



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 23, 2020

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION ANALYSIS OF EXELON GENERATION COMPANY, LLC'S INITIAL AND UPDATED DECOMMISSIONING FUNDING PLANS FOR THE BRAIDWOOD, BYRON, DRESDEN, LASALLE, LIMERICK, OYSTER CREEK, PEACH BOTTOM, QUAD CITIES AND SALEM-HOPE CREEK INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS

Dear Mr. Hanson:

By letter dated December 17, 2012, Exelon Generation Company, LLC (Exelon) submitted, for U.S. Nuclear Regulatory Commission (NRC) staff review and approval, initial decommissioning funding plans (DFPs) for the independent spent fuel storage installations (ISFSIs) at Braidwood Station, Units 1 and 2 (Braidwood); Byron Station, Units 1 and 2 (Byron); Dresden Nuclear Power Station, Units 2 and 3 (Dresden); LaSalle County Station, Units 1 and 2 (LaSalle); Limerick Generating Station, Units 1 and 2 (Limerick); Oyster Creek Nuclear Generating Station (Oyster Creek); Peach Bottom Atomic Power Station, Units 1, 2, and 3 (Peach Bottom); Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities); and Salem Generating Station, Units 1 and 2 (Salem) (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12353A488).¹

By letter dated March 31, 2015, Exelon submitted, for NRC staff review and approval, updated decommissioning funding plans (DFP Updates) for the ISFSIs at Braidwood; Byron; Dresden; LaSalle; Limerick; Oyster Creek; Peach Bottom; Quad Cities; and Salem-Hope Creek (ADAMS Accession No. ML15090A537).²

¹ Public Service Enterprise Group Nuclear, LLC (PSEG), is the co-owner with Exelon of the ISFSI at Peach Bottom and the shared Salem-Hope Creek ISFSI, which is used by Salem and by PSEG's Hope Creek Generating Station (Hope Creek). PSEG submitted, for the NRC staff's review and approval, initial decommissioning funding plans (DFPs) for its portions of the Salem-Hope Creek and Peach Bottom ISFSIs, by letter dated December 17, 2012 (ADAMS Accession Nos. ML12353A037). The NRC staff provided its financial analyses of the DFPS for the PSEG portions of these ISFSIs in a separate letter (ADAMS Accession No. ML17221A190).

² The letter also provided financial information for the ISFSIs at other Exelon ISFSI facilities. Additionally, by letter dated December 17, 2015 (ADAMS Accession No. ML15351A336), PSEG submitted, for NRC staff review and approval, DFP Updates for the portions of the Salem-Hope Creek ISFSI and the Peach Bottom ISFSI that PSEG co-owns with Exelon. The NRC staff provided its financial analyses of the DFPS for these ISFSIs in a separate letter (ADAMS Accession No. ML17221A190).

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR), Sections 72.30(b) and (c), and using NUREG-1757, Vol. 3, Rev. 1, "Consolidated Decommissioning Guidance," the NRC staff reviewed the Exelon's initial and updated DFPs, including the initial and updated decommissioning cost estimates (DCEs) and the method of assuring funds for decommissioning.

Pursuant to 10 CFR 72.30(b), each holder of, or applicant for, a license under Part 72 must submit for NRC review and approval a DFP containing information on how reasonable assurance will be provided that funds will be available to decommission its ISFSIs. The DFP must contain a detailed DCE, in an amount reflecting: (1) the cost of an independent contractor to perform all decommissioning activities, (2) an adequate contingency factor, and (3) the cost of meeting the 10 CFR 20.1402 unrestricted use criteria (or the cost of meeting the 10 CFR 20.1403 restricted use criteria, provided the licensee can demonstrate its ability to meet these criteria). The licensee's DFP must also identify and justify using the key assumptions contained in the DCE. Further, the DFP must describe the method of assuring funds for ISFSI decommissioning, including means for adjusting cost estimates and associated funding levels periodically over the life of the ISFSI. Additionally, the DFP must specify the volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination and contain a certification that financial assurance for ISFSI decommissioning has been provided in the amount of the DCE.

The NRC staff reviewed and analyzed the information submitted by Exelon on how reasonable assurance will be provided that funds will be available to decommission the ISFSIs, including the amount of the DCE and the method of assuring funds for decommissioning.

In its 2012 initial DFPs, Exelon estimated the total costs to decommission the ISFSIs to unrestricted use, in 2012 dollars. The DCEs were provided for Braidwood (\$4,220,000 for Units 1 and 2), Byron (\$4,220,000 for Units 1 and 2), Dresden (\$4,365,000 million for Units 2 and 3)³, LaSalle (\$4,477,000 for Units 1 and 2), Limerick (\$9,864,000 for Units 1 and 2), Oyster Creek (\$14,202,000), Peach Bottom (\$1,705,000) Quad Cities (\$2,673,000 per unit) and Salem (\$1,853,000). Based on its financial analysis of Exelon's submittals, the NRC staff finds that the DCEs submitted for 2012: (1) are based on reasonable costs of a third-party contractor; (2) include an adequate contingency factor; (3) reflect the cost of meeting the 10 CFR 20.1402 criteria for unrestricted use; and (4) are based on reasonable and documented assumptions. Therefore, the NRC finds that the 2012 DCEs adequately estimate the cost, to carry out required ISFSI decommissioning activities prior to license termination, and that the 2012 DCEs are acceptable.

