



**REVIEW OF  
COAL COMBUSTION RESIDUAL  
STORAGE AND DISPOSAL  
PROCESSES  
OF THE  
FLORIDA ELECTRIC  
INDUSTRY**

**D E C E M B E R 2 0 1 1**

**BY AUTHORITY OF  
THE FLORIDA PUBLIC SERVICE COMMISSION  
OFFICE OF AUDITING AND PERFORMANCE ANALYSIS**



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COAL COMBUSTION RESIDUAL  
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OF THE  
FLORIDA ELECTRIC INDUSTRY**

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**BY AUTHORITY OF  
THE STATE OF FLORIDA  
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# TABLE OF CONTENTS

<b>CHAPTER</b>	<b>PAGE</b>
<b>1.0 EXECUTIVE SUMMARY</b>	
1.1 Scope and Objectives .....	1
1.2 Background and Perspective .....	1
1.3 Findings and Conclusions .....	4
<b>2.0 OVERVIEW OF OPERATIONAL COMPLIANCE</b>	
2.1 Observations.....	7
<b>3.0 TAMPA ELECTRIC COMPANY</b>	
3.1 Coal Combustion Residual Management .....	15
3.2 Risk Assessment .....	17
3.3 Performance Self-Evaluation .....	20
<b>4.0 PROGRESS ENERGY FLORIDA, INC</b>	
4.1 Coal Combustion Residual Management .....	21
4.2 Risk Assessment .....	23
4.3 Performance Self-Evaluation .....	24
<b>5.0 GULF POWER COMPANY</b>	
5.1 Coal Combustion Residual Management .....	29
5.2 Risk Assessment .....	31
5.3 Performance Self-Evaluation .....	32
<b>6.0 FLORIDA POWER &amp; LIGHT COMPANY</b>	
6.1 Coal Combustion Residual Management .....	35
6.2 Risk Assessment .....	38
6.3 Performance Self-Evaluation .....	40
<b>7.0 COMPANY COMMENTS</b>	
7.1 Tampa Electric Company.....	43
7.2 Progress Energy Florida, Inc.....	43
7.3 Gulf Power Company.....	46
7.4 Florida Power & Light Company.....	48
<b>8.0 APPENDICES</b>	
8.1 Appendix A – Summary of EPA’s Proposed Rules.....	51
8.2 Appendix B – Key Differences of EPA’s Proposed Rules.....	53

## TABLE OF EXHIBITS

<b>NO.</b>	<b>EXHIBIT NAME</b>	<b>PAGE</b>
1.	CCR Production/Storage/Disposal/Sales December 2010 .....	7
2.	CCR Engineering Control Requirements Surface Impoundments in Florida .....	10
3.	CCR Engineering Control Requirements Landfills in Florida .....	11
4.	Tampa Electric Company Big Bend Power Station CCR Production/Sales/Storage/Disposal .....	15
5.	Tampa Electric Company Polk Power Station Slag Production/Sales/Storage/Disposal.....	15
6.	Progress Energy Florida, Inc. Coal Combustion Residual – Fly Ash Produced/Marketed/Disposed .....	21
7.	Progress Energy Florida, Inc. Coal Combustion Residual – Bottom Ash Produced/Marketed/Disposed .....	21
8.	Progress Energy Florida, Inc. Coal Combustion Residual – Gypsum Produced/Marketed/Disposed .....	22
9.	Progress Energy Florida, Inc. Coal Combustion Residual Management Risk Matrix.....	27
10.	Gulf Power Company CCR Production/Sales/Storage/ Disposal.....	29
11.	Jacksonville Electric Authority St. Johns River Power Park CCR Production/Sales/Storage/Disposal .....	35
12.	Georgia Power Company Plant Scherer CCR Production/ Sales/Storage/Disposal.....	36

## 1.0 EXECUTIVE SUMMARY

### 1.1 SCOPE AND OBJECTIVES

This review examines how the four major investor-owned electric utilities (IOUs) in Florida are handling coal combustion residual (CCR) storage and disposal. It also addresses how each company is reassessing its practices based on proposed regulations by the U.S. Environmental Protection Agency (EPA). This review was conducted on behalf of the Florida Public Service Commission (FPSC) by the Performance Analysis Section of the Office of Auditing and Performance Analysis. The companies audited included: Tampa Electric Company (TECO), Progress Energy Florida, Inc. (PEF), Gulf Power Company (Gulf), and Florida Power & Light Company (FPL). Specifically, FPSC audit staff focused on the following areas:

- ◆ CCR Management
- ◆ Risk Assessment
- ◆ Performance Self-Evaluation

### 1.2 BACKGROUND AND PERSPECTIVE

Nearly half of the nation's electricity comes from coal-fired generation plants.<sup>1</sup> Future reliance on coal generation may decline sharply as fewer coal plants are being built due to environmental concerns. In Florida, approximately 36 percent of the electricity was generated from coal in 2000. In 2010, 25 percent of Florida's electric generation was from coal and it is forecasted to remain near 25 percent by 2020.<sup>2</sup>

Coal combustion for electric generation produces four main types of large volume CCRs:

- ◆ Fly ash – Fine particles of silica glass that are removed from the plant exhaust gases by air emission control devices.
- ◆ Bottom ash – Ash particles that are too large to be carried in the flue gases and collect on the furnace walls or fall through open grates to an ash hopper.
- ◆ Boiler slag – Molten bottom ash collected at the base of slag tap and cyclone type furnaces that is quenched with water. It is made up of hard, black, angular particles that have a smooth, glassy appearance.
- ◆ Flue gas desulfurization materials (e.g., gypsum) – Sludge or powdered sulfate and sulfite produced through a process used to reduce sulfur dioxide (SO<sub>2</sub>) emissions from the exhaust gas system of a coal-fired boiler.

Of the 136 million tons of CCRs generated nationwide in 2008 by roughly 495 coal-fired power plants, approximately 34 percent were disposed in landfills, 22 percent in surface

<sup>1</sup> U.S. Energy Information Administration (p.1) at <http://www.eia.gov/cneaf/electricity/epa/figes1.html>.

<sup>2</sup> FRCC's 2011 Load & Resource Plan, pp. S-17 to S-19, at [http://www.psc.state.fl.us/utilities/electricgas/docs/FRCC\\_2011\\_Load\\_Resource\\_Plan.pdf](http://www.psc.state.fl.us/utilities/electricgas/docs/FRCC_2011_Load_Resource_Plan.pdf).

impoundments,<sup>3</sup> and 8 percent in mines. The remaining 37 percent was recycled in concrete, gypsum wallboard, or other beneficial uses.

The Florida power plants subject to this review generated approximately 3 million tons of CCRs in 2010, with about 25 percent stored or disposed in landfills, 3 percent in surface impoundments, 5 percent in other storage facilities, and 67 percent beneficially used. In 2010, the combined Florida cost for disposal totaled about \$2.4 million. Sales revenue for the residuals was over \$3.8 million. In Florida, CCR storage and disposal and beneficial recycling are regulated by the Florida Department of Environmental Protection (FDEP). The FPSC also has regulatory authority pursuant to Chapter 366, Florida Statutes, over electric utility operations, safety, and rates which could be impacted by the increased regulatory costs associated with the EPA's proposed rules. As required by existing rules and statutes, power plants in Florida are permitted or licensed, and are required to monitor water impacts from ash storage areas or settling ponds by one of the following ways:

- ◆ National Pollutant Discharge Elimination System permit
- ◆ Separate groundwater permit
- ◆ Solid waste permit
- ◆ Conditions of certification under the Florida Power Plant Siting Act

#### **2008 TVA KINGSTON SPILL**

Due in large part to the environmental impact of the CCR spill at the Tennessee Valley Authority's (TVA's) Kingston facility in 2008, the EPA has proposed rules to regulate CCRs as hazardous wastes. Future regulation of CCRs could restrict disposal in liquid form and require additional liners or capping of existing CCR ponds.

Following the TVA ash spill in 2008, the EPA requested detailed information from coal-fired electric utility plants to identify and assess the structural integrity of their CCR surface impoundments, dams, or other management units. Staff reviewed the responses to the EPA's requests and notes that none of Florida's coal-fired electric utility plants are on the "high hazard potential" ratings list. Hazard potential ratings are generally assigned by state dam safety officials.

EPA's April 2010 regulatory impact analysis contains a list identifying the electric utility plants that have reported historical contamination release events, involving CCR surface impoundments, within the years 1999 to 2008. None of Florida's coal-fired electric utility plants are on this list.

The EPA's risk assessment analysis concluded that absent proper disposal contaminants from CCRs leak into groundwater. On June 21, 2010, the EPA proposed rules that would regulate CCR disposal by electric utilities. The EPA also requested and reviewed comments on whether certain forms of beneficial uses should be regulated, such as the use of CCRs in embankment fill and some agricultural applications. At this time, the EPA is not proposing to regulate beneficial uses of CCRs on a federal level.

#### **EPA PROPOSED REGULATIONS**

The EPA has proposed two regulatory schemes to regulate CCRs. In the Resource Conservation and Recovery Act under Subtitle C, CCRs are classified as "*special waste*", and

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<sup>3</sup> Surface impoundments are natural topographic depressions, man-made excavations, or diked areas formed primarily of earthen materials (although may be lined with man-made materials), which are designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which are not injection wells. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.



classified as “*non-hazardous waste*” under Subtitle D. Both schemes require liners and groundwater monitoring on new landfills receiving CCRs. The primary differences in the two plans involve the interim management of CCRs prior to disposal, treatment of existing disposal facilities, as well as implementation and enforcement.

Subtitle C regulates CCRs as hazardous waste. It includes measures intended to result in a phase out of existing surface impoundment facilities for the wet storage of CCRs. This approach also creates a comprehensive program of requirements for waste disposal that would be directly enforceable by the federal government through state or federal permit programs. Due to Florida’s statutory prohibition of hazardous waste landfills, the disposal and beneficial use of CCRs in Florida would be prohibited. Absent legislative amendment, CCRs will have to be transported out-of-state for disposal or for beneficial use. States would be required to adopt the rule before it would become effective. The EPA expects that rule adoption by the states could take several years.

Under Subtitle D, the EPA would set performance standards for CCR disposal and would require liners on existing impoundments where CCRs are stored in wet form. The EPA expects this would induce utilities to close existing impoundments and increase the disposal of CCRs in dry form. This approach would go into effect perhaps as early as six months after promulgation of the rules because it would not require state or federal permit programs. The rules would not be federally enforceable, but would be primarily enforced through citizen litigation.

The EPA prepared a Regulatory Impact Analysis to estimate the costs and benefits of the two regulatory approaches under various scenarios. The EPA estimates nationwide annualized costs of \$1.5 billion for the first approach and \$0.6 billion under the second approach. The EPA’s cost estimates include industry compliance costs, as well as state and federal monitoring and enforcement costs. The EPA contends that the rules will have “widespread environmental and economic benefits,” including: benefits associated with groundwater protection, prevention of future ash spills, and encouragement of recycling into beneficial uses. There has been disagreement whether the EPA’s proposed rules will increase or decrease beneficial uses for CCRs.

The EPA’s annualized benefit estimate under Subtitle C is \$7.4 billion based on induced future annual increases in beneficial use. However, potential decreases in beneficial use could reduce potential benefits by \$0.1 billion to \$3.0 billion per year nationwide.<sup>4</sup>

Gulf, for example, states that its costs necessary to comply with the Subtitle C and D regulations might result in an estimated annual revenue requirement between \$186 million to \$286 million and \$102 million to \$172 million to Gulf’s retail customers, respectively. The company emphasizes that the costs and resulting revenue requirements to Gulf’s retail customers are high-level estimates and include a significant amount of uncertainty.

The EPA released its proposed rules on June 21, 2010. The public comment period ended on November 19, 2010. The final rules are anticipated in 2012. The timing of compliance would depend on the rule option adopted, with full compliance expected by 2018. Both rules provide a five-year window for utilities to install required liners on existing CCR surface impoundments. **Appendix A** contains a summary of the EPA’s proposed rules and **Appendix B** lists the key differences between the rule options.

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<sup>4</sup> EPA’s August 20, 2010 Proposed Rule Update at <http://www.regulations.gov/#/documentDetail;D=EPA-HQ-RCRA-2009-0640-2660>.

## 1.3 FINDINGS AND CONCLUSIONS

### WHAT ARE AUDIT STAFF'S FINDINGS AND CONCLUSIONS?

Each of the four IOUs are proactively managing CCR storage and disposal activities. All four IOUs are taking steps to market CCRs for beneficial use with varying degrees of success, and each employs management oversight of storage and disposal operations. The company self-assessment information reflected in **Exhibits 2 and 3** appears to indicate general compliance with applicable federal, state and local regulations pertaining to CCR storage and disposal.

In addition, audit staff believes each company is assessing the potential operational changes and impacts of the proposed EPA regulations. The companies state that they continue to monitor the proceeding and will conduct a more thorough cost analysis once the EPA issues its final rules.

Audit staff's findings specific to each of the company's CCR management processes are as follows:

#### **TECO**

Audit staff commends TECO's efforts in marketing 86 percent of CCRs produced and generating sales revenue of \$4.0 million in 2010. TECO states that including its temporarily stored inventory, more than 99 percent of its CCRs are ultimately reclaimed for beneficial use. Staff believes that TECO should maintain its successful efforts through comprehensive, long-term contracts designed to maximize the utilization of CCRs.

#### **PEF**

Audit staff commends PEF for appropriately recognizing the risks associated with CCR management through its risk matrix analysis. Audit staff encourages PEF to ensure that it has developed specific actions to address all potential risk items identified in its priority ranking chart (a.k.a. risk matrix)—with emphasis on those items marked as potential catastrophic and high priority events—to prevent such problems from occurring.

Audit staff notes that PEF does not have operational procedures in place to handle an emergency event involving any of its CCR surface impoundments or landfills. To remedy this, PEF states that while it does not currently have a specific emergency management or disaster recovery plan in place to address CCR storage or disposal problems, it is working towards establishing emergency response procedures by January 1, 2012, which will cover spills, erosion, slope failure, flooding, and dust control as part of an overall CCR storage and disposal area operational plan.

Audit staff found that in 2010 PEF marketed 67 percent of its CCR production for beneficial use. PEF's total CCR net sales revenue was (\$896,110). PEF earned \$792,206 for the sale of fly and bottom ash. This revenue was offset by the marketing of gypsum which yielded net revenues of (\$1,688,316) in 2010. Audit staff encourages PEF to consider the use of a competitive bidding process to potentially increase marketing revenues. Although the revenues may be relatively small, cost savings associated with the reduction in storage and disposal activities should be realized.

Golder Associates prepared a CCR and Solid Waste Management Plan for PEF in September 2010. The plan identified several areas for improvement in PEF's operations. Audit staff found that corrective actions referenced in this plan have not been implemented.

### **GULF**

Audit staff raised some concerns regarding Gulf's procedures in place to handle potential emergency events at its CCR management facilities. To alleviate such concerns, the company states that it has implemented issuing cards with emergency contact information and posting the information in control rooms and other locations around the plants as designated by the plant managers. Audit staff also recognizes Gulf's initiation of stockpiling gravel, riprap (broken stones or concrete), and soil at its CCR surface impoundments for emergency dike repair purposes.

Audit staff found that in 2010 Gulf marketed 41 percent of its CCR production. Net revenues from marketing the CCRs were \$46,149. This total is comprised of \$64,620 in revenue from Plant Daniel in Mississippi but with a marketing cost at Plant Crist of \$18,471. None of the CCRs at Plant Smith and Scholz were marketed. Audit staff encourages Gulf to become more proactive in marketing the CCRs produced by its three plants in Florida. At some point, Gulf may want to consider the use of a competitive bidding process.

