analyses as required per FPSC Rule 25-6.0143 - Use of Accumulated Provision Accounts 228.1, 228.2, and 228.4.

Sincerely,

Terry A. Davis

vm

Attachment

cc w/attach: Beggs & Lane
Jeffrey Stone

EQECAT
An ABS Group Company

Gulf Power Company

Transmission and Distribution Hurricane Loss and Reserve Performance Analyses

January
2011

GULF POWER
A SOUTHERN COMPANY

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A SIGNIFICANT AMOUNT OF UNCERTAINTY EXISTS IN KEY ANALYSIS PARAMETERS THAT CAN ONLY BE ESTIMATED. PARTICULARLY, SUCH UNCERTAINTIES EXIST IN, BUT ARE NOT LIMITED TO: HURRICANE SEVERITY AND LOCATIONS; ASSET VULNERABILITIES, REPLACEMENT COSTS, AND OTHER COMPUTATIONAL PARAMETERS, ANY OF WHICH ALONE CAN CAUSE ESTIMATED LOSSES TO BE SIGNIFICANTLY DIFFERENT THAN LOSSES SUSTAINED IN SPECIFIC EVENTS.

Executive Summary

Gulf Power (Gulf) transmission and distribution (T & D) systems are exposed to and in the past have sustained damage from hurricanes. The exposure of these assets to hurricane damage is described and potential losses are quantified. Loss analyses were performed by EQECAT, using an advanced computer model simulation program WORLDCATenterprise USWIND™.

The hurricane exposure is analyzed from a probabilistic approach, which considers the full range of potential hurricane characteristics and corresponding losses. Factors considered in the analysis include the location of Gulf's T & D assets, the probability of hurricanes of different intensities and landfall points impacting those assets, the vulnerability of those assets to hurricane damage, and the costs to repair assets and restore electrical service.

The frequencies and computed damage for all simulated hurricanes are combined to calculate the expected annual loss and the annual aggregate exceedance relations. The expected annual damage represents the average of all storm years over a long period of time. There is a 10% probability that damage to T&D assets from all hurricanes in one year could exceed $22 million, and a 1% probability that damage could exceed $140 million.

An analysis was also performed to simulate the performance of Gulf's reserve fund over a five year prospective period. This probabilistic analysis is based on the losses and frequencies of occurrence of hurricanes, and the current level of annual accruals to the reserve. This anaysis shows the reserve fund balance is expected to decline from the current $27 million to $11 million at the end of five years. There is a 29% probability that the reserve could have inadequate funds to cover hurricane damage over the five year simulation period.

A summary of the analyses performed by EQECAT of Gulf's hurricane loss exposure and reserve performance are provided in the risk profile in Table E-1 below.

This report is intended to be used solely by Gulf and the Florida Public Service Commission for estimation of potential future Gulf losses to the reserve and the estimation of the performance of the reserve fund.

Table E-1

Gulf Power Company Transmission and Distribution Risk Profile

OWNER	**Gulf Power Company**	
ASSETS	Transmission and Distribution (T & D) System consisting of: Transmission towers, and conductors; Distribution poles, transformers, conductors, lighting and other miscellaneous assets	
LOCATION	All T & D assets located within State of Florida	
ASSET VALUE	Normal replacement value is approximately $ 2.2 billion, of which approximately 21% is transmission and 79% is distribution	
LOSS PERIL	Hurricane Windstorm (SSI 1 to 5)	
EXPECTED ANNUAL DAMAGE	$8.3 million	
10% AGGREGATE DAMAGE EXCEEDANCE VALUE	$22 million (one year)	
1% AGGREGATE DAMAGE EXCEEDANCE VALUE	$140 million (one year)	
	RESERVE PERFORMANCE	
Reserve Fund Initial Balance	**Expected Fund Balance at 5 years**	**Probability of negative balances within 5 years**
$27 million	$11 million	29%

1. Hurricane Loss Analysis

Gulf Power (Gulf) transmission and distribution (T & D) systems are exposed to and in the past have sustained damage from hurricanes. The exposure of these assets to hurricane damage is described and potential losses are quantified. Loss analyses were performed by EQECAT, using an advanced computer model simulation program WORLDCATenterprise USWIND ™ developed by EQECAT, an ABS Group Company. All results which are presented here have been calculated using USWIND, and Gulf provided T & D asset portfolio data.

The hurricane exposure is analyzed from a probabilistic approach, which considers the full range of potential hurricane characteristics and corresponding losses. Probabilistic analyses identify the probability of damage exceeding a specific dollar amount. WORLDCATenterprise USWIND™ is a probabilistic model designed to estimate damage and losses due to the occurrence of hurricanes. EQECAT proprietary computer software USWIND is one of only four models evaluated and determined acceptable by the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) for projecting hurricane loss costs and approved for use in insurance rating (Reference 1).

Probabilistic Annual Damage & Loss is computed using the results of thousands of random variable hurricanes. Annual damage and loss estimates are developed for each individual site and aggregated to overall portfolio damage and loss amounts. Damage is defined as the Operations and Maintenance (O&M) portion of the cost, exclusive of capital and nominal labor, associated with repair and/or replacement of T & D assets necessary to promptly restore service in a post hurricane environment. This cost is typically larger than the costs associated with scheduled repair and replacement programs.

Factors considered in the analysis include locations of Gulf's overhead T & D assets, the probability of hurricanes of different intensities and/or landfall points impacting those assets, the vulnerability of those assets to hurricane damage, and the costs to repair assets and restore electrical service.

