

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for approval of 2014 nuclear  
decommissioning study, by Duke Energy  
Florida, Inc.

DOCKET NO. 140057-EI  
ORDER NO. PSC-14-0702-PAA-EI  
ISSUED: December 22, 2014

The following Commissioners participated in the disposition of this matter:

ART GRAHAM, Chairman  
LISA POLAK EDGAR  
RONALD A. BRISÉ  
EDUARDO E. BALBIS  
JULIE I. BROWN

NOTICE OF PROPOSED AGENCY ACTION  
ORDER APPROVING ACCRUALS FOR NUCLEAR DECOMMISSIONING

BY THE COMMISSION:

NOTICE is hereby given by the Florida Public Service Commission that the action discussed herein is preliminary in nature and will become final unless a person whose interests are substantially affected files a petition for a formal proceeding, pursuant to Rule 25-22.029, Florida Administrative Code.

Background

Duke Energy Florida, Inc. (DEF) filed its updated decommissioning cost study for its Crystal River Unit No. 3 (CR3) nuclear power plant on March 21, 2014. Rule 25-6.04365, F.A.C., requires nuclear decommissioning studies to be filed every five years. The purpose of this study is to recognize developments and changes affecting decommissioning cost estimates, and to consider such factors as additional information, improvements in technology, and regulatory changes that have transpired since the last decommissioning study. As a result of DEF's decision to retire CR3 - the first Florida nuclear plant to be decommissioned - the current study before us reflects significant changes from the 2010 study approved by Order No. PSC-12-0225-PAA-EI.<sup>1</sup>

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<sup>1</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida Inc.

*Nuclear Decommissioning*

Decommissioning involves the process of dismantling and removing plant buildings, materials, and equipment that are no longer used and useful but remain following retirement of the nuclear generating unit. While the definition does not include the removal and disposal of spent fuel, certain on-site storage costs 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.

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.

The funding program provides for financial assurance through monthly contributions to its nuclear decommissioning trust funds. As discussed later, the Company's monthly contribution (accrual) is currently zero. DEF's funds are held with State Street Bank and Trust Company as trustee, while both State Street Global Advisors and NISA Investment advisors manage the investments. DEF contends its external sinking fund complies with the NRC's final rule, the Internal Revenue Service's (IRS) requirements, and reasonable financial assurance is provided that funds will be available for decommissioning.<sup>2</sup>

We approved the external sinking funding method by Order No. 21928.<sup>3</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.

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<sup>2</sup> Responses to Commission staff's First Data Request Nos. 18, 19, 20, and 21.

<sup>3</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 was acquired by Carolina Power & Light Company and became Progress Energy Florida, Inc., effective January 1, 2003. On April 29, 2013, Progress Energy Florida, Inc. officially changed its name to Duke Energy Florida, Inc. (d/b/a Duke Energy Florida) following its merger with Duke Energy.

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>4</sup> we 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.

Since 1981, the NRC and this Commission have recognized the desirability of performing site-specific cost studies, because such studies account for factors unique to the individual nuclear unit.<sup>5</sup> A major change in the 1994 site-specific decommissioning cost study for Florida Power & Light Company (FPL) was the treatment of spent fuel generated during the operation of the nuclear units.<sup>6</sup> While the disposal of spent nuclear fuel (SNF) 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 SNF or the 2010 date for a permanent high level waste repository, we 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, we found that these costs should continue to be reviewed to determine the prudence of their inclusion in the annual decommissioning accruals. We note that DEF's 2014 decommissioning study includes a provision for on-site SNF management and is discussed subsequently in this order.

#### *Recent Decommissioning Orders*

On January 20, 2012, DEF filed with us a settlement agreement that addressed matters in Docket Nos. 100437-EI and 120009-EI.<sup>7</sup> As part of the Settlement Agreement approved by

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<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.

<sup>5</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.

<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; and Docket No. 941352-EI, In Re: Petition for Approval of Increase In Accrual for Nuclear Decommissioning Costs by Florida Power Corporation.

<sup>7</sup> Docket No. 100437-EI - Examination of the outage and replacement fuel/power costs associated with the CR3 steam generator replacement project, by Progress Energy Florida, Inc., and Docket No. 120009-EI - Nuclear cost recovery clause.

Order No. PSC-12-0104-FOF-EI,<sup>8</sup> DEF was required to place its CR3 nuclear unit in extended cold shutdown effective January 1, 2011, at which time depreciation and other accruals would be suspended or reversed until the unit is returned to commercial operation or retired.<sup>9</sup> In addition, DEF was required to file a depreciation study, fossil dismantlement study, and nuclear decommissioning study on or before July 31, 2017. We note DEF submitted its current decommissioning study (2014 study) on March 21, 2014.

By Order No. PSC-12-0225-PAA-EI,<sup>10</sup> issued April 30, 2012, which addressed DEF's 2010 decommissioning study, we found that DEF's annual decommissioning accrual did not require revision at that time. DEF's site-specific decommissioning cost study indicated that decommissioning base cost estimates have increased since 2005, but assumptions relating to escalation rates and inflation forecasts indicated that DEF's current-approved zero annual decommissioning accrual did not warrant revision. We note that the assumed retirement date for CR3 in DEF's 2010 study was 2036.

The current decommissioning study before us reflects significant changes from the prior study approved by Order No. PSC-12-0225-PAA-EI.<sup>11</sup> While CR3 was not operational at the time of 2010 study approval, the plant was assumed to be brought back into service and operate until 2036. However, on February 5, 2013, DEF announced its decision to retire CR3. DEF formally made this announcement to the NRC on February 20, 2013 by filing a Certification of Permanent Cessation of Power Operations and Defueling as required by 10 CFR §50.82(a)(1)(i). As such, the current decommissioning study reflects the earlier retirement year of 2013. Additionally, the Company has selected the SAFSTOR method of managing nuclear waste during decommissioning, departing from the DECON method that had been assumed in its prior studies.

