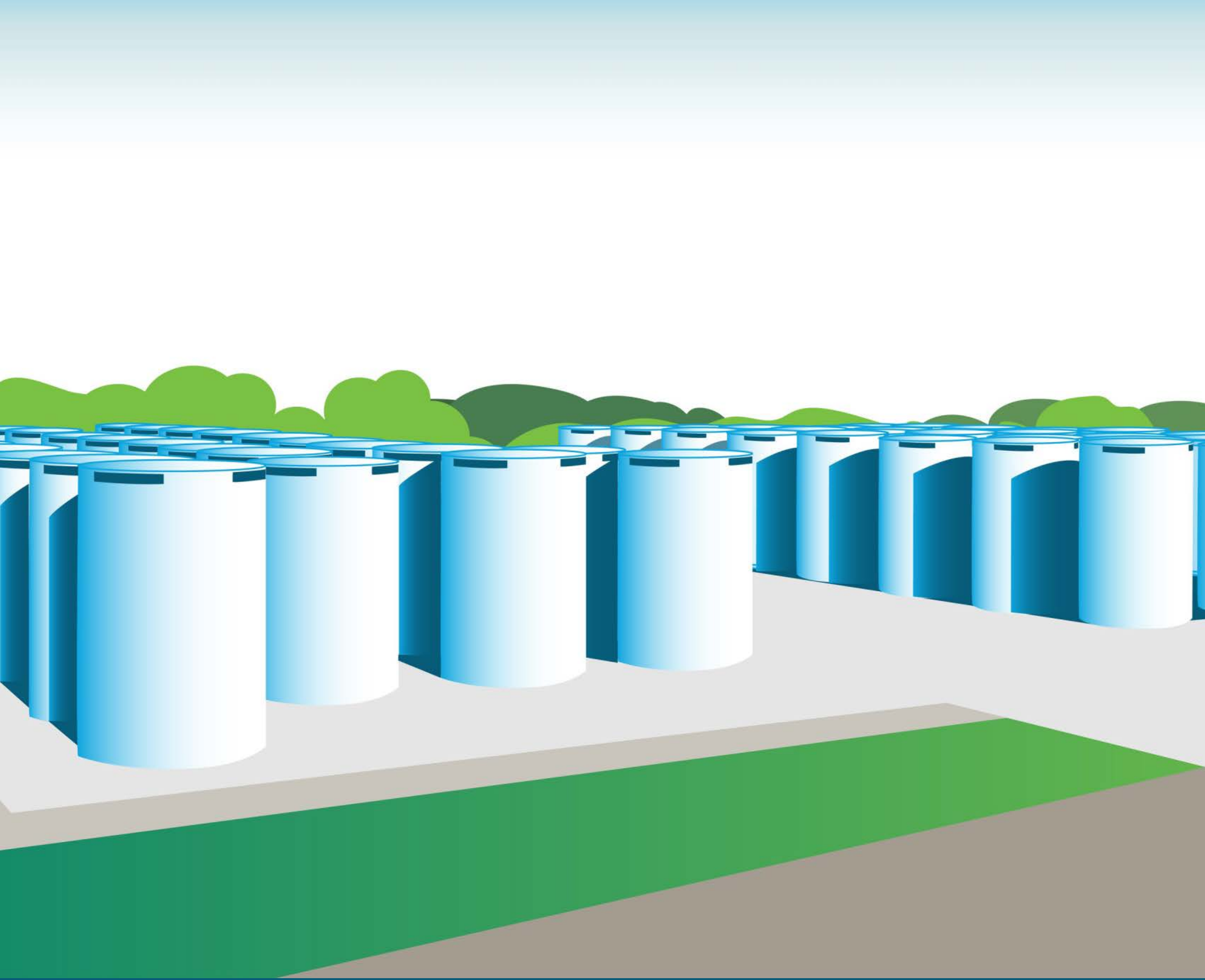
SPENT NUCLEAR FUEL AND REPROCESSING WASTE INVENTORY

December 2024



U.S. DEPARTMENT OF ENERGY

Office of NUCLEAR ENERGY

SPENT FUEL & HIGH-LEVEL WASTE DISPOSITION

Spent Nuclear Fuel and Reprocessing Waste Inventory

December 2024

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SUMMARY

This report provides information on the inventory of spent nuclear fuel (SNF) in the United States located at Nuclear Power Reactor (NPR) and Independent Spent Fuel Storage Installation (ISFSI) sites, as well as SNF and reprocessing waste located at U.S. Department of Energy (DOE) sites and other research and development (R&D) centers as of the end of calendar year 2022. Actual quantitative values for current inventories are provided along with inventory forecasts derived from examining different future nuclear power generation scenarios, based on information available and assumptions made at the time the scenarios were developed. The report also includes select information on the characteristics associated with the wastes examined (e.g., type, packaging, heat generation rate, decay curves).

ACKNOWLEDGMENTS

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ACRONYMS

ANL	Argonne National Laboratory
ATR	Advanced Test Reactor
BFC	Bare Fuel Cask
BWR	Boiling Water Reactor
DOE	Department of Energy
EIA	Energy Information Administration
GTCC	Greater-than-Class-C (category of radioactive waste)
GWd/MT	Gigawatt-days per Metric Ton (of Initial Uranium)
GWSB	Glass Waste Storage Building
HIP	Hot Isostatic Pressing
HLW	High-Level Radioactive Waste
INL	Idaho National Laboratory
ISF	Interim Storage Facility
ISFSI	Independent Spent Fuel Storage Installation
LLRW	Low-Level Radioactive Waste
LWR	Light Water Reactor
MCO	Multi-Canister Overpack
MT	Metric Tons
MTHM	Metric Tons Initial Heavy Metal (typically equivalent to MTU)
MTU	Metric Tons Initial Uranium
NIST	National Institute of Standards and Technology
NNPP	Naval Nuclear Propulsion Program
NPR	Nuclear Power Reactor
NRC	Nuclear Regulatory Commission
NSNFP	National Spent Nuclear Fuel Program
OCRWM	Office of Civilian Radioactive Waste Management
ORNL	Oak Ridge National Laboratory
PWR	Pressurized Water Reactor
R&D	Research and Development
SFD	Spent Fuel Database
SFWD	DOE’s Office of Spent Fuel and High-Level Waste Disposition
SNF	Spent Nuclear Fuel
SRNL	Savannah River National Laboratory
SRS	Savannah River Site
TREAT	Transient Reactor Test Facility
TMI	Three Mile Island
TRU	Transuranic

UFDC	Used Fuel Disposition Campaign
WEST	Waste Encapsulation and Storage Facility
WTP	Waste Treatment Project

1. INTRODUCTION

This report[3] provides information on the inventory of spent nuclear fuel (SNF) and reprocessing waste including high-level radioactive waste (HLW)[4] in the United States as of the end of calendar year 2022. Inventory forecasts for SNF were made for a few selected scenarios of future nuclear power generation involving the existing reactor fleet, as well as reactors under construction for one case. This introductory section (Section 1) provides an overview of the SNF inventory based on three location categories: Nuclear Power Reactor (NPR) and Independent Spent Fuel Storage Installation (ISFSI) sites, DOE sites, and other research sites (universities, other government agencies, and commercial research centers). Section 2 presents more detailed information on the SNF located at NPR and ISFSI sites (excluding DOE ISFSIs). A more in-depth discussion on the SNF located at DOE sites is provided in Section 3. Research and Development centers are discussed in Section 4. Reprocessing waste located on government-owned (federal or state) sites is provided in Section 5. Additional and supporting information is contained in the appendices, namely information on NPR SNF characteristics; SNF discharges by reactor; and inventory forecast breakouts by reactor, storage location, site, state, U.S. Nuclear Regulatory Commission (NRC) region, and Congressional Districts. This report was sponsored by DOE's Office of Spent Fuel and High-Level Waste Disposition (SFWD) within the Office of Nuclear Energy and has been generated for SFWD planning and analysis purposes.

[3] This is a technical report that does not take into account contractual limitations or obligations under the Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (Standard Contract) (10 CFR Part 961).

To the extent discussions or recommendations in this report conflict with the provisions of the Standard Contract, the Standard Contract governs the obligations of the parties, and this report in no manner supersedes, overrides, or amends the Standard Contract.

This report reflects technical work which could support future decision making by DOE. No inferences should be drawn from this report regarding future actions by DOE, which are limited both by the terms of the Standard Contract and Congressional appropriations for the Department to fulfill its obligations under the Nuclear Waste Policy Act including licensing and construction of a spent nuclear fuel repository.

[4] This report does not necessarily reflect final classifications for the material being discussed; for example, material referred to as "HLW" or "SNF" may be managed as HLW and SNF, respectively, without having been actually classified as such for disposal.

1.1 INVENTORY SUMMARY

As of the end of 2022, the U.S Inventory of SNF and primary reprocessing waste was located at over 100 sites in 39 states. These locations include: commercial NPR and ISFSI sites; DOE sites; and other research and development (R&D) sites. Figure 1-1 provides the approximate locations for:

- 73 Sites of Commercial NPRs and/or ISFSIs [5] (often co-located) with SNF stored onsite including:
    - 72 sites of 74 Light Water Reactor (LWR) nuclear power plants with a total of 92 operating NPRs and 27 shutdown NPRs, including both Pressurized Water Reactors (PWRs) and Boiling Water Reactors (BWRs) (see Table 2.1);
    - 1 away-from-reactor NPR SNF pool storage ISFSI (see Table 2.3).
- 6 DOE Sites with SNF storage and/or DOE research reactors (see Section 3)
- 28 Other Research and Development (R&D) Sites including:
    - 20 university research reactor sites [6] (see Section 4.1)
    - 4 other government agency research reactors (see Section4.2)
    - 4 commercial R&D centers (see Section 4.3)
- 4 Reprocessing Waste Storage Sites
    - 3 DOE sites with primary reprocessing waste (see Section 5.1)
    - 1 commercial HLW storage location (see Section 5.2).

This information as well as the total U.S. SNF inventory in metric tons of heavy metal (MTHM) at the end of 2022 is summarized in Table 1.1, which is comprised of SNF at NPRs and non-DOE ISFSI locations, some SNF at DOE sites, and a much smaller amount at other R&D centers. The number of vitrified reprocessing waste canisters is composed primarily of DOE vitrified waste canisters with smaller inventory of vitrified commercial reprocessing waste canisters at the West Valley Demonstration Project.

[5] Excludes ISFSIs at DOE sites including the ISFSI in Colorado for SNF from the Fort St. Vrain nuclear power plant which used a gas-cooled reactor; and the Three Mile Island Unit 2 (TMI-2) ISFSI at the Idaho National Laboratory (INL). For the purposes of this report, the Nine Mile Point nuclear power plant and James A. Fitz Patrick nuclear power plant are considered to be at a single site. Similarly, the Hope Creek nuclear power plant and Salem nuclear power plant are considered to be at a single site.

[6] Excludes a reactor critical facility and three operational AGN-201 reactors at universities which operate at very low power and which are not expected to have to be refueled prior to permanent shutdown and associated fuel discharge.

Table 1.1 U.S. SNF and Reprocessing Waste Inventory Summary as of December 31, 2022

Commercial Spent Nuclear Fuel at Nuclear Power Reactor and ISFSI Sites (excluding DOE)	90,963 MTHM [a]
Total Amount of Commercial Discharged PWR Spent Nuclear Fuel [b]	135,645 Assemblies 59,013 MTHM [a]
Total Amount of Commercial Discharged BWR Spent Nuclear Fuel [b]	179,466 Assemblies 32,023 MTHM [a]
Total Number of Commercial Spent Nuclear Fuel Canisters/Casks in Dry Storage (See Section 2.1)	3,862
Spent Nuclear Fuel at DOE Sites (includes SNF from DOE Research Reactors)	2,479 MTHM [a,c]
Spent Nuclear Fuel at Other Sites (University and Other Government Research Reactors, Commercial R&D Centers) [d]	1 MTHM [a]
Number of Sites Having One or More Commercial Nuclear Power Reactors and/or ISFSIs with SNF Stored Onsite (excluding DOE Sites) [e]	73
Number of Sites Having All Nuclear Power Reactors Shutdown with SNF Stored Onsite (excluding DOE Sites, See Section 2)	20
Number of Operating Nuclear Power Reactors	92
Number of Shutdown Nuclear Power Reactors with SNF Stored Onsite (excluding DOE sites)	27
Number of DOE Sites with SNF storage and/or DOE research reactors (see Section 3)	6
Number of University Research Reactor Sites (see Section 4.1) [f]	20
Number of Other Government Agency Research Reactors (see Section 4.2)	4
Number of Commercial Research and Development Centers with SNF (see Section 4.3)	4
Number of Primary Reprocessing Waste or HLW Storage Sites (see Section 5.1) [g]	4
Number of Vitrified Reprocessing Waste Canisters at DOE Sites	4,346 [h]
Number of Vitrified Reprocessing Waste Canisters at West Valley Site	278 [i]

Table 1.1 Notes:

[a] Values are rounded to the nearest MTHM.
[b] SNF inventories are the inventories reported as being permanently discharged through December 31, 2022 from the commercial light water NPRs listed in Table 2.1. Includes 73 MTU of SNF that was transferred to DOE sites for research and development purposes. Excludes SNF that was reprocessed at West Valley in NY, removed from TMI Unit 2, or discharged from the Fort St. Vrain reactor (now decommissioned).
[c] Includes SNF from DOE research and production activities, Naval SNF, and SNF discharged from the decommissioned Ft. St. Vrain gas-cooled reactor. See Table F.1 for more details.
[d] Includes university reactors, other government agency research reactors, commercial R&D centers (see Sum of Table 4.1, Table 4.2, and Table 4.3, respectively) for SNF.
[e] Excludes ISFSIs at DOE sites including the ISFSI in Colorado for SNF from the Fort St. Vrain nuclear power plant which used a gas-cooled reactor; and the Three Mile Island Unit 2 (TMI-2) ISFSI at the Idaho National Laboratory (INL). Includes the Morris away-from-reactor pool storage ISFSI. The Nine Mile Point nuclear power plant and James A. Fitz Patrick nuclear power plant are considered to be at a single site. Similarly, the Hope Creek nuclear power plant and Salem nuclear power plant are considered to be at a single site.
[f] Excludes a reactor critical facility and three operational AGN-201 reactors at universities which operate at very low power and which are not expected to have to be refueled prior to permanent shutdown and associated fuel discharge.

[g] Includes 3 DOE sites with primary reprocessing waste (see Section 5.1) and 1 commercial (HLW) storage location (see Section 5.2).

[h] Accounts only for the current inventory of vitrified reprocessing waste canisters produced through December 31, 2022. Reprocessing waste which has yet to be treated is not included. All canisters produced thus far are 2 feet in diameter × 10 feet tall.

[i] Commercial vitrified reprocessing waste canisters from the West Valley Demonstration Project, including 2 canisters used to evacuate the melter prior to decommissioning and 1 non-routine (end-of-process) canister. The West Valley Demonstration Project is located at the Western New York Nuclear Service Center which is owned by New York State Energy Research and Development Authority

1.2 REVISION HISTORY

This document is expected to be a “living” document with expanded additional information and scenarios to develop a broad range of potential inventory for program planning purposes. A description of the revision history for this report is provided in APPENDIX G.

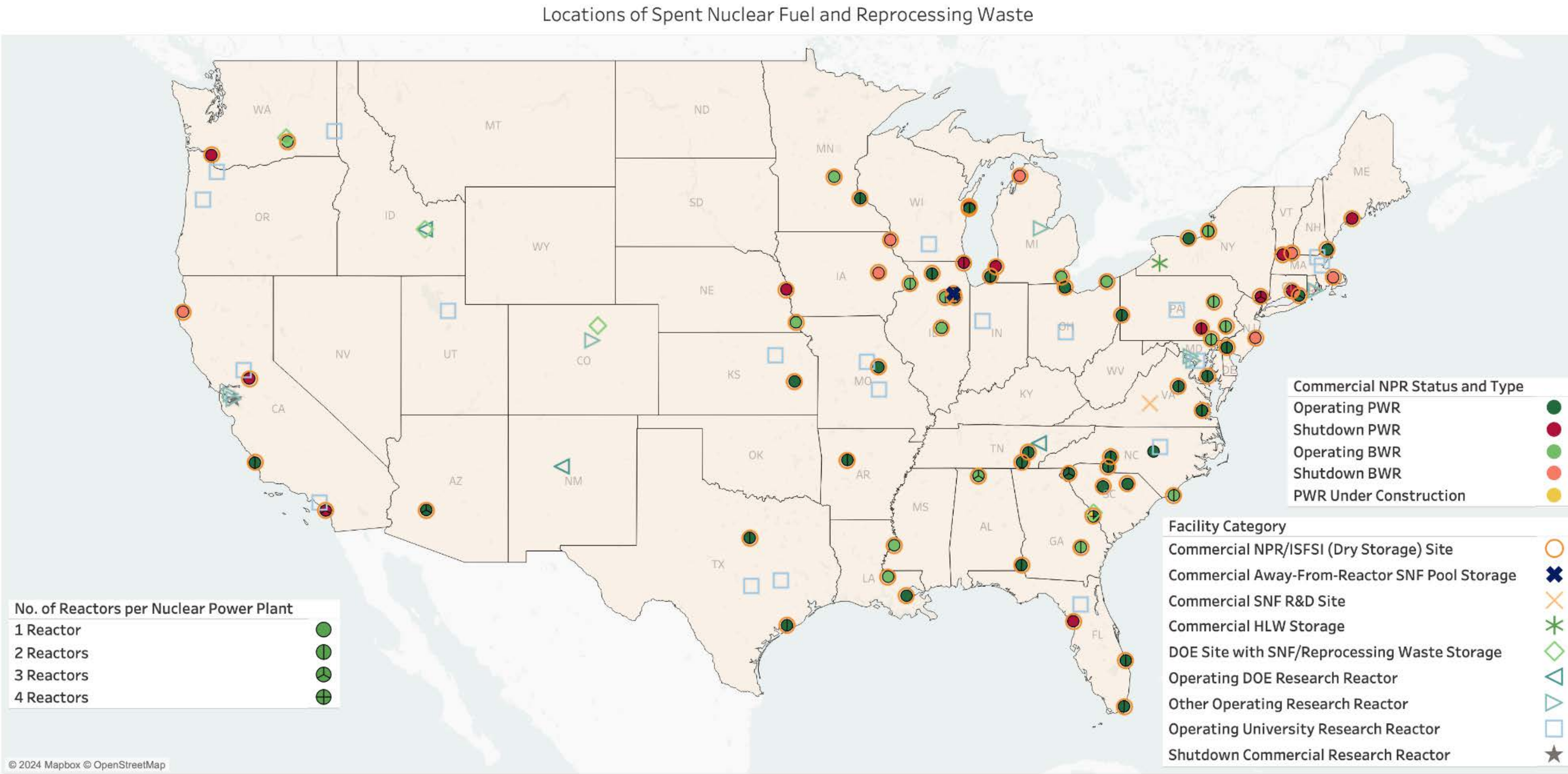

Figure 1-1 Sites Storing Spent Nuclear Fuel and Reprocessing Waste at the End of 2022

2. SNF AT NPR AND ISFSI SITES (EXCLUDING DOE LOCATIONS)

Nuclear Power Reactors (NPRs) have operated in the U.S. since about 1960. Excluding a number of civilian reactors categorized as experimental electric-power reactors (e.g. Vallecitos Boiling Water Reactor, Saxton Nuclear Experimental Reactor Project) or those used primarily for purposes other than central-station nuclear power generation (e.g., N.S. Savannah), 131 NPRs have been built for civilian nuclear power generation. Nine of these were early prototype or demonstration reactors which have since been or are in a state of being decommissioned (e.g., Peach Bottom 1 and Shippingport in Pennsylvania and Fermi 1 in Illinois) and for which SNF no longer remains on site (SNF remaining from these demonstration reactors is discussed in Section 3.1.1). Fort St. Vrain was a high temperature gas cooled reactor in Colorado which was also decommissioned, however SNF discharged from this reactor is currently managed by DOE and stored partly in an Independent Spent Fuel Storage Installation (ISFSI) near the reactor site and partly at the Idaho National Laboratory (INL) see Section 3.1.2.

Of the remaining 121 NPRs, all are light water reactors (LWRs). One LWR (Shoreham in New York) never operated at full power and was decommissioned, the SNF was transferred to another reactor and discharged there. A second (Three Mile Island Unit 2, in Pennsylvania) was disabled, and the vast majority of the SNF debris is managed by the DOE at INL see Section 3.1.2. For the 119 other NPRs, 27 were in permanent shutdown status at the end of 2022, leaving 92 NPRs licensed to operate at that time.

A nuclear power plant includes one or more reactor units, along with supporting balance of plant equipment for power generation. Although a geographic site could encompass more than one nuclear power plant, typically there is only one nuclear power plant per site. Almost all of these plants also have a co-located ISFSI. After all the reactors are permanently shut down and later decommissioned, the only facility that might remain at the site is a stand-alone ISFSI. A simple site grouping structure has been adopted for these nuclear power plant sites and other non-DOE ISFSIs, and is used throughout the report. The grouping structure is provided below to distinguish between nuclear power plant sites based on the operational status of their reactors.

Nuclear Power Plant Sites (with NPRs and/or co-located ISFSI):

Group A: sites with all reactors permanently shutdown (**A**ll units shutdown).

Group B: sites with at least one reactor permanently shutdown co-located with at least one reactor continuing to operate (status is **B**etween Group A and Group C sites)

Group C: sites with all reactors operating or expected to resume operation, i.e., none permanently shutdown (**C**ontinuing operations with all reactors)

Other Non-DOE ISFSI Sites:

Group F: Away-from-Reactor ISFSI.

Within each group, a numeric value of 1 is appended to the site group identifier for a site with only dry SNF storage. A value of 2 is used to identify a site with both wet and dry storage, and a value of 3 is appended to sites with SNF in wet storage only. For example, Yankee Rowe is included in Site Group A and Subgroup A1, since the entire inventory of shutdown reactor SNF is currently in dry storage. Seabrook and Surry are included in Site Group C and Subgroup C2, with both wet and dry stored SNF.

Table 2-1 provides a list of LWR power plants by their assigned Groups/Subgroups. The ISFSI associated with the Fort St. Vrain gas-cooled nuclear power plant is included under Section 3.1 on

SNF at DOE Sites. As of 2023, two of the Group C reactors (Diablo Canyon 1 and 2 in California) have announced early shutdown dates before the end of 2030.

Group A sites are those sites with shutdown reactors with no continuing nuclear operations and with SNF remaining onsite. This includes SNF from reactors that ceased operations prior to 2000 and where all SNF in dry storage with reactor decommissioning that is complete or nearing completion. This subgroup is sometimes referred to as “legacy” shutdown reactor sites, since these sites have not had an operating reactor on the site for at least 20 years. Group A also includes SNF from reactors that ceased operations after 2000. This subgroup is sometimes referred to “Early Shutdown Reactors” since operations were halted prior to achieving 60 years of operations. Several have recently completed moving SNF into dry storage, several reactors in Group A still have SNF both in the pools and in dry storage at the end of 2022[7].

In addition to the shutdown reactor sites, SNF from 2 shutdown reactors (i.e., Dresden 1 in Illinois, and Millstone 1 in Connecticut) is stored on sites co-located with operating reactors (Group B). Figure 1-1 illustrates the locations of these shutdown nuclear power reactors.

For the LWRs with SNF still located on site[8], SNF is currently stored in pools or dry storage casks within an ISFSI with disposal in a geologic repository envisioned in a once-through fuel cycle. Some NPR SNF has been transferred to DOE (see Section 3.1.2). The General Electric-Hitachi facility at Morris, Illinois (the lone Group F Site) is currently the only non-DOE operated, NRC licensed pool storage facility that is not co-located at a reactor site. In September 2021, the NRC approved an Away-from-Reactor ISFSI license application for Interim Storage Partners in Texas, but the facility has not yet been constructed. An Away-from-Reactor ISFSI license application for Holtec International in New Mexico was approved by the Nuclear Regulatory Commission in May 2023, but that facility has also not been constructed. In August 2023, the U.S. Court of Appeals for the Fifth Circuit vacated both licenses. NRC is evaluating the Fifth Circuit decisions and next steps.

SNF from commercial LWRs includes irradiated fuel discharged from pressurized water reactors (PWRs) and boiling water reactors (BWRs). The fuel used in these reactors primarily consists of uranium dioxide pellets encased in zirconium alloy (Zircaloy). A small number of early fuel designs used stainless steel cladding. The fuel assemblies vary in physical configuration, depending upon reactor type and manufacturer.

Discharged SNF data has been collected periodically through the Nuclear Fuel Data Survey conducted using Form GC-859 for the Office of Standard Contract Management within the Office of General Counsel (formerly part of Office of Civilian Radioactive Waste Management [OCRWM]). Appendix A, Table A.1 and Table A.2 present the assembly class, array size, fuel manufacturer, assembly version, assembly type code, length, width, and cladding material of PWR SNF and BWR SNF, respectively. Physical dimensions are those of unirradiated assemblies. Within an assembly class, assembly types are of a similar size. Appendix A, Table A.3 presents the manufacturer, initial uranium load, enrichment, and burnup characteristics of NPR SNF assembly types in existence at the end of 2017. Some new fuel types have been introduced since 2017, however, similar information to that presented in Appendix A is not available because non-propriety data sources do not exist.

[7] Duane Arnold completed transfer to dry storage in early 2022.

[8] Excluding the spent fuel debris at Three Mile Island Unit 2.

Table 2.1 LWR Nuclear Power Reactor Sites by Group/Subgroup (as of December 2022)

Group A: All Units Shutdown Sites (# of Units) – 25 Reactors/20 Sites			
A1 (Dry Storage)		A2 (Dry and Pool Storage)	A3 (Pool Storage)
Reactors Shutdown Prior to 2000			
Big Rock Point (1)	Rancho Seco (1)	Indian Point (3)	
Haddam Neck (1)	Trojan (1)	Palisades (1)	
Humboldt Bay (1)	Yankee Rowe (1)		
La Crosse (1)	Zion (2)		
Maine Yankee (1)			
Reactors Shutdown Post 2000			
Crystal River (1)	Vermont Yankee (1)		
Kewaunee (1)	Fort Calhoun (1)		
San Onofre (3)	Oyster Creek (1)		
Pilgrim (1)	Duane Arnold (1)		
Three Mile Island (1) ††			

Group B: Mixed Status Sites (# of Units) – Total 6 Reactors (4 Operating, 2 Shutdown) /2 Sites		
Currently All Group B Sites have both Dry and Wet Storage Capabilities	B2† (Dry and Pool Storage)	
	Dresden (3)	
	Millstone (3)	

Group C: All Units Operating (# of Units)– 88 Reactors/52 Nuclear Power Plants/50 Sites (Note: All Group C Sites have Wet Storage Capabilities)			
C2 (Dry and Pool Storage)			C3 (Pool Storage)
Arkansas Nuclear (2)	Fitzpatrick (1)‡‡	Prairie Island (2)	Shearon Harris (1)
Beaver Valley (2)	Fermi (1) ††	Quad Cities (2)	
Braidwood (2)	Ginna (1)	River Bend (1)	
Browns Ferry (3)	Grand Gulf (1)	Robinson (1)	
Brunswick (2)	Hatch (2)	Saint Lucie (2)	
Byron (2)	Hope Creek (1) ‡‡‡	Salem (2) ‡‡‡	
Calvert Cliffs (2)	La Salle (2)	Seabrook (1)	
Callaway (1)	Limerick (2)	Sequoyah (2)	
Catawba (2)	McGuire (2)	South Texas (2)	
Clinton (1)	Monticello (1)	Summer (1)	
Columbia Generating Station (1)	Nine Mile Point (2)‡‡	Surry (2)	
Comanche Peak (2)	North Anna (2)	Susquehanna (2)	
Cooper (1)	Oconee (3)	Turkey Point (2)	
Davis-Besse (1)	Palo Verde (3)	Vogtle (2)	
D.C. Cook (2)	Peach Bottom (2) ††	Waterford (1)	
Diablo Canyon (2)	Perry (1)	Watts Bar (2)	
Farley (2)	Point Beach (2)	Wolf Creek (1)	

† Two B2 Sites have a single shutdown reactor and 2 operating reactors.

†† Does not include prototype (Fermi 1), experimental (Peach Bottom-1), or disabled (TMI-2) reactors.

‡‡ The Nine Mile Point nuclear power plant and James A. Fitz Patrick nuclear power plant are considered to be at a single site in this table due to proximity and site boundary/exclusion area considerations.

‡‡‡ The Hope Creek nuclear power plant and Salem nuclear power plant are considered to be at a single site in this table due to proximity and shared ISFSI.

2.1 CURRENT NPR AND AWAY-FROM-REACTOR SNF INVENTORY

The source of historical inventory data for this report is information collected from the Nuclear Fuel Data Survey conducted periodically for the US Department of Energy. Information collected from GC-859 forms is available on an assembly basis for SNF discharges from 1968 through December 2022.

To develop an inventory estimate beyond 2022, SNF discharge projections were developed using the U.S. Commercial Spent Nuclear Fuel Projection tool [Vinson, 2015]. The methodology used by the tool is documented in "Description and Validation of a Revised Tool for Projecting U.S. Commercial Spent Nuclear Fuel Inventory", March 2015 [Vinson, 2015]. The tool allows for multiple methodologies for handling plant capacity factors, reactor uprates, and other operating inputs. Based on the validation report findings, the methodology utilized in this report makes no adjustment for reactor-specific capacity factors or EIA-forecast nuclear energy demand data. This methodology was found to provide the best agreement to GC-859 data (<1.4% difference between preliminary GC-859 and projected assembly discharged data between the beginning of 2003 and the end of 2012) [Vinson 2015].

The projection method forecasts each LWR individually and these quantities have been adopted for this study except for shutdown reactors that have published the actual quantities of discharged SNF. Actual discharges from reactors shutdown prior to December 31, 2022 are taken from the GC-859 survey data. Data for reactors shutdown after this date are a combination of the historical data and the forecast discharges up to the announced or assumed shutdown date.

Table 2.2 provides the SNF discharged at the end of 2022 by reactor type. The total projected inventory is in metric tons (MT) of uranium (MTU) contained in multiple discharged assemblies. The table provides actual discharges through December 31, 2022 from the GC-859 data set.

Table 2.2 Reactor SNF Discharged through 12/31/2022 by Reactor Type, Detailed by GC-859*

Reactor Type	Assy.	Initial Uranium (MT)
PWR	135,645	59,013
BWR	179,466	32,023
Totals	**315,111**	**91,036**

* Excludes SNF that was reprocessed at West Valley in NY, removed from TMI Unit 2, or discharged from the Fort St. Vrain reactor (now decommissioned).

2.1.1 SNF TRANSFERS

The values reported in Table 2.2 indicate reported discharge quantities by reactor type and do not reflect subsequent transfer of discharged SNF assemblies. Utilities did not report (via GC-859 forms) SNF that was transferred to West Valley, NY for reprocessing. Prior to 2000, some discharged SNF was transferred to other locations. Five reactors transferred some of their discharged SNF to the pool storage facility at Morris, IL. Table 2.3 details the transfers to Morris.

The Nuclear Fuel Data Survey process indicates approximately 73 MTU of SNF from the reactors listed in Table 2.1 was transferred to DOE for research and development purposes such as fuel rod consolidation, dry storage demonstrations, and nuclear waste vitrification projects. This SNF has been transferred to the DOE and is not stored in NRC licensed facilities. DOE has dispositioned some of the material transferred, with 68 MTU in storage. This quantity does not include Ft. St. Vrain and TMI-2 SNF debris that is stored in an NRC-licensed ISFSI at INL. See Section 3.1.2.

Since 2000, essentially all SNF generated has remained on the generating reactor sites in either pool or dry storage. Some utilities did transfer some SNF between its operating reactors (see Table 2.4).

Table 2.3 SNF Transferred to Pool Storage at Morris, Illinois

		Transferred to Morris	
Reactor [Unit] (Site Subgroup)	Operating Status	Assemblies	Initial Uranium (MT)
Cooper (C2)	Operating	1,054	198.02
Dresden 2 (B2)	Operating	753	145.19
Monticello (C2)	Operating	1,058	198.19
Haddam Neck (A1)	Shutdown	82	34.48
San Onofre 1 (A2)	Shutdown	270	98.41
	Totals	**3,217**	**647.29**

Table 2.4 Nuclear Power Reactor SNF Transfers

Discharge Reactor	Transferred SNF		Transferred to Reactor Site
	Assemblies	Initial Uranium (MT)	
Robinson	304	136.8	Brunswick
Robinson	504	215.8	Shearon Harris
Brunswick	4,397	800.3	Shearon Harris
Oconee	300	139.4	McGuire

Table 2.5 provides a summary of SNF inventory, by Site Group and storage method, as of December 31, 2022. Table 2-5 excludes discharges that were reprocessed at West Valley, NY, and transfers to DOE for research and development purposes and therefore represents the quantity of SNF stored at

the 73 sites of commercial LWR NPRs and/or ISFSIs including the away-from-reactor pool storage ISFSI at Morris, IL.

Table 2.6 provides the end of 2022 inventory remaining at the LWR sites by storage method accounting for all known SNF transfers (this does not include the inventory at Morris). The dry storage assembly and canister/cask quantities as of 12/31/2022 have been derived from publicly available sources [Store Fuel, 2023]. The balance of the projected inventory remains in the reactor pools. The end of 2021 marked the first year there is more SNF in dry storage than in the reactor pools. APPENDIX B provides additional details on a reactor specific basis and site group basis. Appendix B reflects known transfers.

Figure 2-1 illustrates the current distribution by site group and storage method, and Figure 2-2 illustrates the current distribution of storage casks by site group.

The burn-up (GWd/MTHM) distribution and the initial enrichment (% U-235) distribution for the inventory (as extracted from the GC-859 data at the end of 2022) are shown in Figure 2-3. Similar to the discharge quantities, the enrichment and burn-up for individual LWRs is based on the last 5 discharge cycles reported in the GC-859 database. Adjustments are made for reactor power uprates where applicable. These values are also used to generate Figures 2-4 through 2-6, described below.

Figure 2-4 shows the annual average Burn-up (GWd/MT) and the initial enrichment (% U-235) between 1968 and 2022.

Figure 2-5 provides the Burn-up (GWd/MT) distribution based on assembly counts for the PWR and BWRs.

Figure 2-6 provides the Burn-up (GWd/MT) distribution based on the initial uranium mass (MTU) for the PWR and BWRs.

Table 2.5 Spent Nuclear Fuel Inventory by Reactor Group/Subgroup (As of 12/31/2022)

Site Group/ Subgroup	Dry Inventory*			Pool Inventory		Site Total	
	Assy.	Initial Uranium (MT)	Number of Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Group A Sites							
A1 Pre 2000	7,659	2,815	248	-	-	7,659	2,815
A1 Post 2000	25,508	6,868	533	-	-	25,508	6,868
A2	3,798	1,623	126	2,256	1,004	6,054	2,627
A3	-	-	-	-	-	-	-
A	**36,965**	**11,306**	**907**	**2,256**	**1,004**	**39,221**	**12,310**
Group B Sites							
B1	-	-	-	-	-	-	-
B2	7,822	1,675	141	10,474	2,400	18,296	4,075
B3	-	-	-	-	-	-	-
B	**7,822**	**1,675**	**141**	**10,474**	**2,400**	**18,296**	**4,075**
Group C Sites							
C1	-	-	-	-	-	-	-
C2	124,394	35,945	2,814	123,333	36,254	247,727	72,199
C3	-	-	-	6,417	1,704	6,417	1,704
C	124,394	35,945	2,814	129,750	37,958	254,144	73,903
Group F Sites							
F	-	-	-	**3,217**	**674**	**3,217**	**674**
Total All Sites	**169,181**	**48,926**	**3,862**	**145,697**	**42,037**	**314,878**	**90,963**

* Discharges exclude NPR SNF reprocessed at West Valley in NY, removed from TMI Unit 2, discharged from the decommissioned Fort St. Vrain reactor, or transferred to DOE for R&D purposes.

† Mass values for totals were rounded to the nearest MTHM, after any summing pre-rounded values.

Table 2.6 Current Inventory at NPR sites by Storage Method as of 12/31/2022

	Dry Inventory			Pool Inventory		Total Discharged SNF	
Reactor Type	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
PWR	94,407	16,675	1,399	78,008	14,131	172,415	30,805
BWR	74,774	32,252	2,463	64,472	27,232	139,246	59,484
Totals	**169,181**	**48,926**	**3,862**	**142,480**	**41,363**	**311,661**	**90,289**

APPENDIX B, Tables B-1 – B-5 provide additional details on a reactor specific basis.

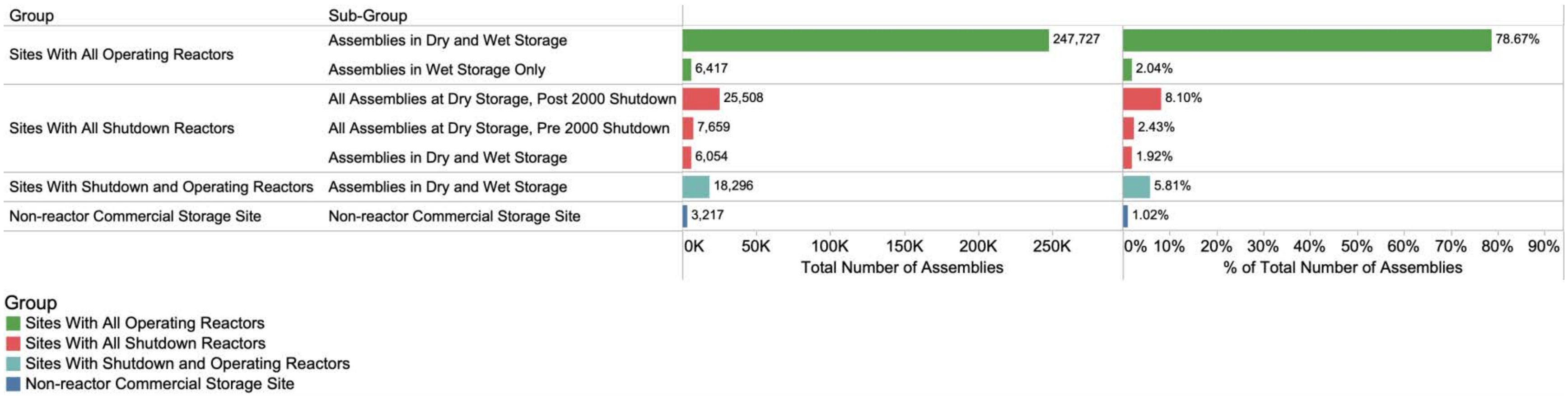

Figure 2-1 Nuclear Power Reactor and ISFSI Sites (non-DOE) Currently Storing SNF

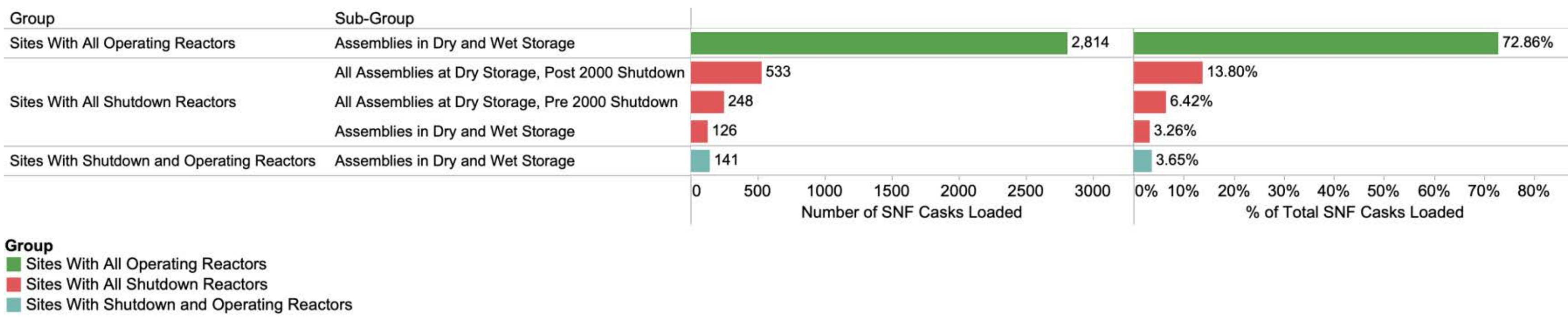

Figure 2-2 Dry SNF Storage Casks Loaded at Nuclear Power Reactor Sites

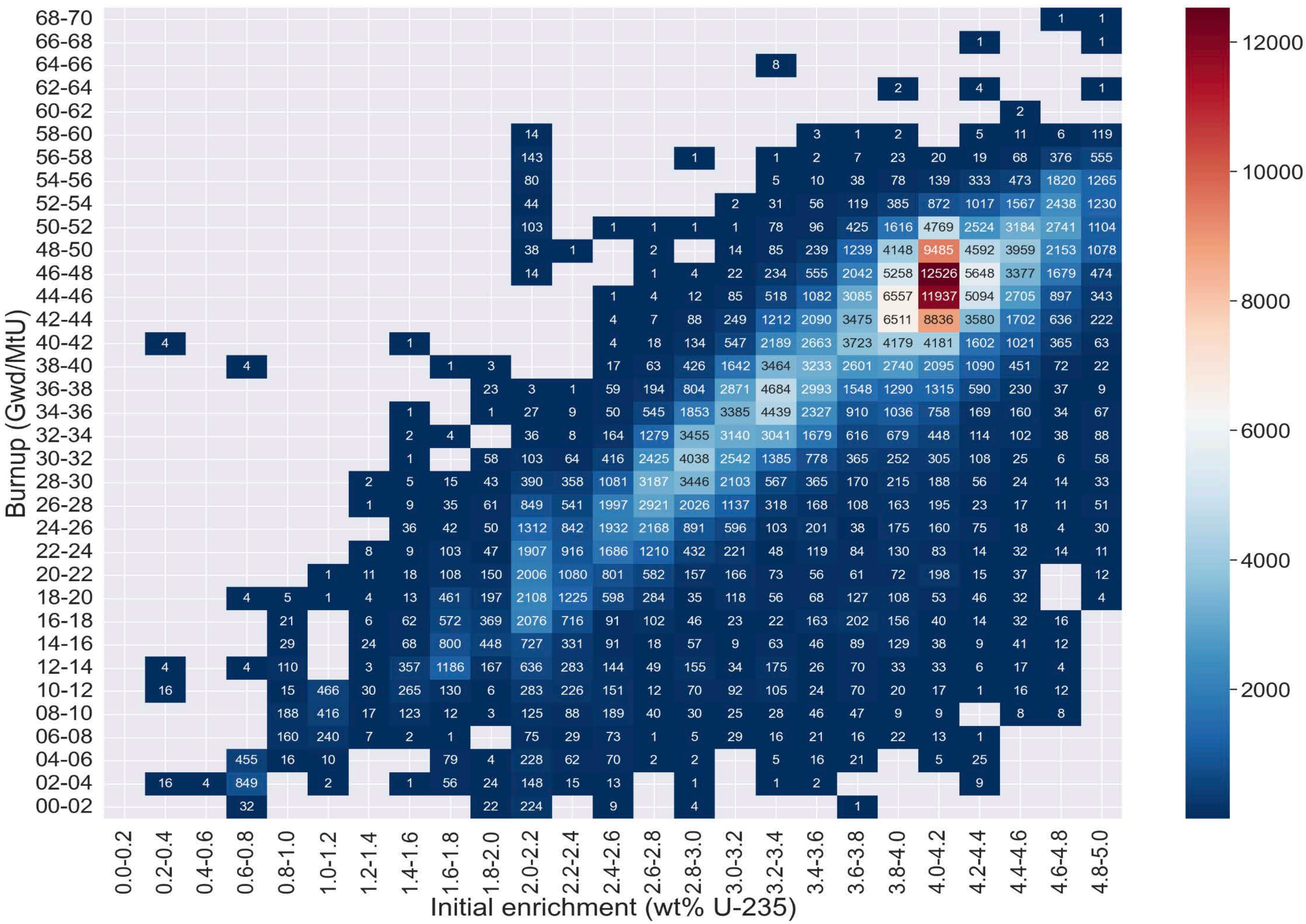

Figure 2-3 Burn-up (GWd/MTHM) & Initial Enrichment (% U-235) by Number of Assemblies of SNF Through December 2022

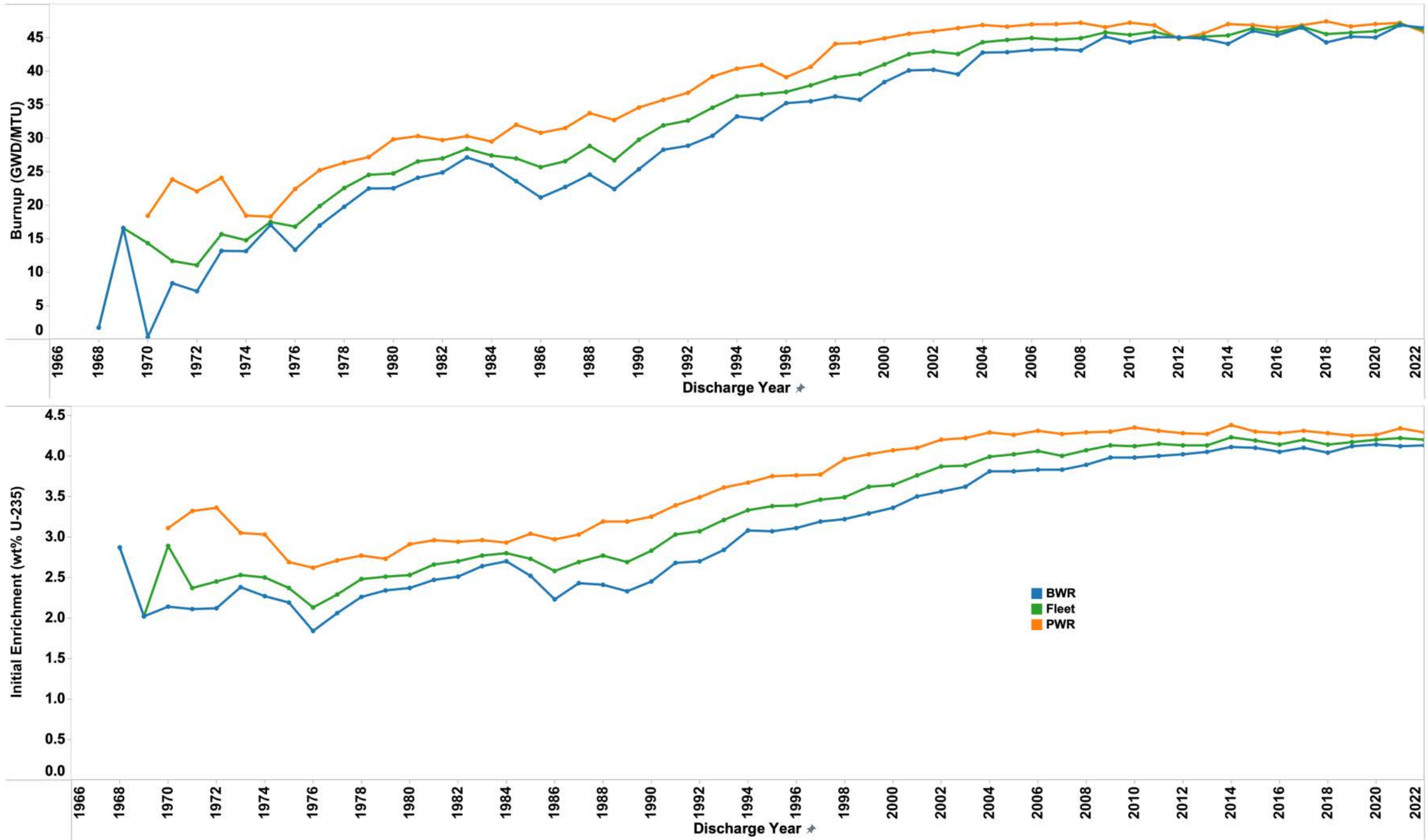

Figure 2-4 Average Annual Burn-up (GWd/MT) and Enrichment (U-235%)

BWR

Burnup (GWD/MTU)

Year	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	60-65
1968-1980	875	1,329	2,396	4,049	2,913	941	2					
1980-1990	1,012	574	1,776	2,344	7,995	11,141	3,836	58	9			
1990-2000	191	191	728	1,231	1,621	6,376	14,662	11,235	2,563	301	92	
2000-2010	1	2	298	209	328	654	2,415	9,390	16,490	11,293	1,805	6
2010-2022		4	27	490	240	124	740	3,131	17,608	28,743	5,025	

Num Assm
1 28,743

PWR

Burnup (GWD/MTU)

Year	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
1968-1980	34	139	689	1,530	1,141	2,265	1,279	299	2				
1980-1990		25	475	1,305	1,300	4,153	6,795	4,927	1,302	104	9	12	
1990-2000	16	129	326	392	684	1,225	4,139	8,654	9,475	6,040	1,126	67	2
2000-2010	1		8	33	101	141	531	2,409	8,308	13,652	7,203	827	3
2010-2022	5	23	192	230	229	570	1,040	2,463	9,505	14,288	11,498	2,309	4

Num Assm
1 14,288

Figure 2-5 Burn-up (GWd/MTHM) Distribution by Assembly Count for SNF Through December 2022

BWR

Burnup (GWD/MTU)

Year	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	60-65
1968-1980	162.9	242.5	435.9	717.4	523.8	173.2	0.3					
1980-1990	183.2	103.1	318.5	420.3	1,462.5	2,011.2	689.4	10.4	1.6			
1990-2000	35.4	35.0	129.1	220.7	288.9	1,154.5	2,620.6	1,985.2	449.4	51.6	15.6	
2000-2010	0.2	0.4	53.6	37.4	57.3	113.9	422.6	1,639.4	2,874.5	1,970.0	310.3	1.0
2010-2022		0.7	4.9	88.6	44.2	22.5	134.3	567.3	3,172.0	5,177.0	907.2	

MTU 0.2 – 5K

PWR

Burnup (GWD/MTU)

Year	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
1968-1980	7.2	51.6	281.9	652.7	475.2	926.5	532.8	126.3	0.9				
1980-1990		7.6	205.3	581.5	576.7	1,800.4	2,915.6	2,087.2	538.7	43.0	3.9	5.1	
1990-2000	6.4	48.7	137.7	174.6	307.9	541.4	1,807.1	3,783.3	4,093.2	2,572.4	478.0	26.2	0.8
2000-2010			3.0	14.4	47.9	64.5	234.6	1,056.3	3,682.7	6,013.9	3,099.4	342.8	1.3
2010-2022	1.7	10.2	83.7	97.0	104.7	248.2	451.9	1,070.2	4,223.0	6,352.7	5,010.1	1,011.8	1.6

MTU 0.8 – 6K

Figure 2-6 Burn-up (GWd/MTHM) Distribution by Initial Uranium Mass for SNF Through December 2022

2.1.2 SHUTDOWN REACTOR SNF AS OF 12/31/2022

The number of shutdown reactors continue to increase as well as the corresponding total quantity of SNF at these sites and the amount in dry storage. On 12/31/2022 (the data date for this report) the inventory of shutdown reactors with SNF remaining on site includes the following groups/subgroups:

- Reactors that were shutdown prior to 2000 with no other ongoing nuclear power operations (Group A1, Pre-2000 subgroup).
- Reactors that were shutdown after 2000 with no other ongoing nuclear power operations (Group A1, Post-2000 subgroup).
- Reactors that were shutdown at a site with other ongoing nuclear power operations (shutdown reactors at Group B2 sites)
    - Table 2.7 and Figure 2-7 provide additional details on the first of these groups/subgroups. SNF at these sites was discharged prior to 2000, and the quantities shown are from the GC-859 database. Also shown in the table and figure are the number of storage casks loaded with Greater-than-Class C (GTCC) Low-Level Radioactive Waste (LLRW) to provide a complete cask count for these sites, since GTCC casks for sites with shutdown reactors are typically stored at the ISFSI along with the SNF casks [9]. The second group/subgroup consists of early shutdown reactors which are those reactors which have ceased operations since 2000 which have not reached their 60-year operating lifetime. Table 2.8 and Figure 2-8 provides the detailed inventory and shutdown date of each of these reactors. This inventory data is based on the GC-859 database. There are no nuclear operations on these sites. It should be noted that in the spring of 2024, a loan guarantee from the U.S. Department of Energy could allow Holtec International to restart nuclear power operations at the Palisades nuclear power plant. Scenarios which include restart of that reactor are not included in projections of future LWR SNF inventories in this revision of the inventory report,but may be included in a subsequent revision.
- In September 2022, California Senate Bill 846 was passed which provided a pathway for extending the operating period of the Diablo Canyon Power Plant beyond its otherwise expected shutdown of Unit 1 in 2024 and Unit 2 in 2025. The bill defined "extension of the operating period" to mean "license renewal by the United States Nuclear Regulatory Commission and any other licensing, permitting, or approvals by federal or state authorities necessary to allow continued operations of the Diablo Canyon powerplant beyond the current expiration date of each unit, and until a new date that shall be no later than October 31, 2029, for Unit 1 and no later than October 31, 2030, for Unit 2." Subsequently, the California Public Utilities Commission voted to conditionally approve extended operations at Diablo Canyon reactor units until these specified dates. Since these new dates are still prior to the plant reaching a 60-year operating lifetime which is typical for plants with an NRC initial license renewal assuming such a renewal is granted, the two reactor units are shown in Table 2.9 for SNF inventory at sites of reactors with announced early shutdown dates. This scenario inventory is based on GC-859 reported discharges through 2022 and estimated projected discharges from these reactors through 2030. Once shutdown, there will be no other nuclear operations on this site.

[9] This report does not provide an over-arching estimate for GTCC LLRW associated with decommissioning the U.S. fleet of current and future nuclear power reactors. For estimates of GTCC LLRW and information on the characteristics of this type of waste and its disposal, the reader is referred to Final Environmental Impact Statement for the Disposal of GTCC LLRW and GTCC-Like Waste [DOE, 2016].

- Discharged SNF by permanently shutdown reactors with continued nuclear operations (Group B sites) are detailed in Table 2.10. These reactors shutdown prior to 2000 and the quantities are based on the GC-859 database.

Group A reactors include reactors on sites that have only dry storage capabilities (A1) and reactors on sites with SNF in both wet and dry storage (A2) for the end of 2022. All the Group A sites that shutdown prior to 2000 are Subgroup A1 sites. Most of the Group A sites shutdown after 2000 also have completed SNF pool de-inventory as part of the decommissioning process to become Subgroup A1 sites. Table 2.5 details the number of assemblies and MTU at Group A sites along with forecasted canisters/casks to be used for storage and canisters that remain to be loaded.

Table 2.7 SNF and Stored GTCC LLRW at Group A Sites Shutdown Prior to 2000

		Discharges		Transferred		Remaining Inventory at the end of 2022			
Reactor	Shutdown Date	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)	SNF Casks Loaded	GTCC LLRW Casks Loaded
Big Rock Point	8/29/1997	526	69.40	85	11.48	441	57.92	7	1
Haddam Neck	12/5/1996	1,102	448.42	83	34.89	1,019	413.53	40	3
Humboldt Bay 3	7/2/1976	390	28.94	-	-	390	28.94	5	1
La Crosse	4/30/1987	334	38.09	1	0.12	333	37.97	5	-
Maine Yankee	12/6/1996	1,434	542.26	-	-	1,434	542.26	60	4
Rancho Seco	6/7/1989	493	228.38	-	-	493	228.38	21	1
Trojan	11/9/1992	790	359.26	-	-	790	359.26	34	-
Yankee Rowe	10/1/1991	533	127.13	-	-	533	127.13	15	1
Zion 1	2/21/1997	1,143	523.94	-	-	1,143	523.94	-	-
Zion 2	9/19/1996	1,083	495.47	-	-	1,083	495.47	-	-
Zion Totals	-	2,226	1,019.41	-	-	2,226	1,019.41	61	2
Totals	-	**7,828**	**2,861.28**	**169**	**46.49**	**7,659**	**2,814.92**	**248**	**15**

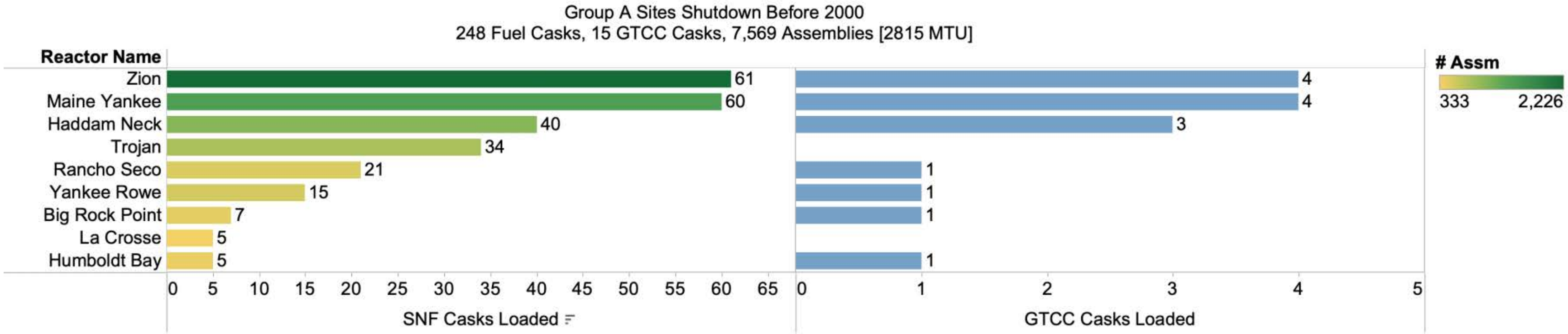

Figure 2-7 Dry SNF Storage at Group A Sites Shutdown Before 2000

Table 2.8 Total Discharged SNF and Stored GTCC LLRW from Group A Sites Shutdown Post 2000 through 12/31/2022

Reactor [Unit]	Shutdown Date	Assy.	Initial Uranium (MT)	SNF Casks Loaded	Assy. Loaded	GTCC LLRW Casks Loaded
Crystal River 3	2/20/2013	1,243	582.24	39	1,243	-
Duane Arnold	10/12/2020	3,648	662.64	60	3,648	-
Fort Calhoun	10/24/2016	1,264	466	40	1,264	-
Indian Point 1	4/30/2021	4,001	1,777	77	2,443	-
Indian Point 2	4/20/2020					
Indian Point 3	10/31/1974					
Kewaunee	5/7/2013	1,335	518.7	38	1,335	2
Oyster Creek	9/25/2018	4,504	802.24	67	4,504	4
Palisades	5/31/2022	2,053	850.48	49	1,355	-
Pilgrim 1	5/31/2019	4,116	734.82	62	4,116	3
San Onofre 1	11/30/1992	3,855	1,609	123	3,855	3
San Onofre 2	6/12/2013					
San Onofre 3	6/12/2013					
Three Mile Island	9/20/2019	1,663	786.49	46	1,663	1
Vermont Yankee	12/29/2014	3,880	705.66	58	3,880	1
Totals		**31,562**	**9,495**	**659**	**29,306**	**14**
* These inventory data reflect SNF assembly transfers.						

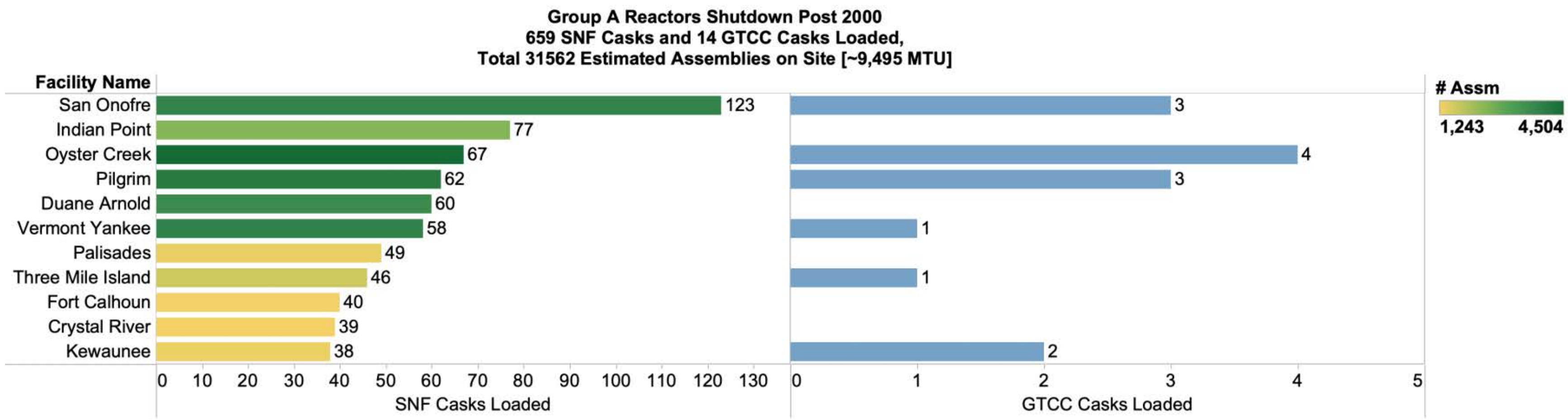

Figure 2-8 Dry SNF Storage at Group A Sites Shutdown Post 2000

Table 2.9 SNF and Stored GTCC LLRW from Groups B&C Sites with Announced Early Shutdown Dates (as of 2023)

		Discharges as of 12/31/2022		Total Projected Discharged SNF			
Reactor [Unit]	Announced Shutdown Date	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Loaded SNF Casks	GTCC LLRW Casks Loaded*
Diablo Canyon 1	10/31/2029	1,928	827.71	2,586	1105.52	58	-
Diablo Canyon 2	10/31/2030	1,933	829.34	2,596	1109.22	58	-
Totals		**3,861**	**1,657**	**5,182**	**2,215**	**58**	-

* More detailed information on estimates of GTCC LLRW can be found in [DOE, 2016] and supporting documentation.

Table 2.10 SNF and Stored GTCC LLRW from Shutdown Reactors at Group B Sites

		Discharges as of 12/31/2022		Transferred to Morris (Group F Site)		Remaining Onsite Inventory at the end of 2022			
Reactor [Unit]	Shutdown Date	Assy.	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	SNF Casks Loaded	GTCC LLRW Casks Loaded
Dresden 1*	10/31/1978	892	90.87	3	0.26	889	90.6	14	-
Millstone 1	7/21/1998	2,884	525.62	-	0	2,884	525.62	-	-
Totals		**3,776**	**616.49**	**3**	**0.26**	**3,773**	**616.23**	**14**	-

* 617 Dresden 1 assemblies (~63.2MTU) are co-mingled with unit 2 and 3 SNF. This SNF is being moved to dry canister storage in a co-mingled fashion.

Details of the inventory for sites that are predicted to be shutdown by the end of 2030 is depicted in Figure 2-9. Specifically, Figure 2-9 includes current shutdown reactors and announced shutdown reactors. Figure 2-9 is exclusive of shutdown reactors on sites with continuing nuclear operations. The number of assemblies, casks, MTU stored, and loaded number of GTCC are also depicted in Figure 2-9.

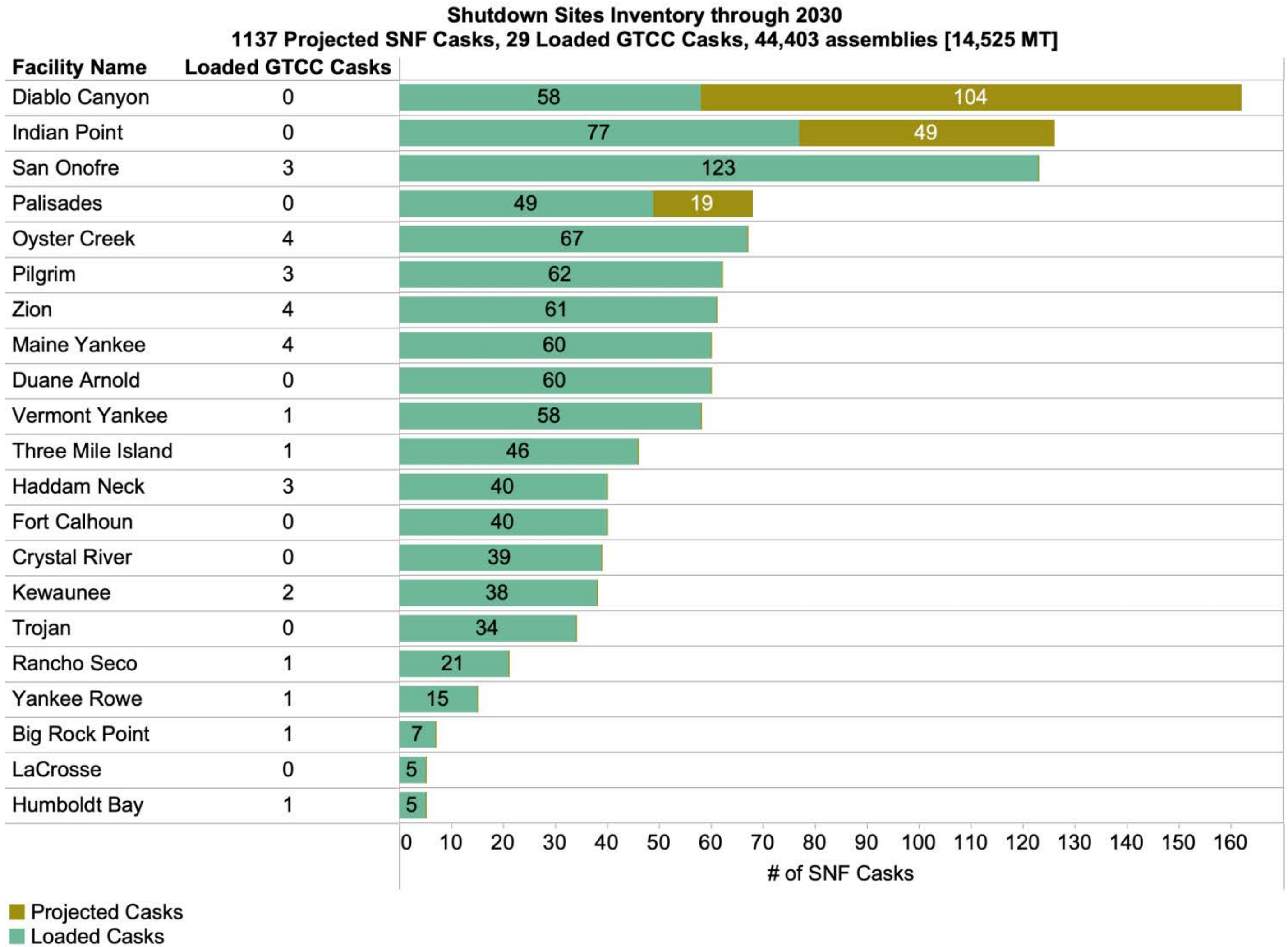

Figure 2-9 Shutdown Site Inventory by 2030

2.2 FUTURE LWR SNF INVENTORY FORECAST

The methods outlined above (Section 2.1) have been extended to provide the individual NPR forecasts inventory. Such forecasts vary with the estimation method parameters described above, and also with scenario specific details. Multiple scenarios have been included in the current revision of this report, as described herein. The reference projection scenario is described in the next section and assumes 60 or 80 (depending upon the renewal status) years of operation for existing reactors, when early shutdowns have not been announced. The scenarios examined are based on the end-of-2022 inventory data, the status of early shutdown announcements as of 2023, and other assumptions as noted for each of the scenarios discussed below.