Transmission and Distribution asset data are provided in the Tables 1-1 and 1-2 below. Distribution asset values are shown in Figure 1-1.

Table 1-1

Overhead Distribution Asset Replacement Values by County

County	Replacement Value ($1,000)
Escambia	410,976
Bay	221,048
Okaloosa	206,440
Santa Rosa	188,933
Washington	45,271
Walton	39,078
Holmes	14,624
Jackson	9,136
Total	**1,135,506**

Table 1-2

Overhead Transmission Asset Replacement Value

	Replacement Value ($1,000)
Total	**463,579**

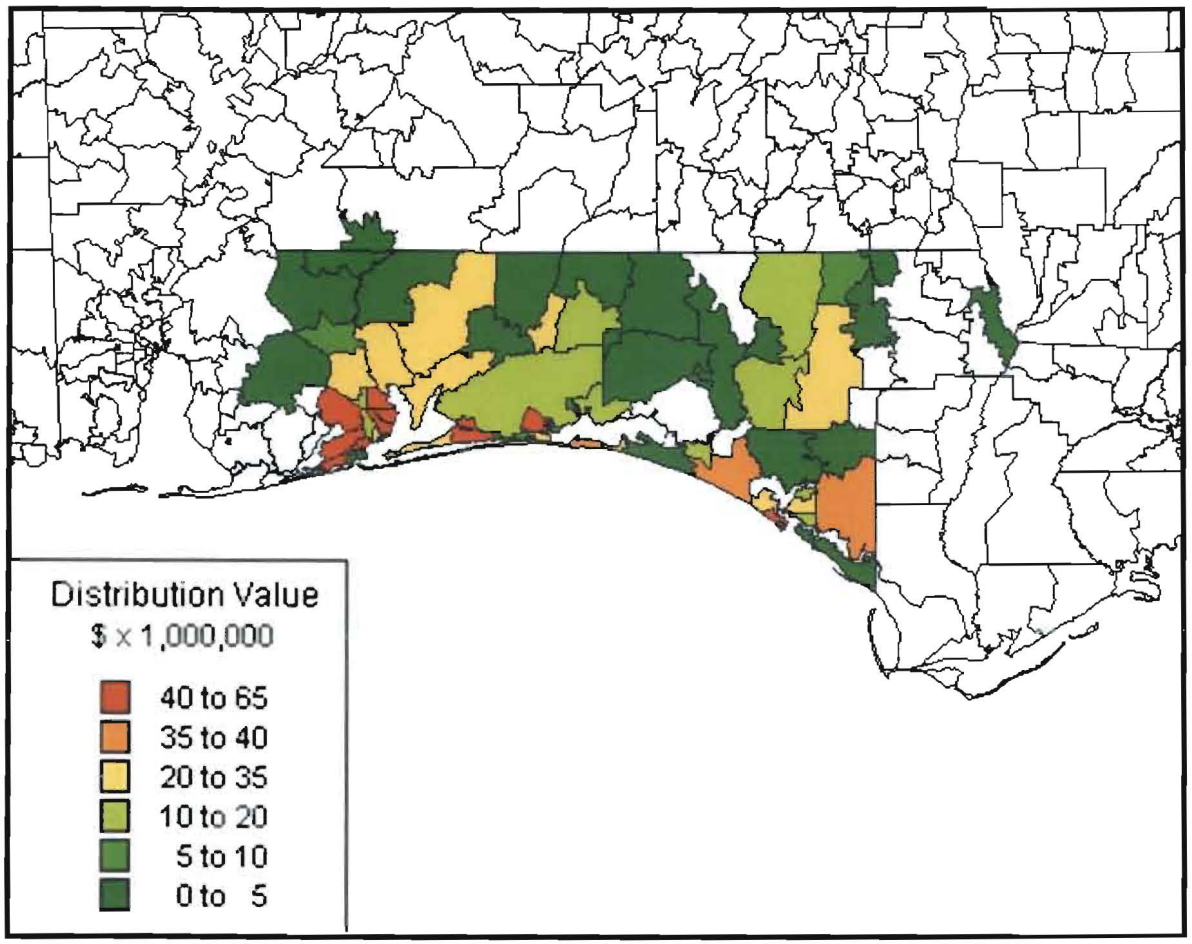

Figure 1-1: Overhead Distribution Asset Values by Zip Code

Transmission and Distribution Asset Vulnerabilities

The Gulf Power loss history from the 2004 Hurricane Ivan, 2005 Hurricane Dennis and Katrina were considered in the calibration of the hurricane loss model. These hurricanes provide data on recent hurricane recovery costs from moderate intensity events. The 2004-05 hurricane loss experience includes the effects of many factors including the post hurricane costs of labor, mutual aid and other factors associated with the hurricane restoration process utilized by Gulf Power. The 2004-05 loss history is believed to be most reflective of the current Gulf hurricane restoration practices and cost experience.

Loss Estimation Methodology

The basic components of the hurricane risk analysis include:

- **Assets at risk:** define and locate
- **Hurricane hazard**: apply probabilistic hurricane model for the region
- **Asset vulnerabilities:** severity (wind speed) versus damage
- **Portfolio Analysis:** probabilistic analysis -damage/ loss

2. Hurricane Hazard

Hurricane Exposure

The hurricane exposure is analyzed from a probabilistic approach, which considers the full range of potential hurricane characteristics and corresponding losses. Probabilistic analyses identify the probability of damage exceeding a specific dollar amount. WORLDCATenterprise USWIND™ is a probabilistic model designed to estimate damage and losses due to the occurrence of hurricanes. EQECAT, Inc. proprietary computer software USWIND is one of only four models evaluated and determined acceptable by the Florida Commission on Hurricane Loss Projection Methodology (FCHLPM) for projecting hurricane loss costs and approved for use in insurance rating.

