



J. J. Hutto
Regulatory Affairs Director

40 Inverness Center Parkway
Post Office Box 1295
Birmingham, AL 35242
205 992 5872 tel
205 992 7601 fax

jhhutto@southernco.com

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ATTN: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

**Joseph M. Farley Nuclear Plant – Units 1 and 2
Edwin I. Hatch Nuclear Plant – Units 1 and 2
Vogtle Electric Generating Plant – Units 1 and 2
Independent Spent Fuel Storage Installation
ISFSI Decommissioning Funding Plan Triennial Update**

Ladies and Gentlemen:

In accordance with 10 CFR 72.30(b) and (c), Southern Nuclear Operating Company (SNC) hereby submits the enclosed Independent Spent Fuel Storage Installation (ISFSI) decommissioning cost studies and funding plans for Joseph M. Farley Nuclear Plant (Farley), Edwin I. Hatch Nuclear Plant (Hatch) and Vogtle Electric Generating Plant (Vogtle) Units 1 and 2.

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at 205.992.7369.

Respectfully submitted,

James J. Hutto
Regulatory Affairs Director

JJH/efb/lac

Enclosures:

1. Farley ISFSI Decommissioning Funding Plan Triennial Update
2. Hatch ISFSI Decommissioning Funding Plan Triennial Update
3. Vogtle ISFSI Decommissioning Funding Plan Triennial Update

cc: Southern Nuclear Operating Company

Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. D. G. Bost, Executive Vice President & Chief Nuclear Officer
Mr. D. R. Madison, Vice President – Farley
Mr. D. R. Vineyard, Vice President – Hatch
Mr. B. K. Taber, Vice President – Vogtle 1 & 2
Mr. M. D. Meier, Vice President – Regulatory Affairs
Mr. B. J. Adams, Vice President – Engineering
Ms. B. L. Taylor, Regulatory Affairs Manager – Farley
Mr. G. L. Johnson, Regulatory Affairs Manager – Hatch
Mr. D. D. Sutton, Regulatory Affairs Manager – Vogtle 1 & 2
RTypes: GG1.004; CFA04.054; CHA02.004; CVC7000

Alabama Power Company

Ms. A. Allcorn-Walker, Comptroller & V.P.
Mr. C. Blake, Assistant Treasurer

Georgia Power

Ms. A. P. Daiss, Comptroller, CAO, and Senior V. P.

Oglethorpe Power

Ms. A. F. Appleby, Vice President, Treasurer

Municipal Electric Authority of Georgia

Mr. E. E. Easterlin, Sr., Senior V.P. and CFO

City of Dalton

Mr. Tom Bundros, CEO and President, Dalton Utilities

U. S. Nuclear Regulatory Commission

Mr. Michael Layton, Director – Division of Spent Fuel Management
Ms. C. Haney, Regional Administrator
Mr. S. A. Williams, NRR Senior Project Manager – Farley
Mr. R. Hall, NRR Senior Project Manager - Hatch
Mr. M. D. Orenak, NRR Senior Project Manager – Vogtle 1&2
Mr. P. K. Niebaum, Senior Resident Inspector – Farley
Mr. D. H. Hardage, Senior Resident Inspector – Hatch
Mr. M. F. Endress, Senior Resident Inspector – Vogtle 1 & 2

**Joseph M. Farley Nuclear Plant – Units 1 and 2
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ISFSI Decommissioning Funding Plan Triennial Update**

Enclosure 1

**Joseph M. Farley Nuclear Plant – Units 1 and 2
ISFSI Decommissioning Funding Plan Triennial Update**

Joseph M. Farley Nuclear Plant – Units 1 and 2 ISFSI Decommissioning Funding Plan Triennial Update

Background and Introduction

The Nuclear Regulatory Commission (NRC) issued its final rule on Decommissioning Planning on June 17, 2011,^[1] with the rule becoming effective on December 17, 2012. Subpart 72.30, "Financial assurance and recordkeeping for decommissioning," requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a decommissioning funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the Independent Spent Fuel Storage Installation (ISFSI).

In accordance with Subpart 72.30(b) and (c) of the rule, this enclosure provides the required triennial update with adjustments as necessary to account for changes in costs and the extent of contamination, including a detailed cost estimate in an amount reflecting:

1. The work is performed by an independent contractor;
2. An adequate contingency factor;
3. Release of the facility and dry storage systems for unrestricted use, as specified in 10 CFR Part 20.1402;
4. Identification of the key assumptions contained in the cost estimate; and
5. The volume of onsite subsurface material containing residual radioactivity, if any, that will require remediation to meet the criteria for license termination.

Spent Fuel Management Strategy

The operating licenses for Farley Units 1 & 2 are currently set to expire on June 25, 2037 and March 31, 2041 respectively. Approximately 5,520 spent fuel assemblies are currently projected to be generated as a result of plant operations through the license expiration date. The ISFSI is operated under a Part 50 General License.

Assuming that the plant operates to the end of its currently licensed life, the spent fuel pools are expected to contain a total of approximately 2,221 spent fuel assemblies after the final core offloads. To facilitate immediate dismantling or safe-storage operations, the spent fuel that cannot be transferred directly to the DOE from the pool is assumed to be packaged in dry storage casks for interim storage at the ISFSI. Transferring the spent fuel from the pool to the ISFSI will permit decontamination and dismantling of the spent fuel pool systems and fuel pool areas or result in reduced operating expenses should the station be placed into a SAFSTOR dormancy configuration.

Completion of the ISFSI decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site. DOE's repository program assumes that spent fuel allocations will be accepted for disposal from the nation's commercial nuclear plants, with limited

¹ U.S. Code of Federal Regulations, Title 10, Parts 20, 30, 40, 50, 70 and 72 "Decommissioning Planning," Nuclear Regulatory Commission, Federal Register Volume 76, Number 117 (p 35512 et seq.), June 17, 2011

exceptions, in the order (the “queue”) in which it was discharged from the reactor.^[2] Southern Nuclear Company’s current spent fuel management plan for the Farley spent fuel is based in general upon: 1) a 2032 start date for DOE initiating transfer of commercial spent fuel to a federal facility, and 2) completion of spent fuel receipt by year 2075. The completion date is based upon the DOE’s generator allocation/receipt schedules which are based upon the oldest fuel receiving the highest priority. The end date assumes a maximum rate of transfer of 3,000 metric tons of uranium/year.^[3]

ISFSI Decommissioning Strategy

At the conclusion of the spent fuel transfer process the ISFSI will be promptly decommissioned (similar to the power reactor DECON alternative) by removing and disposing of residual radioactivity and verifying that remaining materials satisfy NRC release criteria. For purposes of providing an estimate for a funding plan, financial assurance is expected to be provided on the basis of a prompt ISFSI decommissioning scenario. In this estimate the ISFSI decommissioning is considered an independent project, regardless of the decommissioning alternative identified for the nuclear power plant.