On August 1, 2013, DEF filed with us a revised (revision to the 2012)<sup>12</sup> settlement agreement. Pursuant to the 2013 Revised and Restated Stipulation and Settlement Agreement (RRSSA) approved by Order No. PSC-13-0598-FOF-EI,<sup>13</sup> DEF removed CR3 from its rate base, and the associated revenue requirements were excluded from rates established through the RRSSA.

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<sup>8</sup> See Order No. PSC-12-0104-FOF-EI, issued March 8, 2012, in Docket No. 120022-EI, In re: Petition for limited proceeding to approve stipulation and settlement agreement by Progress Energy Florida, Inc.

<sup>9</sup> Ibid.

<sup>10</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida Inc.

<sup>11</sup> Ibid.

<sup>12</sup> See Order No. PSC-12-0104-FOF-EI, issued March 8, 2012, in Docket No. 120022-EI, In re: Petition for limited proceeding to approve stipulation and settlement agreement by Progress Energy Florida, Inc.

<sup>13</sup> See Order No. PSC-13-0598-FOF-EI, issued November 12, 2013, in Docket No. 130208-EI, In re: Petition of Duke Energy Florida, Inc. for limited proceeding to approve Revised and Restated Stipulation and Settlement Agreement, including Certain Rate Adjustments.

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

DEF's RRSSA also addressed matters relating to end-of-life nuclear materials and supplies (EOL M&S) inventories and the last core of nuclear fuel (Last Core). Pursuant to paragraph 5a., the accounting of previous accruals associated with EOL M&S and Last Core were reversed (debit reserve and credit expense), and the total balance was placed in a regulatory asset, titled "CR3 Regulatory asset," for recovery at a future date. From the 2013 Settlement: "DEF placed CR3 in extended cold shutdown effective January 1, 2011, at which time depreciation and other accruals were suspended and/or reversed until the unit was retired."<sup>14</sup>

We inquired as to the disposition of unrecovered amounts associated with EOL M&S and Last Core as outlined in the RRSSA, to which the Company stated it is currently in the process of selling and/or salvaging its inventories consistent with the agreement and any remaining costs will be recovered through the CR3 regulatory asset. We have reviewed the accounting information requested of the Company on this matter and believes the proper reversing entries, as authorized by Order No. PSC-13-0598-FOF-EI,<sup>15</sup> have been made.<sup>16</sup>

As a result of DEF's RRSSA, we have not raised in the instant docket two issues historically addressed in decommissioning dockets relating to future EOL M&S and Last Core amortizations. We find that these items have been addressed by Order No. PSC-13-0598-FOF-EI, and the recovery amounts are to be included in the CR3 Regulatory Asset. We will have the future opportunity to audit the CR3 Regulatory Asset in conjunction with its value determination, (i.e. total cost of the asset).<sup>17</sup>

We have jurisdiction over these matters through several provisions of Chapter 366, Florida Statutes, including Sections 366.04, 366.05, 366.06.

Decision

I. DEF's Decommissioning Cost Study

As stated, DEF filed its updated CR3 decommissioning cost study on March 21, 2014. As a result of DEF's decision to retire CR3, the current decommissioning study before us reflects significant changes from the 2010 study approved by Order No. PSC-12-0225-PAA-EI.<sup>18</sup> We note this is the first decommissioning study of a retired nuclear generation facility we have reviewed.

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<sup>14</sup> See Order No. PSC-13-0598-FOF-EI, issued November 12, 2013, in Docket No. 130208-EI, In re: Petition of Duke Energy Florida, Inc. for limited proceeding to approve Revised and Restated Stipulation and Settlement Agreement, including Certain Rate Adjustments.

<sup>15</sup> Ibid.

<sup>16</sup> Responses to staff's First Data Request Nos. 51, 52, 54, and 55. Responses to staff's Second Request for Documents No. 1. DEF's Supplemental Responses to staff's Second Data Request No. 6.

<sup>17</sup> See Order No. PSC-13-0598-FOF-EI, issued November 12, 2013, in Docket No. 130208-EI, In re: Petition of Duke Energy Florida, Inc. for limited proceeding to approve Revised and Restated Stipulation and Settlement Agreement, including Certain Rate Adjustments.

<sup>18</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida Inc.

Operating License

The CR3 Nuclear Generation Facility commenced operation January 28, 1977 and was retired February 5, 2013. The Company's operating license was valid until December 3, 2016. On February 20, 2013, DEF formally announced cessation of CR3 operations to the NRC by filing a Certification of Permanent Cessation of Power Operations and Defueling as required by 10 CFR §50.82(a)(1)(i). As such, the current decommissioning study before us reflects the decision to retire CR3 in 2013.

Decommissioning Method

For the 2010 study, DEF selected the DECON decommissioning method as its likely approach for decommissioning CR3. However, in light of CR3's early retirement, the Company has now elected to place the plant in safe storage, utilizing the NRC-approved SAFSTOR decommissioning method. Under the SAFSTOR method of decommissioning, the facility is placed in a stable state allowing radioactivity levels to naturally decrease (decay) over time, followed by decontamination and plant demolition. Due to SAFSTOR being an NRC-approved decommissioning method, DEF does not have to obtain an NRC order for its selection. Under SAFSTOR, the plant must be fully decommissioned within a 60-year time frame as required by 10 CFR §50.82(a)(3), unless otherwise authorized by the NRC. DEF states that the SAFSTOR method of decommissioning was selected for CR3 based on a number of factors. Such factors include the total cost of decommissioning alternatives, the duration and amount of Nuclear Decommissioning Trust (NDT) earnings growth, minimization of occupational radiation exposure, availability of low-level waste disposal facilities, availability of a high-level waste repository, regulatory requirements and public concerns.

The assumed 60-year SAFSTOR period for the CR3 plant is from years 2014 to 2074, after which it is assumed the CR3 site will be cleared of all contaminated/activated plant components and structures. DEF is required to submit to the NRC a License Termination Plan (LTP) within two years of the expected license termination (approximately 2072). Once the decommissioning process is complete, the NRC will determine if site remediation has been performed in accordance with the LTP, and if envisioned by the LTP, released by the NRC for unrestricted use.<sup>19</sup> We note that DEF's current decommissioning study assumed site remediation to the level of unrestricted use. Once the NRC releases a nuclear plant site for unrestricted use, its involvement in the decommissioning process is concluded.

