



10 CFR 50.75(f)
10 CFR 72.30(b)

LR-N19-0014

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U. S. Nuclear Regulatory Commission
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Hope Creek Generating Station
Renewed Facility Operating License No. NPF-57
NRC Docket No. 50-354 and 72-48

Salem Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-70 and DPR-75
NRC Docket Nos. 50-272, 50-311, and 72-48

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277, 50-278 and 72-29

Subject: **Report on Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations**

In accordance with 10 CFR 50.75, "Reporting and recordkeeping for decommissioning planning," paragraph (f), PSEG Nuclear LLC (PSEG) is submitting a report on the status of decommissioning funding for the reactors owned by PSEG. Additionally, in accordance with 10 CFR 72.30, "Financial assurance and recordkeeping for decommissioning," PSEG is submitting a report on the status of decommissioning funding for the independent spent fuel storage installations (ISFSIs) owned by PSEG.

In accordance with 10 CFR 50.75(b)(4), 50.75(c), and 50.75(f), the estimated cost of decommissioning for financial assurance is based on either the NRC formula cost amount calculated in accordance with 10 CFR 50.75(c) or on site-specific decommissioning cost estimates. PSEG has not made a final determination of the decommissioning option for any of its nuclear units, although its current intention is to implement SAFSTOR.

There are no regulatory commitments contained in this submittal. If you have any questions or require additional information, please contact Mr. Michael Wiwel at 856-339-7907.

Respectfully,



David J. Mannai
Senior Director – Regulatory Operations
PSEG Nuclear

Attachments:

1. Labor, Energy, and Burial Factors Used in Calculations (All Facilities)
2. Annual Radiological Decommissioning Funding Assurance Report for Hope Creek Generating Station
3. Annual Radiological Decommissioning Funding Assurance Report for Salem Generating Station, Unit 1
4. Annual Radiological Decommissioning Funding Assurance Report for Salem Generating Station, Unit 2
5. Annual Radiological Decommissioning Funding Assurance Report for Peach Bottom Atomic Power Station, Unit 2
6. Annual Radiological Decommissioning Funding Assurance Report for Peach Bottom Atomic Power Station, Unit 3

cc: Mr. D. Lew, Administrator, Region I, NRC
Mr. J. Kim, Project Manager, NRC
NRC Senior Resident Inspector, Hope Creek
NRC Senior Resident Inspector, Salem
Mr. P. Mulligan, Chief, NJBNE
PSEG Corporate Commitment Tracking Coordinator
Hope Creek Commitment Tracking Coordinator
Salem Commitment Tracking Coordinator

Attachment 1

Labor, Energy, and Burial Factors Used in Calculations (All Facilities)

Labor, Energy, and Burial Factors Used in Calculations (All Facilities)

The labor, energy, and burial indexes used are consistent with those described in NUREG-1307, Revision 17, published February 2019.

The current labor cost indexes used are obtained from the Employment Cost Index, published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS). Specifically, PSEG used the Employment Cost Index for total compensation for private industry workers by region. The labor adjustment factors were calculated according to Section 3.2 of NUREG-1307, Revision 17, using fourth quarter 2018 data. Table 1 shows the data used for this calculation.

Table 1: Labor Adjustment Factors

Region	Applicable Sites	Series ID	4Q2018 Index Number	Base L_x	Labor Adjustment Factor (L_x)
Northeast	Hope Creek Salem Peach Bottom	CIU2010000002101	136.5	2.16	2.9484

The current energy cost indexes used are obtained from Producer Price Indexes (PPI) – Commodities, published by the U.S. Department of Labor, BLS. Specifically, PSEG used the PPI for industrial electric power (WPU0543) and light fuel oils (WPU0573). The energy adjustment factors were calculated according to Section 3.3 of NUREG-1307, Revision 17, using December 2018 data. Table 2 shows the data used for this calculation.