ISFSI Description

The Farley ISFSI uses a Holtec International (Holtec) HI-STORM 100S, Version B dry storage system. The HI-STORM 100S Version B is comprised of a multi-purpose canister (MPC) and storage overpack. The MPCs are assumed to be transferred directly to the DOE and not returned to the station. The storage overpacks remain onsite after transfer of the spent fuel to the DOE. The majority of the overpacks are assumed to be disposed of as “clean” material. The inner steel liners of the remaining overpacks are assumed to have residual radioactivity due to some minor level of neutron-induced activation as a result of the long-term storage of the spent fuel. The cost to dispose of residual radioactivity, and verify that the remaining facility and surrounding environs meet the NRC’s radiological limits established for unrestricted use, form the basis of the ISFSI decommissioning estimate.

SNC’s current spent fuel management plan for Farley spent fuel would result in 89 spent fuel storage casks (nominal 32 assemblies per cask) and 56 spent fuel storage casks (nominal 24 assemblies per cask) being placed on a storage pad at the site after all spent fuel has been removed from the spent fuel pool. This represents approximately 75% of the total spent fuel projected to be generated during the currently licensed operating period.

In addition to the spent fuel casks located on the ISFSI pad after shutdown there are projected to be additional casks that are expected to be used for Greater-than-Class-C (GTCC) storage. The storage overpacks used for the GTCC canisters (estimated quantity of 8) are not expected to have any interior contamination or residual activation and can be reused or disposed of by conventional means after a final status survey.

² U.S. Code of Federal Regulations, Title 10, Part 961.11, Article IV – Responsibilities of the Parties, B. DOE Responsibilities, 5.(a) ... DOE shall issue an annual acceptance priority ranking for receipt of SNF and/or HLW at the DOE repository. This priority ranking shall be based on the age of SNF and/or HLW as calculated from the date of discharge of such materials from the civilian nuclear power reactor. The oldest fuel or waste will have the highest priority for acceptance, except as ...”

³ “Acceptance Priority Ranking & Annual Capacity Report,” DOE/RW-0567, July 2004.

Table 1 provides the significant quantities and physical dimensions used as the basis in developing the ISFSI decommissioning estimate.

Key Assumptions / Estimating Approach

The decommissioning estimate is based on the configuration of the ISFSI expected after all spent fuel and GTCC material has been removed from the site. The configuration of the ISFSI is based on the unit operating until the end of its current license, (Unit 1 – June 25, 2037; Unit 2 – March 31, 2041), and the assumptions associated with DOE's spent fuel acceptance, as previously described.

The nominal size of the ISFSI pad is sufficient to store the projected amount of spent fuel and is expected to be approximately 40,000 square feet in surface area.

It is not expected that the overpacks will have any interior or exterior radioactive surface contamination. It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Any neutron activation of the steel and concrete is expected to be extremely small. To validate this assumption, the estimate accounts for characterization of 10% of the overpacks; it is likely that some of this characterization will take place well before the last of the fuel is removed from the ISFSI in order to establish a more definitive decommissioning scope.

The decommissioning estimate conservatively assumes that 14 overpacks, excluding those used for GTCC, will contain low levels of neutron-induced residual radioactivity on its inner steel liner that would necessitate remediation at the time of decommissioning. For purposes of this estimate, the overpack inner steel liners are designated for controlled disposal as low-level radioactive waste. It is not expected that there will be any residual contamination left on the concrete ISFSI pad, or other facilities at the Farley ISFSI. It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Therefore, it is assumed for this analysis that these facilities will not be contaminated. As such, only verification surveys are included for the facilities in the decommissioning estimate.

There is no expected subsurface material in the proximity of the ISFSI containing residual radioactivity that will require remediation to meet the criteria for license termination.

To support an application for License Termination, the estimate assumes that a Final Status Survey will be performed; this will include a 100% survey of the concrete overpack surfaces, and a significant fraction of the ISFSI pad and the immediate area surrounding the pad, and the other ISFSI structures.

Decommissioning is assumed to be performed by an independent contractor. As such, essentially all labor, equipment, and material costs are based on national averages, i.e., costs from national publications such as R.S. Means' Building Construction Cost Data (adjusted for regional variations), and laboratory service costs are based on vendor price lists. Those craft labor positions that are expected to be provided locally. SNC will oversee the site activities; and, therefore the estimate includes SNC's labor and overhead costs.

Low-level radioactive waste disposal costs are based on Southern Nuclear Company's current cost of disposal at the EnergySolutions Clive, Utah disposal site.

Costs are reported in 2015 dollars.

Contingency has been added at an overall rate of 25%. This is consistent with the contingency evaluation criteria referenced by the NRC in NUREG-1757.^[4]

The estimate is limited to costs necessary to terminate the ISFSI's NRC license and meets the §20.1402 criteria for unrestricted use. Disposition of released material and structures is outside the scope of the estimate.

Cost Estimate

The estimated cost to decommission the ISFSI and release the facility for unrestricted use is provided in Table 2. The cost has been organized into three phases, including:

- An initial planning phase - empty overpacks are characterized and the specifications and work procedures for the decontamination (liner removal) developed.
- The remediation phase - residual radioactivity is removed, packaged in certified waste containers, transported to the low-level waste site, and disposed of at low-level waste.
- The final phase - license termination surveys, independent surveys are completed, and an application for license termination submitted.

In addition to the direct costs associated with a contractor providing the decommissioning services, the estimate also contains costs for the NRC (and NRC contractor), SNC's oversight staff, site security (industrial), and other site operating costs.

For estimating purposes it is conservatively assumed that all expenditures will be incurred in the year 2076, the year following all spent fuel removal.

Financial Assurance Summary

SNC operates the Farley ISFSI in accordance with the general license provisions of the 10 CFR 72, Subpart K. The Farley ISFSI is a shared facility for storage of spent fuel from both Unit 1 and Unit 2. Accordingly, the cost associated with operation and decommissioning the ISFSI is not unit-specific and may be funded from the existing decommissioning trust fund established in accordance with 10 CFR 50.75 for either unit.

The Farley ISFSI decommissioning cost estimate is derived from a site-specific decommissioning cost study prepared every three years. The scope of the decommissioning cost study includes decommissioning of the reactor facility to permit license termination, management of the spent fuel in accordance with 10 CFR 50.54(bb), and decommissioning the ISFSI following removal of the spent fuel. The estimated costs are adjusted periodically to reflect the current assumptions such as cost of energy, labor, burial cost, projected capacity, and schedule for removal of fuel from the site. Incorporation of the cost to decommission the

⁴ "Consolidated Decommissioning Guidance, Financial Assurance, Recordkeeping, and Timeliness," U.S. Nuclear Regulatory Commission's Office of Federal and State Materials and Environmental Management Programs, NUREG-1757, Volume 3, Revision 1, February 2012.

