

State of Florida



Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

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

DATE: June 5, 2014
TO: Carlotta Stauffer, Commission Clerk, Office of Commission Clerk
FROM: Devlin Higgins, Public Utility Analyst III, Division of Economics
RE: 140057-EI - Petition of Duke Energy Florida, Inc. for approval of Nuclear Decommissioning Cost Study.

Would you be so kind as to add the attached data and document requests responses, titled DEF's response to Florida Public Service Commission Staff's Data Request (Nos. 1-59) and Request for Documents (Nos. 1-12), in the above docket file. Thank you very much.

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**RE: DOCKET NO. 140057-EI –
PETITION FOR APPROVAL OF 2014 NUCLEAR DECOMMISSIONING STUDY,
BY DUKE ENERGY FLORIDA, INC.**

**DEF'S RESPONSES TO DATA REQUEST 1
DUE: JUNE 2, 2014**

Data Requests

General

1. For the purposes of the following request, please refer Duke's 2014 Decommissioning Study, Section 1, Page 2 of 8. It is stated in the third paragraph that "TLG did not prepare a comparison report for the current study versus the 2010 study." Florida Public Service Commission Rule 25-6.04365 (3)(q) requires "[a] summary and explanation of material differences between the current study and the utility's last filed study including, at a minimum, changes in methodology and assumptions. Please provide a comparative analysis of DEF's 2010 Decommissioning Study to its 2014 Study, similar to the analysis contained in section 8 of the 2010 Study.

RESPONSE:

A comparative analysis of DEF's 2014 Decommissioning Study and DEF's 2010 Study (TLG's 2008 Study) is provided with this response in Bates range 14NDS-FPSCDR1-1-000001 through 14NDS-FPSCDR1-1-000011.

DEF's 2014 Study presents the decommissioning cost for a premature shutdown and for a nuclear unit that had not operated for several years. The 2014 Study is, therefore, based upon actual costs and the latest (at the time the estimate was prepared) planning and engineering budgets for near-term activities, information not available in 2008 (when the 2010 Study was prepared). In some instances, the format of the information in the 2014 Study did not facilitate comparison of costs for the planning periods (Period 1 and associated sub-periods) with the 2010 Study.

2. Please describe DEF's plans for use of the Crystal River 3 (CR3) site after decommissioning.

RESPONSE:

DEF has no plans at this time for use of the CR3 site after decommissioning.

3. The planned SAFSTOR period for CR3 appears to be exactly 60 years, the amount of time allowable under this Nuclear Regulatory Commission (NRC) approved decommissioning program. Is there any penalty levied by the NRC for not completing the plant decommissioning within the 60 year timeframe?

RESPONSE:

The NRC regulations do not set forth any specific penalty for not completing the plant decommissioning within the 60 year timeframe. In the event that more than 60 years may be required to complete plant decommissioning, 10 CFR 50.82(a)(3) states that:

Completion of decommissioning beyond 60 years will be approved by the Commission only when necessary to protect public health and safety. Factors that will be considered by the Commission in evaluating an alternative that provides for completion of decommissioning beyond 60 years of permanent cessation of operations include unavailability of waste disposal capacity and other site specific factors affecting the licensee's capability to carry out decommissioning, including presence of other nuclear facilities at the site.

4. What financial firm is the third-party trustee of Duke's CR3 Nuclear Decommissioning Trust Fund (NDT)?

RESPONSE:

State Street Bank and Trust Company.

5. Please detail the main cost drivers/activities that comprise the License Termination, Spent Fuel Management, and Site Restoration cost categories.

RESPONSE:

The main cost drivers/activities that comprise the License Termination, Spent Fuel Management and Site Restoration categories are detailed in the TLG Study Summary; a) Page xv through xvi of xx, b) Tables 3.2, 3.3, 3.4 and 6.2, and c) Appendix C which provides the exact costs in each of the three categories by period. Also please see DEF's response to Question 1.

6. Please explain the specific modifications made in Duke's 2014 study to the site-specific considerations and assumptions used in Duke's 2010 analysis. What new information or experience was obtained from ongoing decommissioning programs provided alternatives or improved processes?

RESPONSE:

The 2014 study incorporated actual costs and the latest (at the time the estimate was prepared) planning and engineering budgets for near-term activities.

In addition, the assumptions and cost estimating bases for the 2008 Study (basis for the DEF 2010 Study) were reviewed in the process of updating the estimate to 2013 dollars and for the premature shutdown. The latest economic information was relied upon (e.g., cost of labor, materials, taxes, fees, site operating costs, etc.) to update the estimates for the various decommissioning activities over the five year interval. The technical assumptions were also reviewed (e.g., spent fuel management, low-level radioactive waste disposition alternatives) and modified, as appropriate, to reflect changes in approach or available options over the five year interval between estimates.

Please see the response to Question No. 1 for additional detail.

7. Do the costs included in Spent Fuel Management relate entirely to estimated costs for on-site spent fuel storage needed due to the failure of the Department of Energy (DOE) to provide a final repository? If negative, identify the portion of the Spent Fuel Management costs relating solely to DOE's breach of contract. Please identify any other costs in this category that would not be incurred except for DOE's contract breach.

RESPONSE:

No, the Spent Fuel Management costs will not be entirely incurred due to failure of the DOE to provide the final repository. The "Spent Fuel Management" subcategory contains costs associated with the containerization and transfer of spent fuel located in the spent fuel pool at the cessation of plant operations to the ISFSI and the management of the ISFSI until such time that the transfer of all fuel from this facility to an off-site location (e.g., geologic repository) is complete. These costs would not have been incurred except for DOE's contract breach. However, certain plant upgrades and modifications related to the ISFSI construction, which have been excluded from recovery in prior litigation over the DOE's delay in taking possession of CR3 spent nuclear fuel, are included in this subcategory; such costs are considered to be costs that DEF would have incurred even if DOE had performed and thus are not caused by DOE's delay. Please refer to DEF's response to Q46 for these costs.

8. For the purposes of the following request, please refer to Duke's 2014 Decommissioning Study Petition, page 5, paragraph 13. Here it is stated that "[t]he SAFSTOR decommissioning method is a decommissioning method that is permitted by the NRC and currently employed by other utilities in the industry at other retired nuclear power plants."
 - a. Please list these "other utilities" and how their SAFSTOR experience informed Duke as to its 2014 Decommissioning Cost Estimate.

RESPONSE:

Dominion Energy's Kewaunee Power Station ceased operation in early 2013 and selected the SAFSTOR method as the basis for decommissioning planning. Dominion filed its Post-Shutdown Decommissioning Activities Report in February 2013. The owner has been/is requesting the necessary approvals from the NRC for the regulatory changes required to place the previously operating unit into long-term, safe-storage.

The owners of Vermont Yankee (VY) and San Onofre Nuclear Generating Station (SONGS) also announced their intentions to permanently cease operations and decommission. Entergy VY has also selected the SAFSTOR method as the basis for their decommissioning planning.

In addition to the current nuclear units entering decommissioning, there are several units that have been in safe-storage for a number of years including Dresden 1, Millstone 1, and Indian Point 1. Nuclear units such as Rancho Seco, Humbolt Bay, SONGS-1, and Zion were initially placed in safe-storage before being decommissioned. As such, there is considerable, cumulative experience in placing and maintaining a nuclear unit in safe-storage.

9. For the purposes of the following request, please refer to Duke's 2014 Decommissioning Study Petition, page 7, paragraph 16. Here it is stated that "the SAFSTOR decommissioning method is the most cost effective, safe, and therefore optimal decommissioning method for the Company and its customers." Please elaborate on why the Company believes the SAFSTOR option is the most "safe" method for the Company and its customers.

RESPONSE:

SAFSTOR defers the physical decontamination and dismantling (decommissioning) of the nuclear unit. The time delay can result in reduced work-area radiation levels due to the natural decay of the radionuclides produced from the operation of the plant and, in some instances, a reduction in the waste volume from dismantling due to the decrease in radionuclide concentrations. The decrease in the work-area radiation levels and in radionuclide content of plant components may provide some additional factor of safety to the workforce.