DEF's 2010 decommissioning cost study and estimate, approved by Order No. PSC-12-0225-PAA-EI,<sup>20</sup> estimated the DECON method of decommissioning for CR3. However, DEF's 2010 study also contained an evaluation of the SAFSTOR method of decommissioning and corresponding cost estimate. In light of DEF's election to currently utilize the SAFSTOR method of decommissioning, for relevancy we compared the 2010 SAFSTOR evaluation (costs

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<sup>19</sup> U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, "Radiological Criteria for License Termination," Federal Register, Volume 62, Number 139, July 21, 1997.

<sup>20</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida Inc.

in 2008 Dollars, escalated to 2013 values using CPI) to the 2014 SAFSTOR evaluation (costs in 2013 Dollars).

### Decommissioning Cost Estimates

As with its previous decommissioning cost studies, DEF commissioned TLG Services Inc. (TLG) to develop the decommissioning cost estimates for CR3. These estimates are based on a number of assumptions, including regulatory requirements, project contingencies, low-level radioactive waste disposal practices, high-level radioactive waste management options, and site restoration requirements. The cost estimates also include the dismantling of site-structures & non-essential facilities, and site restoration.

TLG uses the unit factor method<sup>21</sup> for estimating decommissioning activity costs. Unit factors capture 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. 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 current overall cost estimate to decommission CR3 utilizing the SAFSTOR method increased from the Company's previous estimate. By escalating costs from the 2010 study to 2013 dollar values using CPI, the estimate rose from \$1,043 million to \$1,180 million, or by approximately 13 percent. The majority of this increase can be attributed to corresponding increases in program management, utility site indirect (non-labor O&M), low-level radioactive waste disposal, and removal-related activities. Mitigating the overall cost increase were substantial reductions in property taxes and energy costs. Security costs also decreased due to a shorter estimated time period for spent fuel management over the 2010 study. Factors influencing cost differences in the aforementioned categories are detailed further in this Order.

### Program Management (Staffing)

Program management is the largest single element of the overall decommissioning cost estimate. The program management cost element primarily captures costs relating to the staffing and organization during the decommissioning process (labor costs). Program management costs increased by approximately 40 percent from DEF's prior study. The main cause of the increase

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<sup>21</sup> The unit factor method of estimating costs is based on activity 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, 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 costs 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 2013," Kingston, Massachusetts.

derives from essentially all operations and maintenance (O&M) costs between mid-2013 to mid-2015 being assigned to program management. This assignment was made as a result of the Company's decision to retire CR3 in February 2013, and was not reflected in the 2010 study. The updated O&M cost assignment resulted in an approximate \$70 million added to the current estimate.

Further contributing to the increase in program management costs are higher average salary levels of approximately 10 percent over DEF's prior study. We note that program management comparisons between the 2010 and 2014 studies are not "one-to-one," due to CR3's premature shut-down not being projected/reflected in DEF's 2010 study, which led to changes in period-dependent staffing levels.<sup>23</sup>

#### Low-Level Radioactive Waste Disposal

Low-level radioactive wastes are defined as Class A, B, C, or Greater than Class C (GTCC) based on level of radioactivity. The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the federal government responsibility for disposing of GTCC waste. However, to date, the federal government has not issued an acceptance schedule nor cost rates for disposing of GTCC waste. As such, DEF's estimate treats GTCC similarly to high-level (spent fuel) waste, packaged in the same containers at a cost equivalent to spent fuel.

Until recently, there were only two facilities available to DEF for disposal of low-level radioactive waste generated by CR3, one facility in Clive, Utah (Class A), and the other in Barnwell, South Carolina (Class B & C).

As of July 1, 2008, the facility in Barnwell, South Carolina was closed to generators outside the Atlantic Compact,<sup>24</sup> of which DEF is not a member. The Company currently has a "Life of Plant Agreement" with EnergySolutions for disposal (in Utah) of Class A waste generated at CR3.

On November 10, 2011 Waste Control Specialists (WCS) opened the Texas Low-Level Radioactive Waste Disposal Compact Facility in Andrews County Texas. This facility is licensed to dispose of Class A, B, and C low-level radioactive wastes. For purposes of DEF's 2014 decommissioning cost estimate, Class B and C wastes are assumed to be shipped for disposal to the WCS facility.

The total cost of low-level radioactive waste disposal increased 47 percent, or \$19.7 million from DEF's prior study. The increase is primarily due to disposal of onsite "legacy waste"<sup>25</sup> in 2014 and 2015, and retired Nuclear Steam Supply System (NSSS) components (steam generators, reactor closure head, and hot leg piping). Included in legacy waste were

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<sup>23</sup> Responses to staff's Third Data Request No. 1a.

<sup>24</sup> The Atlantic Compact is comprised of the states of Connecticut, New Jersey, and South Carolina.

<sup>25</sup> The term "legacy waste" refers to radioactive material such as refurbished pumps, valves, tools, instruments, and refueling equipment. The Crystal River Nuclear Plant used these radioactive materials for routine operations, maintenance and refueling outages. These materials were no longer needed following the Feb. 5, 2013 announcement to retire the plant.

“miscellaneous inventory located in the spent fuel storage pool”<sup>26</sup> that was assumed in the prior study to be disposed of prior to plant shutdown (2036), and was then considered a plant operating expense.

The Company states it will attempt to reduce the total volume of low-level radioactive waste that must be disposed of as such. This will be accomplished by analyzing waste either on site, or by shipping to a waste processor (assumed to be Studsvik<sup>27</sup> for the cost estimate) for conditioning and elimination of the waste that does not require more costly disposal as radioactive waste.

