Terry A. Davis Assistant Secretary and Assistant Treasurer

One Energy Place Pensacola, Florida 32520-0786

Tel 850.444.6664 Fax 850.444.6026 TADAVIS@southernco.com



March 30, 2012

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

RE: Docket No. 120007-El

Dear Ms. Cole:

Enclosed are an original and fifteen copies of Gulf Power Company's Environmental Compliance Program Update to be filed in the above referenced docket.

Sincerely,

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Enclosures

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FPSC-COMMISSION CLERK

GULF POWER COMPANY ENVIRONMENTAL COMPLIANCE PROGRAM UPDATE

For

Clean Air Interstate Rule Cross State Air Pollution Rule National Ambient Air Quality Standards Mercury and Air Toxics Standards Clean Air Visibility Rule



April 2, 2012

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FPSC-COMMISSION CLERK

CONTENTS

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1.0	EXI	ECUTIVE SUMMARY	1
2.0	REG	GULATORY AND LEGISLATIVE UPDATE	4
	2.1	Clean Air Interstate Rule / Cross State Air Pollution Rule	
	2.2	National Ambient Air Quality Standards	
	2.3	Clean Air Visibility Rule	
	2.4	Clean Air Mercury Rule / Mercury and Air Toxics Standards	6
3.0	GU	LF'S COMPLIANCE PROGRM	7
	3.1	Gulf Power Electric Generating System	7
	3.2	Compliance Options	
	3.3		
4.0	PL A	ANT-BY-PLANT COMPLIANCE PROGRAM	
	4.1	Plant Crist	
	4.2		
	4.3		18
	4.4		20
5.0	PO	FENTIAL NEW ENVIRONMENTAL REGULATIONS	22
2.0	5.1	Ozone Standard	
	5.2	National Ambient Air Quality Standards	22
	5.3	Global Climate Issues	
	2.0		

LIST OF TABLES

,

.

<u> Table No.</u>	Title	<u>Page</u>
1.0-1	Projected 2012-2019 Compliance Program Capital and O&M Costs by Plant	3
2.1-1	CAIR Emission Reduction Requirements	4
3.1-1	Compliance Program Capital Expenditures	8
3.1-2	Compliance Program Plant O&M Expenses	9
3.3-1	Net Replacement Costs - Daniel Units 1 and 2	14

1.0 EXECUTIVE SUMMARY

Since the Clean Air Act Amendments (CAAA) were passed by Congress in 1990, Gulf Power Company (Gulf Power or Gulf) has reviewed and updated its environmental compliance planning as needed on an on-going basis. The goal of this process is to identify reasonable, cost-effective compliance strategies that will minimize the impact on Gulf Power's customers while achieving environmental objectives and assuring compliance with all environmental requirements.

On June 22, 2007, the Office of Public Counsel (OPC), the Florida Industrial Power Users' Group (FIPUG) and Gulf filed a petition for approval of a stipulation regarding the substantive provisions of Gulf's compliance plan. That stipulation identified 10 specific components, Phase I, of Gulf's program as being reasonable and prudent for implementation and set forth a process for review in connection with the three remaining components of the program. On August 14, 2007, the Florida Public Service Commission (Commission or FPSC) voted to approve the stipulation with the proviso that Gulf provide an annual status report regarding cost-effectiveness and prudence of the phases in its program into which the Company is moving.

This document is the fifth update of Gulf's original environmental compliance program¹ approved by the Commission in Order No. PSC-07-0721-S-EI. That program: (a) addressed the requirements of the Clean Air Interstate Rule (CAIR), Clean Air Mercury Rule (CAMR), and the Clean Air Visibility Rule (CAVR); (b) reviewed the decision process for assuring compliance at Gulf Power; and (c) provided cost estimates for incorporating these requirements at Gulf Power. The document reviewed the specific issues, timing, alternatives, process, and costs necessary for compliance with the new federal rules and the corresponding implementation programs developed by the Florida Department of Environmental Protection (FDEP) and the Mississippi Department of Environmental Quality (MDEQ).

Since the Commission's approval of Gulf's compliance program in 2007, there have been a number of regulatory and legislative developments. Gulf has addressed in several of its intervening filings, as well as in the annual updates, regulatory updates and changes to schedules of approved projects. There have been several significant court decisions that have had and will have further impact on Gulf's compliance program.

On August 8, 2011, the Environmental Protection Agency (EPA) adopted the Cross State Air Pollution Rule (CSAPR) to replace CAIR effective January 1, 2012. Like CAIR, the CSAPR was intended to address interstate emissions of SO₂ and NOx that interfere with downwind states' ability to meet or maintain national ambient air quality standards for ozone and/or particulate matter. On December 30, 2011, the U.S. Court of Appeals for the District of Columbia Circuit stayed the CSAPR in its entirety and ordered the EPA to continue administration of CAIR pending resolution of litigation challenging the rule. The states of Florida and Mississippi had already completed plans to implement CAIR, and emissions reductions were being accomplished by the installation and operation of emission controls at the Company's coal-fired facilities and/or by the purchase of emission allowances. Gulf is

¹⁻ The title of Gulf's compliance environmental program has been revised since the original filing in March of 2007. CSAPR, NAAQS, and MATS were added to the title when the rules were adopted. Likewise, CAMR was removed from the title when the CAMR rule was vacated.

continuing its assessment of the recent CSAPR revisions. If CSAPR remains in its current form and Florida and Mississippi are no longer included in the annual SO_2 and NOx programs, it will have the effect of requiring Florida and Mississippi to revise their regional haze state implementation plans to include Electric Generating Unit (EGU) Best Available Retrofit Technology (BART) determinations.

In February 2008, the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) issued an opinion vacating the EPA's CAMR. In a separate proceeding in the U.S. District Court for the District of Columbia, the Court, under a consent decree, required the EPA to issue a proposed EGU Maximum Achievable Control Technology (MACT) rule by March 16, 2011, and a final rule by November 16, 2011. The MACT rule, renamed the Mercury and Air Toxics Standards (MATS), was published in the federal register on February 16, 2012. The MATS rule imposes stringent emissions limits for mercury, acid gases and other (non-mercury) metals on coal and oil-fired electric utility generating units. Compliance for existing sources is required by April 16, 2015, three years after the effective date of the rule. Gulf is currently evaluating potential MATS compliance options.

Compliance with the MATS rule is likely to require substantial capital expenditures and compliance costs at the Company's facilities. These costs may arise from unit retirements, installation of additional emission controls, changing fuel sources for certain existing units, the addition of new generating resources, and/or upgrades to the transmission system. The MATS rule also requires installation of additional continuous emission monitors and/or additional emissions testing.

