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State of Florida



# Public Service Commission

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COMMISSION  
CLERK

## -M-E-M-O-R-A-N-D-U-M-

**DATE:** August 11, 2011

**TO:** Office of Commission Clerk (Cole)

**FROM:** Division of Economic Regulation (Higgins, Bulecza-Banks, D. Buys, Cicchetti, Franklin, L'Amoreaux, P. Lee, Lester, Maurey, Salnova, Springer)  
Office of the General Counsel (Klancke)

**RE:** Docket No. 100458-EI – Petition for approval of 2010 nuclear decommissioning study, by Florida Power & Light Company.

**AGENDA:** 08/23/11 – Regular Agenda – Proposed Agency Action - Interested Persons May Participate

**COMMISSIONERS ASSIGNED:** All Commissioners

**PREHEARING OFFICER:** Edgar

**CRITICAL DATES:** None

**SPECIAL INSTRUCTIONS:** None

**FILE NAME AND LOCATION:** S:\PSC\ECR\WP\100458.RCM.DOC

### Case Background

#### Nuclear Decommissioning

Decommissioning involves the process of dismantling and removing materials and equipment that are no longer used and useful but which remain following retirement of the nuclear generating unit. While the definition does not include the removal and disposal of spent fuel, on-site storage facilities for spent fuel are included. Decommissioning changes the licensing status of the nuclear power plant site from operational to possession-only, and possibly, at some future date, to unrestricted use.

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Prior to 1981, the costs of decommissioning were considered a component of the depreciation rate design (cost of removal) for nuclear plants in Florida. By Order No. 10067,<sup>1</sup> issued June 16, 1981, the Commission initiated a proceeding for the express purpose of determining the proper accounting and ratemaking treatment of the costs associated with decommissioning. The proceeding provided, for the first time, a forum to address cost estimates to decommission nuclear facilities, as well as to identify the decommissioning methodologies available.

The Nuclear Regulatory Commission (NRC) accepts the following three decommissioning methods: prompt removal/dismantling (DECON), entombment (ENTOMB), and mothballing with delayed dismantling (SAFSTOR). One alternative to complete decommissioning involves repowering the electric generating system after the original nuclear steam supply system has been isolated and decommissioned. The NRC recommends prompt dismantlement absent a clear showing of why a nuclear plant should be decommissioned on a delayed basis.

By Order No. 10987,<sup>2</sup> issued July 13, 1982, the Commission determined that, due to the amount of money estimated to be necessary to decommission or remove these nuclear facilities and due to public health and safety issues, a funded reserve, apart from the reserve for depreciation, was necessary for the accumulation of the estimated costs of decommissioning each nuclear unit. A funded reserve was established to ensure that the monies necessary for decommissioning would be available at the expiration of the nuclear facility's operating license.

The Commission also recognized in Order No. 10987 that estimated decommissioning costs might need revision periodically and, therefore, required companies to file updated decommissioning cost studies no less often than once every five years. The purpose of these studies is to update cost estimates based on new developments, additional information, technological improvements and forecasts, and to re-evaluate alternative methodologies, and revise the annual accrual needed to recover the costs.

The NRC's final rule, 10 C.F.R. Section 50.75, requires that licensees provide reasonable financial assurance that funds will be available for decommissioning through prepayment prior to the start of operation, an external sinking fund or a surety method, insurance, or other guarantee method. An external sinking fund is defined as:

A fund established and maintained by setting funds aside periodically in an account segregated from licensee assets and outside the licensee's administrative control in which the total amount of funds would be sufficient to pay decommissioning costs at the time termination of operation is expected. An external sinking fund may be in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities.

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<sup>1</sup> See Order No. 10067, issued June 16, 1981, in Docket No. 810100-EU (CI), In re: Investigation of the appropriate accounting and ratemaking treatment of decommissioning and depreciation costs of nuclear powered generators.

<sup>2</sup> See Order No. 10987, issued July 13, 1982, in Docket No. 810100-EU (CI), In re: Investigation of the appropriate accounting and ratemaking treatment of decommissioning and depreciation costs of nuclear powered generators.

Florida Power & Light Company (FPL or Company) provides for financial assurance through monthly contributions to their nuclear decommissioning trust funds.<sup>3</sup> FPL's funds are held in trust with The Bank of New York Mellon Corporation as trustee; external investment management firms manage the investments. FPL believes that its respective external sinking funds comply with the NRC final rule and the Internal Revenue Service (IRS) requirements and that reasonable financial assurance is provided that funds will be available for decommissioning.

The Commission approved the external sinking funding method by Order No. 21928.<sup>4</sup> In determining the annual provision for decommissioning, the current cost estimate is escalated to the expected dates of actual decommissioning. The escalation rate used can be determined from a variety of sources including a combination of the general economic inflation rates and inflation rates for decommissioning labor, transportation, and burial of nuclear waste. Once the escalated decommissioning amount is known, a sinking fund annuity is calculated to determine the annual annuity. This annual annuity plus the earnings on the annuities, net of taxes, will grow to the escalated decommissioning amount.

The primary objective of a decommissioning trust fund is to have enough money on hand at decommissioning to meet all required expenses at the lowest possible cost to utility ratepayers. No set of investment policies will meet this goal with certainty. The management of the fund, therefore, must be concerned with both the preservation of contributions and the purchasing power of the contributions. By Order No. 21928,<sup>5</sup> the Commission required that the fund's assets earn a consistent positive real return over a market cycle. The imposed minimum fund earnings rate has been at least the rate of inflation measured by the Consumer Price Index (CPI) over each five-year review period.

The IRS has a few requirements pertaining to the control of nuclear decommissioning funds. Additionally, the IRS Regulations are silent as to how funds qualified under the Internal Revenue Code are to be managed. The IRS requires that, in order for contributions to a Qualified Fund to be deductible for tax purposes, the Commission must specifically address certain issues. These issues directly result from the decisions the Commission makes in other substantive issues. Rather than identifying each of these issues individually, staff has addressed the IRS requirements in Issues 1, 4, and 7 of this recommendation.

Since the 1981 docket, the NRC and this Commission have recognized the desirability of performing site-specific cost studies, since such studies account for factors unique to the individual nuclear unit. A major change in the 1994 site-specific decommissioning cost study for FPL was the treatment of spent fuel generated during the operation of the nuclear units.<sup>6</sup>

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<sup>3</sup> The monthly contribution at the present time is zero for each FPL nuclear unit.

<sup>4</sup> See Order No. 21928, issued September 29, 1989, in Docket No. 870098-EI, In re: Petitions for approval of an increase in the accrual of nuclear decommissioning costs by Florida Power Corporation and Florida Power & Light Company. On June 20, 2001, Florida Power Corporation (FPC) was acquired by Carolina Power & Light Company and became Progress Energy Florida, Inc. (PEF), effective January 1, 2003.

<sup>5</sup> Id.

<sup>6</sup> See Order No. PSC-95-1531-FOF-EI, issued December 12, 1995, in Docket No. 941350-EI, In re: Petition for increase in annual accrual for Turkey Point and St. Lucie nuclear unit decommissioning costs by Florida Power & Light Company. (1994 FPL Nuclear Decommissioning Study)

While the disposal of spent fuel assemblies (high-level waste) generated during plant operations is not considered a decommissioning expense, the presence of those assemblies on-site does have an impact on the costs to decommission nuclear facilities. Faced with the uncertainties of the Department of Energy (DOE) meeting its 1998 deadline for the acceptance of spent nuclear fuel (SNF) or the 2010 date for a permanent high level waste repository, the Commission recognized in the 1994 FPL Nuclear Decommissioning Study that spent fuel may have to remain on-site long after decommissioning begins. For this reason, an allowance for on-site dry storage costs was made in determining the decommissioning accruals for each nuclear unit. The primary goal in requiring this allowance was to ensure that the money needed to fully decommission a nuclear unit is available when the plants are retired, and recovered from those customers who have benefitted from the low-cost nuclear generation. However, the Commission found that these costs should continue to be reviewed to determine the prudence of their inclusion in the annual decommissioning accruals.