ISFSI into the scope of the Farley decommissioning cost study and use for cost-of-service ratemaking, provides assurance that adequate funding will be available as required by 10 CFR 72.30 (b), (c), and (d).

Financial assurance that adequate funds are available to decommission the ISFSI is based on the following:

- Site specific cost studies have historically included the cost to decommissioning the ISFSI as part of the scope of activities necessary to decommission the Part 50 facility and terminate the Part 50 specific license in accordance with 10 CFR 50.82, Termination of License.
- SNC previously collected funds to demonstrate compliance with the NRC minimum decommissioning funding requirement based on the NRC formula amount described in 10 CFR 50.75 based on the original operating license period of 40 years. Upon issuance of the renewed operating license, these same funds will accumulate interest over an additional 20 year period. As a result, the decommissioning trust fund balances will exceed the NRC minimum decommissioning funding formula amount described in 10 CFR 50.75 at the time of Part 50 license expiration and provide additional assurance that adequate funds will be available to decommission the Farley ISFSI.
- The most recent Farley decommissioning cost study update estimates the amount necessary for ISFSI decommissioning to be \$5,297,000 (2015\$) shared by both operating units. The estimates are included in Table 3.
- In accordance with 10 CFR 72.30(b), financial assurance for decommissioning has been provided in an amount separate from the requirements of 10 CFR 50.75(b). The amount allocated for ISFSI decommissioning is held in the same financial instrument as the reactor decommissioning funds required by 10 CFR 50.75. As shown in Table 3, these funds are in excess of the amount required for decommissioning the Part 50 facility and provide adequate assurance that funding for decommissioning the ISFSI will be available upon expiration of the Part 50 operating licenses for Farley Units 1 and 2.

Accordingly, the funds set aside to cover the ISFSI decommissioning costs for Farley are not the same funds credited for compliance with the decommissioning funding requirements of 10 CFR 50.75. Table 3 provides a summary to demonstrate decommissioning funding in the amounts required by 10 CFR 50.75 and 10 CFR 72.30 will be available when required to decommission the Part 50 reactor plants and the Part 72 ISFSI, respectively.

Table 1
Significant Quantities and Physical Dimensions

ISFSI Pad

Item	Area (ft ²)	Residual Radioactivity
ISFSI Pad	40,000	No residual radioactivity

ISFSI Overpack (HI-STORM 100S Version B)

Item	Value	Notes (all dimensions are nominal)
Overall Height (inches)	218.5	
Outside Diameter (inches)	132.5	Main cylindrical body of overpack
Inside Diameter (inches)	73.5	
Inner Liner Thickness (inches)	1.0	
Quantity (total)	153	Spent Fuel 145 + GTCC 8
Quantity (with residual radioactivity)	14	Equivalent to the number of overpacks used to store last complete core offloads
Total Surface Area of Overpack Inner Liner with Residual Radioactivity (square feet)	4,485	
Low-Level Radioactive Waste (cubic feet)	3,131	
Low-Level Radioactive Waste (packaged density- lbs./cu.ft.)	59	

Other Potentially Impacted Items

Item	Value	Notes
Number of Overpacks used for GTCC storage	8	No residual radioactivity
Transfer Cask	1	No residual radioactivity

Table 2
ISFSI Decommissioning Costs¹ and Waste Volumes

	(thousands, 2015 dollars)						Waste Volume (ft3)	Person-Hours		
	Removal	Packaging	Transport	Disposal	Other	Total		Contractor	Licensee	NRC/ NRC Contractor
Decommissioning Contractor										
Planning (characterization, specs and procedures)	-	-	-	-	422	422	-	1,288	-	-
Remediation (activated liner removal)	253	13	58	196	57	577	3,131	963	-	-
License Termination (radiological surveys)	-	-	-	-	2,150	2,150	-	17,246	-	-
Subtotal	253	13	58	196	2,629	3,148	3,131	19,497	-	-
Supporting Costs										
NRC and NRC Contractor Fees and Costs	-	-	-	-	425	425	-	-	-	776
Insurance	-	-	-	-	142	142	-	-	-	-
Property Tax	-	-	-	-	2	2	-	-	-	-
Site Overheads	-	-	-	-	66	66	-	-	-	-
Corporate Overheads	-	-	-	-	57	57	-	-	-	-
Security (Industrial)	-	-	-	-	101	101	-	4,978	-	-
Farley Oversight Staff	-	-	-	-	297	297	-	-	3,771	-
Subtotal	-	-	-	-	1,090	1,090	-	4,978	3,771	776
Total (w/o contingency)	253	13	58	196	3,718	4,238	3,131	24,475	3,771	776
Total (with 25% contingency)	-	-	-	-	-	5,297	-	-	-	-

Note 1: For funding planning purposes decommissioning costs can be assumed to be incurred in year 2076.

Table 3 – Financial Assurance
 (Alabama Power Company – 100% ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75(b) and (c) (Dec 2016\$)	\$421,872,000	\$421,872,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$402,098,838	\$388,100,905
3	Assumptions regarding: (a) Rates of escalation in decommissioning costs (b) Rates of earnings on de commissioning funds (c) Real rate of return	4.5% 7.0% 2.5%	4.5% 7.0% 2.5%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75(b) and (c) (U1 - year 2037, U2 - year 2041)	\$1,063,219,177	\$1,267,908,645
5	Projected ending fund balance (U1 – year 2037, U2 year 2041)	1,685,739,447	2,131,415,883
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2037, U2 – year 2041) Row 5 – Row 4	\$622,520,270	\$863,507,238
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$2,648,500	\$2,648,500
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2037, U2 – year 2041)	\$6,975,227	\$8,318,088

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Independent Spent Fuel Storage Installation
ISFSI Decommissioning Funding Plan Triennial Update**

Enclosure 2

**Edwin I. Hatch Nuclear Plant – Units 1 and 2
ISFSI Decommissioning Funding Plan Triennial Update**

Edwin I. Hatch Nuclear Plant – Units 1 and 2 ISFSI Decommissioning Funding Plan Triennial Update

Background and Introduction

The Nuclear Regulatory Commission (NRC) issued its final rule on Decommissioning Planning on June 17, 2011, with the rule becoming effective on December 17, 2012. Subpart 72.30, "Financial assurance and recordkeeping for decommissioning," requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a decommissioning funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the Independent Spent Fuel Storage Installation (ISFSI).