Table 2: Energy Adjustment Factors

WPU0543 – January 1986 (base value)	114.2
WPU0573 – January 1986 (base value)	82
WPU0543 – December 2018 (preliminary value)	240.2
WPU0573 – December 2018 (preliminary value)	223.6
Industrial electric power adjustment factor - P_x	2.103
Light fuel oil adjustment factor - F_x	2.727
Energy Adjustment Factor (PWR) – $E_x(\text{PWR})$	2.365
Energy Adjustment Factor (BWR) – $E_x(\text{BWR})$	2.390

The waste burial adjustment factors used are taken from Table 2-1 of NUREG-1307, Revision 17, based on 2018 data. The adjustment factors PSEG used assume a combination of compact-affiliated and non-compact facilities, consistent with current waste disposal practices at PSEG and consistent with typical waste disposal practices during decommissioning. Table 3 summarizes the data used for the calculation of the waste adjustment factors.

Labor, Energy, and Burial Factors Used in Calculations (All Facilities)

Table 3: Waste Adjustment Factors

LLW Burial Site	Reactor Type	Applicable Site	Combination of Compact-Affiliated and Non-Compact Facility Waste Adjustment Factor (B_x)
South Carolina site Atlantic Compact	BWR	Hope Creek	12.872
South Carolina site Atlantic Compact	PWR	Salem	11.607
Generic LLW Disposal Site	BWR	Peach Bottom	13.422

The calculation methodology used for all adjustment factors is consistent with NUREG-1307, Revision 17.

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Attachment 2

**Annual Radiological Decommissioning Funding Assurance Report for Hope Creek
Generating Station**

**Annual Radiological Decommissioning Funding Assurance Report for
Hope Creek Generating Station**
(December 31, 2018 dollars, thousands)

Formula cost amount per 10 CFR 50.75(c)	\$682,967	
Projected Value of Decommissioning Trust Fund at End of Plant Life	\$940,605	Note (b)
Site-specific cost amount per 10 CFR 72.30(b)	\$8,506	Note (c) Note (d)
Amount of decommissioning trust funds accumulated as of December 31, 2018	\$548,048	Note (a)
Schedule of annual amounts remaining to be collected	-None-	
Assumptions used in funding projections	2% April 11, 2046	Note (b)
There are no contracts relied upon pursuant to 10 CFR 50.75(e)(1)(v)		
Modifications occurring to a licensee's current method of providing financial assurance since the last submitted report	-None-	
Material changes to trust agreements	-None-	

Notes:

- (a) The trust fund amount is the amount allocated for Radiological Decommissioning only.
- (b) A 2% annual real rate of return is used as allowed by 10 CFR 50.75(e)(1)(i). For purposes of this report, permanent termination of operations (shutdown) is expected on April 11, 2046.
- (c) The following statements specifically address the events defined in 10 CFR 72.30(c):
1. No spills of radioactive material producing additional residual radioactivity in onsite subsurface material have occurred.
 2. Facility modifications have not had an effect on ISFSI decommissioning costs.
 3. There were no changes in authorized possession limits.
 4. No active decommissioning has occurred; thus, there have not been any actual remediation costs that exceed the previous cost estimate.
- (d) The site-specific decommissioning funding plan was previously provided in a letter from Paul Duke, PSEG, to USNRC, "Decommissioning Funding Plan for Independent Spent Fuel Storage Installations," dated December 17, 2015. The detailed cost estimate was updated in 2018 and is provided below:

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Attachment 2**

Hope Creek Generating Station ISFSI Decommissioning Cost Estimate (thousands of 2018 dollars)									
Activity Description	Removal Costs	Packaging Costs	Transport Costs	LLRW Disposal Costs	Other Costs	Total Costs	Burial Volume Class A (cubic feet)	Craft Manhours	Oversight and Contractor Manhours
Decommissioning Contractor									
Planning (characterization, specs and procedures)	-	-	-	-	361	361	-	-	1,168
Decontamination (activated disposition)	386	274	585	2,375	-	3,619	61,344	3,705	-
License Termination (radiological surveys)	-	-	-	-	1,957	1,957	-	14,536	-
Subtotal	386	274	585	2,375	2,318	5,938	61,344	18,241	1,168
Supporting Costs									
NRC and NRC Contractor Fees and Costs					490	490	-	-	1,153
Insurance					97	97	-	-	-
Property taxes					13	13	-	-	-
Security Staff Cost					117	117	-	-	2,011
Utility Staff Cost					151	151	-	-	1,793
Subtotal	-	-	-	-	867	867	-	-	4,956
Total (w/o contingency)	386	274	585	2,375	3,186	6,805	61,344	18,241	6,124
Total (w/25% contingency)	482	342	732	2,969	3,982	8,506			

With respect to the other information required by 10 CFR 72.30(b), there has been no change to the decommissioning funding plan provided in the December 17, 2015 letter.

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Attachment 3

**Annual Radiological Decommissioning Funding Assurance Report for
Salem Generating Station, Unit 1**

**Annual Radiological Decommissioning Funding Assurance Report for
Salem Generating Station, Unit 1**
(December 31, 2018 dollars, thousands)

Formula cost amount per 10 CFR 50.75(c)	\$287,989	Note (a)
Projected Value of Decommissioning Trust Fund at End of Plant Life	\$535,328	Note (b)
Site-specific cost amount per 10 CFR 72.30(b)	\$2,915	Note (d) Note (e)
Amount of decommissioning trust funds accumulated as of December 31, 2018	\$377,660	Note (c)
Schedule of annual amounts remaining to be collected	-None-	
Assumptions used in funding projections	2% August 13, 2036	Note (b)
There are no contracts relied upon pursuant to 10 CFR 50.75(e)(1)(v)		
Modifications occurring to a licensee's current method of providing financial assurance since the last submitted report	-None-	
Material changes to trust agreements	-None-	

Notes:

- (a) Based on PSEG's 57.41% ownership of Salem
- (b) A 2% annual real rate of return is used as allowed by 10CFR 50.75(e)(1)(i). For purposes of this report, permanent termination of operations (shutdown) is expected on August 13, 2036
- (c) The trust fund amount is the amount allocated for Radiological Decommissioning only.
- (d) The following statements specifically address the events defined in 10 CFR 72.30(c):
 - 1. No spills of radioactive material producing additional residual radioactivity in onsite subsurface material have occurred.
 - 2. Facility modifications have not had an effect on ISFSI decommissioning costs.
 - 3. There were no changes in authorized possession limits.
 - 4. No active decommissioning has occurred; thus, there have not been any actual remediation costs that exceed the previous cost estimate.
- (e) The site-specific decommissioning funding plan was previously provided in a letter from Paul Duke, PSEG, to USNRC, "Decommissioning Funding Plan for Independent Spent Fuel Storage Installations," dated December 17, 2015. The detailed cost estimate was updated in 2018 and is provided below. The value stated is based on one-half of the amount identified in the table below prorated to 57.41% PSEG ownership of Salem. The estimate is common for both Salem Units.

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Attachment 3**

**Salem Generating Station
ISFSI Decommissioning Cost Estimate
(thousands of 2018 dollars)**

Activity Description	Removal Costs	Packaging Costs	Transport Costs	LLRW Disposal Costs	Other Costs	Total Costs	Burial Volume Class A (cubic feet)	Craft Manhours	Oversight and Contractor Manhours
Decommissioning Contractor									
Planning (characterization, specs and procedures)	-	-	-	-	439	439	-	-	1,264
Decontamination (activated disposition)	450	318	674	2,753	-	4,194	71,319	4,296	-
License Termination (radiological surveys)	-	-	-	-	2,317	2,317	-	17,239	-
Subtotal	450	318	674	2,753	2,756	6,950	71,319	21,536	1,264
Supporting Costs									
NRC and NRC Contractor Fees and Costs					496	496	-	-	1,153
Insurance					193	193	-	-	-
Property taxes					18	18	-	-	-
Security Staff Cost					295	295	-	-	5,082
Utility Staff Cost					174	174	-	-	2,062
Subtotal	-	-	-	-	1,176	1,176	-	-	8,297
Total (w/o contingency)	450	318	674	2,753	3,931	8,125	71,319	21,536	9,561
Total (w/25% contingency)	562	397	842	3,441	4,914	10,156			

With respect to the other information required by 10 CFR 72.30(b), there has been no change to the decommissioning funding plan provided in the December 17, 2015 letter.