By Order No. PSC-99-0519-AS-EI,<sup>7</sup> issued March 17, 1999, the Commission approved a Stipulation and Settlement that, among other things, required that FPL's nuclear decommissioning accruals approved in the 1994 FPL Decommissioning Study not be increased through the Stipulation period, to end April 15, 2002.

Effective January 30, 2001, Rule 25-6.04365, Florida Administrative Code (F.A.C.), was promulgated to codify the Commission's policy concerning nuclear decommissioning as established in Order Nos. 12356, 21928, and the FPL Nuclear Decommissioning Study.<sup>8</sup> The rule requires each utility owning a nuclear unit to file nuclear decommissioning studies at least once every five years, prescribes the method of calculating the accumulation of decommissioning accruals, establishes fund performance guidelines, and requires notification of communications with the NRC about major milestones concerning license renewal.

By Order No. PSC-02-0055-PAA-EI,<sup>9</sup> issued January 7, 2002, the Commission revised FPL's annual decommissioning accruals to \$78,516,937.<sup>10</sup> The effective date for the revised annual accruals was January 1, 2002. The Commission found that the accumulated amount of

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<sup>7</sup> See Order No. PSC-99-0519-AS-EI, issued March 17, 1999, in Docket No. 990067-EI, In re: Petition by the Citizens of the State of Florida for a full revenue requirements rate case for Florida Power & Light Company.

<sup>8</sup> Docket Nos. 810100-EI, 870098-EI, 941350-EI, and 941352-EI.

<sup>9</sup> See Order No. PSC-02-0055-PAA-EI, issued January 7, 2002, in Docket No. 981246-EI, In re: Petition by Florida Power & Light Company for approval of annual accrual for Turkey Point and St. Lucie nuclear decommissioning unit costs; Docket No. 990324-EI, In re: Disposition of Florida Power & Light Company's accumulated amortization pursuant to Order PSC-96-0461-FOF-EI; and Docket No. 991931-EG, In re: Determination of appropriate method of recovery for the last core of nuclear fuel for Florida Power & Light Company and Florida Power Corporation. (1998 FPL Nuclear Decommissioning Study)

<sup>10</sup> FPL's revised accruals were effective May 1, 2002, when the governing Stipulation approved by Order No. PSC-99-0519-AS-EI ended. The Stipulation had capped FPL's annual decommissioning accruals at \$84,024,335, jurisdictional, approved by Order No. PSC-95-1531-FOF-EI, issued December 12, 1995.

nuclear amortization expense of approximately \$98.7 million as authorized by Order No. PSC-96-0461-FOF-EI<sup>11</sup> should serve to offset the revised nuclear decommissioning accruals.

By Order No. PSC-05-0902-S-EI,<sup>12</sup> issued September 14, 2005, the Commission approved a Stipulation and Settlement that suspended, effective September 1, 2005, FPL's nuclear decommissioning annual accrual approved in the 1998 FPL Nuclear Decommissioning Study through the end of the Stipulation and Settlement period, December 31, 2009. Per the terms of the Stipulation and Settlement, FPL's 2005 decommissioning study to be filed on or before December 31, 2005, would have no impact on FPL's customer rates or terms of the Stipulation and Settlement. On December 16, 2010, FPL filed its current nuclear decommissioning cost study.

#### End of Life Materials and Supplies and Last Core of Nuclear Fuel

In the review of the 1998 FPL Nuclear Decommissioning Study, the Commission addressed, for the first time, recovery of the level of materials and supplies (M&S) inventories<sup>13</sup> and unburned fuel (Last Core)<sup>14</sup> expected to remain at the end of each nuclear unit's life (EOL). The Commission found that these unrecovered costs are unique to the nuclear unit and are the direct result of unit shut down. However, the Commission recognized that these costs do not meet the intent of nuclear decommissioning because they do not involve the removal of the plant facility. The Commission concluded that the unrecovered costs associated with EOL M&S inventories and Last Core should be amortized over the remaining life span<sup>15</sup> of each site. Such recovery, the Commission held, ratably allocates the costs to those receiving the benefit of the nuclear generation and avoids a burdensome expense at the time of unit shut down.

The Commission found that the amortization of the costs associated with the EOL M&S inventories should be accounted for as a debit to nuclear maintenance expense with a credit to an unfunded Account 228 reserve.<sup>16</sup> For the EOL Last Core associated costs, the Commission found that the amortization should be recorded as a base rate fuel expense with a credit to an unfunded Account 228 reserve. The annual amortization expenses for FPL relating to the EOL

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<sup>11</sup> See Order No. PSC-96-0461-FOF-EI, issued April 2, 1996, in Docket No. 950359-EI, In re: Petition to establish amortization schedule for nuclear generating units to address potential for stranded investment by Florida Power & Light Company. (Nuclear Amortization Schedule)

<sup>12</sup> See Order No. PSC-05-0902-S-EI, issued September 14, 2005, in Docket No. 050045-EI, In re: Petition for rate increase by Florida Power & Light Company and Docket No. 050188-EI, In re: 2005 comprehensive depreciation study by Florida Power & Light Company. (2005 FPL Settlement)

<sup>13</sup> EOL M&S inventories are the level of inventories that will remain at the end of each nuclear site's life (license expiration of the last nuclear unit at the site).

<sup>14</sup> The Last Core is the unburned fuel that will remain in the fuel assemblies at the end of the last operating cycle of each nuclear unit when it ceases operation.

<sup>15</sup> Remaining life span for each nuclear unit is that period of years from the decommissioning study date to the nuclear license expiration date.

<sup>16</sup> In an unfunded reserve, the accumulated amortization expenses become an internal source of funds to be used by the company for general corporate purposes. No specific fund of money is set aside to pay for the cost of EOL M&S or the Last Core. Rather, at the time of shut down, the company will raise the money through normal financial markets. From an economic standpoint, an unfunded reserve produces the lowest cost to the customers, due to the elimination of capital costs that are not incurred because the funds generated internally are used instead.

Last Core costs were \$5.5 million.<sup>17</sup> The annual amortization expenses relating to M&S inventories were \$2.4 million for FPL (\$1.7 million for Turkey Point Units 3 and 4 (TP3 and TP4) and \$0.7 million for St. Lucie Units 1 and 2 (SL1 and SL2). The Commission found that the accumulated \$98.7 million in nuclear amortization expense as authorized by FPL's Nuclear Amortization Schedule should be used to offset the EOL M&S inventories and Last Core amortization expenses. The Commission concluded that for administrative ease, these associated EOL costs should be addressed in subsequent decommissioning studies so the related annual amortization expenses could be revised, if warranted.

As result of the 2005 FPL Settlement, FPL filed its 2005 decommissioning study for informational purposes only.<sup>18</sup> No Commission action was taken with respect to the 2005 decommissioning study. That study included updated cost estimates for the Last Core and EOL M&S inventories. The results of the updated estimates reflected a decrease of \$1.4 million in amortization expense for EOL M&S inventories and a decrease of \$0.7 million for the Last Core from the 2002 amortization amounts. Even though no Commission action was taken with respect to the 2005 decommissioning study, FPL reflected the decreased annual amortization amounts in its accounting for EOL M&S and Last Core effective January 1, 2006.

FPL provided updates for its respective EOL M&S and Last Core costs in the current decommissioning cost study. The Commission is vested with jurisdiction over these matters through several provisions of Chapter 366, Florida Statutes, including Section 366.04, Section 366.05, and Section 366.06.

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<sup>17</sup> \$2.4 million for SL and \$3.1 million for TP.