Additionally, audit staff notes that Gulf's inspectors at Plant Crist should complete each page of the inspection form, as formatted, including the inspection date and time. This process would not only satisfy the company's own procedures but also facilitate post-inspection data analysis, inspection performance reviews, and accurate recordkeeping of all the data contained in the eight-page inspection form.

### **FPL**

FPL does not operate any coal-fired power plants, but it is co-owner of two coal-fired electric power generation units at JEA's Plant St. Johns and one at Georgia Power's Plant Scherer. According to the company, JEA marketed 47 percent of its CCRs produced at Plant St. Johns. The percentage of CCRs marketed by Georgia Power at Plant Scherer cannot be determined from the data that is available to FPL under its operating agreement with Georgia Power. Audit staff encourages FPL to continue collaborating with its ownership partners to ensure that they use effective marketing practices for the CCRs produced.

### **CONCLUSIONS**

Approximately three million tons of CCRs are generated per year by the Florida IOUs subject to this review. In 2010, the combined cost of CCR storage and disposal totaled about \$2.4 million, while CCR sales revenue was over \$3.8 million. The percent of CCRs marketed for beneficial use varied among the IOUs, from a low of 41 percent to a high of 86 percent.

Audit staff notes that the IOUs each have their own unique CCR production, storage and disposal issues. The utilities should continue to review their operations, identify areas for improvement, and make changes to their CCR storage and disposal processes that may be necessary. All companies are encouraged to either continue or increase their marketing of CCRs for beneficial use.



## 2.0 OVERVIEW OF OPERATIONAL COMPLIANCE

### 2.1 OBSERVATIONS

#### HOW MUCH OF THE COAL COMBUSTION RESIDUALS ARE PRODUCED, MARKETED, STORED OR DISPOSED BY THE FLORIDA IOUs, AND WHAT ARE THE ASSOCIATED COSTS AND REVENUES?

Combined, the Florida utilities produced just under three million tons of CCRs in 2010. Approximately 67 percent of the residuals produced were marketed for beneficial use with the remainder stored or disposed. In 2010, the combined Florida cost for storage and disposal totaled about \$2.4 million. Sales revenue for the residuals was over \$3.8 million. **Exhibit 1** shows a summary of the amounts of CCRs produced, marketed, stored or disposed, and the associated costs and revenues in 2010 for each company.

CCR PRODUCTION/STORAGE/DISPOSAL/SALES DECEMBER 2010					
IOU	Produced (tons)	Marketed (tons)	Stored or Disposed (tons)	Storage or Disposal Cost	Sales Revenue
TECO	1,056,766	906,656	150,110	\$304,766	\$3,982,050
PEF	806,109	543,970	262,139	(1,478,152)	(896,110)
GULF <sup>1</sup>	593,651 <sup>2</sup>	245,680	338,569	2,457,823	46,149
FPL	344,028 <sup>3</sup>	188,782 <sup>4</sup>	155,246 <sup>3</sup>	1,159,654 <sup>4</sup>	681,465
<b>Total</b>	<b>2,800,556</b>	<b>1,885,088</b>	<b>906,064</b>	<b>\$2,444,091</b>	<b>\$3,813,554</b>

#### EXHIBIT 1

Source: Supplemental Document Request 2.7(a),(b)

<sup>1</sup> Includes Gulf's ownership portion of Plant Daniel (in Mississippi).

<sup>2</sup> Gulf states CCRs produced do not equal the sum of marketed, stored and disposed due to inherent imprecision in estimating ash content of varying coal supplies.

<sup>3</sup> Data not provided by Georgia Power to FPL.

<sup>4</sup> Includes FPL's portion of marketed CCRs from JEA's Plant St. John and Georgia Power's Plant Scherer.

#### WHAT IS THE STATUS OF THE UTILITY'S COMPLIANCE WITH THE CURRENT COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL REQUIREMENTS?

**Exhibits 2 and 3** below reflect each IOU's self-assessment of the status of compliance with the current requirements for the disposal of CCRs in Florida.<sup>5</sup> **Exhibit 2** identifies the self-assessments for surface impoundments, and **Exhibit 3** identifies the self-assessments for landfills.

#### **TECO**

TECO has three surface impoundments at Plant Big Bend and one slag storage or landfill area at Plant Polk. TECO's Plant Big Bend is covered by a groundwater monitoring plan.<sup>6</sup> With the exception of the flue gas desulfurization (FGD) gypsum storage area, all CCR management units at the site have liner systems. The company also points out that all of the units, including the FGD gypsum area, are zero discharge facilities with engineered run-on/run-

<sup>5</sup> EPA's April 2010 RIA at <http://rfflibrary.files.wordpress.com/2010/05/epa-hq-rcra-2009-0640-0003.pdf>, provides a summary of baseline state government requirements for both landfills and surface impoundments. See <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-RCRA-2009-0640-0003;oldLink=false>.

<sup>6</sup> Pursuant to the provisions of Site Certification PA 79-12 and Industrial Wastewater Permit No. FLA017047.

off controls, and dust controls where necessary. According to TECO's website, the company has plans to line the gypsum storage area to help reduce groundwater and surface water impacts.

TECO states that its existing slag storage area is in compliance with all currently applicable regulations and permits for its Plant Polk. The slag storage area was constructed and is operated in accordance with FDEP solid waste regulations approved by EPA under the federal Subtitle D regulatory program.<sup>7</sup> The slag storage area has a composite liner, groundwater monitoring, leachate collection, run-on/run-off controls, dust controls. Annual financial assurance<sup>8</sup> documentation has been submitted to FDEP as well.

### **PEF**

PEF operates both a landfill and surface impoundments<sup>9</sup> at its Crystal River plant. PEF states that its CCR landfill and FGD blowdown surface impoundments are in full compliance with current requirements. The company further states that groundwater monitoring for the wells located around the ash landfill is performed in accordance with the FDEP issued Industrial Wastewater (IWW) permit for Crystal River, and that there are no other local or federal regulations that govern the ash landfill. PEF's FGD blowdown surface impoundment ponds are wastewater treatment ponds associated with the blow down of solids from the FGD (scrubber) system. The FDEP issued IWW permit regulates the operation of this treatment pond system.

### **GULF**

Gulf has four CCR surface impoundments in Florida. Two are at Plant Crist, one at Plant Smith, and one at Plant Scholz. Gulf states that all four are in compliance with all relevant and applicable federal and state laws and rules pertaining to CCR management. It also states that the liner, leachate collection system, financial assurance, and daily cover requirements are determined on a case-by-case basis pursuant to the FDEP Rule 62-701.220, F.A.C.

**Exhibit 2** shows that Gulf passed groundwater monitoring at three of the four surface impoundments. The fourth impoundment is at Plant Crist and began operations in 1959. According to Gulf groundwater monitoring is not applicable for this impoundment. Gulf stated that due to the location of that surface impoundment, and topography, groundwater monitoring would not be possible and would not provide representative data due to the influence of the adjacent surface water. Gulf discussed the site factors with FDEP and it was decided that surface water monitoring for this surface impoundment would be adequate. This sampling method was agreed to and then required in Gulf's NPDES permit.

Gulf indicates in **Exhibit 2** that it does not have liners, leachate collection systems, caps, financial assurances, daily covers, dust controls, run-on/run-off controls, and post-closure monitoring controls for the three older surface impoundments. The company states these controls are not required for these impoundments. The 2009 surface impoundment at Plant Crist, however, does require some of these controls. Specifically, the liner, leachate, and run-on/run-off controls are required. The company states it complies with each of these requirements for the 2009 surface impoundment at Plant Crist. Gulf states that the cap,

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<sup>7</sup> Under the provisions of Site Certification PA 92-32, Section XX1.B.

<sup>8</sup> TECO's financial assurance documentation relates to the company's claim that it has the means and finances necessary to cleanup any contamination event that should occur. Audit staff notes that under the Subtitle D proposal, the EPA has no authority to require financial assurance to insure cleanup of a contamination event.

<sup>9</sup> PEF's surface impoundments became active on February 22, 2010. These lined surface impoundments are used to collect and settle out/treat solids from the FGD blow down process. The solids contained in the FGD blowdown are wet-sluided or flushed from the wet scrubbers. These solids (gypsum fines) are periodically removed from the lined ponds as necessary.

financial assurance, daily cover, dust controls, and post-closure monitoring controls are not applicable to the 2009 surface impoundment.

### **FPL**

Jacksonville Electric Authority's (FPL's ownership partner) states that the CCR landfills at its St. Johns River Power Park (Plant St. Johns) are in compliance with all relevant and applicable federal and state laws and rules pertaining to CCR management. JEA further notes that its CCR landfills at Plant St. Johns are addressed by FDEP on a case-by-case basis.<sup>10</sup> The company states that it performs groundwater monitoring pursuant to its groundwater monitoring plan approved by FDEP, and that caps, dust controls, run-on/run-off, and post-closure monitoring controls are all in place as approved by FDEP. JEA further states that liners, leachate collection systems, daily covers, and financial assurance are not required.

Georgia Power Company (FPL's other ownership partner) states that its CCR management facilities at Plant Scherer in Georgia are currently in compliance with all applicable federal and state of Georgia requirements. Georgia Power also states that it operates flue gas desulfurization (FGD) systems at certain of the Plant Scherer units (not including Unit 4 until 2012), and that the on-site solid waste landfill is permitted by the state of Georgia and is primarily operated for FGD gypsum storage and disposal. This permitted landfill has a leachate collection system, groundwater monitoring, and is a lined facility. Plant Scherer's ash pond wastewater discharge is subject to a NPDES permit issued by the state of Georgia, and Georgia Power states Plant Scherer is in compliance with that permit.

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<sup>10</sup> JEA states that typical municipal solid waste landfill requirements (e.g., liners) are not automatically applied to these facilities and through a case-by-case evaluation owners and operators of CCR landfills are required to provide reasonable assurance to FDEP that such facilities will not cause pollution in violation of FDEP standards.

**CCR ENGINEERING CONTROL REQUIREMENTS  
SURFACE IMPOUNDMENTS IN FLORIDA\***

Coal-Fired Power Plant	Year of Initial Operation	Groundwater Monitoring Compliance (Pass or Fail)	Liner (Yes or No)	Liner (Pass or Fail)	Leachate Collection System (Pass or Fail)	Cap (Yes or No)	Cap (Pass or Fail)	Financial Assurance (Pass or Fail)	Daily Cover (Pass or Fail)	Dust Controls (Pass or Fail)	Run-on/Run-off (Pass or Fail)	Post Closure Monitoring (Pass or Fail)
<b>TECO</b>												
<b>Big Bend<sup>a</sup></b>	1985	Pass	Yes	Pass	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A
<b>PEF</b>												
<b>Crystal River<sup>b</sup></b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>GULF</b>												
<b>Crist</b>	1959	N/A <sup>c</sup>	No	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A
	2009	Pass	Yes	Pass	Pass	No	N/A	N/A	N/A	N/A	Pass	N/A
<b>Smith</b>	1965	Pass	No	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A
<b>Scholz</b>	1953	Pass	No	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A

\*The inputs in the "Pass or Fail" columns refer to the issue of compliance with the minimum requirements reflected in the EPA's Appendix E at <http://www.regulations.gov/#!documentDetail:D=EPA-HQ-RCRA-2009-0640-0003:oldLink=false>.

<sup>a</sup> Data applies to each Big Bend CCR surface impoundment: North Fly Ash, North Bottom Ash, and South Bottom Ash.

<sup>b</sup> PEF states these attributes and requirements are not applicable (N/A) to the Crystal River surface impoundments. The Company states that its flue gas desulfurization (FGD) blowdown treatment ponds, which were placed into service February 22, 2010, are permitted as surface water impoundments under the State's wastewater rules (FLDEP) found in Chapter 62-620 F.A.C.

<sup>c</sup> Gulf states that it conducts FDEP approved surface water monitoring in lieu of groundwater monitoring for the CCR surface impoundment at this facility.

**EXHIBIT 2**

*Source: Company Responses to Supplemental DR2*



**CCR ENGINEERING CONTROL REQUIREMENTS  
LANDFILLS IN FLORIDA\***

Coal-Fired Power Plant	Year of Initial Operation	Groundwater Monitoring Compliance (Pass or Fail)	Liner (Yes or No)	Liner (Pass or Fail)	Leachate Collection System Pass or Fail	Cap (Yes or No)	Cap (Pass or Fail)	Financial Assurance (Pass or Fail)	Daily Cover (Pass or Fail)	Dust Controls (Pass Or Fail)	Run-on/Run-off (Pass or Fail)	Post Closure Monitoring (Pass or Fail)
<b>TECO</b>												
Polk <sup>1</sup>	1995	Pass	Yes	Pass	Pass	No	N/A	Pass	N/A	N/A	N/A	Pass
<b>PEF</b>												
Crystal River	1982	Pass	No	N/A	N/A	Yes	Pass	N/A	N/A	N/A	N/A	N/A
<b>GULF</b>												
Crist	1980	Pass	No	N/A	N/A	Yes	Pass	N/A	N/A	Pass	Pass	N/A
Smith	1985	Pass	Yes	N/A	N/A	Yes	Pass	N/A	N/A	Pass	Pass	N/A
<b>FPL and Jacksonville Electric Authority</b>												
St. Johns River	Area I: 1987 Area II: 2001 Area B: 2009	Pass	No	Pass	Pass	Yes	Pass	N/A	N/A	Pass	Pass	Pass
<p>*The inputs in the "Pass or Fail" columns refer to the issue of compliance with the minimum requirements reflected in the EPA's Appendix E at <a href="http://www.regulations.gov/#!documentDetail:D=EPA-HQ-RCRA-2009-0640-0003;oldLink=false">http://www.regulations.gov/#!documentDetail:D=EPA-HQ-RCRA-2009-0640-0003;oldLink=false</a>.</p> <p><sup>1</sup> Refers to the slag storage area at Plant Polk.</p>												

**EXHIBIT 3**

*Source: Company Responses to Supplemental DR2*

## **WHAT PREVENTATIVE MEASURES HAVE BEEN TAKEN BY FLORIDA UTILITIES TO MITIGATE RISK OF HARM TO THE PUBLIC HEALTH AND ENVIRONMENT?**

### **TECO**

TECO has capped and closed its unlined on-site storage areas and lined all active CCR surface impoundments (ponds) at its Plant Big Bend to mitigate risks of contaminant seepage into groundwater. The company's inspection process, use of automated controls, and on-going monitoring and evaluations all facilitate prevention of any CCR storage and disposal problems. FPSC audit staff notes that the New Source Performance Standards under the Clean Water Act require zero discharge for fly ash transport waste streams.<sup>11</sup> In this regard, TECO states that all of its CCR surface impoundments and management facilities at Plant Big Bend, including the gypsum storage area, are closed-cycle, zero-discharge systems (i.e., all ash sluice water and run-off is recycled back to the plant for reuse so none of the wastewater is discharged to surface waters) and are constructed pursuant to approved site plan certifications.

Plant Big Bend is the only TECO facility that operates a flue gas desulfurization (FGD) system. This system is designed so that no FGD wastewater is discharged as contaminated run-off or leachate. Specifically, more than 90 percent of the FGD wastewater is recycled and less than 10 percent is treated and discharged through a permitted outfall.