2.2.1 REFERENCE SCENARIO: NO REPLACEMENT NUCLEAR POWER GENERATION

The "No Replacement Nuclear Power Generation" scenario assumes no new NPRs are constructed and operated or will shutdown in the future. This is the Reference Scenario for the purpose of comparison to alternative scenarios. Alternative Scenario 1 discussed in the next section examines the inventory impact associated with startup of Vogtle Units 3 and 4. The inventory for this initial Reference Scenario includes the SNF discharged from shutdown LWRs and the operating LWRs listed in Table 2-1 as of the end of 2022. Eighty-four of the 92 operating LWRs are assumed to have one 20 year life extension and will be decommissioned after 60 years of operation. Six reactors (Turkey Point Units 3 and 4, Peach Bottom Units 2 and 3, and Surry Units 1 and 2) have received a "subsequent" or second 20-year license extensions and will operate for 80 years [10].

For the purposes of this scenario, it is also assumed that the following two operating LWRs have announced early shutdown dates as indicated:

- Diablo Canyon Unit 1, 2029
- Diablo Canyon Unit 2, 2030

Applying these assumptions, the last nuclear generator finishes operations in 2075 (Watts Bar Unit 2).

Table 2.11 Projected NPR SNF Discharges for the Reference Scenario by Reactor Type* provides the scenario inventory by reactor type as a function of the estimate phase. Actual quantities are used for discharges through December 31, 2022, forecast discharges are used for the individual reactors for later time periods.

Table 2.12 provides the scenario inventory detailed to provide actual discharges through December 31, 2022 from the GC-859 database, the projected quantities between 1/1/2023 and the end of the scenario, by major storage location category and by site Group. Table 2.13 excludes discharges that were reprocessed at West Valley, NY, and transfers to DOE for research and development purposes and therefore represents the quantity of SNF stored at power reactor sites away-from-reactor pool storage location at Morris, IL.

Figure 2-10 provides the reference scenario quantities at two points in time assuming a consolidated interim storage facility and/or repository is not available before 2045.

---

[10] On 2/24/2022 the NRC notified these subsequent license holders they must go through a full environmental review before they would be allowed to operate for the additional 20 years. This report assumes successful completion of this process.

Figure 2-11 provides the Reference Scenario including the historical and forecast SNF discharges and the historical and forecast dry storage canister/casks assuming a consolidated interim storage facility and/or repository is not available before the end of the scenario.

Figure 2-12 provides the burn-up distribution and initial enrichment distribution, respectively, for the Reference Scenario.

Figure 2-13 shows the estimated annual average Burn-up (GWd/MT) and the initial enrichment (% U-235) between 1968 and 2060.

Figure 2-14 provides the estimated Burn-up (GWd/MT) distribution based on assembly counts for the PWR and BWRs.

Figure 2-15 provides the estimated Burn-up (GWd/MT) distribution based on the initial uranium mass (MTU) for the PWR and BWRs.

APPENDIX C, Tables C-1 through C-5 provides additional details for this Reference Scenario on a reactor specific basis. Appendix C is discharged SNF information and does not reflect transfers.

APPENDIX D and APPENDIX E provide summary information for the Reference Scenario by state, and by NRC Region, respectively.

APPENDIX F and APPENDIX H provides additional congressional district and state detail for the reference scenario and also DOE SNF and reprocessing waste. Appendix H also provides SNF discharges by reactor before and after transfers reflecting the actual or estimated quantities in storage for a given site, Congressional District or state.

Table 2.11 Projected NPR SNF Discharges for the Reference Scenario by Reactor Type*

	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/23 to 12/31/2075		Total Projected Discharged SNF	
Reactor Type	**Assemblies**	**Initial Uranium (MT)**	**Assemblies**	**Initial Uranium (MT)**	**Assemblies**	**Initial Uranium (MT)**
PWR	135,645	59,013	71,014	31,405	206,659	90,418
BWR	179,466	32,023	90,542	16,164	270,008	48,187
Totals	**315,111**	**91,036**	**161,556**	**47,569**	**476,667**	**138,605**

*Includes NPR SNF inventory at Morris and that was transferred to DOE sites, other than debris from TMI-2 (Not all SNF transferred to DOE is still in the form of SNF, some has been processed and vitrified).

Table 2.12 SNF Inventory at NPRs and Morris for the Reference Scenario by Site Group (Group Status as of 12/31/2022)

Description	Site Group	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
		Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Operating Reactors at Group C Sites (86 Rx/49 Sites without Diablo)*	C	250,283	72,246	155,019	45,512	405,302	117,758
Operating Reactors at Group C, Diablo only, 1 Site with Announced Shutdown Date (2 Rx/1 Site)	C	3,861	1,657	1,321	558	5,182	2,215
Operating Reactors at Group B Sites (4 Rx/2 Sites)*	B	14,523	616	5,216	1,500	19,739	4,959
Shutdown Reactors at Group B Sites (2 Rx/2 Sites)	B	3,773	6868	-	-	3,773	616
Reactors Shutdown Since 2000 and Assemblies at Dry Storage (10 Rx/8 Sites)	A1 Post 2000	25,508	2,627	-	-	25,508	6,868
Reactors Shutdown Since 2000 and Assemblies are in Both Dry and Pool Storage (5 Reactors /3 Sites)	A2	6,054	2,815	-	-	6,054	2,627
Reactor Shutdown Prior to 2000 (10 Reactors/9 Sites)	A1 Pre 2000	7,659	2,815	-	-	7,659	2,815
Away-from-Reactor Storage	F	3,217	674	-	-	3,217	674
Totals		**314,878**	**90,963**	**161,556**	**47,569**	**476,434**	**138,532**

* Excludes reactors with announced early shutdowns.

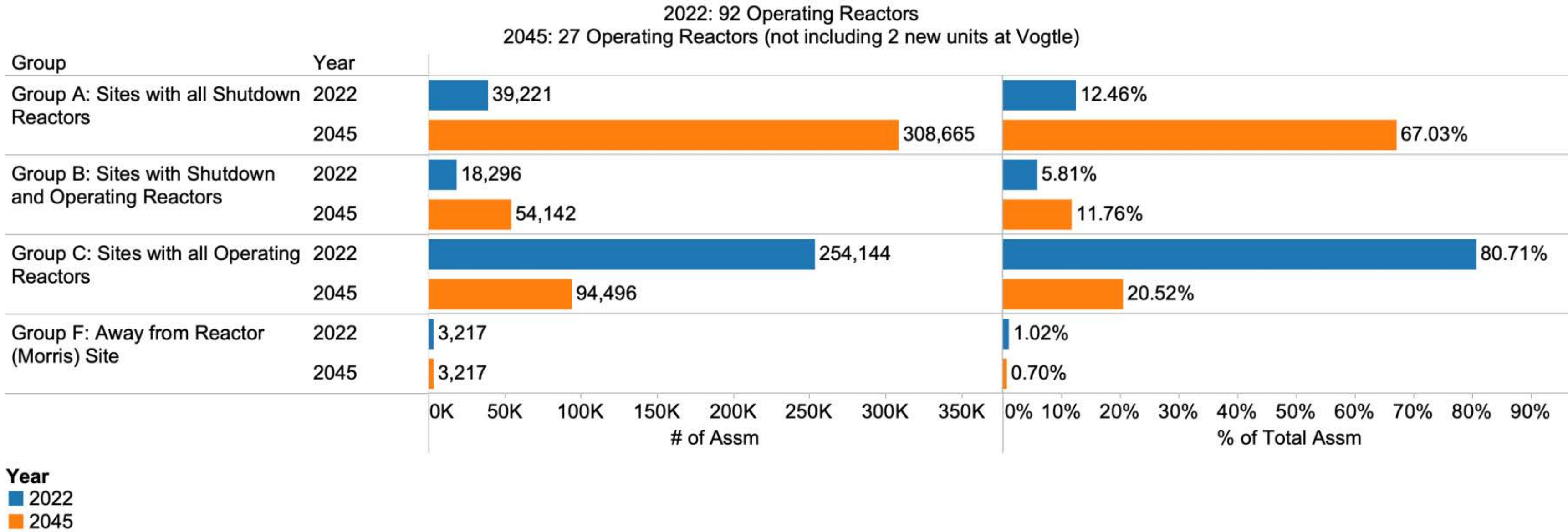

Figure 2-10 Projected Change in Distribution of Nuclear Power Reactor SNF by Group with Time (absent any future transfers)

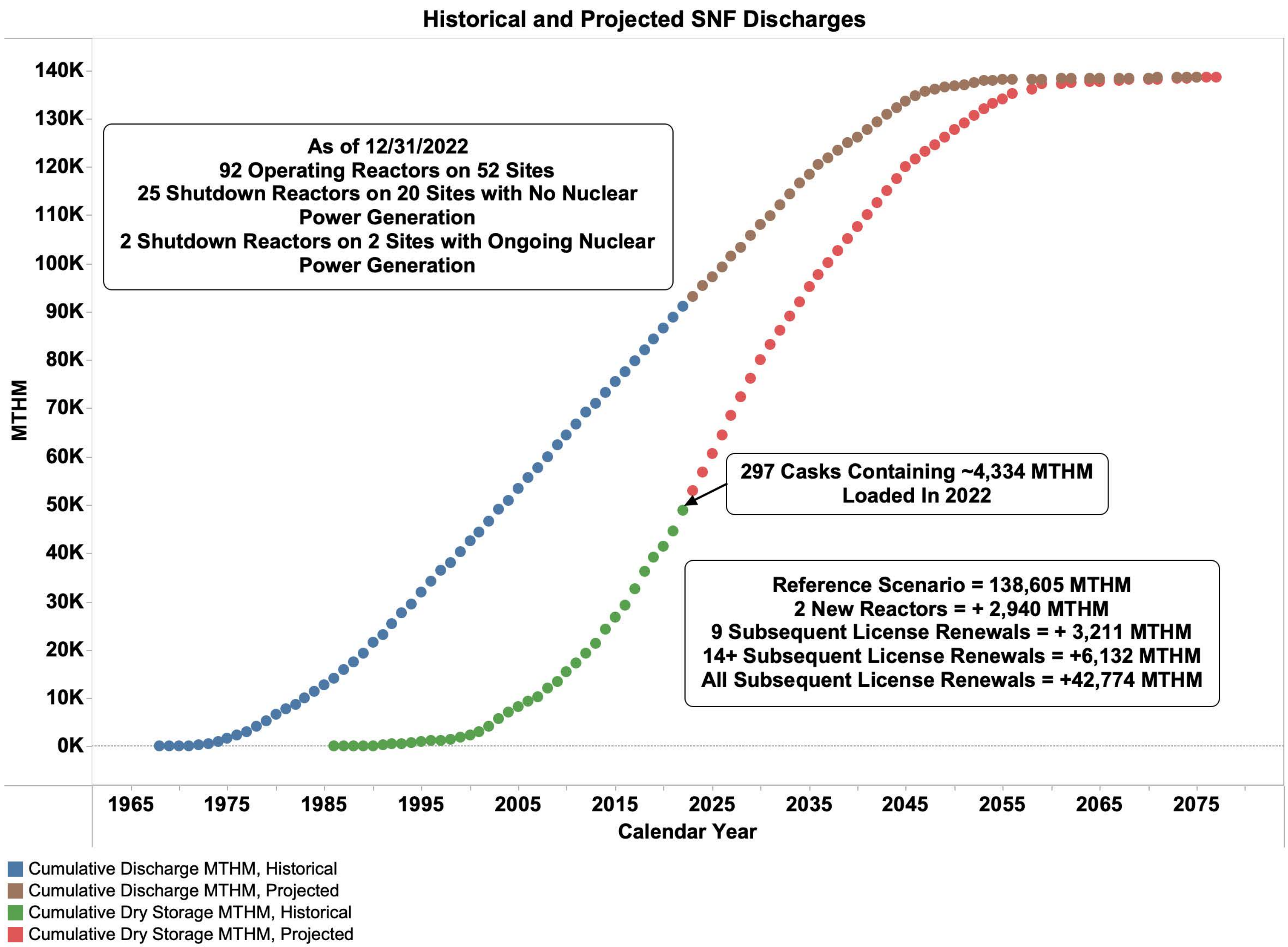

Figure 2-11 Reference Scenario Nuclear Power Reactor SNF Forecast

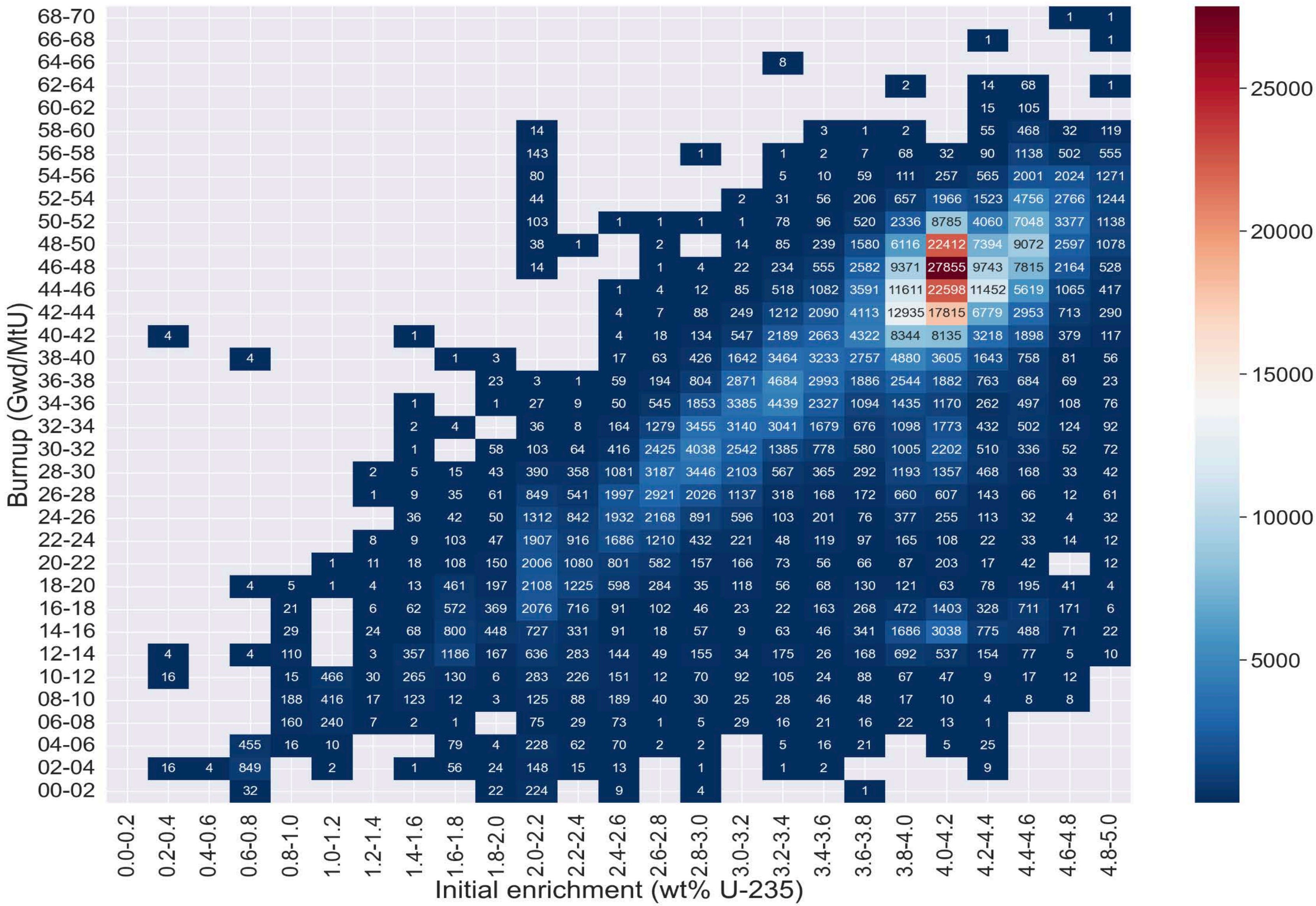

Figure 2-12 Reference Scenario SNF Burn-up Distribution & Initial Enrichment Distribution for SNF Assemblies

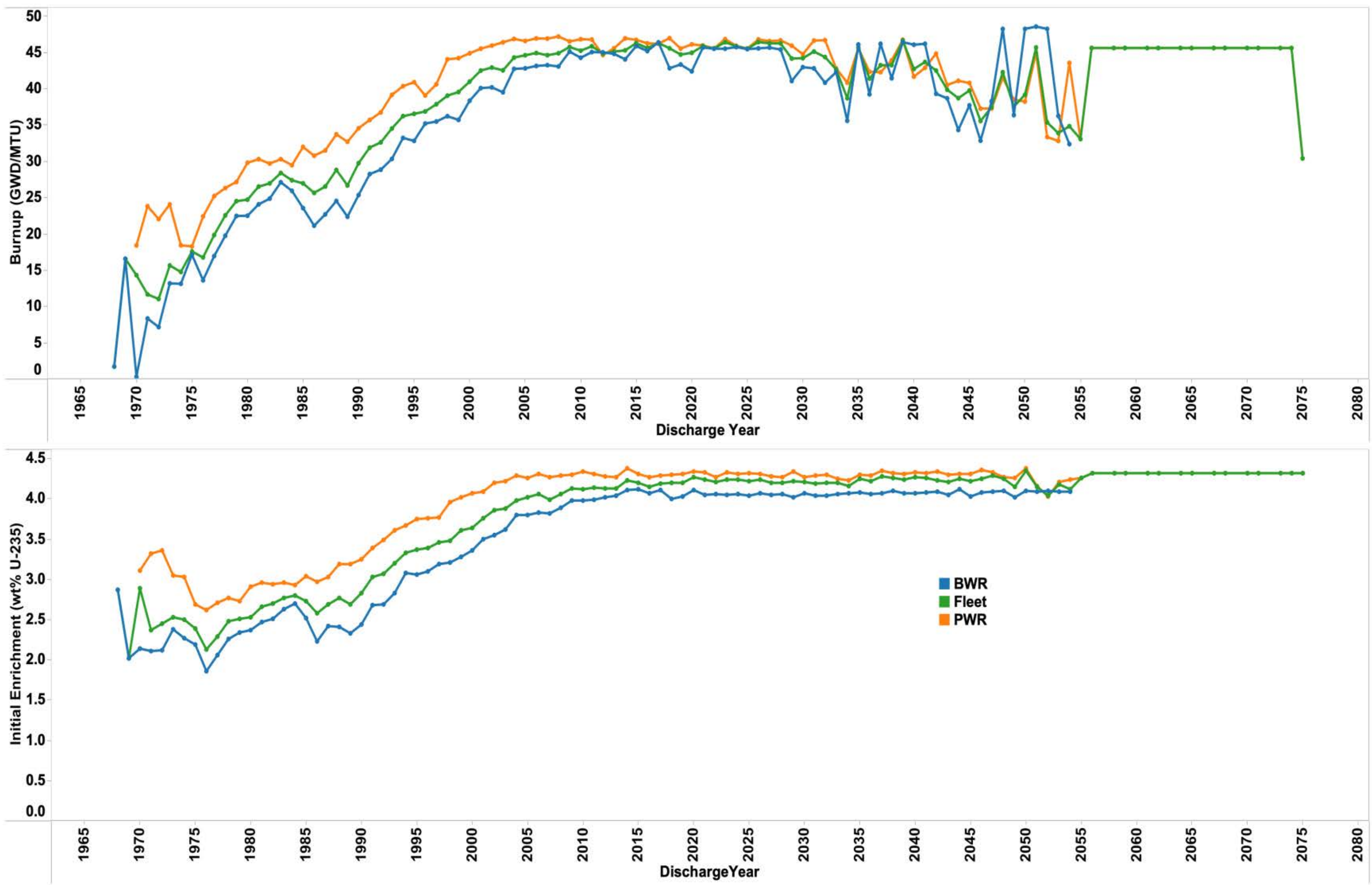

Figure 2-13 Estimated Average Annual Burn-up (GWd/MT) and Enrichment (U-235%) Through 2075

BWR

Burnup (GWD/MTU)

Year	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	60-65
1968-1980	875	1,329	2,396	4,049	2,913	941	2					
1980-1990	1,012	574	1,776	2,344	7,995	11,141	3,836	58	9			
1990-2000	191	191	728	1,231	1,621	6,376	14,662	11,235	2,563	301	92	
2000-2010	1	2	298	209	328	654	2,415	9,390	16,490	11,293	1,805	6
2010-2020		4	25	439	117	114	611	2,862	14,424	21,634	3,595	
2020-2030			128	341	123	139	485	1,633	13,623	21,417	3,056	
2030-2040			1,510	1,255	49	1,459	1,318	1,552	11,211	16,458	2,121	
2040-2050			1,316	2,164	40	1,274	2,162	547	4,101	9,223	1,470	
2050-2060			32	478		32	466	10	108	1,166	382	

Num Assm
1 21,634

PWR

Burnup (GWD/MTU)

Year	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
1968-1980	34	139	689	1,530	1,141	2,265	1,279	299	2				
1980-1990		25	475	1,305	1,300	4,153	6,795	4,927	1,302	104	9	12	
1990-2000	16	129	326	392	684	1,225	4,139	8,654	9,475	6,040	1,126	67	2
2000-2010	1		8	33	101	141	531	2,409	8,308	13,652	7,203	827	3
2010-2020	1	23	176	189	128	341	662	2,014	7,279	10,999	8,852	1,433	4
2020-2030	4		17	142	101	316	841	1,976	7,839	11,669	7,335	1,799	60
2030-2040		9	453	803	82	492	1,127	1,946	7,113	10,189	5,248	964	81
2040-2050		5	584	1,208	62	558	1,042	1,010	4,240	5,226	2,355	514	50
2050-2060			218	245	6	217	233	134	837	879	107	15	5
2060-2075			20	44		20	45		240	544			

Num Assm
1 13,652

Figure 2-14 Estimated Burn-up (GWd/MTHM) Distribution by Assembly Count for SNF Through December 2075

BWR

Year	Burnup (GWD/MTU) 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	60-65
1968-1980	162.9	242.5	435.9	717.4	523.8	173.2	0.3					
1980-1990	183.2	103.1	318.5	420.3	1,462.5	2,011.2	689.4	10.4	1.6			
1990-2000	35.4	35.0	129.1	220.7	288.9	1,154.5	2,620.6	1,985.2	449.4	51.6	15.6	
2000-2010	0.2	0.4	53.6	37.4	57.3	113.9	422.6	1,639.4	2,874.5	1,970.0	310.3	1.0
2010-2020		0.7	4.5	79.2	22.1	20.6	110.5	517.7	2,591.3	3,878.3	647.0	
2020-2030			21.8	58.7	22.1	23.8	84.9	294.5	2,440.7	3,848.0	551.7	
2030-2040			267.8	221.1	8.8	258.6	232.4	279.1	2,011.4	2,953.5	381.3	
2040-2050			236.9	389.5	7.2	229.3	389.2	98.5	738.2	1,660.1	264.6	
2050-2060			5.8	86.0		5.8	83.9	1.8	19.4	209.9	68.8	

MTU
0.2 3,878.3

PWR

Year	Burnup (GWD/MTU) 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
1968-1980	7.2	51.6	281.9	652.7	475.2	926.5	532.8	126.3	0.9				
1980-1990		7.6	205.3	581.5	576.7	1,800.4	2,915.6	2,087.2	538.7	43.0	3.9	5.1	
1990-2000	6.4	48.7	137.7	174.6	307.9	541.4	1,807.1	3,783.3	4,093.2	2,572.4	478.0	26.2	0.8
2000-2010			3.0	14.4	47.9	64.5	234.6	1,056.3	3,682.7	6,013.9	3,099.4	342.8	1.3
2010-2020	0.4	10.2	77.0	77.8	58.7	150.6	287.2	870.1	3,241.2	4,889.7	3,846.7	629.8	1.6
2020-2030	1.3		7.1	60.9	46.1	135.1	363.0	864.5	3,456.7	5,177.8	3,209.8	778.5	25.1
2030-2040		3.9	198.3	346.8	35.6	213.9	484.9	846.1	3,146.5	4,564.3	2,322.1	418.7	34.0
2040-2050		2.1	257.1	542.2	26.4	246.1	466.4	444.3	1,884.7	2,359.0	1,042.6	221.5	21.0
2050-2060			98.0	108.9	2.6	97.6	103.9	59.7	379.9	398.4	46.2	6.3	2.1
2060-2075			9.2	20.2		9.2	20.7		110.4	250.2			

MTU
0.4 6,013.9

Figure 2-15 Estimated Burn-up (GWd/MTHM) Distribution by Initial Uranium Mass for SNF Through December 2075

2.2.2 ALTERNATIVE SCENARIO 1: ADDITION OF "NEW BUILDS"

Alternative Scenario 1 is based on the Reference Scenario with the addition of two "New Builds". This scenario has the same underlying assumptions that characterize the Reference Scenario with the additional inclusion of Vogtle Units 3 & 4 that have recently commenced operations. For the purpose of the current revision to this report, these reactors are assumed to operate for 60 years. No other modifications to the Reference Scenario assumptions are made for this alternative scenario.

Table 2.13 provides the scenario inventory by reactor type as a function of the estimate phase. Actual quantities are used for discharges prior to 12/31/2022. Forecast discharges are used for the individual reactors for later time periods.

Table 2.14 provides the scenario inventory detailed to provide actual discharges through December 31, 2022, from the GC-859 database and the projected quantities between 1/1/2023 and the end of the scenario (2084), by major storage location category and by site Group. One additional category beyond the Reference Scenario is included:

- "New Builds" includes two new reactors at an existing site in Georgia. Table 2.15 provides details of the projected discharges from these reactors.

Table 2.13 Projected NPR SNF Discharges for Alternative Scenario 1 by Reactor Type*

	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/23 to 12/31/84		Total Projected Discharged SNF	
Reactor Type	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)
PWR	135,645	59,013	76,554	34,345	212,199	93,358
BWR	179,466	32,023	90,542	16,164	270,008	48,187
Totals	**315,111**	**91,036**	**167,096**	**50,509**	**482,207**	**141,545**

* Includes NPR SNF inventory at Morris and that was transferred to DOE sites, other than debris from TMI-2. (Not all SNF transferred to DOE is still in the form of SNF, some has been processed and vitrified.)

Table 2.14 Projected SNF Inventory at NPR and Morris for Alternative Scenario 1 by Site Group (Group Status as of 12/31/2022)

Description	Site Group	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/2023 to 12/31/2084		Total Projected Discharged SNF	
		Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Operating Reactors at Group C Sites without Diablo (86 Rx/49 Sites)*	C	250,283	72,246	155,019	45,512	405,302	117,758
Operating Reactors at Group C Sites with Announced Shutdown Date (Diablo) (2 Rx/1 Site)	C	3,861	1,657	1,321	558	5,182	2,215
Operating Reactors at Group B Sites (4 Rx/2 Sites)	B	14,523	3,459	5,216	1,500	19,739	4,959
Shutdown Reactors at Group B Sites (2 Rx/2 Sites)	B	3,773	616.22	-	-	3,773	616.22
Reactors Shutdown Since 2000 (10 Rx/8 Sites)	A1 Post 2000	25,508	6868.13	-	-	25,508	6,868
Reactors Shutdown Since 2000 (5 Rx/3 Sites)	A2	6,054	2,627	-	-	6,054	2,627
Reactor Shutdown prior 2000 (10 Rx/9 sites)	A1 Pre 2000	7,659	2,815	-	-	7,659	2,815
Away-from-Reactor Storage	F	3,217	674	-	-	3,217	674
New Builds (2 Rx/1 Sites)		-	-	5,540	2,940	5,540	2,940
Totals		**314,878**	**90,963**	**167,096**	**50,509**	**481,974**	**141,472**

* Excludes reactors with announced early shutdowns.

Table 2.15 Projected SNF Discharges for Assumed "New Builds"

Reactor [Unit]	Assumed Startup	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2084		Total Projected Discharged SNF	
		Assy.	Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Vogtle 3	7/31/2023	0	0	2,770	1,469.85	2,770	1,469.85
Vogtle 4	3/30/2024*	0	0	2,770	1,469.85	2,770	1,469.85
Totals		-	-	**5,540**	**2,939.70**	**5,540**	**2,939.70**

*The in-service date for Unit 4 is projected during the second quarter of 2024.

2.2.3 ALTERNATIVE SCENARIO 2: SUBSEQUENT LICENSES WITH APPLICATIONS PENDING

Alternative Scenario 2 provides the additional inventory from nine reactors which had applications pending for NRC approval of a "subsequent" or an additional 20-year operating license renewal as of the end of 2022. These nine reactors are:

- North Anna 1
- North Anna 2
- Point Beach Unit 1
- Point Beach Unit 2
- Oconee 1
- Oconee 2
- Oconee 3
- St. Lucie Unit 1
- St. Lucie Unit 2

Table 2.16 provides the scenario inventory by reactor type as a function of the estimate phase. Actual quantities are used for discharges to December 31, 2022. Forecast discharges are used for the individual reactors for later time periods.

Table 2.17 provides the scenario inventory detailed for actual discharges through December 31, 2022, from the GC-859 database; and the projected quantities between 1/1/2023 and the end of the scenario (2075), by major storage location category and by site Group.

The assumptions in this scenario are projected to result in an increase of SNF assemblies relative to the projections of the Reference Scenario as can be seen when Table 2.16 values are compared to Table 2.11.

Table 2.16 Projected NPR SNF Discharges for Alternative Scenario 2 by Reactor Type*

	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
Reactor Type	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)
PWR	135,645	59,013	78,387	34,616	214,032	93,629
BWR	179,466	32,023	90,542	16,164	270,008	48,187
Totals	**315,111**	**91,036**	**168,929**	**50,780**	**484,040**	**141,816**

* Includes NPR SNF inventory at Morris and that was transferred to DOE sites, other than debris from TMI-2 (Not all SNF transferred to DOE is still in the form of SNF, some has been processed and vitrified.)

Table 2.17 Projected SNF Inventory at NPR and Morris for Alternative Scenario 2 by Site Group (Group Status as of 12/31/2022)

Description	Site Group	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
		Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Operating Reactors at Group C Sites (86 Rx/49 Sites without Diablo)*	C	250,283	72,246	162,392	48,722	412,675	120,968
Operating Reactors at Group C, Diablo only, 1 Site with Announced Shutdown Date	C	3,861	1,657	1,321	558	5,182	2,215
Operating Reactors at Group B Sites (4 Rx/2 Sites)*	B	14,523	3,459	5,216	1,500	19,739	4,959
Shutdown Reactors at Group B Sites (2 Rx/2 Sites)	B	3,773	616	-	-	3,773	616
Reactors Shutdown Since 2000 and Assemblies at Dry Storage (10 Rx/8 Sites)	A1 Post 2000	25,508	6,868	-	-	25,508	6,868
Reactors Shutdown Since 2000 and Assemblies are in Both Dry and Pool Storage (5 Reactors /3 Sites)	A2	6,054	2,627	-	-	6,054	2,627
Reactor Shutdown Prior to 2000 (10 Reactors/9 Sites)	A1 Pre 2000	7,659	2,815	-	-	7,659	2,815
Away-from-Reactor Storage	F	3,217	674	-	-	3,217	674
Totals		**314,878**	**90,963**	**168,929**	**50,779**	**483,807**	**141,742**

* Excludes reactors with announced early shutdowns.

2.2.4 ALTERNATIVE SCENARIO 3: FUTURE SUBSEQUENT LICENSE RENEWAL APPLICATIONS

Alternative Scenario 3 provides the additional inventory from 14 reactors obtaining a “subsequent” license approval. These include the 9 reactors in alternate Scenario 2 and 5 reactors which have publicly expressed intentions to apply for a “subsequent” license renewal as of spring 2023 including:

- Monticello Unit 1 (application submitted in Jan 2023)
- Browns Ferry Units 1, 2, and 3
- Summer Unit 1

The scenario also assumed one 20-year license renewal for each of the Diablo Canyon reactor units based on the November 2023 License Renewal Application (Unit 1 operating license would be extended to 11/2/2044 and Unit 2 operating license would be extended to 8/26/2045). Table 2.18 provides the scenario inventory by reactor type as a function of the estimate phase. Actual quantities are used for discharges to December 31, 2022. Forecast discharges are used for the individual reactors for later time periods.

Table 2-19 provides the scenario inventory detailed for actual discharges through December 31, 2022 from the GC-859 database; and the projected quantities between 1/1/2023 and the end of the scenario (2075), by major storage location category and by site Group.

The assumptions in this scenario are projected to result in an increase of SNF assemblies relative to the projections of the Reference Scenario as can be seen when Table 2-18 values are compared to Table 2.11.

Table 2.18 Projected NPR SNF Discharges for Alternative Scenario 3 by Reactor Type*

	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
Reactor Type	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)	Assemblies	Initial Uranium (MT)
PWR	135,645	59,013	81,034	35,730	216,679	94,743
BWR	179,466	32,023	100,722	17,971	280,188	49,994
Totals	**315,111**	**91,036**	**181,756**	**53,701**	**496,867**	**144,737**

* Includes NPR SNF inventory at Morris and that was transferred to DOE sites, other than debris from TMI-2 (Not all SNF transferred to DOE is still in the form of SNF, some has been processed and vitrified).

Table 2.19 Projected SNF Inventory at NPR and Morris for Alternative Scenario 3 by Site Group (Group Status as of 12/31/2022)

Description	Site Group	SNF Discharges as of 12/31/2022		Forecast Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
		Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Operating Reactors at Group C Sites (86 Rx/49 Sites without Diablo)*	C	250,283	72,246	175,219	51,643	425,502	123,889
Operating Reactors at Group C, Diablo only, 1 Site with Announced Shutdown Date (2 Rx/1 Site)	C	3,861	1,657	1,321	558	5,182	2,215
Operating Reactors at Group B Sites (4 Rx/2 Sites)*	B	14,523	3,459	5,216	1,500	19,739	4,959
Shutdown Reactors at Group B Sites (2 Rx/2 Sites)	B	3,773	616	-	-	3,773	616
Reactors Shutdown Since 2000 and Assemblies at Dry Storage (10 Rx/8 Sites)	A1 Post 2000	25,508	6,868	-	-	25,508	6,868
Reactors Shutdown Since 2000 and Assemblies are in Both Dry and Pool Storage (5 Reactors /3 Sites)	A2	6,054	2,627	-	-	6,054	2,627
Reactor Shutdown Prior to 2000 (10 Reactors/9 Sites)	A1 Pre 2000	7,659	2,815	-	-	7,659	2,815
Away-from-Reactor Storage	F	3,217	674	-	-	3,217	674
Totals		**314,878**	**90,963**	**181,756**	**53,700**	**496,634**	**144,664**

* Excludes reactors with announced early shutdowns.

2.2.5 ALTERNATIVE SCENARIO 4: SUBSEQUENT LICENSE RENEWAL APPLICATIONS FOR ALL OPERATING REACTORS

Alternative Scenario 4 provides the additional inventory assuming all reactors operating on 12/31/2025 ultimately obtain a “subsequent” license renewal. This includes the new build reactors Vogtle Units 3 & 4. This scenario provides a reasonable bounding scenario for the existing LWR fleet.

Table 2.20 provides scenario 4 inventory by reactor type as a function of the estimate phase. Actual quantities are used for discharges to December 31, 2022. Forecast discharges are used for the individual reactors for later time periods.

Table 2.21 provides the scenario inventory detailed for actual discharges through December 31, 2022, from the GC-859 database; and the projected quantities between 1/1/2023 and the end of the scenario (2104), by major storage location category and by site Group. The scenario includes the new build reactors operating to 80 years.

The assumptions in this scenario are projected to result in an increase of SNF assemblies relative to the projections of the Reference Scenario as can be seen when Table 2.20 values are compared to Table 2.11.

Table 2.20 Projected NPR SNF Discharges for Alternative Scenario 4 by Reactor Type*

	SNF Discharges as of 12/31/2017		Forecast Discharges 1/1/23 to 12/31/2104		Total Projected Discharged SNF	
Reactor Type	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
PWR	135,645	59,013	137,288	61,128	272,933	120,141
BWR	179,466	32,023	163,900	29,215	343,366	61,238
Totals	**315,111**	**91,036**	**301,188**	**90,343**	**616,299**	**181,379**

* Includes NPR SNF inventory at Morris and that was transferred to DOE sites, other than debris from TMI-2. (Not all SNF transferred to DOE is still in the form of SNF, some has been processed and vitrified.

Table 2.21 Projected SNF Inventory at NPR and Morris for Alternative Scenario 4 by Site Group (Group Status as of 12/31/2022)

Description	Site Group	SNF Discharges as of 12/31/2017		Forecast Discharges 1/1/2023 to 12/31/2104		Total Projected Discharged SNF	
		Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Operating Reactors at Group C Sites without Diablo (86 Rx/49 Sites)*	C	250,283	72,246	275,957	80,830	526,240	153,076
Operating Reactors at Group C Sites, Diablo only (2 Rx/1 Sites)	C	3,861	1,657	5,622	2,373	9,483	4,031
Operating Reactors at Group B Sites (4 Rx/2 Sites)*	B	14,523	3,459	12,327	3,276	26,850	6,735
Shutdown Reactors at Group B Sites (2 Rx/2 Sites)	B	3,773	616.22	-	-	3,773	616.22
Shutdown Reactors at Group B Sites (10 Rx/8 Sites)	A1 Post 2000	25,508	6,868	-	-	25,508	6,868
Reactors Shutdown Since 2000 (4 Rx/2 Sites)	A2	6,054	2,627	-	-	6,054	2,627
Reactors Shutdown Prior to 2000 (10 Rx/9 Sites)	A1 Pre 2000	7,659	2,815	-	-	7,659	2,815
Away-from-Reactor Storage	F	3,217	674.29	-	-	3,217	674.29
New Builds (2 Rx/1 site)	C	-	-	7,282	3,864	7,282	3,864
Totals		**314,878**	**90,963**	**301,188**	**90,343**	**616,066**	**181,307**

* Excludes reactors with announced early shutdowns.

2.2.6 SCENARIO COMPARISON SUMMARY

The methods described previously have been extended to provide the forecast discharges based on a number of scenarios. Four alternative scenarios, in addition to the Reference Scenario have been included in the current report. A summary and comparison are provided in Table 2.22 to illustrate the impact of the scenario assumptions for each alternative scenario, relative to the Reference Scenario. The results of the alternative scenarios considered in this revision of the report indicate a potential inventory that would vary from the Reference Scenario by indicating an increase in assemblies (and thus MTU) in the case where nine reactors have subsequent operating licenses approved and an increase if the entire fleet including the newbuild units Vogtle Units 3 & 4 obtain a subsequent 20-year license extension.

Table 2.22 Summary Table of Projected NPR SNF Discharges*

Scenario	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2104		Total Projected Discharged SNF		Delta from Reference	
	Assy	Initial Uranium (MT)	Assy	Initial Uranium (MT)	Assy	Initial Uranium (MT)	Assy	Initial Uranium (MT)
Reference Scenario 60 Year Operation unless Announced Otherwise	315,111	91,036	161,556	47,569	476,667	138,605	-	-
Scenario 1: Addition of 2 New Builds	315,111	91,036	167,096	50,509	482,207	141,545	5,540	2,940
Scenario 2: Subsequent Licenses with Applications Pending - 9 Reactors	315,111	91,036	168,929	50,780	484,040	141,816	7,373	3,211
Scenario 3: Future Subsequent License Renewal Applications – 14 Reactors	315,111	91,036	181,756	53701	496,867	144,737	20,200	6,132
Scenario 4: Subsequent License Renewal Applications for Reactors Without Announced Shutdown Dates	315,111	91,036	301188	90343	616299	181379	139,632	42,774

* Prior to transfers excluding TMI-2 fuel debris.

2.3 SPENT NUCLEAR FUEL DRY STORAGE SYSTEMS

SNF is initially stored at the nuclear plants in water-filled pools. Most of these pools were not designed for long term storage and many facilities have run out of capacity to store all the SNF in their pools. At these facilities, dry storage systems are utilized to store the SNF. As more facilities run out of pool storage and as reactors continue to generate SNF, the amount of dry storage is increasing. Table 2.6 and Appendix B list the number of SNF casks assemblies loaded at NPR sites as of December 31, 2022. The distribution of SNF by storage method is provided in Figure 2-16.

As of the end of 2022, only Shearon Harris does not have dry storage capabilities. Shearon Harris will not require dry storage before the end of the current license.

SNF storage methods have changed since its inception and today there are three broad categories of storage methods: SNF assemblies in heavy composite wall casks which provide integral confinement and shielding (often called bare fuel casks), SNF in welded steel canisters loaded into storage/transportation overpacks, and SNF in welded steel canisters stored in vented concrete storage overpacks which provide shielding for the SNF canister pending transportation. Table 2.23 provides the distribution by storage method.

Table 2.23 Dry Storage Method Distribution

Storage Method	Canisters/Casks	Assemblies
Welded Canisters in Storage/Transportation Overpacks	12	866
Bare Fuel Casks	235	10,942
Weld Canisters in Concrete Storage Overpacks/Modules	3,615	157,373
Total	**3,862**	**169,181**

Only 12 welded canisters already loaded in storage/transportation overpacks are in use at three sites. These systems are no longer being loaded. See Table 2.24.

Table 2.24 Welded SNF Canisters in Storage/Transportation Overpacks

Reactor, Unit	Cask System	Canister Name	Number of Canisters	Assemblies
Dresden	HI-STAR	MPC-68	4	272
Humboldt Bay	HI-STAR	MPC-HB	5	390
Hatch	HI-STAR	MPC-68	3	204
Total			**12**	**866**

Bare Fuel Casks (BFCs) are still in use and are being routinely loaded at Prairie Island. Peach Bottom stopped loading these systems in 2019. Table 2.25 provides details on these canisters.

Table 2.25 Bare Fuel Casks by Reactor Site and Cask Vendor/Model

Reactor	Cask System	Cask Name	Number of Canisters	Assemblies
Surry	CASTOR	CASTOR V/21	26	558
Surry	MC-10	MC-10	1	24
Surry	NAC-I28	NAC-I28	2	56
Surry	TN Metal Casks	TN-32	26	832
McGuire	TN Metal Casks	TN-32	10	320
North Anna	TN Metal Casks	TN-32	28	896
Prairie Island	TN Metal Casks	TN-40	29	1,160
Prairie Island	TN Metal Casks	TN-40HT	21	840
Peach Bottom	TN Metal Casks	TN-68	92	6,256
Total			**235**	**10,942**

The majority of the SNF in dry storage is in welded canisters stored in concrete overpacks. These dry storage systems are referred to as vented concrete casks or modules. Table 2.26 provides the vendor distribution. Figure 2-16 summarizes the current composition of SNF dry storage systems.

Table 2.26 Welded Canisters in Concrete Storage Overpacks by Vendor

Vendor	Canisters	Assemblies
Orano TN	1,262	49,638
Holtec International	1,750	89,840
NAC	538	16,062
Energy Solutions	65	1,833
Total	**3,615**	**157,373**

Table 2.27 through Table 2.29 provide the storage systems used at the Group A and Group B shutdown sites [Leduc, 2012 updated to reflect current knowledge]. These tables also provide the transportation cask status for the anticipated storage cask [Leduc, 2012 updated to reflect current knowledge]. Except for Millstone 1, all the reactor sites listed in these tables have implemented a dry storage system. All SNF from the shutdown Millstone 1 reactor is currently still in wet storage. Dry storage operations at Millstone have thus far been limited to discharges from the two operating PWRs at this site.

An additional six casks are currently stored on the cask pad and two casks containing SNF from West Valley are stored on rail cars at CPP-2707 at INL. TMI-2 core debris is currently stored primarily in casks at the TMI-2 ISFSI at INL. The Fort St. Vrain ISFSI stores SNF elements in a vault type storage system near Platteville, Colorado.

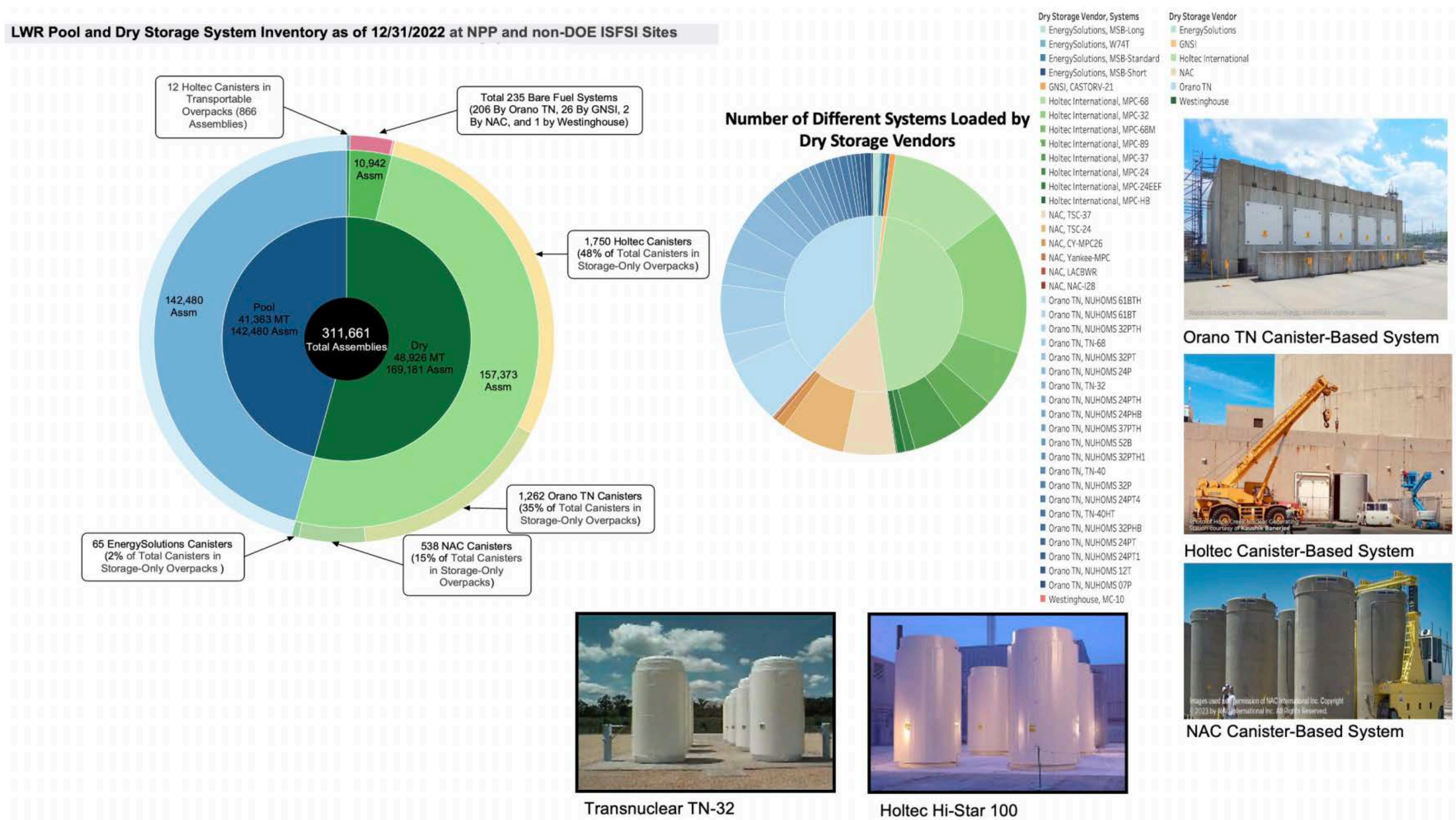

Figure 2-16 SNF Dry Storage Summary

Table 2.27 Cask Systems Used at Group A Sites Shutdown Prior to 2000

Reactor, Unit	Type	Year of First Use[a]	Last Year loaded[b]	Storage System/Canisters	Transport Cask Status
Big Rock Point	BWR	2002	2003	Fuel Solutions W150 Storage Overpack W74 Canister	FuelSolutions TS-125 (Docket No. 71-9276); Certificate expires 11/30/2027. None fabricated
Haddam Neck	PWR	2004	2005	NAC-MPC/CY-MPC (26 Assy) canister	NAC-STC (Docket No. 71-9235); Certificate expires 5/31/2029. Foreign use versions fabricated.
Humboldt Bay	BWR	2008	2013	Holtec HI-STAR HB/MPC-HB canister	HI-STAR HB (Docket No. 71-9261); Certificate expires 4/30/2029 SNF in canisters in fabricated casks. No impact limiters or spacers.
LaCrosse	BWR	2012	2012	NAC MPC/LACBWR canister	NAC-STC (Docket No. 71-9235); Certificate expires 5/31/2029. Foreign use versions fabricated.
Maine Yankee	PWR	2002	2004	NAC-UMS/UMS-24 canister	NAC-UMS Universal Transport Cask (Docket No. 71-9270); Certificate expires 11/30/2027. None fabricated
Rancho Seco	PWR	2001	2002	TN Standardized NUHOMS/FO-DSC, FC-DSC, and FF DSC canisters	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028. One cask fabricated. No impact limiters.
Trojan	PWR	2002	2003	TranStor Storage Overpack/Holtec MPC-24E and MPC-24EF canisters	HI-STAR 100 (Docket No. 71-9261) Certificate expires 4/30/2029. Units fabricated but dedicated to storage at other sites. No impact limiters or spacers
Yankee Rowe	PWR	2002	2003	NAC-MPC/Yankee-MPC canister	NAC-STC (Docket No. 71-9235); Certificate expires 05/31/2029. Foreign use versions fabricated
Zion	PWR	2013	2015	NAC MAGNASTOR/TSC 37 canister	NAC MAGNATRAN (Docket No. 71-9356); Certificate expires 4/30/2029. No units fabricated.

[a] Dates represent the dates the spent fuel was transferred to the ISFSI.

[b] Year last loaded includes GTCC.

Table 2.28 Cask Systems Used at Group A Sites Shutdown Post 2000

Reactor, Unit	Type	First Use Load date	Last Load date	Storage System	Canister	Transport Cask Status
Crystal River	PWR	2017	2018	NUHOMS	NUHOMS 32PTH1	TN MP197HB (Docket No. 71-9302) Certificate expires 1/31/2028. Fabrication complete
Duane Arnold	BWR	2003	2011	NUHOMS	NUHOMS 61BT	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028. One cask fabricated. No impact limiters.
Duane Arnold	BWR	2020	2022	NUHOMS	NUHOMS 61BTH	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028. One cask fabricated. No impact limiters.
Fort Calhoun	PWR	2006	2020	NUHOMS	NUHOMS 32PT	TN MP197HB (Docket No. 71-9302); Certificate expires 1/31/2028.
Kewaunee	PWR	2017	2017	MAGNASTOR	TSC-37	TN MP197HB (Docket No. 71-9302); Certificate expires 1/31/2028. NAC MAGNATRAN (Docket 71-9356) Certificate expires 4/30/2029. None fabricated
Kewaunee	PWR	2009	2014	NUHOMS	NUHOMS 32PT	TN MP197HB (Docket No. 71-9302); Certificate expires 1/31/2028. NAC MAGNATRAN (Docket 71-9356) Certificate expires 4/30/2029. None fabricated
Oyster Creek	BWR	2002	2010	NUHOMS	NUHOMS 61BT	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028.
Oyster Creek	BWR	2021	2021	HI-STORM FW	MPC-89	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028.
Oyster Creek	BWR	2012	2018	NUHOMS	NUHOMS 61BTH & 61BTH Type 1	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028.
Pilgrim	BWR	2015	2018	HI-STORM	MPC-68	HI-STAR 100 (Docket No. 71-9261) Certificate expires 4/30/2029. Units fabricated. No impact limiters or spacers
Pilgrim	BWR	2020	2021	HI-STORM	MPC-68M	HI-STAR 100 (Docket No. 71-9261) Certificate expires 4/30/2029. Units fabricated. No impact limiters or spacers.
San Onofre	PWR	2005	2005	NUHOMS	NUHOMS 24PT1	NUHOMS MP187 (Docket No. 71-9255); Certificate expires

Reactor, Unit	Type	First Use Load date	Last Load date	Storage System	Canister	Transport Cask Status
						11/30/2028. One cask fabricated. No impact limiters. TN MP197HB (Docket No. 71-9302); Certificate expires 1/31/2028. HI-STAR 190 (Docket No. 71-9373), Certificate expires 8/31/2027. None fabricated.
San Onofre	PWR	2007	2012	NUHOMS	NUHOMS 24PT4	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028. TN MP197HB (Docket No. 71-9302); Certificate expires 1/31/2028. HI-STAR 190 (Docket No. 71-9373), Certificate expires 8/31/2027.
San Onofre	PWR	2018	2020	HI-STORM UMAX	MPC-37	NUHOMS MP187 (Docket No. 71-9255); Certificate expires 11/30/2028. TN MP197HB (Docket No. 71-9302); Certificate expires 1/31/2028. HI-STAR 190 (Docket No. 71-9373), Certificate expires 8/31/2027. None fabricated.
Three Mile Island	PWR	2021	2022	MAGNASTOR	MAG-TSC	NAC MAGNATRAN (Docket 71-9356) Certificate expires 4/30/2029. None fabricated
Vermont Yankee	BWR	2008	2017	HI-STORM	MPC-68	HI-STAR 100 (Docket No. 71-9261) Certificate expires 4/30/2029. Units fabricated. No impact limiters or spacers
Vermont Yankee	BWR	2017	2018	HI-STORM	MPC-68M	HI-STAR 100 (Docket No. 71-9261) Certificate expires 4/30/2029. Units fabricated. No impact limiters or spacers

Table 2.29 Cask Systems Used at Shutdown Reactors at Group B Sites[a]

Reactor, Unit	Canister ID	General Canister ID	Load Dates	Canisters Name	Count
Dresden 1	1005D_MPC-68F-030	MPC-68F-030	2014	MPC-68	68
Dresden 1	1005D_MPC-68FF-343	MPC-68FF-343	2014	MPC-68FF	40
Dresden 1	HI_STAR_MPC68F_1005D_MPCF005	MPCF005	2000	MPC-68F	68
Dresden 1	HI_STAR_MPC68F_1005D_MPCF020	MPCF020	2001	MPC-68F	68
Dresden 1	HI_STAR_MPC68F_1005D_MPCF021	MPCF021	2001	MPC-68F	68
Dresden 1	HI_STORM_MPC68F_1005D_MPCF006	MPCF006	2001	MPC-68F	68
Dresden 1	HI_STORM_MPC68F_1005D_MPCF019	MPCF019	2001	MPC-68F	68
Dresden 1	HI_STORM_MPC68F_1005D_MPCF027	MPCF027	2001	MPC-68F	68
Dresden 1	HI_STORM_MPC68F_1005D_MPCF029	MPCF029	2002	MPC-68F	67
Dresden 1	HI_STORM_MPC68_1005D_MPC008	MPC008	2001	MPC-68	34
Dresden 1	HI_STORM_MPC68_1005D_MPC009	MPC009	2001	MPC-68	68
Dresden 1	HI_STORM_MPC68_1005D_MPC016	MPC016	2001	MPC-68	68
Dresden 1	HI_STORM_MPC68_1005D_MPC017	MPC017	2001	MPC-68	68
Dresden 1	HI_STORM_MPC68_1005D_MPC018	MPC018	2001	MPC-68	68
Millstone 1		N/A	N/A	N/A	*
Total					**889**

[a] All Dresden 1 assemblies were loaded into dry storage prior to 2014.

* All BWR SNF at the Millstone is currently in pool storage

2.4 SPENT NUCLEAR FUEL CHARACTERISTICS

To date, SNF has been discharged with burnup ranging from less than 20 gigawatt-days per metric ton (GWd/MT) and projected to approach 60 GWd/MT. Table 2.30 through Table 2.33 and Figure 2-17 to Figure 2-20 present the radionuclide decay heat for the 40 and 60 GWd/MT burnup PWR and 30 and 50 GWd/MT BWR as representative SNF. The figures and tables provide the total decay heat and decay heat by isotopic groups with similar isotopic parameters. Discharged SNF compositions (in g/MT) for representative SNF are available in Appendix C of the Used Fuel Disposition Campaign (UFDC) Inventory report [Carter, 2013].