In the initial DFPs, Exelon relied on excess funding from the decommissioning trust fund designated for each facility as financial assurance for ISFSI decommissioning and parent company guarantees, as necessary, a method authorized by 10 CFR 72.30(e)(2). The NRC staff confirmed that the parent company guarantees and the financial test meet the criteria of 10 CFR Part 30, Appendix A. The NRC staff finds that the aggregate dollar amount of the licensee's financial instruments provides adequate financial assurance to cover its cost estimates, and therefore, that these financial instruments are acceptable.

³ Exelon stated in its 2012 initial DFPs and 2015 Update, that the cost to decommission the spent fuel from Dresden, Unit 1 is included in the site-specific DCE reported for the ISFSI at Dresden, Units 2 and 3 (ADAMS Accession No. ML12353A488 and ML15090A537).

Based on its financial analyses, the NRC staff finds that the initial DFPs contain the information required by 10 CFR 72.30(b) and that Exelon has provided reasonable assurance that funds will be available to decommission the ISFSIs at Braidwood, Byron, Dresden, LaSalle, Limerick, Oyster Creek, Peach Bottom, Quad Cities, and Salem-Hope Creek.

Pursuant to 10 CFR 72.30(c), at the time of license renewal and at intervals not to exceed 3 years, the decommissioning funding plan (DFP) required to be submitted by 10 CFR 72.30(b) must be resubmitted with adjustments as necessary to account for changes in costs and the extent of contamination (updated DFP). The updated DFP must update the information submitted with the original or prior approved plan. In addition, the DFP must also specifically consider the effect of the following events on decommissioning costs, as required by 10 CFR 72.30(c)(1)–(4): (1) spills of radioactive material producing additional residual radioactivity in onsite subsurface material, (2) facility modifications, (3) changes in authorized possession limits, and (4) actual remediation costs that exceed the previous cost estimate.

In its 2015 updated DFPs, Exelon provided estimates of the total cost to decommission its ISFSIs for unrestricted use in 2014 dollars. Exelon estimated that the total costs to decommission the ISFSIs at Braidwood (\$4.7 million per unit for Units 1 and 2), Byron (\$4.6 million per unit for Units 1 and 2), Dresden⁴ (\$2.3 million per unit for Units 2 and 3), LaSalle (\$6.3 million per unit for Units 1 and 2), Limerick \$3.6 million per unit for Units 1 and 2), Oyster Creek (\$7.3 million), Peach Bottom (\$879,000 for Unit 2 and \$878,000 for Unit 3), Quad Cities (\$1.4 million per unit for Units 1 and 2) and Salem (\$955,000 for Unit 1 and \$954,000 for Unit 2) for unrestricted use, in 2014 dollars.

Based on its analysis of Exelon's submittals, the NRC staff finds that the updated DCEs for 2015: are based on reasonable costs of a third party contractor; include an adequate contingency factor; reflect the cost of meeting the 10 CFR 20.1402 criteria for unrestricted use; and are based on reasonable and documented assumptions. Therefore, the NRC staff finds that the updated DCEs adequately estimate the costs, at this time, to carry out required ISFSI decommissioning activities prior to license termination, and that the 2015 updated DCEs are acceptable.

Exelon's updated DCEs and its May 2, 2018, RAI response (ADAMS Accession No. ML18124A197) provided narratives on each of the requirements of 10 CFR 72.30(c)(1)–(4). Specifically, the licensee explained there were no changes in the factors listed in 10 CFR 72.30(c)(1)–(4). Based on its review of Exelon's 2015 submittals and the 2018 supplement, the NRC staff finds that the updated DCEs: are based on reasonable costs of a third-party contractor; include an adequate contingency factor; reflect the cost of meeting the 10 CFR 20.1402 criteria for unrestricted use; and are based on reasonable and documented assumptions. Therefore, the NRC staff finds that the 2015 updated DCEs adequately estimate the cost, at this time, to carry out required ISFSI decommissioning activities prior to license termination, and that the DCEs are reasonable.

In the updated DFPs for the Limerick, Peach Bottom and Salem-Hope Creek ISFSIs, Exelon relied on an external sinking fund method, coupled with an external trust fund, as financial assurance for ISFSI decommissioning, in accordance with 10 CFR 50.75(e)(1)(ii) and 10 CFR 72.30(e)(3). For the ISFSIs at Braidwood, Byron, Dresden, LaSalle, Oyster Creek, and Quad Cities, Exelon relies on the prepayment method, coupled with the external trust fund, as

⁴ Exelon stated that the ISFSI decommissioning cost for Dresden, Unit 1 is included in the Dresden, Unit 2 and Unit 3 site-specific cost estimates.

financial assurance for ISFSI decommissioning, in accordance with 10 CFR 72.30(e)(1) and 50.75(e)(1)(i). The NRC staff reviewed the licensee's updated DFPs and finds that the aggregate dollar amount of the licensee's financial instruments provides adequate financial assurance to cover its cost estimates. Therefore, the NRC staff finds these financial instruments are acceptable.