The historical annual frequency of hurricanes has varied significantly over time. There are many causes for the temporal variability in hurricane formation. While stochastic variability is a significant factor, many scientists believe that the formation of hurricanes is also related to climate variability.

One of the primary climate cycles having a significant correlation with Hurricane activity is the Atlantic Multidecadal Oscillation (AMO). It has been suggested that the formation of hurricanes in the Atlantic Ocean off the coast of Africa is related to the amount of rainfall in the Western African Sahel region. Years in which rainfall is heavy have been associated with the formation of a greater number of hurricanes. The AMO cycle consists of a warm phase, during which the tropical and sub-tropical North Atlantic basins have warmer than average temperatures at the surface and in the upper portion relevant to hurricane activity, and a cool phase, during which these regions of the ocean have cooler than average temperatures. In the period 1900 through 2005, the AMO has gone through the following phases:

1900 through 1925	Cool	(Decreased Hurricane Activity)
1926 through 1969	Warm	(Increased Hurricane Activity)
1970 through 1994	Cool	(Decreased Hurricane Activity)
1995 through 2010	Warm	(Increased Hurricane Activity)

These AMO phases are illustrated by the plot of Sea Surface Temperature (SST) Anomalies (deviation from the mean) in the Atlantic Basin over the past 150 years in Figure 2-1.

The National Oceanic and Atmospheric Administration (NOAA) believes that we entered a warm phase of AMO around 1995 which can be expected to continue for at least several years; historically, each phase of AMO has lasted approximately 25 to 40 years.

Probabilistic Annual Damage & Loss is computed using the results of thousands of random variable hurricanes considering the long term 100 year hurricane hazard. Annual damage estimates are developed for each individual site and aggregated to overall portfolio damage amounts. Damage is defined as the total cost including the operations and maintenance (O&M) and capital components associated with repair and/or replacement of T & D assets necessary to promptly restore service in a post hurricane environment. This cost is typically larger than the costs associated with scheduled repair and replacement programs.

Primary factors considered in the analysis include the location of Gulf Power Company's overhead T & D assets, the probability of hurricanes of different intensities and/or landfall points impacting those assets, the vulnerability of those assets to hurricane damage, and the costs to repair assets and restore electrical service.

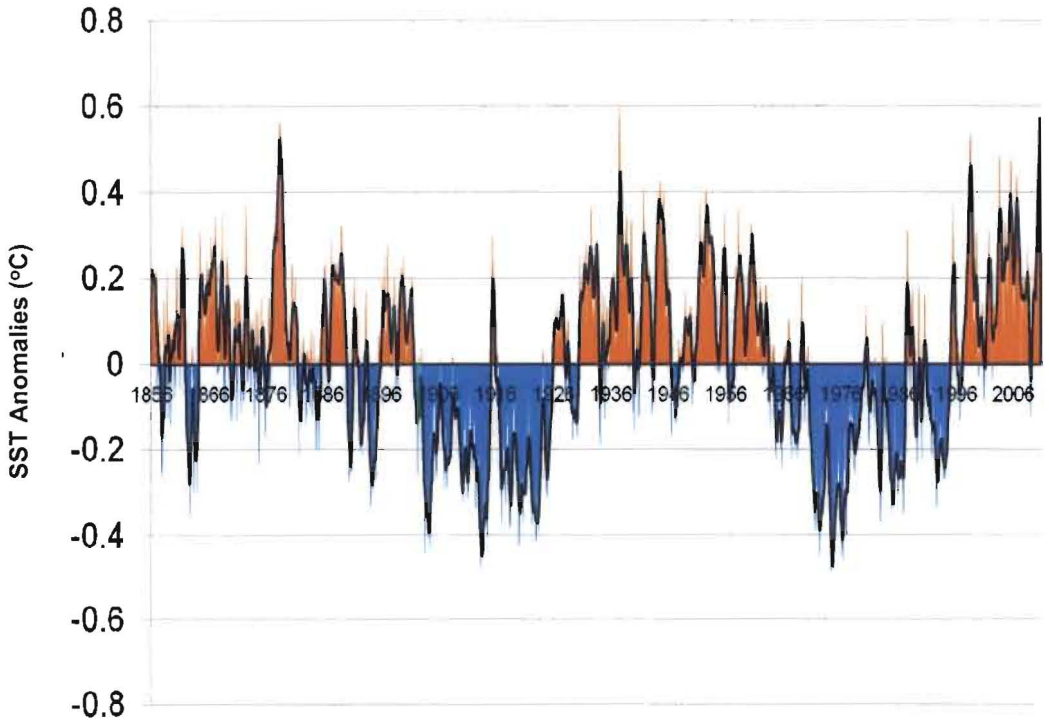

Figure 2-1: Atlantic Multidecadal Oscillation in Sea Surface Temperatures 1856-2010

3. Hurricane Landfall Analyses for SSI Ranges

In order to provide further insight into Gulf's risk profile, the full set of stochastic hurricane events were analyzed by landfall for four storm intensities, SSI 1 through 4. The landfall locations are at mile posts 780 through 1010. Figure 3-1 illustrates the landfall locations. These mile posts extend east from Pascagoula, MS to Apalachicola, FL at approximately 10 mile intervals.