Table 2.30 PWR 40 GWd/MT Spent Nuclear Fuel Decay Heat

Elements	Decay Heat (Watts/MT)							
	Time (years)							
	1	10	30	50	70	100	300	500
Gases H, C, Xe, Kr, I	0	0	0	0	0	0	0	0
Cs/Sr/Ba/Rb/Y	2,765	1,054	566	354	222	110	1	0
Noble Metals Ag, Pd, Ru, Rh	2,752	11	0	0	0	0	0	0
Lanthanides La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Ho, Tm	3,593	64	10	2	0	0	0	0
Actinides Ac, Th, Pa, U	0	0	0	0	0	0	0	0
Transuranic Np, Pu, Am, Cm, Bk, Cf, Es	819	348	332	309	287	258	159	116
Others	515	15	2	1	0	0	0	0
Totals	**10,444**	**1,492**	**910**	**666**	**509**	**368**	**160**	**116**

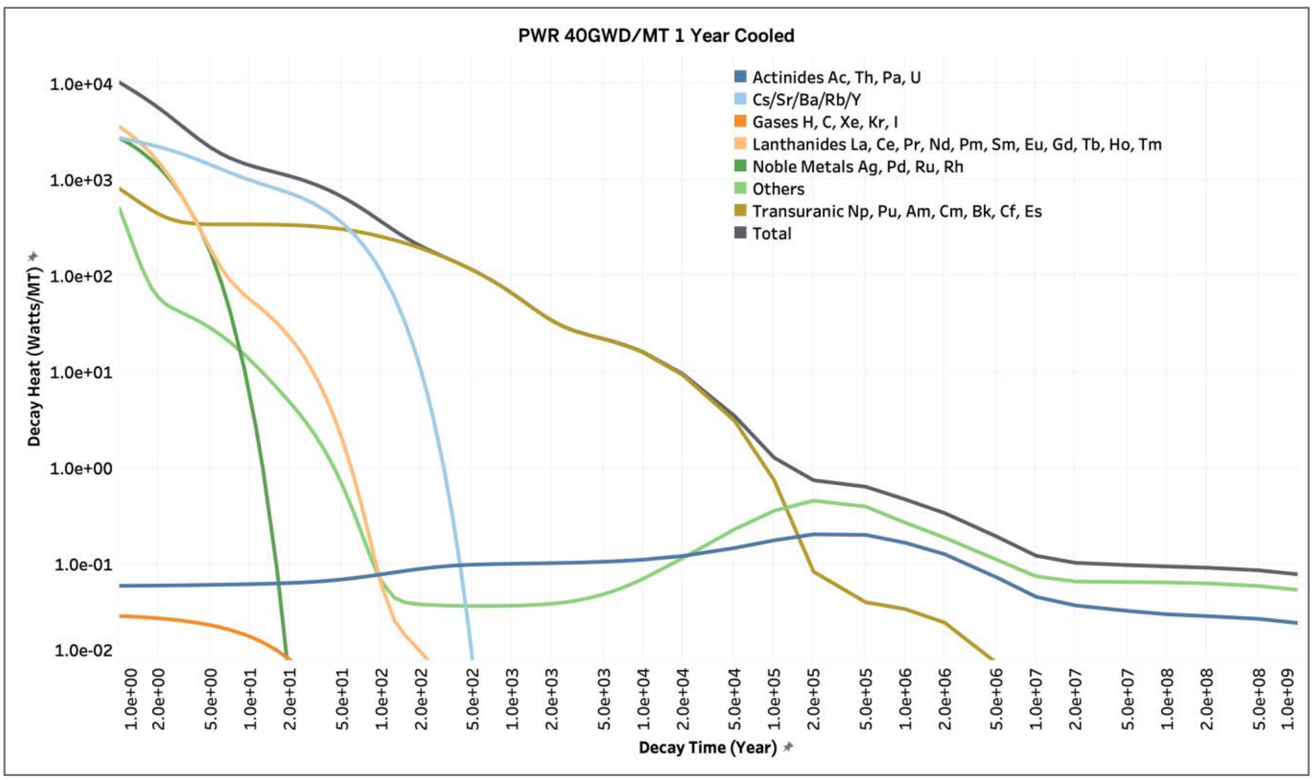

Figure 2-17 PWR 40 GWd/MT Spent Nuclear Fuel Decay Heat

Table 2.31 PWR 60 GWd/MT Spent Nuclear Fuel Decay Heat

Elements	Decay Heat (Watts/MT)							
	Time (years)							
	1	10	30	50	70	100	300	500
Gases H, C, Xe, Kr, I	0	0	0	0	0	0	0	0
Cs/Sr/Ba/Rb/Y	4,608	1,576	824	516	323	160	1	0
Noble Metals Ag, Pd, Ru, Rh	3,447	14	0	0	0	0	0	0
Lanthanides La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Ho, Tm	3,843	109	17	3	1	0	0	0
Actinides Ac, Th, Pa, U	0	0	0	0	0	0	0	0
Transuranic Np, Pu, Am, Cm, Bk, Cf, Es	1,515	785	613	516	449	381	199	139
Others	522	21	3	1	0	0	0	0
Totals	**13,936**	**2,505**	**1,458**	**1,036**	**773**	**541**	**201**	**139**

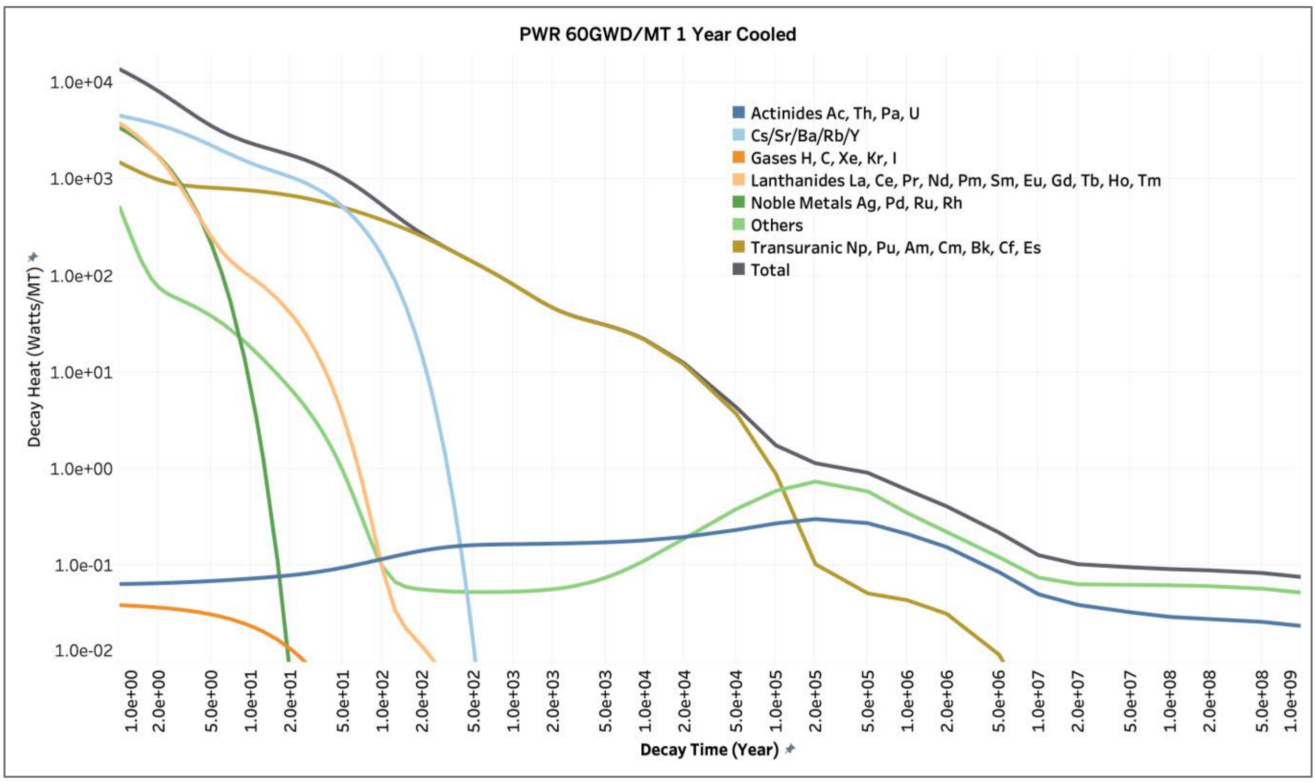

Figure 2-18 PWR 60 GWd/MT Spent Nuclear Fuel Decay Heat

Table 2.32 BWR 30 GWd/MT Spent Nuclear Fuel Decay Heat

Elements	Decay Heat (Watts/MT) Time (years)							
	1	10	30	50	70	100	300	500
Gases H, C, Xe, Kr, I	0	0	0	0	0	0	0	0
Cs/Sr/Ba/Rb/Y	1,895	778	425	266	166	82	1	0
Noble Metals Ag, Pd, Ru, Rh	2,042	8	0	0	0	0	0	0
Lanthanides La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Ho, Tm	2,675	43	6	1	0	0	0	0
Actinides Ac, Th, Pa, U	0	0	0	0	0	0	0	0
Transuranic Np, Pu, Am, Cm, Bk, Cf, Es	588	225	234	225	213	196	127	94
Others	403	12	2	0	0	0	0	0
Totals	**7,603**	**1,067**	**667**	**493**	**380**	**278**	**128**	**94**

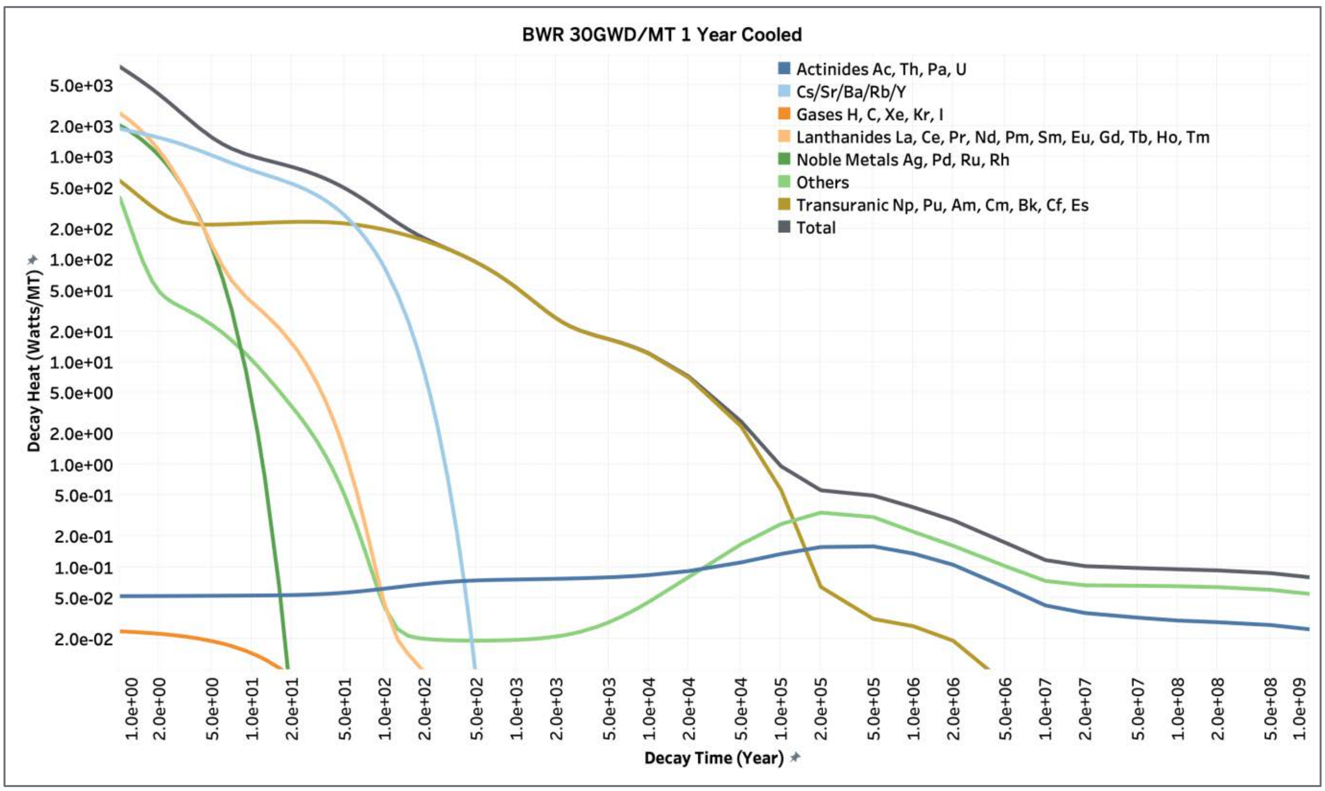

Figure 2-19 BWR 30 GWd/MT Spent Nuclear Fuel Decay Heat

Table 2.33 BWR 50 GWd/MT Spent Nuclear Fuel Decay Heat

Elements	Decay Heat (Watts/MT) Time (years)							
	1	10	30	50	70	100	300	500
Gases H, C, Xe, Kr, I	0	0	0	0	0	0	0	0
Cs/Sr/Ba/Rb/Y	3,558	1,257	662	414	259	128	1	0
Noble Metals Ag, Pd, Ru, Rh	2,669	11	0	0	0	0	0	0
Lanthanides La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Ho, Tm	2,734	92	14	3	1	0	0	0
Actinides Ac, Th, Pa, U	0	0	0	0	0	0	0	0
Transuranic Np, Pu, Am, Cm, Bk, Cf, Es	1,627	760	591	496	433	369	199	139
Others	420	17	2	1	0	0	0	0
Totals	**11,008**	**2,137**	**1,271**	**914**	**693**	**498**	**200**	**139**

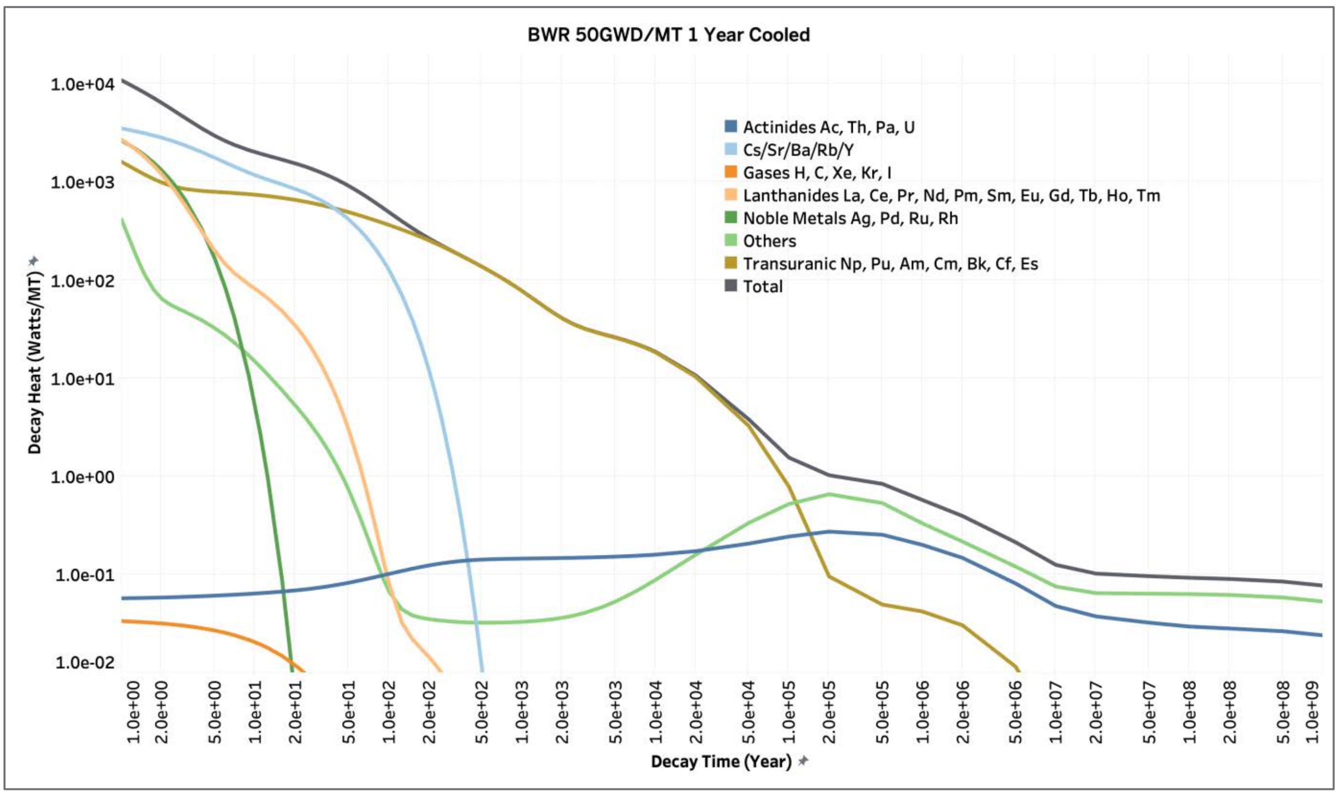

Figure 2-20 BWR 50 GWd/MT Spent Nuclear Fuel Decay Heat

3. SNF AT DOE LOCATIONS

Since the inception of nuclear reactors, the DOE and its predecessor agencies operated or sponsored a variety of production, research, test, training, and other experimental reactors both domestically and overseas. The Naval Nuclear Propulsion Program (NNPP) has generated SNF from operation of nuclear-powered submarines and surface ships, operation of land-based prototype reactor plants, operation of moored training ship reactor plants, early development of nuclear power reactors, and irradiation test programs.

3.1 DOE MANAGED SNF

The SNF located at DOE sites can be generally categorized as:

SNF generated in production reactors supported defense programs and other isotope production programs. An example of SNF existing today from production reactors is the N Reactor SNF stored at Hanford. This is the largest quantity (over 2,100 MTHM) by mass and is included in Section 3.1.1.

DOE sponsored nuclear research activities in the U.S. and overseas. There are four main DOE research reactors; the Advanced Test Reactor (ATR) and the Transient Reactor Test (TREAT) Facility at Idaho National Laboratory (INL), the Annular Core Research Reactor (SNL) and the High Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory (ORNL). In addition to these there is also the Advanced Test Reactor Critical Facility (a low-power version of the higher-powered ATR core) and the Neutron Radiography (NRAD) Reactor (a TRIGA-type reactor), both at INL. Spent nuclear fuel from ATR is stored in the ATR canal prior to transfer to dry storage at INL's CPP-603 facility, while spent nuclear fuel from HFIR is stored in storage racks within the HFIR pool outside the core zone awaiting shipment to Savannah River Site. Additional information regarding DOE-Research Reactors can be found in Appendices F and H, the listing by state and congressional district and the state-by-state maps, respectively. The inventory is included in Section 3.1.1.

There are numerous university and other government agency research reactor sites within the United States. Permanently discharged SNF from research reactors is stored primarily at the INL and SRS and included in Section 3.1.1. (See Section 4 for more information on the university and other government agency reactors.)

DOE has some early demonstration power reactor SNF remaining from Atomic Energy Commission activities. This inventory is also included in Section 3.1.1.

DOE has some NPR SNF resulting from the R&D activities supporting the nuclear power reactors and geologic repository development activities. This inventory is discussed in Section 3.1.2.

SNF resulting from The Nuclear Naval Propulsion Program is included in Section 3.2

3.1.1 SNF INVENTORY

The source of current inventory data for this study is the Spent Fuel Database (SFD) maintained by the National Spent Nuclear Fuel Program (NSNFP) at the INL [NSNFP, 2023]. The total inventory of SNF at about the end of 2022 was approximately 2,446.2 MTHM (NSNFP, 3/22/2023). DOE continues to operate several research reactors and will be receiving SNF from universities and the foreign research reactor return program. Projected material amounts (out to 2035) are relatively small (about 14 MTHM) and there is some uncertainty as to the total amount that will be generated or received. This quantity includes prior receipts of research reactor SNF from all sources, including SNF remaining from very early power demonstration reactors such as Shippingport and Peach Bottom Unit 1. This quantity does not include any Naval spent nuclear fuel (see Section 3.2) nor spent nuclear fuel of NPR origin (See Section 3.1.2) used in various Research and development studies.

SNF comes from a wide range of reactor types, such as light- and heavy-water-moderated reactors, graphite-moderated reactors, and breeder reactors, with various cladding materials and enrichments, varying from depleted uranium to over 93% enriched ^{235}U. Many of these reactors, now decommissioned, had unique design features, such as core configuration, fuel element and assembly geometry, moderator and coolant materials, operational characteristics, and neutron spatial and spectral properties.

As described below, there is a large diversity of reactor and fuel designs. In addition, there is a relatively large number (229,212 (NSNFP, 2023)) of fuel pieces or assemblies, which range from many pieces for some reactors (N Reactor) to a few individual pieces for other unique reactors (Chicago Pile-5 converter cylinders).

There are several hundred distinct types of DOE SNF. This SNF inventory was reduced to 34 groups based on fuel matrix, cladding, cladding condition, and enrichment. These parameters were selected because of their potential relevance to supporting system-level evaluations.

A discussion of each of the 34 groupings is presented in Appendix D of UFDC Inventory [Carter, 2013]. The discussions of each of the 34 groups provide a description of the SNF group and an example of SNF that makes up the group. When appropriate, a more detailed description of a SNF with the largest percentage of MTHM within each group is provided. This discussion is not intended to address each SNF in the group.

Appendix D Table D.1 of UFDC Inventory [Carter, 2013] describes the typical ranges of the nominal properties for SNF in the 34 groups.

3.1.1.1 SNF RADIONUCLIDE INVENTORY

Process knowledge and the best available information regarding fuel fabrication, operations, and storage for DOE SNF are used to develop a conservative source-term estimate. The DOE SNF characterization process relies on pre-calculated results that provide radionuclide inventories for typical SNF at a range of decay times. These results are used as templates that are scaled to estimate radionuclide inventories for other similar SNF.

To estimate an SNF source term, the appropriate template is selected to model the production of activation products and transuranics by matching the reactor moderator and fuel cladding, constituents, and beginning-of-life enrichment. Pre-calculated radionuclide inventories are extracted from the appropriate template at the desired decay period and then scaled to account for differences in fuel mass and specific burnup. Appendix A of “DOE Managed Waste” [Wilson, 2016] lists the projected radionuclide inventory of DOE SNF for the nominal and bounding cases as of 2010. The nominal case is the expected or average inventory. The bounding case represents the highest burnup assembly or accounts for uncertainties if fuel burnup is not known.

From the SFD [NSNFP, 2023, the total estimated nominal radionuclide inventory is 96 million Ci for the year 2030. The estimated bounding radionuclide inventory is 195 million Ci for the year 2030. The nominal case is the expected or average inventory. The bounding case represents the highest burnup assembly or accounts for uncertainties if fuel burnup is not known.

3.1.1.2 SNF STORAGE/CANISTERS

SNF has been stored throughout the U.S. at numerous facilities. A decision was made in 1995 to consolidate the material at three existing DOE sites: Hanford Site in Washington, the INL in Idaho, and the SRS in South Carolina. The vast majority of SNF is currently stored at these three sites. As of about the end of 2022, [NSNFP, 2023], there was 2,128 MTHM at Hanford, 270 MTHM at INL, and

27 MTHM at SRS. The storage configurations vary for each of the sites and include both dry and wet storage. By mass, the largest portion of the SNF is contained in about 388 Multi-canister Overpacks (MCO) at the Hanford site. The MCO is a sealed, stainless steel canister which is about 24 inches in diameter and about 14 feet long.

For the remaining SNF, a standard disposal canister design was developed which included canisters of 18- and 24-inch diameters and 10- and 15-foot lengths. Because of uncertainty in disposal and packaging efficiencies, the total number of canisters to be generated ranged from about 50% to 160% of a point estimate of 2,710. Currently, no SNF has been packaged into the standardized disposal canister design.

The radionuclide inventory and resulting decay heat was calculated for the year 2030 based on the estimated radionuclide inventory as described in Section 3.1.2. The decay heat per canister is calculated as the estimated decay heat associated with each SNF record divided by the number of canisters (unrounded) required for the SNF (based on volume). These values are considered adequate for this scoping evaluation.

Table 3.1 provides the distribution of standard canisters based on the 2030 nominal decay heat using the 2,710 nominal total canister count. Table 3-1 provides detail for the DOE SNF. The 2030 data indicate over 60% of the DOE SNF canisters will be generating decay heat of less than 100 watts. About 97% of the DOE SNF canisters will be generating decay heat less than 300 watts. Nearly all the DOE SNF canisters (>99%) will be generating less than 1 kW. Since the methodology used to calculate the radionuclide inventory is very conservative, some SNF have radionuclide amounts based on bounding assumptions resulting in extreme decay heat values.

Table 3.1 Spent Nuclear Fuel Canister Decay Heat in 2030 [NSNFP, 2023]

	DOE SNF	
Decay heat per canister (watts)	Number of canisters [11]	Cumulative %
<50	1,411	52.1%
50 - 100	459	69.0%
100 - 220	647	92.9%
220 - 300	100	96.6%
300 - 500	77	99.4%
500 - 1000	6	99.6%
1000 - 1500	3	99.7%
1500 - 2000	-	99.7%
>2000	7	100.0%
Total	**2,710**	

[11] The fractional canister counts from the application of a loading algorithm in the SFD database have been rounded up to the whole canister. These provide a relative comparison for the quantities in each decay heat range and do not represent a future "as loaded" condition. These do not sum to the "Total" provided by the SFD database. The Cumulative percentages use the algorithm values.

3.1.2 SNF FROM NPR RESEARCH AND DEVELOPMENT ACTIVITIES

The Spent Fuel Database (SFD) maintained by the National Spent Nuclear Fuel Program at the INL [NSNFP, 2023] tracks spent nuclear fuel of NPR origin which is being managed by DOE. For this study, NPR SNF is identified as having been discharged from the reactors listed in Table 2.1 as well as Three Mile Island Unit 2 debris at INL, and Ft. St. Vrain.

There is 173.6 MTHM of NPR SNF, as defined in this report, that is currently managed by DOE according to the SFD. The contributors to this total include 81.6 MTHM of Three Mile Island Unit 2 core debris, 23.6 MTHM for Ft St. Vrain SNF (both in Colorado and Idaho), and 68.4 MTHM from other NPR sites (e.g., Surry, Ginna, and Robinson) used in various research and development programs. This 68.4 MTU is less than the 73 MTU reported in GC-859 to have been transferred to DOE. This is due to DOE material disposition programs, vitrification research programs, and post irradiation examination.

The intact portion of this SNF from LWRs could be transported and disposed in six waste packages sized to accommodate 21 PWR assemblies or 44 BWR assemblies. The non-intact portion of this SNF could be loaded into DOE standard canisters (see Section 3.1.2 for a description of the standard canister) before shipment and disposal. The non-intact portion is projected to generate 944 DOE standard canisters. Table 3.2 provides a breakdown of the decay heat characteristics for all 950 canisters containing SNF of NPR origin.

Table 3.2 Canister Decay Heat Characteristics of NPR Origin SNF in DOE Possession

Decay heat per canister (watts)	2030	
	Number of DOE Standard Canisters [12]	Cumulative %
<50	792	83.4%
50 - 100	54	89.0%
100 - 220	33	92.5%
220 - 300	40	96.7%
300 - 500	3	97.0%
500 - 1000	24	99.6%
1000 - 1500	0	99.6%
1500 - 2000	0	99.6%
>2000	5	100.0%
Totals	**950**	

[12] The fractional canister counts from the application of a loading algorithm in the SFD database have been rounded up to the next whole canister. These provide a relative comparison for the quantities in each decay heat range and do not represent a future "as loaded" condition. These do not sum to the "Total" provided by the SFD database. Cumulative % is based on the algorithm values.

3.2 NAVAL SNF

The NNPP has generated SNF from operation of nuclear-powered submarines and surface ships, operation of land-based prototype reactor plants, operation of moored training ship reactor plants, early development of nuclear power, and irradiation test programs. The source of naval SNF information for this report is the unclassified portion of the Yucca Mountain Repository License Application [DOE, 2008] and an evaluation report on options for permanent geologic disposal of spent nuclear fuel and HLW [SNL, 2014]. Since most details regarding naval SNF are classified, only limited information is presented herein. [13]

3.2.1 NAVAL SNF INVENTORY

Naval SNF consists of solid metal and metallic components that are nonflammable, highly corrosion-resistant, and neither pyrophoric, explosive, combustible, chemically reactive, nor subject to gas generation by chemical reaction or off-gassing. Approximately 40 MTHM of Naval SNF currently exists with a projected inventory of less than 65 MTHM in 2035.

New naval nuclear fuel is highly enriched uranium. As a result of the high uranium enrichment, very small amounts of transuranics (TRU) are generated by end of life when compared to NPR SNF.

3.2.2 NAVAL SNF RADIONUCLIDE INVENTORY

Each naval SNF canister is loaded such that thermal, shielding, criticality, and other characteristics of the received waste will be within the proposed repository waste acceptance requirement limits. As a result, a radionuclide inventory for a representative naval SNF canister, five years after reactor shutdown, was developed for use in the repository source term analyses (UFDC Inventory Appendix E, Table E.1 [Carter, 2013]). Different packaging designs may be needed dependent upon the future disposal options.

3.2.3 NAVAL SNF STORAGE/CANISTERS

SNF from the NNPP is temporarily stored at the INL. To accommodate different naval fuel assembly designs, naval SNF is loaded in either a naval short SNF canister or a naval long SNF canister. Both were sized to fit within the proposed design for the Yucca Mountain repository waste package.

The outer diameter of the naval SNF canister is 66 in. nominal (66.5 inches maximum). The maximum external dimensions ensure naval SNF canisters fit into the waste packages. The naval short SNF canister is 185.5 inches (nominal) in length (187 inches maximum), and the naval long SNF canister is 210.5 inches (nominal) in length (212 inches maximum). Except for length, the geometry of the naval SNF canisters are identical.

Approximately 400 naval SNF canisters (310 long and 90 short) are currently planned to be packaged and temporarily stored pending shipment. The average thermal load is 4,250 watts/container. The maximum heat load of all containers will be under the 11,800 watts/container limit established for Yucca Mountain. The NNPP is responsible for preparing and loading naval SNF canisters and began canister loading operations in 2002. As of December 31, 2022, 201 naval SNF canisters have been loaded and are being temporarily stored at INL. Table 3.3 provides the distribution of Naval SNF canisters based on nominal decay heat. [SNL, 2014]

[13] Before using the information in this section for studies involving naval SNF, contact the NNPP Program Manager, Naval Spent Nuclear Fuel at (202) 781-5903.

Table 3.3 Naval SNF Canister Decay Heat

Decay heat per canister (watts)	Number of canisters	Cumulative %
500 - 1000	13	3.3%
1000 - 2500	36	12.3%
2500 - 5000	94	35.8%
>5000	257	100.0%
Total	**400**	

4. SNF AT OTHER SITES

Spent Nuclear Fuel at other sites includes: University Research Reactors, other Government Agency reactors, and Commercial Research and Development Centers. The SNF quantities are derived from data prepared by INL using the Spent Fuel Database version 8.2.9 (released November 2022). The total SNF is approximately 1.35 MT.

4.1 UNIVERSITY RESEARCH REACTORS

University research reactors operate at power levels that range from less than a watt up to 10 MW depending on the reactor type. Permanently discharged SNF from these reactors is generally sent to either SRS or INL, and the SNF is managed by DOE and included in the inventory discussed in Section 3.1. Excluding the Reactor Critical Facility at Rensselaer Polytechnic Institute and the AGN-201 reactors located at Idaho State University, Texas A&M University, and the University of New Mexico which have such a low fuel burnup rate that they should never have to be refueled in their useful lifetime, there are twenty university research reactors in operation at twenty sites[14]. Table 4.1 provides a listing of the university reactors and the quantities of spent nuclear fuel at those locations. The quantities reported include the in-core amounts and SNF which has not reached the end of its useful life. Permanently discharged SNF is returned to DOE and included in the inventory in Section 3.1.1. Additional information regarding research reactors at universities is included in the listing by state and congressional district (APPENDIX F) and the state-by-state maps (APPENDIX G).

[14] In this report, the Rhode Island Nuclear Science Center (RINSC) reactor is listed in the next section on other government agency research reactors. RINSC serves as the headquarters for the Rhode Island Atomic Energy Commission RIAEC) which is the licensee for the reactor which is located on the Narragansett Bay Campus of the University of Rhode Island. The reactor is on land leased to the RIAEC from the Rhode Island Department of Higher Education, and the land adjacent to the RINSC reactor is owned and controlled by the University of Rhode Island. The reactor supports research and education at the University of Rhode Island and other universities.

Table 4.1 University Research Reactors

State	Installation	Inventory (kg)
California	University of California (Irvine)	20.34
	University of California (Davis)	80.34
Florida	University of Florida (Gainesville)	19.30
Indiana	Purdue University (West Lafayette)	12.03
Kansas	Kansas State University (Manhattan)	21.44
Maryland	University of Maryland (College Park)	19.84
Massachusetts	University of Massachusetts-Lowell	10.64
	Massachusetts Institute of Technology (Cambridge)	20.21
Missouri	University of Missouri (Columbia)	28.95
	University of Missouri (Rolla)	25.52
North Carolina	North Carolina State University (Raleigh)	484.05
Ohio	Ohio State University (Columbus)	26.15
Oregon	Oregon State University (Corvallis)	75.63
	Reed College (Portland)	18.95
Pennsylvania	Pennsylvania State University (University Park)	37.94
Texas	Texas A&M University (College Station)	68.76
	University of Texas (Austin)	42.83
Utah	University of Utah (Salt Lake City)	25.77
Washington	Washington State University (Pullman)	57.53
Wisconsin	University of Wisconsin (Madison)	58.29
Total		1,154.48

4.2 OTHER GOVERNMENT AGENCY RESEARCH REACTORS

Table 4.2 lists research reactors operated by other government organizations. Permanently discharged SNF from these reactors is generally sent to either SRS or INL, and the SNF is managed by DOE and included in the inventory discussed in Section 3.1.

Table 4.2 Other Government Agency Research Reactors SNF

State	Installation	Inventory (kg)
Colorado	U.S. Geological Survey (Denver)	65.76
Maryland	National Institute of Standards and Technology (Gaithersburg)	13.91
	Armed Forces Radiobiology Research Institute (Bethesda)	18.27
Rhode Island	Rhode Island Atomic Energy Commission, RINSC Reactor (Narragansett)	19.24
Total		**177.17**

4.3 COMMERCIAL RESEARCH AND DEVELOPMENT CENTERS

Table 4.3 lists commercial research and development centers. Three sites have reactors while the BWX Technologies site in Virginia is a fuel cycle research center conducting SNF destructive examinations among other activities.

Table 4.3 Commercial Research and Development Centers SNF

State	Installation	Inventory (kg)
California	Aerotest Research Reactor (San Ramon)	17.50
	General Electric (Pleasanton)	3.98
Michigan	Dow Chemical, Research Reactor (Midland)	14.81
Virginia	BWX Technology, Fuel cycle R&D Center (Lynchburg)	43.89
Total		**80.19**

5. REPROCESSING WASTE

Aqueous reprocessing of SNF has occurred at the Hanford Site, the INL, and the SRS. The INL is using electro-chemical processing to treat up to 60 MTHM of sodium bonded SNF. The Defense Waste Processing Facility at SRS is converting the reprocessing waste into borosilicate glass and a reprocessing waste treatment facility is under construction at the Hanford site.

In addition, some NPR SNF was reprocessed at a private company, Nuclear Fuel Services, located at the Western New York Service Center which is owned by the New York State Energy Research and Development Authority. The reprocessing waste has been treated by conversion into borosilicate glass and is stored on the site. (Section 5.2)

5.1 REPROCESSING WASTE AT DOE SITES

High-level radioactive waste [15] is the highly radioactive material resulting from the reprocessing of SNF, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. Aqueous reprocessing waste is in a liquid form and historically has been stored in underground metal storage tanks. Long term storage of reprocessing waste requires stabilization of the wastes into a form that will not react, nor degrade, for an extended period of time. Two treatment methods used for stabilization of the waste are vitrification or calcination. Vitrification is the transition of the reprocessing waste into a glass by mixing with a combination of silica sand and other constituents or glass forming chemicals that are melted together and poured into stainless steel canisters. Glass canisters have a nominal diameter of 2 feet and have heights of 10 or 15 feet. Calcination of reprocessing waste is accomplished by injecting the waste with calcining additives into a fluidized bed to evaporate the water and decompose the remaining constituents into a granular solid material.

In addition to aqueous reprocessing, the INL is using electro-chemical processing to treat up to 60 MTHM of sodium bonded SNF. The process converts the bond sodium into sodium chloride and separates the SNF into a uranium product and reprocessing waste. The reprocessing waste is produced in two forms, ceramic and metal. The ceramic waste form primarily contains the salt electrolyte with active metal fission products and the metal waste is primarily the cladding hulls and undissolved noble metals. The process has been demonstrated and used to treat about 4 MTHM of sodium bonded SNF to date.

5.1.1 CURRENT REPROCESSING WASTE INVENTORY

The sources of inventory data for this report includes information collected by the Department's OCRWM for the Yucca Mountain License Application [DOE, 2008] and recent site treatment plans. [DOE, 2020; Chew, 2019]

INL reprocessed SNF from naval propulsion reactors, test reactors, and research reactors to recover uranium and generated approximately 30,000 m^3 of liquid reprocessing waste. Between 1960 and 1997, the INL converted their liquid reprocessing waste into about 4,400 m^3 of a solid waste form

[15] This report does not necessarily reflect final classifications for the material being discussed; for example, material referred to as "HLW" or "SNF" may be managed as HLW and SNF, respectively, without having been actually classified as such for disposal. In this report "reprocessing waste" primarily refers to the waste stream containing most of the fission products which is typically extracted during the first cycle of nuclear fuel reprocessing and, for aqueous reprocessing, often proposed for vitrification.

called calcine (a granular solid with the consistency of powder laundry soap). These solids are stored retrievably on-site in stainless steel bins (like grain silos but smaller) within concrete vaults.

The SRS has reprocessed defense reactor SNF and nuclear targets to recover valuable isotopes since 1954 having received more than 160 million gallons of waste. Through evaporation and vitrification of the waste, SRS has reduced this inventory to the current level of about 35 million gallons of waste. [Chew, 2019]. SRS began vitrifying reprocessing waste in 1996 and through December 31, 2022, has produced 4,346 vitrified waste canisters (2 feet × 10 feet).

The Hanford Site reprocessed defense reactor SNF since the 1940s and has generated about 56 million gallons of liquid reprocessing waste to recover the plutonium, uranium, and other elements for defense and other federal programs. Construction of a vitrification facility is currently underway. Table 5.1 summarizes the current reprocessing inventory.

Table 5.1 Current Reprocessing Waste Inventory

Site	Vitrified Waste Canisters[1]	Liquid Reprocessing Waste[2] (m^3)	Dry Reprocessing Waste[3] (m^3)
Hanford	N/A	220,000	N/A
INL	N/A	N/A	4,400
SRS	4,346[4]	133,000	N/A

[1] Vitrified Reprocessing Waste in stainless steel canisters.

[2] Reprocessing Waste stored in tanks.

[3] Calcined reprocessing waste stored in bins.

[4] Produced through December 31, 2022. Source: “Savannah River Site: Waste Tank Levels” SRMC-LWP-2022-00001 R77

The Hanford Site encapsulated Cs and Sr separated from the liquid waste between 1974 and 1985. Some of these capsules were leased to companies as radiation sources. After one of the capsules developed a microscopic leak, the capsules were recalled. Hanford is storing 1,335 Cs capsules and 601 Sr capsules, which contained approximately 109 million curies at the time of production. Table 5.2 provides the capsule inventory broken down by decay heat load. Decay heat continues to decrease and as of 1/1/2020 the total radioactivity has been reduced to approximately 42M Ci with decay continuing to approximately 24 million curies by January 2043 [Covey, 2002].

The Hanford Tank Closure and Waste Management FEIS evaluated selected disposition pathways for the capsule contents. One alternative evaluated was conversion to glass. In this scenario, the capsule contents have potential to generate an additional 340 vitrified reprocessing waste canisters.

No decision has been made on the disposition of the Cs/Sr capsules. At present, DOE is working to construct a dry storage facility to replace wet storage in Waste Encapsulation and Storage Facility (WESF). After transferring the 1,936 capsules to dry storage, they would be safely stored until a future decision on disposition is made.

Table 5.2 Hanford Site Encapsulated Cs and Sr Inventory Distribution as of 1/1/2020

Decay heat per canister (watts)	Cs Capsules		Sr Capsules		Total Capsules	
	Number of canisters	Cumulative %	Number of canisters	Cumulative %	Number of canisters	Cumulative %
<50	3	0.2%	64	10.6%	67	3.5%
50 – 100	232	17.6%	125	31.4%	357	21.9%
100 – 200	1,100	100.0%	298	81.0%	1,398	94.1%
200 - 300	-	100.0%	105	98.5%	105	99.5%
300 - 500	-	100.0%	9	100.0%	9	100.0%
500 - 1000	-	100.0%	-	100.0%	-	100.0%
1000 - 1500	-	100.0%	-	100.0%	-	100.0%
1500 - 2000	-	100.0%	-	100.0%	-	100.0%
>2000	-	100.0%	-	100.0%	-	100.0%
Total Canisters	**1,335**		**601**		**1,936**	
Total Decay Heat (watts)	**144,421**		**85,508**		**229,930**	

5.1.2 PROJECTED REPROCESSING WASTE INVENTORY

SRS currently has the only operating reprocessing facility in the United States, H Canyon. It is estimated that an additional 12,000 m^3 of liquid reprocessing waste may be generated with continued canyon operations [Chew, 2019] (approximately 2026, including H-Canyon shutdown flows).

The projected number of vitrified reprocessing waste canisters to be generated at each site will be dependent on actual loading and final waste form. Because of this uncertainty, the actual number of reprocessing waste canisters produced may vary significantly from what is anticipated today.

SRS began conversion of the liquid defense waste into borosilicate glass in 1996 and is the only DOE site with vitrified waste in a packaged configuration. A total of 4,346 canisters have been produced through December 31, 2022. Therefore, the SRS inventory can be described as those canisters in the current inventory and those projected from future operations. Decay heat of the current inventory is based on radiological inventories contained in the production records for those canisters. The decay heat of future canisters is estimated based on the radionuclide composition of the reprocessing waste inventory remaining in the liquid waste storage tanks. The radionuclide and resulting decay heat is calculated based on the year the canister is/will be produced. The total Savannah River canister count is based on information supporting Savannah River Liquid Waste Disposition Plan revision 21 which assumes a Salt Waste Processing Facility start-up date of FY-20.

Table 5.3 provides the projected canister distribution of SRS canisters based on the nominal decay heat at the time of production. The data indicate: about 33% of the Savannah River canisters will be generating less than 50 watts; 96% of the Savannah River canisters will be generating less than 300 watts; all the SRS canisters will be generating less than 500 watts.

Table 5.3 Savannah River Canister Decay Heat Distribution (projected)

Savannah River		
Decay heat per canister (watts)	Number of canisters	Cumulative %
<50	2,625	32.3%
50 – 100	984	44.4%
100 – 200	3,668	89.6%
200 – 300	537	96.2%
300 – 500	307	100.0%
500 – 1000	-	100.0%
1000 – 1500	-	100.0%
1500 – 2000	-	100.0%
>2000	-	100.0%
Totals	**8,121**	
Total Decay Heat (watts)	**855,088**	

The Hanford Waste Treatment Project (WTP) is currently under construction and therefore the Hanford borosilicate glass canisters are based on a reference baseline inventory for their future production taken from *River Protection Project System Plan*, Revision 9 [DOE, 2020] as 7,300 (Scenario 1) canisters of immobilized high level waste (IHLW) glass and 8,800 (Scenario 1) TRU waste drums. System Plan Revision 9 includes 6 different scenarios (n.b. Scenario 1 has 4 variants) with glass canister production ranging from 7,000 (Scenario 1B) to 9,100 (Scenario 2 & 4[a]). Scenario 1D assumes DOE does not elect to pursue Contact-Handled Transuranic (CH-TRU) waste treatment which results in an estimated 7,400 IHLW glass canisters.

Scenario 1D is dissimilar to the 11,079 canisters estimated by the January 2011 Waste Treatment Plant document titled "2010 Tank Utilization Assessment". This tank utilization assessment includes individual canister specific decay heat values which are summarized in Table 3-6 indicating 85% of the Hanford canisters will be generating less than 50 watts; and 100% of the Hanford canisters will be generating less than 300 watts. Since the Hanford system plan baseline (Scenario 1 [16]) results in about 3,279 fewer canisters (29.6%) and the CH-TRU waste drums will not contain significant decay heat products, the decay heat values resulting from the current Hanford baseline will result in approximately 30% increase in each decay heat value group in Table 5-4.

At INL several options were considered for ultimate disposal of the calcine. Alternatives included direct disposal, vitrification, or hot isostatic pressing (HIP) to compress the calcine into a volume-reduced monolithic waste form. A Record of Decision issued December 2009 determined that DOE will use the HIP technology to treat the calcine.

Decay heat of DOE calcined waste currently stored at the Idaho site is taken from the October 2005 Idaho Cleanup Project document titled "Decay Heat and Radiation from Direct Disposed Calcine", EDF-6258 revision 0. EDF-6258 provides this data for direct disposal of the calcine waste. The current Record of Decision for disposal of the calcine is for it to be treated using HIP, which will result

[16] Specific canister decay heat projections are not available for the current Hanford reference baseline scenario.

in an approximate 50% increase in the volume of calcine material (due to additives) followed by about 30% decrease in the volume as a result of the HIP process. The size of the final HIP container and final packaged canister remains under investigation. The current estimate is 3700 canisters.

Table 5.4 provides the projected distribution of DOE calcine canisters based on the nominal decay heat in the year 2017. The data indicates that 100% of calcine canisters will be less than 50 watts.

Table 5.4 Hanford and Idaho Waste Inventory (projected)

	Hanford Borosilicate Glass[a]		Idaho Calcine[b]	
Decay heat per canister (watts)	Number of canisters	Cumulative %	Number of canisters	Cumulative %
<50	9,291	83.9%	3,700	100.0%
50 - 100	1,237	95.0%		
100 - 200	523	99.7%		
200 - 300	28	100.0%		
300 - 500	0	100.0%		
500 - 1000	0	100.0%		
1000 - 1500	0	100.0%		
1500 - 2000	0	100.0%		
>2000	0	100.0%		
Totals	**11,079**		**3,700**	
Total Decay Heat (watts)	**304,904**		**92,674**	

[a] Projected based on future waste vitrification operations.

[b] Projected based on future waste treatment which may change.

Table 5.5 shows the estimated number of vitrified reprocessing waste canisters to be produced. The current best estimate and a potential range are provided. [Marcinowski memo to Kouts, 2008; EIS, 2002; Chew, 2019, DOE-2017] Table 1.1. and APPENDIX F provide the equivalent MTHM using the “Best Estimate” canisters count and using the historical factor of 0.5 MTHM per canister established in DOE/DP 0020/1 [DOE, 1985].

Table 5.5 Projected Total Number of DOE Vitrified Reprocessing Waste Canisters

	Canisters[1] Best Estimate	Canister Range
Hanford	7,300	7,000-9,100
INL (Projected)	3,802	1,272 – 11,335
INL (Calcine)	3,700	1,190 - 11,200
INL (Electro-chemical processing)	102	82-135
SRS	8,121	8,000 - 8,300
West Valley	278	278
Totals	**19,500[2]**	**~16,500 - ~29,000[2]**

[1] With the exception of Hanford, all canisters are 2 feet × 10 feet. Hanford canisters are 2 feet × 15 feet

[2] Rounded to nearest 100 canisters

5.1.3 REPROCESSING WASTE RADIONUCLIDE INVENTORY

"DOE Managed Waste" [Wilson, 2016 Appendix B] lists the total reprocessing waste radionuclide inventory for each of the generating sites decayed to 2017. Although there may be some variation in the number of canisters produced for the sites that have not completed waste treatment, the total amount of radionuclide will not change except by radioactive decay. The combined inventory from all three sites is approximately 1.3 million watts.

OCRWM used the "projected maximum" inventory on a per canister basis for the vitrified reprocessing waste curie content supplied by SRS. The use of the "projected maximum" on a per canister basis resulted in a conservative total curie content for SRS that is approximately twice the actual SRS tank farm inventory. The expected curie content of SRS reprocessing waste is presented in DOE Managed Waste [Wilson, 2016 Appendix B].

SRS is also the only DOE site continuing reprocessing, and the DOE-EM program periodically processes excess special isotopes via the reprocessing facility and the vitrification process. The potential for future EM special isotope disposal campaigns has not been assessed in this study.

The total radionuclide inventory for treatment of sodium bonded SNF is shown in Table F3 of the UFDC Inventory report [Carter, 2013].

5.1.4 VITRIFIED REPROCESSING WASTE STORAGE

The vitrified reprocessing waste canisters at SRS is stored in below grade concrete vaults, called Glass Waste Storage Buildings (GWSB), containing support frames for vertical storage of 2,262 canisters. SRS currently has two GWSBs. The first GWSB is being modified such that canisters can be stacked two high, doubling the capacity of this building and delaying the need for a third GWSB. As of January 2020, one thousand additional storage positions have been recovered by the double stack modifications.

5.2 REPROCESSING WASTE AT WEST VALLEY

A spent nuclear fuel reprocessing plant was constructed and operated by Nuclear Fuel Service. The facility was located at Western New York Service Center which is owned by the New York State Energy Research and Development Authority. The facility operated from 1966 through 1972 and reprocessed approximately 640 metric tons of SNF to recover the plutonium and unused uranium [NFS, 1973]. Of the SNF reprocessed at West Valley, about 260 metric tons were NPR fuel and about 380 metric tons were DOE N Reactor fuel. Included in this amount processed were approximately 30 MTHM of unirradiated fuel for the N Reactor and 3 MTHM of unirradiated fuel for the Pathfinder reactor.

During operations, about 2,500 m^3 of liquid HLW was generated. The liquid HLW was vitrified between 1996 and 2001 producing 278 canisters, including 275 canisters of vitrified HLW, two additional canisters used to evacuate the melter prior to decommissioning, and one non-routine HLW canister (WV-413), that are stored at West Valley (see Table 5.6) [DOE, 1996]. Appendix F provides the equivalent MTHM contained in these canisters based upon the historical factor of 2.3 MTHM per canister established in DOE/DP 0020/1[1985]. This factor is conservative for the West Valley canisters, recognizing that a portion of the fuel processed was unirradiated.

Table 5.6 West Valley High-Level Waste Inventory

Site	HLW Canisters[1]	Liquid HLW (m^3)	Dry HLW (m^3)
West Valley	278[2]	N/A	N/A

[1] Vitrified HLW in stainless steel canisters.

[2] Includes 2 canisters used to evacuate the melter prior to decommissioning in 2002 and 1 non-routine HLW canister (WV-413).

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APPENDIX A – NUCLEAR FUEL CHARACTERISTICS

Table A.1 Physical characteristics of pressurized water reactor assembly class

Assembly Class	Array Size	Manufacturer Code	Version	Assembly Code	Length (in.)	Width (in.)	Clad Material
B&W 15 × 15	15 × 15	B&W	B&W Mark B	B1515B	165.7	8.54	Zircaloy-4
			B&W Mark B10	B1515B10	165.7	8.54	Zircaloy-4
			B&W Mark B3	B1515B3	165.7	8.54	Zircaloy-4
			B&W Mark B4	B1515B4	165.7	8.54	Zircaloy-4
			B&W Mark B4Z	B1515B4Z	165.7	8.54	Zircaloy-4
			B&W Mark B5	B1515B5	165.7	8.54	Zircaloy-4
			B&W Mark B5Z	B1515B5Z	165.7	8.54	Zircaloy-4
			B&W Mark B6	B1515B6	165.7	8.54	Zircaloy-4
			B&W Mark B7	B1515B7	165.7	8.54	Zircaloy-4
			B&W Mark B8	B1515B8	165.7	8.54	Zircaloy-4
			B&W Mark B9	B1515B9	165.7	8.54	Zircaloy-4
			B&W Mark BGD	B1515BGD	165.7	8.54	Zircaloy-4
			B&W Mark BZ	B1515BZ	165.7	8.54	Zircaloy-4
		WE	WE	B1515W	165.7	8.54	not available
B&W 17 × 17	17 × 17	B&W	B&W Mark C	B1717B	165.7	8.54	Zircaloy-4
CE 14 × 14	14 × 14	ANF	ANF	C1414A	157.0	8.10	Zircaloy-4
		CE	CE	C1414C	157.0	8.10	Zircaloy-4
		WE	WE	C1414W	157.0	8.10	Zircaloy-4
CE 16 × 16	16 × 16	CE	CE	C1616CSD	176.8	8.10	Zircaloy-4
CE System 80	16 × 16	CE	CE System 80	C8016C	178.3	8.10	Zircaloy-4
WE 14 × 14	14 × 14	ANF	ANF	W1414A	159.8	7.76	Zircaloy-4
		ANF	ANF Top Rod	W1414ATR	159.8	7.76	Zircaloy-4
		B&W	B&W	W1414B	159.8	7.76	not available
		WE	WE LOPAR	W1414WL	159.8	7.76	Zircaloy-4
		WE	WE OFA	W1414WO	159.8	7.76	Zircaloy-4
		WE	WE Std	W1414W	159.8	7.76	Zircaloy-4

Assembly Class	Array Size	Manufacturer Code	Version	Assembly Code	Length (in.)	Width (in.)	Clad Material
WE 15 × 15	15 × 15	ANF	ANF	W1515A	159.8	8.44	Zircaloy-4
			ANF HT	W1515AHT	159.8	8.44	not available
			ANF Part Length	W1515APL	159.8	8.44	not available
		WE	LOPAR	W1515WL	159.8	8.44	Zircaloy-4
			OFA	W1515WO	159.8	8.44	Zircaloy-4
			WE Std	W1515W	159.8	8.44	Zircaloy
			WE Vantage 5	W1515WV5	159.8	8.44	not available
WE 17 × 17	17 × 17	ANF	ANF	W1717A	159.8	8.44	Zircaloy-4
		B&W	B&W Mark B	W1717B	159.8	8.44	not available
		WE	WE	W1717WRF	159.8	8.44	not available
			WE	W1717WVJ	159.8	8.44	not available
			WE LOPAR	W1717WL	159.8	8.44	Zircaloy-4
			WE OFA	W1717WO	159.8	8.44	Zircaloy-4
			WE Pressurized	W1717WP	159.8	8.44	not available
			WE Vantage	W1717WV	159.8	8.44	not available
			WE Vantage +	W1717WV+	159.8	8.44	ZIRLO
			WE Vantage 5	W1717WV5	159.8	8.44	Zircaloy-4
			WE Vantage 5H	W1717WVH	159.8	8.44	not available
South Texas	17 × 17	WE	WE	WST17W	199.0	8.43	Zircaloy-4
Ft. Calhoun	14 × 14	ANF	ANF	XFC14A	146.0	8.10	not available
		CE	CE	XFC14C	146.0	8.10	Zircaloy-4
		WE	WE	XFC14W	146.0	8.10	not available

Assembly Class	Array Size	Manufacturer Code	Version	Assembly Code	Length (in.)	Width (in.)	Clad Material
Haddam Neck	15 × 15	B&W	B&W SS	XHN15B	137.1	8.42	SS-304
			B&W Zir	XHN15BZ	137.1	8.42	Zircaloy
		GA	Gulf SS	XHN15HS	137.1	8.42	SS
			Gulf Zir	XHN15HZ	137.1	8.42	Zircaloy
		NU	NUM SS	XHN15MS	137.1	8.42	SS
			NUM Zir	XHN15MZ	137.1	8.42	Zircaloy
		WE	WE	XHN15W	137.1	8.42	SS-304
			WE Zir	XHN15WZ	137.1	8.42	not available
Indian Point-1	13 × 14	WE	WE	XIP14W	138.8	6.27	SS
Palisades	15 × 15	ANF	ANF	XPA15A	147.5	8.20	Zircaloy-4
		CE	CE	XPA15C	147.5	8.20	Zircaloy-4
St. Lucie-2	16 × 16	CE	CE	XSL16C	158.2	8.10	Zircaloy-4
San Onofre-1	14 × 14	WE	WE	XSO14W	137.1	7.76	SS-304
			WE D	XSO14WD	137.1	7.76	not available
			WE M	XSO14WM	137.1	7.76	not available
Yankee Rowe	15 × 16	ANF	ANF	XYR16A	111.8	7.62	Zircaloy-4
		CE	CE	XYR16C	111.8	7.62	Zircaloy-4
		UNC	UNC	XYR16U	111.8	7.62	not available
	17 × 18	WE	WE	XYR18W	111.8	7.62	SS

NOTE: Some characteristics of more recently discharged SNF (post-2002) have not yet been provided

Table A.2 Physical characteristics of boiling water reactor assembly classes

Assembly Class	Array Size	Manufacturer Code	Version	Assembly Code	Length (in.)	Width (in.)	Clad Material
GE BWR/ 2,3	7 × 7	ANF	ANF	G2307A	171.2	5.44	Zircaloy-2
	8 × 8	ANF	ANF	G2308A	171.2	5.44	Zircaloy-2
	9 × 9	ANF	ANF	G2309A	171.2	5.44	Zircaloy-2
			ANF IX	G2309AIX	171.2	5.44	Zircaloy-2
	8 × 8	ANF	ANF Pressurized	G2308AP	171.2	5.44	Zircaloy-2
		GE	GE-10	G2308G10	171.2	5.44	Zircaloy-2
	9 × 9	GE	GE-11	G2309G11	171.2	5.44	Zircaloy-2
	7 × 7	GE	GE-2a	G2307G2A	171.2	5.44	Zircaloy-2
			GE-2b	G2307G2B	171.2	5.44	Zircaloy-2
			GE-3	G2307G3	171.2	5.44	Zircaloy-2
	8 × 8	GE	GE-4	G2308G4	171.2	5.44	Zircaloy-2
			GE-5	G2308G5	171.2	5.44	Zircaloy-2
			GE-7	G2308G7	171.2	5.44	NA
			GE-8a	G2308G8A	171.2	5.44	Zircaloy-2
			GE-8b	G2308G8B	171.2	5.44	Zircaloy-2
			GE-9	G2308G9	171.2	5.44	Zircaloy-2
			GE-Barrier	G2308GB	171.2	5.44	Zircaloy-2
			GE-Pressurized	G2308GP	171.2	5.44	Zircaloy-2
	not available	not available	not available	9X9IXQFA	171.2	5.44	not available
GE BWR/ 4-6	9 × 9	ANF	ANF	G4609A	176.2	5.44	Zircaloy-2
	10 × 10	ANF	ANF	G4610A	176.2	5.44	NA
	9 × 9	ANF	ANF 9-5	G4609A5	176.2	5.44	Zircaloy-2
			ANF 9X	G4609A9X	176.2	5.44	Zircaloy-2
			ANF IX	G4609AIX	176.2	5.44	Zircaloy-2
	10 × 10	ANF	ANF IX	G4610AIX	176.2	5.44	not available
	9 × 9	ANF	ANF X+	G4609AX+	176.2	5.44	not available
	8 × 8	ANF	ANF-Pressurized	G4608AP	176.2	5.44	Zircaloy-2

Assembly Class	Array Size	Manufacturer Code	Version	Assembly Code	Length (in.)	Width (in.)	Clad Material
	not available	AREVA	not available	ATRIUM10	176.2	5.44	Zircaloy-2
GE BWR/ 4-6 (Continued)	10 × 10	ABB	CE	G4610C	176.2	5.44	not available
	8 × 8	GE	GE-10	G4608G10	176.2	5.44	Zircaloy-2
			GE-11	G4608G11	176.2	5.44	not available
	9 × 9	GE	GE-11	G4609G11	176.2	5.44	Zircaloy-2
	8 × 8	GE	GE-12	G4608G12	176.2	5.44	not available
	10 × 10	GE	GE-12	G4610G12	176.2	5.44	Zircaloy-2
	9 × 9	GE	GE-13	G4609G13	176.2	5.44	Zircaloy-2
	10 × 10	GE	GE-14	G4610G14	176.2	5.44	not available
	7 × 7	GE	GE-2	G4607G2	176.2	5.44	Zircaloy-2
			GE-3a	G4607G3A	176.2	5.44	Zircaloy-2
			GE-3b	G4607G3B	176.2	5.44	Zircaloy-2
	8 × 8	GE	GE-4a	G4608G4A	176.2	5.44	Zircaloy-2
			GE-4b	G4608G4B	176.2	5.44	Zircaloy-2
			GE-5	G4608G5	176.2	5.44	Zircaloy-2
			GE-8	G4608G8	176.2	5.44	Zircaloy-2
			GE-9	G4608G9	176.2	5.44	Zircaloy-2
			GE-Barrier	G4608GB	176.2	5.44	Zircaloy-2
			GE-Pressurized	G4608GP	176.2	5.44	Zircaloy-2
		WE	WE	G4608W	176.2	5.44	Zircaloy-2
Big Rock Point	9 × 9	ANF	ANF	XBR09A	84	6.52	Zircaloy-2
	11 × 11	ANF	ANF	XBR11A	84	6.52	Zircaloy-2
	7 × 7	GE	GE	XBR07G	84	6.52	not available
	8 × 8	GE	GE	XBR08G	84	6.52	not available
	9 × 9	GE	GE	XBR09G	84	6.52	Zircaloy-2
	11 × 11	GE	GE	XBR11G	84	6.52	Zircaloy-2
		NFS	NFS	XBR11N	84	6.52	not available
Dresden-1	6 × 6	ANF	ANF	XDR06A	134.4	4.28	Zircaloy-2

Assembly Class	Array Size	Manufacturer Code	Version	Assembly Code	Length (in.)	Width (in.)	Clad Material
		GE	GE	XDR06G	134.4	4.28	Zircaloy-2
	7 × 7	GE	GE SA-1	XDR07GS	134.4	4.28	not available
	8 × 8	GE	GE PF Fuels	XDR08G	134.4	4.28	not available
	6 × 6	GE	GE Type III-B	XDR06G3B	134.4	4.28	not available
			GE Type III-F	XDR06G3F	134.4	4.28	not available
			GE Type V	XDR06G5	134.4	4.28	not available
		UNC	UNC	XDR06U	134.4	4.28	not available
Humboldt Bay	6 × 6	ANF	6 × 6 ANF	XHB06A	95	4.67	Zircaloy
		GE	GE	XHB06G	95	4.67	Zircaloy-2
	7 × 7	GE	GE Type II	XHB07G2	95	4.67	Zircaloy
La Crosse	10 × 10	AC	AC	XLC10L	102.5	5.62	SS348H
		ANF	ANF	XLC10A	102.5	5.62	SS348H

NOTE: Some characteristics of more recently discharged SNF (post-2002) have not yet been provided.