The slag storage area at Plant Polk is not a zero discharge system. Instead, TECO states its facility is engineered with stormwater run-off controls, a leachate collection system, and a leachate treatment system that all satisfy FDEP requirements. The company submits FDEP required quarterly reports on the amount of slag produced, recycled, and disposed, including the end-of-month stockpiled slag inventory. It also provides FDEP with required groundwater reports on a quarterly basis that contain the monthly monitoring results of wells within the vicinity of the storage area. TECO also states that it performs required monitoring of the quantity and quality of any leachate which emanates from the slag pile. The company believes its daily inspections and monitoring of its slag storage and disposal facilities aid in early detection of any unusual conditions or problems that could be addressed immediately.

### **PEF**

PEF's Plant Crystal River is the only power plant in the company's Florida fleet that has a coal ash landfill. The ash landfill is a dry handling facility meaning that ash material is not conveyed to the landfill via water transport. Ash is transported on a dry basis via trucks and, thus, the landfill is not considered to be a closed-cycle, zero discharge (CCZD) system. At the present time, the company has no plans to implement a closed-cycle, zero discharge system for its ash landfill, its impoundments, or FGD blow down treatment ponds involved in the treatment or storage of CCRs. There is a stormwater collection system for the ash landfill. The ash landfill's stormwater system is connected to the plant's system-wide stormwater system which is permitted under a National Pollution Discharge Elimination System (NPDES) permit. The ash landfill is also covered by the plant's FDEP Industrial Wastewater permit which contains groundwater monitoring provisions.

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<sup>11</sup> EPA's Steam Electric Power Generating Point Source Category: Final Detailed Study Report (EPA 821-R-09-008), October 2009, Table 3-8, p.3-33, at [http://water.epa.gov/lawsregs/guidance/cwa/304m/archive/upload/2009\\_10\\_26\\_guide\\_steam\\_finalreport.pdf](http://water.epa.gov/lawsregs/guidance/cwa/304m/archive/upload/2009_10_26_guide_steam_finalreport.pdf). Source: 40 CFR 423; 47 FR 52304, November 19, 1982, § 423.17(e) There shall be no discharge of wastewater pollutants from fly ash transport water, at [http://cfr.regstoday.com/40cfr423.aspx#40\\_CFR\\_423](http://cfr.regstoday.com/40cfr423.aspx#40_CFR_423), p.15.

### **GULF**

Gulf states that none of its CCR management facilities are closed-cycle, zero-discharge systems. Gulf Power notes that it is unaware of any federal law, state law or rule that requires implementation of closed-cycle, zero discharge systems.

Plant Crist operates a flue gas desulfurization (FGD) system. The operating areas of the FGD system at Plant Crist have concrete or geosynthetic liners in place to prevent stormwater from coming into contact with the gypsum and potentially impacting groundwater. The stormwater from these areas is conveyed to the existing FGD gypsum pond and storage area and then routed to another pond to be reused in the scrubber system. The only discharge from the FGD system is to a permitted Underground Injection Control (UIC) well that was approved by FDEP on February 12, 2009. Approximately 85 to 95 percent of the FGD system wastewater is recycled for reuse in the system itself. The remaining wastewater discharges from the FGD system (scrubber blow down and vacuum extraction water from the processing system) are conveyed into the lined pond system where gypsum settles and the remaining water is further conveyed to the return water pond. From that point, the water is routed for reuse in the FGD system. Only a small portion of the FGD system wastewater is removed and injected into the FDEP permitted UIC well for control of chloride concentrations to facilitate FGD system the wastewater reuse.

### **FPL**

For JEA's Plant St. Johns and Georgia Power's Plant Scherer, which are partly owned by FPL, the companies state that none of their CCR management units are closed-cycle, zero-discharge systems. Both JEA and Georgia Power state that they are not taking any actions to implement CCZD systems to eliminate the waste stream, nor are they aware of any federal law, state law or rule that requires implementation of such systems. JEA states that Plant St. Johns operates a flue gas desulfurization (FGD) system, and the associated FGD wastewater is routed to the on-site industrial wastewater facility for treatment prior to discharge as an internal NPDES outfall into the cooling tower blow down line, which ultimately discharges as the main plant NPDES outfall. Similarly, Georgia Power states that at the Plant Scherer units with operational FGD systems (not including Unit 4 until 2012), FGD gypsum is generated and transported with sluice water and upon settling within the rim stack CCR landfill, the supernatant water is recycled back to the FGD unit as makeup.



## 3.0 TAMPA ELECTRIC COMPANY

### 3.1 COAL COMBUSTION RESIDUAL MANAGEMENT

**HOW MUCH AND WHAT TYPES OF COAL COMBUSTION RESIDUALS ARE PRODUCED, MARKETED, STORED OR DISPOSED BY THE UTILITY, AND WHAT ARE THE ASSOCIATED COSTS AND REVENUES?**

TECO has five coal-fired electric power generation units in Florida at its 1,565-megawatt (MW) Big Bend Power Station (Plant Big Bend) and 250 MW Polk Power Station (Plant Polk). **Exhibit 4** shows the amounts, by type, of CCRs produced, marketed, stored or disposed for 2008 through 2010 at Plant Big Bend. In 2010, Plant Big Bend was able to market 86 percent of the CCRs produced generating sales revenue of \$3,795,969 for its ash, gypsum and slag.

<b>TAMPA ELECTRIC COMPANY BIG BEND POWER STATION CCR PRODUCTION/SALES/STORAGE/DISPOSAL</b>									
Year	CCR Type	Produced <sup>a</sup> (tons)	Marketed (tons)	Stored (tons)	Disposed (tons)	Disposal Cost	Sales Revenue	Where Stored <sup>b</sup>	Off-site Disposal
2008 <sup>a</sup>	Ash	280,503	235,678	40,010	4,815	\$57,425	\$406,966	TSI/TSD	Landfill
	Gypsum	683,537	585,787	97,750	0	0	2,949,187	TSP	Landfill
	Slag	69,673	24,718	43,961	994	11,855	557,020	TSI	Landfill
2009	Ash <sup>a</sup>	277,942	263,065	11,000	3,877	64,101	81,594	TSI/TSD	Landfill
	Gypsum <sup>a</sup>	560,300	444,401	115,345	554	3,324	2,216,892	TSP	Landfill
	Slag	31,897	30,789	0	1,108	18,319	654,095	TSI	Landfill
2010	Ash <sup>a</sup>	316,395	300,445	10,000	5,950	93,646	704,208	TSI/TSD	Landfill
	Gypsum <sup>a</sup>	662,530	533,921	128,079	530	3,180	2,129,724	TSP	Landfill
	Slag	61,429	59,759	0	1,670	\$26,284	\$962,037	TSI	Landfill

<sup>a</sup> The produced amount is estimated based on the amount marketed plus the amounts stored and disposed;

<sup>b</sup> Temporary Surface Impoundment (TSI) and Temporary Storage Pile (TSP) and Temporary Storage Dome (TSD).

**EXHIBIT 4**

*Source: Supplemental Document Request 2.7(b)*

**Exhibit 5** shows the amounts, by type, of CCRs produced, marketed, stored or disposed for 2008 through 2010 at Plant Polk. In 2010, Plant Polk was able to market 76 percent of its CCRs, showing steady improvement in sales.

<b>TAMPA ELECTRIC COMPANY POLK POWER STATION SLAG PRODUCTION/SALES/STORAGE/DISPOSAL</b>								
Year	Produced (tons)	Marketed (tons)	Stored (tons)	Disposed (tons)	Disposal Cost	Sales Revenue	Where Stored	Off-site Disposal
2008 <sup>a</sup>	20,972	9,540	10,871	561	\$23,908	\$131,805	Temporary Storage Pile	Landfill
2009 <sup>a</sup>	16,700	11,834	3,624	1,242	\$59,989	\$191,261	Temporary Storage Pile	Landfill
2010	16,412	12,531	120	3,761	\$181,656	\$186,081	Temporary Storage Pile	Landfill

<sup>a</sup> The produced amounts of CCRs represent the total amount marketed plus the amounts stored and disposed.

**EXHIBIT 5**

*Source: Supplemental Document Request 2.7(a)*

## **WHAT ARE THE UTILITY'S GOAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL ACTIVITIES AND PROGRAMS?**

Bottom ash produced at Plant Big Bend is marketed to cement companies and fly ash is managed in partnership with Separation Technologies, Inc. The fly ash is pneumatically piped directly from the ash collection systems to a storage dome. After treatment by Separation Technologies, the fly ash is stored in two silos with a total capacity of approximately 18,000 tons. One of the silos receives approximately 70–90 percent of the ash, which due to its high quality is marketed directly to the mixed concrete products industry. The second silo receives approximately 10–30 percent of the ash, which due to its higher carbon content does not meet mixed concrete specifications, but is valuable as cement feedstock or a solid fuel. This ash may be sold to cement companies as market conditions allow or blended with coal and burned as fuel for cement kilns or other boilers, including TECO's Big Bend boilers. In the event the boilers are unable to accommodate this product, Separation Technologies may opt for off-site disposal.

At Plant Big Bend, TECO operates three ash ponds: one economizer fly ash, and two bottom ash ponds. All three ponds are lined with a heavy duty high density polyethylene liner and groundwater is monitored.<sup>12</sup> Plant Big Bend is the only TECO generating facility which operates a flue gasification desulfurization (FGD) system. The system is used to reduce sulfur dioxide emissions from the exhaust gas of the coal-fired boilers and there is no FGD wastewater discharged as contaminated run-off or leachate. More than 90 percent of the wastewater generated from the FGD system is recycled.

Plant Polk is an integrated gasification combined-cycle (IGCC) power plant that uses "coal gasification" technology to create a clean burning gas and "combined-cycle" technology, a highly efficient method of producing electricity. IGCC plants have lower emissions and higher cycle efficiencies than other coal-fired power plants.

The slag produced at Plant Polk is temporarily stored on-site at the slag storage area. According to the slag storage operational plan, daily inspections of the slag storage area are conducted and any problems with the slag storage and transfer facilities are noted and immediately corrected. TECO is required by FDEP to submit monthly totals for the quantity and semi-annual analyses for the quality of the slag leachate from the slag storage area and quarterly reports on the amount of slag produced, recycled, disposed, including the end-of-month stockpiled slag inventory. TECO is also required to monitor groundwater quality in the vicinity of the slag storage area and submit quarterly groundwater quality reports to FDEP.

The slag storage area is not a zero discharge system. Instead, this facility is engineered with stormwater run-off controls, a leachate collection system and a leachate treatment system meeting the requirements of the FDEP. This collection system consists of two leachate holding ponds which are periodically pumped out to a sand filter treatment unit. The effluent from the sand filter unit is pumped through the industrial wastewater sewer system for the power station to the cooling reservoir. The cooling reservoir is a continuously recirculating system delivering cooling water to the plant condensers and make-up water to other processes. The cooling reservoir also discharges intermittent blow down to an on-site reclaimed lake, which discharges to Little Payne Creek, the off-site receiving stream. This effluent handling system is permitted by FDEP.

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<sup>12</sup> Pursuant to Big Bend Site Certification PA 79-12 and Industrial Wastewater Permit No. FLA017047.

TECO is required to monitor the quantity and quality of the effluent leaving the site on a continuous basis for certain characteristics such as temperature and pH. Other chemical constituents are monitored at various frequencies, including monthly, quarterly, and semi-annually. According to TECO, the cooling water effluent is currently in compliance with all applicable permit conditions and water quality limitations.

### **WHAT DOES THE UTILITY DO TO MARKET COAL COMBUSTION RESIDUALS FOR BENEFICIAL USE?**

According to TECO's reported data, approximately 86 percent of its CCRs were marketed for beneficial use in 2010. TECO states that including its temporarily stored inventory, more than 99 percent of its CCRs are ultimately reclaimed for beneficial use. The company employs three main strategies to sell CCRs for beneficial use. First, the company enters into long-term contractual arrangements with end users and brokers of the CCRs for specific quantities of material with required quality requirements. Second, TECO contracts on a long-term basis with brokers, who process the CCRs and sell the processed product to end users. This type of sale will also have specifications for quantities and qualities of material. The third strategy used by the company to sell CCRs is to make short-term sales to brokers and end user customers. These sales have quality requirements but are frequently done on an as available basis without quantity specifications.

TECO has established a partnership with Separation Technologies, Inc. to use the ash generated at Plant Big Bend to produce marketable ash for beneficial use in cement and concrete products. The company states that it continues to evaluate potential markets for the ash stored at its on-site temporary surface impoundment. The majority of the FGD gypsum material generated at Plant Big Bend is sold to National Gypsum as raw material for wallboard production with smaller quantities marketed to agriculture and the cement industry. All of the gypsum produced by the Big Bend Units 1-4 scrubbers is potentially marketable. The only remaining CCR is slag from Units 1-3. This slag is sluiced directly to settling bins from these units, then dewatered and loaded directly onto trucks for transport to the customer.

TECO has entered into partnerships with CCR customers who use slag as a raw material in grit blast media and cement.

Audit staff commends TECO's continued efforts to maximize the amount of CCRs marketed for beneficial use. Staff encourages TECO to continue to explore contracts with vendors designed to maximize the utilization of CCRs.

## **3.2 RISK ASSESSMENT**

### **DOES THE UTILITY EMPLOY ADEQUATE MANAGEMENT OVERSIGHT AND APPROPRIATE CONTROLS FOR ITS COAL STORAGE AND DISPOSAL OPERATIONS?**

Plant Big Bend personnel inspect and evaluate in-plant processes and equipment during each shift to ensure all CCR piping, transfer, and containment facilities are operating to prevent releases to the environment. They report any unusual conditions or releases of product to the environmental personnel and respond accordingly, including immediate cleanup. Shift walk downs are logged by Big Bend personnel and any unusual conditions or problems are noted.

The CCR storage areas are inspected on a periodic basis, including daily inspections of water levels and dike conditions of the company's four active CCR ponds. If any unusual conditions are noted, the company evaluates the situation and makes corrections, if necessary. The ponds have audible water level alarms to ensure safe operating levels are not exceeded.

At Plant Polk, the potential risks from TECO's temporary on-site storage of slag are mainly associated with groundwater quality due to the minor potential for seepage from its CCR containment areas. TECO states it has mitigated these risks by designing and constructing the slag storage area to meet state and federal requirements.

**HAS THE UTILITY PARTICIPATED IN THE EPA'S RULEMAKING OR ANY OTHER RELATED PROCEEDING CONCERNING COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL?**

TECO has been cooperating with the EPA's information gathering efforts for both the impending Effluent Guidelines Rulemaking since 2007 and the Coal Combustion Residuals (CCRs) Rulemaking since 2009. For the effluent rulemaking effort, the activities are preliminary to the Formal Effluent Guidelines Rulemaking expected to occur in the future. TECO has not filed formal comments to the EPA regarding the rulemaking. However, when the rulemaking proceeds beyond the current information gathering phase, the company plans to participate both individually and as a member of the Utility Water Act Group, a national trade association of electric utilities formed for the purpose of tracking and commenting on new or revised environmental rules affecting the industry.

The FDEP initiated hearings in 2003 to begin the Industrial Waste Disposal and Recycling Rulemaking. As a member of the Florida Electric Power Coordinating Group, TECO participated in the early workshops held by FDEP to discuss perceived regulatory gaps in state regulations governing the storage and disposal of CCRs. TECO and the Florida Electric Power Coordinating Group generally supported the FDEP's efforts of ensuring that the resulting rule requirements would appropriately protect public health and the environment without becoming overly burdensome or unreasonably inhibiting beneficial uses of CCRs. At present, this rulemaking has been put on hold due to other regulatory priorities and is not likely to proceed until selection of a federal CCR regulatory option occurs.