This document addresses Gulf's ongoing compliance projects and the reasons Gulf plans to continue these projects. Florida and Mississippi's state implementation plans for CAIR must be met. Decisions regarding Gulf's CAIR compliance strategy were made jointly with the CAVR and CAMR compliance plans due to co-benefits of proposed controls. In response to finalization of the MATS rule and revisions to the CSAPR, these plans are being evaluated for compliance with the new standards. Once the Company determines the most cost-effective compliance options, Gulf will submit revisions to the environmental compliance program for the Commission's review. Gulf Power's compliance program will be impacted by factors such as: final requirements of new or revised environmental regulations; the cost and availability of emissions allowances; performance of emission control equipment; and changes to the Company's fuel mix. Based on these factors, future environmental compliance costs will continue to be incurred, and projections will be revised. The timing of the requirements and costs incurred will be a function of the compliance options selected, new generating resources, fuel sources and prices, fuel sulfur content, transmission upgrades, energy demand, and other variables.

A capital and operations and maintenance (O&M) cost summary for Gulf's compliance program for CAIR, CAMR, and CAVR is provided in Table 1.0-1. Detailed capital and O&M costs are provided in Section 3 of this document. In response to finalization of the MATS rule and revisions to the CSAPR, these plans are being evaluated for compliance with the new standards.

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As noted in the Commission's approval of Gulf's original environmental compliance program, the program would likely evolve over time. At present, only Phase I projects and one Phase II project, the Daniel Unit 1 and Unit 2 Selective Catalytic Reduction (SCR) project, have been approved by the Commission. The remaining Phase II components of Gulf's compliance program, the Plant Smith Units 1 and 2 scrubber and the Plant Smith baghouse project, remain in the planning phase and the schedule and decisions about these projects remain very flexible. The Plant Smith scrubber and baghouse projects are included in Gulf's compliance program for future consideration.

Gulf Power has remained in compliance with all requirements of the CAAA and has addressed local concerns regarding potential ozone non-attainment in Pensacola and along the Gulf Coast. Implementation of the program described in this document will help assure continued compliance; however, the new one-hour SO₂ standards and the anticipated new ozone standard may still result in the Pensacola area or other areas of Florida and Mississippi being designated as non-attainment. The EPA finalized the new one-hour SO₂ standard during 2010 with state non-attainment designations due in mid-2012. The EPA is expected to finalize a new eight-hour ozone standard in the 2014 timeframe, with state implementation plans for any non-attainment areas due in 2017.

In addition to the air rules mentioned above that are aimed at reductions of NOx, SO₂, mercury, acid gases and other (non-mercury) metals, there are multiple state, federal and international initiatives regarding greenhouse gases (GHG), particularly carbon dioxide (CO_2), pending. If adopted, these rules could further impact Gulf's compliance program. All of this uncertainty reinforces the need for a flexible, robust compliance plan. Accordingly, as Gulf finalizes its strategy for complying with the new MATS regulations and revisions to the CSAPR, as decision dates for equipment purchases approach, and as regulatory and economic drivers become better defined, the analysis will be updated as needed to enable the selection of the most reasonable and cost-effective compliance alternatives while maintaining future flexibility in the plan.

Plant	Phase I Capital Expenditures (\$ in millions)	Phase II Capital Expenditures (\$ in millions)	Phase I O&M Expenses (\$ in millions)	Phase II O&M Expenses (\$ in millions)
Crist	57	0	148	0
Daniel	350	243	32	17
Smith	0.2	242	14	8
Scholz	0	0	0	0
TOTAL	407	485	194	25

Table 1.0-1Projected 2012-2019 Compliance Program
Capital and O&M Costs by Plant

*Costs for Gulf Power's ownership portion of Plant Daniel in Mississippi.

Note: Phase II projects include the Smith Scrubber, Smith Baghouse, and Daniel SCRs. Allowance cost projections are not included in Table 1.0-1.

2.0 REGULATORY AND LEGISLATIVE UPDATE

This section provides a regulatory and legislative update and review of the CAIR and its stayed replacement rule the Cross State Air Pollution Rule (CSAPR), National Ambient Air Quality Standards (NAAQS), the CAVR, as well as the CAMR and its replacement rule the Mercury and Air Toxics Standards (MATS).

2.1 CLEAN AIR INTERSTATE RULE / CROSS STATE AIR POLLUTION RULE

In March 2005, the EPA published the final CAIR, a rule that addresses transport of SO₂ and NOx emissions that contribute to non-attainment of the ozone and fine particulate matter NAAQS in the eastern United States. This cap and trade rule addresses power plant SO₂ and NOx emissions that were found to contribute to non-attainment of the 8-hour ozone and fine particulate matter standards in downwind states. Twenty-eight eastern states, including Florida and Mississippi, are subject to the requirements of the rule. The rule calls for additional reductions of NOx and SO₂ to be achieved in two phases, 2009/2010 and 2015, as shown in Table 2.1-1.

Table 2.1-1

Emissions	Phase I reduction from acid rain allocations or current emissions	Phase II reduction from current allocations or current emissions		
SO ₂	50% (2010)	66% (2015)		
NOx	50% (2009)	65% (2015)		

CAIR Emission Reduction Requirements

In 2008, the U.S. Court of Appeals for the District of Columbia Circuit issued decisions invalidating certain aspects of CAIR, but left CAIR compliance requirements in place while the EPA developed a new rule. On August 8, 2011, the EPA adopted the CSAPR to replace CAIR effective January 1, 2012. Like CAIR, the CSAPR was intended to address interstate emissions of SO_2 and NO_x that interfere with downwind states' ability to meet or maintain national ambient air quality standards for ozone and/or particulate matter. On December 30, 2011, the U.S. Court of Appeals for the District of Columbia Circuit issued an order granting motions to stay the CSAPR pending resolution of litigation in which numerous petitioners challenged the rule. The order states that the EPA "is expected to continue administering the Clean Air Interstate Rule" while litigation is ongoing. The states of Florida and Mississippi had already completed plans to implement CAIR, and emissions reductions were being accomplished by the installation and operation of emission controls at the Company's coal-fired facilities and/or by the purchase of emission allowances.

Before the stay was granted, the EPA published proposed technical revisions to the CSAPR, including adjustments to certain state emissions budgets and a delay in implementation of the emissions trading limitations. On February 7, 2012, the EPA released final technical revisions to the CSAPR and at the same time issued a direct final rule providing additional increases to certain state emission budgets, including Florida and Mississippi. Decisions regarding Gulf's CAIR compliance strategy were made jointly with the CAVR and CAMR compliance plans due to co-benefits of proposed controls. In response to finalization of the MATS rule and revisions to the CSAPR, these plans are being evaluated for compliance with the new standards and will be updated as needed.