Table A.3 Assembly types and their main characteristics as of December 31, 2017

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
BWR	ABB Combustion Engineering	G4610C	175.44	176.3	2.51	3.37	3.62	39,466	43,605
BWR	Advanced Nuclear Fuel Corporation	G4608AP	175.75	176.56	2.72	3.02	3.37	30,570	38,727
BWR	Advanced Nuclear Fuel Corporation	G4609A2	172.66	175.66	0.72	3.33	3.52	32,873	42,000
BWR	Advanced Nuclear Fuel Corporation	G4609A5	175.45	175.6	3.25	3.42	3.42	35,420	39,105
BWR	Advanced Nuclear Fuel Corporation	G4609AIX	176.64	177.4	3.03	3.07	3.11	29,674	33,629
BWR	Advanced Nuclear Fuel Corporation	G4609AX+	167.25	167.26	3.15	3.15	3.15	38,245	38,449
BWR	Allis Chalmers	XLC10L	120.16	121.03	3.64	3.78	3.94	14,419	21,532
BWR	Areva	G2308A	173.13	173.84	2.68	2.74	2.83	32,653	36,826
BWR	Areva	G2308AP	172.75	173.13	2.82	2.83	2.83	34,366	34,826
BWR	Areva	G2309A	168.05	169.08	2.94	3.09	3.15	35,909	40,818
BWR	Areva	G2309AIX	168.95	170.06	3.25	3.58	3.78	41,154	49,573
BWR	Areva	G4609A9X	174.01	175.39	3.79	3.91	4.1	40,854	48,140
BWR	Areva	G4609AIX	173.68	174.05	3.8	3.87	3.93	23,734	36,777
BWR	Areva	G4610A	177.72	179.53	1.63	4.02	4.61	43,173	51,607
BWR	Areva	G4610AXM	181.53	182.24	3.86	4.08	4.18	45,505	50,872
BWR	Areva	G4611A	180.96	180.97	3.69	3.69	3.69	17,953	18,078
BWR	ASEA Brown Boveri(ABB) Atom	G4610C	175.63	175.8	2.86	2.87	2.88	33,918	39,397
BWR	ASEA Brown Boveri(ABB) Atom	G4610W+	174.92	175.63	3.19	3.4	3.82	42,348	52,971
BWR	Exxon Nuclear Corporation	G2307A	181.8	183.8	2.64	2.64	2.65	24,256	27,826
BWR	Exxon Nuclear Corporation	G2308A	175.13	184.41	2.48	2.63	3.13	27,555	35,520
BWR	Exxon Nuclear Corporation	G2309A	168.31	169.52	2.78	3.13	3.14	35,956	37,999

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
BWR	Exxon Nuclear Corporation	G4608AP	176.9	176.9	2.81	2.81	2.81	27,786	32,877
BWR	Exxon Nuclear Corporation	G4609AX+	167.28	167.36	3.13	3.13	3.13	40,234	40,457
BWR	Exxon Nuclear Corporation	XDR06A	95.21	95.48	2.23	2.23	2.24	4,907	5,742
BWR	Exxon Nuclear Corporation	XHB06A	69.73	73.8	2.35	2.4	2.41	9,037	22,377
BWR	Exxon Nuclear Corporation	XLC10A	108.66	109.61	3.68	3.69	3.71	15,017	20,126
BWR	Framatome	G4610A	177.74	179.7	2.06	3.96	4.24	43,578	52,016
BWR	GE Nuclear Energy	G2307G2A	194.93	197.6	2.07	2.1	2.11	16,775	24,902
BWR	GE Nuclear Energy	G2307G2B	193.03	197.4	1.65	2.15	2.62	16,601	29,728
BWR	GE Nuclear Energy	G2307G3	187.47	189.11	1.96	2.42	2.61	25,504	38,860
BWR	GE Nuclear Energy	G2308A	178.16	178.16	2.4	2.4	2.4	19,807	19,807
BWR	GE Nuclear Energy	G2308G10	172.28	177.14	3.1	3.25	3.57	32,006	45,475
BWR	GE Nuclear Energy	G2308G4	183.97	185.5	2.2	2.53	2.76	26,363	32,984
BWR	GE Nuclear Energy	G2308G5	177.09	178.42	2.38	2.65	2.77	28,723	33,486
BWR	GE Nuclear Energy	G2308G8A	175.27	179.11	2.55	3.1	3.41	34,906	44,933
BWR	GE Nuclear Energy	G2308G8B	172.86	178.58	2.96	3.18	3.4	36,443	42,756
BWR	GE Nuclear Energy	G2308G9	172.08	173.11	2.85	3.28	3.5	37,922	45,330
BWR	GE Nuclear Energy	G2308GB	178.07	180.06	2.62	2.82	3.39	31,956	43,381
BWR	GE Nuclear Energy	G2308GP	177.22	183.8	2.2	2.78	3.02	28,915	38,138
BWR	GE Nuclear Energy	G2309G11	168.33	171.48	3.09	3.61	4.1	41,717	53,739

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
BWR	GE Nuclear Energy	G2310G14	174.45	174.67	4.12	4.12	4.14	49,406	51,406
BWR	GE Nuclear Energy	G4607G2	194.85	197.33	1.09	1.56	2.52	9,399	11,829
BWR	GE Nuclear Energy	G4607G3A	187.42	189.14	1.11	2.37	2.51	21,631	32,188
BWR	GE Nuclear Energy	G4607G3B	189.93	191.54	1.09	2.31	2.51	21,948	30,831
BWR	GE Nuclear Energy	G4608G10	177.64	186.09	2.29	3.27	3.7	37,030	47,199
BWR	GE Nuclear Energy	G4608G11	171.42	171.45	2.85	2.85	2.85	33,598	33,604
BWR	GE Nuclear Energy	G4608G4A	183.9	185.22	2.17	2.61	2.94	24,770	43,430
BWR	GE Nuclear Energy	G4608G4B	186.71	187.89	2.1	2.31	2.76	21,362	32,941
BWR	GE Nuclear Energy	G4608G5	183.01	185.37	0.7	2.36	3.02	23,966	38,224
BWR	GE Nuclear Energy	G4608G8	179.71	185.85	2.95	3.2	3.41	34,997	44,640
BWR	GE Nuclear Energy	G4608G9	177.84	185.79	1.51	3.22	3.57	36,830	47,062
BWR	GE Nuclear Energy	G4608GB	184.47	187	0.71	2.54	3.26	26,348	45,986
BWR	GE Nuclear Energy	G4608GP	183.11	186.89	0.71	2.36	3.26	22,850	42,428
BWR	GE Nuclear Energy	G4609G11	170.11	173.6	2.18	3.63	4.16	41,605	65,149
BWR	GE Nuclear Energy	G4609G13	171.49	176.98	1.57	3.89	4.2	43,212	54,023
BWR	GE Nuclear Energy	G4610G12	178.49	182.14	3.34	3.93	4.2	43,420	52,735
BWR	GE Nuclear Energy	G4610G14	179.36	183.37	1.47	3.93	4.43	41,198	50,906
BWR	GE Nuclear Energy	XBR07G	131.5	133	2.88	2.88	2.88	1,643	1,690

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
BWR	GE Nuclear Energy	XBR08G	112.5	113	2.85	2.85	2.85	4,546	7,027
BWR	GE Nuclear Energy	XBR09G	137.01	141	3.51	3.58	3.62	15,143	22,083
BWR	GE Nuclear Energy	XBR11G	124.5	132	3.11	3.46	3.63	22,802	24,997
BWR	GE Nuclear Energy	XDR06G	111.35	111.35	1.47	1.47	1.47	23,522	23,522
BWR	GE Nuclear Energy	XDR06G3B	101.61	102.52	1.83	1.83	1.83	18,632	27,106
BWR	GE Nuclear Energy	XDR06G3F	102.05	102.88	2.25	2.25	2.25	22,132	28,138
BWR	GE Nuclear Energy	XDR06G5	105.86	112.26	2.26	2.26	2.26	21,095	25,886
BWR	GE Nuclear Energy	XDR07GS	59	59	3.1	3.1	3.1	29,000	29,000
BWR	GE Nuclear Energy	XDR08G	99.71	99.71	1.95	1.95	1.95	25,287	25,287
BWR	GE Nuclear Energy	XHB06G	76.35	77	2.35	2.43	2.52	17,170	22,876
BWR	GE Nuclear Energy	XHB07G2	76.33	77.1	2.08	2.11	2.31	18,187	20,770
BWR	Global Nuclear Fuel	G2307G2B	193.53	193.53	2.25	2.25	2.25	15,538	21,063
BWR	Global Nuclear Fuel	G2307G3	186.76	186.76	2.3	2.3	2.3	23,839	24,667
BWR	Global Nuclear Fuel	G2308G10	171.98	172.9	3.23	3.26	3.34	40,989	43,345
BWR	Global Nuclear Fuel	G2308G4	184.05	184.8	2.19	2.41	2.62	24,651	44,457
BWR	Global Nuclear Fuel	G2308G5	177.03	177.57	2.65	2.74	2.82	30,789	33,597
BWR	Global Nuclear Fuel	G2308G8A	179.27	179.37	2.98	2.99	2.99	34,346	36,367
BWR	Global Nuclear Fuel	G2308G8B	172.87	172.93	3.12	3.19	3.2	38,976	40,440

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
BWR	Global Nuclear Fuel	G2308G9	172.52	172.7	3.13	3.15	3.17	38,690	41,143
BWR	Global Nuclear Fuel	G2308GP	177.32	178.2	2.09	2.72	2.84	31,985	38,966
BWR	Global Nuclear Fuel	G2309G11	168.84	171.61	3.48	3.72	3.84	45,351	53,076
BWR	Global Nuclear Fuel	G2310G12	176.65	176.69	3.31	3.32	3.32	44,299	44,328
BWR	Global Nuclear Fuel	G2310G14	174.22	176.71	1.95	3.92	4.72	43,684	52,627
BWR	Global Nuclear Fuel	G2310GG2	181.15	181.45	3.69	3.87	4.08	47,781	51,505
BWR	Global Nuclear Fuel	G4607G3A	187.73	187.92	1.1	1.9	2.3	15,854	23,403
BWR	Global Nuclear Fuel	G4608G10	178.04	178.87	3.16	3.27	3.4	35,677	41,475
BWR	Global Nuclear Fuel	G4608G4A	184.27	184.5	2.74	2.74	2.99	26,313	33,000
BWR	Global Nuclear Fuel	G4608G8	178.28	179.2	2.99	3.07	3.24	34,129	36,000
BWR	Global Nuclear Fuel	G4608GB	183.7	184.41	2.99	3	3.11	28,025	33,000
BWR	Global Nuclear Fuel	G4608GP	183.09	184.16	2.74	2.85	2.99	28,564	32,212
BWR	Global Nuclear Fuel	G4609G11	170.71	173.9	1.43	3.62	4.1	44,871	53,013
BWR	Global Nuclear Fuel	G4609G13	177.5	179.49	2.24	4.01	4.19	45,410	51,972
BWR	Global Nuclear Fuel	G4610G12	180.24	180.64	3.7	3.92	4.09	40,677	51,048
BWR	Global Nuclear Fuel	G4610G14	179.25	185.66	3.54	4.11	4.7	46,067	53,835
BWR	Global Nuclear Fuel	G4610G14i	169.07	169.16	4.06	4.06	4.06	49,819	49,964
BWR	Global Nuclear Fuel	G4610GG2	185.69	186.89	3.29	4.02	4.73	43,645	52,958

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
BWR	Gulf/United Nuclear Fuels	XDR06U	101.58	103.16	1.85	2.24	2.26	14,850	23,780
BWR	Nuclear Fuel Services	XBR11N	123.91	124.02	2.16	2.16	2.16	20,923	21,850
BWR	Siemens Nuclear Corporation	G2309AIX	168.61	170.8	3.25	3.71	3.84	38,257	50,675
BWR	Siemens Nuclear Corporation	G4608AP	176	176	2.62	2.68	2.72	31,768	35,518
BWR	Siemens Nuclear Corporation	G4609A2	172.41	172.72	3.4	3.55	3.73	36,842	45,000
BWR	Siemens Nuclear Corporation	G4609A5	175.58	175.7	2.94	3.24	3.56	37,351	43,555
BWR	Siemens Nuclear Corporation	G4609A9X	169.12	176.8	2.53	2.87	2.93	36,897	43,330
BWR	Siemens Nuclear Corporation	G4610A	177.39	178.1	3.44	3.8	3.94	43,916	50,243
BWR	Siemens Nuclear Corporation	G4610AIX	170.22	170.22	3.56	3.56	3.56	37,706	38,009
BWR	Siemens Nuclear Corporation	XBR09A	127.69	131.41	3.45	3.49	3.52	20,981	22,811
BWR	Siemens Nuclear Corporation	XBR11A	130.24	133.17	3.14	3.43	3.83	22,716	34,212
BWR	United Nuclear Corporation	XDR06U	102.68	103.44	1.83	2.23	2.26	21,708	26,396
BWR	Westinghouse Electric	G2310W02	172.41	173.65	3.89	4	4.12	46,478	51,786
BWR	Westinghouse Electric	G4608W	171.6	171.83	2.69	2.84	2.99	27,119	33,140
BWR	Westinghouse Electric	G4610C	174.87	175.04	3.62	3.81	3.86	40,727	44,031
BWR	Westinghouse Electric	G4610W02	177.23	177.24	4.09	4.09	4.09	44,482	45,134
PWR	ABB Combustion Engineering	C1414C	387.35	409.15	1.92	3.43	4.49	36,978	51,312
PWR	ABB Combustion Engineering	C1616AH	442.62	443.18	4.15	4.18	4.21	20,904	24,821

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
PWR	ABB Combustion Engineering	C1616C	416.92	442.99	1.87	3.83	4.63	39,916	63,328
PWR	ABB Combustion Engineering	C1616W	437.36	441.57	4.13	4.41	4.64	38,651	55,085
PWR	ABB Combustion Engineering	C8016C	423.82	442.01	1.92	3.68	4.32	39,408	58,745
PWR	ABB Combustion Engineering	XSL16W	398.87	402.47	3.98	4.2	4.39	48,225	53,683
PWR	ABB Combustion Engineering	XYR16C	228.77	233.4	3.51	3.8	3.92	24,282	35,999
PWR	Advanced Nuclear Fuel Corporation	C1414A	387.19	400	0.3	3.33	3.94	38,156	50,871
PWR	Advanced Nuclear Fuel Corporation	C1414C	376.78	376.95	3.88	3.89	3.89	46,605	46,605
PWR	Advanced Nuclear Fuel Corporation	W1414A	378.91	380.95	3.4	3.46	3.5	37,577	39,798
PWR	Advanced Nuclear Fuel Corporation	W1515A	430.65	431.84	3.16	3.35	3.61	41,340	49,708
PWR	Advanced Nuclear Fuel Corporation	W1515AH	432.47	433.83	3.54	3.79	3.92	39,881	43,723
PWR	Advanced Nuclear Fuel Corporation	XPA15A	403.15	405.75	2.67	2.97	3.23	33,829	40,533
PWR	Areva	B1515AH	485.74	491.14	1.34	4.01	4.94	43,659	57,440
PWR	Areva	B1515B	463.56	465.48	3.59	3.6	3.63	40,578	50,128
PWR	Areva	B1515B10	485.89	489.39	3.24	3.56	4.02	42,921	53,600
PWR	Areva	B1515B11	458.61	460.76	2.74	3.72	4.11	44,917	56,976
PWR	Areva	B1515B4	463.97	471.61	2.01	2.83	3.42	28,029	50,598
PWR	Areva	B1515B4Z	462.69	463.24	3.22	3.26	3.33	37,886	42,257
PWR	Areva	B1515B5Z	464.42	465.18	3.2	3.23	3.23	36,016	42,328
PWR	Areva	B1515B6	462.49	464.4	3.22	3.48	3.67	41,790	49,383
PWR	Areva	B1515B7	463.24	464.51	3.48	3.51	3.56	42,059	48,738
PWR	Areva	B1515B8	463.88	466.01	3.29	3.62	3.89	42,119	51,137
PWR	Areva	B1515B9	463.25	466.24	3.3	3.57	3.67	40,296	50,736

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
PWR	Areva	B1515BGD	429.56	430.26	3.92	3.92	3.92	49,027	58,310
PWR	Areva	B1515BZ	463.56	466.25	3.18	3.36	3.72	37,691	52,506
PWR	Areva	B1717B	456.72	457.93	2.65	2.85	3.04	29,517	33,904
PWR	Areva	C1414AH	398.56	401.37	2.2	3.9	4.4	45,458	55,003
PWR	Areva	C1414AHA	407.45	410.51	3.7	4.17	4.47	45,488	53,034
PWR	Areva	W1515AH	436.44	438.81	3.75	4.11	4.56	45,329	49,092
PWR	Areva	W1717A	464.8	465.04	3.82	3.83	3.84	43,231	43,561
PWR	Areva	W1717AH	454.86	460.54	3.42	4.07	4.75	43,922	50,551
PWR	Areva	W1717B	455.71	466.69	2.92	3.94	4.69	42,303	54,014
PWR	Areva	W1717BAd	466.54	468.7	4.2	4.44	4.55	47,348	54,195
PWR	Areva	W1717BM	445.72	446.05	0.26	0.26	0.26	40,311	40,459
PWR	Areva	XFC14AF	386.35	389.57	3.38	4.01	4.48	36,856	54,881
PWR	Areva	XPA15AH	431.21	435.1	0.31	4.16	4.39	48,723	55,818
PWR	Babcock & Wilcox Company	B1515B10	465.72	470.45	3.99	4.38	4.73	49,755	58,160
PWR	Babcock & Wilcox Company	B1515B12	487.84	491.72	4.18	4.44	4.72	50,185	58,084
PWR	Babcock & Wilcox Company	B1515B3	464	468.18	1.93	2.44	2.84	21,036	32,267
PWR	Babcock & Wilcox Company	B1515B4	464.62	474.85	1.98	2.9	3.89	29,458	57,318
PWR	Babcock & Wilcox Company	B1515B4Z	463.69	466.31	3.63	3.88	3.95	39,357	51,660
PWR	Babcock & Wilcox Company	B1515B5	468.25	468.25	3.13	3.13	3.13	38,017	39,000
PWR	Babcock & Wilcox Company	B1515B8	465.37	468.56	3.38	3.67	4.01	43,393	54,000
PWR	Babcock & Wilcox Company	B1515B9	463.97	467.57	3.89	4.31	4.76	48,135	53,952
PWR	Babcock & Wilcox Company	B1515BZ	463.07	465.13	3.06	3.6	4.18	33,537	54,023
PWR	Babcock & Wilcox Company	W1414B	383.16	383.25	3.22	3.22	3.22	24,398	24,471

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
PWR	Babcock & Wilcox Company	W1717B	450.36	452.77	3.36	3.52	3.57	8,919	18,069
PWR	Babcock & Wilcox Company	XHN15B	411.92	415.06	3.01	4	4.02	33,809	37,833
PWR	Babcock & Wilcox Company	XHN15BZ	363.92	368.07	3.41	3.81	3.92	34,278	42,956
PWR	Combustion Engineering	C1414C	380.94	399.33	1.93	3.22	4.3	33,329	57,165
PWR	Combustion Engineering	C1616C	412.97	433.2	1.87	3.34	4.01	35,557	56,175
PWR	Combustion Engineering	XFC14C	362.31	376.84	1.39	2.96	3.95	32,129	51,504
PWR	Combustion Engineering	XPA15C	412.44	416.78	1.65	2.48	3.07	16,020	33,630
PWR	Combustion Engineering	XSL16C	381.02	394.4	1.72	3.44	4.28	38,841	54,838
PWR	Exxon Nuclear Corporation	C1414A	375.82	400	3	3.41	4	37,489	50,327
PWR	Exxon Nuclear Corporation	W1414A	376.96	381.77	0.71	3.3	3.71	36,151	52,104
PWR	Exxon Nuclear Corporation	W1414ATR	365.14	368.01	2.4	3.39	3.58	38,054	45,969
PWR	Exxon Nuclear Corporation	W1414WO	367.77	368.91	3.54	3.56	3.57	40,796	43,353
PWR	Exxon Nuclear Corporation	W1515A	428.79	434.79	2.02	2.98	3.6	32,889	49,859
PWR	Exxon Nuclear Corporation	W1515APL	305.09	305.32	1.23	1.24	1.24	22,313	23,900
PWR	Exxon Nuclear Corporation	W1717A	402.11	405.13	3.62	3.8	4.12	40,772	50,664
PWR	Exxon Nuclear Corporation	XFC14A	353.35	358.81	3.5	3.57	3.8	37,197	46,048
PWR	Exxon Nuclear Corporation	XPA15A	391.44	404.31	1.5	2.94	3.27	30,606	39,766
PWR	Exxon Nuclear Corporation	XYR16A	233.56	237.3	3.49	3.78	4.02	29,034	35,088
PWR	Framatome	B1515AH	486.7	489.74	2.45	4.04	4.47	41,868	49,918

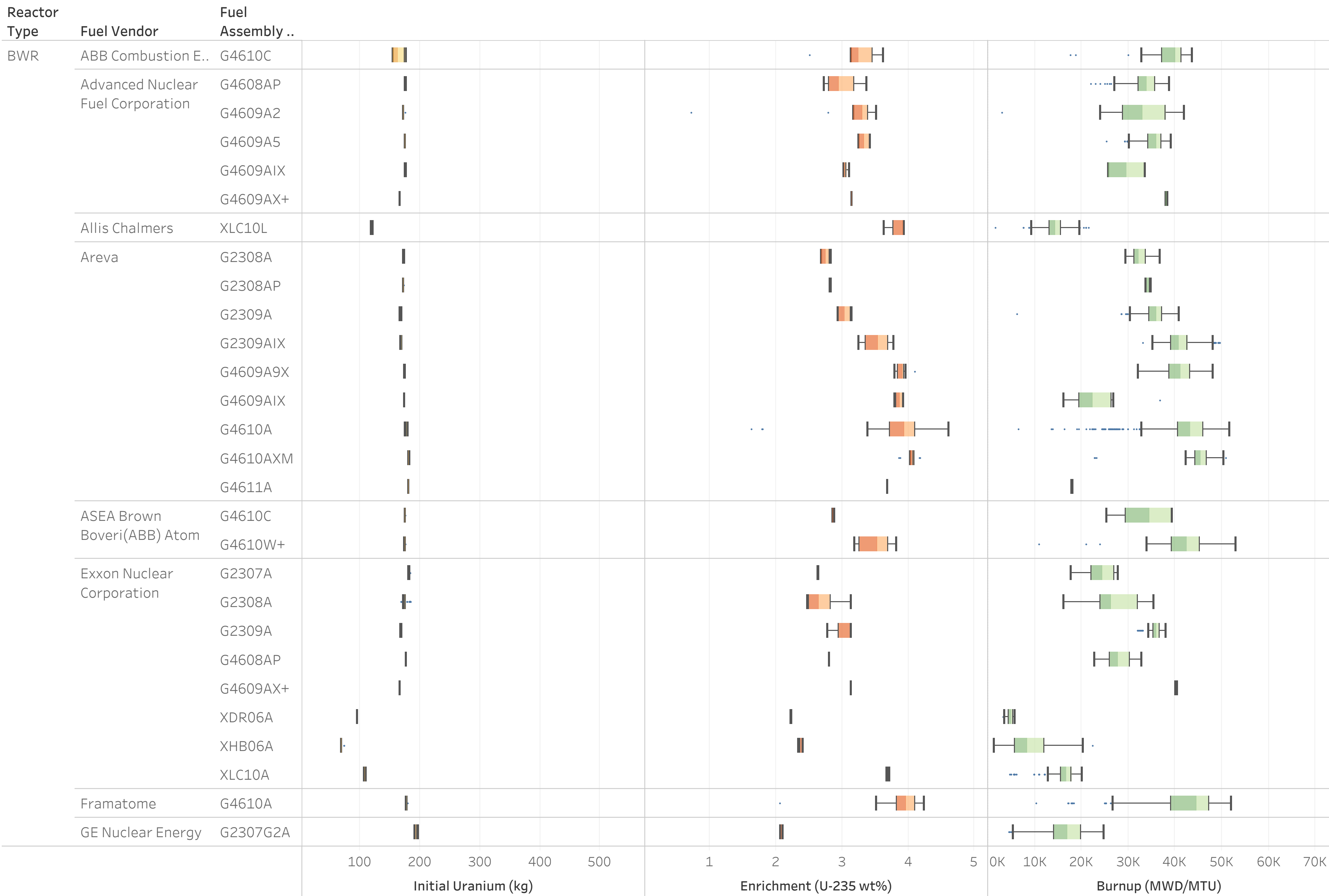
Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
PWR	Framatome	B1515B10	470.75	488.6	4.25	4.46	4.71	50,151	56,983
PWR	Framatome	B1515B12	487.44	489.7	4.3	4.54	4.7	48,318	57,213
PWR	Framatome	B1515B4	463.55	463.66	3.82	3.91	4.06	45,482	55,080
PWR	Framatome	B1515B9	462.35	463.66	4.06	4.06	4.06	41,879	46,887
PWR	Framatome	B1515B9Z	463.66	463.7	4.01	4.02	4.03	46,923	55,760
PWR	Framatome	B1515BZ	462.98	465.42	4.5	4.56	4.68	50,820	52,443
PWR	Framatome	C1414A	396.23	398.59	3.65	4.02	4.34	45,407	51,655
PWR	Framatome	C1414AH	412.05	412.28	4.25	4.26	4.27	53,924	62,611
PWR	Framatome	W1515AH	434.43	438.38	3.78	4.12	4.56	46,415	53,414
PWR	Framatome	W1717AH	455.98	458.8	4.08	4.54	4.77	47,506	52,482
PWR	Framatome	W1717B	454.39	458.75	2.02	4.22	4.65	47,283	54,565
PWR	Framatome	W1717BAd	462.68	468.5	4.2	4.29	4.38	50,780	67,725
PWR	Framatome	XFC14A	371.57	373.87	3.42	3.92	4.5	41,987	51,519
PWR	Framatome	XPA15AH	433.03	437.76	0.3	3.85	4.21	45,896	54,337
PWR	General Atomics	XHN15HS	406.16	406.16	3.99	3.99	3.99	32,151	32,151
PWR	General Atomics	XHN15HZ	362.86	362.86	3.26	3.26	3.26	18,546	18,546
PWR	Gulf/United Nuclear Fuels	XHN15B	411.51	412.36	3.66	4	4.02	33,398	36,713
PWR	Nuclear Materials and Equipment Corporations	XHN15MS	405.98	406.99	3.66	3.66	3.66	28,324	28,324
PWR	Nuclear Materials and Equipment Corporations	XHN15MZ	370.78	371.04	2.96	2.96	2.96	25,643	25,643
PWR	Siemens Nuclear Corporation	C1414A	391.28	399.39	3.74	4.08	4.53	46,393	55,274
PWR	Siemens Nuclear Corporation	W1414A	380.54	382.72	3.4	3.62	4.1	40,649	56,328
PWR	Siemens Nuclear Corporation	W1414AH	400.01	406.84	4	4.29	4.5	45,228	53,956
PWR	Siemens Nuclear Corporation	W1515AH	434.72	438.07	3.52	4.18	4.59	47,124	56,922

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
PWR	Siemens Nuclear Corporation	W1515AHP	308.82	310.07	1.85	1.9	1.95	32,632	37,770
PWR	Siemens Nuclear Corporation	W1717A	407.64	409.95	4	4.6	4.95	46,462	53,325
PWR	Siemens Nuclear Corporation	W1717AH	455.85	460.54	4.08	4.54	4.78	48,898	53,958
PWR	Siemens Nuclear Corporation	XFC14A	372.77	375.2	0.34	3.66	4.05	41,519	55,274
PWR	Siemens Nuclear Corporation	XPA15A	411.42	435.04	1.19	3.77	4.05	43,073	51,486
PWR	United Nuclear Corporation	XYR16U	238.57	241.3	3.96	3.99	4.02	27,461	31,986
PWR	Westinghouse Electric	B1515B11	459.5	459.72	3.33	3.33	3.33	46,963	47,035
PWR	Westinghouse Electric	B1515W	461.82	464.76	3.9	4.06	4.22	36,993	49,075
PWR	Westinghouse Electric	C1414C	408.01	411.64	4.23	4.26	4.27	46,531	51,175
PWR	Westinghouse Electric	C1414W	403.48	411.72	2.7	3.15	3.76	30,033	37,781
PWR	Westinghouse Electric	C1414WT	407.03	411.4	1.98	4.31	4.67	47,645	62,788
PWR	Westinghouse Electric	C1616C	430.13	430.92	4.06	4.11	4.16	42,565	46,776
PWR	Westinghouse Electric	C1616W	426.55	434.73	4.03	4.25	4.43	42,363	54,126
PWR	Westinghouse Electric	C1616WN	429.37	434.63	1.3	3.96	4.47	40,440	51,922
PWR	Westinghouse Electric	C8016W	437.45	441.45	3.1	4.12	4.53	41,765	53,631
PWR	Westinghouse Electric	C8016WN	430.29	430.52	2.94	2.95	2.95	40,413	45,729
PWR	Westinghouse Electric	W1414A	359.79	360.96	3.52	3.53	3.54	38,273	39,182
PWR	Westinghouse Electric	W1414W	393.9	403.68	2.26	3.04	3.48	27,318	39,723

Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
PWR	Westinghouse Electric	W1414WL	399.09	405.81	2.27	3.07	3.41	31,939	47,932
PWR	Westinghouse Electric	W1414WO	355.33	362.81	1	3.92	4.97	44,988	69,453
PWR	Westinghouse Electric	W1414WV1	349.29	352.9	3.74	4.77	4.95	50,681	58,617
PWR	Westinghouse Electric	W1414WV2	394.18	402.82	3.21	4.58	4.96	47,462	59,224
PWR	Westinghouse Electric	W1515W	448.67	451.85	2.21	3	3.35	29,324	41,806
PWR	Westinghouse Electric	W1515WL	455.33	465.6	1.85	2.98	3.8	30,860	55,385
PWR	Westinghouse Electric	W1515WO	458.61	465.14	1.91	3.73	4.6	41,489	57,415
PWR	Westinghouse Electric	W1515WP	452.21	457.67	1.48	4.48	4.95	47,431	59,552
PWR	Westinghouse Electric	W1515WV5	456.57	463	1.4	4.17	4.95	40,718	57,413
PWR	Westinghouse Electric	W1717WL	460.91	469.2	1.6	3.12	4.42	32,395	58,417
PWR	Westinghouse Electric	W1717WN	456.88	457.2	4.79	4.8	4.8	53,388	63,480
PWR	Westinghouse Electric	W1717WO	423.33	429.58	1.6	3.48	4.78	37,645	60,301
PWR	Westinghouse Electric	W1717WP	422.16	465.36	1.69	4.54	4.97	48,973	69,693
PWR	Westinghouse Electric	W1717WR	456.38	462.65	2.57	4.35	4.95	48,792	57,606
PWR	Westinghouse Electric	W1717WR2	458	466.8	1.5	4.35	4.97	47,390	57,476
PWR	Westinghouse Electric	W1717WV+	424.13	465.47	1.61	4.28	4.96	47,100	62,487
PWR	Westinghouse Electric	W1717WV5	423.27	463.88	1.19	4.04	4.9	43,799	56,469
PWR	Westinghouse Electric	W1717WVH	461.86	473.96	2.11	3.89	4.95	41,893	56,583

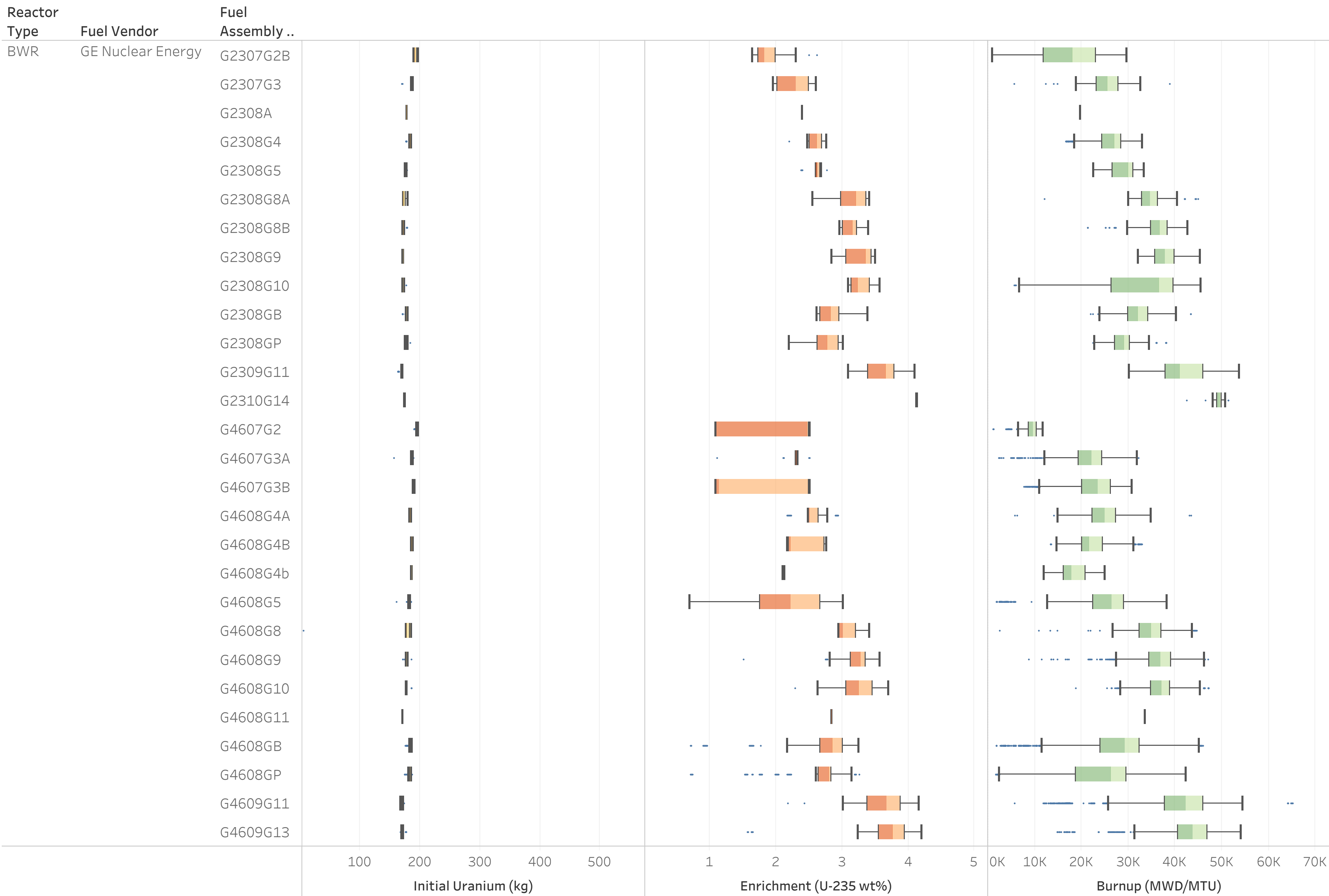
Reactor Type	Mfg. Code	Assembly Code	Initial Uranium Loading (kg/assembly)		Enrichment (U^{235} wt %)			Burnup (MWd/MTU)	
			Avg.	Max.	Min.	Avg.	Max.	Avg.	Max.
PWR	Westinghouse Electric	W1717WVJ	464.48	467.6	4	4.24	4.55	46,684	55,087
PWR	Westinghouse Electric	WST17W	540.75	546.58	1.51	3.37	4.41	35,737	54,399
PWR	Westinghouse Electric	WST17WR	533.43	543.08	2.99	4.08	4.47	46,314	55,614
PWR	Westinghouse Electric	WST17WR2	532.14	534.46	3.91	4.27	4.66	47,156	55,572
PWR	Westinghouse Electric	XFC14W	373.82	376	0.27	3.81	4.25	39,070	51,971
PWR	Westinghouse Electric	XHN15W	415.56	421.23	3.02	3.59	4	27,922	35,196
PWR	Westinghouse Electric	XHN15WZ	384.89	386.69	4.21	4.39	4.61	14,321	19,376
PWR	Westinghouse Electric	XIP14W	191.15	200.47	2.83	4.12	4.36	16,471	27,048
PWR	Westinghouse Electric	XSL16W	399.81	402.39	1.51	3.82	4.42	42,002	51,586
PWR	Westinghouse Electric	XSO14W	368.18	374.89	3.16	3.88	4.02	27,177	39,275
PWR	Westinghouse Electric	XSO14WZ	311.23	311.23	0.71	0.71	0.71	19,307	19,636
PWR	Westinghouse Electric	XYR18W	273.35	274.1	4.94	4.94	4.94	25,484	31,755

Assembly types and their main characteristics as of December 31, 2017



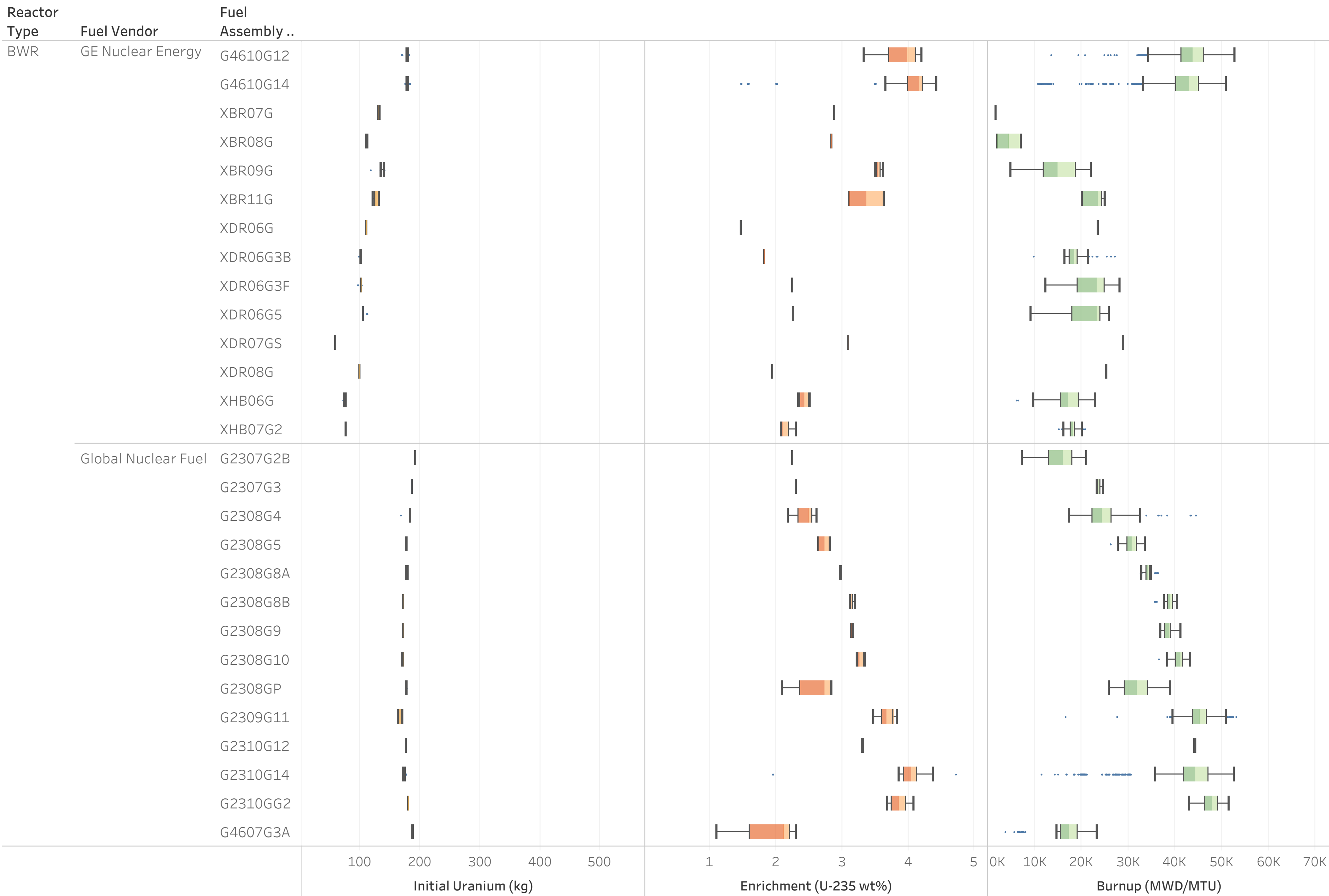
Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



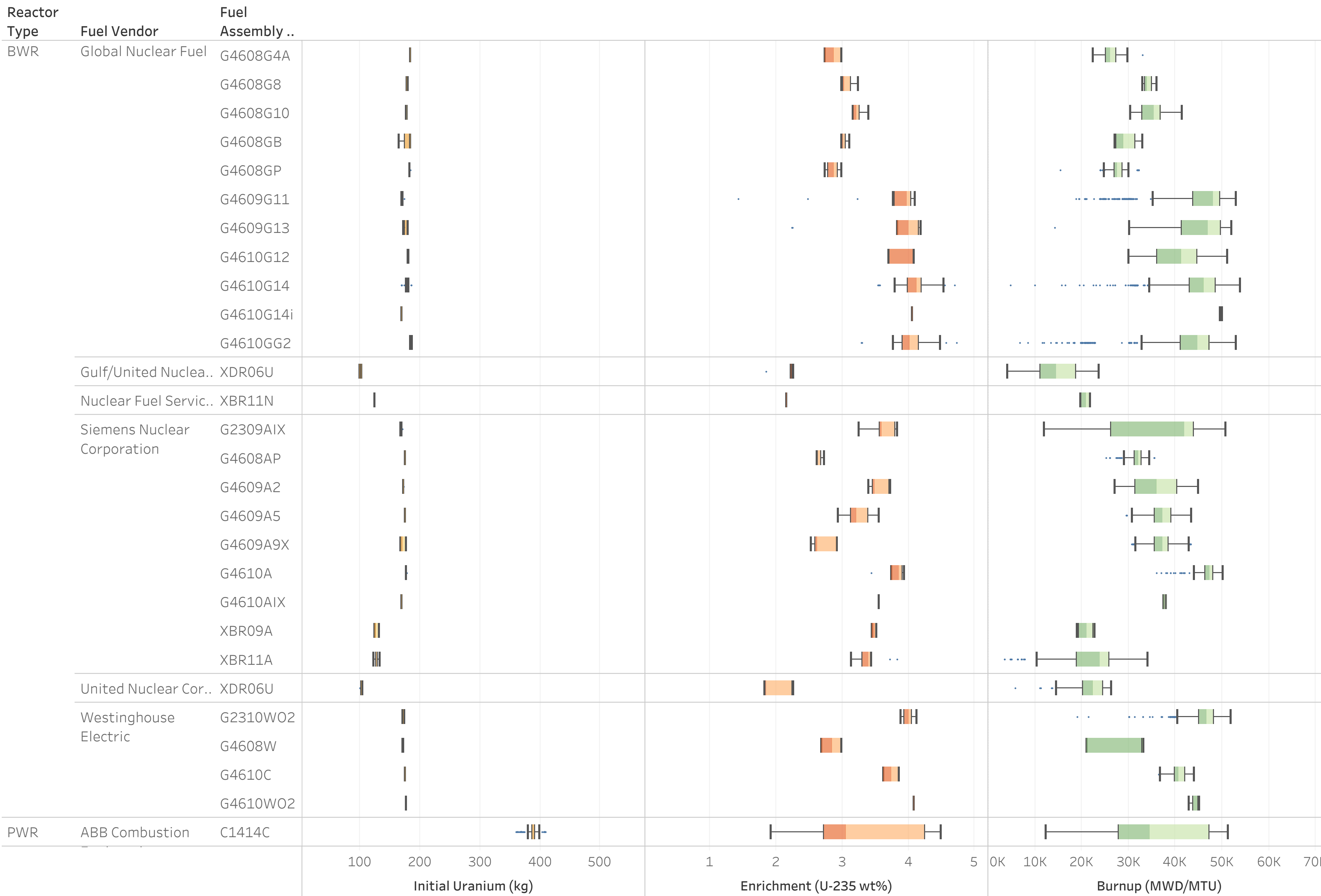
Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



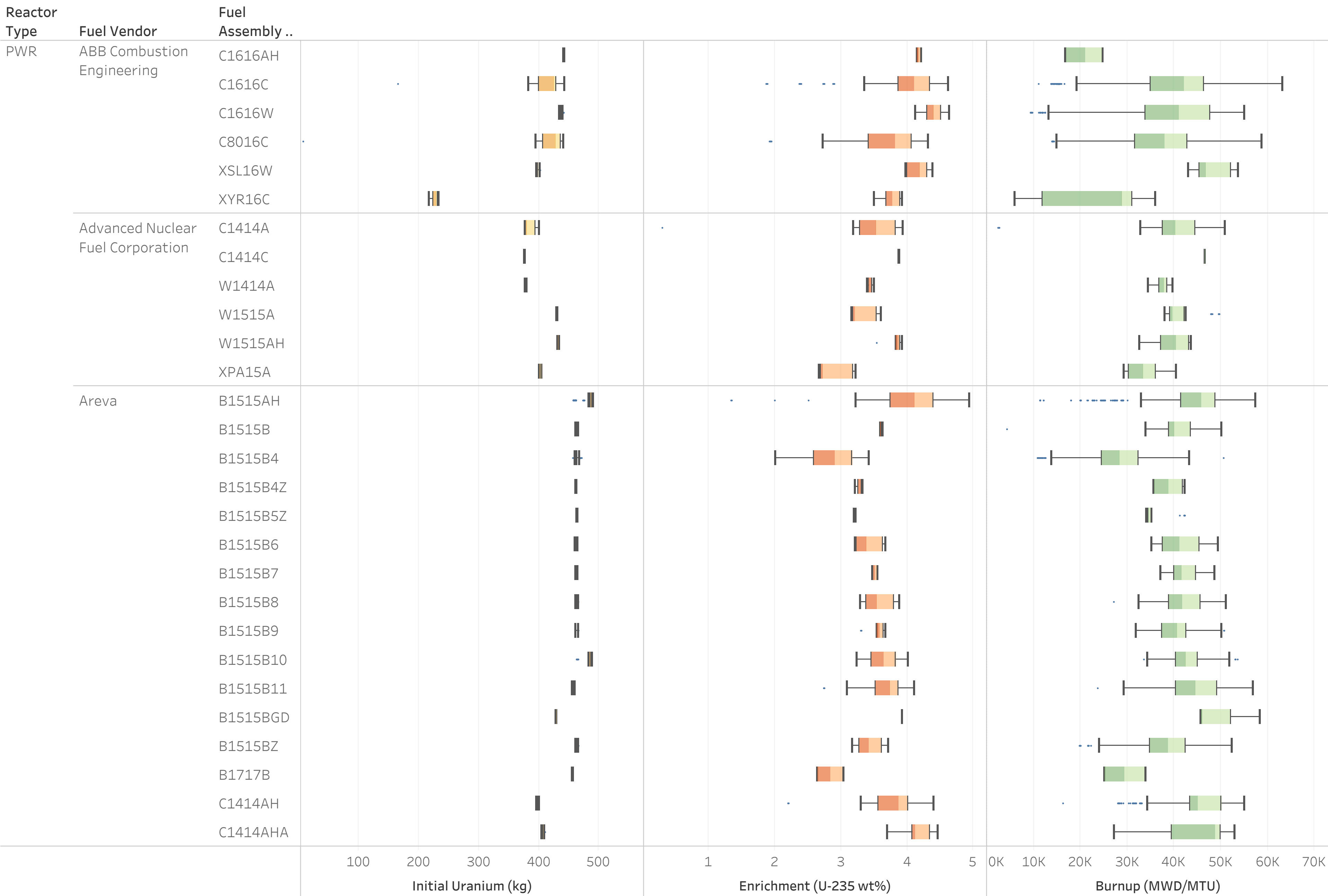
Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



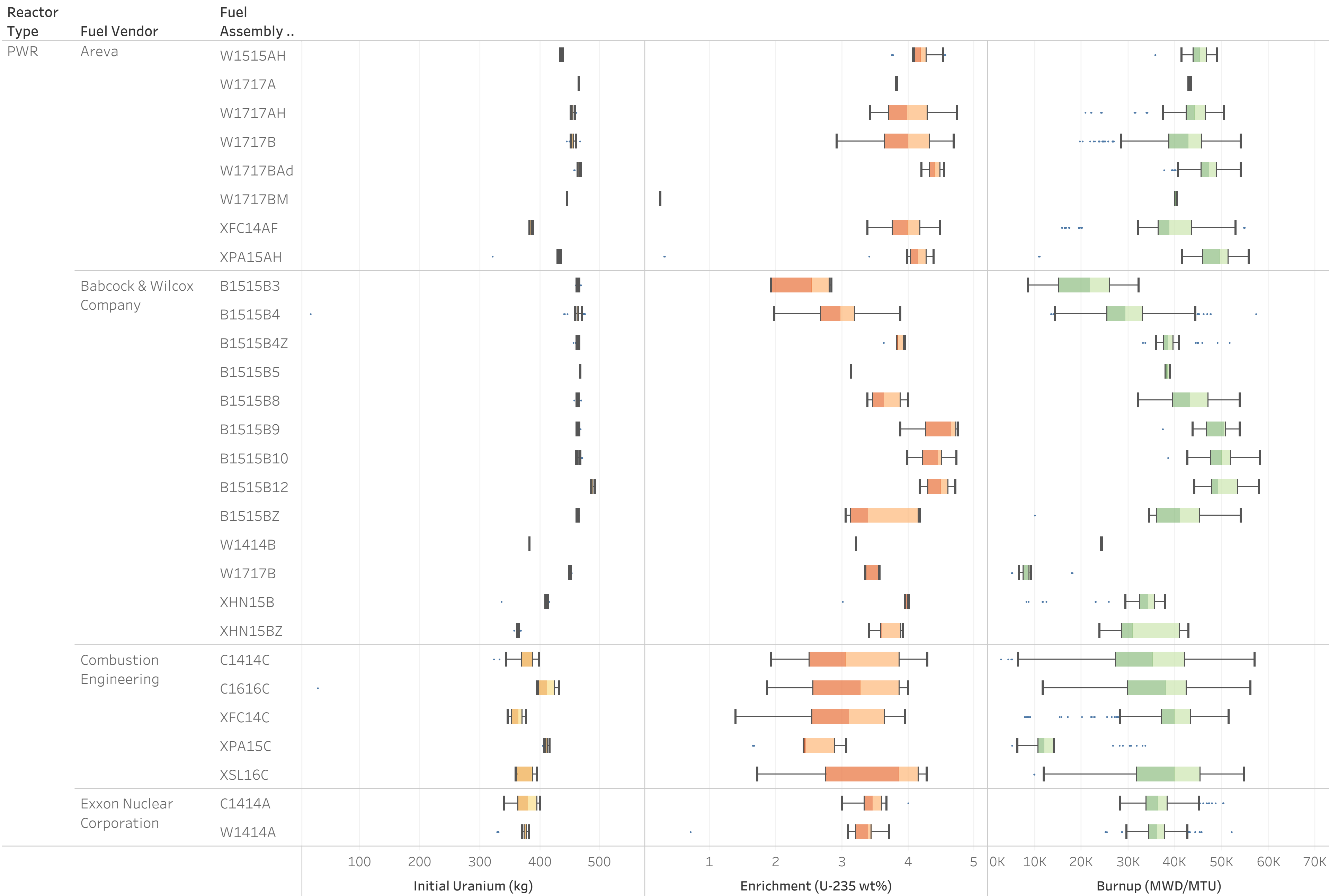
Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



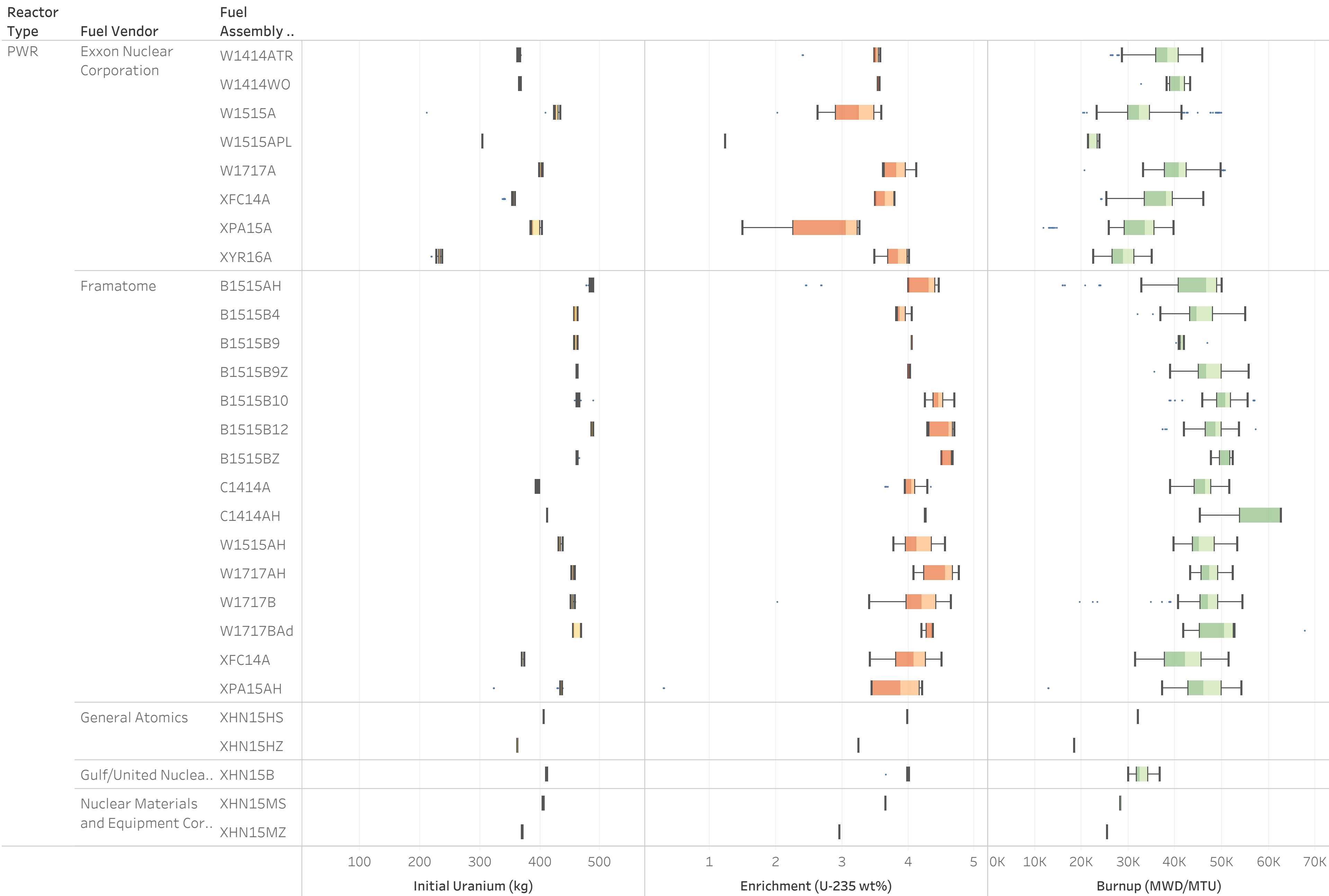
Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



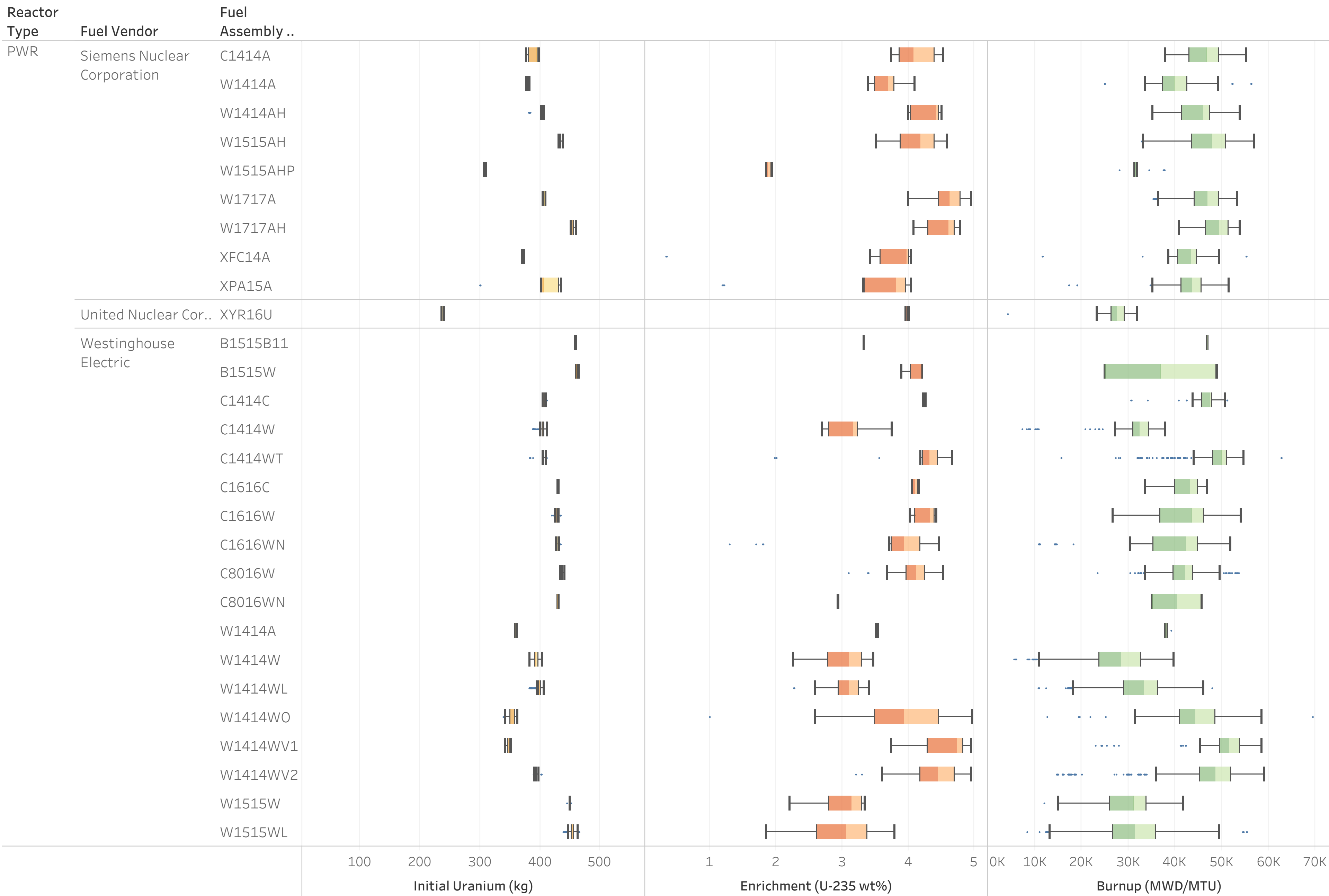
Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



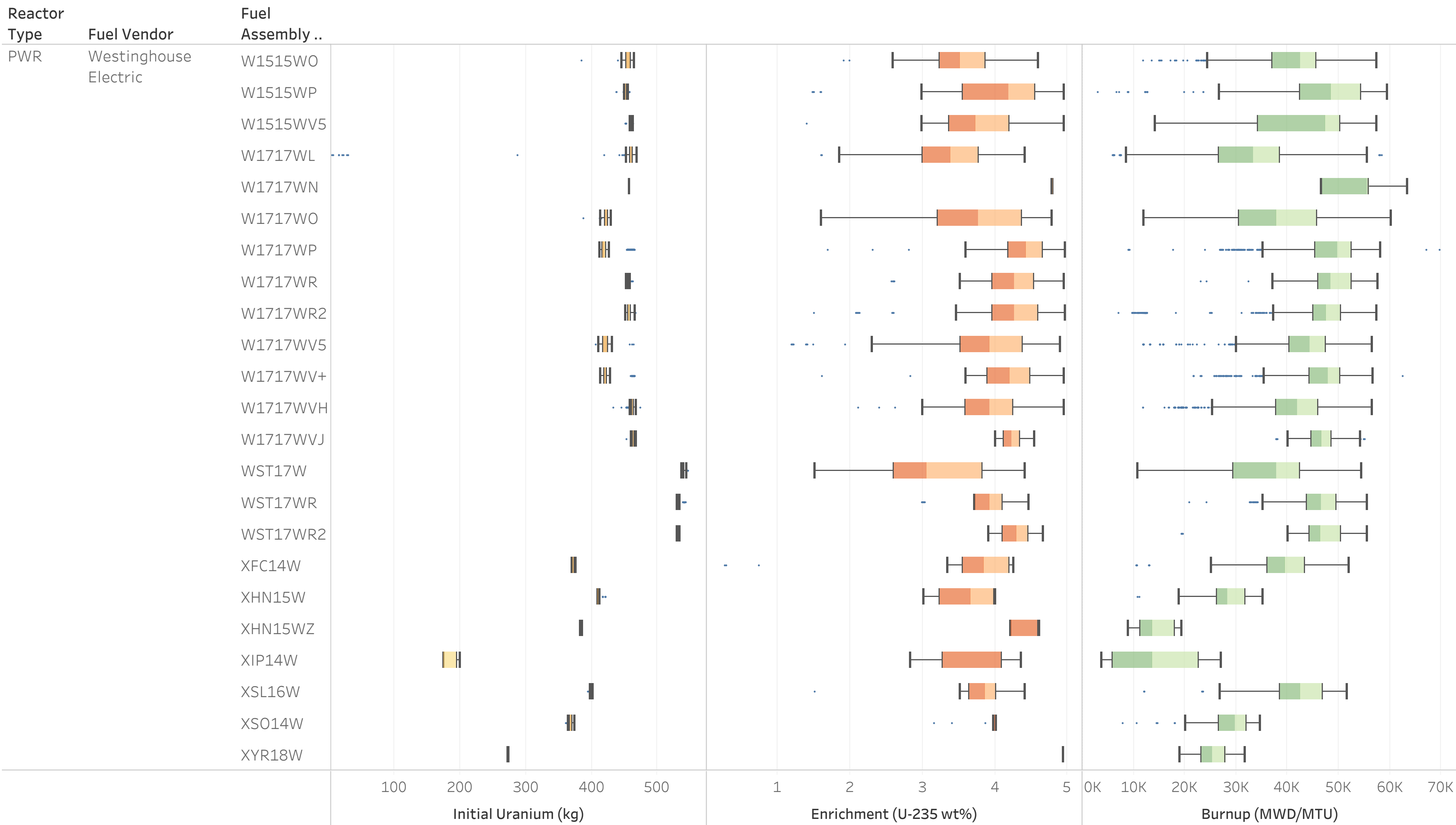
Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

Assembly types and their main characteristics as of December 31, 2017



Initial Uranium (kg), Enrichment (U-235 wt%) and Burnup (MWD/MTU) for each Fuel Assembly Type broken down by Reactor Type and Fuel Vendor. For pane Initial Uranium (kg): Details are shown for Initial Uranium (kg). For pane Burnup (MWD/MTU): Details are shown for Burnup (MWD/MTU). The view is filtered on Burnup (MWD/MTU), which keeps non-Null values only.

APPENDIX B – DECEMBER 2022 PROJECTED INVENTORY BY REACTOR

Table B.1 Estimated Inventory at Operating Reactors by Storage Type and Site (Group B & C Sites)

Reactor	Dry Inventory 12/31/2022			Pool Inventory 12/31/2022		Site Inventory 12/31/2022	
	Assy.	Estimated Initial Uranium (MT)	SNF Casks	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)
Arkansas Nuclear One (2)	2,752	1,209.59	102	1,336	609.57	4,088	1,819.16
Beaver Valley Power Station (2)	740	342.16	20	2,374	1,096.19	3,114	1,438.35
Braidwood Station (2)	1,312	552.14	41	2,580	1,083.41	3,892	1,635.55
Browns Ferry Nuclear Plant (3)	8,667	1,552.05	108	6,483	1,180.31	15,150	2,732.36
Brunswick Steam Electric Plant (2)	3,172	561.35	52	2,146	470.57	5,318	1,031.92
Byron Station (2)	1,536	647.44	48	2,555	1,072.78	4,091	1,720.22
Callaway Plant (1)	1,110	465.82	30	1,083	461.94	2,193	927.76
Calvert Cliffs Nuclear Power Plant (2)	2,846	1,105.76	100	1,411	570.8	4,257	1,676.56
Catawba Nuclear Station (2)	1,686	757.25	54	2,076	929.08	3,762	1,686.33
Clinton Power Station (1)	1,602	291	18	2,706	492.48	4,308	783.48
Columbia Generating Station (1)	3,672	645.63	54	1,192	216.19	4,864	861.82
Comanche Peak Steam Electric Station (2)	1,728	720.15	54	1,901	808.06	3,629	1,528.21
Cooper Nuclear Station (1)	1,830	329.17	30	1,626	296.59	3,456	625.76
Davis-Besse Nuclear Station (1)	496	238.02	15	1,014	481.96	1,510	719.98
Diablo Canyon Nuclear Power Plant (2)	1,856	809.13	58	2,005	847.92	3,861	1,657.05
Donald C. Cook Nuclear Power Plant (2)	1,824	794.26	57	2,688	1,181.03	4,512	1,975.29
Dresden Nuclear Power Station (3)	5,365	940.8	78	5,519	972.86	11,884	1,913.66

Reactor	Dry Inventory 12/31/2022			Pool Inventory 12/31/2022		Site Inventory 12/31/2022	
	Assy.	Estimated Initial Uranium (MT)	SNF Casks	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)
Edwin I. Hatch Nuclear Plant (2)	6,392	1,147.39	94	3,863	702.64	10,255	1,850.03
Fermi (1)	1,564	273.96	23	2,648	471.77	4,212	745.73
Grand Gulf Nuclear Station (1)	2,992	524.73	44	3,260	591.65	6,252	1,116.38
H.B. Robinson Steam Electric Plant (1)	800	346.42	39	302	128.6	1,102	475.02
Hope Creek Generating Station (1)	2,312	415.38	34	3,000	541.62	5,312	957.00
James A. FitzPatrick Nuclear Power Plant (1)	2,176	389.12	32	2,428	448.87	4,604	837.99
Joseph M. Farley Nuclear Plant (2)	1,824	811.82	57	1,984	851.52	3,808	1,663.34
LaSalle County Station (2)	3,332	597.44	49	6,664	1,202.42	9,996	1,799.86
Limerick Generating Station (2)	3,889	686.45	61	6,166	1,118.79	10,055	1,805.24
McGuire Nuclear Station (2)	2,287	1,023.87	73	2,002	910.7	4,289	1,934.57
Millstone Power Station (2)	1,568	643.58	49	2,071	902.01	3,639	1,545.59
Monticello Nuclear Generating Plant (1)	1,830	317.17	30	1,052	183.98	2,882	501.15
Nine Mile Point Nuclear Station (2)	3,330	588.36	50	5,706	1,019.38	9,036	1,607.74
North Anna Power Station (2)	2,397	1,111.67	74	1,232	569.17	3,629	1,680.84
Oconee Nuclear Station (3)	4,080	1,907.35	170	1,455	695.04	5,535	2,602.39
Palo Verde Nuclear Generating Station (3)	4,314	1,847.27	170	2,511	1092.68	6,825	2,939.95
Peach Bottom Atomic Power Station (2)	7,324	1,322.42	104	5,478	992.6	12,802	2,315.02
Perry Nuclear Power Plant (1)	1,877	340.15	27	3,055	550.52	4,932	890.67
Point Beach Nuclear Plant (2)	1,694	643.09	56	1,134	443.57	2,828	1,086.66
Prairie Island Nuclear Generating Plant (2)	2,000	735.16	50	1,087	412.92	3,087	1,148.08
Quad Cities Nuclear Power Station (2)	4,692	831.74	69	6,267	1,108.26	10,959	1,940.00

Reactor	Dry Inventory 12/31/2022			Pool Inventory 12/31/2022		Site Inventory 12/31/2022	
	Assy.	Estimated Initial Uranium (MT)	SNF Casks	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)
River Bend Station (1)	2,516	446.74	37	2,056	369.1	4,572	815.84
R.E. Ginna Nuclear Power Plant (1)	448	163.95	14	1,109	416.42	1,557	580.37
St. Lucie Plant (2)	1,920	753.02	60	2,434	944.89	4,354	1,697.91
Salem Nuclear Generating Station (2)	1,440	662.79	45	2,325	1064.13	3,765	1,726.92
Seabrook Station (1)	960	439.52	30	727	332.55	1,687	772.07
Sequoyah Nuclear Plant (2)	2,370	1,086.12	70	1,548	704.19	3,918	1,790.31
Shearon Harris Nuclear Power Plant (1)	0	0	0	6,417	1,704.32	6,417	1,704.32
South Texas Project (2)	814	436.21	22	2,423	1,296.93	3,237	1,733.14
Surry Nuclear Power Station (2)	2,824	1,295.01	97	830	380.23	3,654	1,675.24
Susquehanna Steam Electric Station (2)	7,672	1,352.67	127	3,809	674.47	11,481	2,027.14
Turkey Point Nuclear Generating (2)	1,216	553.88	38	2,220	1,008.19	3,436	1,562.07
Virgil C. Summer Nuclear Station (1)	444	188.81	12	1,256	535.78	1,700	724.59
Vogtle Electric Generating Plant (2)	1,696	741.98	53	2,255	956.23	3,951	1,698.21
Waterford Steam Electric Station (1)	992	415.14	31	1,254	533.11	2,246	948.25
Watts Bar Nuclear Plant (2)	962	443.26	26	790	363.18	1,752	806.44
Wolf Creek Generating Station (1)	185	84.39	5	1,827	838.63	2,012	923.02
Totals (92 reactors)	**131,327**	**37,529.75**	**2,941**	**137,340**	**39,832.80**	**268,667**	**77,362.55**

*Note: This Table does reflect SNF transfers.

Table B.2 Estimated Inventory by Storage Type and Site (Group A Sites Shutdown before 2000)

Reactor	Dry Inventory 12/31/2022			Pool Inventory 12/31/2022		Site Inventory 12/31/2022	
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Big Rock Point	441	57.91	7	-	-	441	57.91
Haddam Neck	1,019	413.66	40	-	-	1,019	413.66
Humboldt Bay	390	28.94	5	-	-	390	28.94
La Crosse	333	37.97	5	-	-	333	37.97
Maine Yankee	1,434	542.26	60	-	-	1,434	542.26
Rancho Seco	493	228.38	21	-	-	493	228.38
Trojan	790	359.26	34	-	-	790	359.26
Yankee Rowe	533	127.13	15	-	-	533	127.13
Zion	2,226	1,019.41	61	-	-	2,226	1,019.41
Totals	**7,659**	**2,814.92**	**248**	-	-	**7,659**	**2,814.92**

*Note: This Table **does** reflect SNF transfers.

Table B.3 Estimated Inventory by Storage Type and Site (Shutdown Reactors at Group B Sites)

	Dry Inventory 12/31/2022			Pool Inventory 12/31/2022		Site Inventory 12/31/2022	
Reactor [Unit]	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Dresden 1	889	90.61	14	0	0**	889	90.61
Millstone 1	-	-	-	2,884	525.62	2,884	525.62
Totals	**889**	**90.61**	**14**	**2,884**	**525.62**	**3,773**	**616.23**

*Note: This Table **does** reflect SNF transfers.
** Few Dresden 1 Casks are co-mingled with unit 2 and 3 SNF.

Table B.4 Estimated Inventory by Storage Type and Site (Group A Sites Shutdown Post 2000)

	Dry Inventory 12/31/2022			Pool Inventory 12/31/2022		Site Inventory 12/31/2022	
Reactor [Unit]	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Crystal River (1)	1,243	582.24	39	0	0	1,243	582.24
Duane Arnold (1)	3,648	662.64	60	0	0	3,648	662.64
Fort Calhoun (1)	1,264	465.98	40	0	0	1,264	465.98
Indian Point (3)	2,443	1,070.01	77	1,558	706.61	4,001	1,776.62
Kewaunee (1)	1,335	518.7	38	0	0	1,335	518.7
Oyster Creek (1)	4,504	802.24	67	0	0	4,504	802.24
Palisades (1)	1,355	552.69	49	698	297.79	2,053	850.48
Pilgrim (1)	4,116	734.82	62	0	0	4,116	734.82
San Onofre (3)	3,855	1,609.36	123	0	0	3,855	1,609.36
Three Mile Island (1)	1,663	786.49	46	0	0	1,663	786.49
Vermont Yankee (1)	3,880	705.66	58	0	0	3,880	705.66
Totals	**29,306**	**8,491**	**659**	**2,256**	**1,004**	**31,562**	**9,495**

Table B.5 Estimated Inventory Totals

Reactor Group	Dry Inventory 12/31/2022			Pool Inventory 12/31/2022		Site Inventory 12/31/2022	
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Operating Reactors at Groups B and C Sites	131,327	37,530	2,941	137,340	39,833	268,667	77,363
Shutdown Reactors at Groups B Sites	889	91	14	2,884	526	3,773	616
Shutdown Reactors in Group A Sites (Pre-2000 All Dry Storage)	7,659	2,815	248	-	-	7,659	2,815
Shutdown Reactors in Group A Sites (Post-2000)	29,306	8,491	659	2,256	1,004	31,562	9,495
Grand Total	**169,181**	**48,927**	**3,862**	**142,480**	**41,363**	**311,661**	**90,289**

*Note: This Table **does** reflect SNF transfers.