The NRC staff reviewed Exelon's updated DFP submissions, including the updated DCEs and the method of assuring funds for decommissioning, in accordance with 10 CFR 72.30(c) and NUREG-1757, Vol. 3, Rev. 1, "Consolidated Decommissioning Guidance." Based on its review, the NRC staff finds that the updated DFPs contain the information required by 10 CFR 72.30(c). The NRC staff finds that Exelon provided reasonable assurance that funds will be available to decommission the ISFSIs Braidwood, Byron, Dresden, LaSalle, Limerick, Oyster Creek, Peach Bottom, Quad Cities, and Salem-Hope Creek.

In addition to the NRC staff's review of Exelon's initial and updated DFPs, the NRC staff completed an environmental review. The NRC staff will publish a summary of the results of the environmental review in the *Federal Register* in November 2020⁵ for the ISFSIs at Braidwood; Byron; Dresden; LaSalle; Limerick; Oyster Creek; Peach Bottom, Quad Cities, and Salem-Hope Creek. The environmental assessments and findings of no significant impact for these ISFSIs will be available in <https://www.regulations.gov> under the Docket ID: NRC-2020-0132. The NRC staff determined there were no environmental impacts from the NRC staff's review and approval of Exelon's initial and updated DFPs.

⁵ This *Federal Register Notice* also includes summaries of results for the ISFSIs at the Clinton Power Station, Unit 1; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Nine Mile Point Nuclear Station, Units 1 and 2; R.E. Ginna Nuclear Power Plant; Zion Nuclear Power Station, Units 1 and 2, Arkansas Nuclear One, Units 1 and 2; Grand Gulf Nuclear Station, Unit 1; River Bend Station, Unit 1; and Waterford Steam Electric Station, Unit 3 .

If you have any questions regarding this matter, please contact me at (301) 415-5722 or John.McKirgan@nrc.gov.

Sincerely,

John McKirgan, Chief
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No(s): 72-73, 72-68, 72-37, 72-70,
72-65, 72-15, 72-15, 72-69, 72-8, 72-53, and 72-48
License No(s): SFGL-48, SFGL-43, SFGL-10,
SFGL-44, SFGL-39, SFGL-05, SFGL-04,
SFGL-08, SFGL-24 and SFGL-30
CAC No.: 001028
EPID No(s): L-2017-FPR-0008, L-2017-FPR-0011,
L-2017-FPR-0022, L-2017-FPR-0038,
L-2017-FPR-0039, L-2017-FPR-0049,
L-2017-FPR-0057, and L-2017-FPR-0033

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION ANALYSIS OF EXELON GENERATION COMPANY, LLC'S INITIAL DECOMMISSIONING FUNDING PLANS AND DECOMMISSIONING FUND PLAN UPDATES FOR THE BRAIDWOOD, BYRON, DRESDEN, LASALLE, LIMERICK, OYSTER CREEK, PEACH BOTTOM, QUAD CITIES AND SALEM INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS

DOCUMENT DATED: November 23, 2020

DISTRIBUTION:

PUBLIC

DFM R/F	RidsNmssRefsFab	KLois, NMSS	SHarwell, NMSS
FMiller, NMSS	MHenderson, NMSS	BWhite, NMSS	DHabib, NMSS
JMaltese, OGC	PJehle, OGC	TWengert, NRR	WAllen, NMSS
SLingam, NRR	AKlett, NRR	JMcKirgan, NMSS	CJacobs, NMSS
JWeibe, NRR	JNguyen, NMSS	MMarshall, NRR	RHaskell, NRR
BVaidya, NRR	VSreenivas, NRR	JTobin, NRR	RKuntz, NRR
JKim, NRR	ZCruzPerez, NMSS	JHickman, NMSS	

RidsNMSSResource
 RidsNrrPMBraidwood Resource
 RidsNrrPMByron Resource
 RidsNrrPMCalvertCliffs Resource
 RidsNrrPMClinton Resource
 RidsNrrPMDresden Resource
 RidsNrrPMLaSalle Resource
 RidsNrrPMLimerick Resource
 RidsNrrPMNineMilePoint Resource
 RidsNrrPMPeachBottom Resource
 RidsNrrPMQuadCities Resource
 RidsNrrPMREGinna Resource
 RidsNrrPMHopeCreek Resource
 RidsNrrPMSalem Resource

ADAMS Accession No.: ML20279A501

*** via email**

OFFICE	NMSS/DFM	NMSS/DFM	OGC (NLO)	NMSS/REFS/FAB	NMSS/STLB
NAME	RGladney	WWheatley	PJehle	FMiller	JMcKirgan
DATE	09/10/2020	11/4/2020	11/17/2020	11/2/2020	11/23/2020

OFFICIAL RECORD COPY