2.2 NATIONAL AMBIENT AIR QUALITY STANDARDS

Final revisions to the National Ambient Air Quality Standard for SO_2 , including establishment of a new one-hour standard, became effective during August 2010. Since the EPA intends to rely on monitoring data and computer modeling for implementation of the SO_2 standard, the identification of potential non-attainment areas remains uncertain and could ultimately include areas within the Company's service area. The EPA is expected to designate areas as attainment and non-attainment under the new standard in mid-2012. Demonstration of compliance with the one-hour SO_2 NAAQS via modeling could be required by 2014 for all areas, including both non-attainment and unclassifiable/attainment areas. Implementation of the revised SO_2 standard could require additional reductions of SO_2 emissions and increased compliance and operation costs.

Revisions to the National Ambient Air Quality Standard for nitrogen dioxide (NO₂), which established a new one-hour ozone standard, became effective in April 2010. The EPA signed a final rule with area designations for the new NO₂ standard during January 2012. None of the areas within the Company's service area were designated as non-attainment. While this standard is not focused on the electric utility sector, the new NO₂ standard could result in additional compliance and operational costs for units that require new source permitting.

2.3 CLEAN AIR VISIBILITY RULE

The Clean Air Visibility Rule (formerly called the Regional Haze Rule) was finalized in 2005, with a goal of restoring natural visibility conditions in certain areas (primarily national parks and wilderness areas) by 2064. The rule involves the application of Best Available Retrofit Technology (BART) to certain sources built between 1962 and 1977 and any additional emissions reductions necessary for each designated area to achieve reasonable progress toward the natural conditions goal by 2018 and for each 10-year planning period thereafter. For power plants, the CAVR allows states to determine that the CAIR satisfies BART requirements for SO₂ and NOx.

The states of Mississippi and Florida have submitted regional haze state implementation plans (SIPs) to EPA. These plans indicated that no additional controls beyond CAIR were anticipated to be necessary at any of the Company's facilities. However, the FDEP is scheduled to update their SIP by mid-April 2012. EPA's deadline for submitting comments

on their limited approval of two revisions to Mississippi's SIP revisions were due on or before March 29, 2012. Until these issues are resolved, it remains uncertain whether additional controls may be required for CAVR and BART compliance.

2.4 CLEAN AIR MERCURY RULE / MERCURY AND AIR TOXICS STANDARDS

In March 2005, the EPA published the final Clean Air Mercury Rule, a cap and trade program for the reduction of mercury emissions from coal-fired power plants. The rule set caps on mercury emissions to be implemented in two phases, 2010 and 2018, and provided for an emission allowance trading market. The final CAMR was challenged in the D.C. Circuit and in February 2008, the court issued an opinion vacating the CAMR. The vacatur became effective with the issuance of the court's mandate on March 14, 2008, nullifying CAMR mercury emission control obligations and monitoring requirements.

In a separate proceeding in the U.S. District Court for the District of Columbia, the Court, under a consent decree, required the EPA to issue a proposed MACT rule by March 16, 2011, and a final rule by November 16, 2011. On February 16, 2012, the EPA published the final Mercury Air Toxics Standards (MATS) rule, which imposes stringent emissions limits for acid gases, mercury, and other (non-mercury) metals on coal- and oil-fired electric utility steam generating units. Compliance for existing sources is required by April 16, 2015 – three years after the effective date of the final rule. A one-year extension may be granted in certain cases based on replacement generation, transmission, and control technology needs. Sources needing a fifth year to comply, may seek an Administrative Order under Section 113(a) of the Clean Air Act. According to the EPA, an Administrative Order would be limited to units that are required to run for reliability purposes.

Gulf Power is currently evaluating potential MATS compliance options. Compliance with this rule is likely to require substantial capital expenditures and compliance costs at the Company's facilities. These costs may arise from unit retirements, installation of additional emission controls, changing fuel sources for certain existing units, the addition of new generating resources, and/or upgrades to the transmission system. The MATS rule also requires installation of additional continuous emission monitors and/or additional emissions testing.

3.0 GULF'S COMPLIANCE PROGRAM

3.1 GULF POWER'S ELECTRIC GENERATING SYSTEM

Gulf Power owns and operates three fossil-fueled generating facilities in Northwest Florida (Plants Crist, Smith and Scholz). Gulf also owns a 50 percent undivided ownership interest in Unit 1 and Unit 2 at Mississippi Power Company's Plant Daniel. This fleet of generating units consists of ten fossil steam units, one combined cycle (CC) unit, and one combustion turbine (CT). The nameplate generating capacity of Gulf's generating fleet affected by CAIR/CSAPR, MATS, and/or CAVR is 2,783 megawatts (MW).

A summary of the compliance program capital projects and associated expenditures through 2019 is provided in Table 3.1-1. The projected plant O&M expenses associated with the capital projects are included in Table 3.1-2. The cost information is provided by plant and by project.

				\$ in Thou	isands					
	Prior Years**	2012	2013	2014	2015	2016	2017	2018	2019	Total
By Plant					a manage		and Spendings Const.			
Plant Crist										
Mercury Monitoring		105								
Unit 6 SCR	147,790	51,094								
Units 4-7 Scrubber	633,762									
Plant Scholz										
Mercury Monitoring	644									
Plant Smith										
Unit 2 Baghouse*										
Unit 1 SNCR	8,363									
Unit 2 SNCR	2,905									
Mercury Monitoring	1,433									
Units 1-2 Scrubber *										
CAIR Parametric Monitor	230									
Plant Daniel										
Mercury Monitoring										
Unit 1 SCR										
Unit 2 SCR	_									
Units 1 & 2 Scrubber	23,737									
Unit 1 Low NOx Burners	3,187									
Unit 2 Low NOx Burners	3,586									
By Project										
Mercury Monitoring	2,077	105								
SCRs	147,790	51,094								
Scrubbers	657,499									
SNCRs	11,268									
Baghouse										
CAIR Parametric Monitor	230									
Low Nox Burners	6,773									
Annual Total	825,637									

Table 3.1-1 Compliance Program Capital Expenditures \$ in Thousands

 $\ensuremath{^*}$ Phase II projects that have not been approved for ECRC recovery

**2006-2011 expenditures

Expenditures presented for Plant Daniel represent Gulf's ownership portion. Allowance cost projections are not included in Table 3.1-1

Table 3.1-2 Compliance Program Plant O&M Expenses \$ in Thousands

	2012	2013	2014	2015	2016	2017	2018	2019	Tota
By Plant									
Plant Crist									
Mercury Monitoring									
Unit 6 SCR									
Units 4-7 Scrubber									
Plant Scholz									
Mercury Monitoring									
Plant Smith									
Unit 2 Baghouse*									
Unit 1 SNCR									
Mercury Monitoring									
Units 1-2 Scrubber*									
CAIR Parametric Monitor									
Plant Daniel									
Mercury Monitoring									
Unit 1 SCR									
Unit 2 SCR									
Units 1&2 Scrubber									
Unit 1 Low NOx Burners									
Unit 2 Low NOx Burners									
By Project									
Mercury Monitoring									
SCRs									
Scrubbers									
SNCRs									
Baghouse									
CAIR Parametric Monitor Low NOx Burners									

* Phase II projects that have not been approved for ECRC recovery Expenses presented for Plant Daniel represent Gulf's ownership portion. Allowance cost projections are not included in Table 3.1-2

9

3.2 COMPLIANCE OPTIONS

As part of Gulf's environmental compliance planning evaluation Gulf considers four major options for environmental compliance:

- Dependence on allowance purchases
- Fuel switching
- Retrofit of environmental emission controls to existing generating units
- Retirement of existing generating units and replacement with new or purchased generation

Combinations of these options are also considered.