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Attachment 4

**Annual Radiological Decommissioning Funding Assurance Report for
Salem Generating Station, Unit 2**

**Annual Radiological Decommissioning Funding Assurance Report for
Salem Generating Station, Unit 2**
(December 31, 2018 dollars, thousands)

Formula cost amount per 10 CFR 50.75(c)	\$287,989	Note (a)
Projected Value of Decommissioning Trust Fund at End of Plant Life	\$507,414	Note (b)
Site-specific cost amount per 10 CFR 72.30(b)	\$2,915	Note (d) Note (e)
Amount of decommissioning trust funds accumulated as of December 31, 2018	\$332,811	Note (c)
Schedule of annual amounts remaining to be collected	-None-	
Assumptions used in funding projections	2% April 18, 2040	Note (b)
There are no contracts relied upon pursuant to 10 CFR 50.75(e)(1)(v)		
Modifications occurring to a licensee's current method of providing financial assurance since the last submitted report	-None-	
Material changes to trust agreements	-None-	

Notes:

- (a) Based on PSEG's 57.41% ownership of Salem.
- (b) A 2% annual real rate of return is used as allowed by 10CFR 50.75(e)(1)(i). For purposes of this report, permanent termination of operations (shutdown) is expected on April 18, 2040.
- (c) The trust fund amount is the amount allocated for Radiological Decommissioning only.
- (d) The following statements specifically address the events defined in 10 CFR 72.30(c):
1. No spills of radioactive material producing additional residual radioactivity in onsite subsurface material have occurred.
 2. Facility modifications have not had an effect on ISFSI decommissioning costs.
 3. There were no changes in authorized possession limits.
 4. No active decommissioning has occurred; thus, there have not been any actual remediation costs that exceed the previous cost estimate.
- (e) The site-specific decommissioning funding plan was previously provided in a letter from Paul Duke, PSEG, to USNRC, "Decommissioning Funding Plan for Independent Spent Fuel Storage Installations, dated December 17, 2015." The detailed cost estimate was updated in 2018 and is provided below. The value stated is based on one-half of the amount identified in the table below prorated to 57.41% PSEG ownership of Salem. The estimate is common for both Salem Units.

Salem Generating Station ISFSI Decommissioning Cost Estimate (thousands of 2018 dollars)									
Activity Description	Removal Costs	Packaging Costs	Transport Costs	LLRW Disposal Costs	Other Costs	Total Costs	Burial Volume Class A (cubic feet)	Craft Manhours	Oversight and Contractor Manhours
Decommissioning Contractor									
Planning (characterization, specs and procedures)	-	-	-	-	439	439	-	-	1,264
Decontamination (activated disposition)	450	318	674	2,753	-	4,194	71,319	4,296	-
License Termination (radiological surveys)	-	-	-	-	2,317	2,317	-	17,239	-
Subtotal	450	318	674	2,753	2,756	6,950	71,319	21,536	1,264
Supporting Costs									
NRC and NRC Contractor Fees and Costs	-	-	-	-	496	496	-	-	1,153
Insurance	-	-	-	-	193	193	-	-	-
Property taxes	-	-	-	-	18	18	-	-	-
Security Staff Cost	-	-	-	-	295	295	-	-	5,082
Utility Staff Cost	-	-	-	-	174	174	-	-	2,062
Subtotal	-	-	-	-	1,176	1,176	-	-	8,297
Total (w/o contingency)	450	318	674	2,753	3,931	8,125	71,319	21,536	9,561
Total (w/25% contingency)	562	397	842	3,441	4,914	10,156			

With respect to the other information required by 10 CFR 72.30(b), there has been no change to the decommissioning funding plan provided in the December 17, 2015 letter.