TECO's position is the CCR storage and disposal facilities at Plant Big Bend are adequate to meet the current requirements of the federal Subtitle D regulations. The company's position is that while Subtitle D is the appropriate option for regulating CCRs, the proposed rule is still in need of revision to allow for alternatives to technical requirements. Regarding the EPA's Subtitle C proposal, TECO does not support the classification of CCRs as hazardous waste for the following reasons:

- ◆ The company believes such classification is not warranted because the materials do not have the chemical characteristics of hazardous waste.
- ◆ Modern design and management practices, such as the installation and maintenance of liner systems in ponds and impoundments employed by TECO, provide adequate human health and environmental protection when used for ash storage and handling.
- ◆ TECO believes the imposition of a hazardous designation on CCRs would have significant adverse impacts. Based on comments made by the CCR recycling industry representatives at the public rulemaking hearings in 2010, sales of coal



combustion residuals, which are already depressed due to the current economic slowdown, would plummet due to customers opting to avoid the stigma and perceived liability of using CCRs designated as hazardous waste in their products.

- ◆ TECO could not maintain current levels of beneficial use and other utilities developing programs would not be able to reach significant levels of beneficial use.
- ◆ On-site stockpiles of CCRs would grow at unprecedented rates, thereby dramatically increasing the necessity for off-site disposal. Currently, permitted hazardous waste landfills would be quickly overwhelmed. The use of out-of-state hazardous waste landfills for disposal would be necessary for TECO because current Florida law prohibits the use of landfills for hazardous waste in the state.
- ◆ The transportation of these materials for disposal would result in significant increases in fuel usage and tailpipe emissions.
- ◆ Electric generation costs would increase in response to higher CCR disposal costs, as well as unreasonable equipment retrofits and hazardous waste generator requirements.
- ◆ Ratepayers throughout the country would eventually experience electric rate increases as a result of these financial impacts, without receiving a discernable improvement in environmental protection.

If CCRs were to be classified as hazardous waste, any disposal of this material will be governed under the provisions of the Resource Conservation and Recovery Act Subtitle C regulations. Approximately three percent of the CCRs produced by TECO must be disposed of either on-site in ponds or off-site in landfills. At a minimum, this material would be managed and disposed of as hazardous waste. However, TECO believes a hazardous waste designation would severely reduce the sale of CCRs. Greater amounts of CCR waste would be disposed in hazardous waste landfills by many utilities throughout the U.S. TECO's estimated cost to dispose of its three percent ash waste in out-of-state hazardous waste landfills is roughly \$3 million to \$6 million annually, based on current fees ranging from \$300 to \$500 per ton. If the hazardous waste designation has the expected effect of decreasing the marketability of CCRs and thereby increasing disposal quantities, this estimate would escalate proportionately.

TECO generates clean-up waste during equipment maintenance, outage operations, minor spillage from conveyors and on-site transport of CCRs. All such processes and operations would require "total enclosure" to prevent releases of ash, which would be classified as hazardous waste discharges. TECO believes the scope and expense of the modifications and retrofits of process equipment to meet the Subtitle C rule requirements would be substantial.

TECO states that upgrades to all CCR waste containers and buildings would be required to meet hazardous waste storage standards. On-site accumulation of waste in these containers would be limited to 90 days, at which time, pick up must occur by a permitted hazardous waste transporter for shipment to a permitted hazardous waste landfill. All such shipments would be listed for disposal using the EPA's Uniform Hazardous Waste Manifest System.

Finally, the economizer ash pond would be closed under the Resource Conservation and Recovery Act closure requirements within five years and disposal of the material typically

stored in this pond would be only in an approved off-site hazardous waste landfill. Current Florida law prohibits placing hazardous waste in landfills, requiring all such material to be transported out of state. TECO believes if the state law was repealed and it chose to apply for a permit to construct and operate an on-site hazardous waste disposal area, any such permit application would be met with significant public opposition.

### **3.3 PERFORMANCE SELF-EVALUATION**

#### **HAS THE UTILITY CONDUCTED ANY STUDIES OR ANALYSES ON ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES?**

TECO has not performed any internal audits regarding the company's CCR storage and disposal management processes. However, in 2002, TECO hired Jacobs Engineering to evaluate the CCR products management program at Plant Big Bend, including ash handling and management procedures. Based on the evaluation findings, and under the direction of TECO, Jacobs Engineering developed the Big Bend Station – Coal Combustion Product Management Manual in 2004. This manual is used as a guide to the procedures and management methods necessary to comply with all applicable federal, state and local regulations governing the handling, storage and disposal of CCRs.

#### **DOES THE UTILITY HAVE PROCESS IMPROVEMENT ACTIVITIES IN PLACE FOR ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES (LESSONS LEARNED, PEER REVIEWS, ETC.)?**

As a result of site inspections and liner evaluations performed by TECO and FDEP during 2000 and 2001, the company agreed to replace the liner system for its bottom ash ponds and the associated water return pond. TECO's Bottom Ash Operations Plan contains procedures for performing bottom ash mining operations, managing the water handling system, and protecting the condition of the bottom ash liner system during operations. In accordance with the FDEP requirements, TECO performed an inspection of the visible portions of the economizer ash pond liners in 2002 and made repairs to the liner systems. TECO implemented changes in its CCR waste and dredge spoil disposal practices which allowed the company to close the unlined DA-2 Disposal Area in 2005. The closure of the facility and the ongoing improvements to all of the other CCR management facilities at the site will result in all CCRs generated at Plant Big Bend being stored or disposed in lined storage facilities. The final project in this program is the Gypsum Storage Area and Conveyor Improvement Project, which is in the preliminary engineering stage. The design documents and permit applications for this project are scheduled for submittal in the Spring of 2012 and construction is scheduled for 2013-2015 after approval of the permits.

## 4.0 PROGRESS ENERGY FLORIDA, INC.

### 4.1 COAL COMBUSTION RESIDUAL MANAGEMENT

**HOW MUCH AND WHAT TYPES OF COAL COMBUSTION RESIDUALS ARE PRODUCED, MARKETED, STORED OR DISPOSED BY THE UTILITY, AND WHAT ARE THE ASSOCIATED COSTS AND REVENUES?**

PEF has four coal-fired electric power generation units at its Crystal River Energy Complex (Plant Crystal River) in Florida that are capable of producing a combined 2,313 MW. The amounts, by type, of CCRs produced, marketed, stored or disposed, and the associated costs and revenues for 2008 through 2010 are shown in **Exhibits 6 through 8** below. In 2010, Plant Crystal River marketed 68 percent of its fly ash and 36 percent of its bottom ash, generating sales revenue of \$792,206 for both.

<b>PROGRESS ENERGY FLORIDA, INC. COAL COMBUSTION RESIDUAL – FLY ASH PRODUCED/MARKETED/DISPOSED</b>							
Year	Fly Ash Produced (tons)	Fly Ash Marketed (tons)	Fly Ash Disposed (tons)	Disposal Location	Disposal Cost	Sales Revenue	Total Net Amount
2008	545,771	277,620	268,151	On-site Landfill	N/A <sup>a</sup>	N/A <sup>a</sup>	(\$232,143) <sup>b</sup>
2009	460,650	319,136	141,514	On-site Landfill	N/A <sup>a</sup>	N/A <sup>a</sup>	80,217
2010	493,846	334,589	159,257	On-site Landfill	(\$437,443) <sup>b</sup>	\$792,206	\$354,763

<sup>a</sup> Note: For 2008 and 2009, PEF states it only has the net (expense) and revenue amounts.

<sup>b</sup> PEF did not provide the reasons why its disposal cost and net (expense) amounts are negative.

**EXHIBIT 6**

*Source: Supplemental Document Request 1.7(b)*

<b>PROGRESS ENERGY FLORIDA, INC. COAL COMBUSTION RESIDUAL – BOTTOM ASH PRODUCED/MARKETED/DISPOSED</b>							
Year	Bottom Ash Produced (tons)	Bottom Ash Marketed (tons)	Bottom Ash Disposed (tons)	Disposal Location	Disposal Cost*	Sales Revenue*	Total Net Amount*
2008	69,182	60,984	8,198	On-site Landfill	*	*	*
2009	58,392	12,902	45,490	On-site Landfill	*	*	*
2010	62,600	22,736	39,864	On-site Landfill	*	*	*

\*Note: For cost and revenues, these amounts are all inclusive with the fly ash amounts in **Exhibit 6**.

**EXHIBIT 7**

*Source: Supplemental Document Request 1.7(b)*

**PROGRESS ENERGY FLORIDA, INC.  
COAL COMBUSTION RESIDUAL - GYPSUM  
PRODUCED/MARKETED/STORED/DISPOSED**

Year	Gypsum Produced (tons)	Gypsum Marketed (tons)	Gypsum Stored (tons)	Storage Location	Gypsum Disposed (tons)	Disposal Location	Disposal Cost	Sales Revenue	Total Net Amount
2008	0	0	0	On-site Storage Pad	0	Off-site Landfill	N/A <sup>a</sup>	N/A <sup>a</sup>	N/A <sup>a</sup>
2009	1,702	0	0	On-site Storage Pad	1,702	Off-site Landfill	N/A <sup>a</sup>	N/A <sup>a</sup>	N/A <sup>a</sup>
2010	249,663	186,645	6,185	On-site Storage Pad	56,833	Off-site Landfill	(\$1,040,709)	(\$1,688,316)	(\$2,729,026)

<sup>a</sup> PEF states its processing systems to create gypsum were not completely functional until the beginning of 2010.

**EXHIBIT 8**

*Source: Supplemental Document Request 1.7(b)*

In 2010, PEF began producing gypsum, and was able to market 75 percent of production. Because this was the first year of operation sales revenues were negative. Audit staff notes that although PEF reported only the net dollar amounts for the CCRs marketed for beneficial use, the company has implemented a processing system in 2010 to record and track the disposal costs and sales revenues on a future basis.

**WHAT ARE THE UTILITY'S COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL ACTIVITIES AND PROGRAMS?**

PEF's Plant Crystal River personnel manages CCRs generated at the facility, including fly ash and bottom ash in the dry storage area. The ash storage area at Plant Crystal River incorporates separate management piles of fly ash, bottom ash, comingled materials, and high chloride ash. A primary ash contractor supports PEF with the transportation, spreading, compacting, pile maintenance, and final disposition of the ash. To the extent that the contractor is unable to use or sell these materials, it temporarily transfers unsalable fly ash to the existing on-site ash storage area.

Flue gas desulfurization (FGD) systems, commonly called scrubbers, have been installed at Crystal River Units 4 and 5. The FGD treatment systems, which became operational in December 2009, produce synthetic gypsum (calcium sulfate) which is transported off-site for beneficial use or disposal. Some of the FGD materials (i.e. scrubber purge) were transported to a FGD blow down pond system that became operational in February 2010. The FGD blow down pond system consists of two lined settling ponds with two pipes installed between the ponds that serve as overflow outlets for the backup pond. An emergency spillway is located on the western side of the primary pond.

After settling of suspended solids in the FGD blow down ponds, the liquid is pumped to the existing primary percolation pond at the south plant, with the backup percolation pond available when needed for cleanout and maintenance of the primary pond. Pond solids are removed from the ponds after they have accumulated to a design elevation and are transported off-site for beneficial use or disposal. The solids removal from the primary and backup FGD blow down treatment ponds is accomplished using the FDEP approved procedures designed to

protect integrity of the liners. Dewatered solids will be disposed in an off-site landfill pursuant to applicable solid waste regulations.

#### **WHAT DOES THE UTILITY DO TO MARKET COAL COMBUSTION RESIDUALS FOR BENEFICIAL USE?**

Based on PEF's reported data as reflected in **Exhibits 6 through 8**, approximately 67 percent of its CCRs were marketed for beneficial use in 2010. The Byproducts and Reagents Group, in collaboration with Power Operations, is responsible for development and execution of a comprehensive coal combustion product marketing strategy. These efforts are tailored to each individual site and are driven by the distinct dynamics occurring within each market area. Specifically, at Plant Crystal River, the company utilizes a combination of independent third-party marketing groups and internal company sales and marketing resources to maximize beneficial use.

Audit staff encourages PEF to consider the use of a competitive bidding process to potentially increase marketing revenues. Although the revenues may be relatively small, cost savings associated with the reduction in storage and disposal activities should be realized.

## **4.2 RISK ASSESSMENT**

#### **DOES THE UTILITY EMPLOY ADEQUATE MANAGEMENT OVERSIGHT AND APPROPRIATE CONTROLS FOR ITS COAL STORAGE AND DISPOSAL OPERATIONS?**

There are two compliance groundwater monitoring wells associated with the ash storage area pursuant to the Industrial Wastewater permits governing the operations at Plant Crystal River. According to PEF, four additional intermediate groundwater monitoring wells associated with the ash storage area were installed in the fourth quarter of 2009. PEF also states that groundwater monitoring is conducted and reported to FDEP on a quarterly basis pursuant to Industrial Wastewater permit requirements.

Since fly ash and bottom ash are considered a resource material, procedures for stockpiling and covering the ash not only protect but also facilitate the recovery of material for sale.

Engineering and slope stability studies have been conducted to ensure height and grade of CCR storage areas will maximize the control of erosion, infiltration, and stormwater run-off. The physical characteristics of CCRs have also been tested to establish that sufficient compaction can be achieved. During operations, CCRs are compacted and stormwater run-off from the ash storage area is directed into associated stormwater collection channels and stormwater retention areas. The CCR storage area is designed to contain a 10-year, 24-hour storm event. Stormwater collection channels and retention areas are cleaned of accumulated sediment at six-month intervals. In addition to proper grading and compaction, CCR storage areas may be hydro-seeded to enhance erosion control, when necessary, prior to reaching the maximum height. Once maximum height has been reached, the finished top and sides will be capped with a geocomposite liner material to form a seal and 12 inches of seeded topsoil to minimize erosion. As an additional precaution, the completed top and side slopes will be inspected monthly for erosion damage and repaired promptly as required.

## **HAS THE UTILITY PARTICIPATED IN THE EPA'S RULEMAKING OR ANY OTHER RELATED PROCEEDING CONCERNING COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL?**

PEF participated in the rulemaking process for regulations proposed by the EPA which were released on June 21, 2010. PEF submitted comments to the EPA and provided brief comments at public hearings. PEF is a member of the Florida Electric Power Coordinating Group Environmental (FCG) Committee and participated in the development of FCG's comments that were also submitted to the EPA.

Regarding the classification of CCRs as a "hazardous substance", PEF states that it does not object to the use of the term "hazardous substance" in relation to CCRs when the term is correctly applied in compliance with rules established under appropriate federal laws such as Occupational Safety and Health Act and the Comprehensive Environmental Response, Compensation, and Liability Act.

The term of concern in the most recent rulemaking proposals regarding CCRs is "hazardous wastes" as defined and regulated under Subtitle C of the Resource Conservation and Recovery Act. PEF states it objects to regulation of CCRs under Subtitle C for a variety of reasons including lack of CCR qualification as hazardous, unnecessary stigma resulting in disruption of the ash recycling industry, corresponding adverse environmental impact, exceptional additional administrative and operational expense, and lack of statutory authority for the rule.