10. For the purposes of the following request, please refer to Duke's 2014 Decommissioning Study Summary, Section 1, Page 1 of 8. Please describe what an "Alternate Spent Fuel Cooling System" is, and what location it is contemplated for use (i.e. spent fuel pool, dry storage etc.).

RESPONSE:

With the decision to retire CR3, a need exists for providing alternate ways to remove spent fuel decay heat from the spent fuel pool. The current method of active cooling of the spent fuel pool requires the Spent Fuel (SF), Service Water (SW), and Raw Water (RW) systems, as well as various support systems. Since the original design of these systems was for higher plant heat loads and different plant operating conditions, it is possible to modify and/or replace all or portions of these systems such that more efficient, cost-effective equipment can be used to accomplish the spent fuel pool cooling function. The decision was made to install two new 50% capacity skid-mounted air-cooled chillers to remove the heat load from the spent fuel pool and reject it to the atmosphere. These skid mounted chillers, with associated pumps, piping, electrical service, and control systems, will be installed on the top of the control complex roof. This new system will interface with the spent fuel heat exchangers via a new connection to the existing SW piping. This modification removes the reliance on the SW and RW system for decay heat removal, allowing the SW and RW systems to be abandoned or otherwise reduced in service and maintenance requirements and installs highly reliable low maintenance cooling units to cool the spent fuel pool.

11. For the purposes of the following request, please refer to Duke's 2014 Decommissioning Study Summary, Section 1, Page 5 of 8. Item #4 reads "expenditures of funds accumulated in the Nuclear Decommissioning Trust in the years 2014 — 2074. Please describe in detail what activities these expenditures are intended to address for the years 2014 through 2018.

RESPONSE:

During the years 2014 through 2018, the plant will be prepared for long-term safe-storage. Activities include the disposal of the retired NSSS components (retired steam generators, reactor closure head and hot leg piping), disposal of legacy radwaste (currently stored in the spent fuel pool), plant system reconfiguration, draining, de-energizing and/or abandonment, and the transfer of the majority of the spent fuel from the spent fuel pool to dry storage (all spent fuel is expected to be in dry storage by January 8, 2019).

See documents attached bearing Bates Numbers 14NDS-FPSCDR1-11-000001 through 14NDS-FPSCDR1-11-000010.

12. Does DEF's 2014 Decommissioning Cost Study include any credit values for scrap metals? If so, please detail what types and quantities of metals, along with their associated scrap values.

RESPONSE:

No. The 2014 decommissioning cost study assumes that the disposition of scrap metals is revenue neutral (i.e., that the cost for the survey of the metals for unrestricted use and any size reduction or on-site processing of large metallic components to accommodate handling/receipt by scrap dealers will offset any value received).

13. Staff understands that the nature of this topic is highly sensitive. To the best of the Company's ability at a high-level, can DEF please describe the security measures that will be in place during CR3's dormancy and decommissioning periods, including spent fuel/Independent Spent Fuel Storage Installation (ISFSI) security.

RESPONSE:

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 sections of 10CFR including Part 73. Some examples of measures that must stay in effect include but are not limited to: (1) a defensive strategy made of up layers of defense commonly called "defense-in-depth", (2) access controls, (3) background screening, (4) continuous observations programs, (5) cyber security programs, (6) Local Law Enforcement commitments, (7) Safeguards Information Programs, (8) training programs, and (9) contingency plans. Contained within each programs are numerous elements and measures that must be established and maintained in order to maintain the Company's commitments and compliance to the rules outlined in 10 CFR. Examples of these elements are physical barriers (delay feature), assessment, detection, response, access credentials, illuminations, communications, documentation, records protection and retention, training to provide the appropriate skills, knowledge and ability, procedures and lesson plans. The Security organization acknowledges and considers both the current state and future state of the decommissioning process as well as the changing regulatory governance associated with these decommissioning periods. All decommissioning plans and projections related to security have and will continue to consider these variables prior to implementation.

A significant portion of the security force is maintained until the spent fuel is relocated to the dry storage facility. At that time, the force is reduced as regulations permit for the contracted vital area encompassing the ISFSI. Even with the smaller force, round-the-clock surveillance of the ISFSI is maintained, site access is controlled and routine patrols are conducted of the other site facilities.

14. For its 2010 Decommissioning Study, the Company utilized separate inflation indices for Labor, Material, Burial, and Transportation. However, for the current Study, a composite rate was utilized for valuing the cost estimate to a future date.

- a. Please state the rationale for moving from distinct activity escalators to a composite inflation rate (2.8%).

RESPONSE:

The methodology changed to use the long-term market return assumptions and implied long-term inflation rate embedded in DEF's investment advisor's (Towers Watson) capital market assumptions. (See attached Numbers 9 & 11 - Request for Documents).

- b. To DEF's knowledge, has this approach for estimating the value of future Decommissioning costs been previously accepted by any State Commission?

RESPONSE:

Yes. Duke Energy models previously accepted by other State Commissions in North and South Carolina use a singular rate.

15. Please refer to Staff's First Data Request in Docket No. 100461-EI, No. 28. For this data Request, staff asked the Company (then PEF) "Has PEF initiated legal action against the DOE claiming damages for the DOE's failure to meet its obligations in the standard disposal contract? Why or why not?"

RESPONSE:

The Company's response is as follows:

Yes, both Carolina Power & Light Company and Florida Power Corporation (hereinafter collectively referred to as "Progress Energy") have initiated legal action for breach of contract against the DOE. This action was initiated in the United States Court of Federal Claims on January 14, 2004 and has been assigned Case Number 04-0037 C. This action covered damages incurred from January 1, 1998 to December 31, 2005. Progress obtained a judgment for \$82.8 million. The DOE appealed that judgment, and the appeal resulted in a remand with respect to one aspect of the damages calculation. The new damages calculation will result in additional damages awarded to Progress Energy (up to \$9 million). The remand hearing was February 16, 2011, and the court has not yet ruled as to the amount of the additional damages. Progress Energy is collecting damages data for the time period 2006-2010 and intends to file a new lawsuit by the end of 2011 for the additional damages. PEF

initiated legal action because it incurred damages due to DOE's breach of its spent fuel contract.

- a. Please update staff as to the status of this case and how it has, and currently, affects DEF's (former Progress Energy Florida's) customers.

RESPONSE:

In the Phase 1 litigation for recovery of damages for the period 1998-2005, DEF sought recovery of approximately \$4.7 million in costs associated with replacing the racks in the CR3 spent fuel pool, which served to both resolve issues associated with Borax degradation and silica contamination and to increase the storage capacity in the pool. The Court of Federal Claims determined that DEF most likely would have incurred the costs for this project even if DOE had performed in order to resolve the Borax degradation and silica contamination issue and accordingly denied this claim.

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.

- b. Please detail how this case currently affects DEF's 2014 Decommissioning Cost Study.

RESPONSE:

The costs to construct the ISFSI have not been included in the 2014 Decommissioning Cost Study (subject to DEF's response to Q46). DEF plans to seek recovery of these costs through future litigation against the DOE, and any awards, after removing co-owner and wholesale portions, will be credited to the ISFSI portion of the CR3 Regulatory Asset. In addition to ISFSI construction costs, DEF will seek to recover from the DOE certain spent fuel management costs which have been included in the 2014 Decommissioning Cost Study. These costs are further described in DEF's response to Q7. While DEF has not made any assumptions for recovery of these costs from the DOE in the 2014 Decommissioning Cost Study due to the uncertainty of the amount and timing of the recoveries, any recoveries related to costs funded by the nuclear decommissioning trust will be applied to the trust.

16. Please confirm that the costs for construction of an on-site ISFSI for CR3 were not included in DEF's 2010 Decommissioning Study.

RESPONSE:

That is correct. The costs for construction of an on-site ISFSI for CR3 were not included in DEF's 2010 Decommissioning Study.

17. Must DEF obtain an NRC order allowing for the SAFSTOR option for CR3 to be employed? Will the Company please describe the NRC process for obtaining approval of the SAFSTOR option.

RESPONSE:

Because SAFSTOR is one of the three NRC-approved decommissioning strategies, DEF does not have to obtain an NRC order allowing for the SAFSTOR option to be employed.