In accordance with Subpart 72.30(b) and (c) of the rule, this enclosure provides the required triennial update with adjustments as necessary to account for changes in costs and the extent of contamination, including a detailed cost estimate in an amount reflecting:

1. The work is performed by an independent contractor;
2. An adequate contingency factor;
3. Release of the facility and dry storage systems for unrestricted use, as specified in 10 CFR Part 20.1402;
4. Identification of the key assumptions contained in the cost estimate; and
5. The volume of onsite subsurface material containing residual radioactivity, if any, that will require remediation to meet the criteria for license termination.

Spent Fuel Management Strategy

The operating licenses for Hatch Units 1 & 2 are currently set to expire on August 6, 2034 and June 13, 2038 respectively. Approximately 14,823 spent fuel assemblies are currently projected to be generated as a result of plant operations through the license expiration date. The ISFSI is licensed and operated under 10 CFR Part 72 in accordance with the general license provisions of 10 CFR 72.210.

Assuming that the plant operates to the end of currently licensed life the spent fuel pools are expected to contain a total of approximately 3,337 spent fuel assemblies after the final core offloads. To facilitate immediate dismantling or safe-storage operations, the spent fuel that cannot be transferred directly to the DOE from the pool is assumed to be packaged in dry storage casks for interim storage at the ISFSI. Transferring the spent fuel from the pool to the ISFSI will permit decontamination and dismantling of the spent fuel pool systems and allow termination of the Part 50 license using the DECON method described in NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: Supplement 1, Regarding the Decommissioning of Nuclear Power Reactors," (GEIS).

Completion of the ISFSI decommissioning process is dependent upon the DOE's ability to meet its contractual obligation to remove spent fuel from the site. DOE's repository program assumes that spent fuel allocations will be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the reactor. SNC's current spent fuel management plan for the Hatch spent fuel is based in general upon: 1) a 2032 start date for DOE initiating transfer of commercial spent fuel to a federal

facility, and 2) completion of spent fuel receipt in 2074. The completion date is based upon the DOE's generator allocation/receipt schedules which are based upon the oldest fuel receiving the highest priority. The end date assumes a maximum rate of transfer of 3,000 metric tons of uranium/year.

ISFSI Decommissioning Strategy

At the conclusion of the spent fuel transfer process the ISFSI will be promptly decommissioned (similar to the power reactor DECON alternative) by removing and disposing of residual radioactivity and verifying that remaining materials satisfy NRC release criteria. For purposes of providing an estimate for a funding plan, financial assurance is expected to be provided on the basis of a prompt ISFSI decommissioning scenario. In this estimate the ISFSI decommissioning is considered an independent project, regardless of the decommissioning alternative identified for the nuclear power plant.

ISFSI Description

The Hatch ISFSI uses a Holtec International (Holtec) HI-STORM 100 Version B dry storage system. The HI-STORM 100 is comprised of a multi-purpose canister (MPC) and storage overpack. The multi-purpose canisters are assumed to be transferred directly to the DOE and not returned to the station. The storage overpacks remain onsite after transfer of the spent fuel to the DOE. The majority of the overpacks are assumed to be disposed of as "clean" material. The inner steel liners of the remaining overpacks are assumed to have residual radioactivity due to some minor level of neutron-induced activation as a result of the long-term storage of the spent fuel. The cost to dispose of residual radioactivity, and verify that the remaining facility and surrounding environs meet the NRC's radiological limits established for unrestricted use, form the basis of the ISFSI decommissioning estimate.

SNC's current spent fuel management plan for the Hatch spent fuel would result in 138 spent fuel storage casks (nominal 68 assemblies per cask) and 38 spent fuel storage casks (nominal 52 assemblies per cask) being located on a storage pad after all spent fuel has been removed from the spent fuel pool. This represents approximately 77% of the total spent fuel projected to be generated during the currently licensed operating period.

In addition to the spent fuel casks located on the ISFSI pad after shutdown there are projected to be additional casks that are expected to be used for Greater-than-Class-C (GTCC) storage. The storage overpacks used for the GTCC canisters (estimated quantity of 8) are not expected to have any interior contamination or residual activation and can be reused or disposed of by conventional means after a final status survey.

Table 1 provides the significant quantities and physical dimensions used as the basis in developing the ISFSI decommissioning estimate.

Key Assumptions / Estimating Approach

The decommissioning estimate is based on the configuration of the ISFSI expected after all spent fuel and GTCC material has been removed from the site. The configuration of the ISFSI is based on the unit operating until the end of its current license, (Unit 1 –August 6, 2034; Unit 2 – June 13, 2038), and the assumptions associated with DOE's spent fuel acceptance, as previously described.

The nominal size of the ISFSI pad and adjacent concrete sufficient to store the projected amount of spent fuel is expected to be approximately 67,000 square feet in surface area.

It is not expected that the overpacks will have any interior or exterior radioactive surface contamination. It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Any neutron activation of the steel and concrete is expected to be extremely small. To validate this assumption, the estimate accounts for characterization of 10% of the overpacks; it is likely that some of this characterization will take place well before the last of the fuel is removed from the ISFSI in order to establish a more definitive decommissioning scope.

The decommissioning estimate conservatively assumes that 22 overpacks, excluding those used for GTCC, will contain low levels of neutron-induced residual radioactivity of its inner steel liner that would necessitate remediation at the time of decommissioning. For purposes of this estimate, the overpack inner steel liners are designated for controlled disposal as low-level radioactive waste.

It is not expected that there will be any residual contamination left on the concrete ISFSI pad, or other facilities at the Hatch ISFSI. It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Therefore, it is assumed for this analysis that these facilities will not be contaminated. As such, only verification surveys are included for the facilities in the decommissioning estimate.

There is no expected subsurface material in the proximity of the ISFSI containing residual radioactivity that will require remediation to meet the criteria for license termination.

To support an application for License Termination, the estimate assumes that a Final Status Survey will be performed; this will include a 100% survey of the concrete overpack surfaces, and a significant fraction of the ISFSI pad and the immediate area surrounding the pad, and the other ISFSI structures.

Decommissioning is assumed to be performed by an independent contractor. As such, essentially all labor, equipment, and material costs are based on national averages, i.e., costs from national publications such as R.S. Means' Building Construction Cost Data (adjusted for regional variations), and laboratory service costs are based on vendor price lists. Southern Nuclear Company, as licensee, will oversee the site activities; the estimate includes Southern Nuclear Company's labor and overhead costs.

Low-level radioactive waste disposal costs are based on Southern Nuclear Company's current cost of disposal at the EnergySolutions Clive, Utah disposal site.

Costs are reported in 2015 dollars.

Contingency has been added at an overall rate of 25%. This is consistent with the contingency evaluation criteria referenced by the NRC in NUREG-1757.

The estimate is limited to costs necessary to terminate the ISFSI's NRC license and meet the §20.1402 criteria for unrestricted use. Disposition of released material and structures is outside the scope of the estimate.