#### Removal-Related Activities

Costs associated with removal activities increased approximately 13 percent from DEF’s prior study. The Company states that accounting for the removal of NSSS components increased the cost estimate by \$5.4 million, primarily due to labor duration in segmenting the reactor for packaging and disposal.<sup>28</sup> The Company states that there are three additional removal-related activities included in the current estimate. These activities are remediation of a settling pond, removal of certain contaminated underground piping, and excavation of certain underground services. Also contributing to cost increases are higher craft labor rates and higher costs of heavy equipment (including operating costs).

#### Spent Fuel Management and Storage

The Nuclear Waste Policy Act of 1982 committed the DOE to accept SNF and high-level radioactive waste by January 31, 1998, under the Standard Disposal Contracts with waste generators. However, the DOE has announced delays in the program schedule several times and has yet to accept SNF from commercial nuclear power generators as outlined by the Nuclear Waste Policy Act.

With respect to a final SNF repository, the DOE submitted its license application to the NRC on June 3, 2008, seeking authorization to construct a storage facility located 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. The application review was discontinued in 2010 which triggered legal action in the United States Federal Court of Appeals. In August 2013, the US Court of Appeals for the District of Columbia Circuit issued a Writ of Mandamus ordering the NRC to comply with federal law and restart its review of DOE’s Yucca Mountain repository license application.<sup>29</sup>

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<sup>26</sup> Responses to Commission staff’s Third Data Request No. 1c.

<sup>27</sup> Studsvik offers a range of advanced technical services to the international nuclear power industry in such areas as waste treatment, consultancy services and fuel and materials technology.

<sup>28</sup> Responses to staff’s First Data Request No. 1.

<sup>29</sup> 725 F.3d 255 (D.C. Cir. 2013) IN RE: AIKEN COUNTY, ET AL., PETITIONERS, STATE OF NEVADA, INTERVENOR

The NRC requires that licensees establish a program to manage and provide funding for the caretaking of all spent fuel at the reactor site until title of the fuel is transferred to the DOE.<sup>30</sup> Accordingly, DEF has petitioned us in Docket No. 140113-EI, In re: Petition for approval to construct an independent spent fuel storage installation and an accounting order to defer amortization pending recovery from the Department of Energy, by Duke Energy Florida, Inc., for approval to construct an onsite independent spent fuel storage installation (ISFSI), which once fully in service, is assumed to house the SNF generated at CR3 until transferred to the DOE.

As first referenced in the background section of this order, due to the DOE's breach of contract concerning SNF transfers, DEF initiated litigation for recovery of damages and has received a favorable judgment.<sup>31</sup> We inquired as to how this award (for damages incurred) will currently effect DEF's customers.<sup>32</sup> DEF states:

On March 10, 2014, a U.S. Court Federal Claims judge awarded DEF \$21.1 million for 2006-2010 costs to design, engineer and develop the ISFSI at CR3. The DOE did not appeal the case; therefore, DEF expects to receive the award in the third quarter of 2014. After removing the portions attributable to co-owners and wholesale customers, the remaining \$17.7 million will serve to reduce the ISFSI portion of the CR3 Regulatory Asset, because these costs are included in the CR3 Regulatory Asset pursuant to the 2013 Settlement Agreement approved in Order No. PSC-13-0598-FOF-EI.

We note that the costs to construct the ISFSI are not included in the above referenced lawsuit, nor in DEF's current decommissioning study. DEF states that it plans further litigation against the DOE to recover costs associated with construction of the ISFSI,<sup>33</sup> and any awards, net of co-owners and wholesale portions, will be credited to the ISFSI portion of the CR3 regulatory asset. Further, DEF states it seeks to recover from the DOE certain costs associated with spent fuel management/handling that are part of decommissioning.<sup>34</sup>

Assumptions relating to DEF's spent fuel management plan in its current decommissioning study include: 1) a 2032 start date for transfer of SNF to a federal facility; 2) priority pickup for shutdown reactors; and 3) pickup based on the permanent shutdown date of the plant with the oldest fuel being first. Assuming a maximum rate of transfer of 3,000 metric tons of uranium (MTU)/year,<sup>35</sup> and accounting for the aforementioned assumptions, transfer of SNF from CR3 to the DOE would begin in 2032, and would be completed with all<sup>36</sup> fuel assemblies (1,243 total) removed from the site by the end of 2036.

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<sup>30</sup> U.S. Code of Federal Regulations, Title 10, Part 50 – Domestic Licensing of Production and Utilization Facilities, Subpart 54 (bb), “Conditions of Licenses”

<sup>31</sup> Carolina Power & Light CO. et al., v. United States, Case No. 11-869C, March 10, 2014.

<sup>32</sup> Responses to staff's First Data Request, No. 15(a).

<sup>33</sup> Responses to staff's First Data Request, No. 15(b).

<sup>34</sup> Responses to staff's First Data Request, Nos. 7 and 15(b).

<sup>35</sup> “Acceptance Priority Ranking & Annual Capacity Report,” DOE/RW-0567, July 2004

<sup>36</sup> Responses to staff's First Data Request No. 38(a).

Total costs for Spent Fuel Management increased 38 percent, or \$77.6 million from DEF's prior study. The increase is primarily due to the timing of SNF transfer to the DOE. DEF's 2010 study assumed SNF pick-up would begin in 2024, while the 2014 study assumes the later date of 2032. The 2010 study also assumed a significant portion of the SNF would be transferred to the DOE while CR3 was still in operation (non-decommissioning expense). However, for its 2014 study, DEF assumed that all spent fuel transferred to the DOE is a decommissioning expense.