As part of the decommissioning process, a nuclear power plant licensee must submit a post-shutdown decommissioning activities report (PSDAR) to the NRC. The PSDAR must contain (i) a description of the planned decommissioning activities along with a schedule for their accomplishment, (ii) a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously-issued environmental impact statements, and (iii) a site-specific decommissioning cost estimate, including the projected cost of managing irradiated fuel. DEF submitted its PSDAR to the NRC on December 2, 2013, which designated SAFSTOR as the decommissioning strategy. After receiving the PSDAR, the NRC, as required pursuant to its regulations, (i) published a notice of receipt in the *Federal Register* on December 31, 2013, (ii) made the report available for public review and comment, and (iii) held a public meeting on January 16, 2014 in the vicinity of CR3 to discuss DEF's intentions.

The PSDAR is currently being reviewed by the NRC to determine whether it contains the information required by NRC regulations, but the NRC will not formally approve the PSDAR. To the extent that the NRC has questions or needs clarification regarding information contained in the PSDAR, including the SAFSTOR designation, the NRC addresses those items through the Request for Additional Information (RAI) process. On April 28, 2014, the NRC issued six (6) RAIs to DEF regarding the PSDAR; however, the NRC subsequently determined that one of the RAIs was not applicable to the PSDAR and issued a revised RAI letter that withdrew it. None of the RAIs involve the SAFSTOR designation.

As of 2014, DEF is required by March 31 of each year during the decommissioning process to submit annual status reports, which, among other things, require DEF to identify the decommissioning strategy. Like the PSDAR, the NRC will not formally

approve these reports; however, the NRC may issue RAIs in response to the status reports.

Nuclear Decommissioning Trust Fund and Annual Accrual

18. Please provide the NRC minimum decommissioning fund requirements for CR3.

RESPONSE:

The amount of decommissioning funds required as of December 31, 2013 pursuant to the NRC minimum funding calculation is \$483.3 million. DEF's share (91.7806%) of the fund requirements is \$443.6 million with the CR3 Joint Owners being responsible for the remaining amount. This information was filed with NRC on March 31, 2014 and is provided in Bates range 14NDS-FPSCDR1-18-000001 through 14NDS-FPSCDR1-18-000041.

19. Please explain the extent to which DEF's collections made to assure the availability of adequate decommissioning funds exceed the minimum NRC requirement. Please include copies of any correspondence to or from the NRC regarding this matter.

RESPONSE:

The amount of DEF's decommissioning funds as of December 31, 2013 that DEF proposes be allocated to radiological decommissioning is \$480.3 million, which exceeds DEF's share of the NRC minimum of \$443.6 million. These amounts were filed with the NRC on March 28, 2014 and March 31, 2014, respectively, and are consistent with the allocations set forth in the Petition in this docket made to the Commission on March 21, 2014 that DEF has requested be approved.

20. Please explain how DEF is complying with NRC requirements as they pertain to control of the NDT Fund.

RESPONSE:

DEF meets the NRC definition for an "electric utility" as defined in 10 CFR 50.2. As such, in accordance with 10 CFR 50.75(e)(1)(ii), DEF has established an "External Sinking Fund" in the form of an external trust that is outside of DEF or its subsidiaries or affiliates' administrative control. In accordance with 10 CFR 50.75(e)(1)(ii), the external trust has been established in writing and is maintained in the United States by the State Street Bank and Trust Company as the Trustee under the laws of the Commonwealth of Massachusetts, USA.

The NRC regulations, specifically 10 CFR 50.57(h)(i), identify investment limitations for licensees that are not "electric utilities" as defined in 10 CFR 50.2.

The investment limitation contained in 10 CFR 50.75(h)(1) are not applicable to licensees that are “electric utilities” (i.e., DEF).

The NRC reiterates the requirements contained in 10 CFR 50.75(e)(1)(ii) in Regulatory Guide 1.159, Assuring the Availability of Fund for Decommissioning Nuclear Reactors, Revision 2, Section 2.2.1. An additional item contained in Section 2.2.1 is that the external sinking fund mechanism will “...ensure that special care is taken to safeguard the funds from investment risks...” To this end, the trust agreement contains provisions that allow DEF to “...appoint one or more independent Investment Managers, which may include the Trustee, to direct the Trustee in investing the assets of the Funds...” The trust agreement further requires that “Any such Investment Manager(s) or other person directing investments made in the Trusts shall adhere to the “prudent investor” standard as specified in 18 CFR 35.32(a)(3) of the Federal Energy Regulatory Commission (FERC) regulations (the “Prudent Investor Standard”).”

21. Please explain how DEF is complying with NRC requirements as they pertain to management of the investments in the NDT.

RESPONSE:

The NRC requires that special care is taken to safeguard funds from investment risks. FERC requires the investment manager to exercise the standard of care, whether in investing or otherwise, that a prudent investor would use in the same circumstances.

DEF meets these requirements by diversifying its investments across different asset classes and hiring skilled investment managers. DEF also uses the expertise of an investment advisor to assist with the analysis of a variety of investment decisions and the on-going monitoring of the portfolio and the individual managers’ performance.

22. Please explain whether DEF has requested any exceptions to the NRC guidelines on decommissioning reserves. If so, please provide copies of any related correspondence to or from the NRC regarding this matter.

RESPONSE:

On March 28, 2014, DEF submitted an exemption request to the NRC pursuant to which DEF requested that DEF be allowed to (i) use the CR3 decommissioning trust fund held by DEF (the “CR-3 NDTF”) for spent fuel management and site restoration activities and (ii) make disbursements from the CR3 NDTF for spent fuel management and site restoration activities without prior notice to the NRC. The exemption request is attached in Bates range 14NDS-FPSCDR1-22-000001 through 14NDS-FPSCDR1-22-000016.

23. Should a minimum NDT fund earnings rate be imposed?

RESPONSE:

No. There are no rules or regulations imposing a minimum fund earning rate and none should be imposed. Imposing a minimum fund earnings rate is not appropriate because future earnings and investment returns will vary due to market and economic conditions at the time and cannot be predicted in advance.

- a. If the response to Request No. 23 is affirmative, please explain how that rate should be determined.

RESPONSE:

N/A.

24. Does DEF believe that current escalation rate of 2.8% is below any typical range due to the current macroeconomic market conditions that have reduced escalation factors to near all-time lows? Given that the funding status is highly dependent on assumed escalation rates, please explain why DEF believes its 2.8% assumed escalation rate is appropriate to use in this proceeding.

RESPONSE:

DEF relies on its independent investment advisor (Towers Watson) to provide long-term inflation assumptions. These assumptions consider many variables and are long-term projections. The current escalation rate of 2.8% is consistent with a 20 year nominal return estimate of 6.55% and a 20 year estimated real return of 3.75%.

25. Please explain DEF's investment strategy for its NDT. Please discuss in detail the objectives and guidelines governing the trust funds, such as dollar/portfolio size limitations on issuers, and any other restrictions or constraints.

RESPONSE:

The assets of the Trust will be managed to provide availability of funds to meet decommissioning costs as they become due, provide for the availability of funds to meet administrative costs, and maintain purchasing power of the Trust assets. The goal for trust investments is to maximize long-term after-tax investment returns consistent with a reasonable level of risk.

The Portfolio Guidelines are as follows:

U.S. Equity Target 55% within a range of 50% - 60%

International Equities Target 10% within a range of 5% - 15%
Fixed Income Target 35% within a range of 30% - 40%

26. Please provide a detailed breakdown of the trust fund portfolio by type of securities held, maturity composition (average maturity), credit rating of fixed income investments, and other relevant categories.

RESPONSE:

The Portfolio consists of 4 asset classes, as of March 31, 2014*:

1. US common Equity

- a. 61% of the portfolio.
- b. Passive Index Fund operated by State Street Global Advisors.
- c. Benchmarked against S&P 1500 Index, which is a combination of large cap, mid cap and small cap stocks as chosen by Standard and Poor.