Table B.6 Bare SNF Storage Systems in Use as of 12/31/2022

Utility	Reactor	Cask System	Licensed Purpose	Casks Loaded	Ass.	MTiHM
Constellation	Peach Bottom	TN-68	Storage and Transportation	92	6,256	1125.16
Dominion	North Anna	TN-32	Storage Only	28	896	417.15
Dominion	Surry	CASTOR V/21 & X/33	Storage Only	26	558	255.7
Dominion	Surry	TN-32	Storage Only	26	832	381.2
Dominion	Surry	MC-10	Storage Only	1	24	11
Dominion	Surry	NAC I28 S/T	Storage Only	2	56	25.7
Duke	McGuire	TN-32 (Note 1)	Storage Only	10	320	145.9
Xcel Energy	Prairie Island	TN-40	Storage & transportation	29	1160	430.97
		TN-40HT	storage	21	840	312.08
Totals				235	10942	3104.86

1. The TN-32 casks used at McGuire are TN-32A models.

Table B.7 Canister Based Storage Systems in Use as 12/31/2022

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Arkansas Nuclear One	VSC-24	MSB-Long	1007	unknown	24	576	263
Arkansas Nuclear One	HI-STORM 100	MPC-24	1014	A1	9	960	438
Arkansas Nuclear One	HI-STORM 100	MPC-24	1014	A2	8		
Arkansas Nuclear One	HI-STORM 100	MPC-24	1014	A5	17		
Arkansas Nuclear One	HI-STORM 100	MPC-24	1014	A13	6		
Arkansas Nuclear One	HI-STORM 100	MPC-32	1014	A1	4	1,216	554
Arkansas Nuclear One	HI-STORM 100	MPC-32	1014	A2	8		
Arkansas Nuclear One	HI-STORM 100	MPC-32	1014	unknown	5		
Arkansas Nuclear One	HI-STORM 100	MPC-32	1014	A5	13		
Arkansas Nuclear One	HI-STORM 100	MPC-32	1014	A13	8		
Beaver Valley	Standardized NUHOMS	NUHOMS 37PTH-S	1004	A13/A13R1	4	740	341
Beaver Valley	Standardized NUHOMS	NUHOMS 37PTH-S	1004	A13R1	6		
Beaver Valley	NUHOMS EOS	NUHOMS 37PTH	1042	A1	10		
Big Rock Point	FuelSolutions5	W74T	1026	A2	7	441	56
Braidwood	HI-STORM 100	MPC-32	1014	unknown	2	1,312	548
Braidwood	HI-STORM 100	MPC-32	1014	A3	7		
Braidwood	HI-STORM 100	MPC-32	1014	A9/A9R1	11		
Braidwood	HI-STORM 100	MPC-32	1014	A9R1	21		
Browns Ferry	HI-STORM 100	MPC-68	1014	unknown	3	3,060	545
Browns Ferry	HI-STORM 100	MPC-68	1014	A1	3		
Browns Ferry	HI-STORM 100	MPC-68	1014	A5	39		
Browns Ferry	HI-STORM FW	MPC-89	1014	unknown	6	5,607	998
Browns Ferry	HI-STORM FW	MPC-89	1014	A0/A0R1	19		

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Browns Ferry	HI-STORM FW	MPC-89	1014	A0R1	38		
Brunswick	Standardized NUHOMS	NUHOMS 61BTH Type 2	1004	unknown	5	3,172	569
Brunswick	Standardized NUHOMS	NUHOMS 61BTH Type 2	1004	A10	27		
Brunswick	Standardized NUHOMS	NUHOMS 61BTH Type 2	1004	A13R1	20		
Byron	HI-STORM 100S	MPC-32	1014	A3	5	1,536	642
Byron	HI-STORM 100S	MPC-32	1014	A7	9		
Byron	HI-STORM 100S	MPC-32	1014	A9/A9R1	6		
Byron	HI-STORM 100S-B	MPC-32	1014	A9R1	28		
Callaway	HI-STORM UMAX	MPC-37	1040	A0	30	1,110	463
Calvert Cliffs	Standardized NUHOMS	NUHOMS 24P	1004	S.L.	48	1,152	469
Calvert Cliffs	Standardized NUHOMS	NUHOMS 32P	1004	S.L.	30	960	391
Calvert Cliffs	Standardized NUHOMS	NUHOMS 32PHB	1004	S.L.	16	512	208
Calvert Cliffs	HI-STORM FW	MPC-37	1032	S.L.	3	222	90
Catawba	NAC-UMS	UMS-PWR	1015	A4	24	576	263
Catawba	NAC-MAGNASTOR	TSC4 (PWR)	1031	A2/A7	6	1,110	506
Catawba	NAC-MAGNASTOR	TSC4 (PWR)	1031	A2R1/A7	9		
Catawba	NAC-MAGNASTOR	TSC4 (PWR)	1031	A7	15		
Clinton	HI-STORM FW	MPC-89	1032	unknown	1	1,602	290
Clinton	HI-STORM FW	MPC-89	1032	A0R1	17		
Columbia	HI-STORM 100	MPC-68	1014	A1	15	2,448	436
Columbia	HI-STORM 100	MPC-68	1014	A2	21		
Columbia	HI-STORM 100	MPC-68M	1014	A9R1	18	1,224	218
Comanche Peak	HI-STORM 100	MPC-32	1014	A7	54	1,728	729
Connecticut Yankee	NAC-MPC	CY-MPC, 26 Assy	1025	A3/A5	26	1,019	429

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Connecticut Yankee	NAC-MPC	CY-MPC, 26 Assy	1025	A4/A5	14		
D. C. Cook	HI-STORM 100S	MPC-32	1014	A5	28	1,824	791
D. C. Cook	HI-STORM 100S	MPC-32	1014	A9/A9R1	3		
D. C. Cook	HI-STORM 100S	MPC-32	1014	A9R1	26		
Cooper	Standardized NUHOMS	NUHOMS 61BTH	1004	unknown	4	1,342	241
Cooper	Standardized NUHOMS	NUHOMS 61BTH	1004	A10/A10R1	10		
Cooper	Standardized NUHOMS	NUHOMS 61BTH	1004	A10/A13R1	8		
Cooper	Standardized NUHOMS	NUHOMS 61BT	1004	A9/A9R1	8	488	88
Crystal River	Standardized NUHOMS	NUHOMS 32PTH1 Type 2-W	1004	A14	39	1,243	576
Davis-Besse	Standardized NUHOMS	NUHOMS 24P	1004	A0/A0R1	3	72	35
Davis-Besse	Standardized NUHOMS	NUHOMS 32PH1	1004	A13R1	4	128	62
Davis-Besse	Standardized NUHOMS	NUHOMS 37PTH	1004	A0	8	296	144
Diablo Canyon	HI-STORM 100(anchored)	MPC-32 (Diablo)	SNM-2511	S.L.	58	1,856	784
Dresden	HI-STORM 100	MPC-68	1014	unknown	12	4,080	705
Dresden	HI-STORM 100	MPC-68	1014	A2	47		
Dresden	HI-STORM 100	MPC-68	1014	A8R1	1		
Dresden	HI-STORM 100	MPC-68M	1014	A8/A8R1	3	1,904	329
Dresden	HI-STORM 100	MPC-68M	1014	A8R1	3		
Dresden	HI-STORM 100S	MPC-68M	1014	A8R1	22		
Dresden	HI-STAR 100	MPC-68F	1008	unknown	1	272	47
Dresden	HI-STAR 100	MPC-68F	1008	A2	3		
Duane Arnold	Standardized NUHOMS	NUHOMS 61BT	1004	A4	10	1,220	219

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Duane Arnold	Standardized NUHOMS	NUHOMS 61BT	1004	A9	10		
Duane Arnold	Standardized NUHOMS	NUHOMS 61BTH	1004	A15	10	2,428	435
Duane Arnold	Standardized NUHOMS	NUHOMS 61BTH	1004	A17	25		
Duane Arnold	Standardized NUHOMS	NUHOMS 61BTH	1004	unknown	5		
Farley	HI-STORM 100 -S	MPC-32	1014	unknown	8	1,824	771
Farley	HI-STORM 100 -S	MPC-32	1014	A3	21		
Farley	HI-STORM 100 -S	MPC-32	1014	A9/A9R1	8		
Farley	HI-STORM 100 -S	MPC-32	1014	A9R1	16		
Farley	HI-STORM 100-S-B	MPC-32	1014	A11	4		
Fermi	HI-STORM 100	MPC-68	1014	A5	12	1,564	281
Fermi	HI-STORM 100	MPC-68 M	1014	A11	11		
Fitzpatrick	HI-STORM 100	MPC-68	1014	unknown	13	1,428	260
Fitzpatrick	HI-STORM 100	MPC-68	1014	A5	8		
Fitzpatrick	HI-STORM 100	MPC-68 M	1014	unknown	5	748	136
Fitzpatrick	HI-STORM 100	MPC-68 M	1014	A8R1	6		
Fort Calhoun	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A8	4	1,264	487
Fort Calhoun	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A9	6		
Fort Calhoun	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A15	30		
Ginna	Standardized NUHOMS	NUHOMS 32PT-S125	1004	unknown	4	320	127
Ginna	Standardized NUHOMS	NUHOMS 32PT-S125	1004	A10	6		
Ginna	HI-STORM 100	MPC-32	1014	A13R1	4	128	51
Grand Gulf	HI-STORM 100	MPC-68 M	1014	unknown	2	680	122

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Grand Gulf	HI-STORM 100	MPC-68 M	1014	A9R1	8		
Grand Gulf	HI-STORM 100	MPC-68	1014	A2	7	2,312	416
Grand Gulf	HI-STORM 100	MPC-68	1014	unknown	6		
Grand Gulf	HI-STORM 100	MPC-68	1014	A5	21		
Hatch	HI-STORM 100	MPC-68 (HI-STORM)	1014	unknown	14	4,080	732
Hatch	HI-STORM 100	MPC-68 (HI-STORM)	1014	A2	17		
Hatch	HI-STORM 100	MPC-68 (HI-STORM)	1014	A3	27		
Hatch	HI-STORM 100	MPC-68 (HI-STORM)	1014	A9/A9R1	2		
Hatch	HI-STORM 100	MPC-68M	1014	A9/A9R1	3	2,108	378
Hatch	HI-STORM 100	MPC-68M	1014	A9R1	19		
Hatch	HI-STORM 100	MPC-68M	1014	A11	9		
Hatch	HI-STAR 100	MPC-68 (HI-STAR)	1008	unknown	3	204	37
Hope Creek	HI-STORM 100	MPC-68	1014	unknown	11	2,312	415
Hope Creek	HI-STORM 100	MPC-68	1014	A3	3		
Hope Creek	HI-STORM 100	MPC-68	1014	A5	20		
Hope Creek	HI-STORM	MPC-32			45	1,440	259
Humboldt Bay	HI-STAR 100HB	MPC-HB	SNM-2514	S.L.	5	390	30
Indian Point 1	HI-STORM 100	MPC-32	1014	A4	5	2,443	1,109
Indian Point 2	HI-STORM 100	MPC-32	1014	unknown	8		
Indian Point 2	HI-STORM 100	MPC-32	1014	A2	11		
Indian Point 2/3	HI-STORM 100	MPC-32	1014	A6	23		
Indian Point 2/3	HI-STORM 100	MPC-32	1014	A9R1	12		
Indian Point 2/3	HI-STORM 100	MPC-32	1014	A15	4		
Indian Point 2	HI-STORM 100	MPC-32	1014	A15R23	14		
Kewaunee	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A9/A9R1	4	448	180

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Kewaunee	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A10/A10R1	10		
Kewaunee	NAC-MAGNASTOR	TSC-37	1031	A5/A6	24	887	357
LaSalle	HI-STORM 100	MPC-68	1014	A3	24	1,632	291
LaSalle	HI-STORM 100	MPC-68 M	1014	A8R1	25	1,700	303
La Crosse	NAC-MPC	LACBWR	1025	A6	5	333	38
Limerick	Standardized NUHOMS HSM 202	NUHOMS 61BTH	1004	A9	3	2,196	394
Limerick	Standardized NUHOMS HSM 202	NUHOMS 61BTH	1004	A10	5		
Limerick	Standardized NUHOMS HSM H	NUHOMS 61BTH	1004	A10	22		
Limerick	Standardized NUHOMS HSM H	NUHOMS 61BTH	1004	A14	9		
Limerick	Standardized NUHOMS HSM 202	NUHOMS 61BT	1004	A9	16	1,159	208
Limerick	HI-STORM FW	MPC-89	1032	A1R1	6	534	96
Maine Yankee	NAC-UMS	TSC-24	1015	A2/A5	60	1,434	553
McGuire	NAC-UMS	TSC-24	1015	A3/A4	5	672	306
McGuire	NAC-UMS	TSC-24	1015	A4	23		
McGuire	NAC-MAGNASTOR	TSC-37	1031	A2/A7	10	1,295	590
McGuire	NAC-MAGNASTOR	TSC-37	1031	A2R1/A7	6		
McGuire	NAC-MAGNASTOR	TSC-37	1031	A7	19		
Millstone	Standardized NUHOMS	NUHOMS 32PT-S100	1004	unknown	3	1,568	679
Millstone	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A7/A9	2		
Millstone	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A8	3		
Millstone	Standardized NUHOMS	NUHOMS 32PT-S100	1004	A9	10		
Millstone	Standardized NUHOMS	NUHOMS 32PT-L125	1004	A13	13		

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Millstone	Standardized NUHOMS	NUHOMS 32PT-L125	1004	A14	3		
Millstone	Standardized NUHOMS	NUHOMS 32PT-L125	1004	A15	15		
Monticello	Standardized NUHOMS	NUHOMS 61BT	1004	A9	10	610	106
Monticello	Standardized NUHOMS	NUHOMS 61BTH	1004	A10	6	1,220	213
Monticello	Standardized NUHOMS	NUHOMS 61BTH	1004	A10R1	14		
Nine Mile Point	Standardized NUHOMS	NUHOMS 61BT	1004	A10	16	976	172
Nine Mile Point	Standardized NUHOMS	NUHOMS 61BTH	1004	A10	13	1,464	259
Nine Mile Point	Standardized NUHOMS	NUHOMS 61BTH	1004	A10R1	6		
Nine Mile Point	Standardized NUHOMS	NUHOMS 61BTH	1004	A14	5		
Nine Mile Point	HI-STORM FW	MPC-89	1032	A3	10	890	157
North Anna	NUHOMS EOS	37PTH	1042	A1	6	222	103
North Anna	NUHOMS HD	MPC-32PTH	1030	unknown	3	1,279	595
North Anna	NUHOMS HD	MPC-32PTH	1030	A0	10		
North Anna	NUHOMS HD	MPC-32PTH	1030	A1	27		
Oconee	Standardized NUHOMS	NUHOMS 24PHBL	1004	A8	6	1,536	728
Oconee	Standardized NUHOMS	NUHOMS 24PHBL	1004	A9	42		
Oconee	Standardized NUHOMS	NUHOMS 24PHBL	1004	A13	14		
Oconee	Standardized NUHOMS	NUHOMS 24PHBL	1004	unknown	2		
Oconee	Standardized NUHOMS	NUHOMS 24PTH	1004	A13R1	18	528	250
Oconee	Standardized NUHOMS	NUHOMS 24PTH	1004	A15	4		

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Oconee	Standardized NUHOMS	NUHOMS 24P	1004	unknown	36		
Oconee	Standardized NUHOMS	NUHOMS 24P	1004	A3	3	2,016	955
Oconee	Standardized NUHOMS	NUHOMS 24P	1004	A4	2		
Oconee	Standardized NUHOMS	NUHOMS 24P	1004	A6	1		
Oconee	Standardized NUHOMS	NUHOMS 24P	1004	A7	2		
Oconee	Standardized NUHOMS	NUHOMS 24P	1004	S.L .	40		
Oyster Creek	Standardized NUHOMS	NUHOMS 61BT	1004	A7	7	488	83
Oyster Creek	Standardized NUHOMS	NUHOMS 61BT	1004	A9	1		
Oyster Creek	Standardized NUHOMS	NUHOMS 61BT	1004	unknown	26	1586	271
Oyster Creek	HI-STORM FW	MPC-89	1032	A5	33	2,430	415
Palisades	Standardized NUHOMS	NUHOMS 24PTH-S	1004	A9/A9R1	13	312	134
Palisades	Standardized NUHOMS	NUHOMS 32PT-S125	1004	A7/A7R1	11	352	151
Palisades	HI-STORM FW	MPC-37	1032	A1R1	7	259	111
Palisades	VSC-24	MSB-Standard	1007	unknown	18	432	186
Palo Verde	NAC-UMS	TSC-24	1015	A2/A5	16	3,648	1,596
Palo Verde	NAC-UMS	TSC-24	1015	A3/A5	18		
Palo Verde	NAC-UMS	TSC-24	1015	A4/A5	24		
Palo Verde	NAC-UMS	TSC-24	1015	A5	94		
Palo Verde	NAC MAGNASTOR	TSC-37	1031	A7	18	666	291
Peach Bottom	HI-STORM FW	MPC-89	1027	A1R1	12	1,068	192
Perry	HI-STORM 100	MPC-68	1014	A5	25	1,699	304

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Perry	HI-STORM FW	MPC-89	1032	A5	2	178	32
Pilgrim	HI-STORM 100	MPC-68	1014	A7/A14	17	1,156	202
Pilgrim	HI-STORM 100	MPC-68M	1014	A12/A14	11	2,960	518
Pilgrim	HI-STORM 100	MPC-68M	1014	A14	27		
Pilgrim	HI-STORM 100	MPC-68M	1014	unknown	7		
Point Beach	HI-STORM FW	MPC-37	1032	A3	6	222	87
Point Beach	VSC-24	MSB-Short	1007	unknown	16	384	151
Point Beach	Standardized NUHOMS	NUHOMS 32PT	1004	unknown	14	1,088	428
Point Beach	Standardized NUHOMS	NUHOMS 32PT	1004	A10	9		
Point Beach	Standardized NUHOMS	NUHOMS 32PT	1004	A13	5		
Point Beach	Standardized NUHOMS	NUHOMS 32PT	1004	A14	6		
Quad Cities	HI-STORM 100 S-B	MPC-68	1014	unknown	5	2,652	458
Quad Cities	HI-STORM 100 S-B	MPC-68	1014	A2	4		
Quad Cities	HI-STORM 100 S-B	MPC-68	1014	A3	28		
Quad Cities	HI-STORM 100 S-B	MPC-68	1014	A8	2		
Quad Cities	HI-STORM 100 S-B	MPC-68M	1014	A8	2	2,040	353
Quad Cities	HI-STORM 100 S-B	MPC-68M	1014	A8R1	28		
Rancho Seco	Standardized NUHOMS	NUHOMS 24PT FC-DSC	SNM-2510	S.L.	18	493	229
Rancho Seco	Standardized NUHOMS	NUHOMS 24PT FF-DSC	SNM-2510	S.L.	1		
Rancho Seco	Standardized NUHOMS	NUHOMS 24PT FO-DSC	SNM-2510	S.L.	2		
River Bend	HI-STORM 100	MPC-68	1014	unknown	7	2,108	378
River Bend	HI-STORM 100	MPC-68	1014	A5	24		
River Bend	HI-STORM 100	MPC-68M	1014	unknown	6	408	73

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Robinson	NUHOMS	NUHOMS 07P	SNM-2502	S.L.	8	56	24
Robinson	Standardized NUHOMS	NUHOMS 24PTH-L	1004	A8/A8R1	4	744	324
Robinson	Standardized NUHOMS	NUHOMS 24PTH-L	1004	A9/A9R1	4		
Robinson	Standardized NUHOMS	NUHOMS 24PTH-L	1004	A10/A10R1	10		
Robinson	Standardized NUHOMS	NUHOMS 24PTH-L	1004	A13/A13R1	5		
Robinson	Standardized NUHOMS	NUHOMS 24PTH-L	1004	A13R1	8		
Saint Lucie	NUHOMS HD	NUHOMS 32PTH	1030	unknown	10	1,920	766
Saint Lucie	NUHOMS HD	NUHOMS 32PTH	1030	A0	6		
Saint Lucie	NUHOMS HD	NUHOMS 32PTH	1030	A1	17		
Saint Lucie	NUHOMS HD	NUHOMS 32PTH	1030	A2	27		
Salem	HI-STORM 100	MPC-32	1014	A5	45	1,440	259
San Onofre	HI-STORM UMAX	MPC-37	1040	A2	73	2,668	1,089
San Onofre	Advanced NUHOMS	NUHOMS 24PT1	1029	A0/A4	17	395	161
San Onofre	Advanced NUHOMS	NUHOMS 24PT4	1029	A1/A4	33	792	323
Seabrook	NUHOMS HD	NUHOMS 32PTH	1030	A0/A1	6	960	438
Seabrook	NUHOMS HD	NUHOMS 32PTH	1030	A1	8		
Seabrook	NUHOMS HD	NUHOMS 32PTH	1030	A2	16		
Sequoyah	HI-STORM 100	MPC-32	1014	unknown	3	1,408	640
Sequoyah	HI-STORM 100	MPC-32	1014	A1	5		
Sequoyah	HI-STORM 100	MPC-32	1014	A2	12		
Sequoyah	HI-STORM 100	MPC-32	1014	A5	24		
Sequoyah	HI-STORM FW	MPC-37	1032	A0/A0R1	5	960	437
Sequoyah	HI-STORM FW	MPC-37	1032	A0R1	10		
Sequoyah	HI-STORM FW	MPC-37	1032	A3	11		

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
South Texas	HI-STORM FW	MPC-37	1032	A2	22	814	433
V. C. Summer	HI-STORM FW	MPC-37	1032	A0/A0R1	4	444	186
V. C. Summer	HI-STORM FW	MPC-37	1032	A0R1	8		
Surry	NUHOMS HD	NUHOMS 32PTH	1030	A0	12	1,280	587
Surry	NUHOMS HD	NUHOMS 32PTH	1030	A1	28		
Surry	NUHOMS EOS	NUHOMS 37PTH	1042	A1	2	74	34
Susquehanna	Standardized NUHOMS	NUHOMS 52B	1004	unknown	27	1,404	249
Susquehanna	Standardized NUHOMS	NUHOMS 61BT	1004	unknown	22	2,928	520
Susquehanna	Standardized NUHOMS	NUHOMS 61BT	1004	A9	26		
Susquehanna	Standardized NUHOMS	NUHOMS 61BTH	1004	A10	15	2,806	498
Susquehanna	NUHOMS HSM 102	NUHOMS 61BTH	1004	unknown	3		
Susquehanna	NUHOMS HSM 102	NUHOMS 61BTH	1004	A10	6		
Susquehanna	NUHOMS HSM 102	NUHOMS 61BTH	1004	A10R1	6		
Susquehanna	NUHOMS HSM 102	NUHOMS 61BTH	1004	A14	16		
Susquehanna	HI-STORM FW	MPC-89	1032	A5	6	534	95
Three Mile Island	NAC-MAGNASTOR	TSC-37	1031	A9	46	1,663	810
Trojan	HI-STORM TranStor	MPC-24E (TranStor)	SNM-2509	S.L.	29	790	363
Trojan	HI-STORM TranStor	MPC-24EF (TranStor)	SNM-2509	S.L.	5		
Turkey Point	NUHOMS HD	NUHOMS 32PTH	1030	A1	18	1,216	549
Turkey Point	NUHOMS HD	NUHOMS 32PTH	1030	unknown	2		
Turkey Point	NUHOMS HD	NUHOMS 32PTH	1030	A2	18		
Vermont Yankee	HI-STORM 100	MPC-68	1014	A2	13	1,564	297
Vermont Yankee	HI-STORM 100 S-B	MPC-68	1014	A10	10		
Vermont Yankee	HI-STORM 100 S-B	MPC-68M	1014	A10	35	2,316	440

Reactor	Cask System[1]	Canister[2]	License or CoC	Amendment[3]	Canisters Loaded[4]	Assemblies[4]	MTiHM[4]
Vogtle	HI-STORM 100	MPC-32	1014	A7	6	1,696	717
Vogtle	HI-STORM 100	MPC-32	1014	A9/A9R1	10		
Vogtle	HI-STORM 100	MPC-32	1014	A9R1	37		
Waterford	HI-STORM 100	MPC-32	1014	A5	23	992	426
Waterford	HI-STORM 100	MPC-32	1014	A13	8		
Watts Bar	HI-STORM FW	MPC-37	1032	unknown	5	962	444
Watts Bar	HI-STORM FW	MPC-37	1032	A0/A0R1	6		
Watts Bar	HI-STORM FW	MPC-37	1032	A0R1	15		
Wolf Creek	NUHOMS EOS	NUHOMS 37PTH	storage & transportation	A1	5	185	84
Yankee Rowe	NAC-MPC	Yankee-MPC	1025	A1/A1R5	8	533	123
Yankee Rowe	NAC-MPC	Yankee-MPC	1025	A2/A2R5	7		
Zion	NAC-MAGNASTOR	TSC-37	1031	A3/A6	61	2,226	1,023
Grand Total					**3,627**	**158,239**	**45,769**

1. Some Cask Systems are listed twice for a given reactor since more than one canister type is used for a given system.
2. The specific Canister variant is listed where known, otherwise a more generic canister description is provided.
3. A(Z)/A2 where: A=Amendment number at the time of canister loading; Z = number of canisters loaded under amendment A if different from the total number of same type canisters are loaded; A2 is the current amendment the canisters are managed under, if different from A. For example, “0(6)/0R1” indicates 6 canisters were loaded under amendment 0 and are currently managed under amendment 0 Rev 1.

   S.L is used for canisters loaded under a specific license requirement.

   Unknown amendment number indicates either the information is not supplied in the cask registration letter send to the NRC or the cask registration letter could not be found in the ADAMS database.
4. The inventory is as of December 31, 2022 as described in the report.
5. Now Westinghouse

APPENDIX C – REFERENCE SCENARIO: NO REPLACEMENT NUCLEAR GENERATION FORECAST – DISCHARGED SNF BY REACTOR

Table C.1 No Replacement Nuclear Generation SNF Forecast: Discharges by Operating Reactor

	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
Reactor [Unit]	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Arkansas Nuclear One 1	1,931	908.52	583	285.26	2,514	1,194
Arkansas Nuclear One 2	2,157	910.64	1,057	453.33	3,214	1,364
Beaver Valley 1	1,733	800.17	653	301.26	2,386	1,101
Beaver Valley 2	1,381	638.18	1,165	537.7	2,546	1,176
Braidwood 1	1,963	825.32	1,558	650.96	3,521	1,476
Braidwood 2	1,929	810.23	1,723	718.32	3,652	1,529
Browns Ferry 1	4,004	728.08	2,214	395.1	6,218	1,123
Browns Ferry 2	5,936	1069.47	2,450	436.03	8,386	1,506
Browns Ferry 3	5,210	934.81	2,516	447.14	7,726	1,382
Brunswick 1	4,749	854.9	1,994	357.33	6,743	1,212
Brunswick 2	4,662	840.47	1,922	344.66	6,584	1,185
Byron 1	2,085	876.82	1,558	650.79	3,643	1,528
Byron 2	2,006	843.41	1,633	682.38	3,639	1,526
Callaway	2,193	927.76	1,411	588.89	3,604	1,517
Calvert Cliffs 1	2,215	873.15	707	287.75	2,922	1,161
Calvert Cliffs 2	2,044	804.14	896	364.89	2,940	1,169
Catawba 1	1,883	844.55	1,271	579.53	3,154	1,424
Catawba 2	1,879	841.78	1,194	544.56	3,073	1,386
Clinton 1	4,308	783.48	3,184	576.79	7,492	1,360
Columbia	4,864	861.82	3,244	578.37	8,108	1,440
Comanche Peak 1	1,925	815.37	1,849	781.29	3,774	1,597
Comanche Peak 2	1,704	712.84	2,033	857.26	3,737	1,570
Cook 1	2,339	1055.03	889	402.13	3,228	1,457
Cook 2	2,173	920.26	940	392.29	3,113	1,313
Cooper Station	4,512	824.16	1,373	246.87	5,885	1,071
Davis-Besse	1,510	719.98	716	348.55	2,226	1,069
Diablo Canyon 1	1,928	827.71	658	277.81	2,586	1,106

Reactor [Unit]	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Diablo Canyon 2	1,933	829.34	663	279.88	2,596	1,109
Dresden 2	6,209	1,104	1,468	253.64	7,677	1,358
Dresden 3	5,428	955	1,471	254.11	6,899	1,209
Enrico Fermi 2	4,212	745.73	3,569	641.99	7,781	1,388
Farley 1	1,981	867.04	751	317.61	2,732	1,185
Farley 2	1,827	796.3	949	401.19	2,776	1,197
Fitzpatrick	4,604	837.99	1,754	319.5	6,358	1,157
Grand Gulf 1	6,252	1116.38	4,364	784.53	10,616	1,901
Harris 1	1,516	688.22	1,177	537.1	2,693	1,225
Hatch 1	5,286	954.95	1,695	304.03	6,981	1,259
Hatch 2	4,969	895.07	2,352	421.67	7,321	1,317
HB Robinson 2	1,911	828.11	413	179.64	2,324	1007.75
Hope Creek	5,312	957	4,049	727.31	9,361	1,684
LaSalle County 1	5,084	916.85	3,464	618	8,548	1,535
LaSalle County 2	4,912	883.01	4,009	714.31	8,921	1,597
Limerick 1	5,318	954.21	3,544	635.01	8,862	1,589
Limerick 2	4,737	851.03	4,300	772.81	9,037	1,624
McGuire 1	2,021	909.9	1,057	482.07	3,078	1,392
McGuire 2	1,968	885.32	1,129	514.71	3,097	1,400
Millstone 2	1,923	760.37	809	322.86	2,732	1,083
Millstone 3	1,716	785.21	1,468	669.29	3,184	1,455
Monticello	3,940	699.34	1,104	192.65	5,044	891.99
Nine Mile Point 1	4,052	722.02	976	166.42	5,028	888.44
Nine Mile Point 2	4,984	885.72	4,196	751.64	9,180	1,637
North Anna 1	1,810	837.82	807	375.56	2,617	1,213
North Anna 2	1,819	843.02	883	411.28	2,702	1,254
Oconee 1	2,010	943.76	449	211.02	2,459	1,155
Oconee 2	1,902	894.07	527	253.04	2,429	1,147
Oconee 3	1,923	903.92	547	258.02	2,470	1,162
Palo Verde 1	2,256	971.19	1,816	794.21	4,072	1,765
Palo Verde 2	2,273	978.39	1,921	840.73	4,194	1,819
Palo Verde 3	2,296	990.37	2,001	875.63	4,297	1,866
Peach Bottom 2	6,548	1,184	5,084	914	11,632	2,098
Peach Bottom 3	6,256	1,131	5,324	957.92	11,580	2,089
Perry 1	4,932	890.67	4,120	737.62	9,052	1,628

Reactor [Unit]	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Point Beach 1	1,478	568.39	356	139.84	1,834	708.23
Point Beach 2	1,359	521.83	450	176.99	1,809	698.82
Prairie Island 1	1,542	574.01	381	141.3	1,923	715.31
Prairie Island 2	1,545	574.07	439	163.36	1,984	737.43
Quad Cities 1	5,571	985.3	1,969	340.38	7,540	1,326
Quad Cities 2	5,388	954.7	1,959	338.38	7,347	1,293
R. E. Ginna	1,597	595.66	301	119.07	1,898	714.73
River Bend 1	4,572	815.84	3,099	555.92	7,671	1,372
Salem 1	1,964	901.19	868	396.01	2,832	1,297
Salem 2	1,801	825.73	1,093	498.08	2,894	1,324
Seabrook	1,687	772.07	1,633	744.73	3,320	1,517
Sequoyah 1	1,962	896	1,117	507.52	3,079	1,404
Sequoyah 2	1,956	894.31	1,165	529.41	3,121	1,424
South Texas 1	1,624	869.91	1,409	749.47	3,033	1,619
South Texas 2	1,613	863.24	1,502	799.91	3,115	1,663
St. Lucie 1	2,409	937.8	905	360.28	3,314	1,298
St. Lucie 2	1,945	760.12	1,449	579.1	3,394	1,339
Summer	1,700	724.59	1,028	429.52	2,728	1,154
Surry 1	1,883	862.96	1,373	629.23	3,256	1,492
Surry 2	1,840	843.77	1,477	676.69	3,317	1,520
Susquehanna 1	5,939	1048.61	3,590	637.43	9,529	1,686
Susquehanna 2	5,542	978.54	4,185	742.53	9,727	1,721
Turkey Point 3	1,721	782.35	1,477	666.23	3,198	1,449
Turkey Point 4	1,733	787.9	1,517	684.38	3,250	1,472
Vogtle 1	2,071	892.34	1,649	697.33	3,720	1,590
Vogtle 2	1,880	805.87	1,723	728.17	3,603	1,534
Waterford 3	2,246	948.25	1,702	731.16	3,948	1,679
Watts Bar 1	1,398	643.04	2,085	959.11	3,483	1,602
Watts Bar 2	354	163.4	2,713	1,258	3,067	1,421
Wolf Creek 1	2,012	923.02	1,341	611.83	3,353	1,535
Totals	**271,675**	**77,964**	**161,556**	**47,570**	**433,231**	**125,533**

*Note: This table **does not** reflect SNF transfers.

Table C.2 No Replacement Nuclear Generation SNF Discharges by Reactor for Reactors Shutdown Prior to 2000

	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
Reactor [Unit]	**Assy.**	**Initial Uranium (MT)**	**Assy.**	**Initial Uranium (MT)**	**Assy.**	**Initial Uranium (MT)**
Big Rock Point	526	69.4	-	-	526	69.4
Haddam Neck	1,102	448.42	-	-	1,102	448.42
Humboldt Bay	390	28.94	-	-	390	28.94
La Crosse	334	38.09	-	-	334	38.09
Maine Yankee	1,434	542.26	-	-	1,434	542.26
Rancho Seco	493	228.38	-	-	493	228.38
Trojan	790	359.26	-	-	790	359.26
Yankee Rowe	533	127.13	-	-	533	127.13
Zion 1	1,143	523.94	-	-	1,143	523.94
Zion 2	1,083	495.47	-	-	1,083	495.47
Totals	**7,828**	**2,861.28**	-	-	**7,828**	**2,861.28**

*Note: This table **does not** reflect SNF transfers.

Table C.3 No Replacement Nuclear Generation SNF Discharges by Reactor for Shutdown Reactors at Group B Sites

	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
Reactor [Unit]	**Assy.**	**Initial Uranium (MT)**	**Assy.**	**Initial Uranium (MT)**	**Assy.**	**Initial Uranium (MT)**
Dresden 1	892	90.87	-	-	892	90.87
Millstone 1	2,884	525.62	-	-	2,884	525.62
Totals	**3,776**	**616.49**	-	-	**3,776**	**616.49**

*Note: This table **does not** reflect SNF transfers.

Table C.4 No Replacement Nuclear Generation SNF Discharges by Reactor Site for Reactors Shutdown after 2000

	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
Reactor [Unit]	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Crystal River	1,243	582.24	-	-	1,243	582.24
Duane Arnold	3,648	662.64	-	-	3,648	662.64
Fort Calhoun	1,264	465.98	-	-	1,264	465.98
Indian Point	4,001	1,776.62	-	-	4,001	1,776.62
Kewaunee	1,335	518.7	-	-	1,335	518.7
Oyster Creek	4,504	802.24	-	-	4,504	802.24
Palisades	2,053	850.48	-	-	2,053	850.48
Pilgrim	4,116	734.82	-	-	4,116	734.82
San Onofre	4,125	1,707.77	-	-	4,125	1,707.77
Three Mile Island	1,663	786.49	-	-	1,663	786.49
Vermont Yankee	3,880	705.66	-	-	3,880	705.66
Totals	31,832	9,594	-	-	31,832	9,594

*Note: This table **does not** reflect SNF transfers.

Table C.5 No Replacement Nuclear Generation SNF Discharges by Reactor Site (Totals)

	SNF Discharges as of 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF	
Reactor [Unit]	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Operating Reactors at Group B and C Sites	271,675	77,964	161,556	47,569	433,231	125,534
Shutdown Reactors at Group B Sites	3,776	616.49	-	-	3,776	616.49
Shutdown Reactors at Group A Sites (Pre-2000)	7,828	2,861	-	-	7,828	2,861
Shutdown Reactors in Group A Sites (Post-2000)	31,832	9,594.00	-	-	31,832	9,594.00
Grand Total	315,111	91,035	161,556	47,569	476,667	138,605

*Note: This table **does not** reflect SNF transfers.

APPENDIX D – REFERENCE SCENARIO: NO REPLACEMENT NUCLEAR GENERATION FORECAST – DISCHARGED SNF BY STATE

Table D.1 Estimated and Projected Inventory at NPR Sites and Morris Site by State

State	SNF Discharged Prior to 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF		Past Inter-State Transfer Adjustments		State's Forecasted Remaining Inventory	
	Assy.	Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)
Alabama	18,958	4,396	8,880	1,997	27,838	6,393	0	0	27,838	6,393
Arizona	6,825	2,940	5,738	2,511	12,563	5,451	0	0	12,563	5,451
Arkansas	4,088	1,819	1,640	738.59	5,728	2,558	0	0	5,728	2,558
California	8,869	3,622	1,321	557.69	10,190	4,180	-270	-98	9,920	4,082
Connecticut	7,625	2,520	2,277	992.15	9,902	3,512	-83	-35	9,819	3,477
Florida	9,051	3,850	5,348	2,290	14,399	6,140	-18	-8	14,381	6,132
Georgia	14,206	3,548	7,419	2,151	21,625	5,699	0	0	21,625	5,699
Illinois	48,001	11,048	23,996	5,798	71,997	16,846	2,461	529	74,458	17,375
Iowa	3,648	662.64	0	0	3,648	662.64	0	0	3,648	662.64
Kansas	2,012	923.02	1,341	611.83	3,353	1,535	0	0	3,353	1,535
Louisiana	6,818	1,764	4,801	1,287	11,619	3,051	0	0	11,619	3,051
Maine	1,434	542.26	0	0	1,434	542.26	0	0	1,434	542.26
Maryland	4,259	1,677	1,603	652.64	5,862	2,330	-2	-1	5,860	2,329
Massachusetts	4,649	861.95	0	0	4,649	861.95	0	0	4,649	861.95
Michigan	11,303	3,641	5,398	1,436	16,701	5,077	-85	-11	16,616	5,066
Minnesota	7,027	1,847	1,924	497.32	8,951	2,345	-1,058	-198	7,893	2,147
Mississippi	6,252	1116.38	4,364	784.53	10,616	1,901	0	0	10,616	1,901

State	SNF Discharged Prior to 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF		Past Inter-State Transfer Adjustments		State's Forecasted Remaining Inventory	
	Assy.	Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)
Missouri	2,193	927.76	1,411	588.89	3,604	1,517	0	0	3,604	1,517
Nebraska	5,776	1,290	1,373	246.87	7,149	1,537	-1,056	-198	6,093	1,339
New Hampshire	1,687	772.07	1,633	744.73	3,320	1,517	0	0	3,320	1,517
New Jersey	13,581	3,486	6,010	1,621	19,591	5,108	0	0	19,591	5,108
New York	19,238	4,818	7,227	1,357	26,465	6,175	-40	-15	26,425	6,160
North Carolina	14,916	4,179	7,279	2,236	22,195	6,415	1,108	492	23,303	6,907
Ohio	6,442	1,611	4,836	1,086	11,278	2,697	0	0	11,278	2,697
Oregon	790	359.26	0	0	790	359.26	0	0	790	359.26
Pennsylvania	39,117	8,373	27,845	5,499	66,962	13,871	-2	0	66,960	13,871
South Carolina	13,208	5,981	5,429	2,455	18,637	8,436	-1,109	-492	17,528	7,944
Tennessee	5,670	2,597	7,080	3,254	12,750	5,850	0	0	12,750	5,850
Texas	6,866	3,261	6,793	3,188	13,659	6,449	0	0	13,659	6,449
Vermont	3,880	705.66	0	0	3,880	705.66	0	0	3,880	705.66
Virginia	7,352	3,388	4,540	2,093	11,892	5,480	-69	-31	11,823	5,449
Washington	4,864	861.82	3,244	578.37	8,108	1,440	0	0	8,108	1,440
Wisconsin	4,506	1,647	806	316.83	5,312	1,964	-10	-4	5,302	1,960
Totals	**315,111**	**91,036**	**161,556**	**47,569**	**476,667**	**138,605**	**-233**	**-70**	**476,434**	**138,535**

* Total Interstate Transfer reflects the amount of SNF reported in GC-859 as being transferred to DOE, this is not the total quantity of NPR SNF in DOE possession, see Section 3.1.2.

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.2 Inventory at NPR Sites and Morris Site by State and by Storage Configuration at the end of 2022

State	Dry Inventory			Pool Inventory		Site Inventory	
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Alabama	10,491	2,364	165	8,467	2,032	18,958	4,396
Arizona	4,314	1,847	170	2,511	1,093	6,825	2,940
Arkansas	2,752	1,210	102	1,336	609.57	4,088	1,819
California	6,594	2,676	207	2,005	847.92	8,599	3,524
Connecticut	2,587	1,057	89	4,955	1,428	7,542	2,485
Florida	4,379	1,889	137	4,654	1,953	9,033	3,842
Georgia	8,088	1,889	147	6,118	1,659	14,206	3,548
Illinois	20,954	4,971	378	29,508	6,607	50,462	11,577
Iowa	3,648	663	60	0	0	3,648	663
Kansas	185	84	5	1,827	838.63	2,012	923
Louisiana	3,508	862	68	3,310	902.21	6,818	1,764
Maine	1,434	542	60	0	0	1,434	542.26
Maryland	2,846	1,106	100	1,411	570.8	4,257	1,677
Massachusetts	4,649	862	77	0	0	4,649	862
Michigan	5,184	1,679	136	6,034	1,951	11,218	3,629
Minnesota	3,830	1,052	80	2,139	596.9	5,969	1,649
Mississippi	2,992	525	44	3,260	591.65	6,252	1,116
Missouri	1,110	466	30	1,083	461.94	2,193	928
Nebraska	3,094	795	70	1,626	296.59	4,720	1,092
New Hampshire	960	440	30	727	332.55	1,687	772.07
New Jersey	8,256	1,880	146	5,325	1,606	13,581	3,486
New York	8,397	2,211	173	10,801	2,591	19,198	4,803
North Carolina	5,459	1,585	125	10,565	3,086	16,024	4,671
Ohio	2,373	578	42	4,069	1,032	6,442	1,611
Oregon	790	359	34	0	0	790	359
Pennsylvania	21,288	4,490	358	17,827	3,882	39,115	8,372
South Carolina	7,010	3,200	275	5,089	2,289	12,099	5,488
Tennessee	3,332	1,529	96	2,338	1,067	5,670	2,597
Texas	2,542	1,156	76	4,324	2,105	6,866	3,261
Vermont	3,880	706	58	0	0	3,880	706

State	Dry Inventory			Pool Inventory		Site Inventory	
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Virginia	5,221	2,407	171	2,062	949	7,283	3,356
Washington	3,672	646	54	1,192	216	4,864	862
Wisconsin	3,362	1,200	99	1,134	444	4,496	1,643
Totals	**169,181**	**48,926**	**3,862**	**145,697**	**42,037**	**314,878**	**90,963**

Excludes SNF from TMI Unit 2 (in ID) and Fort St. Vrain (in ID and CO).

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.3 Pool Inventory by Current Group and by State at the end of 2022

State	A		B		C		F		Totals	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Alabama					8,467	2,032			8,467	2,032
Arizona					2,511	1,093			2,511	1,093
Arkansas					1,336	610			1,336	609.57
California					2,005	848			2,005	848
Connecticut			4,955	1,428					4,955	1,428
Florida					4,654	1,953			4,654	1,953
Georgia					6,118	1,659			6,118	1,659
Illinois			5,519	973	20,772	4,959	3,217	674	29,508	6,606
Iowa									0	0
Kansas					1,827	839			1,827	839
Louisiana					3,310	902			3,310	902
Maine									0	0
Maryland					1,411	571			1,411	571
Massachusetts									0	0
Michigan	698	298			5,336	1653			6,034	1951
Minnesota					2,139	597			2,139	597
Mississippi					3,260	592			3,260	592
Missouri					1,083	462			1,083	462
Nebraska					1626	297			1626	297
New Hampshire					727	333			727	333

State	A		B		C		F		Totals	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
New Jersey					5,325	1,606			5,325	1,606
New York	1558	707			9,243	1,885			10,801	2,591
North Carolina					10,565	3,086			10,565	3,086
Ohio					4069	1032			4069	1033
Oregon									0	0
Pennsylvania					17,827	3,882			17,827	3,882
South Carolina					5,089	2,289			5,089	2,289
Tennessee					2,338	1,067			2,338	1,067
Texas					4324	2105			4324	2105
Vermont									0	0
Virginia					2,062	950			2,062	949
Washington					1,192	216			1,192	216
Wisconsin					1,134	444			1,134	444
Totals	**2256**	**1004**	**10474**	**2400**	**129750**	**37958**	**3217**	**674**	**145697**	**42037**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.4 Dry Inventory by Current Group and by State at the end of 2022

State	A			B			C			Totals		
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks
Alabama							10,491	2,363.87	165	10,491	2,364	165
Arizona							4,314	1,847.27	170	4,314	1,847	170
Arkansas							2,752	1,209.59	102	2,752	1,210	102
California	4,738	1866.68	149				1,856	809.13	58	6,594	2,676	207
Connecticut	1,019	413.66	40	1568	643.58	49				2,587	1,057	89
Florida	1,243	582.24	39				3,136	1,306.90	98	4,379	1,889	137
Georgia							8,088	1,889.37	147	8,088	1,889	147
Illinois	2,226	1019.41	61	6254	1031.41	92	12,474	2,919.76	225	20,954	4,971	378
Iowa	3,648	662.64	60							3,648	662.64	60
Kansas							185	84.39	5	185	84.39	5
Louisiana							3,508	861.88	68	3,508	861.88	68
Maine	1,434	542.26	60							1,434	542.26	60
Maryland							2,846	1,105.76	100	2,846	1,106	100
Massachusetts	4,649	861.95	77							4,649	861.95	77
Michigan	1,796	610.6	56				3,388	1,068.22	80	5,184	1,679	136
Minnesota							3,830	1,052.33	80	3,830	1,052	80
Mississippi							2,992	524.73	44	2,992	524.73	44
Missouri							1,110	465.82	30	1,110	465.82	30
Nebraska	1,264	465.98	40				1,830	329.17	30	3,094	795.15	70
New Hampshire							960	439.52	30	960	439.52	30

State	A			B			C			Totals		
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks
New Jersey	4,504	802.24	67				3,752	1,078.17	79	8,256	1,880	146
New York	2,443	1070.01	77				5,954	1,141.43	96	8,397	2,211	173
North Carolina							5,459	1,585.22	125	5,459	1,585	125
Ohio							2,373	578.17	42	2,373	578.17	42
Oregon	790	359.26	34							790	359.26	34
Pennsylvania	1,663	786.49	46				19,625	3,703.70	312	21,288	4,490	358
South Carolina							7,010	3,199.83	275	7,010	3,200	275
Tennessee							3,332	1,529.38	96	3,332	1,529	96
Texas							2,542	1,156.36	76	2,542	1,156	76
Vermont	3,880	705.66	58							3,880	705.66	58
Virginia							5,221	2,406.68	171	5,221	2,407	171
Washington							3,672	645.63	54	3,672	645.63	54
Wisconsin	1,668	556.67	43				1,694	643.09	56	3,362	1,200	99
Totals	**36,965**	**11,306**	**907**	**7,822**	**1,675**	**141**	**124,394**	**35,945**	**2,814**	**169,181**	**48,926**	**3,862**

Excludes SNF from TMI Unit 2 (in ID) and Fort St. Vrain (in ID and CO).
SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.5 Total Inventory of Group A Sites by State at the end of 2022

State	A1		A2		A3		A	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
California	4,738	1,867			0	0	4,738	1,867
Connecticut	1,019	413.66			0	0	1,019	413.66
Florida	1,243	582.24			0	0	1,243	582.24
Illinois	2,226	1,019			0	0	2,226	1,019
Iowa	3,648	662.64			0	0	3,648	662.64
Maine	1,434	542.26			0	0	1,434	542.26
Massachusetts	4,649	861.95			0	0	4,649	861.95
Michigan	441	57.91	2053	850.48	0	0	2,494	908.39
Nebraska	1,264	465.98			0	0	1,264	465.98
New Jersey	4,504	802.24			0	0	4,504	802.24
New York	0	0	4,001	1,777	0	0	4,001	1,777
Oregon	790	359.26			0	0	790	359.26
Pennsylvania	1,663	786.49			0	0	1,663	786.49
Vermont	3,880	705.66			0	0	3,880	705.66
Wisconsin	1,668	556.67			0	0	1,668	556.67
Totals	**33,167**	**9,683**	**6,054**	**2,627**	**0**	**0**	**39,221**	**12,310**

Excludes SNF from Fort St. Vrain at DOE-Managed ISFSI in Colorado.
SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.6 Total Inventory of Group B Sites by State at the end of 2022

State	B2		B3		B	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Connecticut	6,523	2,071	0	0	6,523	2,071
Illinois	11,773	2,004	0	0	11,773	2,004
Totals	**18,296**	**4,075**	**0**	**0**	**18,296**	**4,075**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.7 Total Inventory of Group C Sites by State at the end of 2022

State	C2		C3		C	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Alabama	18,958	4,396	-	-	18,958	4,396
Arizona	6,825	2,940	-	-	6,825	2,940
Arkansas	4,088	1,819	-	-	4,088	1,819
California	3,861	1,657	-	-	3,861	1,657
Florida	7,790	3,260	-	-	7,790	3,260
Georgia	14,206	3,548	-	-	14,206	3,548
Illinois	33,246	7,879	-	-	33,246	7,879
Kansas	2,012	923.02	-	-	2,012	923.02
Louisiana	6,818	1,764	-	-	6,818	1,764
Maryland	4,257	1,677	-	-	4,257	1,677
Michigan	8,724	2,721	-	-	8,724	2,721
Minnesota	5,969	1,649	-	-	5,969	1,649
Mississippi	6,252	1,116	-	-	6,252	1,116
Missouri	2,193	927.76	-	-	2,193	927.76
Nebraska	3,456	625.76	-	-	3,456	625.76
New Hampshire	1,687	772.07	-	-	1,687	772.07
New Jersey	9,077	2,684	-	-	9,077	2,684
New York	15,197	3,026	-	-	15,197	3,026
North Carolina	9,607	2,966	6,417	1,704	16,024	4,671
Ohio	6,442	1,611	-	-	6,442	1,611
Pennsylvania	37,452	7,586	-	-	37,452	7,586
South Carolina	12,099	5,488	-	-	12,099	5,488
Tennessee	5,670	2,597	-	-	5,670	2,597
Texas	6,866	3,261	-	-	6,866	3,261
Virginia	7,283	3,356	-	-	7,283	3,356
Washington	4,864	861.82	-	-	4,864	861.82
Wisconsin	2,828	1,087	-	-	2,828	1,087
Totals	**247,727**	**72,199**	**6,417**	**1,704**	**254,144**	**73,903**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.8 Total Inventory of Group F Site by State at the end of 2022

State	F	
	Assy.	Initial Uranium (MT)
Illinois	3,217	674
Totals	**3,217**	**674**

Table D.9 Total Inventory by Current Group and by State at the end of 2022

State	A		B		C		F		Totals	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Alabama	-	-	-	-	18,958	4,396	-	-	18,958	4,396
Arizona	-	-	-	-	6,825	2,940	-	-	6,825	2,940
Arkansas	-	-	-	-	4,088	1,819	-	-	4,088	1,819
California	4,738	1,867	-	-	3,861	1,657	-	-	8,681	3,558
Connecticut	1,019	414	6,523	2,071	-	-	-	-	7,542	2,485
Florida	1,243	582	-	-	7,790	3,260	-	-	9,033	3,842
Georgia	-	-	-	-	14,206	3,548	-	-	14,206	3,548
Illinois	2,226	1,019	11,773	2,004	33,246	7,879	3,217	674	50,462	11,576
Iowa	3,648	663	-	-	-	-	-	-	3,648	663
Kansas	-	-	-	-	2,012	923	-	-	2,012	923
Louisiana	-	-	-	-	6,818	1,764	-	-	6,818	1,764
Maine	1,434	542	-	-	-	-	-	-	1,434	542
Maryland	-	-	-	-	4,257	1,677	-	-	4,257	1,677

State	A		B		C		F		Totals	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
Massachusetts	4,649	862	-	-	-	-	-	-	4,649	862
Michigan	2,494	908	-	-	8,724	2,721	-	-	11,218	3,629
Minnesota	-	-	-	-	5,969	1,649	-	-	5,969	1,649
Mississippi	-	-	-	-	6,252	1,116	-	-	6,252	1,116
Missouri	-	-	-	-	2,193	928	-	-	2,193	928
Nebraska	1,264	466	-	-	3,456	626	-	-	4,720	1,092
New Hampshire	-	-	-	-	1,687	772	-	-	1,687	772
New Jersey	4,504	802	-	-	9,077	2,684	-	-	13,581	3,486
New York	4,001	1,777	-	-	15,197	3,026	-	-	19,028	4,762
North Carolina	-	-	-	-	16,024	4,670	-	-	16,024	4,670
Ohio	-	-	-	-	6,442	1,611	-	-	6,442	1,601
Oregon	790	359	-	-	-	-	-	-	790	359
Pennsylvania	1,663	786	-	-	37,452	7,586	-	-	39,115	8,371
South Carolina	-	-	-	-	12,099	5,488	-	-	12,099	5,488
Tennessee	-	-	-	-	5,670	2,597	-	-	5,670	2,597
Texas	-	-	-	-	6,866	3,261	-	-	6,866	3,261
Vermont	3,880	706	-	-	-	-	-	-	3,880	706
Virginia	-	-	-	-	7,283	3,356	-	-	7,283	3,356
Washington	-	-	-	-	4,864	862	-	-	4,864	862
Wisconsin	1,668	557	-	-	2,828	1,087	-	-	4,496	1,644
Totals	**39,221**	**12,310**	**18,296**	**4,075**	**254,144**	**73,903**	**3,217**	**674**	**314,878**	**90,963**

Excludes SNF from TMI Unit 2 (in ID) and Fort St. Vrain (in ID and CO).
SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table D.10 Projected Inventory by Current Group and by State through 2075

State	A		B		C		F		Totals	
	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)
Alabama					27,838	6,393			27,838	6,393
Arizona					12,563	5,451			12,563	5,451
Arkansas					5,728	2,558			5,728	2,558
California	4,738	1,867			5,182	2,215			9,920	4,081
Connecticut	1,019	413.66	8,800	3,063					9,819	3,477
Florida	1,243	582.24			13,138	5,550			14,381	6,132
Georgia					21,625	5,699			21,625	5,699
Illinois	2,226	1,019	14,712	2,512	54,303	13,169	3217	674	74,458	17,375
Iowa	3,648	662.64							3,648	662.64
Kansas					3,353	1,535			3,353	1,535
Louisiana					11,619	3,051			11,619	3,051
Maine	1,434	542.26							1,434	542.26
Maryland					5,860	2,329			5,860	2,329
Massachusetts	4,649	861.95							4,649	861.95
Michigan	2,494	908.39			14,122	4,157			16,616	5,066
Minnesota					7,893	2,147			7,893	2,147
Mississippi					10,616	1,901			10,616	1,901
Missouri					3,604	1,517			3,604	1,517
Nebraska	1,264	465.98			4,829	872.63			6,093	1,339
New Hampshire					3,320	1,517			3,320	1,517

State	A		B		C		F		Totals	
	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)
New Jersey	4,504	802.24			15,087	4,305			19,591	5,108
New York	4,001	1,777			22,424	4,383			26,425	6,159
North Carolina					23,303	6,907			23,303	6,907
Ohio					11,278	2,697			11,278	2,697
Oregon	790	359.26							790	359.26
Pennsylvania	1,663	786.49			65,297	13,084			66,960	13,871
South Carolina					17,528	7,944			17,528	7,944
Tennessee					12,750	5,850			12,750	5,850
Texas					13,659	6,449			13,659	6,449
Vermont	3,880	705.66							3,880	705.66
Virginia					11,823	5,449			11,823	5,449
Washington					8,108	1,440			8,108	1,440
Wisconsin	1,668	556.67			3,634	1,403			5,302	1,960
Total	**39,221**	**12,310**	**23,512**	**5,575**	**410,484**	**119,973**	**3217**	**674**	**476,434**	**138,532**

Excludes SNF from TMI Unit 2 (in ID) and Fort St. Vrain (in ID and CO).

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

APPENDIX E – REFERENCE SCENARIO: NO REPLACEMENT NUCLEAR GENERATION FORECAST – DISCHARGED SNF BY NRC REGION

Table E.1 Estimated and Projected Inventory by NRC Region

NRC Region	SNF Discharged Prior to 12/31/2022		Forecast Future Discharges 1/1/2023 to 12/31/2075		Total Projected Discharged SNF		Past Inter-Region Transfer Adjustments		Region's Forecasted Remaining Inventory	
	Assy.	Est. Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)	Assy.	Est. Initial Uranium (MT)
1	95,470	23,756	46,595	10,866	142,065	34,622	-127	-51.29	141,938	34,571
2	83,361	27,938	45,975	16,476	129,336	44,414	-88	-40.11	129,248	44,374
3	80,927	20,457	36,960	9,135	117,887	29,592	1,308	315.57	119,195	29,907
4	55,353	18,885	32,026	11,092	87,379	29,977	-1,324	-296.43	86,055	29,681
Totals*	**315,111**	**91,036**	**161,556**	**47,569**	**476,667**	**138,605**	**-231**	**-72**	**476,436**	**138,532**

* Total Interstate Transfer reflects the amount of SNF reported in GC-859 as being transferred to DOE, this is not the total quantity of NPR SNF in DOE possession, see Section 3.1.2..

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table E.2 Estimated Inventory by NRC Region and by Storage Configuration at the end of 2022

NRC Region	Dry Inventory			Pool Inventory		Site Inventory	
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
1	54,297	13,294	1,091	41,046	10,410	95,343	23,704
2	43,980	14,863	1,116	39,293	13,035	83,273	27,898
3	39,351	10,142	795	42,884	10,630	82,235	20,772
4	31,553	10,626	860	22,474	7,962	54,027	18,588
Totals	**169,181**	**48,926**	**3,862**	**145,697**	**42,037**	**314,878**	**90,963**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table E.3 Estimated Pool Inventory by Current Group and by NRC Region at the end of 2022

NRC Region	A		B		C		F		Totals	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
1	1,558	706.61	4,955	1,428	34,533	8,276			41,046	10,410
2	0	0			39,293	13,035			39,293	13,035
3	698	297.79	5,519	972.86	33,450	8,685	3,217	674	42,884	10,630
4	0	0			22,474	7,962			22,474	7,962
Totals	**2,256**	**1,004**	**10,474**	**2,400**	**129,750**	**37,958**	**3,217**	**674**	**145,697**	**42,037**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table E.4 Estimated Dry Inventory by Current Group and by NRC Region at the end of 2022

NRC Region	A			B			C			Totals		
	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks	Assy.	Initial Uranium (MT)	SNF Casks
1	19,592	5,182	425	1,568	644	49	33,137	7,469	617	54,297	13,295	1,091
2	1,243	582	39	0	0	0	42,737	14,281	1,077	43,980	14,864	1,116
3	9,338	2,849	220	6,254	1,031	92	23,759	6,262	483	39,351	10,142	795
4	6,792	2,692	223	0	0	0	24,761	7,934	637	31,553	10,625	860
Totals	**36,965**	**11,306**	**907**	**7,822**	**1,675**	**141**	**124,394**	**35,945**	**2,814**	**169,181**	**48,926**	**3,862**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table E.5 Estimated Total Inventory by Current Group and by NRC Region at the end of 2022

NRC Region	A		B		C		F		Totals	
	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)	Assy.	Initial Uranium (MT)
1	21,150	5,889	6,523	2,071	67,670	15,744			95,343	23,704
2	1,243	582.24			82,030	27,316			83,273	27,898
3	10,036	3,147	11,773	2,004	57,209	14,947	3,217	674	82,235	20,772
4	6,792	2,692			47,235	15,896			54,027	18,588
Totals	**39,221**	**12,310**	**18,296**	**4,075**	**254,144**	**73,903**	**3,217**	**674**	**314,878**	**90,963**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

Table E.6 Projected Inventory by Current Group and by NRC Region through 2075

NRC Region	A		B		C		F		Totals	
	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)	Assy.	Estimated Initial Uranium (MT)
1	21,150	5,889	8,800	3,063	111,988	25,619			141,938	34,571
2	1,243	582			128,005	43,792			129,248	44,374
3	10,036	3,147	14,712	2,512	91,230	23,574	3,217	674	119,195	29,907
4	6,792	2,692			79,261	26,989			86,053	29,681
Totals*	**39,221**	**12,310**	**23,512**	**5,575**	**410,484**	**119,973**	**3,217**	**674**	**476,434**	**138,532**

SNF mass in MT has been rounded to the nearest MT, totals are rounded sums of pre-rounded quantities.