The full set of stochastic storms within each SSI category was analyzed on Gulf's T&D portfolio. For each milepost and SSI category, the frequency-weighted average damage was computed from all stochastic storms making landfall within 10 nautical miles of a given milepost and within that SSI category. Figures 3-2 through 3-5 provide these results graphically.

Figure 3-1: Storm Landfall Mile Posts

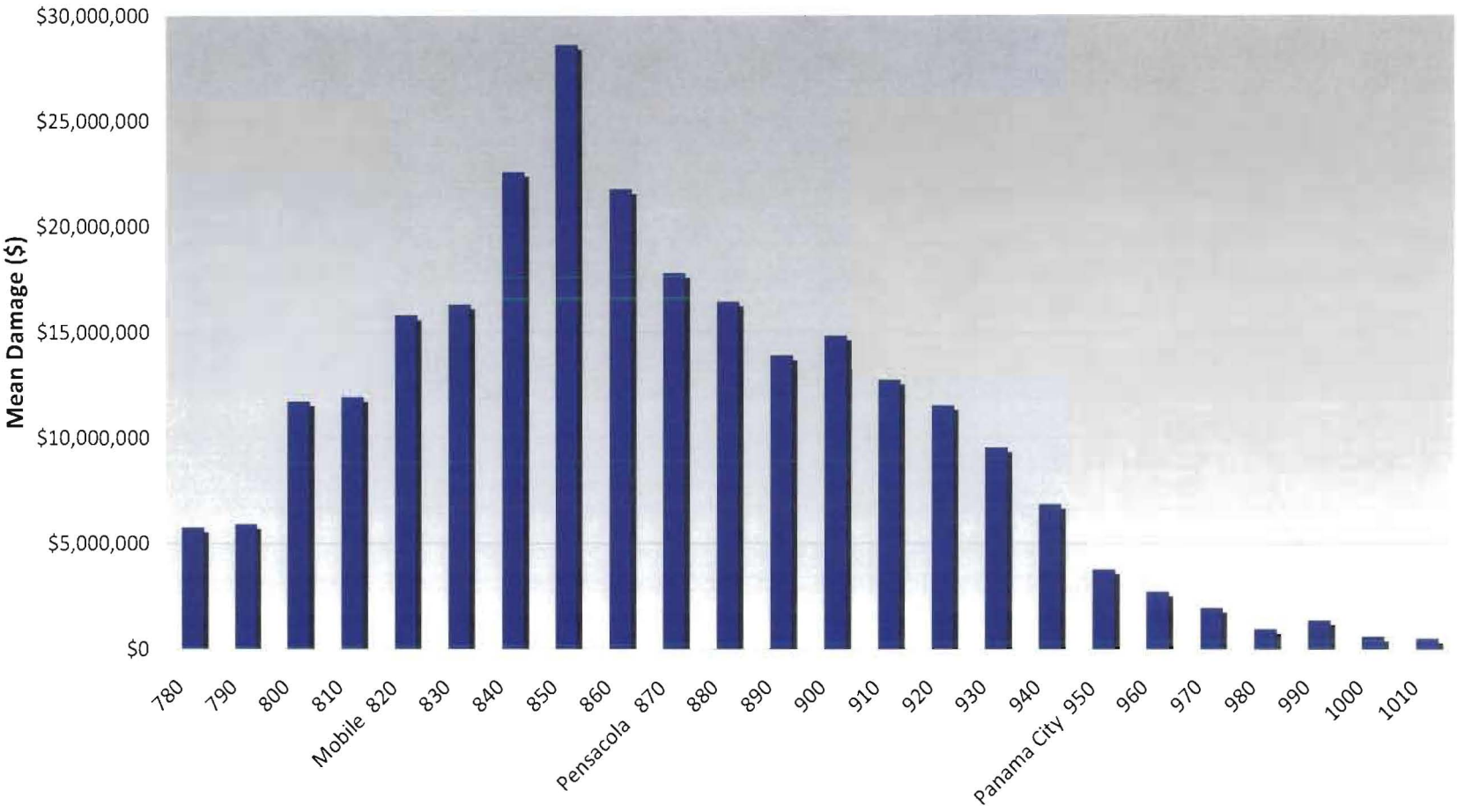

Figure 3-2: Frequency Weighted Average Transmission & Distribution Damage from SSI 1 Landfalls