3.2.1 Allowance Purchase Option

Allowance cap and trade programs are applicable to the Acid Rain, CAIR, and CSAPR programs. These programs consist of markets for annual SO_2 and NOx allowances and seasonal NOx allowances for ozone compliance. Cap and trade programs use a market-based approach to reduce emissions. The program sets a cap, or limit, for each pollutant such as SO_2 and NOx, which is then divided into emission allowances that are allocated to each affected source. Sources are allowed to determine the most reasonable, cost-effective way to comply. Facilities may install environmental emission controls, use fuel switching, replace the generating units, rely on the emission allowance market, or use some combination of these options.

3.2.2 Fuel Switching Option

Fuel switching refers to instances where an electric generating unit's primary fuel is changed to reduce emissions. For certain facilities, NOx emissions can be reduced by burning high-moisture, low-Btu sub-bituminous coals, while mercury emissions can be reduced by utilizing coal lower in mercury content. Co-firing with natural gas or switching to a natural gas fuel supply may be used as an option to lower NOx, SO₂, and mercury emissions for certain units. In Gulf's case, fuel switching to lower sulfur coal was shown under the Acid Rain Program to be a cost-effective means for reducing emissions of SO₂.

3.2.3 Retrofit Options

Retrofit options refer to additional environmental emission controls that can be installed on existing generating units. As discussed in Section 2, affected coal-fired electric generating units would be required to comply with SO₂, NOx, mercury, acid gas, and other (non-mercury) metal limits under CAIR/CSAPR, CAVR, and MATS if the units are to continue to operate. These reductions may be met by installing additional emission controls on existing

units. Currently, the proven control technology of choice for SO_2 reduction is wet scrubbing. For NOx removal, there are a number of proven emission controls available such as Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), and Low NOx Burners (LNBs). Mercury reductions can be achieved as co-benefits from the installation of scrubber and SCR systems for the control of SO_2 and NO_x emissions, respectively. Other emission control equipment and options for MATS compliance are still being evaluated. For MATS compliance, units with a scrubber and a SCR may require additional controls such as a baghouse and/or sorbent injection. Units without a scrubber and a SCR may require additional controls such as a scrubber, baghouse, electrostatic precipitator improvement, and/or sorbent injection.

3.2.4 Retirement and Replacement Option

A retirement and replacement evaluation is used to compare retrofit compliance options to premature retirement and replacement of specific generating units in order to determine the most reasonable, cost-effective compliance option. The retirement option is typically more applicable to smaller, older, less efficient coal plants that cannot financially support the addition of environmental controls. The evaluation methodology and the 2012 evaluation results are discussed in Section 3.3.4.

3.3 GULF'S EVALUATION OF COMPLIANCE OPTIONS

3.3.1 Evaluation of Allowance Purchase Option

Allowance cap and trade programs are applicable to the Acid Rain, CAIR, and CSAPR programs. These programs consist of markets for annual SO₂ and NOx allowances and seasonal NOx allowances for ozone compliance. The SO₂ and seasonal NOx allowance markets have proven to be fundamentally driven by supply and demand. However, over time, many speculative investors have begun entering the allowance markets, particularly the SO₂ market, introducing considerable volatility and uncertainty concerning the price and availability of allowances.

With the high price volatility, the future price and availability of allowances could not be treated as predictable; therefore, depending solely on the market for SO_2 compliance presented a large risk for Gulf Power's customers when developing Gulf's original CAIR, CAMR, CAVR Compliance Plan. However, the market did provide realistic opportunities for reducing costs through limited purchases of allowances in conjunction with retrofitting several generating units with additional emission controls.

The retrofit installations set forth in Gulf's compliance program significantly reduced emissions; however, they did not result in Gulf achieving CAIR compliance levels without the purchase of some emission allowances. Thus, Gulf's environmental compliance program required the purchase of allowances during the 2007-2011 timeframe. Gulf is not projecting the need to purchase additional allowances during 2012 for CAIR compliance. Gulf plans to utilize its existing allowance bank until the CSAPR emissions trading limitations are promulgated.

Under the currently stayed CSAPR, it appears that the emission allowances previously issued under CAIR and/or the Acid Rain Program cannot be used to comply with the CSAPR requirements. Given the pending legal challenge to the CSAPR and the recent increases to certain states' CSAPR emissions budgets, Gulf is unable to predict future CSAPR allowance costs at this time. Gulf may need to begin incurring CSAPR allowance costs as early as 2012 to meet the CSAPR requirements once promulgated.

3.3.2 Evaluation of Fuel Switching Option

Fuel switching was shown under the Acid Rain Program to be cost effective for reducing emissions of SO₂ at some coal fired facilities. For certain facilities, NOx emissions can be reduced by burning high-moisture, low-Btu sub-bituminous coals, and some coals are lower in mercury content than others. However, for the magnitude of emission reductions required by CAIR/CSAPR, MATS, and CAVR, switching coal supplies alone was no longer a viable compliance option. Co-firing with natural gas or switching to a natural gas fuel supply may provide opportunities for certain coal-fired units to lower emissions of NOx, SO₂, and mercury.

3.3.3 Evaluation of Retrofit Options

Having determined that neither an all allowance compliance program nor an all fuel switching compliance program would be feasible or desirable, Gulf Power was left with the primary options of either retrofitting units or retiring and replacing units (and, if necessary, supplementing those options with allowance purchases or fuel switching). However, before making a comparison of retrofit and replacement options, Gulf Power first had to choose among competing retrofit options. Selections of the best retrofit options for CAIR, CAMR, and CAVR were discussed in Gulf's original environmental compliance program and have not changed, and therefore are not repeated here.