APPENDIX F – REFERENCE SCENARIO: NO REPLACEMENT NUCLEAR GENERATION FORECAST – INVENTORY BY CONGRESSIONAL DISTRICT

Table F.1 Inventory by State and Congressional District as of December 31, 2022

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Alabama (AL)	5	Dale Strong (R)	Katie Boyd Britt (R)	Tommy Tuberville (R)	Browns Ferry	Comm Reactor	2732	-	-	2732
Alabama (AL)	2	Barry Moore (R)	Katie Boyd Britt (R)	Tommy Tuberville (R)	Farley	Comm Reactor	1663	-	-	1663
Arizona (AZ)	9	Paul Gosar (R)	Mark Kelly (D)	Kyrsten Sinema (D)	Palo Verde	Comm Reactor	2940	-	-	2940
Arkansas (AR)	4	Bruce Westerman (R)	John Boozman (R)	Tom Cotton (R)	Arkansas Nuclear One	Comm Reactor	1819	-	-	1819
California (CA)	49	Mike Levin (D)	Dianne Feinstein (D)	Alex Padilla (D)	**San Onofre**	Comm Reactor	1609	-	-	1609
California (CA)	2	Jared Huffman (D)	Dianne Feinstein (D)	Alex Padilla (D)	**Humboldt Bay**	Comm Reactor	29	-	-	29
California (CA)	24	Salud Carbajal (D)	Dianne Feinstein (D)	Alex Padilla (D)	Diablo Canyon	Comm Reactor	1657	-	-	1657
California (CA)	14	Eric Swalwell (D)	Dianne Feinstein (D)	Alex Padilla (D)	GE Vallecitos	Non DOE Research Reactor	-	-	-	a
California (CA)	7	Doris Matsui (D)	Dianne Feinstein (D)	Alex Padilla (D)	**Rancho Seco**	Comm Reactor	228	-	-	228
California (CA)	6	Ami Bera (D)	Dianne Feinstein (D)	Alex Padilla (D)	UC Davis/McClellan Nuclear Research Center	University Reactor	-	-	-	a
California (CA)	12	Barbara Lee (D)	Dianne Feinstein (D)	Alex Padilla (D)	Lawrence Berkeley	DOE National Lab	-	-	-	b

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
					National Laboratory					
California (CA)	10	Mark DeSaulnier (D)	Dianne Feinstein (D)	Alex Padilla (D)	Aerotest Research ARRR	Non DOE Research Reactor	-	-	-	a
California (CA)	14	Eric Swalwell (D)	Dianne Feinstein (D)	Alex Padilla (D)	Lawrence Livermore National Laboratory	DOE National Lab	-	-	-	b
California (CA)	16	Anna Eshoo (D)	Dianne Feinstein (D)	Alex Padilla (D)	SLAC National Accelerator Laboratory	DOE National Lab	-	-	-	b
California (CA)	47	Katie Porter (D)	Dianne Feinstein (D)	Alex Padilla (D)	University of California Irvine	University Reactor	-	-	-	a
Colorado (CO)	8	Yadira Caraveo (D)	Michael F. Bennet (D)	John W. Hickenlooper (D)	Fort St. Vrain	DOE Site	-	15	-	15
Colorado (CO)	7	Brittany Pettersen (D)	Michael F. Bennet (D)	John W. Hickenlooper (D)	National Renewable Energy Laboratory	DOE National Lab	-	-	-	b
Colorado (CO)	7	Brittany Pettersen (D)	Michael F. Bennet (D)	John W. Hickenlooper (D)	U.S. Geological Survey GSTR	Non DOE Research Reactor	-	-	-	a
Connecticut (CT)	2	Joe Courtney (D)	Richard Blumenthal (D)	Christopher Murphy (D)	**Haddam Neck**	Comm Reactor	414	-	-	414
Connecticut (CT)	2	Joe Courtney (D)	Richard Blumenthal (D)	Christopher Murphy (D)	Millstone	Comm Reactor	2071	-	-	2071
Florida (FL)	12	Gus Bilirakis (R)	Marco Rubio (R)	Rick Scott (R)	**Crystal River**	Comm Reactor	582	-	-	582
Florida (FL)	28	Carlos Gimenez (R)	Marco Rubio (R)	Rick Scott (R)	Turkey Point	Comm Reactor	1562	-	-	1562
Florida (FL)	21	Brian Mast (R)	Marco Rubio (R)	Rick Scott (R)	Saint Lucie	Comm Reactor	1698	-	-	1698

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Florida (FL)	3	Kat Cammack (R)	Marco Rubio (R)	Rick Scott (R)	University of Florida UFTR	University Reactor	-	-	-	a
Georgia (GA)	12	Rick Allen (R)	Jon Ossoff (D)	Raphael G. Warnock (D)	Vogtle	Comm Reactor	1698	-	-	1698
Georgia (GA)	1	Earl Carter (R)	Jon Ossoff (D)	Raphael G. Warnock (D)	Hatch	Comm Reactor	1850	-	-	1850
Idaho (ID)	2	Michael Simpson (R)	Mike Crapo (R)	James E. Risch (R)	Idaho National Engineering Environmental Lab	DOE National Lab	-	270	1,900	2,170
Idaho (ID)	2	Michael Simpson (R)	Mike Crapo (R)	James E. Risch (R)	Idaho National Lab - Navy	DOE National Lab	-	39	-	39
Idaho (ID)	2	Michael Simpson (R)	Mike Crapo (R)	James E. Risch (R)	Idaho State University AGN-201	University Reactor	-	-	-	a
Illinois (IL)	15	Mary Miller (R)	Tammy Duckworth (D)	Richard J. Durbin (D)	Clinton	Comm Reactor	783	-	-	783
Illinois (IL)	17	Eric Sorensen (D)	Tammy Duckworth (D)	Richard J. Durbin (D)	Quad Cities	Comm Reactor	1940	-	-	1940
Illinois (IL)	16	Darin LaHood (R)	Tammy Duckworth (D)	Richard J. Durbin (D)	La Salle	Comm Reactor	1800	-	-	1800
Illinois (IL)	16	Darin LaHood (R)	Tammy Duckworth (D)	Richard J. Durbin (D)	Byron	Comm Reactor	1720	-	-	1720
Illinois (IL)	16	Darin LaHood (R)	Tammy Duckworth (D)	Richard J. Durbin (D)	Dresden	Comm Reactor	2004	-	-	2004
Illinois (IL)	16	Darin LaHood (R)	Tammy Duckworth (D)	Richard J. Durbin (D)	Morris	Non DOE site	674	-	-	674
Illinois (IL)	1	Jonathan Jackson (D)	Tammy Duckworth (D)	Richard J. Durbin (D)	Braidwood	Comm Reactor	1636	-	-	1636

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Illinois (IL)	10	Bradley Schneider (D)	Tammy Duckworth (D)	Richard J. Durbin (D)	Zion	Comm Reactor	1,019	-	-	1,019
Illinois (IL)	11	Bill Foster (D)	Tammy Duckworth (D)	Richard J. Durbin (D)	Argonne National Laboratory	DOE National Lab	-	-	-	b
Illinois (IL)	3	Delia Ramirez (D)	Tammy Duckworth (D)	Richard J. Durbin (D)	Fermi National Accelerator National Laboratory	DOE National Lab	-	-	-	b
Indiana (IN)	4	James Baird (R)	Mike Braun (R)	Todd Young (R)	Purdue University PUR-1	University Reactor	-	-	-	a
Iowa (IA)	2	Ashley Hinson (R)	Joni Ernst (R)	Chuck Grassley (R)	Duane Arnold	Comm Reactor	663	-	-	663
Iowa (IA)	4	Randy Feenstra (R)	Joni Ernst (R)	Chuck Grassley (R)	Ames Laboratory (DOE Site)	DOE National Lab	-	-	-	b
Kansas (KS)	2	Jake LaTurner (R)	Roger Marshall (R)	Jerry Moran (R)	Wolf Creek	Comm Reactor	923	-	-	923
Kansas (KS)	1	Tracey Mann (R)	Roger Marshall (R)	Jerry Moran (R)	Kansas State University TRIGA II	University Reactor	-	-	-	a
Louisiana (LA)	5	Julia Letlow (R)	Bill Cassidy (R)	John Kennedy (R)	River Bend	Comm Reactor	816	-	-	816
Louisiana (LA)	2	Troy Carter (D)	Bill Cassidy (R)	John Kennedy (R)	Waterford	Comm Reactor	948	-	-	948
Maine (ME)	1	Chellie Pingree (D)	Susan M. Collins (R)	Angus S. King Jr. (R)	**Maine Yankee**	Comm Reactor	542	-	-	542
Maryland (MD)	5	Steny Hoyer (D)	Benjamin L. Cardin (D)	Chris Van Hollen (D)	Calvert Cliffs	Comm Reactor	1677	-	-	1677
Maryland (MD)	4	Glenn Ivey (D)	Benjamin L. Cardin (D)	Chris Van Hollen (D)	University of Maryland MUTR	University Reactor	-	-	-	a
Maryland (MD)	6	David Trone (D)	Benjamin L. Cardin (D)	Chris Van Hollen (D)	National Institute of Standards and Technology	Non DOE Research Reactor	-	-	-	a

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Maryland (MD)	8	Jamie Raskin (D)	Benjamin L. Cardin (D)	Chris Van Hollen (D)	Armed Forces Radiobiology Research Institute TRIGA	Non DOE Research Reactor	-	-	-	a
Massachusetts (MA)	9	William Keating (D)	Edward J. Markey (D)	Elizabeth Warren (D)	**Pilgrim**	Comm Reactor	735	-	-	735
Massachusetts (MA)	1	Richard Neal (D)	Edward J. Markey (D)	Elizabeth Warren (D)	**Yankee Rowe**	Comm Reactor	127	-	-	127
Massachusetts (MA)	3	Lori Trahan (D)	Edward J. Markey (D)	Elizabeth Warren (D)	University of Lowell UMLRR	University Reactor	-	-	-	a
Massachusetts (MA)	7	Ayanna Pressley (D)	Edward J. Markey (D)	Elizabeth Warren (D)	Massachusetts Institute of Technology MITR-II	University Reactor	-	-	-	a
Michigan (MI)	5	Tim Walberg (R)	Gary C. Peters (D)	Debbie Stabenow (D)	Cook	Comm Reactor	1975	-	-	1975
Michigan (MI)	1	Jack Bergman (R)	Gary C. Peters (D)	Debbie Stabenow (D)	**Big Rock Point**	Comm Reactor	58	-	-	58
Michigan (MI)	5	Tim Walberg (R)	Gary C. Peters (D)	Debbie Stabenow (D)	Fermi	Comm Reactor	746	-	-	746
Michigan (MI)	4	Bill Huizenga (R)	Gary C. Peters (D)	Debbie Stabenow (D)	**Palisades**	Comm Reactor	850	-	-	850
Michigan (MI)	8	Daniel Kildee (D)	Gary C. Peters (D)	Debbie Stabenow (D)	DOW Chemical TRIGA	Non DOE Research Reactor	-	-	-	a
Minnesota (MN)	6	Tom Emmer (R)	Amy Klobuchar (D)	Tina Smith (D)	Monticello	Comm Reactor	501	-	-	501
Minnesota (MN)	1	Brad Finstad (R)	Amy Klobuchar (D)	Tina Smith (D)	Prairie Island	Comm Reactor	1148	-	-	1148
Mississippi (MS)	2	Bennie Thompson (D)	Cindy Hyde-Smith (R)	Roger F. Wicker (R)	Grand Gulf	Comm Reactor	1116	-	-	1116
Missouri (MO)	3	Blaine Luetkemeyer (R)	Josh Hawley (R)	Eric Schmitt (R)	Callaway	Comm Reactor	928	-	-	928

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Missouri (MO)	3	Blaine Luetkemeyer (R)	Josh Hawley (R)	Eric Schmitt (R)	University of Missouri at Columbia	University Reactor	-	-	-	a
Missouri (MO)	8	Jason Smith (R)	Josh Hawley (R)	Eric Schmitt (R)	Missouri University of Science and Technology	University Reactor	-	-	-	a
Nebraska (NE)	6	Sam Graves (R)	Josh Hawley (R)	Eric Schmitt (R)	Cooper	Comm Reactor	626	-	-	626
Nebraska (NE)	3	Adrian Smith (R)	Deb Fischer (R)	Pete Ricketts (R)	**Fort Calhoun**	Comm Reactor	466	-	-	466
Nevada (NV)	4	Steven Horsford (D)	Catherine Cortez Masto (D)	Jacky Rosen (D)	Nevada National Security Site	DOE Site	-	-	-	c
Nevada (NV)	4	Steven Horsford (D)	Catherine Cortez Masto (D)	Jacky Rosen (D)	Yucca Mountain	DOE Site	-	-	-	-
New Hampshire (NH)	1	Chris Pappas (D)	Margaret Wood Hassan (D)	Jeanne Shaheen (D)	Seabrook	Comm Reactor	772	-	-	772
New Jersey (NJ)	2	Drew Van Jefferson	Cory A. Booker (D)	Robert Menendez (D)	Hope Creek	Comm Reactor	957	-	-	957
New Jersey (NJ)	2	Drew Van Jefferson	Cory A. Booker (D)	Robert Menendez (D)	Salem	Comm Reactor	1727	-	-	1727
New Jersey (NJ)	2	Drew Van Jefferson	Cory A. Booker (D)	Robert Menendez (D)	Oyster Creek	Comm Reactor	802	-	-	802
New Jersey (NJ)	12	Coleman Watson Bonnie	Cory A. Booker (D)	Robert Menendez (D)	Princeton Plasma Physics Laboratory	DOE National Lab	-	-	-	b
New Mexico (NM)	1	Melanie Stansbury (D)	Martin Heinrich (D)	Ben Ray Luján (D)	University of New Mexico AGN-201	University Reactor	-	-	-	a
New Mexico (NM)	2	Gabe Vasquez (D)	Martin Heinrich (D)	Ben Ray Luján (D)	Eddy-Lea Energy Alliance LLC	Potential SNF Storage Site	-	-	-	-

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
New Mexico (NM)	2	Gabe Vasquez (D)	Martin Heinrich (D)	Ben Ray Luján (D)	Sandia National Laboratory	DOE National Lab	-	-	-	a
New Mexico (NM)	2	Gabe Vasquez (D)	Martin Heinrich (D)	Ben Ray Luján (D)	White Sands Missile Range	DOE Site	-	-	-	c
New Mexico (NM)	3	Fernandez Leger Teresa	Martin Heinrich (D)	Ben Ray Luján (D)	Los Alamos National Laboratory	DOE National Lab	-	-	-	b
New York (NY)	24	Claudia Tenney (R)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	Nine Mile Point	Comm Reactor	1608	-	-	1608
New York (NY)	24	Claudia Tenney (R)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	Ginna	Comm Reactor	580	-	-	580
New York (NY)	23	Nicholas Langworthy (R)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	West Valley Demonstration Project	DOE Site	-	-	640	640
New York (NY)	17	Michael Lawler (R)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	**Indian Point**	Comm Reactor	1777	-	-	1777
New York (NY)	24	Claudia Tenney (R)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	Fitzpatrick	Comm Reactor	838	-	-	838
New York (NY)	1	Nick LaLota (R)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	Brookhaven National Laboratory	DOE National Lab	-	-	-	b
New York (NY)	20	Paul Tonko (D)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	Rensselaer Polytechnic Institute	University Reactor	-	-	-	a
New York (NY)	20	Paul Tonko (D)	Kirsten E. Gillibrand (D)	Charles E. Schumer (D)	Knolls Atomic Power Laboratory	DOE National Lab	-	-	-	-
North Carolina (NC)	12	Alma Adams (D)	Ted Budd (R)	Thom Tillis (R)	McGuire	Comm Reactor	1935	-	-	1935
North Carolina (NC)	13	Wiley Nickel (D)	Ted Budd (R)	Thom Tillis (R)	Harris	Comm Reactor	1704	-	-	1704

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
North Carolina (NC)	7	David Rouzer (R)	Ted Budd (R)	Thom Tillis (R)	Brunswick	Comm Reactor	1,032	-	-	1,032
North Carolina (NC)	2	Deborah Ross (D)	Ted Budd (R)	Thom Tillis (R)	North Carolina State University PULSTAR	University Reactor	-	-	-	a
Ohio (OH)	9	Marcy Kaptur (D)	Sherrod Brown (D)	J.D. Vance (D)	Davis-Besse	Comm Reactor	720	-	-	720
Ohio (OH)	14	David Joyce (R)	Sherrod Brown (D)	J.D. Vance (D)	Perry	Comm Reactor	891	-	-	891
Ohio (OH)	3	Joyce Beatty (D)	Sherrod Brown (D)	J.D. Vance (D)	Ohio State University OSURR	University Reactor	-	-	-	a
Oregon (OR)	1	Suzanne Bonamici (D)	Jeff Merkley (D)	Ron Wyden (D)	**Trojan**	Comm Reactor	359	-	-	359
Oregon (OR)	3	Earl Blumenauer (D)	Jeff Merkley (D)	Ron Wyden (D)	Reed College RRR	University Reactor	-	-	-	a
Oregon (OR)	4	Val Hoyle (D)	Jeff Merkley (D)	Ron Wyden (D)	Oregon State University OSTR	University Reactor	-	-	-	a
Pennsylvania (PA)	10	Scott Perry (R)	Robert P.Casey (D)	John Fetterman Jr. (D)	**Three Mile Island 2**	Comm Reactor	-	-	-	-
Pennsylvania (PA)	11	Lloyd Smucker (R)	Robert P.Casey (D)	John Fetterman Jr. (D)	Peach Bottom	Comm Reactor	2315	-	-	2315
Pennsylvania (PA)	4	Madeleine Dean (D)	Robert P.Casey (D)	John Fetterman Jr. (D)	Limerick	Comm Reactor	1805	-	-	1805
Pennsylvania (PA)	9	Daniel Meuser (R)	Robert P.Casey (D)	John Fetterman Jr. (D)	Susquehanna	Comm Reactor	2027	-	-	2027
Pennsylvania (PA)	17	Christopher Deluzio (D)	Robert P.Casey (D)	John Fetterman Jr. (D)	Beaver Valley	Comm Reactor	1438	-	-	1438

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Pennsylvania (PA)	10	Scott Perry (R)	Robert P.Casey (D)	John Fetterman Jr. (D)	Three Mile Island	Comm Reactor	786	-	-	786
Pennsylvania (PA)	15	Glenn Thompson (R)	Robert P.Casey (D)	John Fetterman Jr. (D)	Pennsylvania State University	University Reactor	-	-	-	-
Pennsylvania (PA)	12	Summer Lee (D)	Robert P.Casey (D)	John Fetterman Jr. (D)	National Energy Technology Laboratory	DOE National Lab	-	-	-	b
Rhode Island (RI)	2	Seth Magaziner (D)	Jack Reed (D)	Sheldon Whitehouse (D)	Rhode Island Atomic Energy Commission Nuclear Science Center	Non DOE Research Reactor	-	-	-	a
South Carolina (SC)	7	Russell Fry (R)	Lindsey Graham (R)	Tim Scott (R)	Robinson	Comm Reactor	475	-	-	475
South Carolina (SC)	3	Jeff Duncan (R)	Lindsey Graham (R)	Tim Scott (R)	Oconee	Comm Reactor	2602	-	-	2602
South Carolina (SC)	5	Ralph Norman (R)	Lindsey Graham (R)	Tim Scott (R)	Catawba	Comm Reactor	1686	-	-	1686
South Carolina (SC)	5	Ralph Norman (R)	Lindsey Graham (R)	Tim Scott (R)	Summer	Comm Reactor	725	-	-	725
South Carolina (SC)	2	Joe Wilson (R)	Lindsey Graham (R)	Tim Scott (R)	Savannah River	DOE National Lab	-	27	4,060	4,087
South Carolina (SC)	1	Nancy Mace (R)	Lindsey Graham (R)	Tim Scott (R)	Moored Training Ship - Unit #1 and Unit 2	Naval Training Reactor	-	-	-	c
Tennessee (TN)	4	Scott DesJarlais (R)	Marsha Blackburn (R)	Bill Hagerty (R)	Watts Bar	Comm Reactor	806	-	-	806
Tennessee (TN)	3	Charles Fleischmann (R)	Marsha Blackburn (R)	Bill Hagerty (R)	Oak Ridge National Laboratory	DOE National Lab	-	-	-	a

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Tennessee (TN)	3	Charles Fleischmann (R)	Marsha Blackburn (R)	Bill Hagerty (R)	Sequoyah	Comm Reactor	1790	-	-	1790
Texas (TX)	25	Roger Williams (R)	John Cornyn (R)	Ted Cruz (R)	Comanche Peak	Comm Reactor	1528	-	-	1528
Texas (TX)	22	Troy Nehls (R)	John Cornyn (R)	Ted Cruz (R)	South Texas	Comm Reactor	1733	-	-	1733
Texas (TX)	37	Lloyd Doggett (D)	John Cornyn (R)	Ted Cruz (R)	University of Texas TRIGA II	University Reactor	-	-	-	a
Texas (TX)	19	Jodey Arrington (R)	John Cornyn (R)	Ted Cruz (R)	Interim Storage Partners	Potential SNF Storage Site	-	-	-	-
Texas (TX)	10	Michael McCaul (R)	John Cornyn (R)	Ted Cruz (R)	Texas A&M University	University Reactor	-	-	-	a
Utah (UT)	1	Blake Moore (R)	Mike Lee (R)	Mitt Romney (R)	University of Utah TRIGA	University Reactor	-	-	-	a
Vermont (VT)	0	Becca Balint (D)	Bernard Sanders (Independ ent)	Peter Welch (Independent)	**Vermont Yankee**	Comm Reactor	706	-	-	706
Virginia (VA)	4	Jennifer McClellan (D)	Tim Kaine (D)	Mark R. Warner (D)	Surry	Comm Reactor	1675	-	-	1675
Virginia (VA)	5	Bob Good (R)	Tim Kaine (D)	Mark R. Warner (D)	North Anna	Comm Reactor	1681	-	-	1681
Virginia (VA)	5	Bob Good (R)	Tim Kaine (D)	Mark R. Warner (D)	BWXT	Non DOE Research Reactor	-	-	-	b
Virginia (VA)	3	Robert Scott (D)	Tim Kaine (D)	Mark R. Warner (D)	Thomas Jefferson National Accelerator Facility	DOE National Lab	-	-	-	b
Washington (WA)	4	Dan Newhouse (R)	Maria Cantwell (D)	Patty Murray (D)	Hanford	DOE Site	-	2,128	3,900	6,028
Washington (WA)	4	Dan Newhouse (R)	Maria Cantwell (D)	Patty Murray (D)	Pacific Northwest National Laboratory	DOE National Lab	-	-	-	b

State	Cong .Dist.	Rep.	Senator	Senator	Facility Name (Bold = Shutdown)	Type of Facility	SNF at NPR/ISFSI Sites (MTHM)	SNF at DOE Sites (MTHM)	Reprocessing Waste (Equivalent MTHM)**	TOTAL (MTHM)
Washington (WA)	4	Dan Newhouse (R)	Maria Cantwell (D)	Patty Murray (D)	Columbia	Comm Reactor	862	-	-	862
Washington (WA)	5	Cathy Rodgers (R)	Maria Cantwell (D)	Patty Murray (D)	Washington State University WSUR	University Reactor	-	-	-	a
Wisconsin (WI)	8	Mike Gallagher (R)	Tammy Baldwin (D)	Ron Johnson (D)	**Kewaunee**	Comm Reactor	519	-	-	519
Wisconsin (WI)	6	Glenn Grothman (R)	Tammy Baldwin (D)	Ron Johnson (D)	Point Beach	Comm Reactor	1,087	-	-	1,087
Wisconsin (WI)	2	Ashley Hinson (R)	Joni Ernst (R)	Chuck Grassley (R)	**LaCrosse**	Comm Reactor	38	-	-	38
Wisconsin (WI)	2	Mark Pocan (D)	Tammy Baldwin (D)	Ron Johnson (D)	University of Wisconsin UWNR	University Reactor	-	-	-	-
Total[d]							**90,963**	**2,479**[e]	**10,500**	**103,942**

** Equivalent MTHM determined by using the nominal canister counts in Tables 2-8 and 3-7 and applying the historical factors of 2.3 and 0.5 MTU per canister for commercial and defense reprocessing waste respectively from DOE/DP 0020/1 "An Evaluation of Commercial Repository Capacity for the Disposal of Defense High-Level Waste" (DOE 1985). Applying the total radioactivity method for determining equivalent MTHM would result in much lower quantities (INEEL 1999)."

[a] SNF from research reactors primarily used for radiography, testing, training, isotope production or other non-power generating commercial services are not included

[b] Small quantities of SNF or reprocessing waste used for R&D purposes, if any, are not included, e.g. for laboratory analysis work

[c] Nuclear material for critical assembly machines or naval prototypes or moored training ships are not included in this table.

[d] Totals for SNF in MTHM represents rounded sums of pre-rounded site values.

[e] Total includes approximately 1 MTHM for small quantities at multiple facilities at the Oak Ridge Reservation in TN and Sandia National Laboratory in NM.

APPENDIX G – REVISION HISTORY

A general description of the changes made with each revision to this document and precursors to it is provided in this appendix. Some of these revisions were only issued as drafts. In prior years, this inventory report was issued with report number FCRD-NFST-2013-000263, Revision 0 through Revision 9 at which time a new report number, PNNL-33938, was introduced since the earlier numbering scheme had become obsolete.

PNNL-33938, Revision 1.1 was issued to correct an error in Table 5.5.

PNNL-33938, Revision 1 updates the inventory data for current storage locations of SNF discharged through 2022. Data for commercial NPRs is based on data submitted via the latest Nuclear Fuel Data Survey using Form GC-859. This revision reflects Palisades moving to a shutdown status in 2022 and placement of large quantities of spent nuclear fuel from the spent fuel pool into storage systems at Three Mile Island also in 2022. This revision also includes new and updated graphics, especially for the state inventory data sheets contained in Appendix H.

PNNL-33938, Revision 0 (FCRD-NFST-2013-000263, Revision 9) provided inventory data for current storage locations of SNF discharged through 2021. This revision also reflected Indian Point moving to a shutdown status.

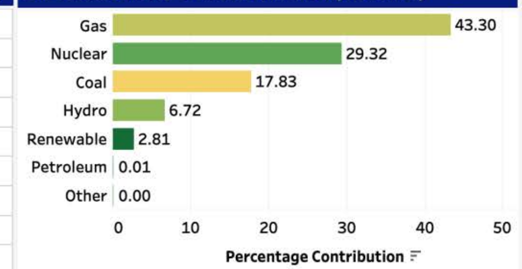
APPENDIX H – REFERENCE SCENARIO: NO REPLACEMENT NUCLEAR GENERATION FORECAST – STATE INVENTORY DATA

ALABAMA

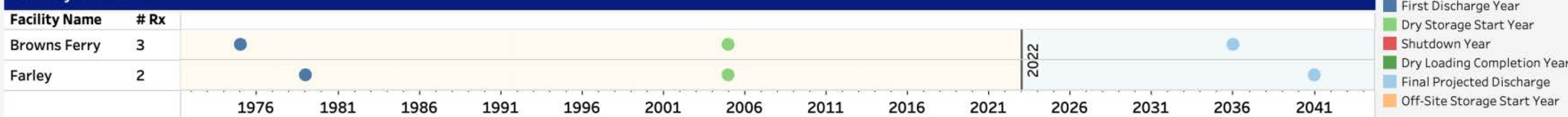
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Kay Ivey (R)
Senators	Britt, Katie Boyd (R) and Tuberville, Tommy (R)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	5
Commercial SNF at Dry Storage (MTU)	2363.87
Commercial SNF at Pool (MTU)	2031.83
Total Commercial SNF (MTU)	4395.7
No. of Commercial SNF Dry Casks	165

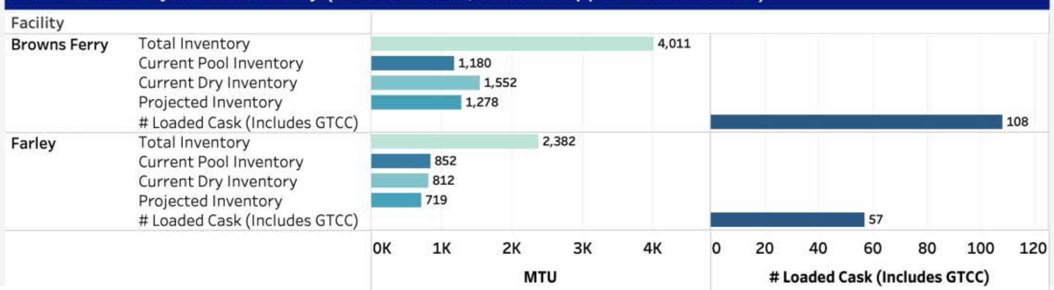
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



ALABAMA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
5	Strong, Dale (R)	Tennessee Valley Authority	Browns Ferry 1	1974-2033	BWR/ Operating	2005/GL	1123.18	-
			Browns Ferry 2	1975-2034	BWR/ Operating	2005/GL	1505.5	-
			Browns Ferry 3	1977-2036	BWR/ Operating	2005/GL	1381.95	-
2	Moore, Barry (R)	Southern Nuclear Operating Company, Inc.	Farley 1	1977-2037	PWR/ Operating	2005/GL	1184.65	-
			Farley 2	1981-2041	PWR/ Operating	2005/GL	1197.49	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
948.9	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

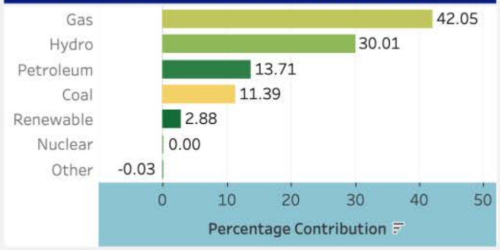
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees.

ALASKA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Mike Dunleavy (R)	-
Senators	Murkowski, Lisa (R) and Sullivan, Dan (R)	-

2022 Electricity Generation Mix (Note# 3)



Notes:

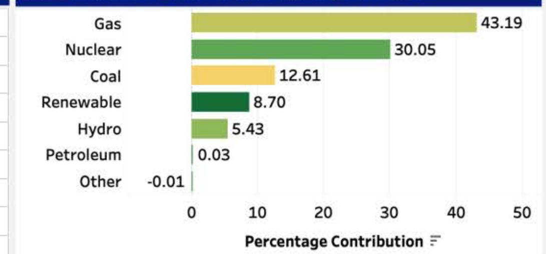
1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous f..

ARIZONA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

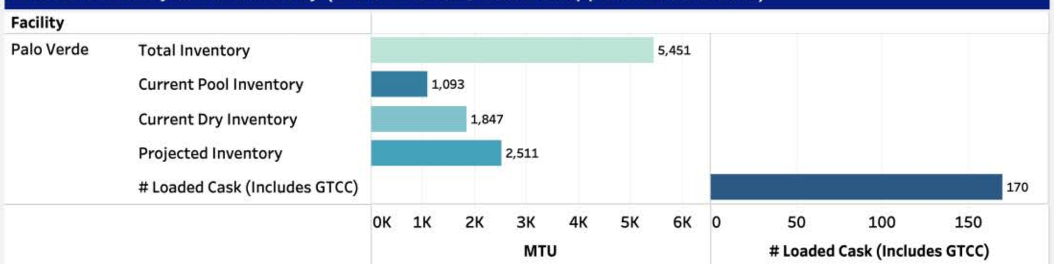
Governor	Katie Hobbs (D)
Senators	Kelly, Mark (D) and Sinema, Kyrsten (I)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Operating Reactors	3
Commercial SNF at Dry Storage (MTU)	1847.27
Commercial SNF at Pool (MTU)	1092.68
Total Commercial SNF (MTU)	2939.95
No. of Commercial SNF Dry Casks	170

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



ARIZONA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
9	Gosar, Paul (R)	Arizona Public Service Company (APS)	Palo Verde 1	1986-2045	PWR/ Operating	2003/GL	1765.4	-
			Palo Verde 2	1986-2046	PWR/ Operating	2003/GL	1819.12	-
			Palo Verde 3	1988-2047	PWR/ Operating	2003/GL	1866	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
686.6	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

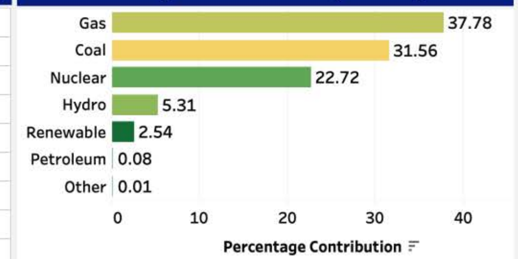
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees.

ARKANSAS

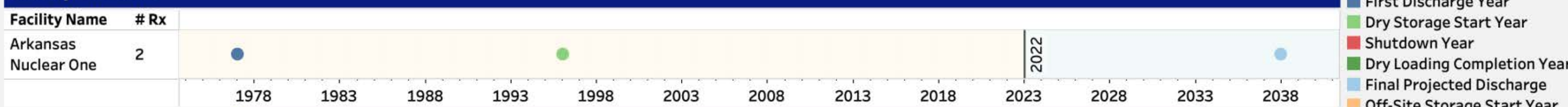
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Sarah Huckabee Sanders (R)
Senators	Boozman, John (R) and Cotton, Tom (R)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Operating Reactors	2
Commercial SNF at Dry Storage (MTU)	1209.59
Commercial SNF at Pool (MTU)	609.57
Total Commercial SNF (MTU)	1819.16
No. of Commercial SNF Dry Casks	102

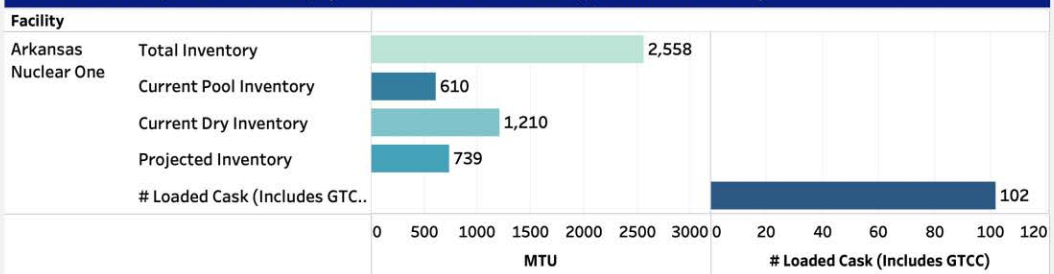
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



ARKANSAS

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
4	Westerman, Bruce (R)	Entergy Services, LLC	Arkansas Nuclear One 1	1974-2034	PWR/ Operating	1996/GL	1193.78	-
			Arkansas Nuclear One 2	1980-2038	PWR/ Operating	1996/GL	1439.9	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
367.1	195	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

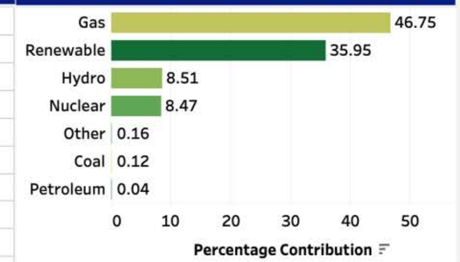
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

CALIFORNIA

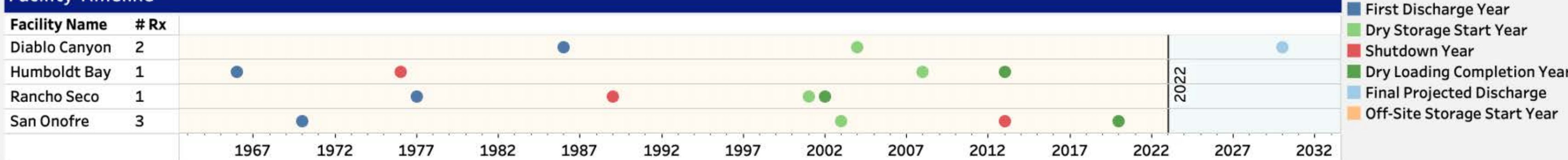
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

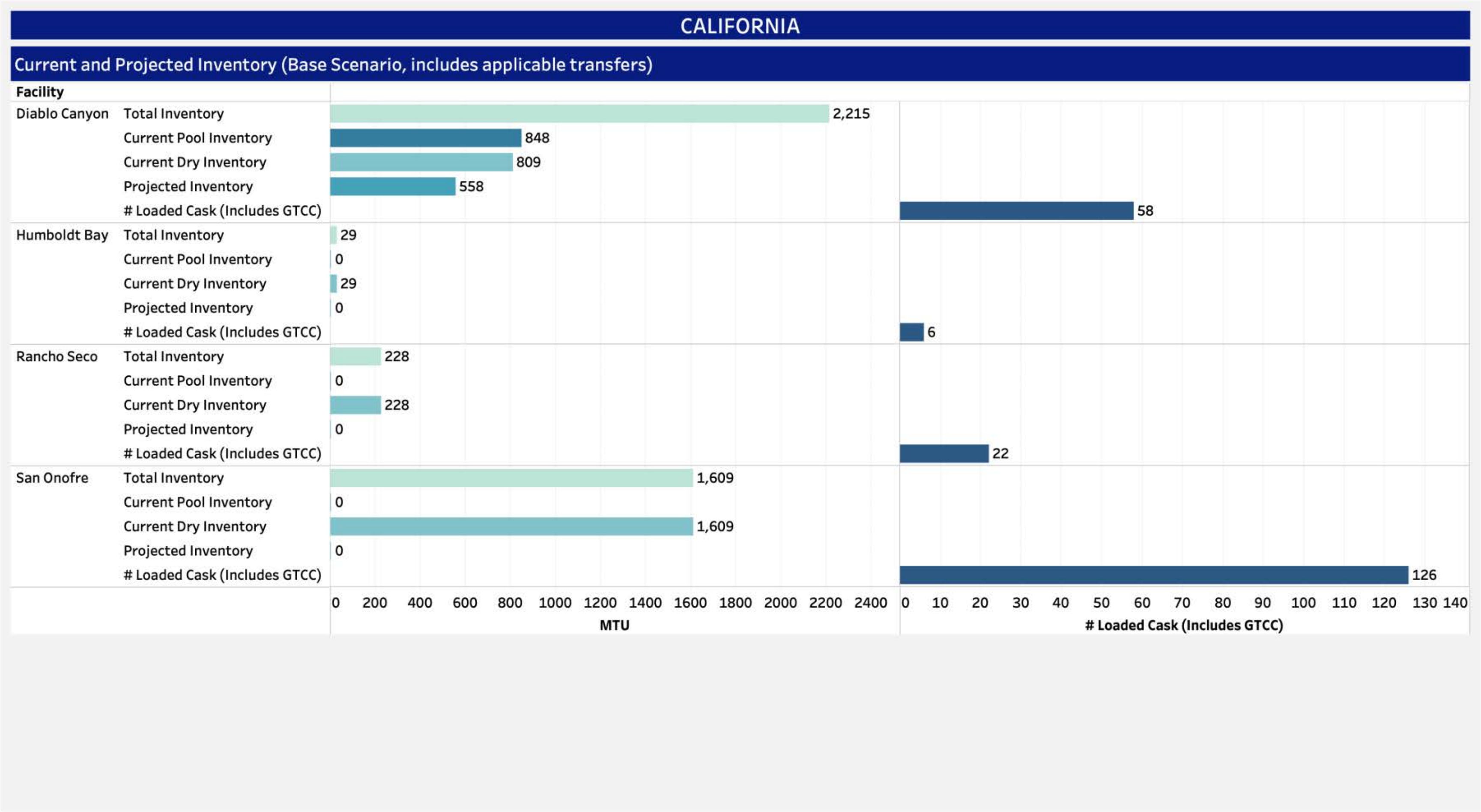
Governor	Gavin Newsom (D)
Senators	Butler, Laphonza (D) and Padilla, Alex (D)
No. of Commercial Site	4
No. of Commercial Dry Storage Site	4
No. of Commercial Operating Reactors	2
No. of Commercial Shutdown Reactors	5
Commercial SNF at Dry Storage (MTU)	2675.81
Commercial SNF at Pool (MTU)	847.92
Total Commercial SNF (MTU)	3523.73
No. of Commercial SNF Dry Casks	207
No. of Commercial GTCC Casks	5
No. of Operating Research Reactors	3 at 3 Sites
No. of Shutdown Research Reactors	5 at 3 Sites

2022 Electricity Generation Mix (Note# 3)



Facility Timeline




CALIFORNIA
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Diablo Canyon
Total Inventory 2,215
Current Pool Inventory 848
Current Dry Inventory 809
Projected Inventory 558
Loaded Cask (Includes GTCC) 58
Humboldt Bay
Total Inventory 29
Current Pool Inventory 0
Current Dry Inventory 29
Projected Inventory 0
Loaded Cask (Includes GTCC) 6
Rancho Seco
Total Inventory 228
Current Pool Inventory 0
Current Dry Inventory 228
Projected Inventory 0
Loaded Cask (Includes GTCC) 22
San Onofre
Total Inventory 1,609
Current Pool Inventory 0
Current Dry Inventory 1,609
Projected Inventory 0
Loaded Cask (Includes GTCC) 126
0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400
MTU
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
Loaded Cask (Includes GTCC)

CALIFORNIA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
50	Peters, Scott (D)	General Atomics	General Atomics	1957-1997/ SAFSTOR	R&TRF TRIGA MARK I/ Shutdown	-	-	-
				1960-1995/ DECON	R&TRF TRIGA MARK F/ Shutdown	-	-	-
49	Levin, Mike (D)	Southern California Edison Company	San Onofre 1	1967-1992/ DECON SAFSTOR	PWR/ Shutdown	2003/GL	244.61	5
			San Onofre 2	1983-2013/ DECON in Progress	PWR/ Shutdown	2003/GL	729.99	-
			San Onofre 3	1984-2013/ DECON in Progress	PWR/ Shutdown	2003/GL	733.16	-
47	Porter, Katie (D)	University of California	University of California Irvine	1969- License R-116	R&TRF TRIGA MARK I, 250 kW/ Shutdown	-	-	-
24	Carbajal, Salud (D)	Pacific Gas & Electric Company (PG&E)	Diablo Canyon 1	1985-2029	PWR/ Operating	2004/SL	1105.52	-
			Diablo Canyon 2	1986-2030	PWR/ Operating	2004/SL	1109.22	-
14	Swalwell, Eric (D)	GE-Hitachi Nuclear Energy Americas LLC	Vallecitos Boiling Water Reactor (VBWR)	1957-1963/ SAFSTOR possession only License DPR-1	BWR/ Shutdown	-	-	6
			Nuclear Test Reactor (NTR)	1957-2021 License R-33	R&TRF Nuclear Test, 100 kW/Operating	-	-	-
			Vallecitos Experimental Superheat Reactor (VESR)	1970-2016/ SAFSTOR possession only License DR-10	R&TRF/Shutdown	-	-	7
			General Electric Test Reactor (GETR)	1986-2016/ SAFSTOR possession only License TR-1	R&TRF/Shutdown	-	-	7
10	DeSaulnier, Mark (D)	Nuclear Labrinith Aerotest	ARRR	1965- License R-98	R&TRF TRIGA MARK I, 250 kW/ Shutdown	-	-	8
7	Matsui, Doris (D)	Sacramento Municipal Utility District (SMUD)	Rancho Seco	1974-1989/ DECON Completed	PWR/ Shutdown	2000/SL	228.38	-
6	Bera, Ami (D)	University of California	UC Davis	1998- License R-130	R&TRF TRIGA MARK II, 2,300 kW/ Operating	-	-	-
2	Huffman, Jared (D)	Pacific Gas & Electric Company (PG&E)	Humboldt Bay	1963-1976/ Decon in Progress	BWR/ Shutdown	2005/SL	28.94	-

CALIFORNIA

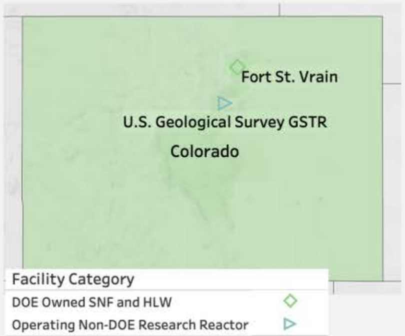
Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
953.0	0.8	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023 (data manually updated on March 29, 2024).
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Includes one-time fees paid by GE. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE
5. Does not include 98 MTU transferred to Morris, Illinois.
6. No fuel on site. The licensee plans to maintain the facility in SAFSTOR until ongoing site nuclear activities are terminated and the entire site can be decommissioned in an integrated fashion.
7. NRC issued a possession-only license for GETR and VESR on February 5, 1986. The license was renewed on September 30, 1992; licensee requested continuation of their current license 12/15/15. There are also hot cells that are used for power reactor fuel post irradiation examination.
8. Ownership issues have been resolved and Nuclear Labyrinth is now the parent company of ARRR, the license renewal is under NRC review Source: ADAMS ML17277B261. By letter dated December 6, 2021, (ML21242A463), license amendment number 6 was issued by the NRC which revised the ARRR's operating license to remove the authority to operate and to authorize possession-only of the reactor and fuel. By letter dated July 20, 2021 (ML21230A304), and supplemented by letter dated January 20, 2022 (ML22025A200), the licensee submitted a license amendment to the NRC for approval of the Decommissioning Plan (DP) for ARRR

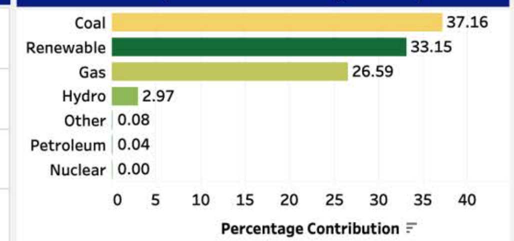
COLORADO



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

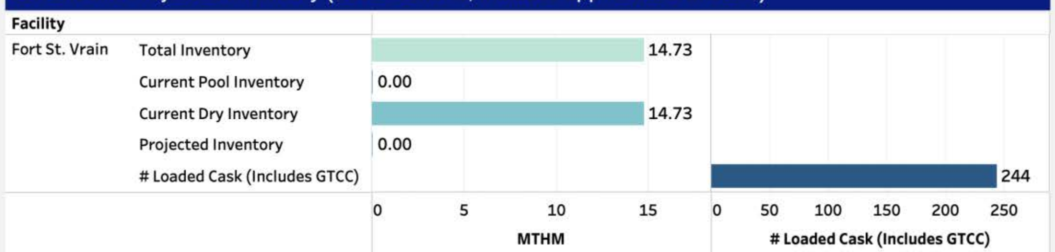
Governor	Jared Polis (D)	
Senators	Bennet, Michael F. (D) and Hickenlooper, John W. (D)	
No. of Operating Research Reactors	1 at 1 Sites	
DOE Owned SNF and/or HLW Site	1 Site (15 MTHM)	

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



COLORADO

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTH..	Note #	
8	Caraveo, Yadira (D)	Department of Energy	Fort St. Vrain	1973-1989/ DECON Completed	HTGR/ Shutdown	1991-2031/SL	24	5	
7	Pettersen, Brittany (D)	USGS	U.S. Geological Survey GSTR	1969- License R-113	R&TRF TRIGA MARK I, 1000 kW/ Operating	-	-	-	

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #	
0.2	0	4	

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

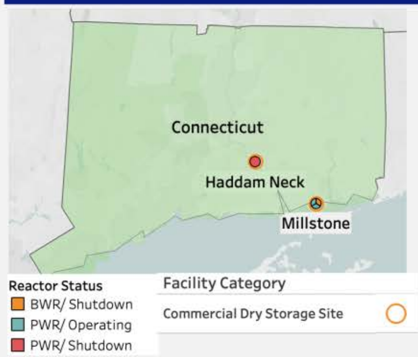
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

5. Actual discharge includes 8.6 MTHM transferred to INL.

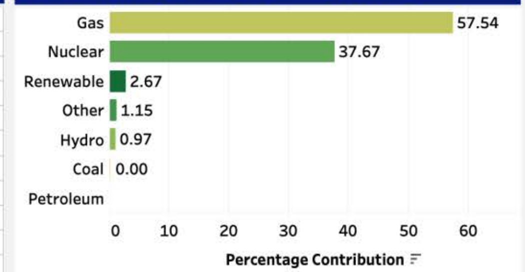
CONNECTICUT



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

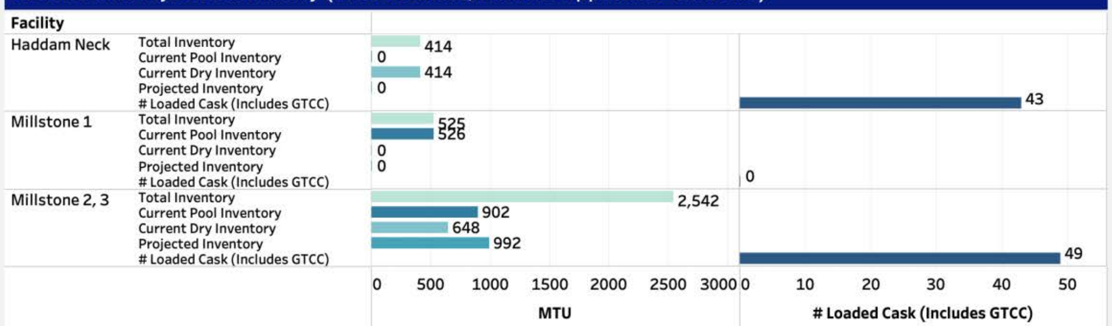
Governor	Ned Lamont (D)
Senators	Blumenthal, Richard (D) and Murphy, Christopher (D)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	2
No. of Commercial Shutdown Reactors	2
Commercial SNF at Dry Storage (MTU)	1057.24
Commercial SNF at Pool (MTU)	1427.63
Total Commercial SNF (MTU)	2484.87
No. of Commercial SNF Dry Casks	89
No. of Commercial GTCC Casks	3

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



CONNECTICUT

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
2	Courtney, Joe (D)	Connecticut Yankee Atomic Power Company	Haddam Neck	1974-1996/ DECON Completed	PWR/ Shutdown	2004/GL	448.54	5
		Dominion Energy	Millstone 1	1970-1998/ SAFSTOR	BWR/ Shutdown	-	525.62	-
			Millstone 2	1975-2035	PWR/ Operating	2005/GL	1144.11	-
			Millstone 3	1986-2045	PWR/ Operating	2005/GL	1454.5	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
923.9	11.9	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

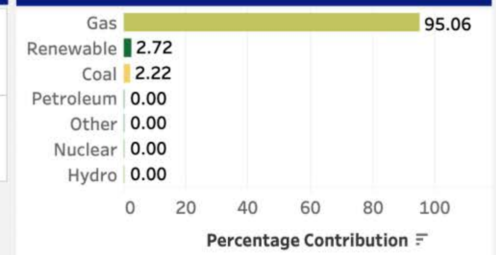
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

DELAWARE

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	John Carney (D)
Senators	Carper, Thomas R. (D) and Coons, Christopher A. (D)

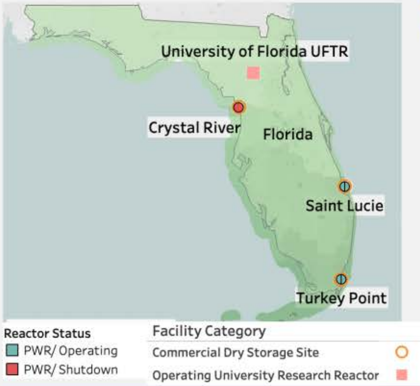
2022 Electricity Generation Mix (Note# 3)



Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

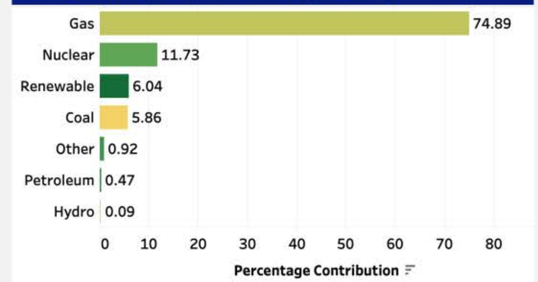
FLORIDA



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

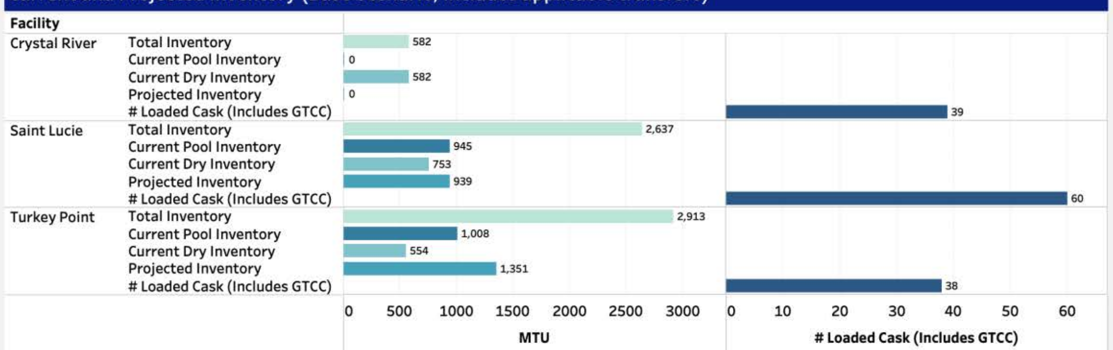
Governor	Ron DeSantis (R)
Senators	Rubio, Marco (R) and Scott, Rick (R)
No. of Commercial Site	3
No. of Commercial Dry Storage Site	3
No. of Commercial Operating Reactors	4
No. of Commercial Shutdown Reactors	1
Commercial SNF at Dry Storage (MTU)	1889.14
Commercial SNF at Pool (MTU)	1953.08
Total Commercial SNF (MTU)	3842.22
No. of Commercial SNF Dry Casks	137
No. of Operating Research Reactors	1 at 1 Sites

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



FLORIDA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTU)	Note #
28	Gimenez, Carlos (R)	NextEra Energy, Inc	Turkey Point 3	1972-2052	PWR/ Operating	2010/GL	1448.58	5, 6
			Turkey Point 4	1973-2053	PWR/ Operating	2010/GL	1472.28	5, 6
21	Mast, Brian (R)	NextEra Energy, Inc	St. Lucie 1	1976-2036	PWR/ Operating	2008/GL	1298.08	-
			St. Lucie 2	1983-2043	PWR/ Operating	2008/GL	1339.22	-
12	Bilirakis, Gus (R)	Accelerated Decommissioning Partners SF1, LLC	Crystal River 3	1977-2013/ SAFSTOR in Progress	PWR/ Shutdown	2017/GL	582.24	-
3	Cammack, Kat (R)	University of Florida	University of Florida UFTR	1959- License R-56	R&TRF Argonaut, 100 kW/ Operating	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
887.0	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

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5. Includes 8 MTU transferred to Idaho National Laboratory.

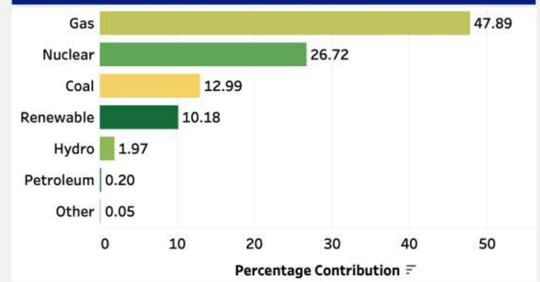
6. Turkey Point Units 3 and 4 were the first reactors in the United States to receive a subsequent (or second) 20 year operating license extension. These units are now licensed to operate a total of 80 years. This operational period is reflected in the base scenario.

GEORGIA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

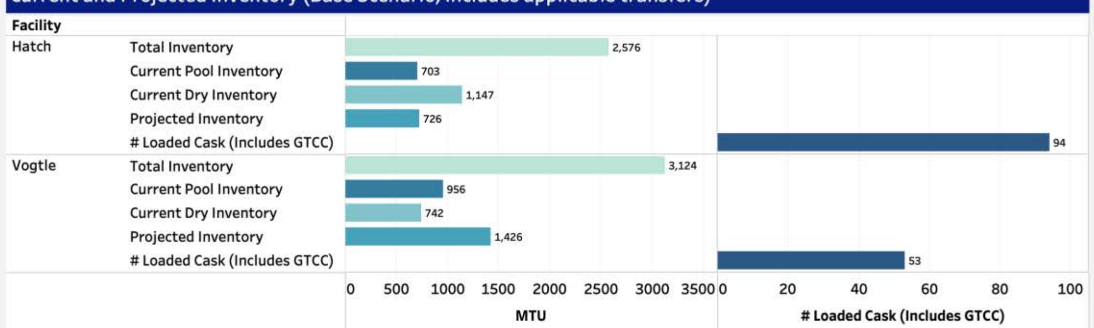
Governor	Brian Kemp (R)
Senators	Ossoff, Jon (D) and Warnock, Raphael G. (D)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	6
Commercial SNF at Dry Storage (MTU)	1889.37
Commercial SNF at Pool (MTU)	1658.87
Total Commercial SNF (MTU)	3548.24
No. of Commercial SNF Dry Casks	147

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



GEORGIA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTU)	Note #
12	Allen, Rick (R)	Southern Nuclear Operating Company, Inc.	Vogtle 1	1987-2047	PWR/ Operating	2012/GL	1589.67	-
			Vogtle 2	1989-2049	PWR/ Operating	2012/GL	1534.04	-
			Vogtle 3	2023/ Planned	PWR/ Under Construction	-	-	5
			Vogtle 4	2023/ Planned	PWR/ Under Construction	-	-	5
1	Carter, Earl (R)	Southern Nuclear Operating Company, Inc.	Hatch 1	1975-2034	BWR/ Operating	2000/GL	1258.98	-
			Hatch 2	1979-2038	BWR/ Operating	2000/GL	1316.74	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
846.1	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

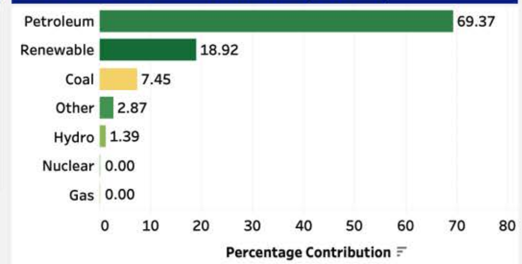
5. Vogtle 3 was under construction at the end of 2022, and has since entered commercial operation on July 31, 2023. The next update to this datasheet will reflect projected inventories from Vogtle 3. Vogtle 4 was under construction at the end of 2022, and has since entered commercial operation on April 29, 2024. The next update to this datasheet will reflect projected inventories from Vogtle 4.

Hawaii

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Josh Green (D)
Senators	Hirono, Mazie K. (D) and Schatz, Brian (D)

2022 Electricity Generation Mix (Note# 3)



Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
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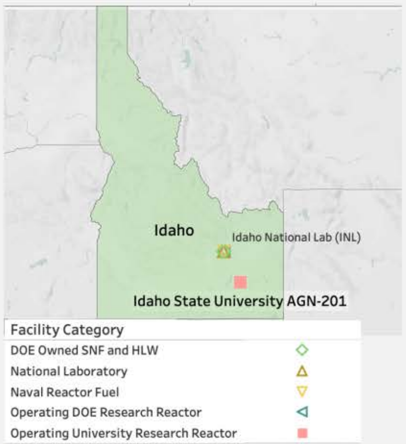
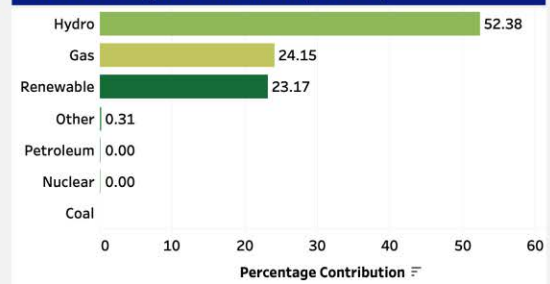
IDAHO



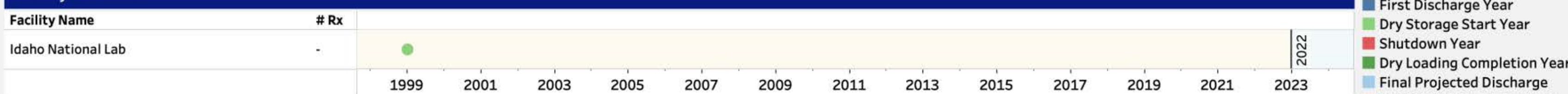
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Brad Little (R)
Senators	Crapo, Mike (R) and Risch, James E. (R)
No. of Operating Research Reactors	5 at 2 Sites
DOE Sites with SNF and/or HLW	1 Site

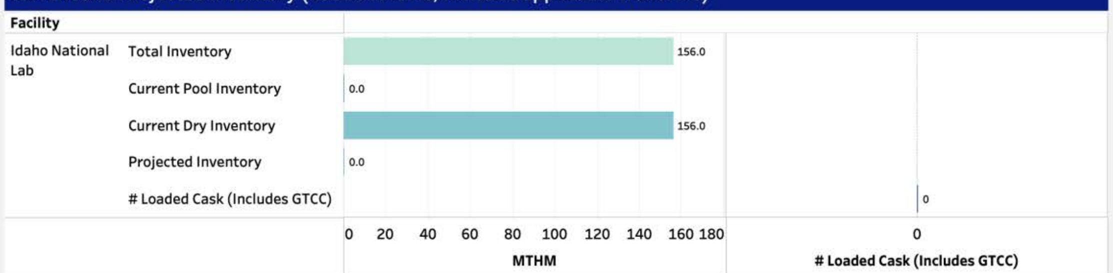
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



IDAHO

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

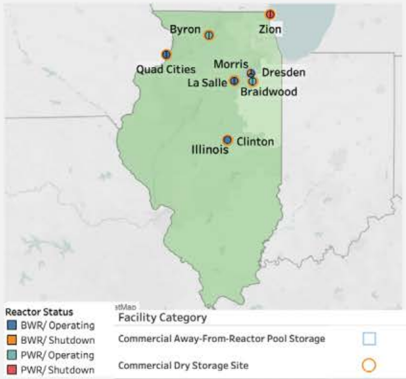
Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTHM)	Note #
2	Simpson, Michael (R)	Department of Energy	INL	1948-	National Laboratory	-	-	5, 6, 7
			Transient Test Reactor (TREAT)	1959-	Test Reactor	-	-	-
			Advanced Test Reactor Critical Facility	1964-	Test Reactor	-	-	-
			INL: Advanced Test Reactor (ATR)	1967-	Test Reactor	-	-	8
			INL: CPP-749, Underground Storage Vault	1971-2035	Dry Storage	-	-	10
			INL: CPP-603, Irradiated Fuel Storage	1974-2035	Dry Storage	-	-	10, 11
			INL: CPP-666, Fuel Storage Basins	1984-2035	Pool Storage	-	-	10
			INL TMI-2	1999-2019	Dry Storage	-	-	13
			INL: CPP-2707, Cask Pad and Rail Car	2003-2035	Dry Storage	-	-	10, 12
			INL Idaho Spent Fuel Facility (ISFF)	Licensed, but not yet constructed	Dry Storage	-	-	-
			Neutron Radiograohy Facility	mid-1970s	R&TRF TRIGA	-	-	-
			INL: Materials and Fuels Complex	Null	Null	-	-	9, 10
			Naval Facility	NULL	Various	-	-	14
		Idaho State University	Idaho State University	1967- License R-110	AGN-201 #103, 0.005 kW/..	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
0	0	4

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.
5. Commercial SNF at INL includes 81.6 MTHM from TMI-2 core debris, 8.6 MTHM transferred from Ft. St. Vrain, and the balance from various R&D programs. INL also has approximately 114 MTHM of SNF from DOE and other sources for a total of 271 MTHM of DOE-Managed SNF, excluding Navy SNF.
6. Since 1951, 52 reactors have been built on the grounds of what was originally the Atomic Energy Commission's National Reactor Testing Station, currently the location of Idaho National Laboratory. Only 3 reactors continue to operate. The 49 other experimental test reactors have been decommissioned.
7. The INL receives SNF from foreign research reactors (FRR) and domestic research reactors (DRR).
8. SNF removed from ATR is temporarily maintained in the reactor canal before it is transferred to CPP-666 (basins) for storage.
9. Materials and Fuels Complex, formerly Argonne West, was part of Argonne National Laboratory (Illinois) until 2004 when it was incorporated into the INL. SNF from Experimental Breeder Reactor-II (EBR-2) is stored in cylinders in the Radioactive Scrap and Waste Facility. SNF from the Hanford Fast Flux Test Facility (HFFTF) is stored in the Hot Fuel Examination Facility.
10. DOE regulated facility. The DOE Authorization Basis for all DOE-regulated SNF facilities assumes operations through 2035.
11. Receipt of approximately 14 MTHM of Foreign Research Reactor (FRR) and Domestic Research Reactor (DRR) SNF is expected through 2035.
12. Includes 6 casks containing fuel from the Test Area North Fuel Examination Facility plus a rail car holding 2 casks from West Valley (New York) containing SNF of commercial origin.
13. Contains Three Mile Island 2 fuel debris.
14. DOE Regulated Facilities.

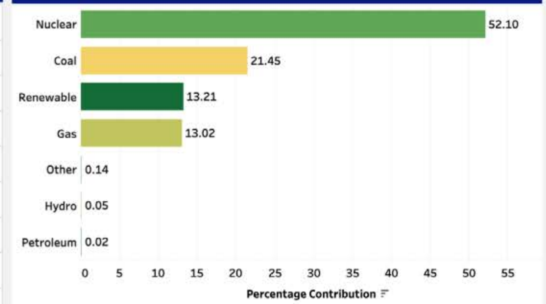
ILLINOIS



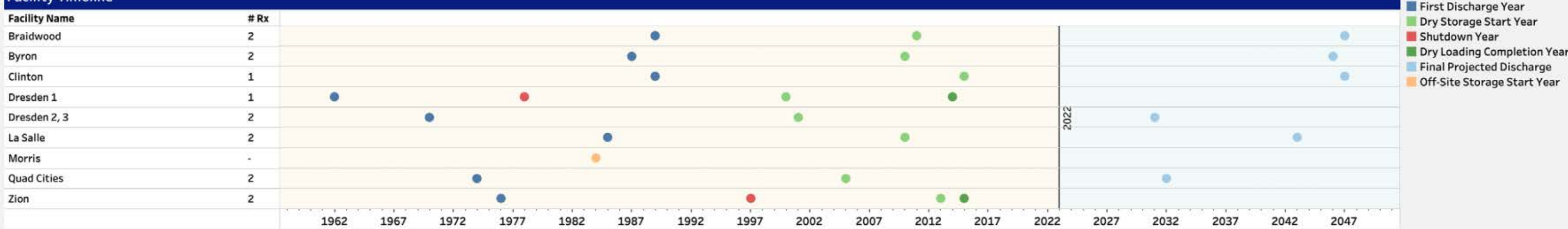
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

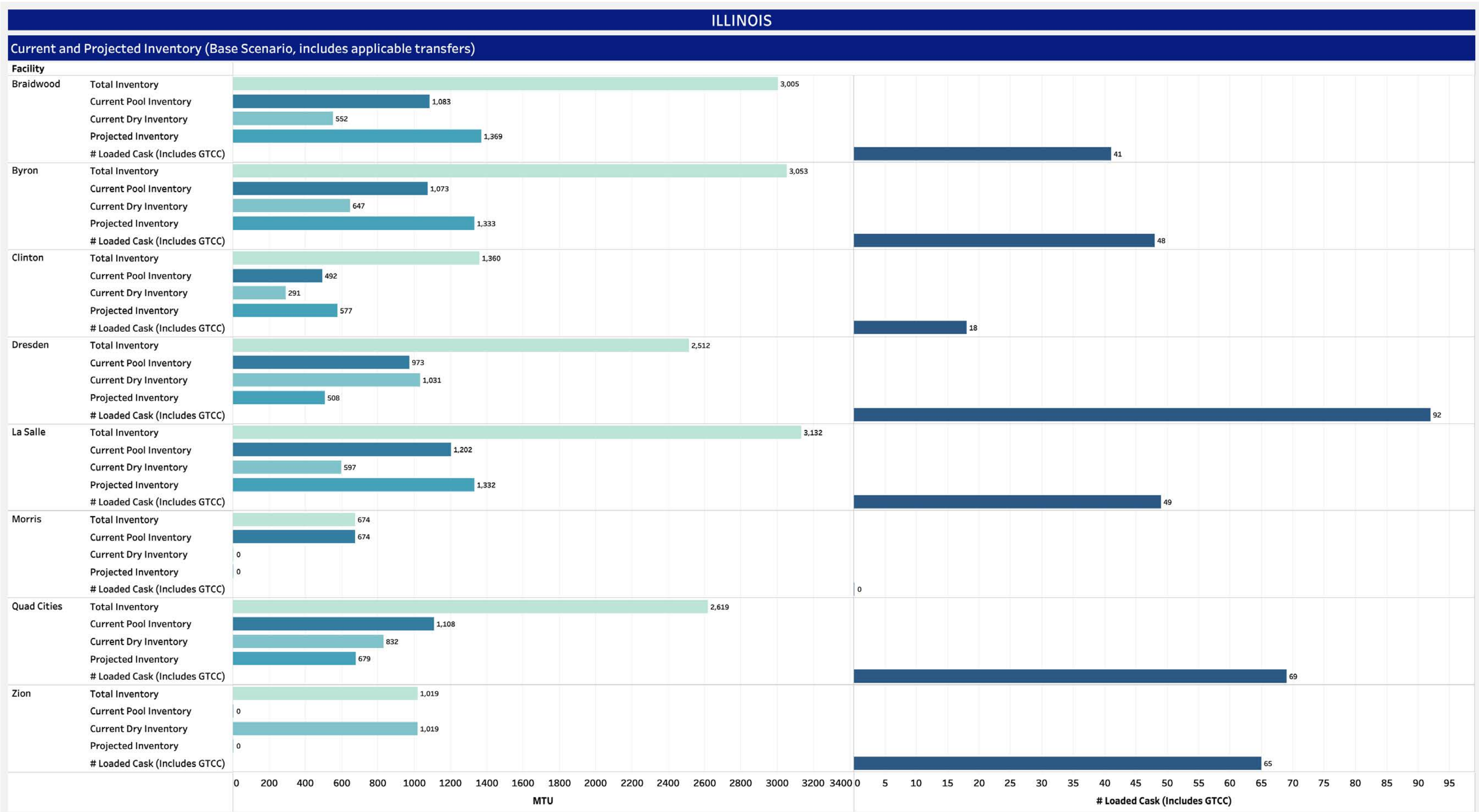
Governor	J.B. Pritzker (D)
Senators	Duckworth, Tammy (D) and Durbin, Richard J. (D)
No. of Commercial Site	7
No. of Commercial Dry Storage Site	7
No. of Commercial Operating Reactors	11
No. of Commercial Shutdown Reactors	3
Commercial SNF at Dry Storage (MTU)	4970.58
Commercial SNF at Pool (MTU)	5932.21
Total Commercial SNF (MTU)	10902.8
No. of Commercial SNF Dry Casks	378
No. of Commercial GTCC Casks	4
Commercial Away-From-Reactor Pool Storage Site	1 Site

2022 Electricity Generation Mix (Note# 3)



Facility Timeline




ILLINOIS
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Braidwood
Total Inventory 3,005
Current Pool Inventory 1,083
Current Dry Inventory 552
Projected Inventory 1,369
Loaded Cask (Includes GTCC) 41
Byron
Total Inventory 3,053
Current Pool Inventory 1,073
Current Dry Inventory 647
Projected Inventory 1,333
Loaded Cask (Includes GTCC) 48
Clinton
Total Inventory 1,360
Current Pool Inventory 492
Current Dry Inventory 291
Projected Inventory 577
Loaded Cask (Includes GTCC) 18
Dresden
Total Inventory 2,512
Current Pool Inventory 973
Current Dry Inventory 1,031
Projected Inventory 508
Loaded Cask (Includes GTCC) 92
La Salle
Total Inventory 3,132
Current Pool Inventory 1,202
Current Dry Inventory 597
Projected Inventory 1,332
Loaded Cask (Includes GTCC) 49
Morris
Total Inventory 674
Current Pool Inventory 674
Current Dry Inventory 0
Projected Inventory 0
Loaded Cask (Includes GTCC) 0
Quad Cities
Total Inventory 2,619
Current Pool Inventory 1,108
Current Dry Inventory 832
Projected Inventory 679
Loaded Cask (Includes GTCC) 69
Zion
Total Inventory 1,019
Current Pool Inventory 0
Current Dry Inventory 1,019
Projected Inventory 0
Loaded Cask (Includes GTCC) 65
0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400
MTU
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
Loaded Cask (Includes GTCC)

ILLINOIS

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTU)	Note #
17	Sorensen, Eric (D)	Constellation Energy Generation, LLC	Quad Cities 1	1973-2032	BWR/ Operating	2005/GL	1325.68	-
			Quad Cities 2	1973-2032	BWR/ Operating	2005/GL	1293.08	-
16	LaHood, Darin (R)	Constellation Energy Generation, LLC	Dresden 1	1960-1978/ SAFSTOR	BWR/ Shutdown	2000/GL	90.86	5
			Dresden 2	1970-2029	BWR/ Operating	2000/GL	1357.5	6
			Dresden 3	1971-2031	BWR/ Operating	2000/GL	1209.11	-
			LaSalle County 1	1984-2022	BWR/ Operating	2010/GL	1534.85	-
			LaSalle County 2	1984-2023	BWR/ Operating	2010/GL	1597.32	-
			Byron 1	1985-2044	PWR/ Operating	2010/GL	1527.61	-
			Byron 2	1987-2046	PWR/ Operating	2010/GL	1525.79	-
		GE-Hitachi Nuclear Energy Americas LLC	Morris	1984-2022	NULL	1982/GL	-	-
15	Miller, Mary (R)	Constellation Energy Generation, LLC	Clinton 1	1987-2027	BWR/ Operating	2016/GL	1360.27	-
10	Schneider, Bradley (D)	Constellation Energy Generation, LLC	Zion 1	1973-1997/ DECON in Progress	PWR/ Shutdown	2014/GL	523.94	-
			Zion 2	1974-1996/ DECON in Progress	PWR/ Shutdown	2014/GL	495.47	-
1	Jackson, Jonathan (D)	Constellation Energy Generation, LLC	Braidwood 1	1988-2026	PWR/ Operating	2011/GL	1476.28	-
			Braidwood 2	1988-2027	PWR/ Operating	2011/GL	1528.55	-

Transfer to Morris

State	Facility	MTU To Morris
California	San Onofre	98.41
Connectic..	Haddam Neck	34.48
Illinois	Dresden	145.19
Minnesota	Monticello	198.19
Nebraska	Cooper	198.02

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
2,261.2	1099.9	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
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4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE. Includes One-Time fees paid by GE (Morris).
5. Discharges includes 0.26 MTU transferred to Idaho National Laboratory.
6. Discharges includes 145 MTU transferred to Morris.