2. International Common Equity

- a. 12% of the portfolio.
- b. Passive Index Fund operated by State Street Global Advisors.
- c. Benchmarked against MSCI EAFE Index, which consists of stocks from 22 developed countries

3. US Fixed Income

- a. 26% of the portfolio.
- b. Mandate operated by NISA Investment Advisors.
- c. Benchmarked against Barclays Aggregate Index, which consists of publicly-issued investment grade, fixed-rate, non-convertible, taxable bonds
- d. Portfolio Characteristics:
 - i. Average Coupon: 3.3%
 - ii. Average maturity: 7.1 Years
 - iii. Average Quality: AA

4. Cash

a. 1% of portfolio

*** Portfolio asset allocations to be rebalanced in 2014 to reflect change to decommissioned status of plant.**

27. Please discuss the relationship DEF has with the trustee of its NDT funds from the inception of the trust through the present. Please include in this discussion an explanation of how the trustee was selected, whether or not the trustee is affiliated with the utility, and how the trustee or its role has changed over time.

RESPONSE:

DEF has designated State Street Bank and Trust Company to serve as the trustee for the Trust. An Amended and Restated Nuclear Decommissioning Trust Agreement dated as of May 1, 2008, as subsequently amended, has been executed which outlines the roles and responsibilities of the Company and the Trustee pursuant to managing the assets of the Trust. The trustee is not an affiliate with the utility. The Trustee and the role of the Trustee has not changed over time.

28. Please discuss the relationship DEF has with the fund manager of its nuclear decommissioning trust funds from the inception of the trust through the present. Please include in this discussion an explanation of how the fund manager was selected, whether or not the fund manager is affiliated with the utility, and how the fund manager or its role has changed over time.

RESPONSE:

No fund (investment) manager is an affiliate of the utility. The current investment managers are listed in the response to question 26. Investment Managers are monitored and jointly reviewed on a quarterly basis by Staff, the Investment Advisor (Towers Watson), and the Duke Energy Investment Committee. The International Manager (Philadelphia Investment Advisors) and the Fixed Income Advisor (PIMCO) were replaced in 2013 due to poor historical performance and our ability to reduce manager fees with this change.

29. Please provide a schedule detailing the trustee fee, investment manager fee, and the total administrative costs (all costs as a percentage of average asset balance) for DEF's NDT for the calendar years 2010, 2011, 2012, and 2013.

RESPONSE:

	2010	2011	2012	2013
Trustee Fee	0.04%	0.04%	0.04%	0.04%
Investment Manager Fee	0.19%	0.18%	0.18%	0.11%
Total Admin Costs*	0.24%	0.23%	0.23%	0.16%

* Includes Advisor Fees of 0.01%

30. Please provide a schedule detailing the nuclear decommissioning trust fund performance (calculated net of administrative costs on an after-tax, time weighted rate of return basis as of 12/31/2013) relative to the Consumer Price Index (CPI) for the past one year, two years, three years, five years, ten years, and since inception.

RESPONSE:

	1 Year	2 Year	3 Year	5 Year	10 Year	Inception*
DEF	19.9%	16.1%	10.9%	12.7%	5.5%	6.6%
CPI	1.5%	1.6%	2.1%	2.1%	2.4%	2.6%
Diff	18.4%	14.5%	8.8%	10.6%	3.1%	4.0%

* As of December 31, 1998

31. What are the legal investment constraints on the NDT? Does DEF have any additional investment constraints? Please explain.

RESPONSE:

See response to Question #21 related to regulatory constraints imposed by the NRC and the FERC. Additional investment constraints prohibit investment in Duke Energy and its subsidiaries and the owners or operators of the nuclear plant.

32. Please provide the most recent status report DEF submitted to the NRC on its decommissioning funds.

RESPONSE:

The annual financial assurance status report required by 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8) is attached bearing Bates numbers 14NDS-FPSCDR1-32-000001 through 14NDS-FPSCDR1-32-000041.

33. Please identify when DEF is scheduled to submit its next report to the NRC that provides an update on the funding status of the NDT. Please provide a copy of the report when it is submitted to the NRC.

RESPONSE:

Sections 50.75(f)(1) and 50.82(a)(8) of Title 10 to the Code of Federal Regulations require that licensed utilization facilities undergoing decommissioning submit an annual financial assurance status report by March 31. The annual financial assurance status report is a publically available document in NRC's Agencywide Documents Access and Management System. DEF's next status report will be submitted by March 31, 2015. DEF's March 31, 2014 status report is produced in response to Q32 above.

Decommissioning Study

This section refers to the *Site-Specific Decommissioning Cost Estimate for the Crystal River Unit 3 Nuclear Generating Plant* (Document No. P23-1680-001, Rev. 0), prepared by TLG Services, Inc.

34. For the purposes of the following request, please refer to Duke's 2014 Decommissioning Study, page xvi of xx.
- a. In the first paragraph on this page, beginning with "Spent Fuel Management," it is stated that spent fuel management expenses incurred prior to June 3, 2013 are not included in this (forward looking) estimate. How has DEF been recovering historical spent fuel management costs?

RESPONSE:

Prior to February 2013, spent fuel management costs were included in operations and maintenance expense and recovered through base rates. Then beginning with the decision to retire CR3 in February 2013 and ending in December 2013, pursuant to Paragraphs 5b and 5c in the 2013 Revised and Restated Stipulation and Settlement Agreement, DEF deferred nuclear operations and maintenance expense to the CR3 regulatory asset. The TLG study included spent fuel management costs as decommissioning beginning June 3, 2013. However, DEF moved these costs from 2013 to 2014 in Section 2, Table 2.1 as explained in Section 2, Page 1 (Table 2.1 Column A explanation).

- b. Regarding the fourth paragraph on this same page, please explain why this cost estimate does not reflect the escalation of costs due to "inflationary and market forces" during the decommissioning period, and why Duke Energy believes this is the best approach for future cost determination.

RESPONSE:

TLG's decommissioning costs are prepared in current year dollars. This approach is consistent with TLG's standard work product format for a decommissioning estimate and allows the owner to apply its individual financial model(s). DEF escalated these costs in Section 2, Table 2.1, Column C, based on the Towers Watson inflation index provided in Section 3, Table 3.1.

- c. Did Duke's 2010 Decommissioning Study contain escalated decommissioning costs that capture inflationary and market forces?

RESPONSE:

No. Consistent with the current study, TLG provided the 2008 decommissioning cost estimate (used as a basis of the Duke 2010 Study) in then-current-year dollars. DEF escalated the costs in Section 2 of that study, which is also consistent with DEF's approach in the current study.

35. For the purposes of the following request, please refer to Duke's 2014 Decommissioning Study, page xviii of xx.

- a. Footnote number [2] describes various costs to be incurred over the next few years. Please elaborate on what "legacy waste from the site" is, and where this waste is to be disposed.

RESPONSE:

The term "legacy waste" refers to large amounts of radioactive material – such as refurbished pumps, valves, tools, instruments and refueling equipment – that could be sold and shipped to licensed radioactive material processing companies, when no longer needed.

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.

Duke Energy Florida is continuing to ship large amounts of radioactive material off-site as part of its decommissioning plan. The company is following best practices from the Electric Power Research Institute (EPRI), which emphasize the importance of reducing the radioactive material footprint to minimize radiological risk to the plant during its SAFSTOR condition.

The cost to ship large amounts of radioactive material is expected to increase every year.

Depending upon the waste classification, the material could go to Texas for disposal at Waste Control Specialist's facility or Clive, Utah for disposal at EnergySolutions facility. Retired components (e.g., the steam generators, reactor closure head and hot leg piping) disposed of during this time period are assumed to be shipped to Clive, Utah for disposal at EnergySolutions facility.

36. For the purposes of the following request, please refer to Section 1, page 4 of 9. The second paragraph reads, "submittal of these notices will entitle the licensee to a fee reduction." What fee is reduced for the licensee, and what cost is this fee intended to address?

RESPONSE:

Section 171.15 of Title 10 to the Code of Federal Regulations pertains to annual fees for reactor licenses and independent spent fuel storage licenses. When a Part 50 licensee submits the certifications required by 10 CFR 50.82(a)(1), they are no longer required to pay reactor fees but, instead are eligible for independent spent fuel storage fees. In fiscal year 2013, the annual fee for a reactor license is \$4,390,000 and the annual fee for an independent spent fuel storage license is \$231,000.