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Attachment 5

**Annual Radiological Decommissioning Funding Assurance Report for
Peach Bottom Atomic Power Station, Unit 2**

**Annual Radiological Decommissioning Funding Assurance Report for
Peach Bottom Atomic Power Station, Unit 2**
(December 31, 2018 dollars, thousands)

Formula cost amount per 10 CFR 50.75(c)	\$349,651	Note (a)
Projected Value of Decommissioning Trust Fund at End of Plant Life	\$420,874	Note (b)
Site-specific cost amount per 10 CFR 72.30(b)	\$2,384	Note (d) Note (e)
Amount of decommissioning trust funds accumulated as of December 31, 2018	\$315,179	Note (c)
Schedule of annual amounts remaining to be collected	-None-	
Assumptions used in funding projections	2% August 8, 2033	Note (b)
There are no contracts relied upon pursuant to 10 CFR 50.75(e)(1)(v)		
Modifications occurring to a licensee's current method of providing financial assurance since the last submitted report	-None-	
Material changes to trust agreements	-None-	

Notes:

- (a) Based on PSEG's 50% ownership of Peach Bottom.
- (b) A 2% annual real rate of return is used as allowed by 10CFR 50.75(e)(1)(i). For purposes of this report, permanent termination of operations (shutdown) is expected on August 8, 2033
- (c) The trust fund amount is the amount allocated for Radiological Decommissioning only.
- (d) The following statements specifically address the events defined in 10 CFR 72.30(c):
 1. No spills of radioactive material producing additional residual radioactivity in onsite subsurface material have occurred.
 2. Facility modifications have not had an effect on ISFSI decommissioning costs.
 3. There were no changes in authorized possession limits.
 4. No active decommissioning has occurred; thus, there have not been any actual remediation costs that exceed the previous cost estimate.
- (e) The site-specific decommissioning funding plan was previously provided in a letter from Paul Duke, PSEG, to USNRC, "Decommissioning Funding Plan for Independent Spent Fuel Storage Installations," dated December 17, 2015. The detailed cost estimate was updated in 2018 and is provided below. The value stated is based on one-half of the amount identified in the table below prorated to 50% PSEG ownership of Peach Bottom. The estimate is common for both Peach Bottom Units.

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Attachment 5**

Peach Bottom Atomic Power Station									
ISFSI Decommissioning Cost Estimate									
(thousands of 2018 dollars)									
Activity Description	Removal Costs	Packaging Costs	Transport Costs	LLRW Disposal Costs	Other Costs	Total Costs	Burial Volume Class A (cubic feet)	Craft Manhours	Oversight and Contractor Manhours
Decommissioning Contractor									
Planning (characterization, specs and procedures)	-	-	-	-	358	358	-	-	1,168
Decontamination (activated disposition)	213	179	1,609	2,222	-	4,222	55,194	2,474	-
License Termination (radiological surveys)	-	-	-	-	1,499	1,499	-	11,505	-
Subtotal	213	179	1,609	2,222	1,856	6,078	55,194	13,978	1,168
Supporting Costs									
NRC and NRC Contractor Fees and Costs	-	-	-	-	485	485	-	-	1,153
Insurance	-	-	-	-	106	106	-	-	-
Property taxes	-	-	-	-	331	331	-	-	-
Security Staff Cost	-	-	-	-	287	287	-	-	4,999
Utility Staff Cost	-	-	-	-	342	342	-	-	3,792
Subtotal	-	-	-	-	1,551	1,551	-	-	9,945
Total (w/o contingency)	213	179	1,609	2,222	3,407	7,629	55,194	13,978	11,113
Total (w/25% contingency)	266	224	2,011	2,777	4,259	9,537			

With respect to the other information required by 10 CFR 72.30(b), there has been no change to the decommissioning funding plan provided in the December 17, 2015 letter.