<sup>18</sup> See 2005 FPL Settlement, page 5.

### **Discussion of Issues**

**Issue 1:** Should the currently approved annual nuclear decommissioning accruals for Florida Power & Light Company (FPL) be revised?

**Recommendation:** No. While a review of FPL's site-specific decommissioning cost study indicates that decommissioning base cost estimates have increased since the 1998 and 2005 cost studies, assumptions relating to escalation rates and inflation forecasts as discussed in Issue 4 show that FPL's current approved zero annual decommissioning accrual does not need to be revised at this time. Increases in base cost estimates recognize factors including additional information, improvements in technology, and regulatory changes that have transpired in the last 12 years. Additionally, staff recommends that the assumptions included in FPL's 2010 decommissioning study are reasonable. (L'Amoreaux, P. Lee)

**Staff Analysis:** In accord with Order No. 10987 issued in Docket No. 810100-EU (CI) and Rule 25-6.04365, F.A.C., FPL has filed an updated site-specific decommissioning cost study. The purpose of this study is to recognize developments and changes impacting decommissioning cost estimates and also to consider such factors as additional information, improvements in technology, and regulatory changes that have transpired since the 1998 FPL Nuclear Decommissioning Study.<sup>19</sup>

### **Operating Licenses**

Each nuclear unit's investment will continue to be included in rate base until expiration of the respective operating license (retirement date). In 2002, the NRC approved FPL's license extension application for TP3 and TP4. In 2003, the NRC approved the license extension for SL1 and SL2. Accordingly, the license expiration date for each unit has been extended 20 years. The license expiration dates for SL1 and SL2 are now considered to be March 2036 and April 2043, respectively. The license expiration dates for TP3 and TP4 are considered to be July 2032 and April 2033, respectively. The current cost study assumes that each unit will operate throughout its extended license period. To the extent that any unit is prematurely retired, the respective license expiration dates will be revised.

### **Decommissioning Methods**

Consistent with the 1998 FPL Nuclear Decommissioning Study, the currently filed site-specific study continues to utilize a combination of SAFSTOR and DECON decommissioning methods. FPL utilizes DECON for the Turkey Point units because this method provides the lowest cost and employs those individuals familiar with the nuclear facility to support the dismantling effort. Further, DECON eliminates a potential long-term safety hazard and relieves the Company of the long-term obligation and liability for continuing maintenance of the property. For the St. Lucie units, due to differences in license expiration dates, SAFSTOR is

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<sup>19</sup> Decommissioning cost studies filed in 1998 and 2000 were the last studies to be thoroughly reviewed by the Commission. In a series of Settlements reached in 2002 and 2005, the annual decommissioning accruals for FPL were suspended. The 2005 FPL Settlement required the filing of a 2005 decommissioning cost study for informational purposes only with no Commission action taken.

utilized for SL1 with about seven years of dormancy followed by prompt dismantlement (DECON) of both SL1 and SL2. This allows for a one-time mobilization of contractor personnel and equipment by mothballing SL1 until the expiration of SL2's license.

### **Decommissioning Cost Estimates**

The major cost contributors to the overall decommissioning costs are labor, high and low-level radioactive waste management and disposal, and other removal related activities (e.g., engineering and support equipment). Changes in base cost estimates since the 1998 site-specific cost study are primarily associated with program management, spent fuel management, disposal and other removal activities.

As with previous decommissioning cost studies, FPL commissioned TLG Services Inc. (TLG) to develop the decommissioning base cost estimates. The estimates are based on a number of assumptions, including regulatory requirements, low-level waste disposal practices, high-level radioactive waste management options, project contingencies, and site restoration requirements.<sup>20</sup> The estimates include a five and one-half year cooling period for the SNF that resides on site when operations cease. Once cooled, the SNF will be transferred to the DOE or to the independent spent fuel storage installation (ISFSI) for interim storage. The estimates also include the dismantling of site structures and non-essential facilities and limited site restoration.

TLG uses a unit factor method<sup>21</sup> for estimating decommissioning activity costs. These factors incorporate site-specific costs, the most current worker productivity in decommissioning activities, and lessons learned from other decommissioning projects. Unit factors for concrete removal, steel removal, and cutting costs were developed using local labor rates. The activity-dependent costs were estimated with item quantities developed from plant drawings and inventory documents. Removal rates and material costs for conventional disposal relied on information available from R.S. Means.<sup>22</sup>

The decommissioning scope of the current cost estimates for FPL has not significantly changed from the 1998 decommissioning cost study. However, the current estimate reflects an additional 20 years of operations and delays the completion of the spent fuel transfer process by

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<sup>20</sup> The cost study assumes that site structures will be removed three feet below grade level. Foundation grade slabs greater than three feet thick will be abandoned in place and backfilled. The intake and discharge canals will be backfilled and the site will be graded.

<sup>21</sup> The unit factor method of estimating costs is based on activity-dependent costs (i.e., costs to decontaminate and remove components for disposal), period-dependent costs (e.g., management staff for the duration of the program), and collateral costs (e.g., insurance and taxes). These costs include labor, equipment, materials, energy, and services. In addition, the effect of salvage and scrap values and contingencies are incorporated into the estimate. Unit factors for concrete removal (\$/cubic yard), steel removal (\$/ton), and cutting costs (\$/inch) are developed using local labor rates. The activity-dependent costs are estimated with the item quantities (cubic yards and tons), developed from plant drawings and inventory documents. Each activity such as cutting pipe, segmenting vessels, demolishing concrete, transporting and disposing of wastes, is individually cost estimated. The unit factors are expressed in terms of the cost per cut, cost per cubic foot demolished, cost per trip, or cost per cubic yard of burial. The unit cost factors are applied to the inventory of plant equipment and structures to be removed from each nuclear unit to develop a cost estimate.

<sup>22</sup> Robert Snow Means Company, Inc., "Building Construction Cost Data 2010," Kingston, Massachusetts.

about 13 years due to the lack of a national repository. A longer schedule in the post-decommissioning dry spent fuel storage period increased the period-dependent costs (e.g., staffing, fees, insurance, and other site operating costs). The total cost estimate to decommission SL increased approximately 76 percent since FPL's 1998 decommissioning cost study and the decommissioning cost estimate for TP increased 63 percent since 1998. Comparing 2005 with 2010 cost estimates, the decommissioning cost for SL has increased approximately 43 percent and the cost for TP has increased approximately 40 percent. The activities resulting in the major increases in cost estimates are discussed below.

### Program Management

Besides changes in staffing and general increases in wages and benefits, a longer schedule due to extending the operating licensed lives and a larger security force result in changes in program management costs. A longer decommissioning schedule in the 2010 cost model reflects a longer post-decommissioning dry spent fuel storage period.

In January 2007, the NRC approved a final rule that enhanced its security regulations governing the design basis threat. This rule also required companies to show extensive consideration of the factors specified in the Energy Policy Act of 2005. Based on the industry's response to the NRC's rulemaking, the security force for decommissioning was increased.

### Spent Fuel Management

The Nuclear Waste Policy Act of 1982 (NWPA) committed the DOE to accept SNF and high-level radioactive waste (HLRW) by January 31, 1998, under the Standard Disposal Contracts with waste generators. Since the original legislation, the DOE has announced several delays in the program schedule. To date, the DOE has not accepted any spent fuel or high-level waste, as required by NWPA and utility contracts.

The DOE submitted its license application to the NRC on June 3, 2008, seeking authorization to construct the repository at Yucca Mountain, Nevada. The NRC formally docketed the DOE's license application on September 8, 2008, triggering a three-year deadline, with a possible one-year extension, set by Congress for the NRC to decide on whether to authorize construction. However, on March 3, 2010, the DOE filed a motion with the NRC to withdraw the application for the repository with prejudice. This case is pending at the NRC.