6. Cost Estimate

The estimated cost to decommission the ISFSI and release the facility for unrestricted use is provided in Table 2. The cost has been organized into three phases, including:

- An initial planning phase - empty overpacks are characterized and the specifications and work procedures for the decontamination (liner removal) developed.
- The remediation phase - residual radioactivity is removed, packaged in certified waste containers, transported to the low-level waste site, and disposed of at low-level waste.
- The final phase - license termination surveys, independent surveys are completed, and an application for license termination submitted.

In addition to the direct costs associated with a contractor providing the decommissioning services, the estimate also contains costs for the NRC (and NRC contractor), Southern Nuclear Company's oversight staff, site security (industrial), and other site operating costs.

For estimating purposes it should be conservatively assumed that all expenditures will be incurred in the year 2075, the year following all spent fuel removal.

Financial Assurance Summary

SNC operates the Hatch ISFSI in accordance with the general license provisions of the 10 CFR 72, Subpart K. The Hatch ISFSI is a shared facility for storage of spent fuel from both Unit 1 and Unit 2. Accordingly, the cost associated with operation and decommissioning the ISFSI is not unit-specific and may be funded from the existing decommissioning trust fund established in accordance with 10 CFR 50.75 for either unit.

The Hatch ISFSI decommissioning cost estimate is derived from a site-specific decommissioning cost study prepared every three years. The scope of the decommissioning cost study includes decommissioning of the reactor facility to permit license termination, management of the spent fuel in accordance with 10 CFR 50.54(bb), and decommissioning the ISFSI following removal of the spent fuel. The estimated costs are adjusted periodically to reflect the current assumptions such as cost of energy, labor, burial cost, projected capacity, and schedule for removal of fuel from the site. Incorporation of the cost to decommission the ISFSI into the scope of the Hatch decommissioning cost study and use for cost-of-service ratemaking, provides assurance that adequate funding will be available as required by 10 CFR 72.30 (b), (c), and (d).

Financial assurance that adequate funds are available to decommission the ISFSI is based on the following:

- Site specific cost studies have historically included the cost to decommissioning the ISFSI as part of the scope of activities necessary to decommission the Part 50 facility and terminate the Part 50 specific license in accordance with 10 CFR 50.82, Termination of License.

- SNC previously collected funds to demonstrate compliance with the NRC minimum decommissioning funding requirement based on the NRC formula amount described in 10 CFR 50.75 based on the original operating license period of 40 years. Upon issuance of the renewed operating license, these same funds will accumulate interest over an additional 20 year period. As a result, the decommissioning trust fund balances will exceed the NRC minimum decommissioning funding formula amount described in 10 CFR 50.75 at the time of Part 50 license expiration and provide additional assurance that adequate funds will be available to decommission the Hatch ISFSI.
- The most recent Hatch decommissioning cost study update estimates the amount necessary for ISFSI decommissioning to be \$6,252,000 (2015\$) shared by both operating units. The estimates are included in Tables 3-6.
- In accordance with 10 CFR 72.30(b), financial assurance for decommissioning has been provided in an amount separate from the requirements of 10 CFR 50.75(b). The amount allocated for ISFSI decommissioning is held in the same financial instrument as the reactor decommissioning funds required by 10 CFR 50.75. As shown in Tables 3-6, these funds are in excess of the amount required for decommissioning the Part 50 facility and provide adequate assurance that funding for decommissioning the ISFSI will be available upon expiration of the Part 50 operating licenses for Hatch Units 1 and 2.

Accordingly, the funds set aside to cover the ISFSI decommissioning costs for Hatch are not the same funds credited for compliance with the decommissioning funding requirements of 10 CFR 50.75. Tables 3-6 provide a summary to demonstrate decommissioning funding in the amounts required by 10 CFR 50.75 and 10 CFR 72.30 will be available when required to decommission the Part 50 reactor plants and the Part 72 ISFSI, respectively.

Table 1
Significant Quantities and Physical Dimensions

ISFSI Pad

Item	Area (ft ²)	Residual Radioactivity
ISFSI Pad	67,000	No residual radioactivity

ISFSI Overpack (HI-STORM 100S Version B)

Item	Value	Notes (all dimensions are nominal)
Overall Height (inches)	229.5	
Outside Diameter (inches)	132.5	Main cylindrical body of overpack
Inside Diameter (inches)	73.5	
Inner Liner Thickness (inches)	1.0	
Quantity (total)	184	Spent Fuel 145 + GTCC 8
Quantity (with residual radioactivity)	22	Equivalent to the number of overpacks used to store last complete core offloads
Total Surface Area of Overpack Inner Liner with Residual Radioactivity (square feet)	8,316	
Low-Level Radioactive Waste (cubic feet)	5,754	
Low-Level Radioactive Waste (packaged density- lbs./cu.ft.)	59	

Other Potentially Impacted Items

Item	Value	Notes
Number of Overpacks used for GTCC storage	8	No residual radioactivity
Transfer Cask	1	No residual radioactivity
Cask Transfer Facility	1	No residual radioactivity

Table 2
ISFSI Decommissioning Costs¹ and Waste Volumes

	(thousands, 2015 dollars)						Waste Volume (ft3)	Person-Hours		
	Removal	Packaging	Transport	Disposal	Other	Total		Contractor	Licensee	NRC/ NRC Contractor
Decommissioning Contractor										
Planning (characterization, specs and procedures)					455	455		1,200		
Remediation (activated liner removal)	86	19	110	1,390	40	1,645	5,754	1,341		
License Termination (radiological surveys)					1,889	1,889		14,962		
Subtotal	86	19	110	1,390	2,384	3,989	5,754	17,503	-	-
Supporting Costs										
NRC and NRC Contractor Fees and Costs					430	430				776
Insurance					148	148				
Property Tax					0	0				
Security (Industrial)					118	118		3,448		
Hatch Oversight Staff					317	317			3,792	
Subtotal					1,013	1,013		3,448	3,792	776
Total (w/o contingency)	86	19	110	1,390	3,397	5,002	5,754	20,950	3,792	776
Total (with 25% contingency)						6,252				

Note 1: For funding planning purposes decommissioning costs can be assumed to be incurred in year 2075.