37. For the purposes of the following request, please refer to Section 2, page 2 of 7. The first bulleted point states "[c]reation of an organizational structure to support the decommissioning plan and evolving emergency planning and site security requirements." Please elaborate on the make-up of the "organizational structure," and what "evolving emergency planning and site security requirements" may entail.

RESPONSE:

During Period 1, the CR3 organization will undergo a transition from supporting an operating plant to supporting a facility in SAFSTOR. The transition to dormancy with wet fuel storage is scheduled to occur over two and a half years and the organization will downsize continually based on workload and regulatory requirements. Since a shutdown plant poses much less risk than an operating unit, regulatory exemptions will be sought from emergency planning requirements in 10 CFR 50.47 and 10 CFR 50 Appendix E. If approved, these exemptions will permit a significant reduction in the emergency response organization. With respect to security requirements, exemptions will be requested from some of the regulations in 10 CFR 73.55 and changes will be made to the security plan under 10 CFR 50.54(p)(2). These activities will allow reductions in the size of the CR3 security force. It is anticipated that the staff size for dormancy with wet fuel storage will be less than 25% of the staff size for an operating plant. Transition to dormancy with dry fuel storage will enable further staff reductions.

38. For the purposes of the following request, please refer to DEF's 2010 Decommissioning Cost Estimate (TLG Study), Section 3, Page 7 of 35, and DEF's 2014 Decommissioning Cost Estimate, Section 3, page 6 of 24.
- a. Please explain, with specificity, the basis for adjusting the final fuel pick up dates from 2072 in the 2010 Study, to 2036 in the 2014 Study.

RESPONSE:

In the 2010 Study, the final fuel pick up completion date of 2072 was based on decommissioning the CR3 plant starting in 2036, which is 20+ more years of plant operation, and thus spent fuel, than estimated in the 2014 Study. The 2010 Study assumed removal would commence in 2024 during operation of the plant. The timing for removal of spent fuel from the site at that time was based upon the DOE's most recently published annual acceptance rates of 400/MTU/year for year 1; 3,800 MTU total for years 2, 3, and 4 together; and 3,000 MTU/year for year 5 and beyond, see Table 7.2 of the Civilian Radioactive Waste Management System Waste Acceptance System Requirements Document, Revision 5 (DOE/RW-0351) issued May 31, 2007. Further, the 2010 Study assumed that when DOE did accept spent fuel from commercial reactors it would accept spent fuel in an "oldest fuel first order." Accordingly, with the last CR3 fuel assembly discharged from the core in 2036, it would take DOE substantial time to work off the backlog from all plants and remove that "youngest" CR3 fuel assembly. The 2010 Study concluded that at this pace it would take until 2072 for completion of removal of spent fuel from CR3.

In the 2014 Study, the final fuel pick up date of 2036 was based on decommissioning the plant starting in 2014, with the plant being offline since 2009. Thus, the 2014 Study assumed a significantly less quantity of spent fuel that would need to be removed than assumed in the 2010 Study. The timing for removal of spent fuel from the site was based upon the most recent information from the DOE on likely future actions regarding interim and long-term solutions to spent fuel disposition ("Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," January 2013). Duke Energy relied upon 1) priority pick-up for the spent fuel since CR3 was a shutdown reactor, consistent with DOE's January 2013 report "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste" and the Nuclear Energy Institute endorsement of giving priority to removal of shutdown plant fuel; 2) a maximum rate of transfer of 3,000 metric tons of uranium (MTU)/year, consistent with the July 2004 report DOE/RW-0567, "Acceptance Priority Ranking & Annual Capacity Report"; and 3) an initial pick up date of 2032. The nine sites that ceased operations prior to CR3 have a total used fuel inventory of 2813 MTU. Based on the aforementioned assumptions, DEF calculated removal of the 1243 spent fuel assemblies at CR3 could be completed by 2036.

- b. What other Commercial Nuclear Power Generator has currently assumed a 2032 (or thereabout) start date for spent fuel pick-up by the DOE?

RESPONSE:

There is no “industry standard” assumption for the commencement of spent fuel pick-up by DOE, and DEF is unaware of any other nuclear generator using a 2032 (or thereabout) start date for it. The 2032 start date is based on a recent (fall 2013) evaluation by DEF. DEF understands that some other generators have used a 2025 spent fuel pick-up start date based on DOE’s January 2013 report “Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste.” DEF considers 2025 a technically feasible start date, but probably optimistic in light of political and regulatory considerations.

- c. What other Commercial Nuclear Power Generator has currently assumed an approximate five-year timeframe for completion of the spent fuel transfer to the DOE?

RESPONSE:

DEF is unaware of any other nuclear generator using an approximate five-year timeframe for completion of the spent fuel transfer to the DOE. As described in the response to Question 38.a, the time frame is based on the reliance that DOE will remove spent fuel from shutdown plants first, consistent with DOE’s January 2013 report “Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste.” Moreover, DEF assumed DOE would pick up shutdown plant fuel in the order in which the plants were shutdown, and at the rate provided in DOE/RW-0567, “Acceptance Priority Ranking & Annual Capacity Report” (2004).

39. For the following, please refer to Section 3, Page 12 of 24, Subsection 3.4.7. Please identify the rates assumed for off-site processing. Please explain in detail the reason for differences in off-site processing rates between the 2010 and 2014 Decommissioning Cost Studies.

RESPONSE:

Off-site processing costs in 2008 (basis of the DEF 2010 Study) were based upon a representative rate of \$2.20 / pound (including tax) for metallic waste.

The base rate (before tax) was escalated for the 2013 estimate (basis of the DEF 2014 Study), resulting in a unit rate of \$2.47 / pound. The source for the escalation rate of 1.097 was based upon the Bureau of Labor Statistics, Consumer Price Index – All Urban Consumers, January 2, 2013 Series ID CUUR0000SAS.

40. Please refer to Section 5, Page 4 of 4, Table 5.1.

- a. Please provide a comparison of the volume of radioactive waste between the 2010 and 2014 decommissioning studies.

RESPONSE:

A summary of the projected waste volumes from decommissioning in the 2010 study can be found in the 2008 TLG estimate (basis for the DEF 2010 study) in Table 5.2 of TLG's document P23-1597-002, dated December 2008. A summary of the projected waste volumes from decommissioning in the 2014 study can be found in the 2013 TLG estimate (basis for the DEF 2014 study) in Table 5.1 of TLG's document P23-1680-001, dated December 2013.

A summary of the waste volumes for the SAFSTOR scenarios is provided below:

10 CFR §61.55 Classification	Disposition	Radioactive Waste Volume (cubic feet)	
		2008	2013
Class A	Direct Disposal	101,051	136,858 ^[1]
Class A	Off-site Processing and Disposal	232,559	269,051
Class B	Direct Disposal	2,824	876
Class C	Direct Disposal	517	462
GTCC	DOE / Federal Disposal Facility	524 ^[2]	1,785 ^[3]
Total		337,475	409,032

^[1] Includes retired steam generators

^[2] Unpackaged volume

^[3] Packaged volume

41. Please refer to Appendix A of the Decommissioning Study, Unit Cost Factor Development.

- a. Please explain the reasons for the decrease in the radiation/ALARA adjustment from 37% in 2008 to 15% in 2015.

RESPONSE:

The sample unit cost factor in the 2008 TLG study reflects a prompt (DECON) decommissioning scenario. The sample unit cost factor in the current study (2014) reflects a deferred (SAFSTOR) decommissioning scenario.

The radiation/ALARA adjustment is higher for the DECON scenario than for SAFSTOR due to the approximately 50 years of dormancy and associated radionuclide decay.

- b. Do the labor rates shown on page 3 of 4 assume in-house labor rates or contract labor rates or a combination of both? Please explain the basis for the assumption.

RESPONSE:

The labor rates reflect billing rates for contracted labor. It was assumed that the rates were representative of the labor pool that would be available to a decommissioning contractor for dismantling work.

- c. Do the labor rates reflect loaded labor rates? If affirmative, what portion of each rate is associated with the base rate, labor overhead (including fringe benefits), and general and administrative overhead?