3.3.4 Evaluation of Retrofit versus Replacement Options

The selection between retrofit and replacement options is based upon a financial assessment of which option ultimately is expected to be the most reasonable, cost effective alternative for Gulf's customers. The analysis examines the relative cost of dispatching the System (a) with the retrofit technology in place and (b) with having retired the unit without making the retrofit and instead, replacing it with new capacity. The 2012 replacement analysis included Plant Daniel Units 1 and 2. The Plant Smith and Plant Crist economic analysis was not updated in 2012 because Gulf has not made any changes to the plants' compliance strategies, other than delaying completion of the Plant Smith mercury monitor installation and moving the Plant Scholz mercury monitor to Plant Crist. The Plant Daniel Units 1 and 2 analysis was performed using a detailed site specific methodology. The economic analysis focused on a comparison of Gulf's 50% ownership costs associated with continued operation with retrofit controls installed to replacement with a combined cycle unit. The economic analysis included hourly production cost modeling and cost implications to the transmission system. Changes in production cost, capital, and other fixed costs were captured in the comparison analysis to help determine the most economical option.

Methodology

The economic analysis focused on a comparison of Gulf's 50% ownership costs associated with continued operation with retrofit controls to replacement with a combined cycle unit at Plant Crist. This evaluation included refined commitment and energy value modeling and cost implications to the transmission system. Changes in energy value, capital, and other fixed costs were captured in the comparison analysis to help determine the most economical option. Replacement energy costs were estimated using the Southern Electric System marginal replacement costs for both the continued coal operation and the replacement alternative. Marginal replacement costs were generated with the Pro-Sym® model. The marginal replacement costs were then used in the Southern Company GenVal model to dispatch both the coal units and the combined cycle unit. The energy benefits (marginal replacement costs minus variable operating costs) were compared to determine the commitment and energy value to the Southern Electric System for both generating options. Fixed costs associated with the continued operation of the existing generating units were based on projections of annual O&M costs and the Net Present Value (NPV) of the revenue requirements associated with incremental capital investment necessary to keep the unit operational over the evaluation period. Replacement, installation capital, fixed O&M, and continue-to-operate capital are site specific costs. The replacement costs are pro-rated to an equal capacity basis with the studied unit. The NPV of the difference between the pro-rated replacement cost and unit operational cost is calculated to determine the overall net contribution.

The evaluation incorporated nine integrated scenarios in order to capture variations in the operating environments that would affect potential retirement of the units. The nine cases were developed around uncertainty in fuel prices and CO_2 legislation. The CO_2 scenarios were Existing (current policies only), Moderate (\$10/ton), and Substantial (\$20/ton). The \$10/ton and \$20/ton CO_2 penalties were modeled in 2010 dollars, starting in 2015 and escalated at 5% above inflation thereafter. These CO_2 prices were coupled with three fuel scenarios (low, moderate, and high) that were differentiated by assumptions about natural gas supply in the United States.

Plant Daniel Units 1 and 2

The purpose of the Plant Daniel evaluation was to determine the economic benefits of retiring Daniel Units 1 and 2 in December 2014 and replacing the units with the lowest cost option. The evaluation included estimates of transmission cost implications. The economic

analysis retired and replaced Gulf's ownership portion of Daniel Units 1 and 2 with one 2x1 MHI GAC series combined cycle, avoiding the Daniel Units 1 and 2 SCRs in the fall of 2018 and the fall of 2017, respectively, and the fall 2015 scrubber installations. It was assumed in this study that the replacement CC would be placed on the Plant Crist site. Due to permitting and construction lead time constraints, the Plant Crist CC could not be online until 2018. Therefore, market replacement capacity and energy purchases were assumed from January 2015 until the replacement unit is available.

A transmission study was performed which concluded there were significant costs associated with retiring Gulf's ownership portion of Daniel Units 1 and 2 and replacing the units with a CC at Plant Crist. The cost of transmission improvements required to place the Crist CC in service in 2018 is projected to be approximately \$

Results

An economic evaluation of the Plant Daniel CC replacement option was performed to compare customer costs from 2012-2041. The CC replacement option was compared to the cost of continuing to operate Gulf's ownership portion of Plant Daniel Units 1 and 2 with SCRs and scrubbers. Table 3.3-1 presents the NPV customer costs resulting from a comparison of costs of a replacement combined cycle unit minus Gulf's 50% ownership cost to continue to operate Daniel Units 1 and 2 with SCRs and scrubbers.

It shows that for eight of the nine scenarios considered, it is more beneficial to Gulf's customers to retrofit Plant Daniel Units 1 and 2, as proposed, rather than replacing them with a CC unit. In addition, transmission upgrades have long lead times due to permitting and construction limitations; therefore, market purchases for a 2015 replacement would be necessary. Even without monetizing the fuel diversity benefits of retaining coal generation on its system, the analysis shows that the proposed retrofit of the Plant Daniel Units is preferable to their replacement.

Table 3.3-1						
Net Replacement Costs – Daniel Units 1 and 2						
NPV [*] 2012 in millions						

Fuel/CO ₂	Existing CO ₂	Moderate CO2	Substantial CO2		
High					
Moderate					
Low					

*Reflects Gulf ownership portion only

4.0 PLANT-BY-PLANT COMPLIANCE PROGRAM

4.1 PLANT CRIST

Plant Crist is a four-unit, coal-fired electric generating facility located just north of Pensacola, Florida. Three older natural gas and oil-fired units at the site have been retired. Units 4 and 5 each have a nameplate rating of 93.75 MW and Units 6 and 7 have nameplate ratings of 370 MW and 578 MW, respectively. All four units were affected under the Acid Rain Program, and the plant has operated on low-sulfur coals since the 1990s to lower SO_2 emissions. All four units are equipped with low-NOx burner systems. Plant Crist Units 4, 5, and 6 have SNCR systems, while Crist Unit 7 is equipped with an SCR system for NOx control. The Crist Unit 6 SNCR will be replaced with a SCR system during late April, 2012.

The Plant Crist Units 4 through 7 flue gas desulfurization (FGD) scrubber became operational in December 2009 and is designed to reduce SO_2 emissions by approximately 95%. With these reductions, Gulf Power will be able to reasonably manage compliance with its SO_2 allowance bank. With the completion of the Crist Units 4 through 7 scrubber, the plant now has the option of burning a higher sulfur coal. Mercury emissions are also expected to be reduced through the co-benefits of the scrubber and SCR installations.

4.1.1 Plant Crist Retrofit Options

Plant Crist Unit 6 SCR Project

The Plant Crist Unit 7 SCR became operational in 2005, significantly reducing emissions of NOx from the plant. This project was called for under an agreement with the FDEP. The agreement also called for additional NOx reductions on Plant Crist Units 4 through 6 up to and including an SCR for Unit 6. The Crist Unit 6 SCR is on schedule to be placed in service during late April 2012. The majority of the associated structural steel and ductwork erection is now complete. All three layers of catalyst have been set in place. The project is in its final phase of construction which includes tying in the SCR ductwork to the unit, installing larger capacity induced draft fans to handle the increased draft demand, and the testing and startup of all remaining equipment and systems.