Table 3 – Financial Assurance
(Georgia Power Company 50.1% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$290,887,000	\$290,887,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$256,846,668	\$237,524,936
3	Assumptions regarding: (a) Rates of escalation in decommissioning costs (b) Rates of earnings on de commissioning funds (c) Real rate of return	2.49% 4.49% 2.00%	2.49% 4.49% 2.00%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2034, U2 - year 2038)	\$452,888,392	\$499,708,989
5	Projected ending fund balance (U1 – year 2034, U2 year 2038)	\$555,426,000	\$612,294,000
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2034, U2 – year 2038) Row 5 – Row 4	\$102,537,608	\$112,585,011
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$1,566,126	\$1,566,126
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2034, U2 – year 2038)	\$2,499,051	\$2,757,408

Table 4 – Financial Assurance
(Oglethorpe Power Company 30% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$174,184,000	\$174,184,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$135,393,000	\$106,443,000
3	Assumptions regarding: (a) Rates of escalation in decommissioning costs (b) Rates of earnings on de commissioning funds (c) Real rate of return	2.49% 5.00% 2.51%	2.49% 5.00% 2.51%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2034, U2 - year 2038)	\$277,944,000	\$306,678,000
5	Projected ending fund balance (U1 – year 2034, U2 year 2038)	\$325,838,941	\$311,372,737
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2034, U2 – year 2038) Row 5 – Row 4	\$47,894,941	\$4,694,737
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$937,800	\$937,800
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2034, U2 – year 2038)	\$1,496,438	\$1,651,143

Table 5 – Financial Assurance
(Municipal Electric Authority of Georgia 17.7% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$102,769,000	\$102,769,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$110,640,440	\$110,172,122
3	Assumptions regarding:		
	(a) Rates of escalation in decommissioning costs	2.49%	2.49%
	(b) Rates of earnings on de commissioning funds	4.15%	4.15%
	(c) Real rate of return	1.66%	1.66%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2034, U2 - year 2038)	\$160,003,325	\$176,544,820
5	Projected ending fund balance (U1 – year 2034, U2 year 2038)	\$221,017,000	\$255,730,000
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2034, U2 – year 2038) Row 5 – Row 4	\$61,013,675	\$79,185,180
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$553,302	\$553,302
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2034, U2 – year 2038)	\$882,898	\$974,174

Table 6 – Financial Assurance
(Dalton Utilities 2.2% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$12,773,000	\$12,773,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$19,694,062	\$19,577,284
3	Assumptions regarding: (d) Rates of escalation in decommissioning costs (e) Rates of earnings on de commissioning funds (f) Real rate of return	2.49% 2.269% -0.221%	2.49% 2.269% -0.221%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2034, U2 - year 2038)	\$19,886,566	\$21,942,483
5	Projected ending fund balance (U1 – year 2034, U2 year 2038)	\$29,493,579	\$32,262,908
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2034, U2 – year 2038) Row 5 – Row 4	\$9,607,013	\$10,320,425
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$68,772	\$68,772
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2034, U2 – year 2038)	\$109,739	\$121,084

**Joseph M. Farley Nuclear Plant – Units 1 and 2
Edwin I. Hatch Nuclear Plant – Units 1 and 2
Vogtle Electric Generating Plant – Units 1 and 2
Independent Spent Fuel Storage Installation
ISFSI Decommissioning Funding Plan Triennial Update**

Enclosure 3

**Vogtle Electric Generating Plant – Units 1 and 2
ISFSI Decommissioning Funding Plan Triennial Update**

Vogtle Electric Generating Plant – Units 1 and 2 ISFSI Decommissioning Funding Plan Triennial Update

Background and Introduction

The Nuclear Regulatory Commission (NRC) issued its final rule on Decommissioning Planning on June 17, 2011, with the rule becoming effective on December 17, 2012. Subpart 72.30, "Financial assurance and recordkeeping for decommissioning," requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a decommissioning funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the Independent Spent Fuel Storage Installation (ISFSI).

In accordance with Subpart 72.30(b) and (c) of the rule, this enclosure provides the required triennial update with adjustments as necessary to account for changes in costs and the extent of contamination, including a detailed cost estimate in an amount reflecting:

1. The work is performed by an independent contractor;
2. An adequate contingency factor;
3. Release of the facility and dry storage systems for unrestricted use, as specified in 10 CFR Part 20.1402;
4. Identification of the key assumptions contained in the cost estimate; and
5. The volume of onsite subsurface material containing residual radioactivity, if any, that will require remediation to meet the criteria for license termination.

Spent Fuel Management Strategy

The operating licenses for Vogtle Nuclear Plant Units 1 & 2 are currently set to expire on January 16, 2047 and February 9, 2049 respectively. Approximately 7,156 spent fuel assemblies are currently projected to be generated as a result of plant operations through the license expiration date. The ISFSI currently has sixteen loaded casks on the pad and is licensed and operated under 10 CFR Part 72 in accordance with the general license provisions of 10 CFR 72.210.

Assuming that the plant operates to the end of currently licensed life the spent fuel pools are expected to contain a total of approximately 2,409 spent fuel assemblies after the final core offloads. To facilitate immediate dismantling or safe-storage operations, the spent fuel that cannot be transferred directly to the DOE from the pool is assumed to be packaged in dry storage casks for interim storage at the ISFSI. Transferring the spent fuel from the pool to the ISFSI will permit decontamination and dismantling of the spent fuel pool systems and allow termination of the Part 50 license using the DECON method described in NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: Supplement 1, Regarding the Decommissioning of Nuclear Power Reactors," (GEIS).

Completion of the ISFSI decommissioning process is dependent upon the DOE's ability to meet its contractual obligation to remove spent fuel from the site. DOE's repository program assumes that spent fuel allocations will be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the reactor. SNC's current spent fuel management plan for the Vogtle spent fuel is based in general

upon: 1) a 2032 start date for DOE initiating transfer of commercial spent fuel to a federal facility, and 2) completion of spent fuel receipt by year 2078. The completion date is based upon the DOE's generator allocation/receipt schedules which are based upon the oldest fuel receiving the highest priority. The end date assumes a maximum rate of transfer of 3,000 metric tons of uranium/year.

ISFSI Decommissioning Strategy

At the conclusion of the spent fuel transfer process the ISFSI will be promptly decommissioned (similar to the power reactor DECON alternative) by removing and disposing of residual radioactivity and verifying that remaining materials satisfy NRC release criteria. For purposes of providing an estimate for a funding plan, financial assurance is expected to be provided on the basis of a prompt ISFSI decommissioning scenario. In this estimate the ISFSI decommissioning is considered an independent project, regardless of the decommissioning alternative identified for the nuclear power plant.

ISFSI Description

The Vogtle ISFSI uses a Holtec International (Holtec) HI-STORM 100S, Version B dry storage system. The HI-STORM 100S Version B is comprised of a multi-purpose canister (MPC) and storage overpack. The multi-purpose canisters are assumed to be transferred directly to the DOE and not returned to the station. The storage overpacks remain onsite after transfer of the spent fuel to the DOE. The majority of the overpacks are assumed to be disposed of as "clean" material. The inner steel liners of the remaining overpacks are assumed to have residual radioactivity due to some minor level of neutron-induced activation as a result of the long-term storage of the spent fuel. The cost to dispose of residual radioactivity, and verify that the remaining facility and surrounding environs meet the NRC's radiological limits established for unrestricted use, form the basis of the ISFSI decommissioning estimate.