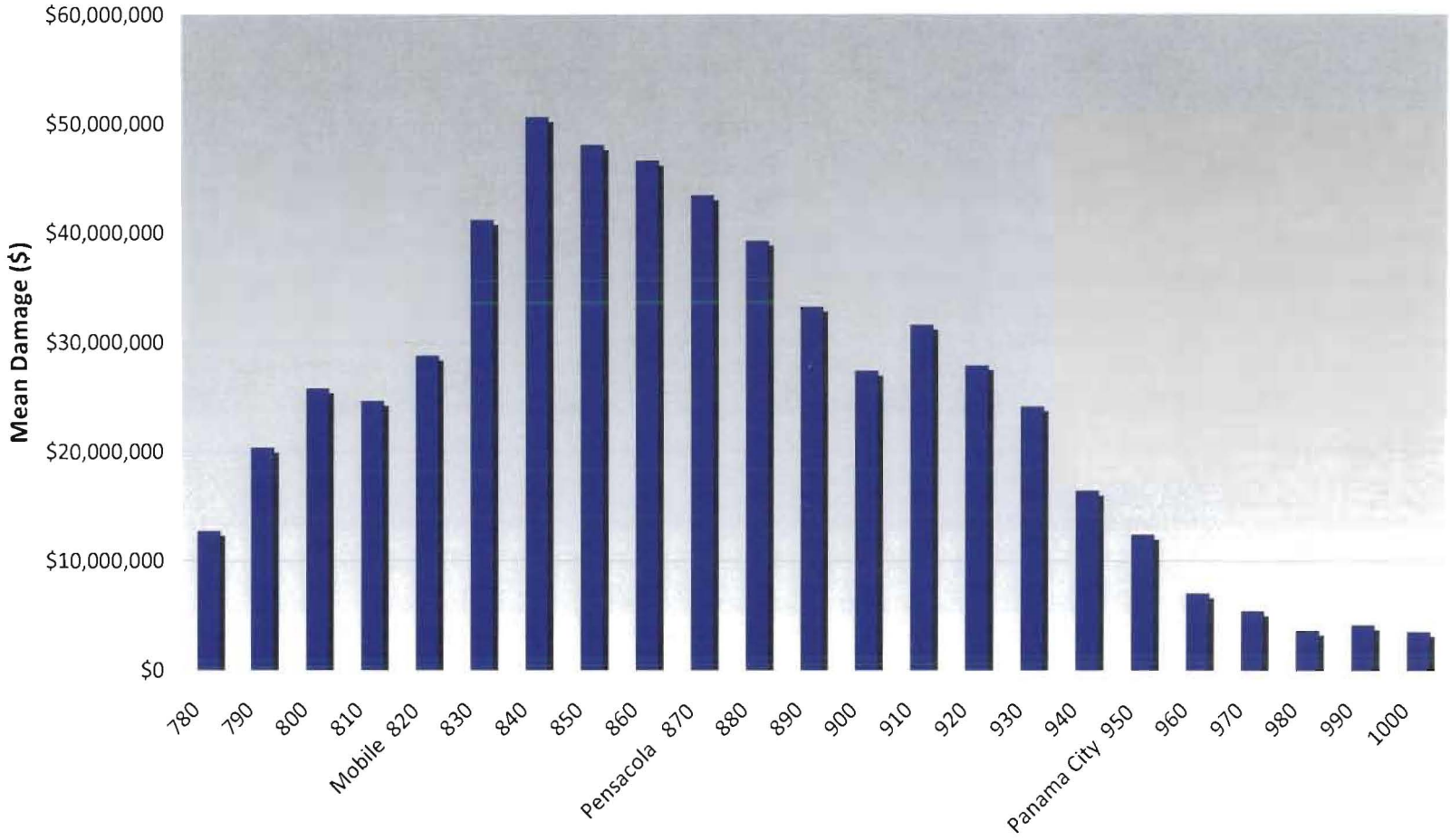

Figure 3-3: Frequency Weighted Average Transmission & Distribution Damage from SSI 2 Landfalls