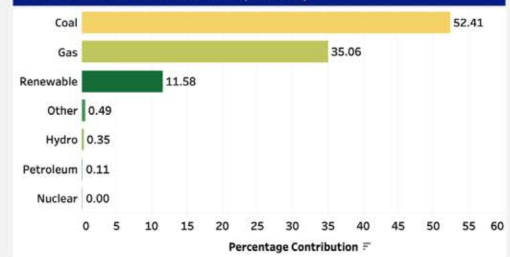
INDIANA

Facility Category
Operating University Research Reactor

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Eric Holcomb (R)
Senators	Braun, Mike (R) and Young, Todd (R)
No. of Operating Research Reactors	1 at 1 Sites

2022 Electricity Generation Mix (Note# 3)



Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/..	Facility Type/ St..	ISFSI License Ye..	Projected Discharg..	Note #
4	Baird, James (R)	Purdue University	PUR-1	1962- License R-87	R&TRF Lockheed, 1 kW/ Operating	-	-	-

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

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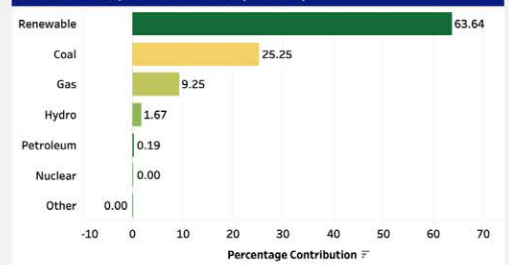
IOWA

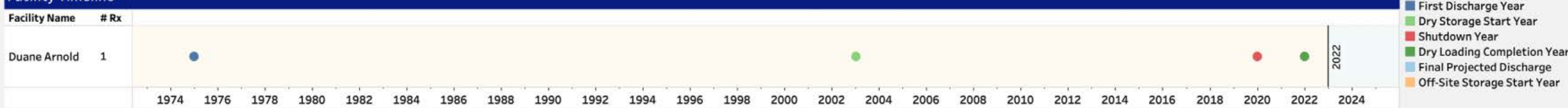
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Kim Reynolds (R)
Senators	Ernst, Joni (R) and Grassley, Chuck (R)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Shutdown Reactors	1
Commercial SNF at Dry Storage (MTU)	662.64
Total Commercial SNF (MTU)	662.64
No. of Commercial SNF Dry Casks	60

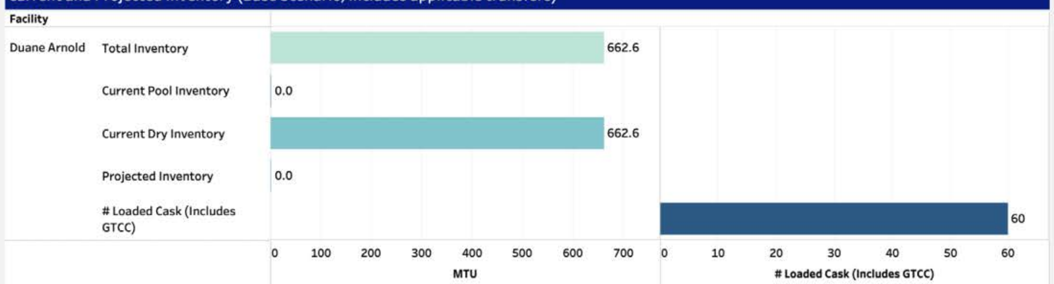
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



IOWA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Ye..	Projected Discharged SNF (MTU)	Note #
2	Hinson, Ashley (R)	NextEra Energy, Inc	Duane Arnold	1975-2034	BWR/ Shutdown	2003/GL	662.64	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
137.1	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

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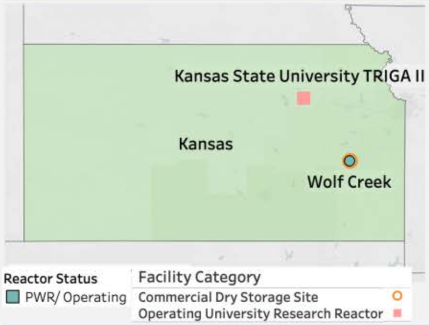
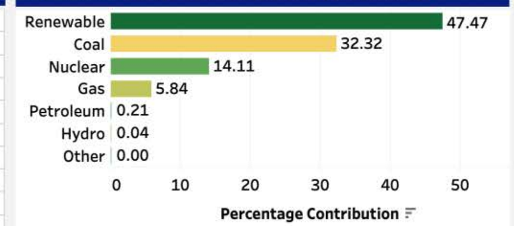
KANSAS



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

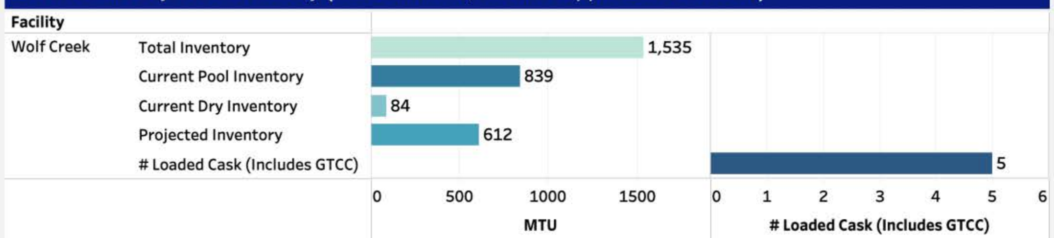
Governor	Laura Kelly (D)	-
Senators	Marshall, Roger (R) and Moran, Jerry (R)	-
No. of Commercial Site	1	-
No. of Commercial Dry Storage Site	1	-
No. of Commercial Operating Reactors	1	-
Commercial SNF at Dry Storage (MTU)	84.39	-
Commercial SNF at Pool (MTU)	838.63	-
Total Commercial SNF (MTU)	923.02	-
No. of Commercial SNF Dry Casks	5	-
No. of Operating Research Reactors	1 at 1 Sites	-

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



KANSAS

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #	
2	LaTurner, Jake (R)	Evergy, Inc	Wolf Creek 1	1985-2045	PWR/ Operating	-	1534.85	-	
1	Mann, Tracey (R)	Kansas State University	Kansas State University	1962- License R-88	R&TRF TRIGA MARK II, 1,250 kW/ Operating	-	-	-	

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #	
225.3	0	4	

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

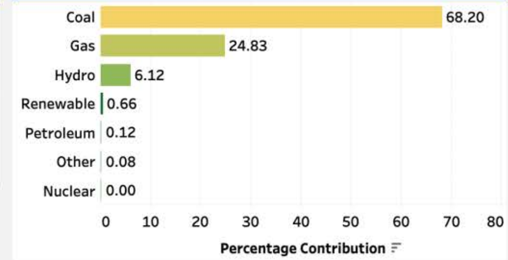
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

KENTUCKY

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Andy Beshear (D)
Senators	McConnell, Mitch (R) and Paul, Rand (R)

2022 Electricity Generation Mix (Note# 3)



Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
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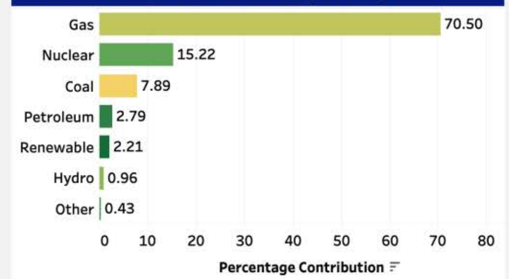
LOUISIANA

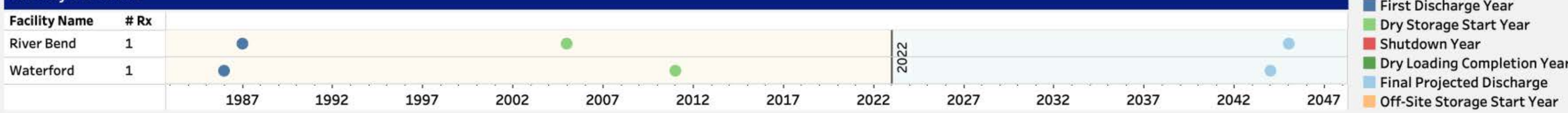
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	John Bel Edwards (D)
Senators	Cassidy, Bill (R) and Kennedy, John (R)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	2
Commercial SNF at Dry Storage (MTU)	861.88
Commercial SNF at Pool (MTU)	902.21
Total Commercial SNF (MTU)	1764.09
No. of Commercial SNF Dry Casks	68

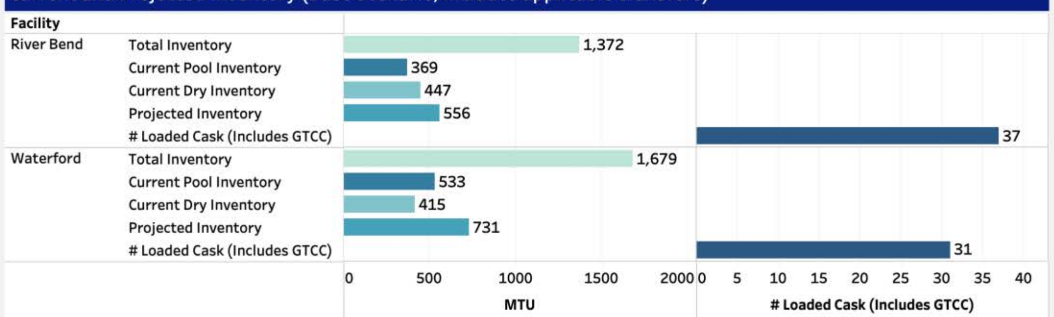
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



LOUISIANA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
5	Letlow, Julia (R)	Entergy Services, LLC	River Bend 1	1986-2025	BWR/ Operating	2005/GL	1409.46	-
2	Carter, Troy (D)	Entergy Services, LLC	Waterford 3	1985-2024	PWR/ Operating	2011/GL	1772.44	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
407.4	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

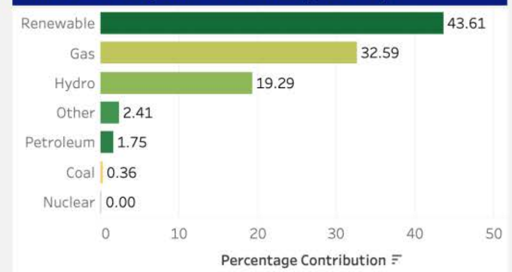
4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

MAINE

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

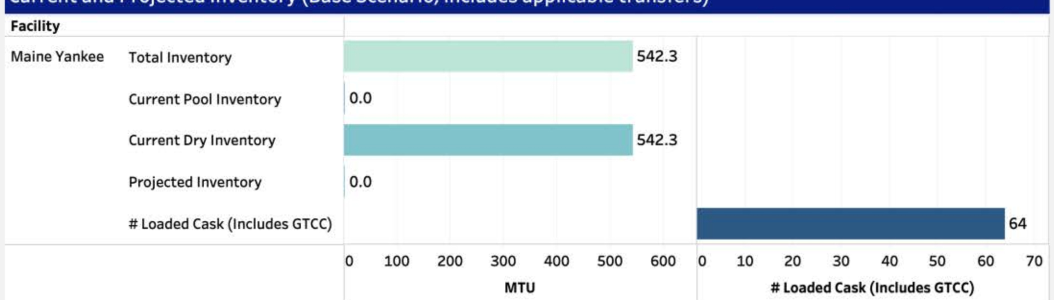
Governor	Janet Mills (D)
Senators	Collins, Susan M. (R) and King, Angus S., Jr. (I)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Shutdown Reactors	1
Commercial SNF at Dry Storage (MTU)	542.26
Total Commercial SNF (MTU)	542.26
No. of Commercial SNF Dry Casks	60
No. of Commercial GTCC Casks	4

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



MAINE

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)									
Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #	
1	Pingree, Chellie (D)	Maine Yankee Atomic Power Company	Maine Yankee	1973-1997/ DECON Completed	PWR/ Shutdown	2002/GL	542.26	-	

Nuclear Waste Fund			
Paid (in million $)	One-time Fee Owed (in million $)	Note #	
251.9	0	4	

Notes:

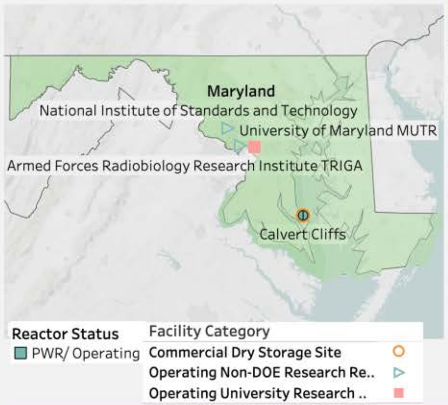
1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

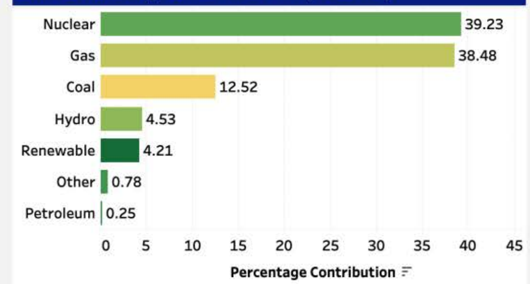
MARYLAND



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

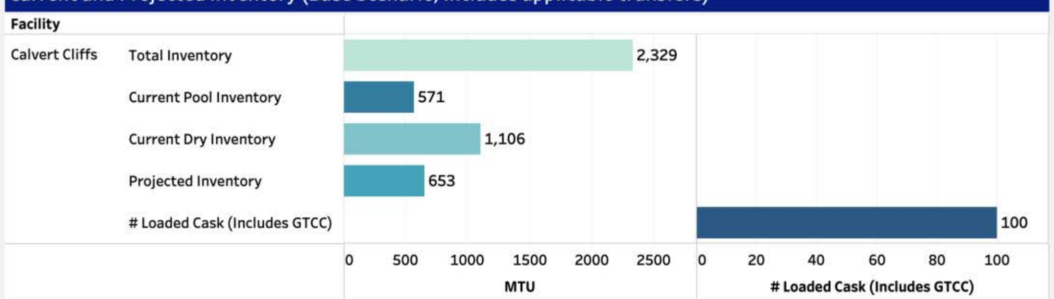
Governor	Wes Moore (D)
Senators	Cardin, Benjamin L. (D) and Van Hollen, Chris (D)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Operating Reactors	2
Commercial SNF at Dry Storage (MTU)	1105.76
Commercial SNF at Pool (MTU)	570.8
Total Commercial SNF (MTU)	1676.56
No. of Commercial SNF Dry Casks	100
No. of Operating Research Reactors	3 at 3 Sites

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



MARYLAND

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
8	Raskin, Jamie (D)	DOD	Armed Forces Radiobiology Research Institute TRIGA	1962- License R-84	R&TRF TRIGA MARK F, 1,100 kW/ Operating	-	-	-
6	Trone, David (D)	Commerce Department	National Institute of Standards and Technology	1970- License TR-5	R&TRF Nuclear Test, 20,000 kW/ Operating	-	-	-
5	Hoyer, Steny (D)	Constellation Energy Generation, LLC	Calvert Cliffs 1	1975-2034	PWR/ Operating	1992/SL	1160.9	-
			Calvert Cliffs 2	1977-2036	PWR/ Operating	1992/SL	1169.03	-
4	Ivey, Glenn (D)	University of Maryland	University of Maryland	1960- License R-70	R&TRF TRIGA MARK I, 250 kW/ Operating	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
426.4	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

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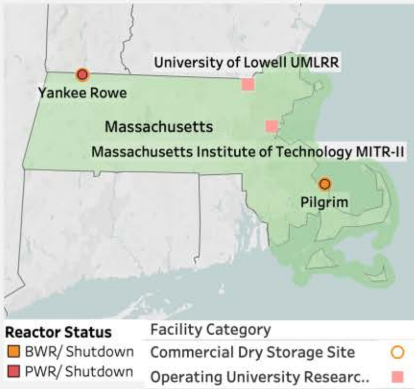
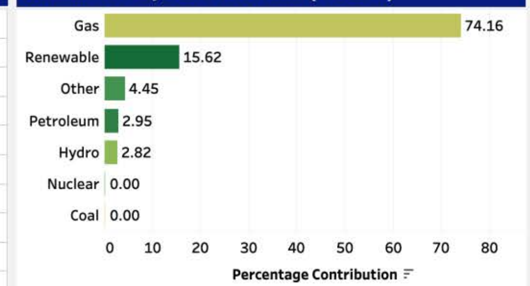
MASSACHUSETTS



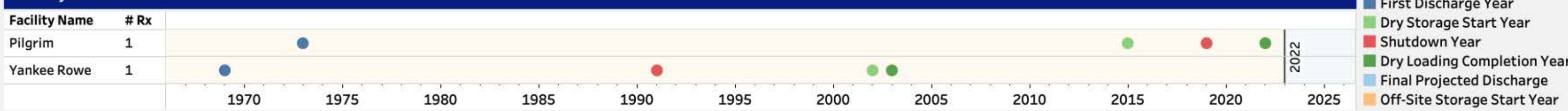
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Maura Healey (D)
Senators	Markey, Edward J. (D) and Warren, Elizabeth (D)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Shutdown Reactors	2
Commercial SNF at Dry Storage (MTU)	861.95
Total Commercial SNF (MTU)	861.95
No. of Commercial SNF Dry Casks	77
No. of Commercial GTCC Casks	4
No. of Operating Research Reactors	2 at 2 Sites

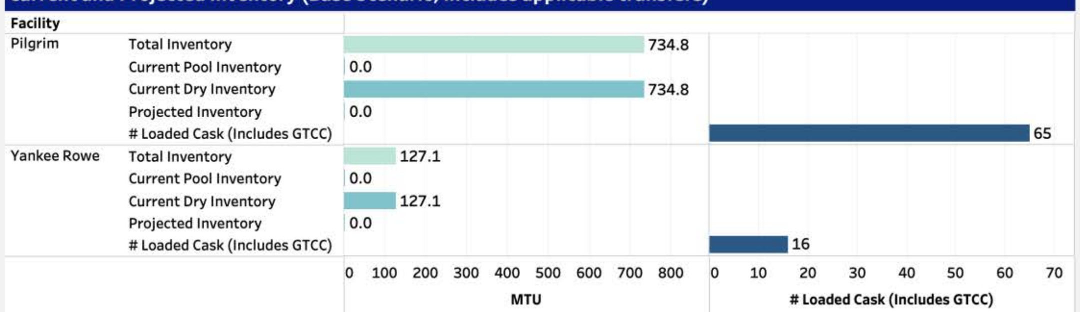
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



MASSACHUSETTS

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
9	Keating, William (D)	Holtec Decommissioning International, LLC	Pilgrim 1	1972-2032/ SAFSTOR	BWR/ Shutdown	2015/GL	734.82	-
7	Pressley, Ayanna (D)	Massachusetts Institute of Technology	Massachusetts Institute of Technology MITR-II	1958- License R-37	R&TRF HWR Reflected, 6,000 kW/ Operating	-	-	-
3	Trahan, Lori (D)	University of Lowell	University of Lowell UMLRR	1974- License R-125	R&TRF GE Pool, 1,000 kW/ Operating	-	-	-
1	Neal, Richard (D)	Yankee Atomic Electric Company	Yankee Rowe	1963-1991/ DECON Completed	PWR/ Shutdown	2002/GL	127.13	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
188.4	0	4

Notes:

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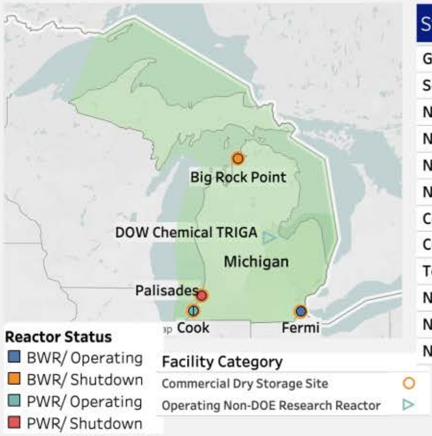
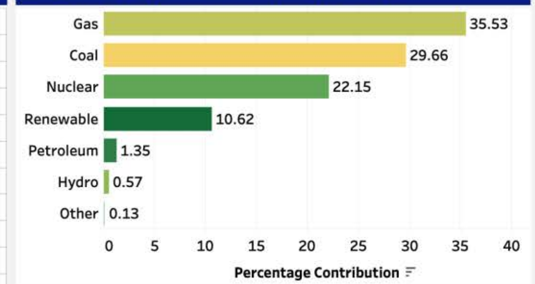
MICHIGAN



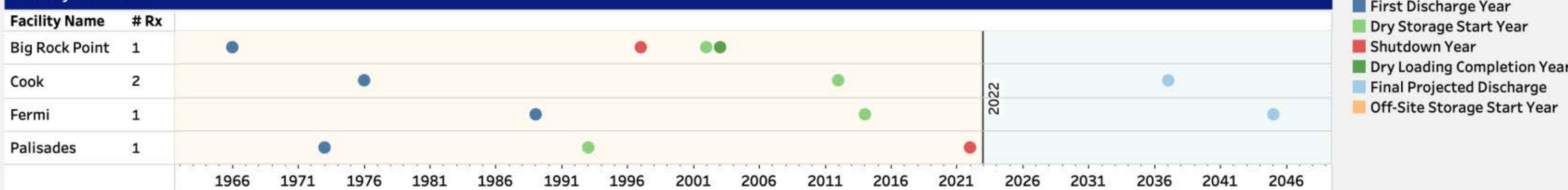
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

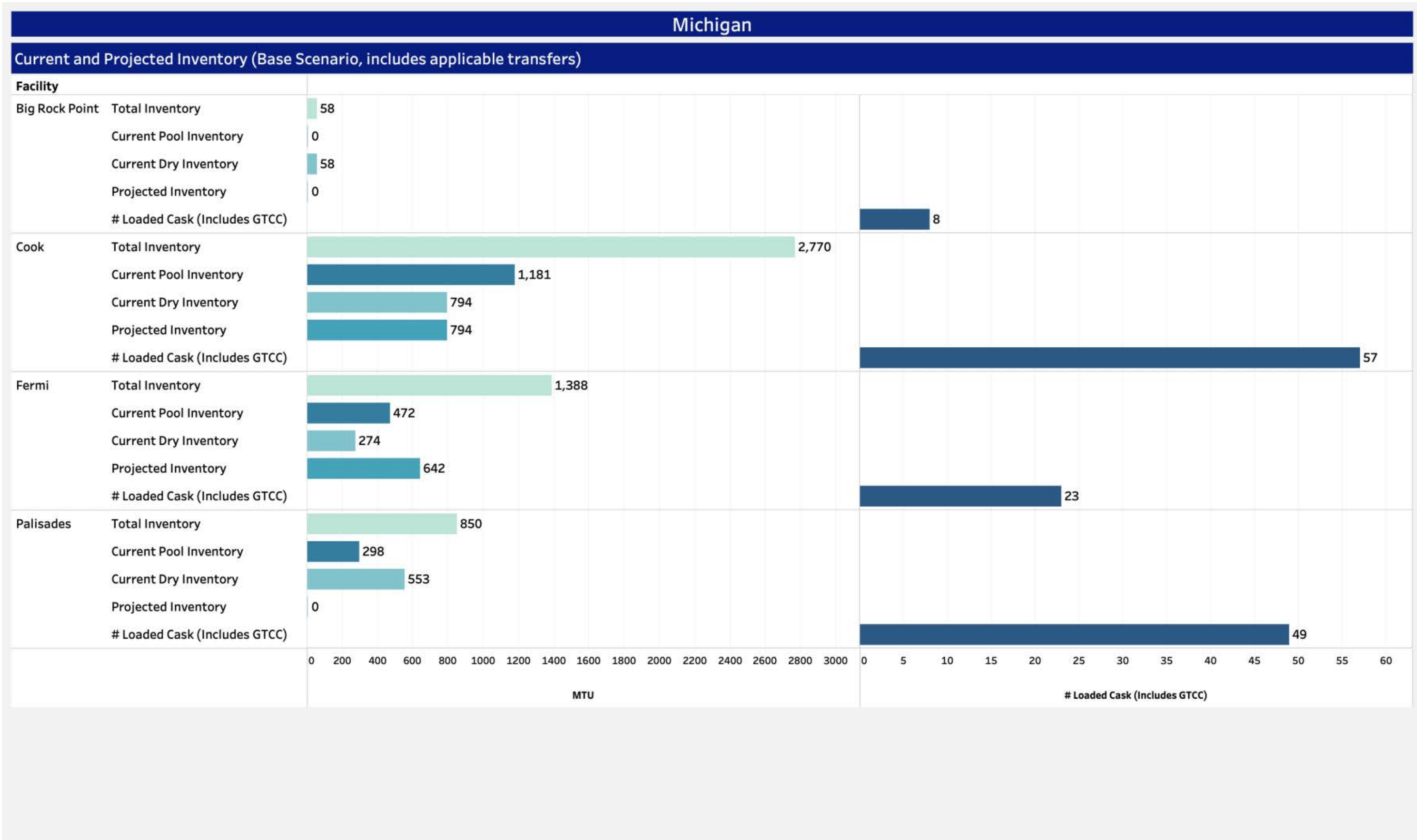
Governor	Gretchen Whitmer (D)
Senators	Peters, Gary C. (D) and Stabenow, Debbie (D)
No. of Commercial Site	4
No. of Commercial Dry Storage Site	4
No. of Commercial Operating Reactors	3
No. of Commercial Shutdown Reactors	2
Commercial SNF at Dry Storage (MTU)	1678.82
Commercial SNF at Pool (MTU)	1950.59
Total Commercial SNF (MTU)	3629.41
No. of Commercial SNF Dry Casks	136
No. of Commercial GTCC Casks	1
No. of Operating Research Reactors	1 at 1 Sites

2022 Electricity Generation Mix (Note# 3)



Facility Timeline




Michigan
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Big Rock Point
Total Inventory 58
Current Pool Inventory 0
Current Dry Inventory 58
Projected Inventory 0
Loaded Cask (Includes GTCC) 8
Cook
Total Inventory 2,770
Current Pool Inventory 1,181
Current Dry Inventory 794
Projected Inventory 794
Loaded Cask (Includes GTCC) 57
Fermi
Total Inventory 1,388
Current Pool Inventory 472
Current Dry Inventory 274
Projected Inventory 642
Loaded Cask (Includes GTCC) 23
Palisades
Total Inventory 850
Current Pool Inventory 298
Current Dry Inventory 553
Projected Inventory 0
Loaded Cask (Includes GTCC) 49
0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000
MTU
0 5 10 15 20 25 30 35 40 45 50 55 60
Loaded Cask (Includes GTCC)

MICHIGAN

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
8	Kildee, Daniel (D)	DOW Chemical	DOW Chemical TRIGA	1967- License R-108	R&TRF TRIGA MARK I, 300 kW/ Operating	-	-	-
5	Walberg, Tim (R)	AEP Indiana Michigan Power	Cook 1	1975-2034	PWR/ Operating	2011/GL	1457.16	-
			Cook 2	1978-2037	PWR/ Operating	2011/GL	1312.55	-
		Detroit Edison Company (DTE)	Enrico Fermi 1	1963-1972/ SAFSTOR	Fast Breeder Reactor/ Shutdown	No SNF on site	-	5
			Enrico Fermi 2	1988-2025	BWR/ Operating	2016/GL	1387.72	-
4	Huizenga, Bill (R)	Holtec Decommissioning International, LLC	Palisades	1971-2031	PWR/ Shutdown	1993/GL	850.48	-
1	Bergman, Jack (R)	Holtec Decommissioning International, LLC	Big Rock Point	1964-1997/ DECON Completed	BWR/ Shutdown	2002/GL	69.39	6

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
829.0	285.6	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

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5. Remaining Fermi Unit 1 SNF has been transferred to DOE.

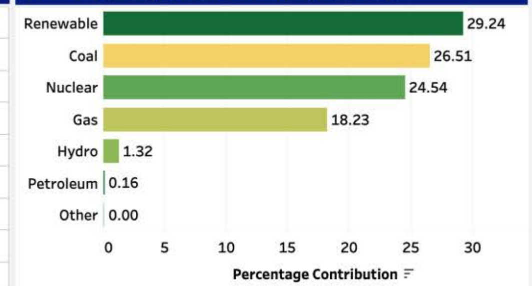
6. Discharge includes 11 MTU transferred to Idaho National Laboratory.

MINNESOTA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

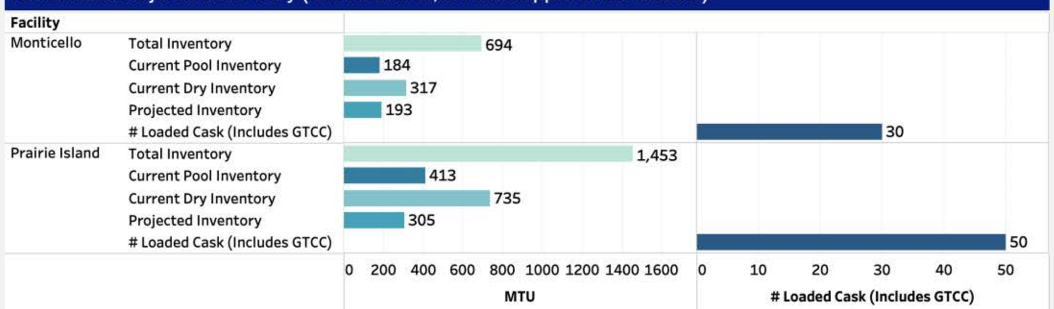
Governor	Tim Walz (D)
Senators	Klobuchar, Amy (D) and Smith, Tina (D)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	3
Commercial SNF at Dry Storage (MTU)	1052.33
Commercial SNF at Pool (MTU)	596.9
Total Commercial SNF (MTU)	1649.23
No. of Commercial SNF Dry Casks	80

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



MINNESOTA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
6	Emmer, Tom (R)	Xcel Energy - Northern States Power Company	Monticello	1971-2030	BWR/ Operating	2008/GL	920.89	5
1	Finstad, Brad (R)	Xcel Energy - Northern States Power Company	Prairie Island 1	1973-2033	PWR/ Operating	1993/SL	715.31	-
			Prairie Island 2	1974-2034	PWR/ Operating	1993/SL	737.43	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
449.2	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

5. Discharge includes 198 MTU transferred to Morris (Illinois).

MISSISSIPPI

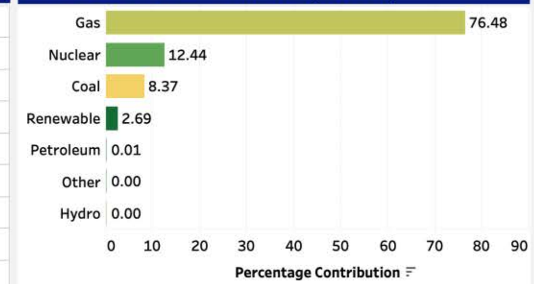
Reactor Status
BWR/ Operating

Facility Category
Commercial Dry Storage Site

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

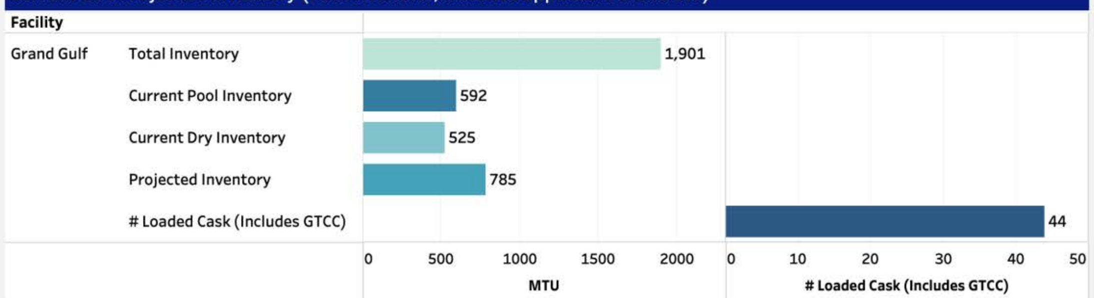
Governor	Tate Reeves (R)
Senators	Hyde-Smith, Cindy (R) and Wicker, Roger F. (R)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Operating Reactors	1
Commercial SNF at Dry Storage (MTU)	524.73
Commercial SNF at Pool (MTU)	591.65
Total Commercial SNF (MTU)	1116.38
No. of Commercial SNF Dry Casks	44

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



MISSISSIPPI

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
2	Thompson, Bennie (D)	Entergy Services, LLC	Grand Gulf 1	1985-2024	BWR/ Operating	2006/GL	1900.91	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
250.4	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

MISSOURI

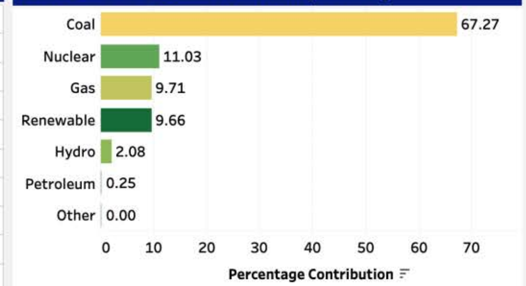
Reactor Status
PWR/ Operating

Facility Category
Commercial Dry Storage Site
Operating University Research Reactor

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Michael Parson (R)
Senators	Hawley, Josh (R) and Schmitt, Eric (R)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Operating Reactors	1
Commercial SNF at Dry Storage (MTU)	465.82
Commercial SNF at Pool (MTU)	461.94
Total Commercial SNF (MTU)	927.76
No. of Commercial SNF Dry Casks	30
No. of Operating Research Reactors	2 at 2 Sites

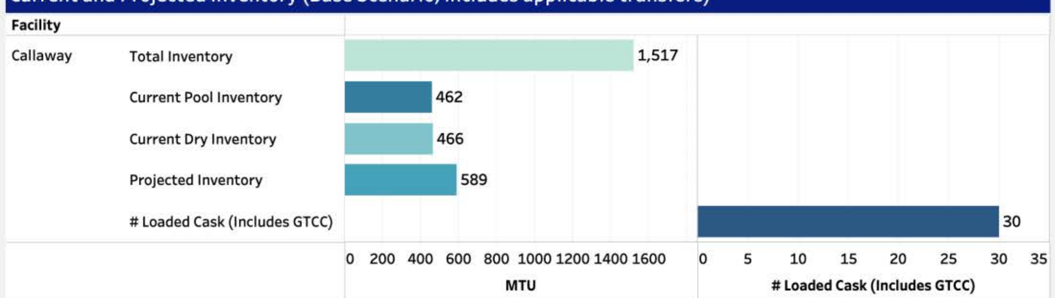
2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Events
First Discharge Year
Dry Storage Start Year
Shutdown Year
Dry Loading Completion Year
Final Projected Discharge
Off-Site Storage Start Year

Current and Projected Inventory (Base Scenario, includes applicable transfers)



MISSOURI

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
8	Smith, Jason (R)	Missouri University of Science and Technology	Missouri University of Science and Technology	1961- License R-79	R&TRF Pool, 200 kW/ Operating	-	-	-
3	Luetkemeyer, Blaine (R)	AmerenUE	Callaway	1984-2044	PWR/ Operating	2015/GL	1516.65	-
		University of Missouri at Columbia	University of Missouri at Columbia	1966- License R-103	R&TRF Tank, 10,000 kW/ Operating	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
243.1	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

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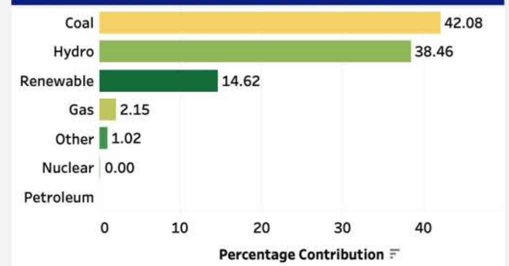
MONTANA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Greg Gianforte (R)
Senators	Daines, Steve (R) and Tester, Jon (D)

2022 Electricity Generation Mix (Note# 3)



Notes:

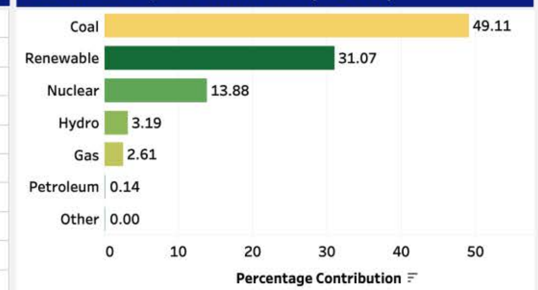
1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

NEBRASKA

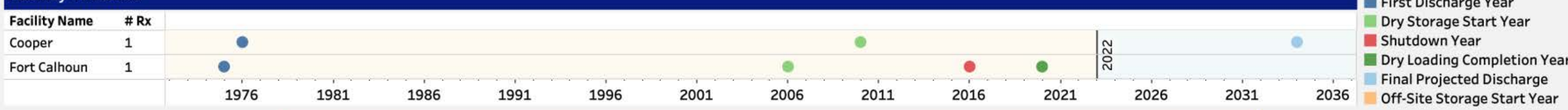
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Jim Pillen (R)
Senators	Fischer, Deb (R) and Ricketts, Pete (R)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	1
No. of Commercial Shutdown Reactors	1
Commercial SNF at Dry Storage (MTU)	795.15
Commercial SNF at Pool (MTU)	296.59
Total Commercial SNF (MTU)	1091.74
No. of Commercial SNF Dry Casks	70

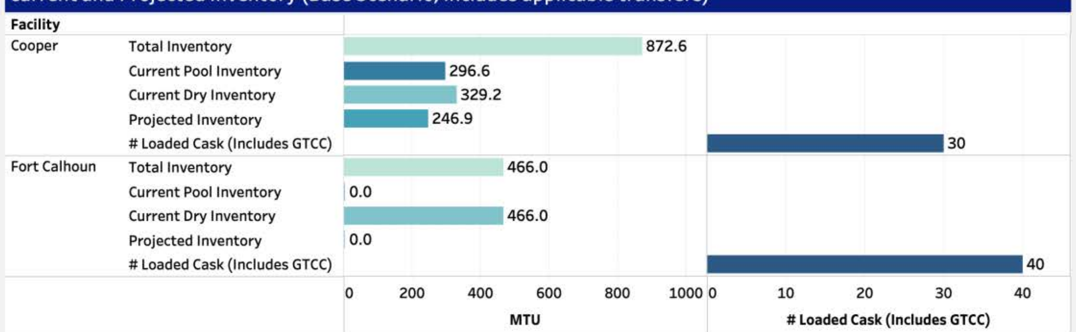
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



NEBRASKA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
6	Graves, Sam (R)	Nebraska Public Power District (NPPD)	Cooper Station	1974-2034	BWR/ Operating	2010/GL	1071.03	5
3	Smith, Adrian (R)	Omaha Public Power District (OPPD)	Fort Calhoun	1973-1933	PWR/ Shutdown	2006/GL	465.98	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
300.2	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE.

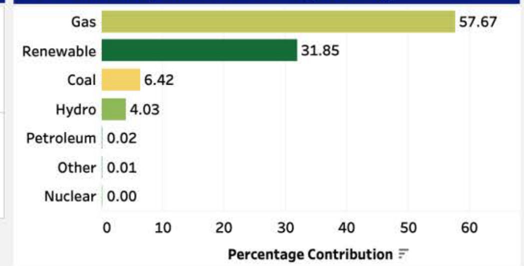
5. Discharge includes 198 MTU transferred to Morris (Illinois).

NEVADA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Joe Lombardo (R)
Senators	Cortez Masto, Catherine (D) and Rosen, Jacky (D)

2022 Electricity Generation Mix (Note# 3)



Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
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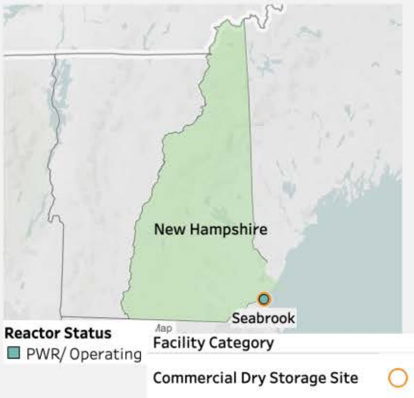
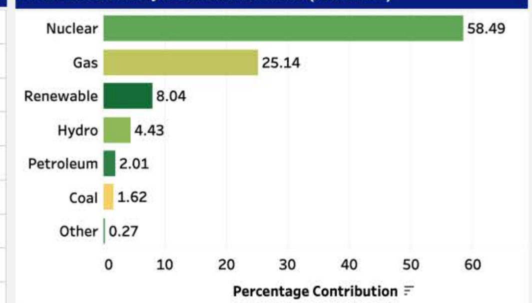
NEW HAMPSHIRE



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

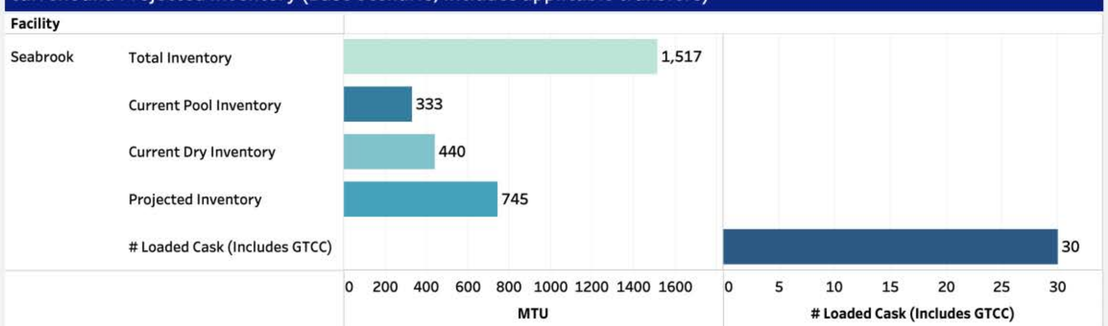
Governor	Chris Sununu (R)
Senators	Hassan, Margaret Wood (D) and Shaheen, Jeanne (D)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Operating Reactors	1
Commercial SNF at Dry Storage (MTU)	439.52
Commercial SNF at Pool (MTU)	332.55
Total Commercial SNF (MTU)	772.07
No. of Commercial SNF Dry Casks	30

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



NEW HAMPSHIRE

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
1	Pappas, Chris (D)	NextEra Energy, Inc	Seabrook	1990-2030	PWR/ Operating	2008/GL	1516.8	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
201.2	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

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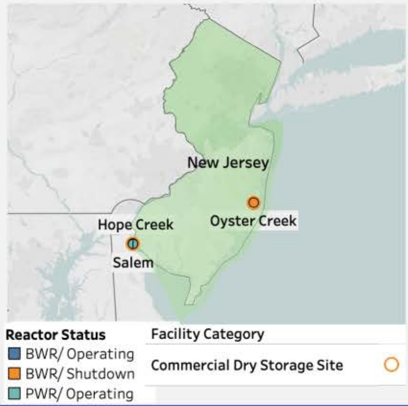
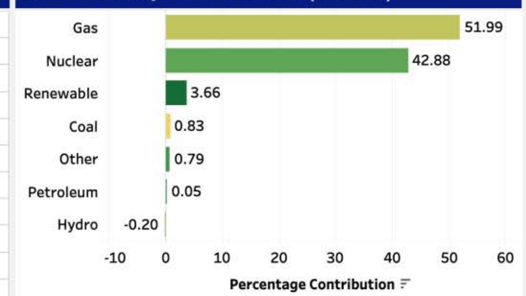
NEW JERSEY



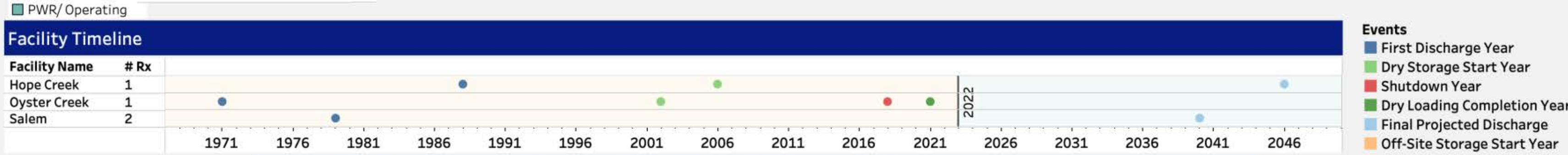
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Phil Murphy (D)
Senators	Booker, Cory A. (D) and Menendez, Robert (D)
No. of Commercial Site	3
No. of Commercial Dry Storage Site	3
No. of Commercial Operating Reactors	3
No. of Commercial Shutdown Reactors	1
Commercial SNF at Dry Storage (MTU)	1880.41
Commercial SNF at Pool (MTU)	1605.75
Total Commercial SNF (MTU)	3486.16
No. of Commercial SNF Dry Casks	146
No. of Commercial GTCC Casks	4

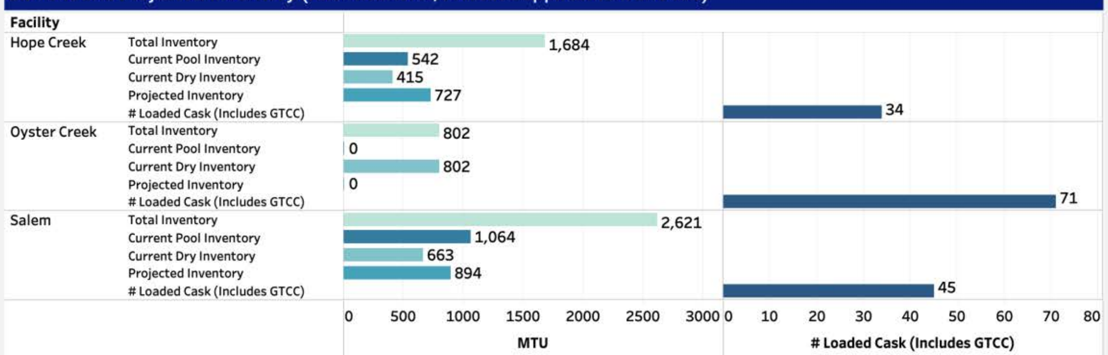
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



NEW JERSEY

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
2	Van Drew, Jefferson (R)	Holtec Decommissioning International, LLC	Oyster Creek	1969-2029/SAFSTOR	BWR/ Shutdown	2002/GL	802.24	-
		PSEG Services Corporation	Salem 1	1977-2036	PWR/ Operating	2010/GL	1297.2	-
			Salem 2	1981-2040	PWR/ Operating	2010/GL	1323.81	-
			Hope Creek	1986-2046	BWR/ Operating	2006/GL	1684.31	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
769.6	188.2	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

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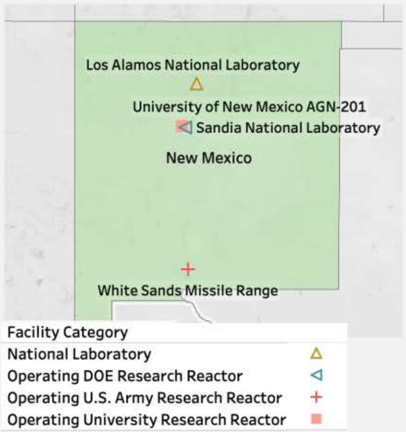
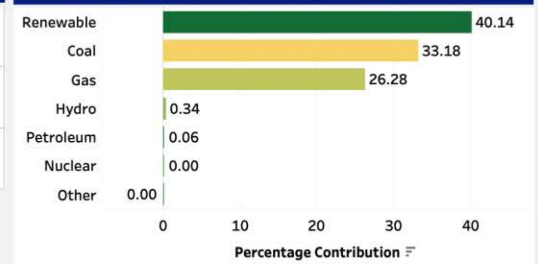
NEW MEXICO



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Michelle Lujan Grisham (D)
Senators	Heinrich, Martin (D) and Luján, Ben Ray (D)
No. of Operating Research Reactors	3 at 3 Sites

2022 Electricity Generation Mix (Note# 3)



Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
3	Leger Fernandez, Teresa (D)	Department of Energy	Los Alamos National Laboratory	None	Various	-	-	-
2	Vasquez, Gabe (D)	Department of Energy	Sandia National Laboratory	1979-	Test Reactor	-	-	-
				None	Various	-	-	-
		U.S. Airforce	White Sands Missile Range	None	R&TRF FGR/ Operating	-	-	-
1	Stansbury, Melanie (D)	University of New Mexico	University of New Mexico AGN-201	1966- License R-102	R&TRF AGN-201M #112, 0.005 kW/ Operating	-	-	-

Notes:

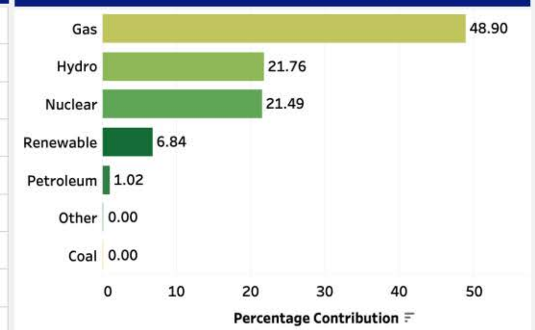
1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

NEW YORK

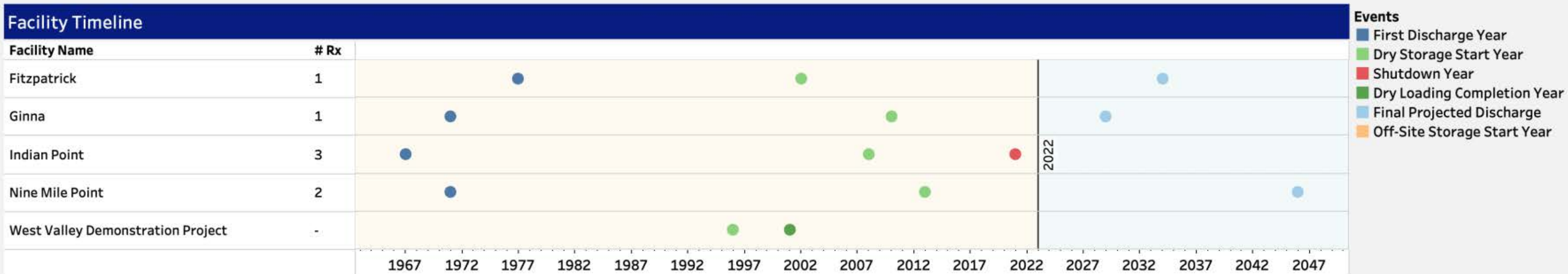
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

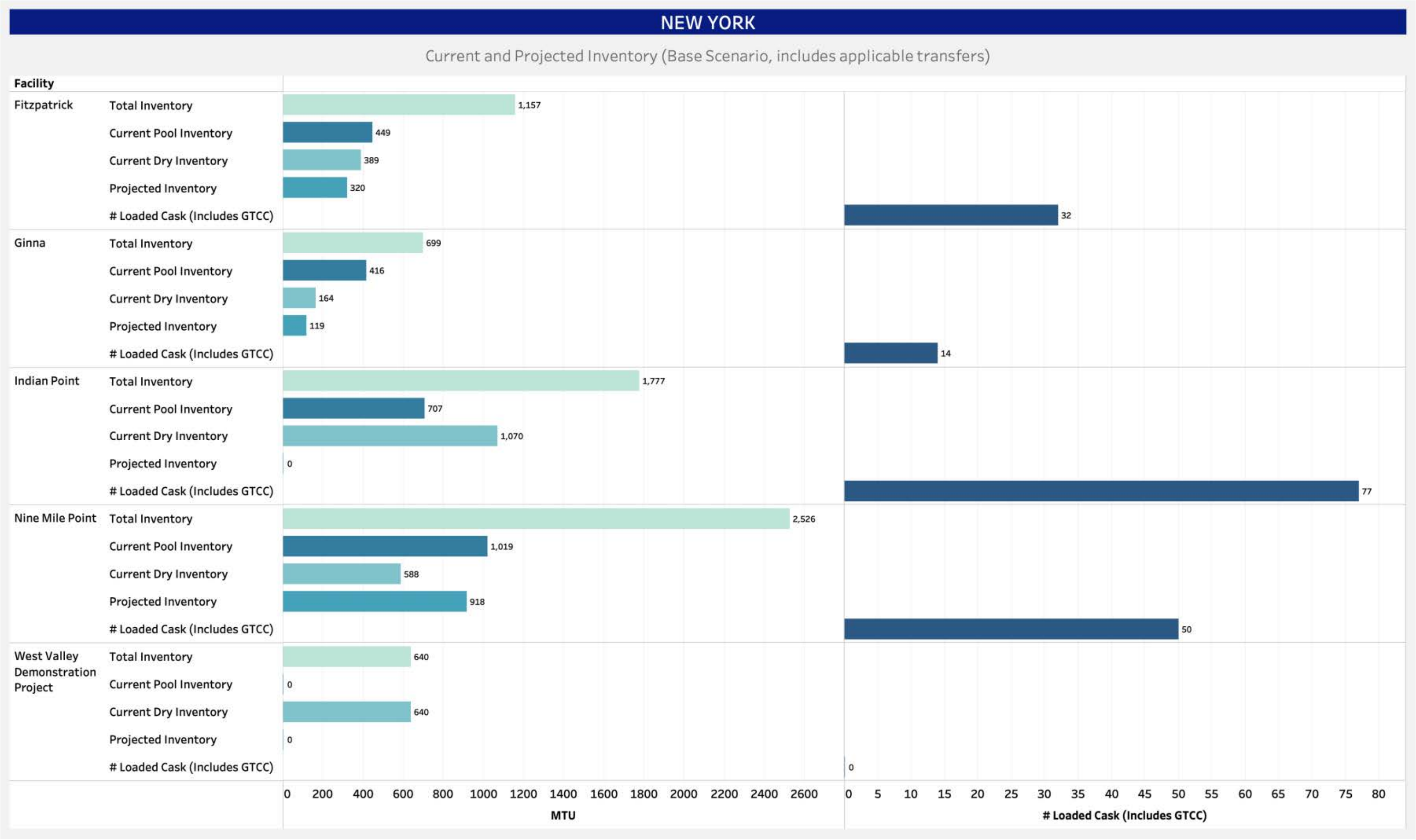
Governor	Kathy Hochul (D)
Senators	Gillibrand, Kirsten E. (D) and Schumer, Charles E. (D)
No. of Commercial Site	4
No. of Commercial Dry Storage Site	4
No. of Commercial Operating Reactors	4
No. of Commercial Shutdown Reactors	3
Commercial SNF at Dry Storage (MTU)	2211.44
Commercial SNF at Pool (MTU)	2591.28
Total Commercial SNF (MTU)	4802.72
No. of Commercial SNF Dry Casks	173
No. of Operating Research Reactors	1 at 1 Sites
Commercial HLW	1 Site

2022 Electricity Generation Mix (Note# 3)



Facility Timeline




NEW YORK
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Fitzpatrick
Total Inventory 1,157
Current Pool Inventory 449
Current Dry Inventory 389
Projected Inventory 320
Loaded Cask (Includes GTCC) 32
Ginna
Total Inventory 699
Current Pool Inventory 416
Current Dry Inventory 164
Projected Inventory 119
Loaded Cask (Includes GTCC) 14
Indian Point
Total Inventory 1,777
Current Pool Inventory 707
Current Dry Inventory 1,070
Projected Inventory 0
Loaded Cask (Includes GTCC) 77
Nine Mile Point
Total Inventory 2,526
Current Pool Inventory 1,019
Current Dry Inventory 588
Projected Inventory 918
Loaded Cask (Includes GTCC) 50
West Valley Demonstration Project
Total Inventory 640
Current Pool Inventory 0
Current Dry Inventory 640
Projected Inventory 0
Loaded Cask (Includes GTCC) 0
0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600
MTU
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80
Loaded Cask (Includes GTCC)

NEW YORK

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTU)	Note #
24	Tenney, Claudia (R)	Constellation Energy Generation, LLC	Nine Mile Point 1	1969-2029	BWR/ Operating	2012/GL	888.44	-
			R. E. Ginna	1970-2029	PWR/ Operating	2010/GL	714.73	5
			Fitzpatrick	1975-2034	BWR/ Operating	2002/GL	1157.49	-
			Nine Mile Point 2	1988-2046	BWR/ Operating	2012/GL	1637.36	-
23	Langworthy, Nic..	Department of Energy	West Valley Demonstration Project	1966-1972/ DECON	Reprocessing Plant/ Shutdown	-	-	6
20	Tonko, Paul (D)	Rensselaer Polytechnic Institute	Rensselaer Polytechnic Institute	1974- License CX-22	R&TRF Critical Assembly, 0.1 kW/ Operating	-	-	-
17	Lawler, Michael (R)	Holtec Decommissioning International, LLC	Indian Point 1	1962-1974/ SAFSTOR	PWR/ Shutdown	2008/GL	30.58	-
			Indian Point 2	1974-2024	PWR/ Shutdown	2008/GL	900.41	-
			Indian Point 3	1976-2025	PWR/ Shutdown	2008/GL	845.62	-
1	LaLota, Nick (R)	Department of Energy	Brookhaven National Laboratory	None	Various	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
1,011.8	545	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

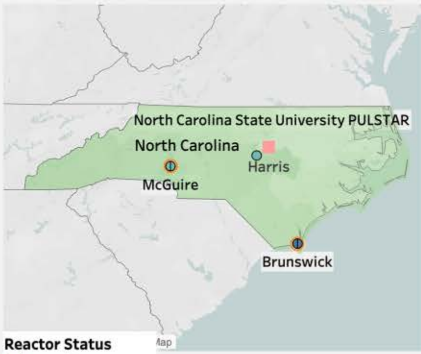
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE. Includes One-Time fees paid by GE (Morris). Includes one-time fee paid by Nuclear Fuel Services (NFS) for West Valley.

5. Discharge includes 15 MTU transferred to Idaho National Laboratory.

6. About 640 MTU were reprocessed producing about 2,500 m3 of liquid high-level waste (HLW). The liquid was vitrified between 1996 and 2001 producing 278 HLW canisters. These canisters have been moved to 56 canisters in concrete vented overpacks, similar to SNF storage, to allow facility decommissionng to continue.