SNC's current spent fuel management plan for the Vogtle spent fuel would result in 93 spent fuel storage casks (nominal 32 assemblies per cask) and 77 spent fuel storage casks (nominal 24 assemblies per cask) being located on a storage pad after all spent fuel has been removed from the spent fuel pool. This represents approximately 67% of the total spent fuel projected to be generated during the currently licensed operating period.

In addition to the spent fuel casks located on the ISFSI pad after shutdown there are projected to be additional casks that are expected to be used for Greater-than-Class-C (GTCC) storage. The storage overpacks used for the GTCC canisters (estimated quantity of 10) are not expected to have any interior contamination or residual activation and can be reused or disposed of by conventional means after a final status survey.

Table 1 provides the significant quantities and physical dimensions used as the basis in developing the ISFSI decommissioning estimate.

Key Assumptions / Estimating Approach

The decommissioning estimate is based on the configuration of the ISFSI expected after all spent fuel and GTCC material has been removed from the site. The configuration of the ISFSI is based on the unit operating until the end of its current license, (Unit 1 – January 16, 2047; Unit 2

– February 9, 2049), and the assumptions associated with DOE's spent fuel acceptance, as previously described.

The nominal size of the ISFSI pad and adjacent concrete sufficient to store the projected amount of spent fuel is expected to be approximately 49,000 square feet in surface area.

It is not expected that the overpacks will have any interior or exterior radioactive surface contamination. It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Any neutron activation of the steel and concrete is expected to be extremely small. To validate this assumption, the estimate accounts for characterization of 10% of the overpacks; it is likely that some of this characterization will take place well before the last of the fuel is removed from the ISFSI in order to establish a more definitive decommissioning scope.

The decommissioning estimate conservatively assumes that 18 overpacks, excluding those used for GTCC, will contain low levels of neutron-induced residual radioactivity of its inner steel liner that would necessitate remediation at the time of decommissioning. For purposes of this estimate, the overpack inner steel liners are designated for controlled disposal as low-level radioactive waste.

It is not expected that there will be any residual contamination left on the concrete ISFSI pad, or other facilities at the Vogtle Nuclear Plant ISFSI. It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Therefore, it is assumed for this analysis that these facilities will not be contaminated. As such, only verification surveys are included for the facilities in the decommissioning estimate.

There is no expected subsurface material in the proximity of the ISFSI containing residual radioactivity that will require remediation to meet the criteria for license termination.

To support an application for License Termination, the estimate assumes that a Final Status Survey will be performed; this will include a 100% survey of the concrete overpack surfaces, and a significant fraction of the ISFSI pad and the immediate area surrounding the pad, and the other ISFSI structures.

Decommissioning is assumed to be performed by an independent contractor. As such, essentially all labor, equipment, and material costs are based on national averages, i.e., costs from national publications such as R.S. Means' Building Construction Cost Data (adjusted for regional variations), and laboratory service costs are based on vendor price lists. Southern Nuclear Company, as licensee, will oversee the site activities; the estimate includes Southern Nuclear Company's labor and overhead costs.

Low-level radioactive waste disposal costs are based on Southern Nuclear Company's current cost of disposal at the EnergySolutions Clive, Utah disposal site.

Costs are reported in 2015 dollars.

Contingency has been added at an overall rate of 25%. This is consistent with the contingency evaluation criteria referenced by the NRC in NUREG-1757.

The estimate is limited to costs necessary to terminate the ISFSI's NRC license and meet the §20.1402 criteria for unrestricted use. Disposition of released material and structures is outside the scope of the estimate.

6. Cost Estimate

The estimated cost to decommission the ISFSI and release the facility for unrestricted use is provided in Table 2. The cost has been organized into three phases, including:

- An initial planning phase - empty overpacks are characterized and the specifications and work procedures for the decontamination (liner removal) developed.
- The remediation phase - residual radioactivity is removed, packaged in certified waste containers, transported to the low-level waste site, and disposed of at low-level waste.
- The final phase - license termination surveys, independent surveys are completed, and an application for license termination submitted.

In addition to the direct costs associated with a contractor providing the decommissioning services, the estimate also contains costs for the NRC (and NRC contractor), SNC's oversight staff, site security (industrial), and other site operating costs.

For estimating purposes it should be conservatively assumed that all expenditures will be incurred in the year 2079, the year following all spent fuel removal.

Financial Assurance Summary

SNC operates the Vogtle ISFSI in accordance with the general license provisions of the 10 CFR 72, Subpart K. The Vogtle ISFSI is a shared facility for storage of spent fuel from both Unit 1 and Unit 2. Accordingly, the cost associated with operation and decommissioning the ISFSI is not unit-specific and may be funded from the existing decommissioning trust fund established in accordance with 10 CFR 50.75 for either unit.

The Vogtle ISFSI decommissioning cost estimate is derived from a site-specific decommissioning cost study prepared every three years. The scope of the decommissioning cost study includes decommissioning of the reactor facility to permit license termination, management of the spent fuel in accordance with 10 CFR 50.54(bb), and decommissioning the ISFSI following removal of the spent fuel. The estimated costs are adjusted periodically to reflect the current assumptions such as cost of energy, labor, burial cost, projected capacity, and schedule for removal of fuel from the site. Incorporation of the cost to decommission the ISFSI into the scope of the Vogtle decommissioning cost study and use for cost-of-service ratemaking, provides assurance that adequate funding will be available as required by 10 CFR 72.30 (b), (c), and (d).

Financial assurance that adequate funds are available to decommission the ISFSI is based on the following:

- Site specific cost studies have historically included the cost to decommissioning the ISFSI as part of the scope of activities necessary to decommission the Part 50 facility and terminate the Part 50 specific license in accordance with 10 CFR 50.82, Termination of License.

- SNC previously collected funds to demonstrate compliance with the NRC minimum decommissioning funding requirement based on the NRC formula amount described in 10 CFR 50.75 based on the original operating license period of 40 years. Upon issuance of the renewed operating license, these same funds will accumulate interest over an additional 20 year period. As a result, the decommissioning trust fund balances will exceed the NRC minimum decommissioning funding formula amount described in 10 CFR 50.75 at the time of Part 50 license expiration and provide additional assurance that adequate funds will be available to decommission the Vogtle ISFSI.
- The most recent Vogtle decommissioning cost study update estimates the amount necessary for ISFSI decommissioning to be \$5,545,000 (2015\$) shared by both operating units. The estimates are included in Tables 3-6.
- In accordance with 10 CFR 72.30(b), financial assurance for decommissioning has been provided in an amount separate from the requirements of 10 CFR 50.75(b). The amount allocated for ISFSI decommissioning is held in the same financial instrument as the reactor decommissioning funds required by 10 CFR 50.75. As shown in Tables 3-6, these funds are in excess of the amount required for decommissioning the Part 50 facility and provide adequate assurance that funding for decommissioning the ISFSI will be available upon expiration of the Part 50 operating licenses for Vogtle Units 1 and 2.