### Property Taxes

There was a substantial decrease in assumed property tax payments of approximately 83 percent from DEF's prior study. We inquired as to how such a large difference in property tax payments was generated. In both DEF's 2010 and 2014 studies, the assumed SAFSTOR periods were both approximately 60 years. The Company responded that the valuation of CR3 in its 2014 study represents a "less-than-salvage" value, and this value was confirmed by its property taxing authority, Citrus County. DEF also states that the proposed ISFSI will be assessed property taxes at only 10 percent of its full value, which is a condition of its settlement with Citrus County.<sup>37</sup>

### Security

Costs associated with securing the CR3 plant (including ISFSI) site during the SAFSTOR and decommissioning periods decreased 12 percent from DEF's prior study. The decrease is primarily due to differences in the assumed duration of SNF being onsite after transfer initiation by the DOE (approximately 48 years in 2010 vs. approximately 5 years in 2014). Further, for the 2014 estimate, it was assumed that less-costly industrial security will replace armed security, as regulations permit, once all SNF is removed from the site. The Company states that "CR3's security organization must maintain its regulatory commitment to protect the public's health and safety throughout all decommissioning periods and during the ISFSI phase. This is accomplished by staying in full compliance with various parts of 10 CFR including part 73."<sup>38</sup> We note that 10 CFR Part 73 prescribes requirements for the establishment and maintenance of physical protection systems at nuclear plant and materials sites.

### Contingency Allowance

The practice of budgeting a cost contingency allowance is common in large-scale construction and demolition projects. Such project 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.

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<sup>37</sup> Responses to staff's First Data Request No.1, Responses to our Third Data Request No. 1e.

<sup>38</sup> Responses to staff's First Data Request Nos. 1 and 13.

The total value of contingency applied in DEF's 2014 decommissioning study represents approximately 13.5 percent of the base cost estimate. The 13.5 percent contingency is a reduction in percentage terms from DEF's currently approved contingency level of 17.2 percent.<sup>39</sup> We note the level of contingency, in percentage terms, for CR3 has either been near flat, or declining over the past 25 years. We compiled a historical representation of DEF's decommissioning contingency percentages approved by us and are presented in Table 1 below.

Table 1

Crystal River Unit 3 Cost Contingency Percentages		
Commission Order No.	Year	Contingency Percentage
21928	1989	25.0 Percent
PSC-95-1531-FOF-EI	1995	17.0 Percent
PSC-02-0055-PAA-EI	2000	17.2 Percent
PSC-05-0945-S-EI	2005	17.3 Percent
PSC-12-0225-PAA-EI	2010	17.2 Percent
<i>*Proposed for FPSC Approval*</i>	2014	13.5 Percent

We find that the contingency allowance, which is based on industry guidelines,<sup>40</sup> presented in DEF's 2014 decommissioning study of approximately 13.5 percent of the base cost estimate is reasonable.

#### Other Factors

Characterization<sup>41</sup> and site survey cost estimates have increased 39 percent since the 2010 study. A driver of the increased costs associated with these activities is the inclusion of new remedial action survey activities based on industry experience that were not included in the Company's 2010 study.

Energy costs decreased significantly from DEF's prior study, falling (68) percent. This is a direct result of the lower assumed cost of electricity in 2013 than in the 2010 study (estimate formulation year of 2008). The assumed cost of electricity between studies decreased from \$0.1255 per kWh in 2008, to \$0.0551 per kWh in 2013.

Total decommissioning costs (including contingency allowance) of \$1,180,128,000, presented in DEF's 2014 estimate are allocated into three cost categories: 1) License Termination; 2) Spent Fuel Management; and 3) Site Restoration. The largest cost category is License Termination. License Termination costs total approximately \$861,902,000, or 73.0 percent of the total cost estimate. The second largest category by cost amount is Spent Fuel Management. Spent Fuel Management costs represent approximately \$265,505,000, or 22.5

<sup>39</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida Inc.

<sup>40</sup> Responses to staff's First Data Request No. 48 and Responses to Staff's First Request for Documents No. 1.

<sup>41</sup> Decommissioning Characterization refers to the process of obtaining and analyzing information relating the types, quantities, and chemical & physical states of radionuclides that will effect the decommissioning process.

percent of the total estimate. The remainder of costs to decommission CR3 fall into the site restoration cost category. Site restoration costs are estimated to be approximately \$52,721,000, which comprise 4.5 percent of the total cost estimate.

### Conclusion

In conclusion, we find the total estimated cost to decommission the Crystal River Nuclear Power Plant in the amount of \$1,180,128,000 in 2013 dollars is reasonable. This total cost amount, inclusive of a 13.5 percent contingency allowance, is comprised of three categories of costs; license termination costs of \$861,902,000, spent fuel management costs of \$265,505,000, and site restoration costs of \$52,721,000.

## II. Appropriate Annual Accrual

The annual accrual amount is based upon information provided by DEF in its site-specific cost study and DEF's responses to Commission staff's data requests. Costs included in DEF's 2014 nuclear decommissioning study are valued in 2013 dollars. In DEF's study, the cost of decommissioning the nuclear unit is determined in current dollars, then escalated into future dollars. The determination of the annual accrual amount 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.

### Tax Deductibility of Contributions

To qualify for tax deductibility, the contributions made to a qualified decommissioning fund must be consistent with the purpose of IRC Section 468A, principles and provisions of Federal Tax Regulations under the Code section, and it must be based on reasonable assumptions.<sup>[42,43]</sup> The Company can generally satisfy its burden of proof by demonstrating that the amounts are calculated based on the assumptions used by us in our most recent order.<sup>44</sup> Our order must be based on reasonable assumptions concerning: (1) the after-tax rate of return to be earned by the amounts collected for decommissioning; (2) the total estimated cost of decommissioning the nuclear power plant; and (3) the frequency of contributions to the nuclear decommissioning fund for a tax year.<sup>45</sup> We find that the assumptions proposed by DEF are reasonable, and therefore shall be deemed appropriate for ruling amounts in the nuclear decommissioning study. Additionally, we have attached a summary listing of IRS Qualified Fund contribution requirements as Appendix A to this Order.

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<sup>42</sup> 26 USC §468A (2011).

<sup>43</sup> Treas. Reg. §1.468A.

<sup>44</sup> Treas. Reg. §1.468A-3(a)(4).

<sup>45</sup> Treas. Reg. §1.468A-3(a)(2).