Given the termination of the Yucca Mountain project, FPL assumes a repository operation date of 2030. This date assumes a decision to select a repository is made within the next two to four years, six years to prepare a new license application for submittal to the NRC, and 10 years for NRC review and approval of the license, construction of the repository, and preparation of the site for receipt of SNF.

The current study includes costs to operate and maintain an ISFSI at each nuclear site to recognize concerns that the DOE would not be able to begin accepting SNF and HLRW as it had committed.

Low-level radioactive waste (LLRW) disposal

The contaminated and activated material generated in the decontamination and dismantling of a nuclear reactor is classified as LLRW, although not all of the material is suitable for "shallow-land" disposal. Amendments of 1985 to the Low-Level Radioactive Waste Policy Act, required states to become responsible for the disposition of LLRW generated within their own borders. With the exception of Texas, no new LLRW disposal facilities have been successfully sited, licensed, and constructed.

Until recently, there were two facilities available to FPL for disposal of LLRW generated by their nuclear units, one facility in South Carolina and one in Utah. As of July 1, 2008, however, the facility in Barnwell, South Carolina was closed to generators outside the Atlantic Compact. This leaves the facility in Clive, Utah, operated by Energy Solutions as the only available destination for LLRW requiring controlled disposal. Energy Solutions' facility does not have a license to dispose of Class B or C radioactive waste, which is more highly radioactive than Class A. For purposes of the currently filed decommissioning cost study, Energy Solutions' facility was used as the basis for estimating the disposal cost for the majority of FPL's radioactive waste (Class A).

Other Factors

Transportation, regulatory fees, and energy cost estimates have increased since the 1998 and 2000 cost studies. The increase in transportation cost estimates is due to a combination of higher tariffs and fuel surcharges. For FPL's SL site, there is an increased cost associated with the transport of approximately 2 million cubic feet of contaminated soil for controlled disposal. The increase in insurance and regulatory fees reflects increased nuclear and property insurance premiums, revisions in the NRC's fee structure for ISFSI fees, and increased state emergency planning fees. The increase in energy cost estimates reflects increases in the price of electricity.

Escalation rates and inflation forecasts also impact the resulting decommissioning annual accrual. In the current case, applying FPL's assumed escalation rates and inflation forecasts to the decommissioning base cost estimates results in a zero decommissioning accrual level.

Conclusion

While a review of FPL's site-specific decommissioning cost study indicates that decommissioning base cost estimates have increased since the 1998 and 2005 cost studies, assumptions relating to escalation rates and inflation forecasts as discussed in Issue 4 show that FPL's current approved zero annual decommissioning accrual does not need to be revised at this time. Increases in base cost estimates recognize factors including additional information, improvements in technology, and regulatory changes that have transpired in the last 12 years. Additionally, staff recommends that the assumptions included in FPL's 2010 decommissioning study are reasonable.

**Issue 2:** Should a contingency allowance be applied to the estimated cost of decommissioning, and if so, what should the percentage be?

**Recommendation:** Yes, staff recommends that a contingency allowance should be applied to the costs of decommissioning nuclear units. The weighted average contingency factors listed below for each of FPL's nuclear units are reasonable and should be approved:

TP3	17.39%
TP4	17.36%
SL1	17.07%
SL2	17.92%

(Higgins, P. Lee)

**Staff Analysis:** The practice of budgeting a contingency allowance is common in large-scale construction and demolition projects. Such cost estimates generally include a baseline cost estimate, which is based on ideal conditions, and a contingency allowance, which is a specific provision for unforeseeable elements of cost within the defined project scope. For a large, complex, and long-running project such as decommissioning, unforeseeable events are likely to occur; therefore, a contingency allowance is necessary.

The Commission concluded in the 1994 FPL Nuclear Decommissioning Study that "... a contingency allowance must be applied to the costs of decommissioning nuclear units." This policy ensures that the full decommissioning costs are borne by those that will benefit from the power generated by the nuclear units.

Contingency allowances are site-specific and activity-dependent. In each cost study, TLG applied specific contingency allowances to the associated decommissioning cost components on a line item basis, producing weighted average contingency values by unit. These specific line item contingency allowances were based on the guidelines developed by the Atomic Industrial Forum (now the Nuclear Energy Institute) in the report "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates."<sup>23</sup>

Staff notes that the aggregate decommissioning base cost contingency estimate for SL1, SL2, TP3, and TP4 has been decreasing over the past two study periods. In FPL's 2005 study, the composite contingency was approximately 18.3 percent, down from 20.3 percent in 1998.

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<sup>23</sup> LaGuardia, T. S., et al., May 1986, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, National Environmental Studies Project, Washington, D.C. The contents of these guidelines were prepared under the review of a task force consisting of representatives from utilities, state and federal regulatory agencies, and architect/engineering firms.

Applying the individual contingency allowances to the line item decommission cost estimates for each unit produces the contingency dollar amounts. Totaling these amounts and dividing the sum by the total decommissioning costs results in the following weighted average contingency factors:

TP3	17.39%
TP4	17.36%
SL1	17.07%
SL2	17.92%

Conclusion

Staff recommends that a contingency allowance should be applied to the costs of decommissioning nuclear units. The weighted average contingency factors listed below for each of FPL's nuclear units are reasonable and should be approved:

TP3	17.39%
TP4	17.36%
SL1	17.07%
SL2	17.92%

**Issue 3:** Should the total estimated cost of nuclear decommissioning include a provision for on-site storage of spent fuel beyond the termination of the operating licenses of each nuclear unit?

**Recommendation:** Yes, staff recommends that it is prudent for the total estimated costs of nuclear decommissioning to include the costs for interim storage of spent fuel incurred after the retirement of each nuclear unit. However, these amounts should continue to be reviewed in subsequent decommissioning studies to determine the prudence of their inclusion. (Higgins, P. Lee)

**Staff Analysis:** Under the terms of the Nuclear Waste Policy Act of 1982, the federal government is assigned the responsibility of providing for the permanent disposal of SNF and HLRW. This legislation also committed the DOE to begin acceptance of SNF no later than January 31, 1998. However, this deadline was not met.

In its review of the 1998 FPL Nuclear Decommissioning Study, the Commission recognized that the need for interim dry storage was based on industry expectations that the DOE would not have a permanent repository in operation before 2010. Current expectations are that a permanent repository will not be in operation until 2020, at the earliest. Under this circumstance, to permit prompt decommissioning of a unit at the end of its operating license, transfer of SNF for interim dry storage prior to the DOE's acceptance of the fuel is the most cost-effective option over the long term. Therefore, interim dry storage of SNF after the retirement of each nuclear unit is needed. The Commission decided in the 1994 FPL Nuclear Decommissioning Study that:

We agree that an allowance must be made in FPL's and FPC's accruals for on-site dry storage costs. Our primary goal in requiring this allowance is to ensure that the money needed to fully decommission a nuclear unit is available when the plants are retired, and not recovered from customers who have not benefitted from the low-cost nuclear generation. FPL's and FPC's annual accrual amounts must, therefore, include the anticipated cost for dry storage of SNF after retirement of each respective unit. We will continue to review these amounts in future decommissioning studies in order to determine the prudence of their inclusion.

Subsequent developments validate the prudence of including the costs of interim dry storage. Faced with the costs associated with interim dry storage, utilities sought relief in the federal courts. On November 14, 1997, the U.S. Court of Appeals for the District of Columbia Circuit issued a decision holding that the DOE has an unconditional obligation to begin accepting SNF beginning in 1998. However, the decision also stated that the court lacked authority to order the DOE to begin spent fuel disposal. The DOE continues to maintain that its delayed performance is unavoidable because it does not have an operational repository and does not have authority to provide storage in the interim. Due to the delayed performance of DOE, FPL filed suit and subsequently executed a Settlement Agreement with the U.S. government on March 31, 2009 that resolved damage claims with regard to SNF acceptance and disposal. The Settlement Agreement requires the U.S. government make payments to FPL to cover its costs incurred for managing and storing SNF on site.