Hazardous waste landfills are prohibited in Florida based on existing statutory law. Therefore, if the new federal regulation is approved as proposed, PEF believes that hazardous waste landfills effectively would be the only option for disposal because on-site storage areas for CCRs would be highly regulated at significant cost. PEF adds that CCRs would have to be transported by truck out-of-state to hazardous waste landfills for disposal. Existing permitted hazardous waste landfill capacity would be very limited for the significant quantities of CCRs generated. PEF further states that a detailed prediction of process changes that could be necessary is difficult due to the complexity of the regulatory options and the likelihood that the final rules would vary considerably from those proposed in 2010.

PEF states that it considers and endorses federal regulation of CCRs as non-hazardous solid wastes under Subtitle D of Resource Conservation and Recovery Act. Under Subtitle D, PEF believes the CCR recycling market and industry will likely be able to continue to put to beneficial use a significant portion of CCRs generated, and power plants would more likely have an on-site or nearby economical landfill. A choice of either option by the EPA might be expected to result in litigation that may delay reliable planning and implementation of any changes in operations.

## **4.3 PERFORMANCE SELF-EVALUATION**

### **HAS THE UTILITY CONDUCTED ANY STUDIES OR ANALYSES ON ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES?**

Following the ash spill at Plant Kingston in Tennessee, FDEP performed an inspection of the ash storage facility at Plant Crystal River on January 29, 2009. A copy of the inspection

report notes that there were no significant findings associated with the site's ash storage system.

In November 2006, a stormwater management system model for Units 4 and 5 of Plant Crystal River was developed by Jacobs Engineering, Inc. and approved by the FDEP.

In 2007, FDEP requested that PEF prepare a sampling plan for various CCRs stored and disposed at Plant Crystal River. The purpose of the sampling plan was to identify the on-site CCRs, including other solid material streams, and to obtain an accurate characterization of them. PEF contracted with Environmental Consulting and Technology Inc. (ECT) to develop the sampling plan, collect and analyze representative samples, and develop a report that detailed the CCRs, including solid materials, which were sampled, sampling locations, and analytical results. The CCRs included fly ash and bottom ash. The other solid material streams included mill rejects (mixture of coal, rock and pyrites), dredge spoil/comingled material (cooling tower solids, wastewater pond dredge material), and non-petroleum contaminated soil. PEF submitted its report to FDEP in March 2008.

In August 2008, a modification to the facility's Conditions of Certification required the plant to develop and submit to FDEP a site-wide CCR and Solid Waste Materials Management Plan for review and approval. The initial plan was submitted to FDEP in December 2008 and revisions have been submitted to FDEP to reflect operational changes at the facility.

FDEP's solid waste division inspected the ash landfill and inactive North Ash Pond at Plant Crystal River on February 5, 2009. The ash landfill inspection results indicate that "[n]o significant areas of erosion were observed on the ash landfill" and that "[m]ost of the side slopes of the ash landfill appeared to be 4H:1V with the exception of the fly ash storage area." The results also indicate that the east side slope of the ash storage area was fairly steep, but no problems were noted in regard to the slope's integrity. PEF states that the slope has since been properly graded. Also, the results of the FDEP's inspection of the inactive North Ash Pond indicate that all existing ash has been excavated and removed to the high chloride ash area of the ash landfill and that the pond has been lined with dirt in preparation for liner construction to accommodate by-product from the flue gas desulfurization (FGD) units under construction. PEF states that the construction of the liner and FGD units have since been completed.

In October 2009, Golder Associates, Inc. performed a slope stability study as part of a request to modify the east side of the ash landfill. The report summary indicates that all critical slope failure surfaces had a safety factor greater than the generally accepted minimum of 1.5 inches. The report also states that "...the coal combustion product disposal area has been operated for about 30 years with no reported stability issues."

In July 2010, Golder Associates, Inc. performed stormwater modeling to assess whether the capacity of the currently permitted stormwater system would be sufficient to manage additional impervious surfaces within Units 4 and 5 which comprise the north plant area of Plant Crystal River. The results and comparisons to the results reported for the 2006 Jacobs model indicate that the peak stages and flow rates were higher in comparison to the 2006 Jacobs model. Golder Associates Inc.'s report concluded that the stormwater model results indicate that the stormwater management system is capable of managing the entire north plant area, defined by the drainage basins as impervious surface.

In September 2010, Golder Associates, Inc. also prepared a revised CCR and Solid Waste Materials Management Plan for Plant Crystal River. This plan was designed to assist the

facility in maintaining compliance with applicable permits and environmental regulations, and preventing contaminant releases to the environment. Audit staff reviewed the plan which identified several exceedances and release point concerns. PEF did not provide any evidence to show that the company has implemented corrective actions regarding the exceedances and release point concerns.

**DOES THE UTILITY HAVE PROCESS IMPROVEMENT ACTIVITIES IN PLACE FOR ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES (LESSONS LEARNED, PEER REVIEWS, ETC.)?**

As part of a corporate-wide process improvement initiative known as Continuous Business Excellence, PEF conducts Rapid Improvement Events to identify and implement more efficient ways to operate. Specific Rapid Improvement Events related to coal byproducts management have been held. On May 11, 2009, a week-long Rapid Improvement Event was held to create and implement a new uniform process for handling and processing coal byproducts shipments at its Plant Crystal River and other plants outside of Florida. The team achieved its goal of implementing an improved process and satisfied its two main objectives by reducing the time to physically load byproducts for shipment and to process the invoices by 50 percent; and improving the accuracy of data and records by 75 percent.

PEF also states that it maintains a database for documenting incidents which occur throughout the power generation industry. Plant Crystal River uses this database to learn from other experiences and to prevent recurrence of problems at its plant.

Plant Crystal River produces a yearly “Significant Environmental Impact Score Sheet” for the coal yard. This helps management to plan for potential fly ash and bottom ash impacts. Activities are “scored” on their likelihood of occurring, toxicity potential, cost, public relations impact, and regulatory consequence. **Exhibit 9** shows the annual significant environmental impact assessment results for calendar year 2010. The risk matrix below for the identified items pertaining to certain CCR management activities is color-coded relative to priority ranking:

- ◆ Catastrophic Event – High Priority Regardless of Score (Maroon)
- ◆ High Priority (Red)
- ◆ Moderate Priority (Pink)
- ◆ Low Priority (Blue)
- ◆ Lowest Priority (Yellow)

Audit staff commends PEF for appropriately recognizing the risk associated with the ash management. Audit staff encourages PEF to develop specific actions to address all potential risk items identified in its priority ranking chart (a.k.a. risk matrix)—with emphasis on those items marked as potential catastrophic and high priority events—to prevent such problems from occurring.



**PROGRESS ENERGY FLORIDA, INC.  
COAL COMBUSTION RESIDUAL MANAGEMENT RISK MATRIX**

<i>Probability</i>							<i>Risk Items</i>
<b>90% or More</b>			2-6	1			1. Landfill/Pond – Potential ground water impacts
<b>66%-89%</b>			7				2. Ash Storage/Management - Stormwater impact
<b>34%-65%</b>			9				3. Truck Traffic – Air impact
<b>11%-33%</b>					8		4. Ash Storage/Management – Air impact
<b>10% or Less</b>							5. Ash Handling System – Air impact
							6. Ash Handling System – Stormwater impact
							7. Ash Storage/Management – Off-site deposition (trucks)
							8. Ash Handling System – Spills and releases
							9. Ash Handling System – Surface water impact
		<b>Harmless</b>	<b>Mild</b>	<b>Moderate</b>	<b>Serious</b>	<b>Severe</b>	
							<i>Impact</i>

**EXHIBIT 9**

*Source: Supplemental Document Request 2.1(c)*



## 5.0 GULF POWER COMPANY

### 5.1 COAL COMBUSTION RESIDUAL MANAGEMENT

#### HOW MUCH AND WHAT TYPES OF COAL COMBUSTION RESIDUALS ARE PRODUCED, MARKETED, STORED OR DISPOSED BY THE UTILITY, AND WHAT ARE THE ASSOCIATED COSTS AND REVENUES?

Gulf has eight coal-fired electric power generation units in Florida with a combined capacity of 1,355 MW: Plant Crist Units 4 through 7 (906 MW), Plant Smith Units 1 and 2 (357 MW), and Plant Scholz Units 1 and 2 (92 MW). The amounts, by type, of CCRs produced, marketed, stored or disposed for 2008 through 2010 are shown in **Exhibit 10**, including the associated storage or disposal costs and sales revenues. In 2010, Gulf marketed 41 percent of CCR production, with the majority of the sales revenue derived from Gulf's ownership portion of Plant Daniel in Mississippi.

<b>GULF POWER COMPANY CCR PRODUCTION/SALES/STORAGE/DISPOSAL</b>							
Plant	Year	Produced <sup>1</sup> (tons)	Marketed (tons)	Stored or Disposed <sup>2</sup> (tons)	Storage or Disposal Facility	Storage or Disposal Cost	Sales Revenue
<b>Crist</b>	2008	189,891	14,632	175,259	Landfill	\$1,436,159 <sup>d</sup>	0
	2009	125,499	42,154	83,345	Landfill	1,356,929 <sup>d</sup>	0
	2010 <sup>a</sup>	179,912	15,414	164,499	Landfill	1,238,990 <sup>d</sup>	0
	2010	110,898 <sup>b</sup>	71,282	39,616	Surface Impoundment	220,082 <sup>e</sup>	(\$18,471) <sup>f</sup>
<b>Smith</b>	2008	81,675	0	81,675	Surface Impoundment	596,855 <sup>d</sup>	0
	2009	52,478	0	52,478	Surface Impoundment	614,567 <sup>d</sup>	0
	2010	66,045	0	66,045	Surface Impoundment	609,290 <sup>d</sup>	0
<b>Scholz</b>	2008	16,211	0	16,211	Surface Impoundment	64,481 <sup>e</sup>	0
	2009	437	0	437	Surface Impoundment	188,795 <sup>e</sup>	0
	2010	6,156	0	6,156	Surface Impoundment	199,234 <sup>e</sup>	0
<b>Daniel<sup>c</sup></b>	2008 <sup>a</sup>	198,388	171,032	26,657	Landfill	217,446 <sup>d</sup>	26,132
	2009 <sup>a</sup>	189,514	98,496	46,018	Landfill	156,437 <sup>d</sup>	52,090
	2010 <sup>a</sup>	230,640	158,984	62,253	Landfill	\$190,227 <sup>d</sup>	\$64,620

<sup>1</sup> Coal ash figures represent both fly ash and bottom ash produced. Plant Crist is the only Gulf facility that generates FGD gypsum.

<sup>2</sup> Gulf states that it does not dispose CCRs but stores them in its surface impoundments and landfills until sold for beneficial use.

<sup>a</sup> Gulf states CCRs produced do not equal the sum of marketed, stored and disposed due to inherent imprecision in estimating ash content of varying coal supplies.

<sup>b</sup> Gypsum; all other entries in this column represent both fly ash and bottom ash.

<sup>c</sup> Figures presented for Plant Daniel (in Mississippi) only represent Gulf Power's ownership portion.

<sup>d</sup> CCR landfill cap operation and maintenance costs.

<sup>e</sup> CCR surface impoundment operation and maintenance costs.

<sup>f</sup> The cost to develop markets with vendors for off-site beneficial use of gypsum in 2010 exceeded the revenue on gypsum sold. The primary cost was transportation, along with providing some gypsum at no cost so prospective vendors could test gypsum for use in their processes.

**EXHIBIT 10**

*Source: Supplemental Document Request 2.7(a)(b)*

## **WHAT ARE THE UTILITY'S COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL ACTIVITIES AND PROGRAMS?**

All of Gulf's CCR storage areas are subject to permits issued by state agencies such as FDEP. Some of those permits require certifications on specific plant ash storage facilities on an annual basis. Gulf personnel conducts weekly inspections of the ash storage facilities. Additionally, Southern Company Services conducts an annual safety inspection and provides an assessment of Gulf's ash storage facilities. Gulf believes the inspections and assessments comply with best practices within the industry to ensure ash storage facilities meet all applicable local, state, federal regulations and industry standards. Specific plant activities and programs are described below.

### **PLANT CRIST**

Fly ash is transported dry via a vacuum and pressure system to two silos. Once in the silos, the ash is either loaded into enclosed trucks for off-site beneficial use by concrete or cement companies or loaded into trucks and taken to the on-site ash landfill for storage. The bottom ash is transported via water to a hydrobin which is designed to remove the water from solid materials in slurry form. The hydrobin is drained each week and the bottom ash is transported by truck to the on-site ash landfill. The ash landfill is divided into cells. Once a cell is full, it is capped with topsoil and grass.

### **PLANT SMITH**

CCRs at Plant Smith are transported by a wet sluicing system to the ash pond where the ash is stored. Periodically, ash is removed from the pond to meet appropriate water detention volume levels. The excavated ash is transported and placed into the on-site ash landfill for storage. As at Plant Crist, the ash landfill is divided into cells which are capped with topsoil and grass when full.

### **PLANT SCHOLZ**

CCRs are transported by a wet sluicing system to the ash pond for storage. Periodically, CCRs are removed and stacked on internal dikes within the ash pond to maintain appropriate and safe volume levels.

### **PLANT DANIEL (IN MISSISSIPPI)**

Fly ash is collected by a dry ash handling system and transferred to silos. The ash is then hauled to the on-site landfill or sold for beneficial use by concrete or cement companies. Similar to the operations at Plant Scholz, the bottom ash is transferred by a wet sluicing system to the ash pond for storage. The bottom ash is periodically removed from the pond to maintain appropriate and safe volume levels and hauled to the on-site landfill where it is either sold for off-site beneficial use by concrete or cement companies or stored.

## **WHAT DOES THE UTILITY DO TO MARKET COAL COMBUSTION RESIDUALS FOR BENEFICIAL USE?**

According to Gulf's reported data as reflected in **Exhibit 10**, approximately 41 percent of its CCRs were marketed for beneficial use in 2010. Net revenues from marketing the CCRs were \$46,149. This total is comprised of \$64,620 in revenue from Plant Daniel in Mississippi but a marketing cost at Plant Crist of (\$18,471). None of the CCRs at Plant Smith and Scholz were marketed. Audit staff encourages Gulf to become more proactive in marketing the CCRs

produced by its three plants in Florida. At some point, Gulf may want to consider the use of a competitive bidding process.

The company has existing contracts with end users that beneficially use CCRs for various purposes including wallboard, cement manufacturing, and agricultural uses. New CCR beneficial use markets are continually being explored by Gulf Power and the CCR marketers with which it contracts.

## **5.2 RISK ASSESSMENT**

### **DOES THE UTILITY EMPLOY ADEQUATE MANAGEMENT OVERSIGHT AND APPROPRIATE CONTROLS FOR ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL OPERATIONS?**

Gulf uses Southern Company Services technical staff to monitor the existing CCR storage processes by physical inspection of the facilities. Specifically, the company states that Gulf personnel conducts weekly inspections and Southern Company Services technical staff conducts an annual safety inspection and assessment of each ash impoundment at Gulf's coal-fired power plants.

According to the company, personnel at all of Gulf's plants are to adhere to the Dam and Dike Inspection Guidelines for the water retaining structures on the property. The guidelines include specific plant responsibilities, such as weekly and monthly visual inspections by the Chemical and Results personnel and Compliance personnel, respectively. Any areas of concern are to be immediately reported to SCG Hydro Services. Also, all completed inspection checklists are to be promptly forwarded to the compliance group for review, routing, and filing. Additional inspections are to be conducted by either plant personnel or a dam safety engineer any time an unusual circumstance occurs: severe rain event, post-storm (hurricane, tornado, etc.), high river or stream flow, unusually high tide, or an earthquake. The results of such inspections are to be immediately reported to SCG Hydro Services for further review and corrective action.