Cost Escalation Rates

The next issue that must be addressed is the determination of the appropriate escalation rates used to convert the current decommissioning cost to the future decommissioning cost for the nuclear unit. The analysis performed by DEF departs from the prior practice of using separate escalation rates for each specific stage or activity as previously approved by this Commission, most recently in Order No. PSC-12-0225-PAA-EI.<sup>46</sup> DEF now uses a single escalation rate of 2.80 percent obtained from DEF's consultant, Towers Watson Investment Services (Towers Watson). The composite escalation rate used in the 2010 study was 2.80 percent, which is the same as the rate used in the current study.

Future Cost to Decommission

We reviewed the total cost estimate for decommissioning the CR3 nuclear unit in future dollars relative to the new decommissioning date beginning in 2014. Based on the current dollar base cost to decommission CR3 as provided by TLG's site-specific study, the contingency allowance discussed above, the cost of extended storage of SNF discussed above, and the escalation rate discussed above, the escalated future cost to decommission CR3 at its license termination utilizing the SAFSTOR method is \$3,189,345,899.

Funding Period

The funding period is the period over which revenues are collected from ratepayers for purposes of decommissioning CR3. 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. With the decision to retire the unit in 2013, the license has been modified to "transitioning to SAFSTOR." DEF will not have its license terminated by the NRC until its plant site remediation has been performed in accordance with the Company's LTP. DEF's study assumes the CR3 site is cleared of contaminated and activated material to levels permitted by the NRC for unrestricted use in 2074.

Years of Fund Expenditures

Previously, the accumulated decommissioning funds were expected to be expended over the period 2036-2073. However, with the decision to retire the unit in 2013, the decommissioning funds will be expended from 2014-2074.

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 the instant case, DEF's current annual accrual requirements are zero. In Order No. 21928, approving the annual accrual following the 1989 study, we approved the use

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<sup>46</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida, Inc.

of an assumed fund earnings rate equal to the Consumer Price Index (CPI).<sup>47</sup> In Order No. PSC-95-1531-FOF-EI, approving the annual accrual following the 1994 study, we approved the use of an assumed fund earnings rate of CPI plus 1.1 percent.<sup>48</sup>

In Order No. PSC-02-0055-PAA-EI, for purposes of the 2000 study, we departed from the past practice of approving annual accrual amounts based on the same fund earnings rate for all nuclear units in the state and instead approved an annual accrual amount for DEF based on a fund earnings rate of 6.0 percent.<sup>49</sup> In Order No. PSC-05-0945-S-EI, approving the annual accrual following the 2005 study, we approved an assumed fund earnings rate of 5.50 percent.<sup>50</sup>

For purposes of the 2010 study, DEF used an assumed fund earnings rate of 5.47 percent. This rate was the weighted average of the expected long-term, after-tax, and net of fees, return on the NDT fund and a 25-year average for long-term CPI. This rate was developed by LCG Associates. For purposes of the current study, DEF used a fund earnings rate of 5.10 percent net of taxes and all administrative costs provided by Towers Watson. This rate was derived using Towers Watson Capital Market Assumptions and represents a forecasted real rate of return of 2.30 percent above the long-term CPI of 2.80 percent for next 20 years.

Recognizing the relatively conservative investment strategy for NDT funds and that this issue will be addressed every five years, we find that it is reasonable to continue to use an assumed fund earnings rate greater than the long-term forecast for CPI. The table below shows the historic performance of DEF's NDT fund (calculated net of administrative costs on an after-tax, time weighted rate of return basis as of June 30, 2013) relative to CPI, Government bonds, and stocks as measured by the S&P 500 average for the past year, 3 years, 5 years, and since the inception of the fund.

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<sup>47</sup> See Order No. 21928, issued September 21, 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.

<sup>48</sup> See Order No. PSC-95-1531-FOF-EI, issued December 12, 1995, in Docket No. 941352-EI, In re: Petition for Approval of Increase In Accrual for Nuclear Decommissioning Costs by Florida Power Corporation.

<sup>49</sup> See Order No. PSC-02-0055-PAA-EI, issued January 7, 2002, in Docket No. 001835-EI, In re: Petition for approval of revised annual accrual for nuclear decommissioning costs by Florida Power Corporation.

<sup>50</sup> See Order No. PSC-05-0945-S-EI, issued September 28, 2005, in Docket No. 050078-EI, In re: Petition for rate increase by Progress Energy Florida, Inc.

Table 2

NDT Fund Performance					
<u>DEF</u>	<u>Fund Return</u>	<u>CPI</u>	<u>Spread</u>	<u>Barclays's</u>	<u>S&amp;P 500</u>
	(a)	(b)	(a) – (b)	<u>Govt. Bonds</u>	
1 Year	13.49%	1.96%	11.53%	-0.62%	20.60%
3 Years	11.56%	2.19%	9.37%	3.88%	18.45%
5 Years	4.83%	1.13%	3.70%	5.29%	7.01%
Inception	4.08%	2.39%	1.69%	5.55%	4.24%

As demonstrated by the range of earned returns shown in table above, total fund returns experience some volatility from year-to-year. However, since the inception of the NDT fund, the overall return has remained above the CPI. DEF has used a long-term CPI of 2.80 percent as projected by Towers Watson for the next 20 years.

The fundamental purpose of our review of the decommissioning study is to make sure there is adequate funding on hand at the time a nuclear unit is 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. Accordingly, we find that an assumed fund earnings rate of 5.10 percent for DEF is appropriate. This rate represents a spread of 2.30 percentage points over the forecasted CPI of 2.80 percent.

Minimum Fund Earnings Rate

Separate from the issue of the assumed fund earnings rate is the issue of whether we shall impose a minimum fund earnings rate. In Order No. 21928,<sup>51</sup> we determined that a minimum fund earnings rate equivalent to the level of inflation over each five-year review period is appropriate. We reaffirmed this approach in previous DEF Nuclear Decommissioning Studies and most recently in Order No. PSC-12-0225-PAA-EI.<sup>52</sup> We find this approach is reasonable and it shall remain in effect.

<sup>51</sup> See Order No. 21928, issued September 21, 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.

<sup>52</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida, Inc.