To date FPL has received approximately \$115.4<sup>24</sup> million in SNF reimbursements from the U.S. government. Further, the Company states that “[f]or the purposes of funding and accrual analysis, contained in this study, the 2010 decommissioning costs have been reduced significantly to reflect the reimbursement by the government of SNF management costs incurred during the decommissioning period.”<sup>25</sup>

Currently, the DOE has no plans to receive SNF before the year 2020. However, there are concerns that date will not be met. On March 3, 2010, the DOE withdrew its application for Yucca Mountain to be a nuclear waste repository. The case is pending with the NRC, but certainly raises the concern that additional delays will push the time out even further. For the purposes of estimating SNF long-term on-site storage costs in the current cost study, FPL assumes the SNF transfer will be completed by 2062 for TP3 and TP4, and by 2073 for SL1 and SL2. As such, costs relating to the construction, operation, and dismantlement of an on-site independent spent fuel storage installation (ISFSI) have been included in FPL’s decommissioning cost estimates. Staff believes that FPL’s 2020 assumption for the DOE acceptance of SNF and Greater than Class C waste (GTCC) is conservative and could very well be delayed further.

FPL’s costs associated with Spent Fuel Management storage included in its 2010 decommissioning study for the TP3 and TP4 total approximately \$374 million. For SL1 and SL2, costs total approximately \$331 million.

Staff believes including the costs for interim dry storage of SNF incurred after retirement of each nuclear unit is prudent. If such costs are not included, they may have to be borne by those customers that will not benefit from the power generated by the nuclear units. The major components of the costs associated with the interim dry storage are the ISFSI capital costs, operation costs after the unit’s retirement, and decommissioning costs when the transfer of SNF to an interim or permanent off-site repository is completed. These amounts should continue to be reviewed in subsequent decommissioning studies to determine the prudence of their inclusion.

### Conclusion

Staff recommends that it is prudent for the total estimated costs of nuclear decommissioning to include the costs for interim storage of spent fuel incurred after the retirement of each nuclear unit. However, these amounts should continue to be reviewed in subsequent decommissioning studies to determine the prudence of their inclusion.

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<sup>24</sup> Amount is net of SL2 participants.

<sup>25</sup> Florida Power & Light Company, 2010 Nuclear Decommissioning Study, Executive Summary page 2 of 3. The Settlement Agreement reimbursement of SNF management costs estimated to be incurred during the decommissioning period is reflected in the decommissioning fund and annual accrual requirements addressed in Issue 4. This is based on the assumed DOE SNF acceptance date of 2020. To the extent this date changes, so will the amount of the reimbursements and the amount of SNF management costs incurred during decommissioning.

**Issue 4:** What is the appropriate annual accrual in equal dollar amounts necessary to recover future decommissioning costs over the remaining life of each nuclear power plant for FPL?

**Recommendation:** Staff recommends a continuation of the suspension of the accrual for nuclear decommissioning as approved by the Commission in the 2005 FPL Settlement. Accordingly, the appropriate jurisdictional annual accrual amounts necessary to recover future decommissioning costs over the remaining life of each nuclear power plant are currently zero. Additionally, staff recommends that the assumptions included in FPL's 2010 decommissioning study to determine the annual accrual are reasonable. (D. Buys, Salnova, P. Lee)

**Staff Analysis:** The annual accrual amounts recommended by staff are based upon information provided by FPL in its site-specific cost study and in its responses to staff's data requests. The base level costs included in the study are in 2010 dollars. Once the cost of decommissioning a nuclear unit is determined in current dollars, this cost is escalated to future dollars. The determination of the annual accrual amounts then resembles an annuity calculation. The question becomes how much money needs to be collected from ratepayers in equal monthly payments, earning at a given rate, to equal decommissioning costs in future dollars at a future date. The appropriate escalation rates and fund earnings rate will be discussed in detail later in this issue.

To qualify for tax deductibility of contributions made to a qualified decommissioning fund, the amounts must be consistent with the purpose of IRC Section 468A, principles and provisions of Federal Tax Regulations under the Code section, and be based on reasonable assumptions.<sup>26 27</sup> The Company can generally satisfy its burden of proof by demonstrating that the amounts are calculated based on the assumptions used by the Commission in its most recent order.<sup>28</sup> The Commission's order must be based on reasonable assumptions concerning; (i) the after tax rate of return to be earned by the amounts collected for decommissioning; (ii) the total estimated cost of decommissioning the nuclear power plant, and (iii) the frequency of contributions to the nuclear decommissioning fund for a tax year.<sup>29</sup> Staff believes that the assumptions proposed by FPL are reasonable, and therefore should be deemed appropriate for ruling amounts in the nuclear decommissioning study.

#### Base Costs of Decommissioning

FPL provided the estimated cost in current (December 31, 2010) dollars to decommissioning each of its nuclear units. These cost estimates assume a 2030 DOE acceptance date of spent fuel as discussed in Issue 3 and unit-specific contingency allowances as discussed

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<sup>26</sup> 26 USC §468A (2011).

<sup>27</sup> Treas. Reg. §1.468A.

<sup>28</sup> Treas. Reg. §1.468A-3(a)(4).

<sup>29</sup> Treas. Reg. §1.468A-3(a)(2).

in Issue 2. The estimated cost to decommission each nuclear unit is shown in Table 4-1:

Table 4-1

<b>FPL</b>	<b>2010 Dollars<sup>30</sup></b>
TP3	\$645,978,526
TP4	723,856,161
SL1	758,058,129
SL2	598,851,426
Total	\$2,726,744,242

The analysis performed by FPL breaks the decommissioning process into five general components. The components are labor, materials, transportation, burial, and other. TLG provided FPL with estimates of the base costs for each activity. These cost estimates were determined through site-specific cost studies and include a contingency allowance. The cost studies reflect weighted average contingency allowances of 17.39 percent for TP3, 17.36 percent for TP4, 17.07 percent for SL1, and 17.92 percent for SL2. Staff's recommendation regarding the appropriate contingency allowances to recognize in the determination of the annual accrual amounts for each unit is discussed in Issue 2.

According to FPL, the primary reasons for the net increase in decommissioning costs from 1998 to 2010 are changes in the costs associated with spent fuel management, transportation, energy, off-site waste processing, fees, and packaging. Further, FPL asserts that the spent fuel management cost increases are the direct result of the DOE's failure in meeting its contractual commitments rather than changes in cost estimating methodology. The 2010 cost analysis assumes a 2030 date for when the DOE will begin the process of removing spent fuel, compared to a 2015 date assumed in the 1998 and 2005 decommissioning cost studies. Increased transportation costs reflect a combination of higher tariffs, fuel surcharges, and the increase in the waste volume designated for controlled disposal (i.e., contaminated soil). The increase in energy costs are driven by actual usage data provided from ongoing decommissioning projects to forecast a consumption trend for TP and SL and increased purchased power rates from 2004 to 2010. Increases in off-site waste processing estimates are due to a larger volume of material designated for processing<sup>31</sup> and a higher processing fee. Insurance costs and regulatory fees reflect conformance with the NRC's proposed guidance on "minimum" insurance coverage during decommissioning, increased property insurance premiums since 2004, and an increase in state fees until the spent fuel has been removed from the site. Packaging cost increases are due to higher labor and material costs.

#### Cost Escalation Rates

The next issue that must be addressed is the determination of the appropriate escalation rates to use to convert the current decommissioning cost to the future decommissioning cost for

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<sup>30</sup> FPL's Jurisdictional Cost of Decommissioning per 2010 Study.