Gulf also operates under various permits, such as the National Pollutant Discharge Elimination System permit, that contain specific inspection requirements concerning wastewater discharge and annual certification of impoundment integrity. Several of the permits require Gulf to certify annually that the ash ponds provide the necessary minimum wet weather detention volume to contain the combined volume for rainfall from a 10-year, 24-hour rainfall event and the maximum industrial wastewater flows which could occur during a 24-hour period.

### **HAS THE UTILITY PARTICIPATED IN THE EPA'S RULEMAKING OR ANY OTHER RELATED PROCEEDING CONCERNING COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL?**

Gulf provided comments on EPA's proposed CCR rulemaking during EPA's public comment period that ended on November 19, 2010. Gulf submitted comments as an operating company of Southern Company and as a member of the Florida Electric Power Coordinating Group, Inc.

Southern Company, as Gulf's parent corporation, also submitted comments to the EPA and stated that adoption of either the Subtitle C or D options could require closure of, or significant change to, existing storage units. Construction of lined landfills, as well as additional waste management and groundwater monitoring may be necessary. Southern Company also stated that under both options, the EPA proposes to exempt the beneficial use of coal combustion byproducts from regulation; however, a hazardous or other designation indicative of heightened risk could limit or eliminate beneficial reuse options. Although its analysis is preliminary, Southern Company believes the EPA has significantly underestimated compliance costs in the proposed rule.

Southern Company stated in its comments that federal oversight is not necessary because its facilities are designed, constructed, and operated according to the best industry practices to ensure CCR management and disposal are safe and effective. However, should the EPA promulgate final regulations, Southern Company urged the EPA to take an approach that recognizes the operational realities of the existing energy delivery structure.

Southern Company further stated that any federal standards or regulations should recognize that CCRs are non-hazardous "solid waste" for purposes of the Resource Conservation and Recovery Act. Gulf believes existing CCR management facilities should be allowed to continue operating and that primary responsibility for CCR regulation should reside with the states, pursuant to the direction provided by Congress under Resource Conservation and Recovery Act Subtitle D. Among the options proposed or discussed by the EPA, Gulf states that Subtitle D-prime is the best approach, subject to the number of additional suggestions proposed by Gulf.

Southern Company stated that the impact of these proposed regulations will depend on their final form and the outcome of any legal challenges. The changes could result in significant additional compliance, operational costs that could affect future unit retirement, replacement decisions, results of operations, cash flows, and financial condition. Also, it noted that higher costs recovered through regulated rates would result in higher rates for customers and could contribute to reduced demand for electricity which could negatively impact results of operations, cash flows, and financial condition.

### **5.3 PERFORMANCE SELF-EVALUATION**

#### **HAS THE UTILITY CONDUCTED ANY STUDIES OR ANALYSES ON ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES?**

Annual CCR storage and disposal management reports from Southern Company Services' inspectors conveyed the following over the period 2009 through 2010:

##### **PLANT CRIST**

The dam safety inspection reports, dated April 9 and December 10, 2010, indicate no major dam safety issues and five open issues that will be addressed in 2011: dike erosion, possible structural instability of discharge canal weir, vegetation overgrowth, examination of Governors Island ash pond at least yearly or after storms to identify any instability and repair if ash is exposed, and discuss proceeding with storm routing study to verify the hydrologic adequacy of the ash pond. The company states it has addressed the dike erosion and vegetation overgrowth issues and has replaced the discharge weir.

### **PLANT SMITH**

A dam safety inspection report, dated February 10, 2010, indicates no conditions were identified that represented a threat to the safety or permanence of the various structures. It also recommended: hydroseeding all dike slopes, weekly inspecting seepage at west dike, and placing emergency signage at granular stockpiles to mark them for "Emergency Dike Repair Use Only".

In regard to an ash pond evaluation on April 23, 2010, stability analyses were evaluated for static, steady-state conditions and seismic loading. The results indicate all calculated safety factors were above the generally-accepted minimum with the exception of the downstream slopes of the north embankment. The calculated safety factors of 1.44 and 1.45 inches for the downstream slopes of the north embankment were below the generally-accepted minimum of 1.5 inches, the company notes that the safety factors do not represent a condition of imminent or likely failure of the slopes.

A report, dated June 29, 2010, containing the hydrologic and hydraulic analyses of the ash pond and outlet structure indicates that each pond will currently handle both a 10-year and 100-year, 24-hour rainfall event. It also indicates that the elevation of the east pond is controlled as long as the discharge weir stays unsubmerged and free flowing. Additionally, the report notes that the 100-year storm event exceeds the swale constructed within the dike between the southwest and east ponds. The company states the internal swale within the CCR pond at Plant Smith does not affect the pond's overall ability to handle a 100-year storm event. The internal swale is designed to compartmentalize the pond into three sections for operational purposes (e.g. staging for CCR drying and transportation). Even if the internal swale were overcome by a 100-year storm event, the perimeter dikes around the pond are designed to handle the event.

### **PLANT SCHOLZ**

A dam safety inspection report by Southern Company Services, dated February 11, 2010, indicates no conditions were identified that represented a threat to the safety or permanence of the various structures. However two recommendations resulted from this inspection: signs should be placed at the south dike granular stockpiles to mark them for "Emergency Dike Repair Use Only"; and aggregate for emergency dike repair should be supplied at the north and east dikes, and placed in a convenient location with appropriate signs.

A report by Southern Company Services, dated October 11, 2010, cites a number of action items concerning an ash pond seepage event. For example, Gulf plans to perform operational improvements such as placing signage and stockpiling stone and gravel for emergency purposes, enhancing communications to ensure immediate response for repairs, increasing inspection and maintenance frequencies, and performing seepage prevention related repairs. The company states the action items noted in the inspection report have been completed.

Another internal report, dated November 18, 2010, modeled a discrete ash pond seepage observance and concluded the event did not result in a discharge to waters of the state and no changes were observed to indicate a potential compromise to the structural integrity of the ash pond.

### **PLANT DANIEL**

A dam safety inspection report, dated April 14, 2009, indicates no conditions were noted that posed an immediate threat, or that would affect the continued safe operation of the facilities

inspected. Recommendations, however, were made to reduce the likelihood of future problems. The recommendations included removing brush and trees from constructed slopes and removing or treating any small trees or shrubs that have been allowed to encroach on the dikes, and repairing erosion.

Another internal dam safety inspection report, dated May 19, 2010, notes that no conditions were identified that posed an immediate threat, or that would affect the continued safe operation of the facilities inspected.

**DOES THE UTILITY HAVE PROCESS IMPROVEMENT ACTIVITIES IN PLACE FOR ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES (LESSONS LEARNED, PEER REVIEWS, ETC.)?**

Gulf states its weekly inspections, annual safety inspections and assessments of its ash ponds by qualified personnel provide the necessary assurance that the facilities will safely retain the CCRs. Gulf has implemented the following procedures and practices to ensure continued safe CCR operations:

- ◆ Emergency response numbers and personnel available twenty-four hours a day, seven days a week if necessary;
- ◆ Plant personnel who conduct ash pond inspections are trained by dam safety engineers annually;
- ◆ Vegetation on dikes/berms of ash ponds is controlled;
- ◆ Any new structures, modifications to existing structures, or changes in maintained sluiced CCR levels must be reviewed and approved by professional engineers at Southern Company Services prior to and during design and construction.

Additionally, Gulf has initiated the stockpiling of gravel and soil at all ash pond locations in the event that corrective actions might be required. Gulf further notes that it strives to improve its best management practices through continual employee education on new industry standards and process improvements.



## 6.0 FLORIDA POWER & LIGHT COMPANY

### 6.1 COAL COMBUSTION RESIDUAL MANAGEMENT

#### HOW MUCH AND WHAT TYPES OF COAL COMBUSTION RESIDUALS ARE PRODUCED, MARKETED, STORED OR DISPOSED BY THE UTILITY AND WHAT ARE THE ASSOCIATED COSTS AND REVENUES?

FPL does not operate any coal-fired power plants, but it is co-owner of three coal-fired electric power generation units with a combined capacity of 900 MW with JEA and Georgia Power. **Exhibit 11** shows the amounts, by type, of CCRs produced, marketed, stored or disposed for 2008 through 2010, including the disposal costs and sales revenues for the jointly-owned Units 1 and 2 of JEA's Plant St. Johns. In 2010, Plant St. Johns marketed 47 percent of its CCRs with total sales revenues of \$773,323. FPL's share of these revenues for 2010 was \$386,662. Of the plant total disposal cost of \$1,086,718, FPL's share was \$543,359.

<b>JACKSONVILLE ELECTRIC AUTHORITY ST. JOHNS RIVER POWER PARK CCR PRODUCTION/SALES/STORAGE/DISPOSAL</b>								
Year	CCR Type	Produced (tons)	Marketed (tons)	Disposed (tons)	Disposal Cost	Sales Revenue	Storage Location	Disposal Location <sup>a</sup>
2008	Fly Ash	360,686	134,634	226,052	\$791,192	\$0 <sup>c</sup>	OAS <sup>b</sup>	Landfill
	High Carbon Ash	25,805	25,805	0	\$0	\$0 <sup>c</sup>	OAS <sup>b</sup>	Landfill
	Bottom Ash	34,319	27,164	7,155	\$25,042	\$6,791	OADB <sup>d</sup>	Landfill
	Gypsum	91,661	91,661	0	\$0	\$963,277	BSA <sup>e</sup>	Landfill
	No-use Byproduct	31,618	0	31,618	\$110,663	-	PSB <sup>f</sup>	Landfill
<b>2008 Total</b>		<b>544,089</b>	<b>279,264</b>	<b>264,825</b>	<b>\$926,887</b>	<b>\$970,068</b>	-	-
2009	Fly Ash	353,776	114,676	239,100	\$836,850	\$0 <sup>c</sup>	OAS <sup>b</sup>	Landfill
	High Carbon Ash	46,082	46,082	0	\$0	\$0 <sup>c</sup>	OAS <sup>b</sup>	Landfill
	Bottom Ash	33,863	0	33,863	\$118,521	\$0 <sup>c</sup>	OADB <sup>d</sup>	Landfill
	Gypsum	71,049	71,049	0	\$0	\$822,605	BSA <sup>e</sup>	Landfill
	No-use Byproduct	39,178	0	39,178	\$137,123	-	PSB <sup>f</sup>	Landfill
<b>2009 Total</b>		<b>543,948</b>	<b>231,807</b>	<b>312,141</b>	<b>\$1,092,494</b>	<b>\$822,605</b>	-	-
2010	Fly Ash	385,687	141,052	244,635	\$856,222	\$0 <sup>c</sup>	OAS <sup>b</sup>	Landfill
	High Carbon Ash	46,661	46,661	0	\$0	\$0 <sup>c</sup>	OAS <sup>b</sup>	Landfill
	Bottom Ash	34,918	0	34,918	\$122,213	\$0 <sup>c</sup>	OADB <sup>d</sup>	Landfill
	Gypsum	92,572	88,069	4,503 <sup>g</sup>	\$15,761	\$773,323	BSA <sup>e</sup>	Landfill
	No-use Byproduct	26,435	0	26,435	\$92,522	-	PSB <sup>f</sup>	Landfill
<b>2010 Total</b>		<b>586,273</b>	<b>275,782</b>	<b>310,491</b>	<b>\$1,086,718</b>	<b>\$773,323</b>	-	-

<sup>a</sup> On-site disposal;

<sup>b</sup> On-site ash silos (OAS);

<sup>c</sup> Ash is marketed to a third party at a zero price, producing zero revenue, but avoiding landfill disposal costs;

<sup>d</sup> On-site ash dewatering bins (OADB);

<sup>e</sup> Byproduct Storage Area;

<sup>f</sup> Pre-sedimentary basins;

<sup>g</sup> High amount of gypsum disposed due to economic downturn in the building sector.

**EXHIBIT 11**

*Source: Supplemental Document Request 2.3*

For the jointly-owned Unit 4 at Georgia Power's Plant Scherer (in Georgia), **Exhibit 12** shows the amounts, by type, of CCRs produced, marketed, stored or disposed for 2008 through 2010, including the associated disposal costs and sales revenues. In 2010, FPL's portion of fly ash marketed was [REDACTED] tons with a sales revenue of [REDACTED].

GEORGIA POWER COMPANY PLANT SCHERER CCR PRODUCTION/SALES/STORAGE/DISPOSAL								
Year	CCR Type	Produced (tons)	Marketed (tons)	Disposed (tons)	Disposal Cost	Sales Revenue	Storage Location	Disposal Location
2008	Fly Ash <sup>a</sup>	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Bottom Ash	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	No-use Byproduct	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<b>2008 Total</b>		[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2009	Fly Ash <sup>a</sup>	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Bottom Ash	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	No-use Byproduct	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<b>2009 Total</b>		[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2010	Fly Ash <sup>a</sup>	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	Bottom Ash	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	No-use Byproduct	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<b>2010 Total</b>		[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

<sup>a</sup>On-site surface impoundment (OSI)

<sup>b</sup>Off-site landfill (OL)

<sup>1</sup>Total tons produced Plant Scherer Units 1-4. Note: Total produced tons does not equal sum of marketed plus disposed.

<sup>2</sup>Reflects only FPL ownership portion. Note: Total produced tons does not equal sum of marketed plus disposed.

<sup>3</sup>Not applicable at Plant Scherer because third parties take the marketed ash directly from the precipitator hoppers such that there is no need for a storage facility.

<sup>4</sup>Included in fly ash cost.

<sup>5</sup>Not applicable at Plant Scherer for FPL's ownership. Unit 4 Flue Gas Desulfurization equipment scheduled to be in-service in 2012.

<sup>6</sup>PAC ash reported as a no-use byproduct which for Plant Scherer was stored off-site for the reporting period.

**EXHIBIT 12**

Source: Supplemental Document Request 2.3

**HOW DOES FPL STAY ABREAST OF COAL COMBUSTION RESIDUAL ACTIVITIES AND ISSUES AT PLANT ST. JOHNS AND PLANT SCHERER?**

FPL states that it expects the operating partners, JEA and Georgia Power, to manage CCR storage and disposal programs in full compliance with all applicable federal, state and local regulations and to be consistent with prudent industry practices. FPL anticipates that, whenever practical, CCRs will be beneficially used rather than placed for long-term storage. FPL participates in an ownership group to which the operating partners provide information regarding changes to regulations or processes at the facilities.

FPL employees are located at Plant St. Johns and Plant Scherer to monitor plant operations and represent FPL's ownership in the jointly-owned facilities. The employees interface with their respective plant operating staffs on a daily basis to be familiar with immediate operating conditions, potential issues affecting the plant, common facilities operation, and to ensure compliance with operating agreements.

FPL receives monthly operating reports from each plant operator, including information on the number of environmental reportable events, and there is a regularly scheduled bi-weekly conference call with Plant Scherer regarding environmental issues. Formal operating committee meetings are conducted at the sites (monthly for Plant St. Johns and quarterly for Plant Scherer Unit 4) to review current and year-to-date operating performance, root cause analysis on operating issues, emerging plant issues, and business plan updates.

#### **WHAT ARE THE UTILITY'S COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL ACTIVITIES AND PROGRAMS?**

##### **JEA**

JEA states that pursuant to Chapter 403, Florida Statutes, management and disposal of CCRs generated at Plant St. Johns is authorized by a power plant site certification order and conditions issued by Florida's Siting Board (comprised of Florida's Governor and Cabinet.) Specifically, Section XII of the Conditions of Certification issued for Plant St. Johns Units 1 and 2 addresses the design, construction, and operation of the coal combustion waste management areas. These requirements include, but are not limited to, groundwater monitoring and reporting as necessary, and compliance with Chapter 62-672, F.A.C., in the construction of perimeter berms associated with coal combustion waste management areas.