*Investment Strategy for Near-Term NDT Expenditures*

In the previous studies, DEF applied a constant earnings rate to all years. In the current study, DEF calculated the expected decommissioning costs using a rolling five-year period for near-term expenditures and modeled the earnings to more closely resemble DEF's investment activity in the fund. Each year DEF will calculate the expected costs for the current year and future four years. Then DEF will ensure the funds needed to cover those near-term future costs are invested in low risk securities. The remaining balance of the fund is assumed to earn the 5.10 percent rate provided by Towers Watson.

*Conclusion*

The current annual expense accrual requirement for DEF's CR3 nuclear unit decommissioning costs presented in the study supports a zero accrual and funding requirement as of December 31, 2013. The current level of funding in the NDT, given the projected earnings, is sufficient to meet the current funding requirements to decommission CR3. Based on the anticipated fund earnings rate, funding period, the years of fund expenditures, and the projected future costs to decommission as discussed above, the NDT fund at zero accrual is sufficient to meet the decommissioning funding requirements. Consequently, no additional funds are required from customers at this time.

Based on the current dollar cost to decommission CR3 as determined in TLG's site-specific study, the unit-specific contingency allowance discussed in Issue 1, the escalation rate approved above, the cost of extended storage for spent fuel, and the assumed fund earnings rate of 5.10 percent, we find that DEF's request to continue the suspension of the accrual is reasonable. For matters discussed above, Appendix A contains a summary listing (for IRS purposes) of this Order.

Consistent with our prior practice and Rule 25-6.04365, F.A.C., the assumptions presented in DEF'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, we find that a continuation of the suspension of the accrual for nuclear decommissioning as approved by us in PSC-12-0225-PAA-EI.<sup>53</sup> Accordingly, the appropriate jurisdictional annual accrual amount for DEF necessary to recover future decommissioning costs for CR3 is zero. The assumptions and methodology proposed by DEF to determine the appropriate annual accrual are reasonable, and therefore shall be deemed appropriate for tax purposes in the nuclear decommissioning study.

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<sup>53</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida, Inc.

III. Effective Date

By Order No. PSC-12-0225-PAA-EI,<sup>54</sup> issued April 30, 2012, we found that DEF's currently-approved zero annual decommissioning accrual did not warrant revision at that time. While a review of DEF's site-specific decommissioning cost study in this docket indicates that decommissioning base cost estimates have increased since 2010, assumptions relating to escalation rates and funds earnings, as discussed above, indicate that DEF's currently approved zero annual decommissioning accrual does not require current revision. Therefore, we need not establish an effective date at this time.

IV. Next Nuclear Decommissioning Study

Rule 25-6.04365, F.A.C., requires a utility that owns a nuclear generating plant under our jurisdiction to file a site-specific nuclear decommissioning cost study update at least once every five years from the submission date of the previous study unless otherwise required by us. Given that DEF's current study was filed on March 21, 2014, its next study shall be filed no later than Thursday, March 21, 2019.

Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that Duke Energy Florida, Inc.'s total estimated cost to decommission the Crystal River Nuclear Power Plant in the amount of \$1,180,128,000 in 2013 dollars is reasonable. This total cost amount, inclusive of a 13.5 percent contingency allowance, is comprised of three categories of costs; license termination costs of \$861,902,000, spent fuel management costs of \$265,505,000, and site restoration costs of \$52,721,000. It is further

ORDERED that there shall be a continuation of the suspension of the accrual for nuclear decommissioning as approved by this Commission in Order Nos. PSC-02-0655-AS-EI,<sup>55</sup> PSC-05-0945-S-EI, and PSC-12-0225-PAA-EI. Therefore, the appropriate jurisdictional annual accrual amount necessary to recover future decommissioning costs for the CR3 nuclear unit is zero. This assumptions included in DEF's 2014 decommissioning study to determine the annual accrual are reasonable. It is further

ORDERED that there is no change to the current approved zero decommissioning accrual. It is further

ORDERED that Duke Energy Florida, Inc.'s next decommissioning cost study for CR3 should be filed no later than March 21, 2019. It is further

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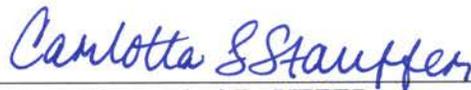
<sup>54</sup> See Order No. PSC-12-0225-PAA-EI, issued April 30, 2012, in Docket No. 100461-EI, In re: Petition for approval of nuclear decommissioning cost study, by Progress Energy Florida Inc.

<sup>55</sup> See Order No. PSC-02-0655-AS-EI, issued May 14, 2002, in Docket No. 000824-EI, In re: Review of Florida Power Corporation's earnings, including effects of proposed acquisition of Florida Power Corporation by Carolina Power & Light.

ORDERED that the provisions of this Order, issued as proposed agency action, shall become final and effective upon the issuance of a Consummating Order unless an appropriate petition, in the form provided by Rule 28-106.201, Florida Administrative Code, is received by the Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on the date set forth in the "Notice of Further Proceedings" attached hereto. It is further

ORDERED that in the event this Order becomes final, this docket shall be closed.

By ORDER of the Florida Public Service Commission this 22nd day of December, 2014.



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CARLOTTA S. STAUFFER  
Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399  
(850) 413-6770  
[www.floridapsc.com](http://www.floridapsc.com)

Copies furnished: A copy of this document is provided to the parties of record at the time of issuance and, if applicable, interested persons.

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NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing that is available under Section 120.57, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing will be granted or result in the relief sought.

Mediation may be available on a case-by-case basis. If mediation is conducted, it does not affect a substantially interested person's right to a hearing.

The action proposed herein is preliminary in nature. Any person whose substantial interests are affected by the action proposed by this order may file a petition for a formal proceeding, in the form provided by Rule 28-106.201, Florida Administrative Code. This petition must be received by the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on January 12, 2015.

In the absence of such a petition, this order shall become final and effective upon the issuance of a Consummating Order.

Any objection or protest filed in this/these docket(s) before the issuance date of this order is considered abandoned unless it satisfies the foregoing conditions and is renewed within the specified protest period.