<sup>31</sup> Material from the radiological-controlled area that was targeted in the 1998 cost estimates for in-place decontamination and release is now assumed to be treated off-site. In addition, steam generators, turbines, and condensers are now designated to be processed off-site.

each nuclear unit. The analysis performed by FPL divides the decommissioning process into five major cost components. These stages are labor, materials and equipment, shipping, burial, and other. The base level costs are in 2010 dollars. The 2010 current dollar estimates are escalated to future dollar estimates at the respective license termination date for each nuclear unit using separate inflation forecasts for the major cost components. FPL relied upon "The U.S. Economy, The 30-Year Focus, Third - Quarter 2010," published by Global Insight as the source for their specific inflation measures, except for the burial escalation rate. Staff reviewed the most recent economic forecasts published in "The U.S. Economy, The 30-Year Focus, First-Quarter 2011" and believes the inflation forecasts in the Third-Quarter 2010 and the First-Quarter 2011 are not materially different. FPL's burial cost escalation rate of 3 percent is based on Company-specific data and historical experience. This is a reduction from the 6.6 percent rate assumed in the 2005 study. Since the 2005 study was prepared, FPL has signed an agreement with Energy Solutions which provides for the long-term disposal of Class A waste generated during decommissioning, and as such, cost for disposal of Class A waste is estimated based on the Energy Solutions agreement. The burial escalation rate is a weighted rate based on a ratio of 90 percent of Class A waste escalated at the estimated long-term CPI rate of 2 percent and 10 percent of Class B and C waste escalated at 6.6 percent, which approximates the historical rate of change in published Barnwell rates. The decrease in the burial escalation rate from the 2005 decommissioning study is attributed to the lower cost of burial for Class A waste due to the agreement with Energy Solutions. The escalation rate of 3 percent for burial costs is reasonable based on the information provided by FPL.

The methodology used by FPL in the 2010 decommissioning study to determine the assumed escalation rates, with the exception of the burial cost rate as noted above, is consistent with the methodologies used in the 1998 and 2005 decommissioning studies. While FPL used a methodology consistent with the 1998 and 2005 decommissioning cost studies, the escalation rates do differ. The differences between the escalation rates used in the prior decommissioning studies can be attributed to the change in the projections of the rates of inflation. The indicated escalation rate used to convert the current decommissioning cost to a future decommissioning cost for each nuclear unit is included in Table 4-2.

Table 4-2

<b>FPL</b>	<b>2005 Study</b>	<b>2010 Study<sup>32</sup></b>
TP3	4.50%	2.95%
TP4	4.60%	2.95%
SL1	4.50%	2.84%
SL2	4.70%	2.97%

#### Future Cost to Decommission

FPL's estimate of the total cost to decommission each nuclear unit in future dollars was based on present operating license termination dates, the current dollar base costs to

<sup>32</sup> Staff notes that FPL's 2010 Decommissioning Study points out that the funding status is highly dependent upon the assumed escalation rates, which are currently assumed to be at near all-time lows, and could increase significantly in the future.

decommission each nuclear unit as provided by TLG's site-specific study, the contingency allowances discussed in Issue 2, the cost of extended storage of spent fuel discussed in Issue 3, and the escalation rates. The estimated costs in future dollars to decommission each nuclear unit at its respective license termination date are listed in Table 4-3.

Table 4-3

<b>FPL</b>	<b>2010 Study</b>
TP3	\$1,570,866,216
TP4	1,768,814,654
SL1	2,217,446,996
SL2	2,212,931,132
Total	\$7,770,058,998

Funding Period

The funding period is that period over which revenues are collected from ratepayers for purposes of decommissioning the nuclear units. Funding periods are assumed to expire on the last day of the month preceding the month in which the operating license for the unit is due to expire. The operating license expiration dates for the nuclear units are listed in Table 4-4.

Table 4-4

<b>FPL</b>	<b>NRC Operating License Expiration Date</b>
TP3	July 19, 2032
TP4	April 10, 2033
SL1	March 1, 2036
SL2	April 6, 2043

Years of Fund Expenditures

The years in which the accumulated decommissioning funds will be expended are listed in Table 4-5.

Table 4-5

<b>FPL</b>	<b>Years of Fund Expenditures</b>
TP3	2032-2073
TP4	2033-2073
SL1	2036-2074
SL2	2043-2074

Fund Earnings Rate

The fund earnings rate is an important assumption in the determination of the appropriate annual accrual amount. The amount of the annual accrual moves inversely to the fund earnings rate. In other words, the higher the assumed fund earnings rate, the lower the indicated annual accrual and vice versa. In its 2010 Study, FPL used an assumed fund earnings rate of 3.9 percent for all four of its nuclear units. This assumption is based on an estimate of the expected nominal

return of 3.9 percent over the life of FPL's nuclear decommissioning trust (NDT) fund. This assumption equates to a projected real long-term, after tax and net of fees, earnings rate of 1.9 percent plus an estimated long-term inflation rate of 2.0 percent. The inflation rate is taken from the CPI forecast in "The U.S. Economy, The 30-Year Focus, Third-Quarter 2010." This is the same approach FPL used in the 1998 and 2005 decommissioning studies where the assumed earnings rate is compared to the CPI to assure that the overall return remains above CPI to maintain the purchase power of the accruals until actual decommissioning. In the 1998 FPL Nuclear Decommissioning Study, the Commission approved FPL's assumed fund earnings rate of 4.9 percent (CPI of 3.8 percent plus a spread of 1.1 percent). In FPL's 2005 decommissioning study, in which the Commission took no action due to a settlement between OPC and the Company, FPL used an assumed fund earnings rate of 5 percent (CPI of 2.6 percent plus a spread of 2.4 percent). The changes in projected CPI rates and assumed fund earnings rates can be attributed to the change in economic and financial forecasts used to project the long-term CPI and the expected nominal return of FPL's NDT fund.

The assumed fund earnings rate reflects the projection of continued adequacy of the funds and assumes a conservative investment strategy where the funds are moved to 100 percent fixed income prior to the first year of decommissioning and a more conservative all bonds and cash asset mix in the final years of decommissioning.

FPL reported that the change in actual cost and actual returns since 2005 have reduced the funded status of the Company's four nuclear units by more than \$195 million as of December 31, 2010. However, adequate funding levels have been maintained due to offsets attributed to reductions in the assumed escalation factors for future decommissioning costs, and government reimbursements pursuant to the DOE settlement for storing spent nuclear fuel. Table 4-6 shows the historic performance of FPL's nuclear decommissioning trust fund (calculated net of administrative costs on an after-tax, time weighted rate of return basis as of December 31, 2010) relative to CPI.

Table 4-6

<b>FPL</b>	<b>Fund Return</b>	<b>CPI</b>	<b>Spread</b>
1 Year	10.1%	1.5%	8.6%
2 Years	11.1%	2.1%	9.0%
3 Years	1.9%	1.4%	0.5%
5 Years	3.8%	2.2%	1.6%
10 Years	4.1%	2.3%	1.8%
Inception	6.9%	2.9%	4.0%

As demonstrated by the range of earned returns shown in Table 4-6, total fund returns have experienced some volatility from year to year. However, since inception of the NDT funds, the overall return has remained above CPI. FPL has projected long-term CPI at 2.0 percent, and based on the actual returns since inception, staff believes FPL's forecasted fund earnings rate of 3.9 percent is reasonable for the purpose of determining the appropriate annual accrual amount.

The fundamental purpose of the Commission's review of the decommissioning study is to make sure there will be adequate funding on hand at the time the nuclear units are decommissioned. The assumed fund earnings rate should be conservative enough to avoid a situation whereby future customers are burdened by inadequate funding for decommissioning. However, an assumed fund earnings rate that is too conservative inappropriately burdens current customers with expenses that are going to be incurred in the future. As such, a certain amount of judgment is necessary to determine a fair balance between generations of ratepayers.

For the reasons outlined above, staff believes FPL's assumed fund earnings rate of 3.9 percent is reasonable and should be used in the determination of the annual accrual amounts.