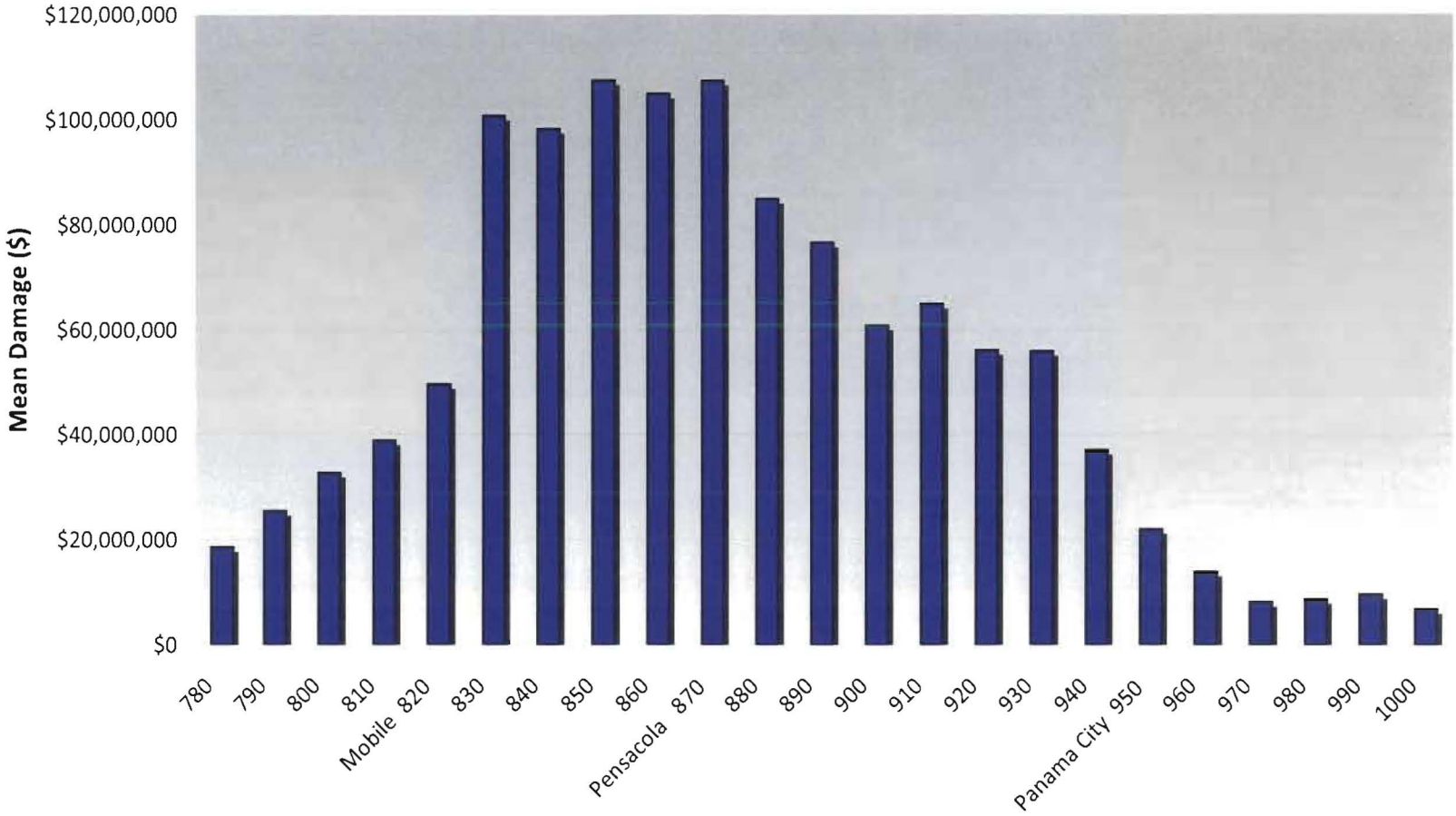

Figure 3-4: Frequency Weighted Average Transmission & Distribution Damage from SSI 3 Landfalls

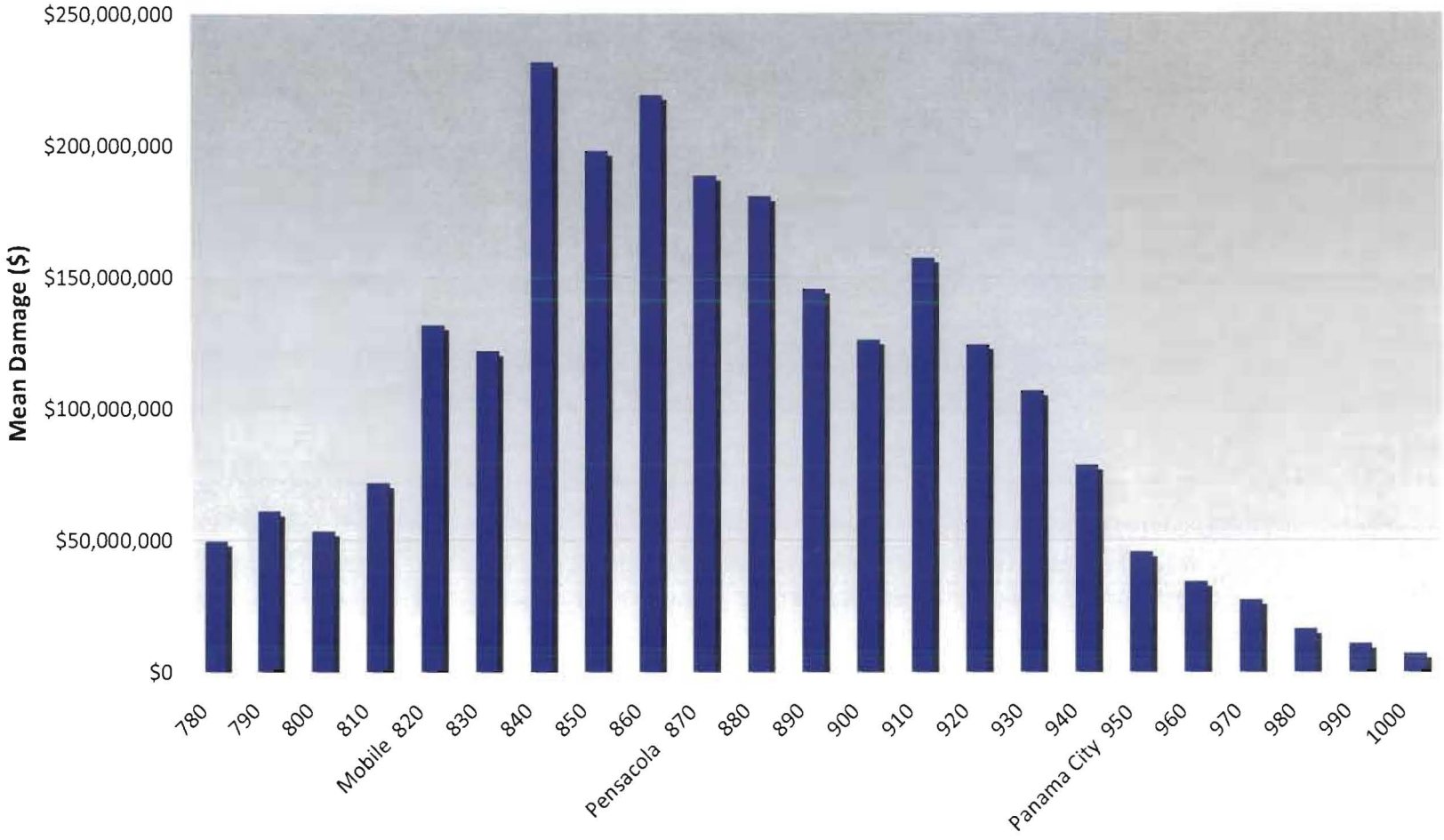

Figure 3-5: Frequency Weighted Average Transmission & Distribution Damage from SSI 4 Landfalls