NORTH CAROLINA



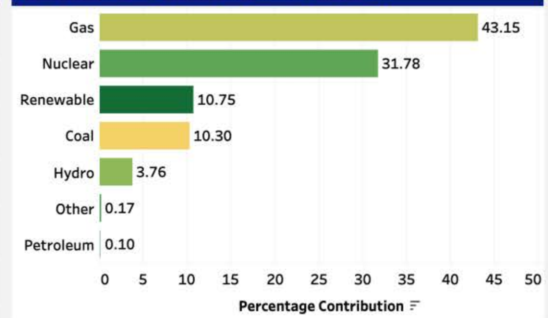
Reactor Status
- BWR/ Operating
- PWR/ Operating

Facility Category
Commercial Dry Storage Site
Operating University Research Reactor

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

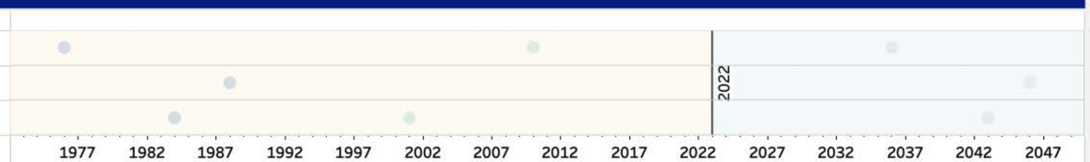
Governor	Roy Cooper (D)
Senators	Budd, Ted (R) and Tillis, Thom (R)
No. of Commercial Site	3
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	5
Commercial SNF at Dry Storage (MTU)	1585.22
Commercial SNF at Pool (MTU)	3085.59
Total Commercial SNF (MTU)	4670.81
No. of Commercial SNF Dry Casks	125

2022 Electricity Generation Mix (Note# 3)

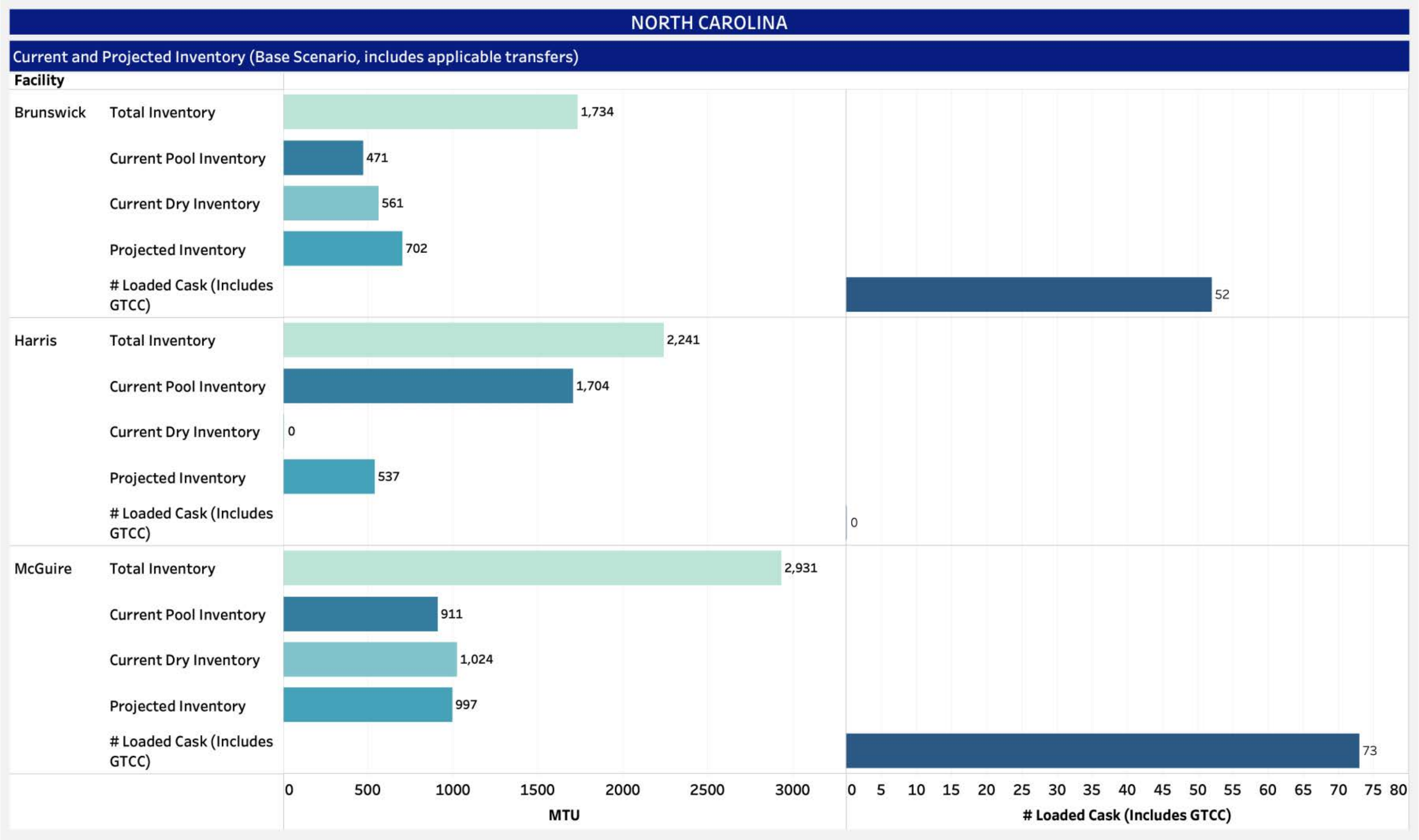


Facility Timeline

Facility Name	# Rx
Brunswick	2
Harris	1
McGuire	2



Events
- First Discharge Year
- Dry Storage Start Year
- Shutdown Year
- Dry Loading Completion Year
- Final Projected Discharge
- Off-Site Storage Start Year


NORTH CAROLINA
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Brunswick
Total Inventory
1,734
Current Pool Inventory
471
Current Dry Inventory
561
Projected Inventory
702
Loaded Cask (Includes GTCC)
52
Harris
Total Inventory
2,241
Current Pool Inventory
1,704
Current Dry Inventory
0
Projected Inventory
537
Loaded Cask (Includes GTCC)
0
McGuire
Total Inventory
2,931
Current Pool Inventory
911
Current Dry Inventory
1,024
Projected Inventory
997
Loaded Cask (Includes GTCC)
73
0 500 1000 1500 2000 2500 3000
MTU
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80
Loaded Cask (Includes GTCC)

NORTH CAROLINA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTU)	Note #
13	Nickel, Wiley (D)	Duke Energy Corporation	Harris 1	1987-2046	PWR/ Operating	-	1225.32	-
12	Adams, Alma (D)	Duke Energy Corporation	McGuire 1	1981-2041	PWR/ Operating	2001/GL	1391.97	-
			McGuire 2	1984-2043	PWR/ Operating	2001/GL	1400.03	-
7	Rouzer, David (R)	Duke Energy Corporation	Brunswick 2	1975-2034	BWR/ Operating	2010/GL	1185.13	-
			Brunswick 1	1977-2036	BWR/ Operating	2010/GL	1212.23	-
2	Ross, Deborah (D)	North Carolina State University PULSTAR	North Carolina State University PULSTAR	1972- License R-120	R&TRF Pulstar, 1,000 kW/ Operating	-	-	-

SNF Transfers

Transferred ..	Transferred F..	MTU	Transferring From ..
Brunswick	Robinson	136.84	South Carolina
Harris	Brunswick	800.29	North Carolina
	Robinson	215.81	South Carolina
McGuire	Oconee	139.35	South Carolina

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
1,034.6	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill Fee and $5.293M One Time Fee payments by DOE. Includes One-Time fees paid by GE (Morris). Includes one-time fee paid by Nuclear Fuel Services (NFS) for West Valley.

5. Discharge includes 15 MTU transferred to Idaho National Laboratory.

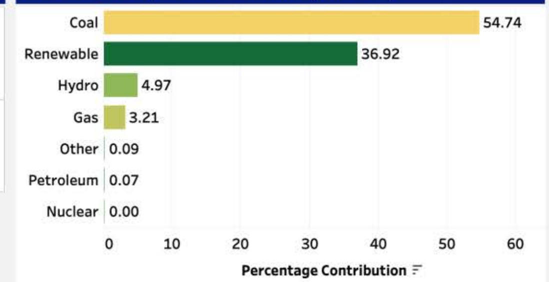
6. About 640 MTU were reprocessed producing about 2,500 m3 of liquid high-level waste (HLW). The liquid was vitrified between 1996 and 2001 producing 278 HLW canisters. These canisters have been moved to 56 canisters in concrete vented overpacks, similar to SNF storage, to allow facility decommissionng to continue.

NORTH DAKOTA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Doug Burgum (R)
Senators	Cramer, Kevin (R) and Hoeven, John (R)

2022 Electricity Generation Mix (Note# 3)



Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
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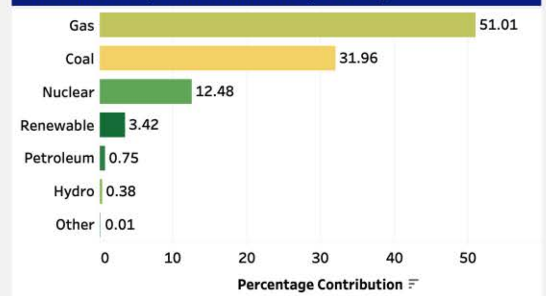
OHIO

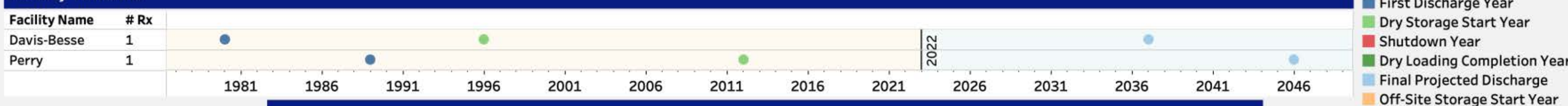
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Mike DeWine (R)
Senators	Brown, Sherrod (D) and Vance, J.D. (R)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	2
Commercial SNF at Dry Storage (MTU)	578.17
Commercial SNF at Pool (MTU)	1032.48
Total Commercial SNF (MTU)	1610.65
No. of Commercial SNF Dry Casks	42
No. of Operating Research Reactors	1 at 1 Sites

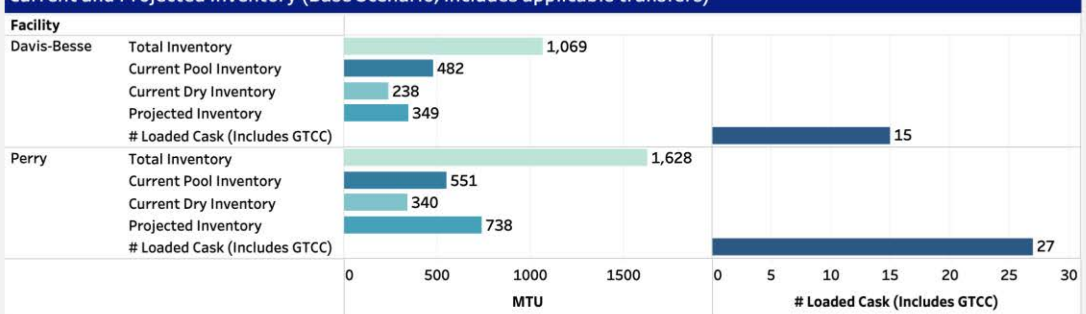
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



OHIO

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
14	Joyce, David (R)	Energy Harbor Nuclear Generation LLC	Perry 1	1987-2026	BWR/ Operating	2007/GL	1628.29	-
9	Kaptur, Marcy (D)	Energy Harbor Nuclear Generation LLC	Davis-Besse	1978-2037	PWR/ Operating	1996/GL	1068.53	-
3	Beatty, Joyce (D)	Ohio State University OSURR	Ohio State University OSURR	1961- License R-75	R&TRF Pool, 500 kW/ Operating	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
381.5	35.2	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

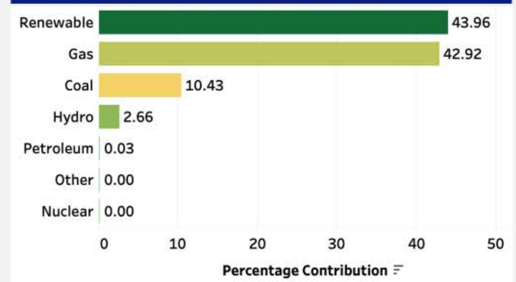
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees.

OKLAHOMA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)	
Governor	Kevin Stitt (R)
Senators	Lankford, James (R) and Mullin, Markwayne (R)

2022 Electricity Generation Mix (Note# 3)



Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

OREGON

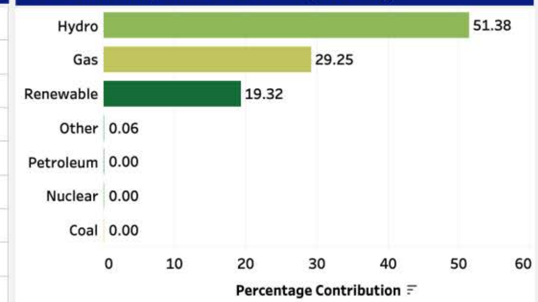
Reactor Status
PWR/ Shutdown

Facility Category
Commercial Dry Storage Site
Operating University Research Reactor

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

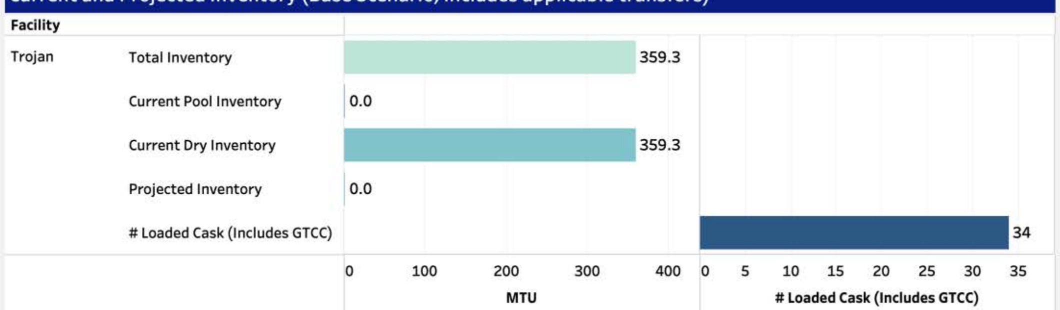
Governor	Tina Kotek (D)
Senators	Merkley, Jeff (D) and Wyden, Ron (D)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Shutdown Reactors	1
Commercial SNF at Dry Storage (MTU)	359.26
Total Commercial SNF (MTU)	359.26
No. of Commercial SNF Dry Casks	34
No. of Operating Research Reactors	2 at 2 Sites

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



OREGON

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)									
Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #	
4	Hoyle, Val (D)	Oregon State University	Oregon State University OSTR	1967- License R-106	R&TRF TRIGA Mark II, 1,100 kW/ Operating	-	-	-	
3	Blumenauer, Earl (D)	Reed College	Reed College RRR	1968- License R-112	R&TRF TRIGA MARK I, 250 kW/ Operating	-	-	-	
1	Bonamici, Suzanne (D)	Portland General Electric	Trojan	1975-1992/ DECON Completed	PWR/ Shutdown	1999/GL	359.26	-	

Nuclear Waste Fund			
Paid (in million $)	One-time Fee Owed (in million $)	Note #	
75.5	0	4	

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

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4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees.

PENNSYLVANIA

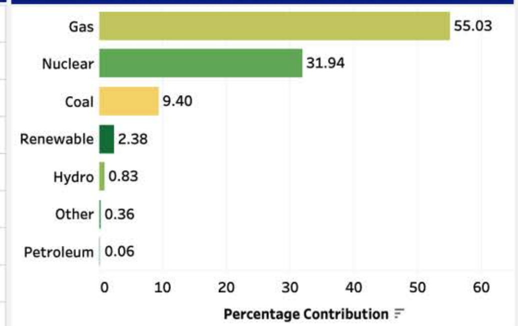
Reactor Status
- BWR/ Operating
- PWR/ Operating
- PWR/ Shutdown

Facility Category
- Commercial Dry Storage Site
- Operating University Research Reactor

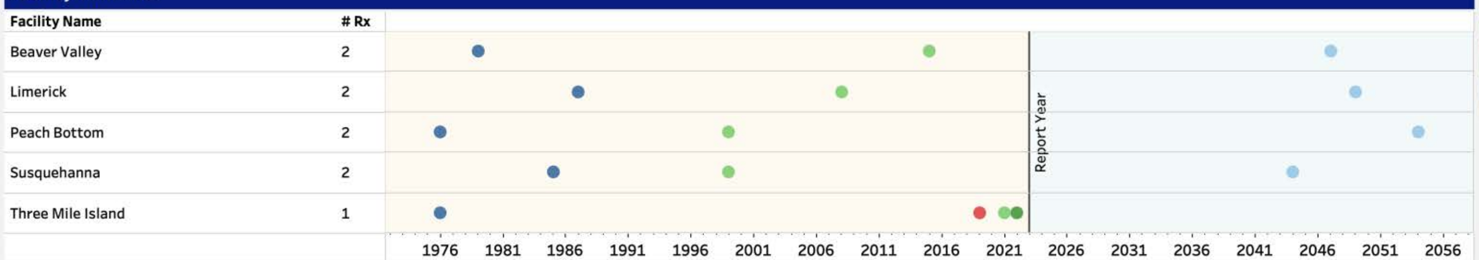
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Josh Shapiro (D)	
Senators	Casey, Robert P., Jr. (D) and Fetterman, John (D)	
No. of Commercial Site	5	
No. of Commercial Dry Storage Site	5	
No. of Commercial Operating Reactors	8	
No. of Commercial Shutdown Reactors	1	
Commercial SNF at Dry Storage (MTU)	4490.19	
Commercial SNF at Pool (MTU)	3882.05	
Total Commercial SNF (MTU)	8372.24	
No. of Commercial SNF Dry Casks	358	
No. of Commercial GTCC Casks	1	
No. of Operating Research Reactors	1 at 1 Sites	

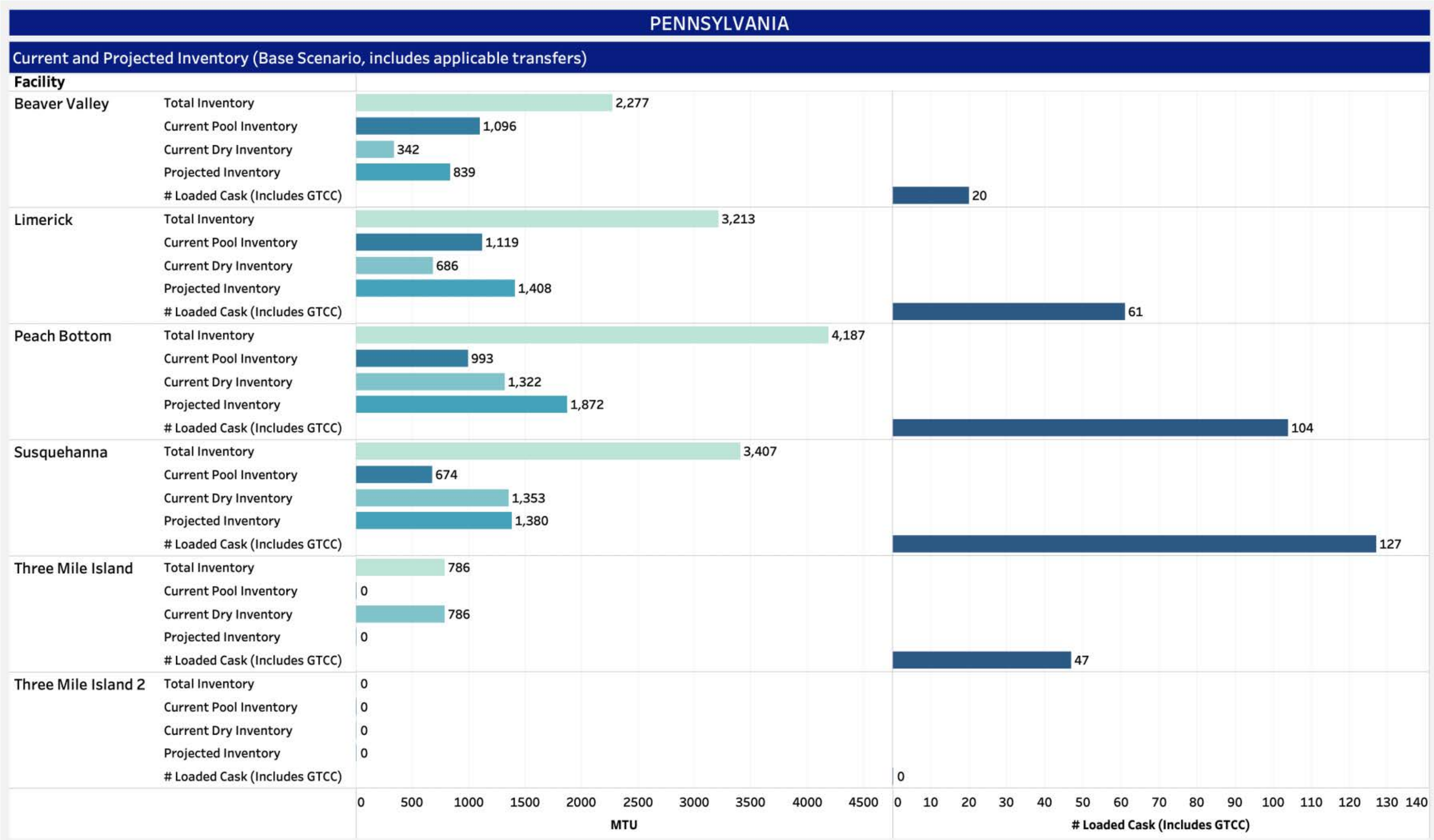
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Events
- First Discharge Year
- Dry Storage Start Year
- Shutdown Year
- Dry Loading Completion Year
- Final Projected Discharge
- Off-Site Storage Start Year


PENNSYLVANIA
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Beaver Valley
Total Inventory 2,277
Current Pool Inventory 1,096
Current Dry Inventory 342
Projected Inventory 839
Loaded Cask (Includes GTCC) 20
Limerick
Total Inventory 3,213
Current Pool Inventory 1,119
Current Dry Inventory 686
Projected Inventory 1,408
Loaded Cask (Includes GTCC) 61
Peach Bottom
Total Inventory 4,187
Current Pool Inventory 993
Current Dry Inventory 1,322
Projected Inventory 1,872
Loaded Cask (Includes GTCC) 104
Susquehanna
Total Inventory 3,407
Current Pool Inventory 674
Current Dry Inventory 1,353
Projected Inventory 1,380
Loaded Cask (Includes GTCC) 127
Three Mile Island
Total Inventory 786
Current Pool Inventory 0
Current Dry Inventory 786
Projected Inventory 0
Loaded Cask (Includes GTCC) 47
Three Mile Island 2
Total Inventory 0
Current Pool Inventory 0
Current Dry Inventory 0
Projected Inventory 0
Loaded Cask (Includes GTCC) 0
0 500 1000 1500 2000 2500 3000 3500 4000 4500
MTU
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
Loaded Cask (Includes GTCC)

PENNSYLVANIA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTU)	Note #
17	Deluzio, Christopher (D)	Energy Harbor Nuclear Generation LLC	Beaver Valley 1	1976-2036	PWR/ Operating	2015/GL	1101.43	-
			Beaver Valley 2	1987-2047	PWR/ Operating	2015/GL	1175.88	-
15	Thompson, Glen..	Pennsylvania State University	Pennsylvania State University	1955- License R-2	R&TRF TRIGA BNR/ Operating	-	-	-
11	Smucker, Lloyd (R)	Constellation Energy Generation, LLC	Peach Bottom 2	1974-2053	BWR/ Operating	2000/GL	2098.09	5, 6
			Peach Bottom 3	1974-2054	BWR/ Operating	2000/GL	2089.24	6
10	Perry, Scott (R)	Constellation Energy Generation, LLC	Three Mile Island 1	1974-2034	PWR/ Shutdown	-	786.49	-
		TMI-2 Solutions, LLC	Three Mile Island 2	1978-1979	PWR/ Shutdown	-	-	7
9	Meuser, Daniel (R)	Susquehanna Nuclear, LLC	Susquehanna 1	1983-2042	BWR/ Operating	1999/GL	1686.04	-
			Susquehanna 2	1985-2044	BWR/ Operating	1999/GL	1721.07	-
4	Dean, Madeleine (D)	Constellation Energy Generation, LLC	Limerick 1	1986-2044	BWR/ Operating	2008/GL	1589.22	-
			Limerick 2	1990-2049	BWR/ Operating	2008/GL	1623.84	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
1,947.3	95.8	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

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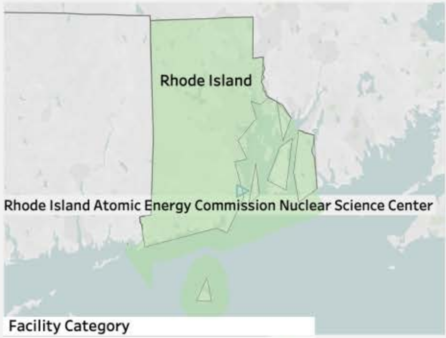
5. Discharges includes 0.38 MTU transferred to Idaho National Laboratory.

6. Data include the subsequent or second 20 year license renewal granted on March 5, 2020.

7. Most of the Three Mile Island Unit 2 fuel shipped to Idaho National Laboratory, a small quantity (~1.125 MT) remains to be removed during decommissioning.

RHODE ISLAND

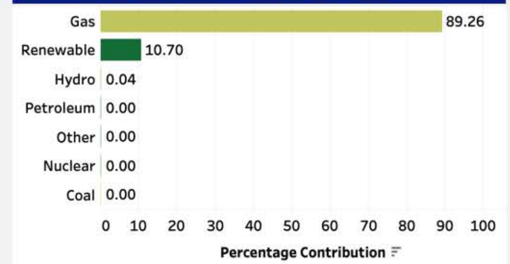


Facility Category	
Operating Non-DOE Research Reactor	▷

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Dan McKee (D)
Senators	Reed, Jack (D) and Whitehouse, Sheldon (D)
No. of Operating Research Reactors	1 at 1 Sites

2022 Electricity Generation Mix (Note# 3)



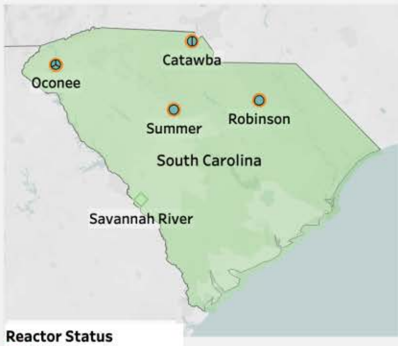
Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #	
2	Magaziner, Seth (D)	Rhode Island Atomic Energy Commission Nuclear Science Center	Rhode Island Atomic Energy Commission Nuclear Science Center	1964- License R-95	R&TRF GE Pool, 2,000 kW/ Operating	-	-	-	

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

SOUTH CAROLINA



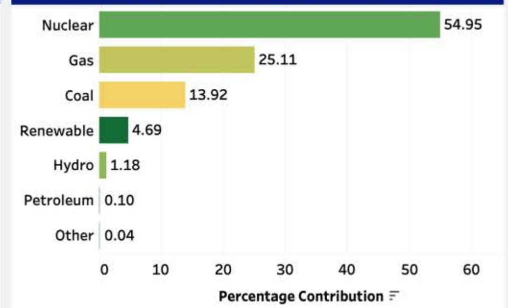
Reactor Status
PWR/ Operating

Facility Category	
Commercial Dry Storage Site	○
DOE Owned SNF and HLW	◇

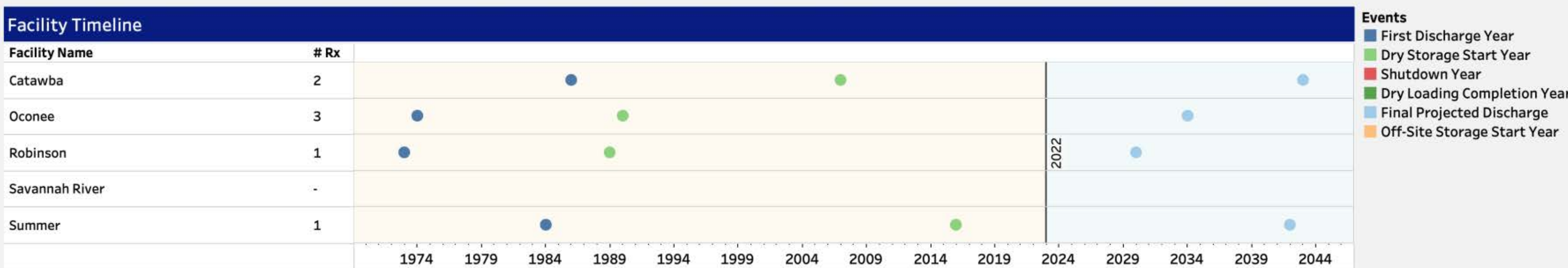
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

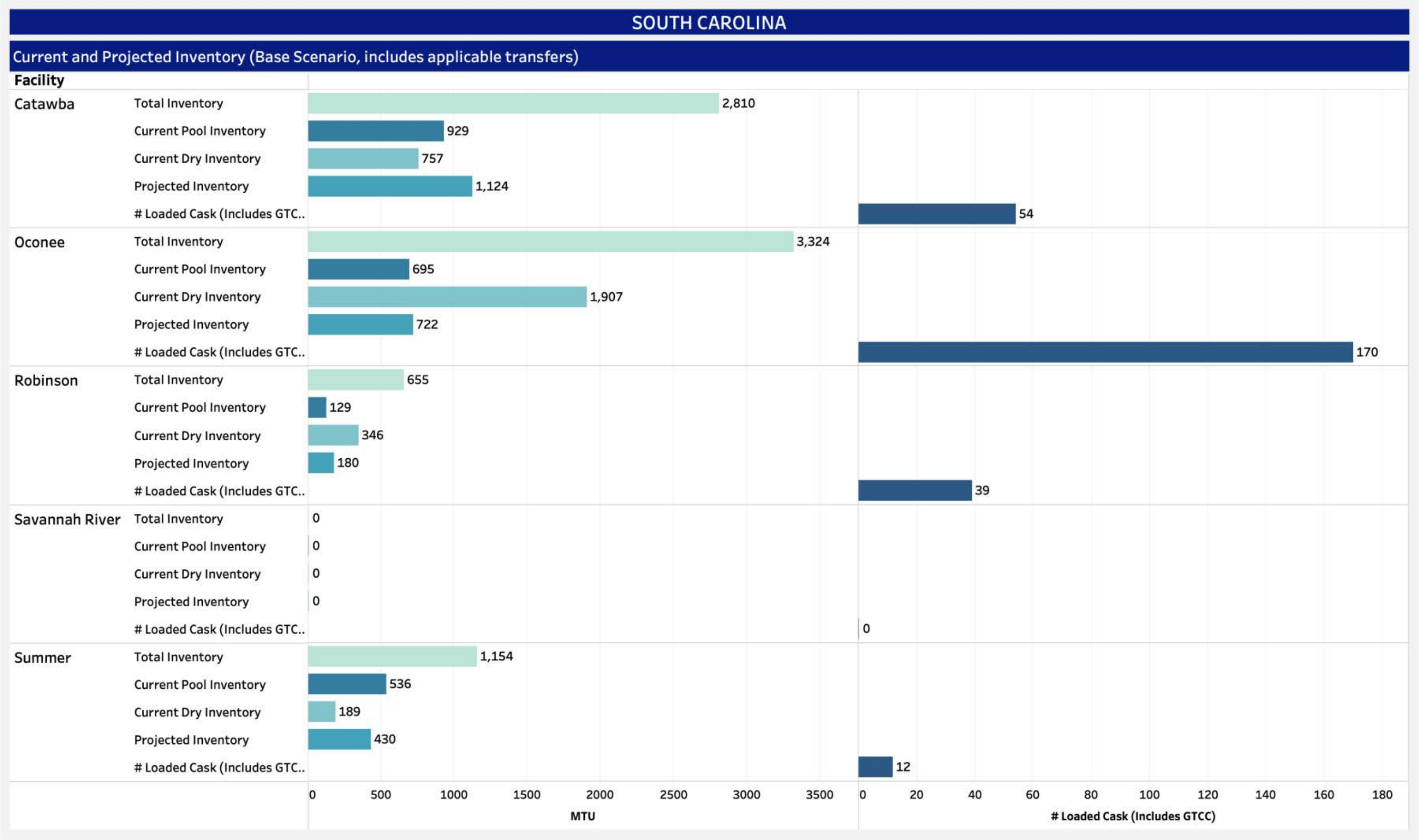
Governor	Henry McMaster (R)
Senators	Graham, Lindsey (R) and Scott, Tim (R)
No. of Commercial Site	4
No. of Commercial Dry Storage Site	4
No. of Commercial Operating Reactors	9
Commercial SNF at Dry Storage (MTU)	3199.83
Commercial SNF at Pool (MTU)	2288.5
Total Commercial SNF (MTU)	5488.33
No. of Commercial SNF Dry Casks	275
DOE Owned SNF and/or HLW Site	1 Site

2022 Electricity Generation Mix (Note# 3)



Facility Timeline




SOUTH CAROLINA
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Catawba
Total Inventory 2,810
Current Pool Inventory 929
Current Dry Inventory 757
Projected Inventory 1,124
Loaded Cask (Includes GTC.. 54
Oconee
Total Inventory 3,324
Current Pool Inventory 695
Current Dry Inventory 1,907
Projected Inventory 722
Loaded Cask (Includes GTC.. 170
Robinson
Total Inventory 655
Current Pool Inventory 129
Current Dry Inventory 346
Projected Inventory 180
Loaded Cask (Includes GTC.. 39
Savannah River
Total Inventory 0
Current Pool Inventory 0
Current Dry Inventory 0
Projected Inventory 0
Loaded Cask (Includes GTC.. 0
Summer
Total Inventory 1,154
Current Pool Inventory 536
Current Dry Inventory 189
Projected Inventory 430
Loaded Cask (Includes GTC.. 12
0 500 1000 1500 2000 2500 3000 3500
MTU
0 20 40 60 80 100 120 140 160 180
Loaded Cask (Includes GTCC)

SOUTH CAROLINA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Actual & Projected Discharged SNF (MTU)	Note #
7	Fry, Russell (R)	Duke Energy Corporation	HB Robinson 2	1971-2030	PWR/ Operating	1986/SL, 2005/GL	1007.75	5
5	Norman, Ralph (R)	Duke Energy Corporation	Catawba 1	1985-2043	PWR/ Operating	2007/GL	1424.08	-
			Catawba 2	1986-2043	PWR/ Operating	2007/GL	1386.34	-
		South Carolina Electric and Gas Company	Summer	1984-2042	PWR/ Operating	2016/GL	1154.11	-
3	Duncan, Jeff (R)	Duke Energy Corporation	Oconee 1	1973-2033	PWR/ Operating	1990/SL, 1999/GL	1154.78	6
			Oconee 2	1974-2033	PWR/ Operating	1990/SL, 1999/GL	1147.11	6
			Oconee 3	1974-2034	PWR/ Operating	1990/SL, 1999/GL	1161.94	6
2	Wilson, Joe (R)	Department of Energy	Savannah River	None	Various	-	-	7

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
1,498.7	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees.

5. Discharges include 0.44 MTU transferred to Idaho National Laboratory, 136.84 MTU to Brunswick (North Carolina), and 215.81 MTU to Harris (North Carolina).

6. Discharges include 139.35 MTU transferred to McGuire (North Carolina).

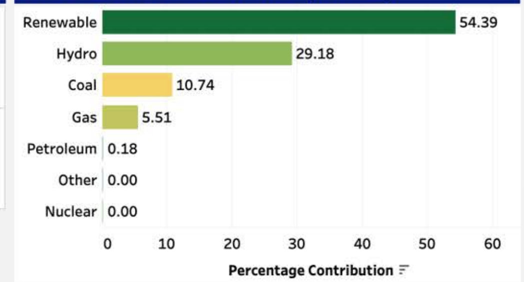
7. Savannah River site has approximately 29 MT from DOE sources.

SOUTH DAKOTA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Kristi Noem (R)
Senators	Rounds, Mike (R) and Thune, John (R)

2022 Electricity Generation Mix (Note# 3)



Notes:

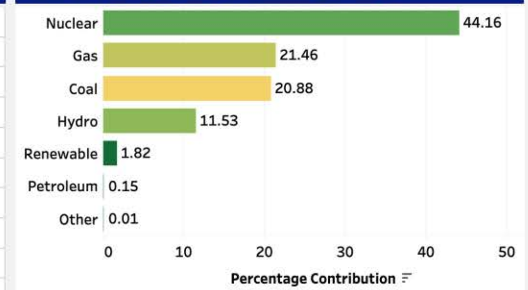
1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

TENNESSEE

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

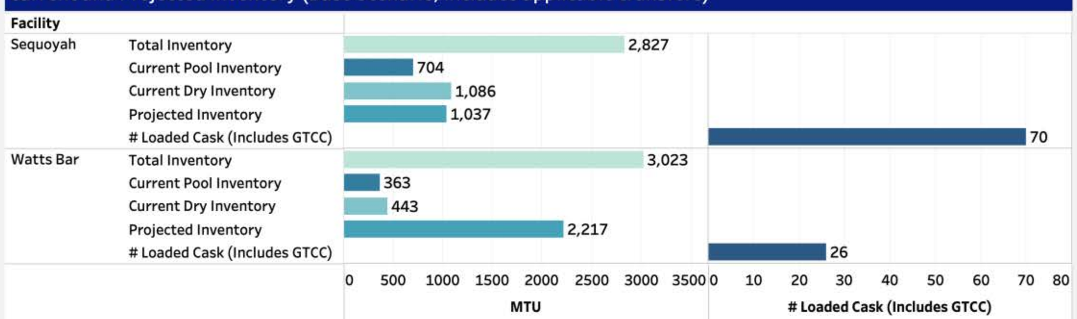
Governor	Bill Lee (R)	–
Senators	Blackburn, Marsha (R) and Hagerty, Bill (R)	–
No. of Commercial Site	2	–
No. of Commercial Dry Storage Site	2	–
No. of Commercial Operating Reactors	4	–
Commercial SNF at Dry Storage (MTU)	1529.38	–
Commercial SNF at Pool (MTU)	1067.37	–
Total Commercial SNF (MTU)	2596.75	–
No. of Commercial SNF Dry Casks	96	–
No. of Operating Research Reactors	1 at 1 Sites	–

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



TENNESSEE

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
4	DesJarlais, Scott (R)	Tennessee Valley Authority	Watts Bar 1	1996-2035	PWR/ Operating	2016/GL	1602.15	-
			Watts Bar 2	2016-2055	PWR/ Operating	2016/GL	1420.91	-
3	Fleischmann, Charles (R)	Department of Energy	High Flux Isotope Reactor (HFIR)	mid-1960s	Test Reactor	-	-	5
			ORNL	None	Various	-	-	-
		Tennessee Valley Authority	Sequoyah 1	1981-2040	PWR/ Operating	2004/GL	1403.52	-
			Sequoyah 2	1982-2041	PWR/ Operating	2004/GL	1423.72	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
596.9	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

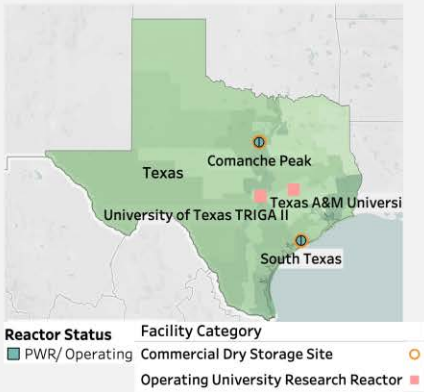
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill fee and $5.293M one time fee payments by DOE.

5. Some of the SNF is stored on-site awaiting transfer to Savannah River Site.

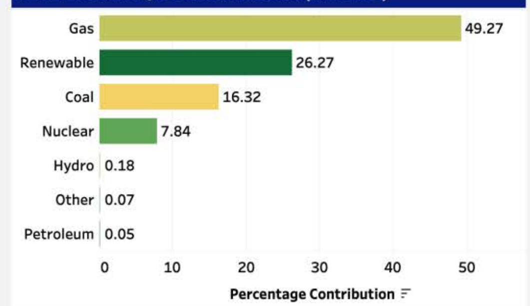
TEXAS



State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

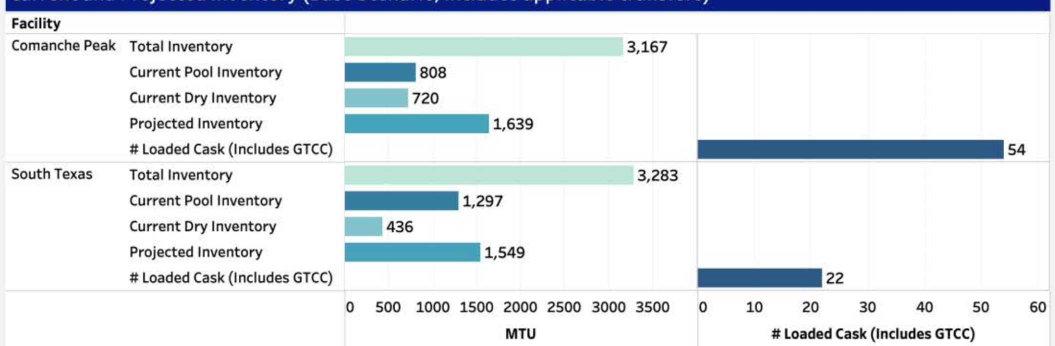
Governor	Greg Abbott (R)
Senators	Cornyn, John (R) and Cruz, Ted (R)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	4
Commercial SNF at Dry Storage (MTU)	1156.36
Commercial SNF at Pool (MTU)	2104.99
Total Commercial SNF (MTU)	3261.35
No. of Commercial SNF Dry Casks	76
No. of Operating Research Reactors	3 at 2 Sites

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



TEXAS

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
37	Doggett, Lloyd (D)	University of Texas	University of Texas TRIGA II	1992- License R-129	R&TRF TRIGA Mark II, 1,100 kW/ Operating	-	-	-
25	Williams, Roger (R)	Comanche Peak LLC	Comanche Peak 1	1990-2030	PWR/ Operating	2012/GL	1596.66	-
			Comanche Peak 2	1993-2033	PWR/ Operating	2012/GL	1570.1	-
22	Nehls, Troy (R)	STP Nuclear Operating Company	South Texas 1	1988-2027	PWR/ Operating	2019/GL	1662.43	-
			South Texas 2	1989-2028	PWR/ Operating	2019/GL	1663.15	-
10	McCaul, Michael (R)	Texas A&M University	Texas A&M University	1957- License R-23	R&TRF AGN-201M #106, 0.005 kW/ Operating	-	-	-
				1961- License R-83	R&TRF TRIGA MARK I, 1,000 kW/ Operating	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
812.3	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill fee and $5.293M one time fee payments by DOE.

UTAH

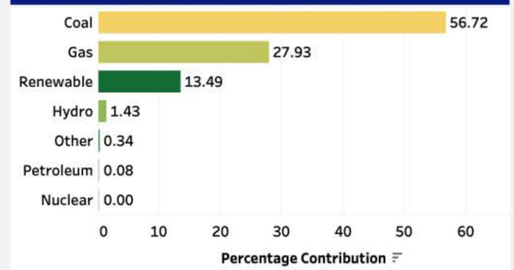
Facility Category

Operating University Research Reactor

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Spencer Cox (R)
Senators	Lee, Mike (R) and Romney, Mitt (R)
No. of Operating Research Reactors	1 at 1 Sites

2022 Electricity Generation Mix (Note# 3)



Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
1	Moore, Blake (R)	University of Utah	University of Utah TRIGA	1975- License R-126	R&TRF TRIGA MARK I, 100 kW/ Operating	-	-	-

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.
2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.
3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

VERMONT

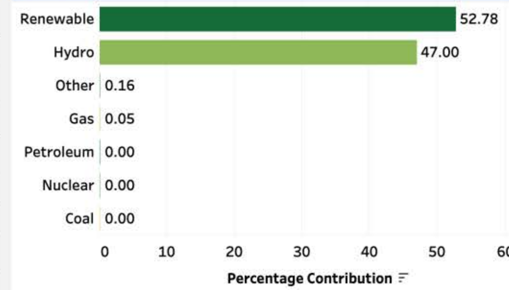
Reactor Status
BWR/ Shutdown

Facility Category	
Commercial Dry Storage Site	◯

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

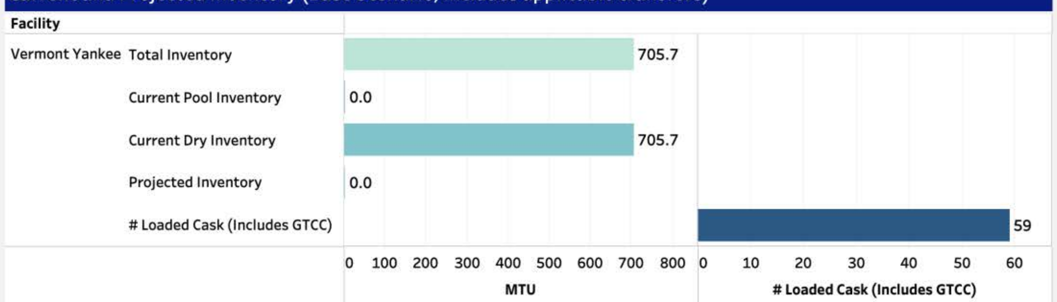
Governor	Phil Scott (R)
Senators	Sanders, Bernard (I) and Welch, Peter (D)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Shutdown Reactors	1
Commercial SNF at Dry Storage (MTU)	705.66
Total Commercial SNF (MTU)	705.66
No. of Commercial SNF Dry Casks	58
No. of Commercial GTCC Casks	1

2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Current and Projected Inventory (Base Scenario, includes applicable transfers)



VERMONT

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
0	Balint, Becca (D)	NorthStar Vermont Yankee, LLC	Vermont Yankee	1972-1932	BWR/ Shutdown	2008/GL	705.66	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
272.3	0	4

Notes:

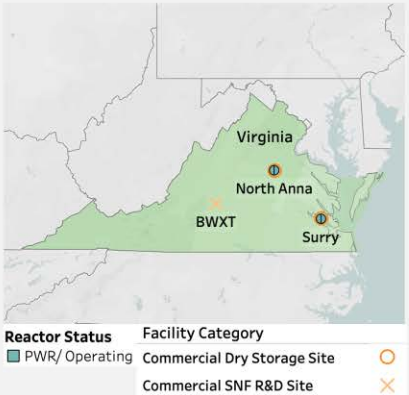
1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill fee and $5.293M one time fee payments by DOE.

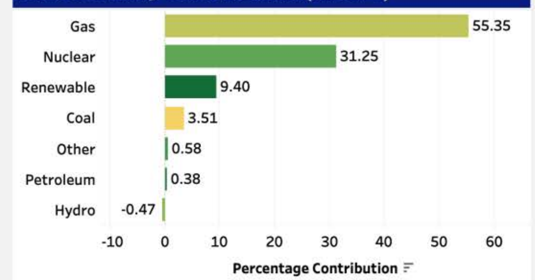
VIRGINIA



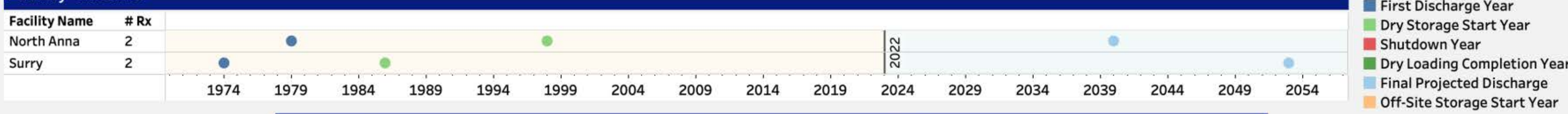
State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Glen Youngkin (R)
Senators	Kaine, Tim (D) and Warner, Mark R. (D)
No. of Commercial Site	2
No. of Commercial Dry Storage Site	2
No. of Commercial Operating Reactors	4
Commercial SNF at Dry Storage (MTU)	2406.68
Commercial SNF at Pool (MTU)	949.4
Total Commercial SNF (MTU)	3356.08
No. of Commercial SNF Dry Casks	171
Commercial R&D Site	1 Site

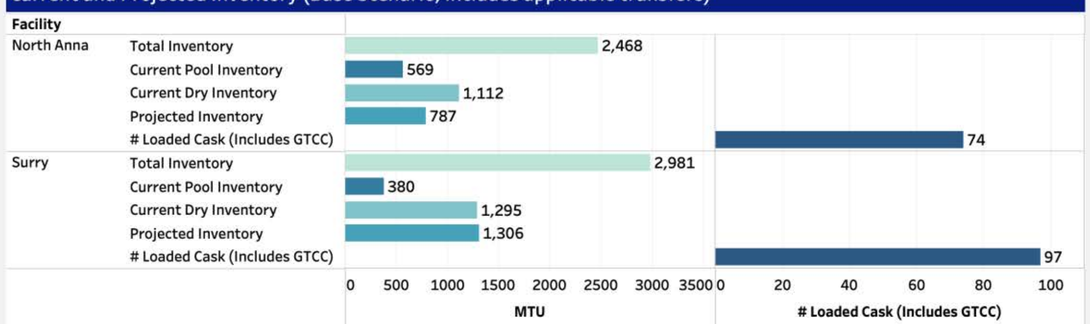
2022 Electricity Generation Mix (Note# 3)



Facility Timeline



Current and Projected Inventory (Base Scenario, includes applicable transfers)



VIRGINIA

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
5	Good, Bob (R)	BWXT	BWXT	SNM-42	Dry and Pool Storage/ Operating	-	-	5
		Dominion Energy	North Anna 1	1978-2038	PWR/ Operating	1998/SL, 2008/GL	1213.38	-
			North Anna 2	1980-2040	PWR/ Operating	1998/SL, 2008/GL	1254.3	-
4	McClellan, Jennifer (D)	Dominion Energy	Surry 1	1972-2052	PWR/ Operating	1986/SL, 2007/GL	1492.19	6, 7
			Surry 2	1973-2053	PWR/ Operating	1986/SL, 2007/GL	1520.46	6, 7

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
837.0	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

4. The Nuclear Waste Policy Act established the Federal Government's responsibility to provide permanent disposal of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF (primarily nuclear utilities) and HLW, to ensure that the costs of carrying out activities relating to the disposal be borne by the generators and owners of the SNF and HLW. A "one-time fee" was established for SNF created before April 7, 1983, and an ongoing quarterly fee based on electricity generated and sold from April 7, 1983 forward. Payments and amounts owed are as of December 31, 2022 using the Department of Energy Consolidated Accounting & Investment System (CAIS) data. Paid amounts are net of fee and interest credits/refunds. One-time fee owed includes both fees and interest on fees. Does not include $2.263M One Mill fee and $5.293M one time fee payments by DOE. Includes one-time fee paid by B&W.

5. Facility manufactures nuclear fuel elements. Dry and wet storage of SNF is included in the operating license.

6. Discharge includes 31.49 MTU transferred to Idaho National Laboratory.

7. Reflects subsequent operating license renewal.

WASHINGTON

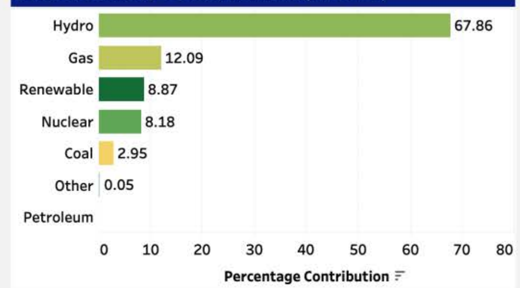
Reactor Status
BWR/ Operating

Facility Category
Commercial Dry Storage Site
DOE Owned SNF and HLW
National Laboratory
Operating University Research Reactor

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Jay Inslee (D)
Senators	Cantwell, Maria (D) and Murray, Patty (D)
No. of Commercial Site	1
No. of Commercial Dry Storage Site	1
No. of Commercial Operating Reactors	1
Commercial SNF at Dry Storage (MTU)	645.63
Commercial SNF at Pool (MTU)	216.19
Total Commercial SNF (MTU)	861.82
No. of Commercial SNF Dry Casks	54
No. of Operating Research Reactors	1 at 1 Sites
DOE Owned SNF and/or HLW Site	1 Site

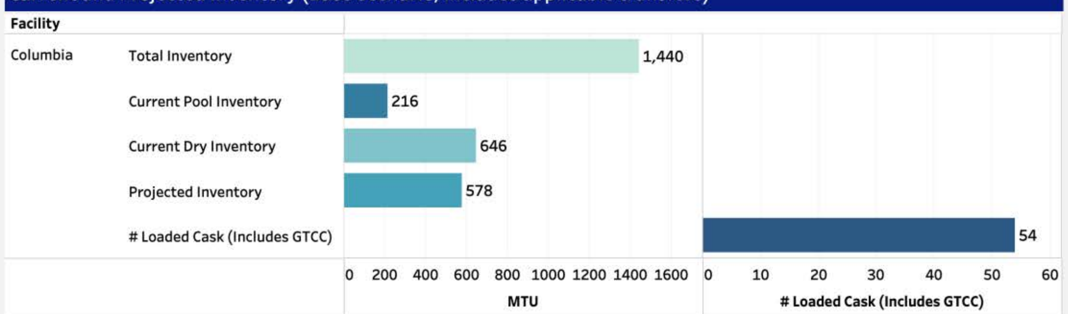
2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Events
First Discharge Year
Dry Storage Start Year
Shutdown Year
Dry Loading Completion Year
Final Projected Discharge
Off-Site Storage Start Year

Current and Projected Inventory (Base Scenario, includes applicable transfers)



WASHINGTON

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
5	Rodgers, Cathy (R)	Washington State University	Washington State University WSUR	1961- License R-76	R&TRF TRIGA, 1,000 kW/ Operating	-	-	-
4	Newhouse, Dan (R)	Department of Energy	Hanford	None	Various/ Shutdown	-	-	-
			Pacific Northwest National Laboratory	None	Various	-	-	-
		Energy Northwest	Columbia	1984-2043	BWR/ Operating	2002/GL	1486.35	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
198.9	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

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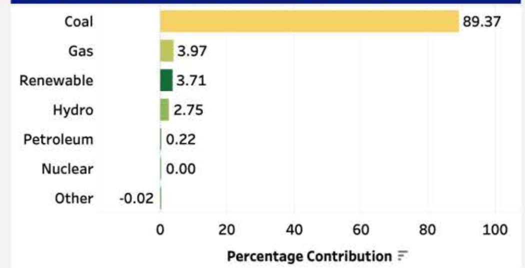
WEST VIRGINIA

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Jim Justice (R)
Senators	Capito, Shelley Moore (R) and Manchin, Joe, III (D)

2022 Electricity Generation Mix (Note# 3)



Notes:

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WISCONSIN

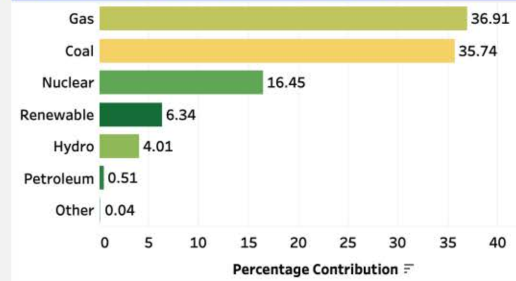
Reactor Status
- BWR/ Shutdown
- PWR/ Operating
- PWR/ Shutdown

Facility Category	
Commercial Dry Storage Site	○
Operating University Research Reactor	■

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

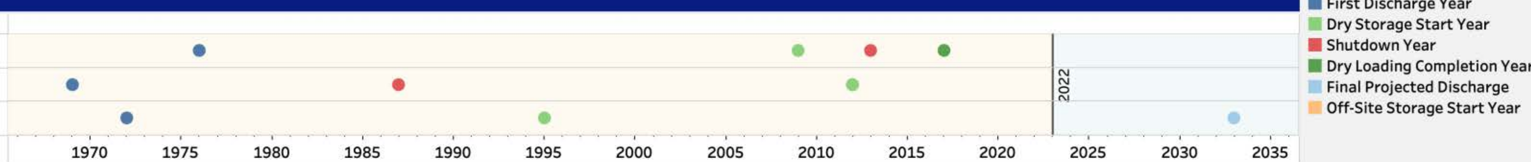
Governor	Tony Evers (D)
Senators	Baldwin, Tammy (D) and Johnson, Ron (R)
No. of Commercial Site	3
No. of Commercial Dry Storage Site	3
No. of Commercial Operating Reactors	2
No. of Commercial Shutdown Reactors	2
Commercial SNF at Dry Storage (MTU)	1199.76
Commercial SNF at Pool (MTU)	443.57
Total Commercial SNF (MTU)	1643.33
No. of Commercial SNF Dry Casks	99
No. of Commercial GTCC Casks	2

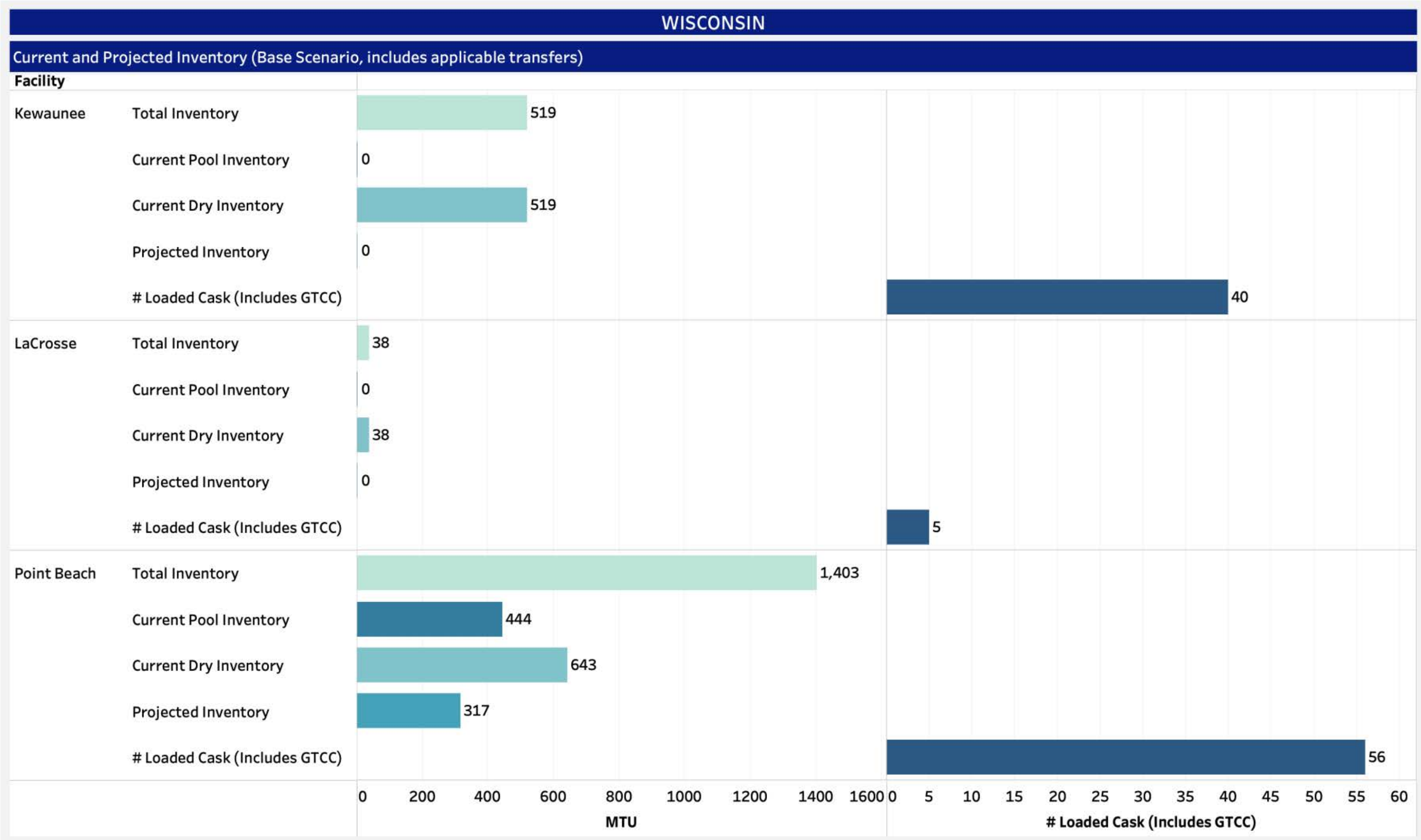
2022 Electricity Generation Mix (Note# 3)



Facility Timeline

Facility Name	# Rx
Kewaunee	1
LaCrosse	1
Point Beach	2




WISCONSIN
Current and Projected Inventory (Base Scenario, includes applicable transfers)
Facility
Kewaunee
Total Inventory
519
Current Pool Inventory
0
Current Dry Inventory
519
Projected Inventory
0
Loaded Cask (Includes GTCC)
40
LaCrosse
Total Inventory
38
Current Pool Inventory
0
Current Dry Inventory
38
Projected Inventory
0
Loaded Cask (Includes GTCC)
5
Point Beach
Total Inventory
1,403
Current Pool Inventory
444
Current Dry Inventory
643
Projected Inventory
317
Loaded Cask (Includes GTCC)
56
0 200 400 600 800 1000 1200 1400 1600
MTU
0 5 10 15 20 25 30 35 40 45 50 55 60
Loaded Cask (Includes GTCC)

WISCONSIN

Facility/Reactor Status Including SNF Discharge Through Projected Operation Period Using Base Scenario (Does not include applicable fuel transfers)

Congressional district	Representative	Utility	Facility Name	Operating Period/ Status	Facility Type/ Status	ISFSI License Year/ Type	Projected Discharged SNF (MTU)	Note #
8	Gallagher, Mike (R)	Kewaunee Solutions, Inc.	Kewaunee	1974-2013	PWR/ Shutdown	2009/GL	518.7	-
6	Grothman, Glenn (R)	NextEra Energy, Inc	Point Beach 1	1970-2030	PWR/ Operating	1996/GL	708.23	5
			Point Beach 2	1972-2033	PWR/ Operating	1996/GL	698.82	-
2	Hinson, Ashley (R)	Dairyland Power Cooperative	La Crosse	1967-1987	BWR/ Shutdown	2011/GL	38.09	6
	Pocan, Mark (D)	University of Wisconsin	University of Wisconsin UWNR	1960- License R-74	R&TRF TRIGA MARK I, 1,000 kW/ Operating	-	-	-

Nuclear Waste Fund

Paid (in million $)	One-time Fee Owed (in million $)	Note #
416.4	0	4

Notes:

1. Data for Elected Officials from https://www.senate.gov/senators/index.htm and https://geodata.bts.gov/datasets/usdot::congressional-districts/about ; Accessed June 01, 2023.

2. Governor from https://www.stateside.com/state-resource/governors, Accessed July 01, 2023.

3. Data for Electricity Generation Mix from Tables 1.4.B-1.13.B, Electric Power Monthly - January 2023. Year-to-Date Data through November 2022. Petroleum includes both liquid and coke. Gas includes both natural gas and other gases. Hydro includes both conventional and pumped storage. Renewable includes wind, biomass, geothermal, and solar. Other includes manufactured, supplemental gaseous fuel, propane, and waste gases.

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5. Discharge includes 2.36 MTU transferred to Idaho National Laboratory.

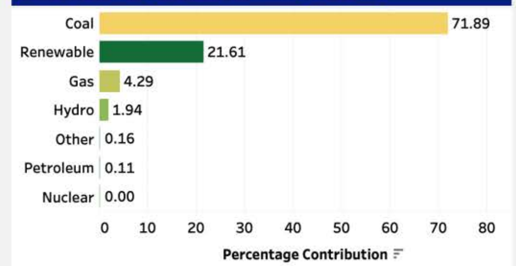
6. Discharge includes 0.12 MTU transferred to Savannah River Site.

WYOMING

State Summary (includes applicable transfers) as of 12/31/2022 (Note# 1, 2)

Governor	Mark Gordon (R)	
Senators	Barrasso, John (R) and Lummis, Cynthia M. (R)	

2022 Electricity Generation Mix (Note# 3)



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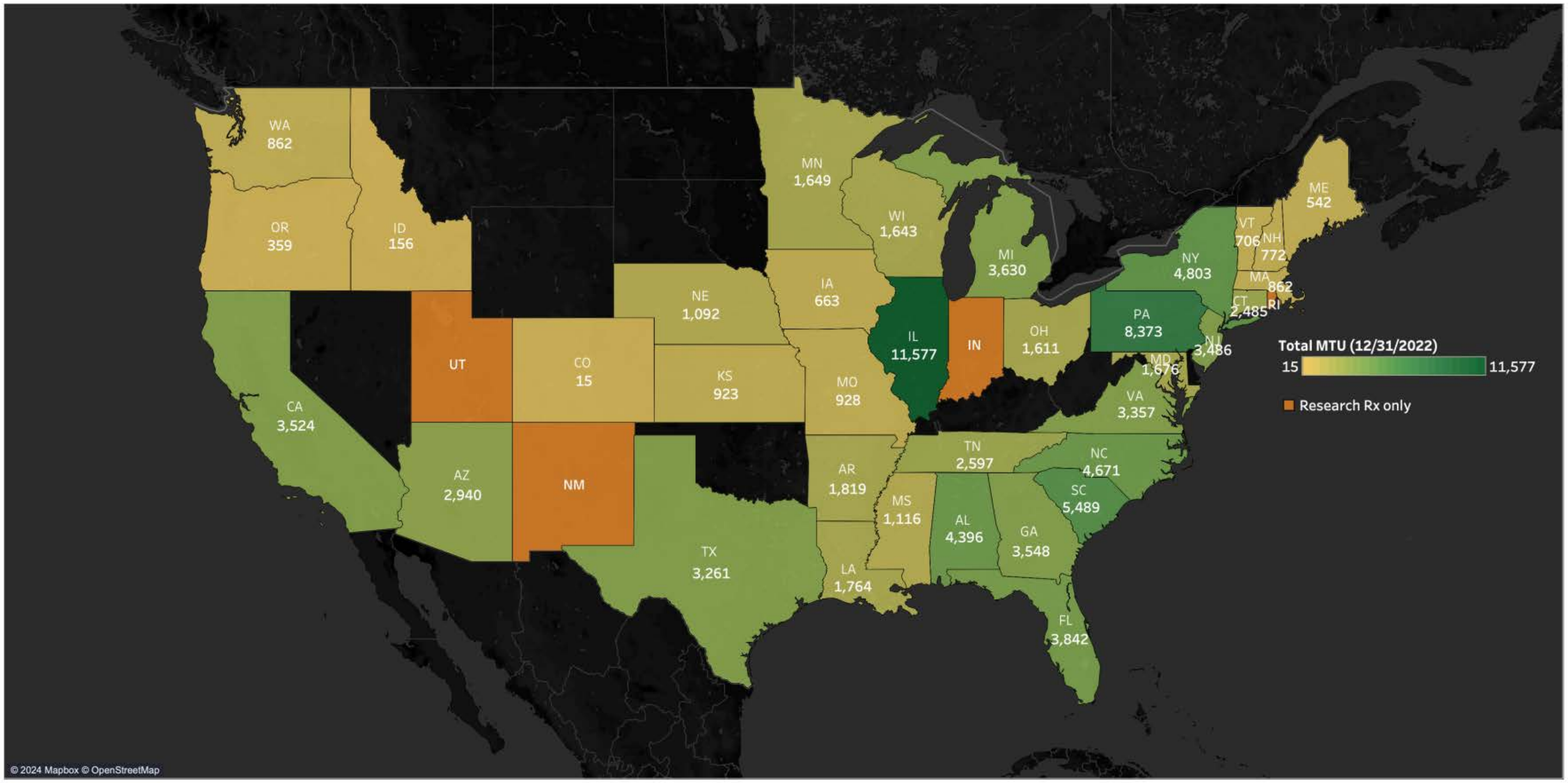
35 States with SNF from Nuclear Power Reactors (DOE Managed SNF at CO and ID)
4 States with Research Reactors Only (IN, NM, RI, UT)
Approximate Amounts in Metric Tons Heavy Metal (Estimated 12/31/22)



Note: Quantities of SNF from Research and defense programs and additional commercial-origin SNF stored under DOE authority are not included.

Top 10 States with LWR SNF