Internal Revenue Service Qualified Fund Requirements

1. The proposed method of decommissioning the CR3 Nuclear Power Plant is Safe Storage / Deferred Decontamination (SAFSTOR). The SAFSTOR method is a change from DEF's 2010 filing, which assumed Prompt Removal/Dismantling (DECON).
2. The estimated cost to decommission CR3 is \$1,180,128,000 in 2013 dollars, of which \$1,083,133,148 is DEF's share. This cost is inclusive of a 13.5 percent contingency allowance.
3. DEF's share of the estimated cost to decommission CR3 is \$3,189,345,899 in future dollars, which is based on a 13.5 percent contingency, assumed escalation rate of 2.80%, and physical plant decommissioning beginning in year 2014.
4. The expenditures of funds accumulated in the Nuclear Decommissioning Trust will occur in the years 2014 through 2074.
5. The methodology of converting the estimated cost of decommissioning in current dollars to estimated cost of decommissioning in future dollars is accomplished by multiplying each year's expenditures by the composite escalation factor of 2.80 percent, compounded by the number of years between 2014 and the year of expenditure.
6. The assumed after-tax, net of administrative expenses, rate of return of 5.10 percent to be earned on the normal growth portion of the fund, and 2.80 percent on the low risk portion of the fund.
7. The CR3 Nuclear Power Plant is no longer included in rate base for ratemaking purposes as of January 1, 2013. Recovery of unrecovered CR3 expenses, excluding those recovered from the nuclear decommissioning trust, will begin no later than 2017.<sup>56</sup>
8. The amount of decommissioning costs for the CR3 Nuclear Power Plant to be included in DEF's cost of service for ratemaking purposes equals \$0.
9. A schedule containing the estimated future (escalated) costs of decommissioning in each year in which decommissioning funds will be expended is attached below.

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<sup>56</sup> See Order No. PSC-13-0598-FOF-EI, issued November 12, 2013, in Docket No. 130208-EI, In re: Petition of Duke Energy Florida, Inc. for limited proceeding to approve Revised and Restated Stipulation and Settlement Agreement, including Certain Rate Adjustments.

The Crystal River 3 Nuclear Power Plant  
Estimated Future (escalated) Cost of Decommissioning  
Duke Energy Florida Portion

Year	License Termination	Spent Fuel	Site Restoration	Total
	\$	\$	\$	\$
2014	88,676,533	24,159,378	-	112,835,911
2015	46,493,244	25,237,389	-	71,730,633
2016	6,811,057	35,676,538	-	42,487,596
2017	6,982,292	36,575,032	-	43,557,323
2018	7,177,796	37,599,133	-	44,776,928
2019	6,797,095	25,644,815	-	32,441,909
2020	6,054,273	5,134,496	-	11,188,769
2021	6,206,622	5,263,381	-	11,470,003
2022	6,380,408	5,410,755	-	11,791,163
2023	6,559,059	5,562,256	-	12,121,316
2024	6,761,367	5,734,166	-	12,495,533
2025	6,931,509	5,878,104	-	12,809,612
2026	7,125,591	6,042,690	-	13,168,282
2027	7,325,108	6,211,886	-	13,536,993
2028	7,551,043	6,403,873	-	13,954,916
2029	7,741,057	6,564,622	-	14,305,678
2030	7,957,806	6,748,431	-	14,706,237
2031	8,180,625	6,937,387	-	15,118,012
2032	8,432,948	7,151,797	-	15,584,745
2033	8,645,153	7,331,320	-	15,976,473
2034	8,887,218	7,536,597	-	16,423,814
2035	9,136,060	12,398,216	-	21,534,276
2036	9,417,852	11,572,682	-	20,990,534
2037	9,597,860	-	-	9,597,860
2038	9,866,600	-	-	9,866,600
2039	10,142,865	-	-	10,142,865
2040	10,453,948	-	-	10,453,948
2041	10,718,817	-	-	10,718,817
2042	11,018,944	-	-	11,018,944
2043	11,327,475	-	-	11,327,475
2044	11,674,890	-	-	11,674,890
2045	11,970,694	-	-	11,970,694

The Crystal River 3 Nuclear Power Plant  
Estimated Future (escalated) Cost of Decommissioning  
Duke Energy Florida Portion

Year	License Termination \$	Spent Fuel \$	Site Restoration \$	Total \$
2046	12,305,873	-	-	12,305,873
2047	12,650,438	-	-	12,650,438
2048	13,038,428	-	-	13,038,428
2049	13,368,780	-	-	13,368,780
2050	13,743,106	-	-	13,743,106
2051	14,127,913	-	-	14,127,913
2052	14,561,218	-	-	14,561,218
2053	14,930,153	-	-	14,930,153
2054	15,348,197	-	-	15,348,197
2055	15,777,946	-	-	15,777,946
2056	16,261,858	-	-	16,261,858
2057	16,673,881	-	-	16,673,881
2058	17,140,750	-	-	17,140,750
2059	17,620,691	-	-	17,620,691
2060	18,161,120	-	-	18,161,120
2061	18,621,264	-	-	18,621,264
2062	19,142,660	-	-	19,142,660
2063	19,678,654	-	-	19,678,654
2064	20,282,201	-	-	20,282,201
2065	20,796,087	-	-	20,796,087
2066	21,378,377	-	-	21,378,377
2067	116,041,673	-	1,663,563	117,705,236
2068	271,091,157	-	5,528,623	276,619,780
2069	508,754,841	-	7,019,180	515,774,022
2070	397,582,039	-	4,416,249	401,998,288
2071	343,980,856	-	3,096,424	347,077,280
2072	236,782,303	-	1,240,482	238,022,785
2073	23,372,538	-	131,178,791	154,551,329
2074	460,059	-	99,748,776	100,208,835
<b>Totals*</b>	<b>2,632,678,867</b>	<b>302,774,942</b>	<b>253,892,089</b>	<b>3,189,345,899</b>

\*Totals may not add due to rounding.