4.1.2 Plant Crist Comparison of Retrofit versus Retirement and Replacement

During 2011, an analysis was run to determine the economic benefits of retiring Plant Crist Unit 6 in December 2014 and replacing the unit with the lowest cost option. The site specific analysis focused on a comparison of continued operation versus unit replacement by a combined cycle. This evaluation included refined commitment and energy value modeling and cost implications to the transmission system. Changes in energy value, capital and other fixed costs were captured in the comparison analysis to help determine the most economical option. The economic results showed that for the twelve scenarios considered, it was more beneficial to Gulf's customers to continue to operate Crist Unit 6 with the SCR installed rather than replacing Crist Unit 6 with a CC unit.

4.1.3 Plant Crist MATS Requirements

Gulf is continuing its efforts to evaluate potential MATS compliance options for Plant Crist. The Plant Scholz mercury monitor has been relocated to Plant Crist in order to further analyze Plant Crist mercury emissions. Compliance with the MATS rule may require additional emission controls such as dry sorbent injection and/or a baghouse, changing fuel sources for certain existing units, the addition of new generating resources, and/or transmission upgrades.

4.1.4 Conclusions for Plant Crist

Based on previous economic assessments of Crist Units 4 through 7 and the Crist Unit 6 economic evaluation, the retrofit of Crist Units 4 through 7 with a single FGD scrubber and SCRs on Units 6 and 7 are the best options for compliance with the current requirements of CAIR, CAVR, and the anticipated NAAQS. These are the only technologies that offer the necessary emission reductions for SO₂ and NOx, and when used together, the scrubber and the SCRs on Units 6 and 7 will provide some additional benefit by reducing mercury emissions. Decisions regarding Gulf's CAIR compliance strategy were made jointly with the CAVR and CAMR compliance plans due to co-benefits of proposed controls. In response to finalization of the MATS rule and revisions to the CSAPR, these plans are being evaluated for compliance with the new standards and plans will be revised accordingly.

4.2 PLANT DANIEL

Gulf Power's ownership interest at Plant Daniel is associated with two coal-fired electric generating units that each have a nameplate rating of 548.25 MW. Gulf Power and Mississippi Power Company each own 50 percent of Daniel Units 1 and 2. The plant is operated by Mississippi Power employees. The facility is located just north of Pascagoula, Mississippi, with direct transmission access across Alabama and into Florida. Both coal-fired units were affected by the Acid Rain Program and have operated on low-sulfur coals since the 1990s. These New Source Performance Standards (NSPS) units are relatively low NOx emitters, and as a result, Gulf and Mississippi Power have been able to delay installation of controls and associated costs required under the Acid Rain Program. Low NOx burners were installed on Daniel Units 1 and 2 during 2010 and 2008, respectively, for CAIR annual and seasonal NOx cap and trade allowance programs.

For compliance with the CAIR/CSAPR, CAVR, MATS and anticipated NAAQS Plant Daniel Units 1 and 2 need significant emission reductions. Only a few technologies have demonstrated the ability to provide the needed SO_2 and NOx emission reductions at the commercial scale required for the coal units at Plant Daniel. An assessment was conducted on Plant Daniel Units 1 and 2 to compare retrofit controls versus retirement and replacement options for compliance. As noted under Section 3.2, complete reliance on fuel switching and allowance purchases were eliminated as viable options for all of Gulf Power's units, including its share of Plant Daniel Units 1 and 2. Retrofit options, as well as retirement and replacement options, are each reviewed below specifically for Plant Daniel.

4.2.1 Plant Daniel Retrofit Options

Plant Daniel Unit 1 and Unit 2 Flue Gas Desulfurization Scrubber Projects

Very high levels of SO_2 emission reductions can be achieved by flue gas desulfurization. Other than flue gas desulfurization, there are no other commercially available options for SO_2 emission reductions at the level needed to assure compliance with the CAIR/CSAPR, CAVR, and the anticipated NAAQS. Flue gas desulfurization, or wet scrubbing, has been determined to be the only viable SO_2 retrofit compliance option for Plant Daniel.

The Daniel scrubber projects are designed to reduce SO_2 emissions by approximately 95%. With these reductions, Gulf Power will be able to reasonably manage compliance using its SO_2 allowance bank. The scrubber projects are currently scheduled for completion in the fall of 2015. The scrubbers will minimize reliance on the SO_2 allowance market and assist Plant Daniel in complying with the MATS rule.

Plant Daniel NOx Reduction Projects

The Daniel Unit 1 and 2 Low NOx burners were planned for CAIR annual and seasonal NOx cap and trade allowance programs. The Daniel Unit 2 Low NOx burners were installed during 2008 and the Unit 1 Low NOx burners were placed in-service in 2010.

The Plant Daniel Units 1 and 2 SCRs are planned for operation in 2017 and 2018 to help meet the requirements of the CAIR/CSAPR, CAVR, and the anticipated NAAQS. The SCRs, along with the Unit 1 and 2 scrubbers, also provide a co-benefit of reducing mercury emissions.

4.2.2 Plant Daniel Comparison of Retrofit versus Retirement and Replacement

Selection between retrofit and retirement/replacement options for Plant Daniel was based upon a financial assessment and analysis to determine the least cost option for Gulf Power and its customers. The analysis examined the relative cost of (a) completing the retrofit projects and operating the retrofitted unit to (b) retiring the Daniel units without making the retrofit and instead, replacing them with capacity from another generation source. This analysis was completed using a detailed site specific methodology, as previously discussed in Section 3.3.4. The economic analysis retired and replaced Gulf's ownership portion of Daniel Units 1 and 2 with one 2x1 MHI GAC series combined cycle, avoiding the Daniel Units 1 and 2 SCRs in the fall of 2018 and the fall of 2017, respectively, and the fall 2015 scrubber installations. This evaluation included refined commitment and energy value modeling and cost implications to the transmission system. Changes in energy value, capital and other fixed costs were captured in the comparison analysis to help determine the most economical option. The economic results showed that for eight of the nine scenarios it would be more beneficial to Gulf's customers to retrofit Plant Daniel Units 1 and 2, rather than replacing them with a CC unit.

4.2.3 Plant Daniel MATS Requirements

Gulf and Mississippi Power are continuing efforts to evaluate potential MATS compliance options for Plant Daniel. It is anticipated that mercury continuous emission monitoring systems and/or additional emissions testing will be needed for Plant Daniel. It is possible that additional emissions controls such as calcium bromide injection may be required.

4.2.4 Conclusions for Plant Daniel

Based on this assessment, the retrofit of Daniel Units 1 and 2 with flue gas desulfurization scrubbers, the installation of Low-NOx combustion controls, and the addition of SCRs on both units are the best options for compliance with the current CAIR/CSAPR, CAVR, and the anticipated NAAQS. These technologies offer the necessary emission reductions for SO₂ and NOx, and when used together, the scrubbers and the SCRs will provide some additional benefit by reducing mercury emissions. Fuel switching alone will not reduce emissions to the required level. Allowance purchases are too uncertain and risky as a sole compliance option. The economic analysis indicated that retirement and replacement of Gulf's ownership portion of the units with a combined cycle unit is not economically feasible relative to retrofit of the existing units under eight of the nine scenarios analyzed.