RESPONSE:

Yes. The labor required in the Appendix A example of Unit Cost Factor Development was assumed to represent use of contract labor and not Duke Energy workforce. The rates were extracted from the contract rates established with an existing alliance contractor based on job titles. Certain job titles were grouped into the categories and averaged. The contractor loader between Straight Time (ST) and Bill rates would represent labor overheads, G&A, and contractor profits. Per Diems were assumed at \$80/work day for all except HP Techs. Their per diem is \$95/work day.

	ST Rate	Loader	Bill Rate	Per Diem	Total
Laborers	\$ 18.38	\$ 5.09	\$ 23.47	\$ 10.00	\$ 33.47
Craftsmen	\$ 26.63	\$ 8.00	\$ 34.63	\$ 10.00	\$ 44.63
Foreman	\$ 32.07	\$ 11.13	\$ 43.20	\$ 10.00	\$ 53.20
General Foreman	\$ 37.50	\$ 14.28	\$ 51.78	\$ 10.00	\$ 61.78
Fire Watch	\$ 18.38	\$ 5.09	\$ 23.47	\$ 10.00	\$ 33.47
Health Physics Tech	\$ 26.25	\$ 8.51	\$ 34.76	\$ 17.16	\$ 51.92

- d. Please provide an explanation and derivation of the 16.0% Overhead & Profit on the Equipment and Materials line item on page 3 of 4.

RESPONSE:

The 16% represents a 10% overhead and profit (O&P) on consumables and a 6% sales tax component. The 10% is consistent with the average value recommended in

R.S. Means Construction Cost Data as an allowance for items that do not include subcontractor O&P.

- e. Please explain how the labor rates on page 3 were determined, identifying any assumptions.

RESPONSE:

The labor rates are composites. The personnel/positions used to construct the composites are identified in the attachment to Document Request No. 2.

- 42. The Property Tax activity reflects a continuing tax obligation over the life of the decommissioning program. Did DEF consider assuming no significant value for site structures and including only a value on the protected area of the land during active decommissioning and only on ISFSI footprint thereafter? Please explain why or why not. Please comment on the reasonableness of such a change in assumptions.

RESPONSE:

Yes, structures and equipment were assessed at 20% of the original tax obligation at shutdown. At the beginning of Period 2b "Dormancy with Dry Fuel Storage", the majority of plant equipment will be readied for long term storage, and the associated tax will be further reduced accordingly. Land is prorated to include the protected area only.

- 43. Please refer to Appendix C of the Decommissioning Study, beginning on Page 2 of 10.

- a. What costs are "Corporate Allocations" (Line Nos. 1.2.3 and 1.2.6) intended to address?

RESPONSE:

CR3 is only one of several generating facilities owned by Duke Energy. As such, a number of the overall corporate support functions are centralized to take advantage of the economies of scale a larger organization can employ. Duke Energy uses a pooling method of cost accounting that a number of supporting organizations charge direct. Monthly these pools are allocated to the operating organizations that they support. During 2013 and 2014 a portion of these charges were pro-rated to the portion of the overall CR3 costs estimated to be incurred as part of the Decommissioning efforts. Examples of the source of these costs would include Corporate Governance and Operations Support, Corporate Information & Technology, Nuclear General Office, Human Resources, Nuclear Engineering, and General Administrative Services.

- b. Please detail what costs line item 2a.2.1 "ISFSI Construction & Pool Offload" are intended to address, specifically "ISFSI Construction."

RESPONSE:

This line item includes the spent fuel transfer or campaign costs associated with the relocation of the spent fuel from the spent fuel storage pool to the dry storage facility (ISFSI) and any construction costs implied to be contained within the cash flow estimate provided to TLG. Please see DEF's response to Question #46; while the direct ISFSI construction costs have been excluded, there are certain ancillary costs related to the construction of the ISFSI that have been included.

Spent Fuel Management

44. Please briefly describe the contemplated design for the ISFSI to be located at the Crystal River Plant Site.

RESPONSE:

An ISFSI would allow the removal of the spent fuel from the spent fuel pool and provide storage on a concrete pad located directly adjacent to the plant, inside the protected area, until the DOE takes possession. Spent fuel is loaded into dry shielded canisters (DSCs) in the spent fuel pool and removed for subsequent draining and drying. The canisters are then welded shut to provide a containment boundary for radionuclides and placed within steel-reinforced concrete horizontal storage modules (HSMs). The HSMs provide shielding and missile protection for the spent fuel in the DSCs.

45. Regarding Section 3, Table 3.3 "Spent Fuel Management Expenditures" of DEF's 2014 Nuclear Decommissioning Cost Study,

- a. What are the types of costs included in the column labeled "Other?"

RESPONSE:

"Other" costs include insurance, property taxes, NRC fees, Emergency Planning fees, the Florida Low-Level Radioactive Waste fee, spent fuel pool operations and maintenance, and ISFSI operating costs.

- b. What are the processes or activities requiring the expenditures shown under the column labeled "Energy?"

RESPONSE:

A portion of the plant energy budget during the spent fuel operating and fuel transfer period was allocated as a "Spent Fuel Management" cost. This includes the cost of electricity to cool the spent fuel pool and transfer the fuel to the ISFSI.

- c. What are the annual costs of the following spent fuel management components, and in which columns of Table 3.3 are the costs contained: purchase of dry shielded canisters, loading and transferring of dry shielded canisters, insurance, licensing fees, staffing, security (costs identified in Section 3.4.1, Pages 6 and 7 of 24)?

RESPONSE:

The cost of purchasing the Dry Shielded Canisters is spread over 2014-2018 and is further identified and explained in DEF's response to Question #46. The loading costs (approximately \$14 million total, excluding contingency) were assigned to years 2017 and 2018. The transfer costs (to DOE) were included in years 2035 and 2036 (approximately \$2.8 million in 2035 and \$2.1 million in 2036, with contingency). Insurance annual cost with contingency varies from \$515k during wet fuel storage to \$475k during dry fuel storage. There are no licensing fees assigned to spent fuel management. Staffing annual cost with contingency varies from \$7.6 million during wet fuel storage to \$1.4 million for dry fuel storage. Security annual cost with contingency varies from \$11.3 million during wet fuel storage to \$2.6 million during dry fuel storage.

- d. Provide additional detail of the labor costs shown for the period 2013 through 2019 which identifies with greater specificity the type of labor or the type of projects involved.

RESPONSE:

The following table identifies the labor component of the estimated costs between June 3, 2013 (start date for the decommissioning estimate) and August 13, 2019 (end of wet spent fuel storage). This table is extracted from Document P23-1680-001, Rev. 0 Appendix C Page 2 of 10.

Line Item	Cost Element	Labor Only (\$k)
1.2.1	2013 O&M Budget (Excluding Security)	8,342
1.2.2	2013 O&M Budget Nuc. Protective Services (Security)	1,410
1.2.3	2013 Corporate Allocations	2,400
1.2.4	2014 O&M Budget (Excluding Security)	47,258
1.2.5	2014 O&M Budget Nuc. Protective Services (Security)	9,489
1.2.6	2014 O&M Budget Corporate Allocations	18,265
1.2.7	2015 O&M Budget (Excluding Security)	22,003
1.2.8	2015 O&M Budget Nuc. Protective Services (Security)	5,875
1.2.9	Spent Fuel Pool Offload Preparations	8,789
1.2.10	Severance (contingency)	5,189
1.2.11	Reduction of Electrical System	1,783
1.2.12	Alternate Spent Fuel Cooling System	1,722
2a.1.4	Bituminous roof replacement	261
2a.2.1	ISFSI Construction & Pool Offload	27,558
2a.4.12	Security Staff Cost	43,398
2a.4.13	Utility Staff Cost	32,712

e. How did DEF estimate its labor costs shown in this table?

RESPONSE:

Costs for items 1.2.1 through 1.2.6 representing the period beginning June 3, 2013 and ending December 31, 2014 were created based on a bottom up budgeting of the Decommission Transition Organization staffing plan for that period using known salaries and wages (including average rates for benefits and taxes).

Costs for items 1.2.7 through 1.2.8 representing the period January 1, 2015 through June 30, 2015 used the average monthly rate per FTE based on the

bottom up budget (above) times the number of FTEs staffing the Decommissioning efforts during this period.