4. Hurricane Loss Analysis Results

Aggregate Damage Exceedance and Expected Annual Damage

A probabilistic database of losses is developed using the hurricane hazard, assets at risk and their vulnerabilities. For each hurricane, the center, shape, geographical orientation, track and wind speeds were defined. The wind field for each hurricane is integrated with the asset vulnerability and the asset locations to compute the damage. The annual frequency and the portfolio damage for each simulated hurricane is determined. By querying this database of thousands of hurricane losses, various loss exceedance or non-exceedance distributions are generated. The frequencies and computed damage for all hurricanes are combined to calculate the expected annual loss and the annual aggregate exceedance relations.

Aggregate damage exceedance calculations are developed by keeping a running total of damage from ***all possible events*** in a given time period. At the end of each time period, the aggregate damage for all events is then determined by probabilistically summing the damage distribution from each event, taking into account the event frequency. The process considers the probability of having zero events, one event, two events, etc. during the time period. Each event within the EQECAT stochastic event set is unique, described by a frequency of occurrence, severity, azimuth of landfall, central track, radius to maximum winds, hurricane profile and other critical parameters.

A series of probabilistic analyses were performed, using the vulnerability curves derived for Gulf assets and the computer program USWIND™. A summary of the analysis is presented in Table 5-1, which shows the aggregate damage (i.e. deductible is "0") exceedance probability for damage layers between zero and over $250 million dollars.

For each damage layer shown, the probability of damage exceeding a specified value is shown. For example, the probability of damage exceeding $100 million in one year is 1.9%. The analysis calculates the probability of damage from all hurricanes and aggregates the total.

Table 4-1 provides the aggregate damage exceedance probabilities for the Gulf T & D assets analyzed for a series of layers. Each layer has a layer amount of $10 million, except for the final layer which represents all damage $250 million and greater. The value in the first column, labeled Damage Layer, is the attachment point for each layer, with the exception of the last layer, for which the attachment point is $250 million.

The second column of the table, labeled 1 year Exceedance Probability, provides the 1-year modeled probability of penetrating each layer, i.e. the probability that the total damage from all events in a 1 year period will exceed the attachment point of the layer.

The expected annual damage (EAD) and exposure to Gulf's Reserve from hurricanes is $8.3 million. This value represents the average damage from all simulated hurricanes over a long time horizon within the EQECAT stochastic event set. The EAD is not expected to occur each and every year. Some years will have no damage from hurricanes, some years will have small amounts of damage and a few years will have large amounts of damage.

Table 4-1

GULF POWER COMPANY T & D ASSETS
AGGREGATE DAMAGE EXCEEDANCE PROBABILITIES

Damage Layer ($millions)	1 Year Exceedance Probability
0 (>0.5)	24.5%
10	15.4%
20	10.8%
30	8.03%
40	6.23%
50	4.96%
60	4.02%
70	3.30%
80	2.74%
90	2.29%
100	1.93%
110	1.63%
120	1.39%
130	1.18%
140	1.01%
150	0.87%
160	0.75%
170	0.65%
180	0.57%
190	0.49%
200	0.43%
210	0.38%
220	0.34%
230	0.30%
240	0.26%
>250	0.23%

5. Reserve Performance Analysis

A probabilistic analysis of losses from hurricanes was performed for Gulf Power (Gulf) to determine their potential impact on the Reserve fund.

Analysis

The Reserve performance analysis consisted of performing 10,000 iterations of hurricane loss simulations within the Gulf service territory, each covering an 8-year period, to determine the effect of the charges for damage on the Gulf Reserve. Monte Carlo simulations were used to generate damage samples for the analysis. The analysis provides an estimate of the Reserve assets in each year of the simulation, accounting for the annual accrual, expenses, fund earnings when balances are positive, borrowing costs when fund balances are negative and hurricane damage using a dynamic financial model.

Assumptions

The analysis performed included the following assumptions:

- An initial Reserve balance of $27 million.
- Annual Reserve accruals of $3.5 million were assumed in the analysis.
- Hurricane losses are assumed to increase by 4% per year as replacement values of T&D increase due to inflation and system growth.
- Negative Reserve balances are assumed to be financed with an unlimited line of credit costing 3.8%.
- Positive Reserve balances are assumed to earn at an annual rate of 3. 6%.
- $6.8 million of the $8.3 million Expected Annual Loss, determined in the Loss Analysis, is assumed to be an obligation of the reserve annually.
- All results are shown in constant 2009 Reserve dollars.

The analysis results for the case analyzed are shown in Table 5-1 below. The results show the Annual Reserve Accrual amount, the mean (expected) Reserve fund balance as well as the probability that the Reserve fund balance will be negative in any one or more of the five years of the simulated time horizon.

Table 5-1
GULF POWER COMPANY T & D
RESERVE FUND ACCRUALS AND
PROBABILITY OF RESERVE FUND PERFORMANCE

Initial Reserve Balance	Annual Reserve Accrual	Expected Reserve Balance at end of 5 years	Probability of negative balance within 5 years
($ millions)	($ millions)	($ millions)	%
$27	$3.5	$11	29%

Figure 5-1 below shows the results of the Reserve fund performance analysis. These results show the mean (expected) Reserve fund balance as well as the 5th and 95th percentiles.