4.3 PLANT SMITH

Plant Smith includes two coal-fired electric generating units (Unit 1 and Unit 2) along with an oil-fired combustion turbine and a natural gas-fired combined cycle unit. The facility is located just north of Panama City, Florida. Plant Smith Unit 1 has a nameplate rating of 149.6 MW, and Unit 2 has a nameplate rating of 190.4 MW. Both coal-fired units were affected under the Acid Rain Program, and the plant has operated on low-sulfur coals since the 1990s to lower SO₂ emissions. Both units are also equipped with low-NOx combustion systems. Unit 1 has special low-NOx burner tips, and Unit 2 has low-NOx burners and separated overfired air.

Installation of SNCRs for Plant Smith Units 1 and 2 were needed for Phase I CAIR compliance in 2009. In addition to CAIR compliance, the SNCRs were needed to assist in maintaining local compliance with the anticipated 8-hour ozone non-attainment designation. The Smith Unit 2 SNCR was placed in-service in the fall of 2008, and the Smith Unit 1 SNCR was placed in-service during May of 2009.

For CAIR and CAVR requirements at Plant Smith, an economic assessment was conducted to compare retrofit controls versus retirement and replacement options for compliance. As noted under Section 3.2, exclusive reliance on fuel switching and allowance purchases were

eliminated as viable options for Gulf Power. Retrofit options and retirement and replacement options are each reviewed below specifically for Plant Smith.

4.3.1 Plant Smith Retrofit Options

Plant Smith Units 1 and 2 Flue Gas Desulfurization Scrubber Project

The Plant Smith scrubber project has been included in the Gulf Power environmental compliance program because the requirements of CAVR will likely lead to a scrubber being required for Plant Smith Units 1 and 2. This decision is based upon anticipated CAVR command and control requirements. In addition, the scrubber will provide the added benefit of reducing mercury and other hazardous air pollutant emissions. The schedule and decisions about the Plant Smith scrubber remain very flexible. This scrubber would offer the same benefits as the scrubbers previously discussed.

Plant Smith Unit 2 Baghouse

The Plant Smith Unit 2 baghouse project has been included in the Gulf Power environmental compliance program because the MATS rules will likely lead to additional emission controls being required for Plant Smith. The schedule and decisions about the Plant Smith Unit 2 baghouse remain very flexible. Gulf is currently evaluating potential MATS compliance options for Plant Smith. Compliance with this rule is likely to require substantial capital expenditures and compliance costs at the Company's facilities. These costs may arise from unit retirements, installation of additional emission controls, changing fuel sources for certain existing units, the addition of new generating resources, and/or upgrades to the transmission system.

4.3.2 Plant Smith Comparison of Retrofit versus Retirement and Replacement

The Plant Smith economic analysis has not been updated because Gulf has not made any changes to the Plant Smith compliance strategy, other than delaying completion of the mercury monitor installation. In addition, the majority of the expenditures for Phase I environmental projects at Plant Smith were incurred prior to 2009. An updated analysis will be performed before Gulf would consider moving forward with the Plant Smith scrubber and baghouse projects. Both of these projects are included in Phase II of Gulf's compliance program and have not yet been approved for ECRC recovery.

4.3.3 Plant Smith Emission Monitoring and MATS Requirements

The CAIR required the installation of a parametric emission monitoring system on the Plant Smith combustion turbine during 2007. Gulf will continue to incur future maintenance expenditures to ensure accurate accounting of the combustion turbine emissions. Gulf is currently evaluating potential MATS compliance options for Plant Smith.

4.3.4 Conclusions for Plant Smith

The retrofit of Smith Units 1 and 2 with SNCRs, a FGD scrubber, and a baghouse on Unit 2 were the best options for compliance with CAIR, CAVR, and the CAMR regulations as described in Gulf's original Compliance Plan evaluations. These technologies offered the necessary emission reductions for SO_2 , NOx, and mercury. Fuel switching alone would not reduce emissions to the required level. Allowance purchases were too uncertain and risky as a sole compliance option.

The Smith Unit 2 SNCR was placed in-service in the fall of 2008 and the Smith Unit 1 SNCR was placed in-service during May of 2009. The schedule and decisions regarding the Plant Smith scrubber and baghouse, Phase II projects, remain very flexible. These projects are included in Gulf's compliance program for future consideration. Decisions regarding Gulf's CAIR compliance strategy were made jointly with the CAVR and CAMR compliance plans due to co-benefits of proposed controls. In response to finalization of the MATS rule and revisions to the CSAPR, these plans are being evaluated for compliance with the new standards and plans will be revised accordingly.

4.4 PLANT SCHOLZ

Plant Scholz consists of two coal-fired electric generating units that each have a nameplate rating of 49 MW. The facility is located in Jackson County, Florida. Both units were affected under the Acid Rain Program, and the plant has operated on low-sulfur coals since the 1990s to lower SO_2 emissions. Because these units are small and older, NOx averaging was used to achieve compliance with the NOx requirements under the Acid Rain Program without the installation of emission control equipment.

For CAIR and CAVR requirements at Plant Scholz, a thorough assessment was conducted to compare retrofit controls versus retirement and replacement options for compliance. Fuel switching, allowance purchases, and emission control retrofit versus retirement and replacement were all evaluated as options for compliance. Because this small plant is nearing retirement, significant investments in capital equipment to reduce emissions cannot be justified economically. The plant will utilize Company wide allowance trading options rather than installing additional emission control equipment for CAIR compliance.

4.4.1 Plant Scholz Emission Monitoring and MATS Requirements

The Scholz mercury emission monitoring system was being installed during February of 2008 when the court issued an opinion vacating the CAMR. Gulf completed the Scholz installation but postponed certification of the system due to pending regulatory uncertainty. The Plant Scholz mercury monitor has recently been relocated to Plant Crist in order to analyze the Plant Crist mercury emissions. Gulf is currently evaluating potential MATS compliance options for Plant Scholz. Compliance with the MATS rule may require unit retirements, additional emission controls, changing fuel sources for certain existing units, and/or the addition of new generating resources.

4.4.2 Conclusions for Plant Scholz

For CAIR compliance, Plant Scholz will utilize Company wide allowance trading options rather than installing additional emission control equipment. Decisions regarding Gulf's CAIR compliance strategy were made jointly with the CAVR and CAMR compliance plans due to co-benefits of proposed controls. In response to finalization of the MATS rule and revisions to the CSAPR, these plans are being evaluated for compliance with the new standards and plans will be revised accordingly.