1.2.9 was based on the best project estimated for DEF staffing costs at the time the DCE was compiled.

1.2.10 was an estimate of Severance costs in excess of prior period costs already recognized.

1.2.11 through 2a.2.1 was based on the best project estimates for DEF staffing costs at the time the DCE was compiled.

2a.4.12 and 2a.4.13 were costs estimated by TLG by applying DEF average labor rates to the their cost model for those periods remaining periods.

46. Regarding Section 3.4.1 of DEF's 2014 Nuclear Decommissioning Cost Study, ISFSI, why are the dry shielded canisters not considered part of the construction costs of the ISFSI, but the horizontal storage modules are considered part of those costs?

RESPONSE:

In the TLG cost study, the canisters were not considered to be a cost to construct the ISFSI. However, after filing the nuclear decommissioning cost study, DEF determined that the canisters should more appropriately be included in the cost to construct the ISFSI and not be included in the decommissioning cost study. At the same time, DEF also determined that some costs were included in the cost to construct the ISFSI that should more appropriately be included in the decommissioning cost study. These costs include certain modifications to a building, crane, retention ponds, gas line and decontamination pit ("modifications"). The main reason for changing DEF's position on the canisters as well as the modifications is that the canisters will be included in any future lawsuits against the Department of Energy for breach of its obligation to remove the spent nuclear fuel while the modifications will not be included. Please also see DEF's response to Q7 above. Since these costs materially offset each other, DEF does not find it necessary to refile the nuclear decommissioning cost study but does plan to move the cost of the canisters out of nuclear decommissioning and move the cost of the modifications into nuclear decommissioning. The table below provides the total dollars to be moved.

	ISFSI Construction	Nuclear Decommissioning
Canisters	\$24,783,000	
Building Modifications		6,631,234
Retention Ponds		2,875,000
Crane		1,438,092
Decon Pit		427,650
Gas/Purge Line		187,861
Contingency/Escalation		10,498,089
Total Change	\$24,783,000	\$22,057,926

47. What is the basis for DEF determining that 2021 represents a near term spent fuel disposition scenario and 2048 represents a long term spent fuel disposition scenario, as discussed in Section 1, Page 6 of 9 of DEF's 2014 Nuclear Decommissioning Cost Study?

RESPONSE:

The basis for DEF stating in Section 1 that 2021 represents a near term timeframe for spent fuel disposition by the DOE and 2048 represents a long term scenario for spent fuel disposition is the additional direction provided by the *Blue Ribbon Commission on America's Nuclear Future in its Report to the Secretary of Energy*, referenced in footnote 17 on page xiii of xx of the 2014 Study. In the Report, the Blue Ribbon Commission recommended that the DOE develop facilities for the storage of used fuel. Thereafter in January 2013, the DOE issued its report, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, referenced in footnote 19 on page xiii of xx of the 2014 Study, noting that with appropriate Congressional authorization the DOE currently plans to implement a program over the next 10 years that "sites, designs and licenses, constructs and begins operations of a pilot interim storage facility by 2021." The DOE report also states that a larger interim facility is planned by 2025 with a geologic repository planned by 2048. Based on the DOE report and the challenges inherent in spent fuel management, DEF considers the year 2021 the earliest technically feasible date for DOE to commence spent fuel removal from commercial nuclear power reactor sites. While DOE has expressed the intention of operating one or more interim storage facilities, there is no guarantee it will do so. The year 2048 corresponds to a scenario in which DOE does not establish an interim storage facility, but does site, design, license and construct a repository for the disposition of spent fuel. Accordingly, DEF has used these timeframes as its near term and long term scenarios. It should be noted that any prediction about the future course of the government's spent fuel management program is necessarily speculative in nature. The overriding impact of local, state and federal political and regulatory considerations on future activities makes any future schedule uncertain.

Contingency

48. In the decommissioning experience of TLG, please identify some of the activities in which contingency dollars have been used to respond to, compensate for, and/or provide adequate funding of decontamination and dismantling tasks.

RESPONSE:

An example of those activities in which contingency dollars can be spent can be found in Volume 1, Chapter 13 of the "Guidelines for Producing Commercial Nuclear Plant Decommissioning Cost Estimates," AIF/NESP-036.

49. Referring to Section 1, page 3 of 8, of DEF's 2014 Nuclear Decommissioning Cost Study Summary:

- a. Please explain in detail how the 13.5% overall contingency allowance used in the current cost study was developed.

RESPONSE:

The 13.5% value is not indicative of the actual level of contingency that is contained within the total estimate. It only represents the average level for those line items for which contingency was specifically identified/reported.

Line items were DEF budgets included in Period 1, known estimates which included contingencies, or estimates of pass-through costs, such as property taxes, are excluded from the calculation, thus lowering the overall contingency allowance percentage.

As can be seen in Table C of the TLG cost estimate, contingency is applied on a line item basis. Sample percentages are listed in Section 3 on page 4 of 24. At the end of Table C, the total contingency dollars are summed and compared to the total estimate without contingency to generate an average value. If, as happened in the 2014 Study, lump-sum costs were provided by the plant operator (i.e., where the contribution of contingency was not specifically identified), the overall average would decrease when compared to the total dollars.

- b. [While staff understands that the Company was proposing the DECON option in its 2010 study, for the purposes of this request, staff is seeking to compare the SAFSTOR option that was also presented in the same study.] Please explain why the contingency factor of 13.5% used in the current study is lower than what was used in the Company's 2010 Decommissioning Study which was 16.2% (Sourced from the last line of Table D, *Crystal River Nuclear Plant, Unit 3, SAFSTOR*

Decommissioning Cost Estimate, on page 14 of Attachment D of the Company's 2010 Update — 2008 Nuclear Decommissioning Cost Study).

RESPONSE:

See the response to part a; the decrease in the average value was due to line items in the 2014 Study for which the contingency component was not specifically reported.

50. Please refer to the Decommissioning Cost Study Section 3, pages 3 thru 4 of 24:

- a. Please provide the rationale for adding four new major activity-related problems (Low-Level Radioactive Waste Processing, Spent Fuel Transfer, ISFSI Decommissioning and Operations and Maintenance) upon which the contingency factors were applied from the 2010 to the 2014 Decommissioning studies.

RESPONSE:

The additional “activity-related problems” were added to the text for completeness, i.e., to better reflect the spectrum of cost components included within the Crystal River estimate. The contingency categories and percentages listed are routinely used and are integral to TLG’s cost estimating model. For example, the values shown for Low-Level Radioactive Waste Processing, Spent Fuel Transfer, and Operations and Maintenance were also used in the 2008 estimate, but the contingency categories and associated values were not specifically identified in the text.

The 25% value for ISFSI Decommissioning is a new addition and consistent with the evaluation criteria referenced by the NRC in NUREG-1757. It has been used in NRC submittals prepared in response to the NRC’s final rule on Decommissioning Planning issued on June 17, 2011 and the requirement for ISFSI decommissioning cost reporting.

- b. For each of the new major activity-related problems discussed in 50a., please explain how the associated contingency value was determined.

RESPONSE:

The ISFSI Decommissioning contingency is the only “new” item (having been established in 2012 based on the June 17, 2011 rule). Its basis is described in the response to part a.

- c. Please list a few examples of unforeseeable events that the aforementioned contingency values addresses.

RESPONSE:

Please see the response to Q48.

End-of-Plant-Life Materials & Supplies and Last core of Nuclear Fuel

51. What was DEF's unrecovered cost of End-of-Life Materials and Supplies (EOL M&S) inventories for CR3 as of December 31, 2013?

RESPONSE:

DEF's materials and supplies inventory was \$51 million (retail) as of December 31, 2013. This amount is included in the CR3 regulatory asset, consistent with the 2013 Settlement Agreement, and was reported in Schedule 6 attached to DEF's December 2013 surveillance report. DEF's reserve for EOL M&S inventory was zero as of December 31, 2013, because it was reversed in the first quarter of 2012, consistent with the 2013 Settlement Agreement, paragraph 5a, which states that "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."