Accordingly, the funds set aside to cover the ISFSI decommissioning costs for Vogtle are not the same funds credited for compliance with the decommissioning funding requirements of 10 CFR 50.75. Tables 3-6 provide a summary to demonstrate decommissioning funding in the amounts required by 10 CFR 50.75 and 10 CFR 72.30 will be available when required to decommission the Part 50 reactor plants and the Part 72 ISFSI, respectively.

Table 1
Significant Quantities and Physical Dimensions

ISFSI Pad

Item	Area (ft ²)	Residual Radioactivity
ISFSI Pad	49,000	No residual radioactivity

ISFSI Overpack (HI-STORM 100S Version B)

Item	Value	Notes (all dimensions are nominal)
Overall Height (inches)	218 - 1/2	
Outside Diameter (inches)	132 - 1/2	Main cylindrical body of overpack
Inside Diameter (inches)	73 - 1/2	
Inner Liner Thickness (inches)	1.0	
Quantity (total)	180	Spent Fuel 145 + GTCC 8
Quantity (with residual radioactivity)	18	Equivalent to the number of overpacks used to store last complete core offloads
Total Surface Area of Overpack Inner Liner with Residual Radioactivity (square feet)	5,767	
Low-Level Radioactive Waste (cubic feet)	4,011	
Low-Level Radioactive Waste (packaged density- lbs./cu.ft.)	59	

Other Potentially Impacted Items

Item	Value	Notes
Number of Overpacks used for GTCC storage	10	No residual radioactivity
Transfer Cask	1	No residual radioactivity
Cask Transfer Facility	1	No residual radioactivity

Table 2
ISFSI Decommissioning Costs¹ and Waste Volumes

	(thousands, 2015 dollars)						Waste Volume (ft3)	Person-Hours		
	Removal	Packaging	Transport	Disposal	Other	Total		Contractor	Licensee	NRC/ NRC Contractor
Decommissioning Contractor										
Planning (characterization, specs and procedures)					421	421		1,176		
Remediation (activated liner removal)	68	13	74	966	39	1,160	4,011	928		
License Termination (radiological surveys)					1,835	1,835		15,485		
Subtotal	68	13	74	966	2,295	3,416	4,011	17,590	-	-
Supporting Costs										
NRC and NRC Contractor Fees and Costs					427	427				776
Insurance					148	148				
Property Tax					0	0				
Security (Industrial)					120	120		3,476		
Vogtle Oversight Staff					326	326			3,824	
Subtotal					1,020	1,020		3,476	3,824	776
Total (w/o contingency)	68	13	74	966	3,315	4,436	4,011	21,066	3,824	776
Total (with 25% contingency)						5,545				

Note 1: For funding planning purposes decommissioning costs can be assumed to be incurred in year 2079.

Table 3 – Financial Assurance Vogtle Unit 1 and 2
 (Georgia Power Company 45.7% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$203,616,000	\$203,616,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$127,774,550	\$137,930,256
3	Assumptions regarding: (a) Rates of escalation in decommissioning costs (b) Rates of earnings on decommissioning funds (c) Real rate of return	2.49% 4.49% 2.00%	2.49% 4.49% 2.00%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2047, U2 - year 2049)	\$436,453,709	\$458,459,710
5	Projected ending fund balance (U1 – year 2047, U2 year 2049)	\$521,070,000	\$576,411,000
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2047, U2 – year 2049) Row 5 – Row 4	\$84,616,291	\$117,951,290
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$1,267,032	\$1,267,032
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2047, U2 – year 2049)	\$2,783,527	\$2,923,872

Table 4 – Financial Assurance Vogtle Units 1 and 2
 (Oglethorpe Power Company 30% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$133,665,000	\$133,665,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$78,988,000	\$71,549,000
3	Assumptions regarding: a) Rates of escalation in decommissioning costs b) Rates of earnings on de commissioning funds c) Real rate of return	2.49% 5.00% 2.51%	2.49% 5.00% 2.51%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2047, U2 - year 2049)	\$293,647,000	\$308,453,000
5	Projected ending fund balance (U1 – year 2047, U2 year 2049)	\$358,448,476	\$357,974,453
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2047, U2 – year 2049) Row 5 – Row 4	\$64,801,476	\$49,521,453
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$831,750	\$831,750
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2047, U2 – year 2049)	\$1,827,261	\$1,919,392

Table 5 – Financial Assurance
 (Municipal Electric Authority of Georgia 22.7% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$101,140,000	\$101,140,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$111,947,589	\$107,008,868
3	Assumptions regarding: a) Rates of escalation in decommissioning costs b) Rates of earnings on decommissioning fund c) Real rate of return	2.49% 4.15% 1.66%	2.49% 4.15% 1.66%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2047, U2 - year 2049)	\$216,794,987	\$227,725,793
5	Projected ending fund balance (U1 – year 2047, U2 year 2049)	\$363,553,000	\$377,053,000
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2047, U2 – year 2049) Row 5 – Row 4	\$146,758,013	\$149,327,207
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$629,358	\$629,358
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2047, U2 – year 2049)	\$1,382,629	\$1,452,341

Table 6 – Financial Assurance
 (Dalton Utilities 1.6% Ownership)

		Unit 1	Unit 2
1	The NRC minimum decommissioning estimate, pursuant to 10 CFR 50.75 (b) and (c) (Dec 2016\$)	\$7,129,000	\$7,129,000
2	Total amount accumulated in the trust fund at the end of 2016 (2016\$)	\$10,577,080	\$10,127,249
3	Assumptions regarding: a) Rates of escalation in decommissioning costs b) Rates of earnings on decommissioning funds c) Real rate of return	2.49% 2.269% -0.221%	2.49% 2.269% -0.221%
4	Projected NRC minimum requirements pursuant to 10 CFR 50.75 (b) and (c) (U1 - year 2047, U2 - year 2049)	\$15,281,110	\$16,051,584
5	Projected ending fund balance (U1 – year 2047, U2 year 2049)	\$21,204,600	\$21,234,586
6	Additional funds available for Spent Fuel Management (10 CFR 50.54 (bb) and 10 CFR 72.30) and Site Restoration (U1 – year 2047, U2 – year 2049) Row 5 – Row 4	\$5,923,490	\$5,183,002
7	ISFSI decommissioning cost estimate from TLG Services Inc cost study (2015\$)	\$44,360	\$44,360
8	Projected ISFSI decommissioning cost estimate from TLG Services Inc cost study (U1 – year 2047, U2 – year 2049)	\$97,454	\$102,368