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Attachment 6

**Annual Radiological Decommissioning Funding Assurance Report for
Peach Bottom Atomic Power Station, Unit 3**

**Annual Radiological Decommissioning Funding Assurance Report for
Peach Bottom Atomic Power Station, Unit 3**
(December 31, 2018 dollars, thousands)

Formula cost amount per 10 CFR 50.75(c)	\$349,651	Note (a)
Projected Value of Decommissioning Trust Fund at End of Plant Life	\$429,145	Note (b)
Site-specific cost amount per 10 CFR 72.30(b)	\$2,384	Note (d) Note (e)
Amount of decommissioning trust funds accumulated as of December 31, 2018	\$315,709	Note (c)
Schedule of annual amounts remaining to be collected	-None-	
Assumptions used in funding projections	2% July 2, 2034	Note (b)
There are no contracts relied upon pursuant to 10 CFR 50.75(e)(1)(v)		
Modifications occurring to a licensee's current method of providing financial assurance since the last submitted report	-None-	
Material changes to trust agreements	-None-	

Notes:

- (a) Based on PSEG's 50% ownership of Peach Bottom.
- (b) A 2% annual real rate of return is used as allowed by 10CFR 50.75(e)(1)(i). For purposes of this report, permanent termination of operations (shutdown) is expected on July 2, 2034.
- (c) The trust fund amount is the amount allocated for Radiological Decommissioning only.
- (d) The following statements specifically address the events defined in 10 CFR 72.30(c):
 1. No spills of radioactive material producing additional residual radioactivity in onsite subsurface material have occurred.
 2. Facility modifications have not had an effect on ISFSI decommissioning costs.
 3. There were no changes in authorized possession limits.
 4. No active decommissioning has occurred; thus, there have not been any actual remediation costs that exceed the previous cost estimate.
- (e) The site-specific decommissioning funding plan was previously provided in a letter from Paul Duke, PSEG, to USNRC, "Decommissioning Funding Plan for Independent Spent Fuel Storage Installations," dated December 17, 2015. The detailed cost estimate was updated in 2018 and is provided below. The value stated is based on one-half of the amount identified in the table below prorated to 50% PSEG ownership of Peach Bottom. The estimate is common for both Peach Bottom Units.

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Attachment 6

Peach Bottom Atomic Power Station									
ISFSI Decommissioning Cost Estimate									
(thousands of 2018 dollars)									
Activity Description	Removal Costs	Packaging Costs	Transport Costs	LLRW Disposal Costs	Other Costs	Total Costs	Burial Volume Class A (cubic feet)	Craft Manhours	Oversight and Contractor Manhours
Decommissioning Contractor									
Planning (characterization, specs and procedures)	-	-	-	-	358	358	-	-	1,168
Decontamination (activated disposition)	213	179	1,609	2,222	-	4,222	55,194	2,474	-
License Termination (radiological surveys)	-	-	-	-	1,499	1,499	-	11,505	-
Subtotal	213	179	1,609	2,222	1,856	6,078	55,194	13,978	1,168
Supporting Costs									
NRC and NRC Contractor Fees and Costs	-	-	-	-	485	485	-	-	1,153
Insurance	-	-	-	-	106	106	-	-	-
Property taxes	-	-	-	-	331	331	-	-	-
Security Staff Cost	-	-	-	-	287	287	-	-	4,999
Utility Staff Cost	-	-	-	-	342	342	-	-	3,792
Subtotal	-	-	-	-	1,551	1,551	-	-	9,945
Total (w/o contingency)	213	179	1,609	2,222	3,407	7,629	55,194	13,978	11,113
Total (w/25% contingency)	266	224	2,011	2,777	4,259	9,637			

With respect to the other information required by 10 CFR 72.30(b), there has been no change to the decommissioning funding plan provided in the December 17, 2015 letter.