52. What have been the debits to nuclear maintenance expense for EOL M&S inventories and credits to Account 228 (Reserve) for CR3 for each year from 2010 through 2013?

RESPONSE:

DEF's debits and credits to the Account 228 End-of-Life Materials and Supplies (EOL M&S) inventory reserve were as follows:

2010: Dr. 528 Nuclear Maintenance Expense	\$1,100,000	
Cr. 228 EOL M&S Reserve		\$1,100,000
2011: Dr. 528 Nuclear Maintenance Expense	\$1,100,000	
Cr. 228 EOL M&S Reserve		\$1,100,000
2012: Dr. 528 Nuclear Maintenance Expense	\$183,334	
Cr. 228 EOL M&S Reserve		\$183,334
		<i>Represents Jan & Feb accruals prior to reversal in March.</i>
2012: Dr. 228 EOL M&S Reserve	\$15,883,342	
Cr. 528 Nuclear Maintenance Exp.	\$15,883,342	
		<i>Balance of reserve was zero after this entry.</i>
2013: No entries in accordance with 2012 Settlement.		Reserve balance was zero.

53. What was DEF's amortization expense recorded in 2013 for EOL M&S for CR3?

RESPONSE:

There was no amortization expense recorded in 2013 for EOL M&S; please see response to Question #51.

54. What was DEF's unrecovered cost of the End of Life Last Core (Last Core) of Nuclear Fuel for CR3 as of December 31, 2013?

RESPONSE:

DEF's nuclear fuel inventory balance was \$249 million (retail) as of December 31, 2013. The balance in the CR3 regulatory asset, consistent with the 2013 Settlement Agreement, was reported in Schedule 6 attached to DEF's December 2013 surveillance report. DEF's reserve for Last Core was zero as of December 31, 2013, because it was reversed in the first quarter of 2012, consistent with the 2013 Settlement Agreement, paragraph 5a, which states that "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."

55. What have been the annual amortizations to fuel expense associated with the Last Core and the credits to Account 228 (Reserve) for each year from 2010 through 2013?

RESPONSE:

DEF's debits and credits to Account 228 Last Core of Nuclear Fuel (Last Core) reserve were as follows:

**2010: Dr. 518 Nuclear Fuel Expense \$1,200,000
 Cr. 228 Last Core reserve \$1,200,000**

**2011: Dr. 518 Nuclear Fuel Expense \$1,200,000
 Cr. 228 Last Core reserve \$1,200,000**

**2012: Dr. 518 Nuclear Fuel Expense \$200,000
 Cr. 228 Last Core reserve \$200,000
 *Represents Jan & Feb accruals prior to reversal in March.***

**2012: Dr. 228 Last Core reserve \$12,500,036
 Cr. 518 Nuclear Fuel Exp \$12,500,036
 *Balance of reserve was zero after this entry***

2013: No entries in accordance with 2012 Settlement. Reserve balance was zero.

56. What does DEF anticipate is the future disposition of any unamortized balance of EOL M&S inventories and its Last Core?

RESPONSE:

DEF is currently in the process of selling or salvaging the M&S and nuclear fuel inventories. Consistent with the 2013 Settlement Agreement, any remaining costs will be recovered through the CR3 regulatory asset.

Effective Dates

57. What is Duke's proposed effective date for its annual decommissioning accrual amount?

RESPONSE:

The effective date for DEF's annual decommissioning accrual of zero is January 2015.

58. What is Duke's proposed effective date for the amortization of its EOL M&S inventories?

RESPONSE:

Any remaining balance of M&S inventory, net of sales recoveries, included in the CR3 regulatory asset will be recovered pursuant to the 2013 Settlement Agreement. Paragraph 5e states, "Effective the earlier of the first billing cycle for January 2017 or the expiration of the Levy Nuclear Project ("LNP") cost recovery charge established and provided for in paragraph 11 of this Revised and Restated Settlement Agreement, DEF shall be authorized to increase its retail base rate charges by the annualized projected revenue requirement for the CR3 Regulatory Asset..."

59. What is Duke's proposed effective date for the amortization of its Last Core?

RESPONSE:

Any remaining balance related to Last Core, net of sales recoveries, included in the CR3 regulatory asset will be recovered pursuant to the 2013 Settlement Agreement. Please see DEF's response to Question #58.

Request for Documents

1. Please provide a copy of the AIF/NESP-036 study report, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates" upon which contingency values were based.

RESPONSE:

Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-01-000001 through 14NDS-FPSCDR1POD-01-000573.

2. Please provide a copy of the "Local Labor Rates" schedule utilized in developing Unit Cost Factors for DEF's 2014 Decommissioning Study.

RESPONSE:

A copy of the source file is provided with this response. The job titles used to construct the composite labor rates are highlighted. Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-2-000001 through 14NDS-FPSCDR1POD-2-000008.

3. Please provide a copy of the "Building Construction Cost Data" published by R.S. Means in DEF's 2014 Decommissioning Cost Study.

RESPONSE:

A copy of the Building Construction Cost Data publication can be obtained through R.S. Means' on-line bookstore: <http://rsmeans.reedconstructiondata.com> or by contacting them at RSMeans, 700 Longwater Drive, Norwell, MA 02061 or by phone or fax at these numbers: Phone: 800-334-3509, Fax: 800-632-6732.

4. For the purposes of the following request, please refer to Duke's 2014 Decommissioning Study, page xi of xx. Please provide a copy of the *Life of Plant Agreement* with EnergySolutions for disposal of its Low-Level Class B and C nuclear waste from CR3.

RESPONSE:

Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-4-000001 through 14NDS-FPSCDR1POD-4-000022. These documents are confidential and subject to DEF's Notice of Intent filed contemporaneously with the service of this response.

5. Please provide a copy of the "Acceptance Priority Ranking & Annual Capacity Report," DOE/RW-0567, July 2004.

RESPONSE:

Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-5-000001 through 14NDS-FPSCDR1POD-5-000081.

6. Please provide working papers, in Microsoft Excel (Excel) format with formula intact, to support your response to Request No. 49.

RESPONSE:

Contingency is applied internal to the cost model, i.e., there are no working papers specifically for the calculation of contingency. However, a copy of Appendix C is provided with this response in Excel format. Two columns have been added to the output file (shaded) to show the contingency calculation in Period 2a, as an example. Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-6-000001 through 14NDS-FPSCDR1POD-6-000008.

7. Please provide "Appendix C" of the 2014 Decommissioning Study, titled "Detailed Cost Analysis" in Excel format, with cells unlocked and formulas intact.

RESPONSE:

A copy of Appendix C is provided with this response in Excel format. The Appendix is generated by the cost model software as an output file. It does not contain any formulas. Please see document attached bearing Bates number 14NDS-FPSCDR1POD-7-000001.

8. Please provide a copy of a working file in Excel format with all formulas and links intact of Table 2.1 (Section 2) of the 2014 Nuclear Decommissioning Cost Study Summary.

RESPONSE:

Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-8-000001 through 14NDS-FPSCDR1POD-8-000003.

9. Please provide a Copy of Towers Watson's U.S. Capital Market forecast, dated July 1, 2013.

RESPONSE:

Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-9-000001 through 14NDS-FPSCDR1POD-9-000009. These documents are confidential and subject to DEF's Notice of Intent filed contemporaneously with the service of this response.

10. Please provide a copy of Towers Watson's most recent U.S. Capital Market forecast.

RESPONSE:

Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-10-000001 through 14NDS-FPSCDR1POD-10-000009. These documents are confidential and subject to DEF's Notice of Intent filed contemporaneously with the service of this response.

11. Please provide all work papers used by Towers Watson to develop the escalation rate of 2.8%. Please include all source materials relied upon by Towers Watson to develop its escalation rate.

RESPONSE:

Please see document attached bearing Bates numbers 14NDS-FPSCDR1POD-11/12-000001 through 14NDS-FPSCDR1POD-11/12-000006. These documents are confidential and subject to DEF's Notice of Intent filed contemporaneously with the service of this response.

12. Please provide all work papers used by Towers Watson to determine the minimum fund earnings rate of 5.10%. Please include all source materials relied upon by Towers Watson to develop the minimum fund earnings rate.

RESPONSE:

See documents produced in response to Q11 above.