For example, given an initial Reserve balance of $27 million and an Annual Accrual of $3.5 million, Figure 5-1 illustrates the expected performance of the Reserve. The Reserve has a mean (expected) balance of $11 at the end of the five year period. The 5th percentile and 95th percentile 5 year ending Reserve balances are $51 million and negative $(111) million respectively. The Reserve fund has a 29% chance of having a negative balance in one or more years of the five year simulation.

The first year of each simulation begins with a $27 million Reserve balance. The first year's annual accrual will bring the reserve balance to $30.5 million. Table 5-1, shows that the likelihood of hurricane damage exceeding $30 million in a single year is about 8%.

The accrual of $3.5 million is less than the Reserve obligation of the Expected Annual Damage from hurricanes of $6.8 million. Therefore with each passing year, the Reserve ending balance has a decreasing likelihood of accumulating surpluses. The expected (mean) Reserve balance declines gradually over the five year simulation to $11 million at five years reflecting the annual accrual less than the expected annual damage. At the end of five years, the likelihood of annual hurricane damage in excess of $11 million is approximately 15%, about double the likelihood at the beginning of the simulation.

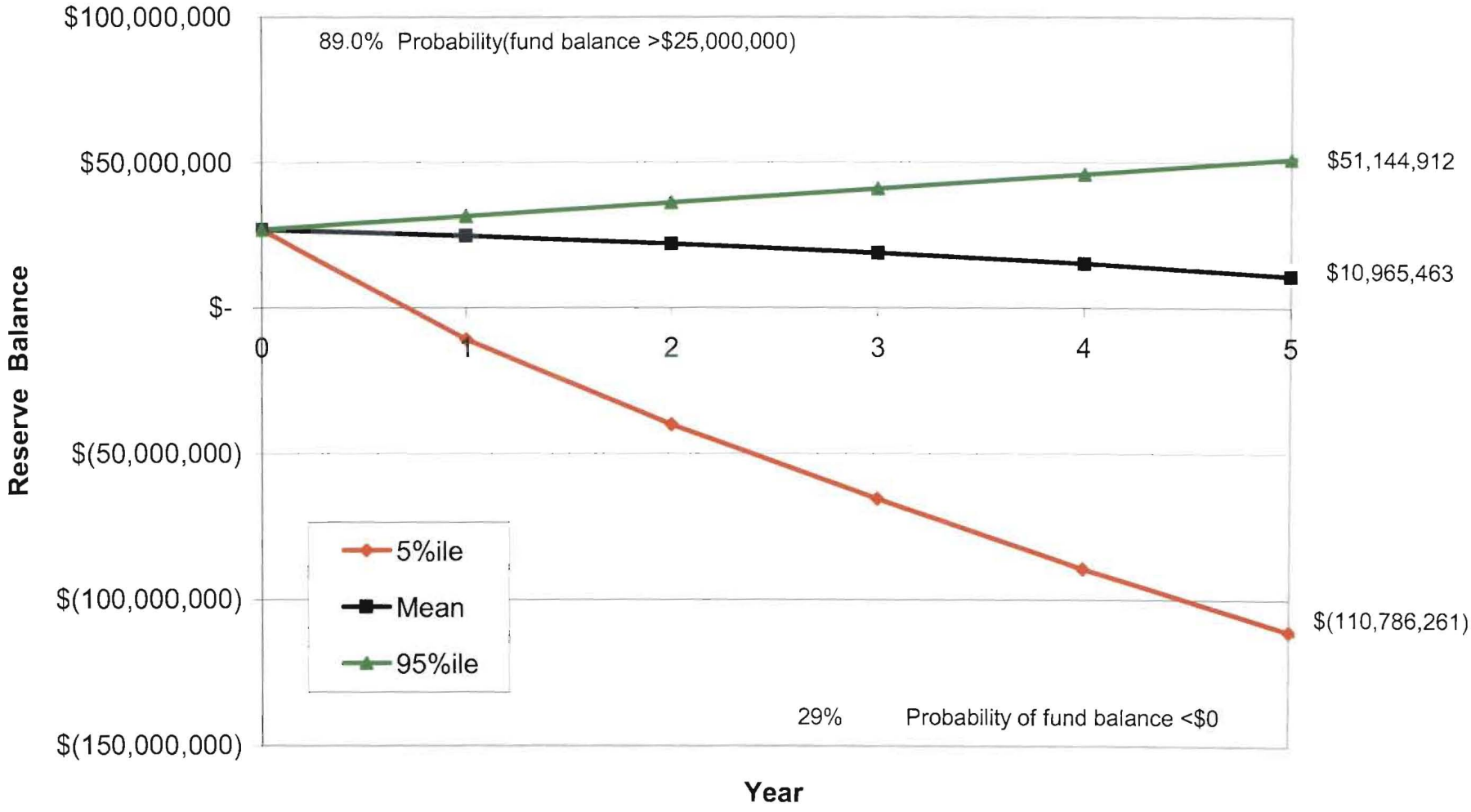

Figure 5-1: Reserve Performance Analysis Results: $27 million Initial Balance, $3.5 million Annual Accrual

6. References

1. "Florida Commission on Hurricane Loss Projection Methodology", EQECAT, an ABS Group Company, May 18, 2009.

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