#### Minimum Fund Earnings Rate

Separate from the issue of the assumed fund earnings rate is the issue of whether the Commission should impose a minimum fund earnings rate. In Order No. 21928, the Commission determined that a minimum fund earnings rate equivalent to the level of inflation over each five-year review period would be appropriate.<sup>33</sup> The Commission reaffirmed this approach in the 1994 FPL Nuclear Decommissioning Study and the 1998 FPL Nuclear Decommissioning Study. In those orders the Commission stated:

Rather than attempting to set a prospective minimum fund earnings rate which may or may not be reasonable under future economic conditions, we will require that the companies set aside funds sufficient to meet the Commission's best estimate of the decommissioning liability and require the companies to maintain the purchasing power as well as the principal amount of these contributions. The companies' investment performance will be evaluated along with all other decommissioning activities every five years. If it is found that the companies' investment earnings, net of taxes and all other administrative costs charged to the trust fund, did not meet or exceed the CPI average for the period, then we will consider ordering the utility to cover this shortfall with additional monies to keep the trust fund whole with respect to inflation. We therefore find a minimum fund earnings rate equivalent to the level of inflation over each five-year review period would be appropriate.

FPL believes a minimum funds earnings rate should not be imposed and the current approach, as approved by the Commission, should remain in effect. The Company explained that economic and financial market conditions can vary widely over time and are difficult if not impossible to predict. FPL also indicated that it is reasonable that the Company be accountable for taking appropriate steps intended to preserve the principal value and the purchasing power of contributions collected from its customers. Staff concurs with FPL and believes this approach is reasonable and recommends that it remain in effect.

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<sup>33</sup> See Order No. 21298, issued September 21, 1989, in Docket No. 870098-EI, Petitions for approval of an increase in the accrual of nuclear decommissioning costs by Florida Power Corporation and Florida Power & Light Company.

Conclusion

The current annual expense accrual requirements for FPL's nuclear unit decommissioning costs presented in the study support a zero accrual and funding requirement as of December 31, 2010. Based on the current dollar cost to decommission each nuclear unit as determined in TLG's site-specific study, the unit-specific contingency allowances discussed in Issue 2, the unit-specific escalation rates recommended above, the cost of extended storage for spent fuel, and the assumed fund earnings rates of 3.9 percent, staff believes FPL's request to continue the suspension of the accrual is reasonable.

Consistent with prior Commission practice and Rule 25-6.04365, F.A.C., the assumptions presented in FPL's nuclear decommissioning study will be reviewed and updated as appropriate at least once every five years, which may change the accrual requirement prospectively.

As such, staff recommends a continuation of the suspension of the accrual for nuclear decommissioning as approved by the Commission in Order No. PSC-05-0902-S-EI.<sup>34</sup> Accordingly, the appropriate jurisdictional annual accrual amounts for FPL necessary to recover future decommissioning costs over the remaining life of each nuclear power plant are currently zero. The assumptions and methodology proposed by FPL to determine the appropriate annual accrual are reasonable, and therefore, should be deemed appropriate for ruling amounts in the nuclear decommissioning study.

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<sup>34</sup> See Order No. PSC-05-0902-S-EI, issued September 14, 2005, in Docket No. 050045-EI, In re: Petition for rate increase by Florida Power & Light Company.

**Issue 5:** Should the amortization expense associated with the unrecovered value of Materials and Supplies inventories that will exist at the nuclear site following shut down (EOL M&S inventories) be revised?

**Recommendation:** Yes. Staff recommends that the jurisdictional annual amortization expense associated with EOL M&S inventories for FPL should be \$1.4 million, effective with the date of new customer rates in FPL's next rate case proceeding. This represents an increase of \$0.3 million over the 2006 amortization amount. The amortization of EOL M&S inventories should be included in subsequent decommissioning studies so the related annual accruals can be revised, if warranted. (L'Amoreaux, P. Lee)

**Staff Analysis:** In the 1998 FPL Nuclear Decommissioning Study, the Commission recognized that a level of M&S inventories will remain at the end of each nuclear site's life. EOL M&S inventories consist of spare replacement parts and supplies<sup>35</sup> needing to be kept in inventory to ensure safe and reliable operations. These inventories are unique and will have little value other than scrap at the end of the licensed operating life of the units.

The Commission found in the 1998 FPL Nuclear Decommissioning Study that the associated unrecovered EOL M&S inventories costs should be amortized over the remaining life span of each site to ratably allocate costs to those receiving the benefit of the generated power. Because these costs do not relate to the removal or disposal of the nuclear plant, the Commission held that the amortization expense associated with EOL M&S inventories should be accounted for as a debit to nuclear maintenance expense with a credit to an unfunded Account 228 reserve sub-account. FPL was authorized to record \$1.7 million annually for TP and \$0.7 million annually for SL. Further, for administrative ease, FPL was required to address the amortization status of EOL M&S inventories in its subsequent updated nuclear decommissioning cost studies so the related annual amortization expense could be revised, if necessary.

As result of the 2005 FPL Settlement, FPL filed a 2005 decommissioning cost study for informational purposes only. In that study, FPL provided updated cost estimates for the EOL M&S inventories at SL and TP. The cost estimates reflected jurisdictional EOL M&S inventory costs for SL of \$12.1 million<sup>36</sup> with an associated reserve of \$2.5 million, resulting in an unrecovered amount of \$9.5 million. For TP, the updated estimates reflected jurisdictional EOL M&S inventory costs of \$28.5 million with a reserve of \$6.4 million, resulting in an unrecovered amount of \$22.1 million. Amortization over the remaining life span of each site resulted in jurisdictional annual amortization expenses of \$1.1 million (\$0.3 million for SL and \$0.8 million for TP), or a decrease of \$1.3 million from that authorized in 2002 (decrease of \$0.4 million for SL and \$0.9 million for TP). Even though no Commission action was taken on FPL's 2005 decommissioning cost study, the Company revised its accounting of the EOL M&S annual amortization amounts to reflect the decrease indicated in the study, effective January 1, 2006.

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<sup>35</sup> EOL M&S inventories include such things as spare pumps and subassemblies, motors, control modules, circuit boards, switch gear, circuit breakers, valves and valve parts, ventilation parts and filters, radiation monitoring parts, and similar types of equipment.

<sup>36</sup> The St. Lucie amount is FPL's share, 92.552245 percent, net of participants.

In its current decommissioning study, FPL estimates the remaining net unrecovered jurisdictional cost of its EOL M&S inventories to be approximately \$15 million, jurisdictional (\$15.1 million, system) at SL<sup>37</sup> and \$20.6 million, jurisdictional (\$20.9 million, system) at TP as of December 31, 2010. The resulting EOL M&S jurisdictional annual amortization expense is estimated to be \$1.4 million (\$0.5 million for SL and \$0.9 million for TP), an increase of \$0.3 million annually. FPL is not requesting to increase its annual amortization at this time. Rather, FPL believes that the results of its updated values should be addressed in its next base rate proceeding and that the appropriate changes in amortization expense should be made at that time. Given that the Commission found in the 1998 FPL Nuclear Decommissioning Study that the recovery of EOL M&S inventories should be considered a base rate component, staff agrees with FPL. Staff believes that changes in the associated EOL M&S inventories amortization should be considered in conjunction with changes in other base rate costs and revenue requirement determinations at the time of a base rate proceeding.

### Conclusion

Staff recommends that the jurisdictional annual amortization expense associated with EOL M&S inventories for FPL should be \$1.4 million, effective with the date of new customer rates in FPL's next rate case proceeding. This represents an increase of \$0.3 million over the 2006 amortization amount. The amortization of EOL M&S inventories should be included in subsequent decommissioning studies so the related annual accruals can be revised, if warranted.

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<sup>37</sup> Id.