5.0 POTENTIAL NEW ENVIRONMENTAL REGULATIONS

5.1 OZONE STANDARD

The EPA regulates ground level ozone through implementation of an eight-hour ozone air quality standard. In March 2008, the EPA issued a final rule establishing a more stringent eight-hour ozone standard, but the rule was challenged in court and was held in abeyance while EPA reconsidered the rule. On January 6, 2011, EPA proposed more stringent revisions to the 2008 eight-hour ozone ambient air quality standard, but the EPA Administrator deferred reconsideration of the standard during September 2011. EPA is expected to finalize a new eight-hour ozone standard in the 2014 timeframe, with state implementation plans for any non-attainment areas due in 2017.

5.2 NATIONAL AMBIENT AIR QUALITY STANDARDS

The EPA is scheduled to set new designation areas for the revised 2010 SO₂ and NO₂ primary NAAQS in mid-2012. Although there are no NO₂ designation issues expected in the Company's service area, it is likely that at least one county will be designated non-attainment for SO₂. The EPA will continue reviewing the SO₂ and NO₂ NAAQS under the normal five-year review cycle.

The EPA also regulates fine particulate matter emissions on an annual and 24-hour average basis. Although all areas within the Company's service area have air quality levels that attain the current standard, the EPA is expected to propose new, more stringent annual and 24-hour fine particulate matter standards in mid-2012.

5.3 GLOBAL CLIMATE ISSUES

Over the past several years, the U.S. Congress has considered many proposals to reduce greenhouse gas emissions and mandate renewable or clean energy. The financial and operational impacts of climate or energy legislation, if enacted, would depend on a variety of factors, including the specific provisions and timing of any legislation that might ultimately be adopted. Federal legislative proposals that would impose mandatory requirements related to greenhouse gas emissions, renewable or clean energy standards, and/or energy efficiency standards are expected to continue to be considered by the U.S. Congress.

In 2007, the U.S. Supreme Court ruled that the EPA has authority under the Clean Air Act to regulate greenhouse gas emissions from new motor vehicles, and, in April 2010, the EPA issued regulations to that effect. When these regulations became effective, carbon dioxide and other greenhouse gases became regulated pollutants under the Prevention of Significant Deterioration (PSD) preconstruction permit program and the Title V operating permit program, which both apply to power plants and other commercial and industrial facilities. In May 2010, the EPA issued a final rule, known as the Tailoring Rule, governing how these

programs would be applied to stationary sources, including power plants. The Tailoring Rule requires new sources that potentially emit over 100,000 tons per year of greenhouse gases and projects at existing sources that increase emissions by over 75,000 tons per year of greenhouse gases must go through the PSD permitting process and install the best available control technology for carbon dioxide and other greenhouse gases. In addition to these rules, the EPA has announced plans to propose a rule setting forth standards of performance for greenhouse gas emissions from new and modified fossil fuel-fired electric generating units and greenhouse gas emissions guidelines for existing sources in late 2012.

Each of the EPA's final Clean Air Act rulemakings have been challenged in the U.S. Court of Appeals for the District of Columbia Circuit. These rules may impact the amount of time it takes to obtain PSD permits for new generation and major modifications to existing generating units and the requirements ultimately imposed by those permits. The ultimate impact of these rules cannot be determined at this time and will depend on the outcome of any legal challenges.

International climate change negotiations under the United Nations Framework Convention on Climate Change also continue. In 2009, a nonbinding agreement known as the Copenhagen Accord was reached that included a pledge from countries to reduce their greenhouse gas emissions. The 2011 negotiations established a process for development of a legal instrument applicable to all countries by 2016, to be effective in 2020. The outcome and impact of the international negotiations cannot be determined at this time.

Although the outcome of federal, state, and international initiatives cannot be determined at this time, mandatory restrictions on the Company system's greenhouse gas emissions or requirements relating to renewable energy or energy efficiency at the federal or state level are likely to result in significant additional compliance costs, including significant capital expenditures. These costs could affect future unit retirement and replacement decisions and could result in the retirement of a significant number of coal-fired generating units.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: Environmental Cost) <u>Recovery Clause</u>)

Docket No.: 120007-EI

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true copy of the foregoing was furnished by U. S. mail this 30th day of March, 2012 on the following:

Ausley Law Firm James D. Beasley J. Jeffry Wahlen Post Office Box 391 Tallahassee, FL 32302 ibeasley@ausley.com

Florida Industrial Power Users Group c/o Keefe Law Firm Vicki Gordon Kaufman Jon C. Moyle, Jr. 118 North Gadsden Street Tallahassee, FL 32301 vkaufman@kagmlaw.com

Office of Public Counsel J. R. Kelly P. Christensen C. Rehwinkel c/o The Florida Legislature 111 W. Madison Street, Room 812 Tallahassee, FL 32399-1400 Christensen.patty@leg.state.fl.us

Tampa Electric Company Ms. Paula K. Brown Regulatory Affairs P. O. Box 111 Tampa, FL 33601-0111 Regdept@teccenergy.com

Hopping Law Firm Gary V. Perko P. O. Box 6526 Tallahassee, FL 32314 gperko@hgslaw.com Brickfield Law Firm James W. Brew F. Alvin Taylor Eighth Floor, West Tower 1025 Thomas Jefferson St, NW Washington, DC 20007-5201 jbrew@bbrslaw.com

Florida Power & Light Company John T. Butler 700 Universe Boulevard Juno Beach, FL 33408-0420 John.Butler@fpl.com

Progress Energy Florida, Inc. Paul Lewis, Jr. 106 East College Avenue, Suite 800 Tallahassee, FL 32301 <u>Paul.lewisir@pgnmail.com</u> Federal Executive Agencies Captain Samuel Miller USAF/AFLOA/JACL/ULFSC 139 Barnes Drive, Suite 1 Tyndall AFB, FL 32403-5319 Samuel.Miller@Tyndall.af.mil

Florida Power & Light Company Kenneth Hoffman 215 South Monroe Street, Suite 810 Tallahassee, FL 32301-1858 Ken.Hoffman@fpl.com

Progress Energy Service Co. John T. Burnett Dianne M. Triplett Post Office Box 14042 St. Petersburg, FL 33733 John.burnett@pgnmail.com

White Springs Agricultural Chemicals, Inc. Randy B. Miller Post Office Box 300 White Springs, FL 32096 <u>RMiller@pcsphosphate.com</u> Office of the General Counsel Charles Murphy 2540 Shumard Oak Blvd Tallahassee, FL 32399-0850 cmurphy@psc.state.fl.us

JEFFREY A.

JEFFREY A. STONE Florida Bar No. 325953 RUSSELL A. BADDERS Florida Bar No. 007455 STEVEN R. GRIFFIN Florida Bar No. 0627569 BEGGS & LANE P. O. Box 12950 Pensacola FL 32591-2950 (850) 432-2451 Attorneys for Gulf Power