The CCRs generated at Plant St. Johns are transported to the storage area by rear dump trucks. Bottom ash and pyrites are loaded by conveyor belts from the dewatering bins to a load-out area to either be transported off-site for beneficial use or transported, via rear dump truck, to the on-site storage area. Fly ash is pneumatically conveyed from the electrostatic precipitator hoppers to the fly ash load-out silos located directly above a truck access to transport to the on-site storage area or off-site for beneficial use.

##### **GEORGIA POWER**

Georgia Power's CCRs produced from the generation of electricity at Plant Scherer are either wet sluiced to the ash pond or sold for beneficial use. In 2010, approximately 73 percent of the CCRs at Plant Scherer were fly ash. Fly ash not sold and all bottom ash go to the ash pond for storage and disposal. Plant Scherer also has a solid waste landfill that is permitted by the State of Georgia and is primarily operated for gypsum storage and disposal. This permitted landfill has a leachate collection system, groundwater monitoring, and is lined.

Plant Scherer's ash pond wastewater discharge is subject to a National Pollutant Discharge Elimination System permit issued by the State of Georgia, and Georgia Power states Plant Scherer is in compliance with that permit. The utility believes the Southern Company Services quarterly inspections provide Plant Scherer with access to the best practices within the industry. This ensures that Plant Scherer's ash pond meets all applicable local, state, and federal regulations.

#### **WHAT DOES THE UTILITY DO TO MARKET COAL COMBUSTION RESIDUAL FOR BENEFICIAL USE?**

According to JEA's reported data as reflected in **Exhibit 11**, approximately 47 percent of the CCRs produced at the jointly-owned facility were marketed for beneficial use in 2010. Plant St. Johns has agreements with Separation Technologies (fly ash and bottom ash), and USG Corporation (synthetic gypsum) for the sale of CCRs. High carbon fly ash has been sold and transported off-site for cement production. In addition, agricultural entities have recently approached Plant St. Johns and procured synthetic gypsum.

Based on Georgia Power's reported data as reflected in **Exhibit 12**, the percentage of CCRs marketed for beneficial use in 2010 by Georgia Power, on behalf of FPL, cannot be determined from the data that is available to FPL under its operating agreement with Georgia Power. Georgia Power has contracted with a leading ash marketer that sells Plant Scherer's fly ash for multiple beneficial uses such as concrete, mineral filler, and exterior trim. The ash marketer has an active research facility that continually develops new and better uses of fly ash to improve products and to benefit the environment through increased recycling. Additionally, Georgia Power continuously seeks additional opportunities for beneficial uses of its CCRs.

Audit staff encourages FPL to collaborate with its ownership partners to ensure that they use a competitive bidding process because CCR beneficial use sales and revenues could potentially be increased through such process. Also, although the revenues may be relatively small, cost savings associated with the reduction in storage and disposal activities should be realized.

## **6.2 RISK ASSESSMENT**

### **DOES THE UTILITY EMPLOY ADEQUATE MANAGEMENT OVERSIGHT AND APPROPRIATE CONTROLS FOR ITS COAL STORAGE AND DISPOSAL OPERATIONS?**

#### **JEA**

JEA states that CCRs generated at Plant St. Johns that have not been transported off-site have been placed in on-site dry storage areas. Plant St. Johns does not have wet ash ponds. The company states that the design, development, monitoring, operations, and maintenance of the dry storage areas significantly reduces associated risks.

Operations personnel at Plant St. Johns monitor the storage areas in accordance with the *Solid Waste Disposal Specifications and Best Management Practices*. Groundwater monitoring wells are sampled and analyzed by JEA with data submitted to FDEP on a quarterly basis.

Operators assess material placement with special attention to the side slopes and top of the storage areas for development of erosion channels. During and after rain events, side slopes are reviewed for erosion and formation of channels. Following the end of a rainstorm event and the detection of erosion, operations personnel redress the slopes and place topsoil and grade to re-establish the side slope contours.

#### **GEORGIA POWER**

Southern Company Services conducts quarterly inspections of the Plant Scherer ash pond and dam. Currently, the inspector for this dam is a professional engineer with over 20 years of experience in civil and geotechnical engineering, including slope stability studies and the design, construction, and inspection of dams and earth-fill embankments. The inspections of the Plant Scherer ash pond are reviewed by two other experienced Southern Company Services geotechnical engineers.

In addition to the quarterly dam safety inspections of the Plant Scherer ash pond, plant personnel perform daily and weekly inspections of the Plant Scherer ash pond dam and perform

inspections after a significant rain event. There are approximately 22 piezometers<sup>13</sup> on the ash pond dike that are read on a monthly basis to measure the groundwater level and flow direction. There have been no significant dam integrity issues identified for the Plant Scherer ash pond dam.

Quarterly inspections of the Plant Scherer ash pond culminate in a written report. These quarterly reports identify any ash pond dam issues to be addressed and document actions taken since the last inspection. There have been no significant dam integrity issues identified for the Plant Scherer ash pond dam according to FPL. The issues identified at the Plant Scherer ash pond have been maintenance issues.

**HAS THE UTILITY PARTICIPATED IN THE EPA'S RULEMAKING OR ANY OTHER RELATED PROCEEDING CONCERNING COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL?**

NextEra, Inc., FPL's parent corporation, submitted comments to the EPA regarding its proposed CCR rules issued on June 21, 2010. FPL is not involved in any additional proceedings related to CCRs.

FPL participates as a member of the Utilities Solid Waste Activities Group and monitors developments in this rulemaking and associated efforts. When deemed appropriate, FPL will participate in developing testimony or providing comments on identified issues.

FPL does not support the classification of CCRs as hazardous waste as stated in the comments submitted for EPA's proposed rule on identification and listing. FPL believes the current approach to regulation as a non-hazardous waste under the Federal Resource Conservation and Recovery Act Subtitle D provisions provides adequate control and protection. FPL further believes that state authority to establish performance standards based on local geology and environments should be preserved in any rules promulgated by the EPA.

JEA states that if CCRs were to be declared a hazardous waste, the impact at Plant St. Johns would depend largely upon the determination of the point of waste generation, which was not addressed by EPA in its co-proposals. Numerous administrative requirements associated with hazardous waste facilities would be applied that would impact the handling and sale of CCR materials.

JEA filed comments with EPA and participated in the development of comments filed with EPA by FCG.<sup>14</sup> FCG's comments conclude, in part, that it is particularly opposed to Subtitle C regulations which would force FCG members to close all CCR landfills and surface impoundments because Florida's statutory law prohibits hazardous waste landfills. Similarly, Subtitle C regulation would prevent FCG members from being able to beneficially use CCRs in Florida because there is also a statutory prohibition on the beneficial use of hazardous waste. If the federal regulation of the residuals is adopted, however, FCG believes the proposed Subtitle D-prime is the only appropriate option and adds that even this option has significant shortcomings that must be modified to provide, at a minimum, adequate flexibilities to reflect

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<sup>13</sup> A piezometer is a permanent or temporary well that may be designed and constructed without the surface sealing or sand filter pack requirements of a monitoring well. This type of well is primarily used to detect the presence of free product or collect water-level elevation data to aid in determining the direction of groundwater flow. Rule 62-770.200, Florida Administrative Code, at [https://www.flrules.org/Gateway/View\\_notice.asp?id=2315407](https://www.flrules.org/Gateway/View_notice.asp?id=2315407).

<sup>14</sup> Florida Electric Power Coordinating Group (FCG) is a non-profit association consisting of 28 investor-owned, municipally-owned, and cooperatively-owned electric utilities that provide the majority of electric power to the public in Florida.

state and site-specific conditions. FCG notes, however, that many of the deficiencies and concerns associated with Subtitle D-prime can be overcome by applying the proposed regulations under a comprehensive CCR program modeled after the existing Municipal Solid Waste Landfill Program.

Both JEA and Georgia Power, as operators of Plant St. Johns and Plant Scherer, respectively, and FPL (co-owner of the plants) state that they will continue to closely monitor the EPA's rulemaking activities and will ultimately evaluate the impact on CCR management, beneficial use, storage, and disposal if the proposed federal regulation becomes law.

## **6.3 PERFORMANCE SELF-EVALUATION**

### **HAS THE UTILITY CONDUCTED ANY STUDIES OR ANALYSES ON ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES?**

FPL collaborates with its ownership partners, JEA and Georgia Power, to improve transparency in CCR management processes, studies or analyses, and facilitate compliance with all applicable federal, state and local regulations, and industry standards. FPL also participates in meetings with its partners during which an information exchange takes place regarding changes to CCR operations, regulations, or management processes at the facilities.

The company also states that the EPA contracted with a consultant, AMEC, which conducted a physical inspection of the Plant Scherer ash pond on May 12, 2010. AMEC reviewed relevant documents regarding the Plant Scherer ash pond with the stated objective of determining the integrity of the Plant Scherer ash pond dam. The EPA has sent a draft final report to Georgia Power, and it has provided comments on the draft final report. To the company's knowledge, the EPA has not made the final report public.<sup>15</sup>

### **DOES THE UTILITY HAVE PROCESS IMPROVEMENT ACTIVITIES IN PLACE FOR ITS COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL MANAGEMENT PROCESSES (LESSONS LEARNED, PEER REVIEWS, ETC.)?**

JEA states that Plant St. Johns stays current regarding industry developments through industry contacts, periodicals, as well as any legislation regarding CCR facilities management.

Georgia Power states that the inspections of the Plant Scherer ash pond have been conducted and documented for a number of years. These inspections have identified issues that the plant has been able to address and has identified some ways in which the plant can improve its activities associated with the ash pond. The plant has acted on these suggestions.

Additionally, as cited in its report entitled "*Coal Combustion Byproducts, A Report on Southern Company's Production and Safe Management of CCBs*," Plant Scherer also employs the following to ensure safe storage of CCRs:

- ◆ Emergency response numbers and personnel available if necessary.

<sup>15</sup> Georgia Power states that once the report is final, it will be posted on the EPA's website at <http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/surveys2/index.htm>.

- ◆ Plant personnel who conduct inspections are trained by dam safety engineers annually.
- ◆ Vegetation is controlled on-site.
- ◆ Any new structures, modification to an existing structure, or change in water level must be reviewed and approved by professional engineers at Southern Company Services prior to and during design and construction.





## 7.0 COMPANY COMMENTS

### 7.1 TAMPA ELECTRIC COMPANY

No written comments were provided by the company.

### 7.2 PROGRESS ENERGY FLORIDA, INC.

#### PROGRESS ENERGY FLORIDA, INC.'S COMMENTS TO THE FPSC DRAFT REPORT "REVIEW OF COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL PROCESSES OF THE FLORIDA ELECTRIC INDUSTRY"

***Audit staff encourages PEF to consider the use of a competitive bidding process to potentially increase marketing revenues. Although the revenues may be relatively small, cost savings associated with the reduction in storage and disposal activities should be realized.***

PEF Response: PEF uses a number of strategies to market its coal combustion residuals<sup>16</sup> for beneficial reuse in order to reduce the volume of coal combustion residuals that are associated with storage and disposal, and to potentially increase marketing revenues. Strategies have included using a competitive bid process, use of a marketing agent, and direct marketing of the coal combustion residuals by PEF. PEF entered into certain long-term agreements to dispose of its coal combustion residuals, some of which were impacted by the depressed housing market in Florida and/or environmental factors beyond the control of either PEF or its customer. PEF has attempted to mitigate the impact by selling the coal combustion residuals into the short term market in the interim.

PEF continues to evaluate marketing strategies and marketing opportunities that include but may not be limited to identifying potential new environmentally responsible beneficial reuse markets and using a competitive bidding process if appropriate.

***(Golder & Assoc Plan) Audit staff reviewed the plan which identified several exceedances and release point concerns. PEF did not provide any evidence to show that the company has implemented corrective actions regarding the exceedances and release point concerns.***

PEF Response:

PEF notes that it has taken certain actions, and continues to evaluate those actions, with respect to the exceedances and release point concerns, as explained in more detail below. However, as also detailed below, PEF has been, and remains, in compliance with its environmental permits.

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<sup>16</sup> PEF notes that a coal combustion residual is also known as a coal combustion product, particularly from a beneficial re-use standpoint. However, to be consistent with the draft report, PEF will refer to them as residuals rather than products.

Specifically, PEF is aware that constituents of concern can potentially leach from our fly ash and bottom ash when subjected to the extreme laboratory conditions of synthetic precipitation leaching procedure (SPLP) testing. For this reason, the ash storage area is operated in a manner which minimizes contact between ash and water. Actions taken to reduce contact with water include compacting the ash to a density meeting at least 90% of the optimum which prevents penetration and allows contact at the surface only. Contact with water is further minimized by applying a barrier of soil cement or grass to those surfaces not actively being worked. All water which has contacted ash is diverted to a settling pond within the bounds of the ash storage area.

Another preventative action taken was the placement of a geosynthetic clay liner (GCL) under the approximate 5.5 acre section of horizontal expansion which we began actively filling in June 2010.

With respect to PEF's permit, the requirements for a comprehensive Coal Combustion Product and Solid Materials Management Plan (CCP Plan) were detailed in the Plant's Conditions of Certification (COC) dated August 28, 2010. The CCP Plan addresses coal combustion products and non-coal combustion products which are considered other solid materials streams on site. By design, the CCP Plan addresses categories such as potential constituents of concern, potential release points, and groundwater monitoring for each of the CCP and Non-CCP storage areas described in the CCP Plan.

The purpose of the CCP Plan is to identify the locations of the solid materials contained on site, quantify the materials, and describe the procedures for managing these materials. It is noted in the CCP Plan that the plant maintains three industrial wastewater permits issued by the FDEP. Two separate industrial wastewater permits pertain to surface water discharges for Units 1,2, and 3 and Units 4 and 5, and constitute authorization to discharge to waters of the state under the National Pollutant Discharge Elimination System (NPDES). An additional industrial wastewater permit covers groundwater discharges for the entire plant site.

The plant has an FDEP approved site wide groundwater monitoring plan (GWMP) which is identified in FDEP's industrial wastewater permit (Permit No. FLA016960). The GWMP includes a zone of discharge (ZOD) at the property boundary for the Crystal River Plant. Zones of Discharge are defined in FDEP Rule Chapter 62-520 F.A.C. The plant samples, analyzes and reports to the FDEP the parameters listed in its industrial wastewater permit on a quarterly basis. While there may be exceedances at certain "release points" mentioned in the CCP Plan, these may be at locations within the plant's ZOD and thus, authorized by the FDEP permit. Other monitoring wells on site that that may involve an exceedance in a compliance monitoring well at the ZOD would need to be addressed by PEF and FDEP if it were to become a concern before a corrective action would be instituted.

***Audit staff encourages PEF to develop specific actions to address all potential risk items identified in its priority ranking chart (a.k.a. risk matrix)—with emphasis on those items marked as potential catastrophic and high priority events—to prevent such problems from occurring.***

PEF Response:

PEF has developed specific actions to address all potential risk items. Specifically, PEF cleaned accumulated sediment from the north/south leg of an old coal pile runoff ditch and a two

acre storm water pond on the southwest corner of the ash landfill. PEF also conducted several routine cleanings of ash storage DRA's and road side ditches in the ash storage area to remove potential ground water impacts. CCR's cleaned from these areas were moved back to appropriate storage piles.