**Issue 6:** Should the amortization expense associated with the cost of the last core of nuclear fuel be revised?

**Recommendation:** Staff recommends that the jurisdictional amortization expense associated with the cost of the last core of nuclear fuel at the FPL nuclear units should be \$11.6 million jurisdictional (\$11.8 million system). This represents an annual increase of \$6.9 million (\$7.0 million system). Staff recommends that the amortization expense should be revised at the time of FPL's next base rate proceeding. FPL should address the costs associated with the Last Core in subsequent decommissioning studies so the related annual accruals can be revised, if warranted. (Higgins, P. Lee, Franklin)

**Staff Analysis:** A nuclear reactor core is composed of fuel assemblies arranged in a regular array of cells surrounded by a coolant, which in most reactors is water. This is the case for FPL's nuclear reactors. Because of the fission process that consumes the fuel, the old fuel rods must be periodically replaced. This period is commonly referred to as a cycle.

During any given cycle, an amount of unburned fuel exists in the reactor. However, fuel assemblies are continually rotated and the current existing unburned fuel will be burned in the next generating cycle. It is only at the time when the unit ceases operations that there are no future generating cycles to burn the residual fuel in the reactor. According to FPL, no feasible solution currently exists to use all of the nuclear fuel by the time of a nuclear unit's shutdown.

The Commission found in the 1998 FPL Nuclear Decommissioning Study that the Last Core is associated with the final shut down of a nuclear unit, equating to an unrecovered cost at the end of each nuclear unit's life. For purposes of the current study under review, FPL assumes a 20-year license renewal. Final shut down of FPL's units are assumed to be 2032 for TP3, 2033 for TP4, 2036 for SL1, and 2043 for SL2.<sup>38</sup>

In the 1998 FPL Nuclear Decommissioning Study, the Commission authorized FPL to begin recording the amortization of estimated Last Core costs as a base rate fuel expense with a credit to a separate unfunded Account 228 reserve. The approved jurisdictional annual amortization amount was \$5.5 million.

In its 2010 decommissioning study, FPL has presented an updated cost analysis associated with the Last Core. The results of this analysis indicate that an increase in the annual amortization amounts is warranted. However, FPL is requesting that any change in accrual amounts should be addressed in its next base rate proceeding. Given that the Commission found in the 1998 FPL Nuclear Decommissioning Study that the annual amortization associated with the Last Core should be considered a base rate obligation, staff agrees with FPL's assessment.

The December 31, 2010 estimated jurisdictional costs, reserve balances, remaining amounts to be recovered, and annual amortization amounts associated with the Last Core are presented in Table 6-1:

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<sup>38</sup> In 2002, the NRC approved the license extension application for TP3 and TP4. In 2003, the NRC approved the license extension application for SL1 and SL2.

Table 6-1						
(000)	EOL Last Core as of 12/31/2010	Reserve Balance as of 12/31/2010	Remaining Amounts to be Recovered	Current Amortization	Revised Amortization	Change in Amortization
<b>FPL Turkey Point</b>						
Unit 3	\$77,968	\$13,554	\$64,414	\$1,120	\$2,996	\$1,876
Unit 4	\$77,770	\$9,236	\$68,534	\$1,170	\$3,080	\$1,910
Totals	\$155,737	\$22,789	\$132,948	\$2,290	<b>\$6,076</b>	\$3,786
<b>FPL St. Lucie</b>						
Unit 1	\$86,169	\$13,223	\$72,947	\$1,358	\$2,898	\$1,540
Unit 2	\$92,691	\$7,550	\$85,142	\$1,107	\$2,640	\$1,533
Totals	\$178,861	\$20,773	\$158,089	\$2,465	<b>\$5,539</b>	\$3,074
Source: FPL Response to Staff's First Data Request, No. 81, and 2010 Decommissioning Study, Support Schedule G.						

FPL's Last Core estimates reflect an expected residual value of the unburned fuel remaining at the end of the last cycle of SL1, SL2, TP3, and TP4. The amortization periods reflect the 20-year extended operations at each unit.

Conclusion

Based on the foregoing, staff recommends that the jurisdictional amortization expense associated with the cost of the last core of nuclear fuel at the FPL nuclear units should be \$11.6 million jurisdictional (\$11.8 million system). This represents an annual increase of \$6.9 million (\$7.0 system). Staff recommends that the amortization expense should be revised at the time of FPL's next base rate proceeding. FPL should address the costs associated with the Last Core in subsequent decommissioning studies so the related annual accruals can be revised, if warranted.

**Issue 7:** What should be the effective date for adjusting the annual decommissioning accrual amounts, amortization of nuclear EOL M&S inventories, and amortization of the costs associated with the Last Core?

**Recommendation:** If the staff recommendations in Issues 1 and 4 are approved, there is no change to the currently approved zero decommissioning accrual. Therefore, the effective date for adjusting the annual decommissioning accrual amounts is moot. Staff recommends that the revised annual amortization amounts relating to EOL M&S inventories (Issue 5) and the Last Core (Issue 6) should be effective at the time new base rates are approved. (Higgins)

**Staff Analysis:** If the staff recommendations in Issues 1 and 4 are approved, the current approved zero annual decommissioning accrual amount continues and is not revised. The zero accrual for each nuclear unit will be included in the cost of service for ratemaking purposes until it is subsequently revised or the unit's operating license expires.

As previously discussed in Issues 5 and 6, FPL's current decommissioning study indicates revisions to the amortization of nuclear EOL M&S inventories and amortization of the costs associated with the Last Core are warranted. However, FPL is requesting that any change in accrual amounts should be addressed in its next base rate proceeding. Given that the Commission found in the 1998 FPL Nuclear Decommissioning Study that the amortization expenses associated with the Last Core and EOL M&S should be considered base rate obligations, staff agrees with FPL's assessment. As such, any revision in amortization expenses should be considered in conjunction with changes in other base rate costs and revenue requirement determinations at the time of a base rate proceeding.

### Conclusion

If the staff recommendations in Issues 1 and 4 are approved, there is no change to the currently approved zero decommissioning accrual. Therefore, the effective date for adjusting the annual decommissioning accrual amounts is moot. Staff recommends that the revised annual amortization amounts relating to EOL M&S inventories (Issue 5) and the Last Core (Issue 6) should be effective at the time new base rates are approved.

**Issue 8:** When should FPL file its next nuclear decommissioning study?

**Recommendation:** The next decommissioning cost study for FPL should be filed no later than December 13, 2015, in accordance with Rule 25-6.04365, F.A.C., and should include an update of the amortization of EOL M&S inventories and the Last Core. (L'Amoreaux)

**Staff Analysis:** By Order No. PSC-01-0096-FOF-EI,<sup>39</sup> issued January 11, 2001, in Docket No. 000543-EI, the Commission adopted Rule 25-6.04365, F.A.C., relating to nuclear decommissioning. This Rule requires each utility to file a site-specific nuclear decommissioning study update at least once every five years from the submission date of the previous study unless otherwise required by the Commission. Therefore, the next decommissioning cost study for FPL should be filed no later than December 13, 2015. As discussed in previous issues, the study should also include an update of the amortization of EOL M&S inventories and Last Core.

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<sup>39</sup> See Order No. PSC-01-0096-FOF-EI, issued January 11, 2001, in Docket No. 000543-EI, In re: Proposed Rule 25-6.04365, F.A.C., Nuclear Decommissioning.

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**Issue 9:** Should this docket be closed?

**Recommendation:** Yes. If no person whose substantial interests are affected by the proposed agency action files a protest within 21 days of the issuance of the Order, this docket should be closed upon the issuance of a Consummating Order. (Klancke)

**Staff Analysis:** If no person whose substantial interests are affected by the proposed agency action issue files a protest within 21 days of the issuance of the Order, this docket should be closed upon the issuance of a Consummating Order.