Roughly six acres of exposed ash were planted in grass and another three acres sprayed with soil cement to reduce potential storm water impacts temporarily until final approval is received from FDEP to permanently cap some of these areas. PEF continues to expect this approval before year end.

Actions taken to address air impacts from our ash handling system have included increasing the moisture content of ash transported from silos to the storage area, an increased enforcement of centering ash loads in trucks and use of tarps over loads being transported on site.

Potential risks identified in the ash storage area have been addressed by using water trucks to wet the roads and street sweepers to clean them. The temporary grassing of exposed ash areas also had a significant impact on management of potential air impacts.

Possible storm water, surface water and spill impacts at our ash handling system, identified in the Risk Matrix, are being addressed with a new drainage system which is being built under the ash storage silos. This will direct area wash down into settling basins. Ash separated from the wash water will be transported to the ash storage area and the water will be recycled back to continuous wash down spray nozzles. This project is slated for completion by the end of November 2011.

Finally, PEF notes that, given the nature of the risks, some of the risks it monitors in the matrix can only be mitigated or reduced, but not eliminated completely. PEF will continue to monitor and manage the risks through its risk matrix.

***Exhibit 6 contains footnoted issues the FPSC would like PEF to address in its comments.***

PEF Response:

As stated above, PEF entered into its contracts for disposal of fly ash using the best information available at that time. Factors that are beyond PEF's control, including the depressed construction market in Florida and unsettled economic and environmental issues have all impacted the marketability of the fly ash and therefore PEF's revenues. PEF also notes that revenues alone do not reflect all of the benefits of moving as much fly ash as possible into beneficial re-use. It is a significant cost savings and the most responsible environmental course to avoid storage or disposal of coal combustion residual products, regardless of the revenue potential.

## 7.3 GULF POWER COMPANY

### GULF POWER COMPANY'S COMMENTS TO THE FPSC DRAFT REPORT

#### "REVIEW OF COAL COMBUSTION RESIDUAL STORAGE AND DISPOSAL PROCESSES OF THE FLORIDA ELECTRIC INDUSTRY"

The Florida Public Service Commission ("FPSC") report understates the potential impact of the U.S. Environmental Protection Agency's ("EPA") proposed Coal Combustion Residuals ("CCR") Rules on Florida electric utilities. The proposed rules contain two primary options: 1) regulation under Subtitle C of the Resource Conservation and Recovery Act ("RCRA"); and 2) regulation under Subtitle D of RCRA. Under the first proposal, CCRs would be classified as "*special waste*" and subject to regulation as "*hazardous waste*." Consequently, CCRs would be subject to the full spectrum of hazardous waste regulations, including the generator requirements in 40 C.F.R. part 262 and the transporter requirements in 40 C.F.R. part 263. Additionally, electric utilities would have to comply with the general facility standards, totally enclosed container standards, preparedness and prevention requirements, contingency plan and emergency procedures, waste manifesting recordkeeping and reporting requirements, closure, post-closure, and general management requirements applicable to hazardous waste treatment, storage, and disposal facilities. Additionally, EPA's proposed CCR-specific Subtitle C requirements would require facilities to comply with fugitive dust controls, land disposal restrictions set forth in 40 C.F.R. part 268, and to retrofit existing surface impoundments with composite liners or "clean" close. None of these requirements have previously been applicable to the management and disposal of CCRs.

As a practical matter, Florida electric utilities would be faced with significant compliance challenges under a Subtitle C regime. The majority of Florida's coal-fired power plants each manage in excess of half a million tons, and in some cases one (1) million tons, of CCRs annually. It would be difficult to manage such large volumes of CCRs in accordance with Subtitle C requirements because these power plants were designed, constructed and operated with the fundamental understanding that CCRs were not regulated under Subtitle C. Consequently, the power plants would have to be substantially re-engineered and retrofitted to meet Subtitle C requirements. This would include, at a minimum, the retrofitting and installation of secondary containment to bring numerous CCR handling, storage and conveyance systems used to treat or store CCRs into compliance with the storage requirements of 40 C.F.R. parts 264, 265 and 267. The associated cost would be substantial. In short, Subtitle C regulation would likely force the closure of most, if not all coal-fired generation and impose an inordinate financial burden on electric utilities without any discernible increase in the protection of human health and the environment.

Furthermore, if regulated under Subtitle C, the disposal and beneficial use of CCRs would be prohibited in Florida. Pursuant to section 403.7222(2), Florida Statutes, hazardous waste landfills are prohibited. In its comment letter<sup>17</sup> to EPA's proposed CCR rules, the Florida Department of Environmental Protection ("FDEP") confirmed that, if regulated as hazardous waste, the land disposal of CCRs would not be allowed unless they are treated to be non-hazardous. While treatment may be an option, it likely will not be an economically or practically viable one. Therefore, absent legislative amendment, Subtitle C regulation would likely leave Florida electric utilities with the sole option of disposing CCRs out of state. In 2009, Florida

<sup>17</sup> Gulf Power provided the Florida Public Service Commission with a copy of FDEP's comment letter to the EPA.

electric utilities disposed of an estimated 1.2 million tons of CCRs. An estimated 130 trucks<sup>18</sup> or more would be required each day to transport these CCRs to the closest hazardous waste landfill, which is located in Emelle, Alabama. For many of the Florida electric utilities generating CCRs, this would be a 1200 mile round trip. The cost of disposal would exceed 312 million dollars annually.<sup>19</sup>

Similarly, if regulated as a hazardous waste, the beneficial use of CCRs will be prohibited. When making a beneficial use determination, FDEP evaluates whether the CCRs in question are an “industrial byproduct,” and if so, whether the proposed beneficial use satisfies the statutory exemption from regulation as a solid waste, set forth in section 403.7045(1)(f), Florida Statutes. Industrial byproducts are broadly defined as materials that “have a demonstrated recycling potential, can be feasibly recycled, and have been diverted or removed from the solid waste stream for sale, use or reuse.” Generally, an “industrial byproduct” is not regulated by FDEP as a waste if a majority of the industrial byproducts are demonstrated to be sold, used, or reused within 1 year, and do not enter the environment and cause a threat of contamination. This exemption, however, does not apply to industrial by-products that are hazardous wastes as defined in Florida statutes and rules.

EPA previously acknowledged that under the Subtitle C proposal, the beneficial use of CCRs would be prohibited in Florida due to Florida’s statutory prohibition. 75 Fed. Reg. 35187 (June 21, 2010). This was confirmed by FDEP in its comment letter. It is unclear whether there would be any legislative support for the amendment of the statutory prohibition on the beneficial use of industrial byproducts that are hazardous wastes. It would be reasonable to assume, however, that any such amendments would be strenuously opposed by various public interest groups.

This will have a severe impact on Florida electric utilities. In 2009, approximately 3.6 million tons of CCRs were generated by Florida electric utilities. Approximately 2.5 million tons were beneficially used in a variety of products and uses, including concrete, cement, roofing shingles, blasting grit, wallboard, and agricultural applications. If alternative economically viable beneficial use markets could not be identified, coal-fired electric utilities would have to dispose of the CCRs they currently beneficially use. Considering Florida’s prohibition on the beneficial use of hazardous waste, the amount of CCRs disposed in Alabama could actually exceed 4.2 million tons annually if coal-fired electric utilities were unable to find alternative beneficial use markets. It is estimated that the cost to dispose this amount of CCRs would exceed 1 billion dollars annually and would require 460 truck trips each day.<sup>20</sup>

Under the second proposal, coal ash would be considered “*non-hazardous waste*” under Subtitle D. This would also have a substantial impact. Each of the coal-fired power plants have operated for many years with a groundwater point of compliance at the property boundary. As proposed, EPA’s Subtitle D rule restricts the groundwater point of compliance to the footprint of the CCR disposal unit. Upon promulgation, the proposed Subtitle D rule would immediately place many if not all of the coal-fired power plants in non-compliance and would require them to implement groundwater remediation measures to attain a level of compliance that is not even required of municipal solid waste landfills. Additionally, the proposed Subtitle D rule may force

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<sup>18</sup> Assuming twenty-five tons capacity.

<sup>19</sup> These estimates were developed by the Florida Electric Power Coordinating Group, Inc. (“FCG”), of which Gulf Power Company is a member, and included in its November 2010 comments to EPA’s proposed CCR rules. Disposal costs were estimated to be \$260 per ton. This conservative estimate was premised on the following costs per ton: transportation (including fuel and surcharge) \$152; disposal fee \$77; and disposal tax \$31.

<sup>20</sup> These estimates were also developed by the FCG and included in its November 2010 comments to EPA.

existing CCR landfills to close if they are unable to satisfy the location restrictions and make the necessary demonstrations. These EPA proposed restrictions do not account for Florida's unique geology and hydrogeology.

As noted in its comment letter, FDEP believes it is appropriately regulating the disposal of CCRs. FDEP strongly opposes the regulation of CCRs under Subtitle C for many of the same reasons expressed by Gulf Power Company and other Florida electric utilities through the FCG. Among the reasons for FDEP's objection is the lack of analytical data supporting the conclusion that CCRs are in fact hazardous, the stigma that would be placed on CCRs and the potential elimination of CCR beneficial use markets, and the ability of Florida electric utilities to continue disposing of and beneficially using CCRs in Florida due to the statutory prohibitions on hazardous waste landfills and beneficial use of hazardous waste. Importantly, FDEP opposes Subtitle C because it would impose an unwarranted regulatory burden on Florida electric utilities without a commensurate increase in protection for the public.

In its letter, FDEP also raises important concerns with EPA's proposed Subtitle D rule and the disproportionate impact it would have on Florida electric utilities due to the unique geology and conditions in Florida. While FDEP does not oppose a Subtitle D approach, like Gulf Power Company and the FCG it believes that sufficient flexibility has to be built into the proposed rule to recognize Florida's unique geology and hydrogeology.

Gulf Power Company, through the Southern Company, and the FCG provided extensive comments<sup>21</sup> to EPA's proposed CCR rules identifying the impact that the proposed rules would have to Florida electric utilities.

## **7.4 FLORIDA POWER & LIGHT**

No written comments were provided by the company.

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<sup>21</sup> Gulf Power provided the Florida Public Service Commission with a copy of Southern Company and Florida Electric Power Coordinating Group's comments to the EPA.

## **APPENDICES**





## 8.0 APPENDICES

### 8.1 APPENDIX A-SUMMARY OF EPA'S PROPOSED RULES

The EPA has proposed rules to regulate CCRs that are to be finalized in 2012. The proposed rules contain different options to regulate CCR, i.e., under Subtitle C or Subtitle D, including a modified version of Subtitle D, called the D-prime option. The highlights of such proposed rules that will impact the CCR storage and disposal operational processes of the IOUs are as follows:

#### **SUBTITLE C**

The EPA is proposing to regulate coal combustion residuals as “special wastes” under Resource Conservation and Recovery Act (RCRA) Subtitle C<sup>22</sup> when they are destined for disposal in landfills or surface impoundments. Therefore, the special wastes would be subject to certain requirements for:

- ◆ Generation and transportation
- ◆ Facilities management such as siting, liners, run-on and run-off controls, groundwater monitoring, fugitive dust controls, financial assurance, corrective action, including facility-wide corrective action, closure of units, and post-closure care.
- ◆ Permitting for facilities that dispose, treat, or store the residuals
- ◆ Disposal of residuals in sand and gravel pits, quarries, and other large fill operations as a landfill
- ◆ Dam safety and stability to address the potential for catastrophic releases from surface impoundments
- ◆ Land and disposal restrictions and treatment standards for the residuals, as well as a prohibition on the disposal of treated residuals below the natural water table.

#### **SUBTITLE D**

The EPA is proposing to regulate CCRs disposed in landfills or surface impoundments under the Resource Conservation and Recovery Act (RCRA) Subtitle D requirements which would establish national criteria to ensure the safe disposal of the residuals. Unlike Subtitle C, the RCRA Subtitle D requirements relate only to the disposal of the CCRs, and the EPA is proposing to list such residuals as “non-hazardous waste” which would be subject to certain standards and requirements for:

- ◆ Disposal location
- ◆ Composite liners (new landfills and surface impoundments would require composite liners; existing surface impoundments without liners would have to retrofit within five years, or cease receiving residuals and close)
- ◆ Groundwater monitoring and corrective action for any releases

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<sup>22</sup>A waste may be subject to regulation either if it exhibits certain hazardous properties, called “characteristics,” or if the EPA has specifically listed the waste as hazardous. See 42 U.S.C. 6921(a). EPA’s regulations in the Code of Federal Regulations (40 CFR) define four hazardous waste characteristic properties: ignitability, corrosivity, reactivity, or toxicity (see 40 CFR 261.21-261.24). All generators must determine whether or not a waste exhibits any of these characteristics by testing the waste, or by using knowledge of the process that generated the waste. See 40 CFR 262.11(c).

- ◆ Closure and post-closure care
- ◆ Stability of surface impoundment
- ◆ Financial assurance
- ◆ Disposal of the residuals in sand and gravel pits, quarries, and other large fill operations as a landfill.

Note that the Subtitle D rule proposal would not regulate the generation, storage or treatment of the residuals prior to disposal. Also, because of the scope of Subtitle D authority, the rule would not require permits, nor could EPA enforce the requirements. Instead, states or citizens could enforce the requirements under RCRA citizen suit authority. The states could also enforce any state regulation under their independent state enforcement authority.

#### **SUBTITLE D-PRIME**

EPA is also considering a potential modification to the Subtitle D option, called D-prime, whereby existing CCR surface impoundments would not have to close or install composite liners but could continue to operate for their useful life. All other requirements of Subtitle D would apply.

## 8.2 APPENDIX B-KEY DIFFERENCES OF EPA'S PROPOSED RULES

<b>KEY DIFFERENCES BETWEEN SUBTITLE C AND SUBTITLE D OPTIONS</b>		
	<b>Subtitle C</b>	<b>Subtitle D</b>
<b>Effective Date</b>	Timing will vary from state to state, as each state must adopt the rule individually - can take 1-2 years or more	Six months after final rule is promulgated for most provisions; certain provisions have a longer effective date
<b>Enforcement</b>	State and Federal enforcement	Enforcement through citizen suits; States can act as citizens.
<b>Corrective Action</b>	Monitored by authorized States and EPA	Self-implementing
<b>Financial Assurance</b>	Yes	Considering subsequent rule using CERCLA 108 (b) Authority
<b>Permit Issuance</b>	Federal requirement for permit issuance by States	No
<b>Requirements for Storage, Including Containers, Tanks, and Containment Buildings</b>	Yes	No
<b>Surface Impoundments Built Before Rule is Finalized</b>	Remove solids and meet land disposal restrictions; retrofit with a liner within five years of effective date. Would effectively phase out use of existing surface impoundments.	Must remove solids and retrofit with a composite liner or cease receiving CCRs within five years of effective date and close the unit
<b>Surface Impoundments Built After Rule is Finalized</b>	Must meet Land Disposal Restrictions and liner requirements. Would effectively phase out use of new surface impoundments.	Must install composite liners. No Land Disposal Restrictions
<b>Landfills Built Before Rule is Finalized</b>	No liner requirements, but require groundwater monitoring	No liner requirements, but require groundwater monitoring
<b>Landfills Built After Rule is Finalized</b>	Liner requirements and groundwater monitoring	Liner requirements and groundwater monitoring
<b>Requirements for Closure and Post-Closure Care</b>	Yes; monitored by States and EPA	Yes; self-implementing

Source: U.S. Environmental Protection Agency