

Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities 2024

Fifty-Seventh Annual Report

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NUREG-0713	Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, 2023, Vol. 45, U.S. Nuclear Regulatory Commission, July 2025.

Previous reports in the NUREG-0714 series, which are now combined with NUREG-0713, are as follows:

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WASH-1350 R6	System, U.S. Atomic Energy Commission.
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NUREG-0714	Occupational Radiation Exposure, Thirteenth and Fourteenth Annual Reports, 1980 and 1981, Vols. 2 and 3, U.S. Nuclear Regulatory Commission, October 1983.
NUREG-0714	Occupational Radiation Exposure, Fifteenth and Sixteenth Annual Reports, 1982 and 1983, Vols. 4 and 5, U.S. Nuclear Regulatory Commission, October 1985.

ABSTRACT

This report summarizes the occupational exposure data maintained in the U.S. Nuclear Regulatory Commission's Radiation Exposure Information and Reporting System database. The bulk of the information in this report was compiled from the 2024 annual reports submitted by five of the seven categories¹ of NRC licensees subject to the reporting requirements of Title 10 of the *Code of Federal Regulations* 20.2206, "Reports of individual monitoring." The annual reports submitted by these licensees consist of radiation exposure records for each monitored individual. These records are analyzed for trends and presented in this report in terms of collective dose and the distribution of dose across the monitored individuals. The term "dose" throughout this report refers to the total effective dose equivalent (TEDE) unless otherwise specified.

Annual reports for 2024 were received from a total of **166** NRC licensees from the five categories included in this report. Collectively, these reports indicate that **133,240** individuals were monitored, **59,338** of whom received a measurable TEDE (a TEDE that is reported as a positive value; see table 3-1). With the data adjusted to account for transient individuals, there were **90,579** unique individuals monitored, **42,352** of whom received a measurable TEDE (see section 5).

The collective TEDE incurred by these individuals was **6,816** person-rem (68,160 person-millisieverts [mSv]), which represents a **10 percent decrease** from the 2023 value (see table 3-1). The 2024 collective TEDE is **1 percent higher** than the 5-year average of **6,721** person-rem (2019–2023), which is not a statistically significant change.² The decrease in collective TEDE in 2024 was due to decreases in three categories: industrial radiography licensees (**10 percent decrease**), commercial nuclear power reactor licensees (**12 percent decrease**), and fuel cycle licensees (**10 percent decrease**). The manufacturing and distribution licensees experienced a statistically significant increase in collective TEDE (**19 percent increase**). Data for independent spent fuel storage installations indicate a numerical increase in collective TED (**56 percent increase**); however, the data do not indicate a statistically significant change in the collective TEDE.

The number of individuals receiving a measurable TEDE increased by **1 percent** from 2023 and was **2 percent above** the 5-year average but was not statistically significant. With the data adjusted to account for transient individuals, the average measurable TEDE in 2024 remained at **0.16 rem** (1.6 mSv), which is the same as the 5-year average. The average measurable TEDE is defined as the total collective TEDE divided by the number of individuals receiving a measurable TEDE.

In calendar year 2024, the average annual collective TEDE per reactor for light-water reactor (LWR) licensees was **53** person-rem (530 person-mSv). This is a **13 percent decrease** from the value reported for 2023 (table 4-3) but does not represent a statistically significant change from the 5-year average. The total number of outage hours at commercial nuclear power plants increased slightly from 2023 to 2024. The collective TEDE for the LWR licensee category decreased by **649** person-rem (6,490 person-mSv), from **5,552** person-rem (55,520 person-mSv) in 2023 to **4,903** person-rem (49,030 person-mSv) in 2024.

¹ The seven categories are (1) commercial nuclear power reactors and test reactor facilities, (2) industrial radiographers, (3) fuel processors (including uranium enrichment facilities), fabricators, and reprocessors, (4) facilities involved in manufacturing and distribution of byproduct material, (5) independent spent fuel storage installations, (6) facilities for land disposal of low-level waste, and (7) geologic repositories for high-level waste. Because there are currently no licensed geologic repositories for high-level waste and no NRC-licensed low-level waste disposal facilities in operation, this report considers only five categories.

² Section 2.2 of this report presents additional statistical comparisons.

The average annual collective TEDE per reactor was **95** person-rem (950 person-mSv) for the **31** boiling-water reactors (BWRs) and **32** person-rem (320 person-mSv) for the **62** pressurized-water reactors (PWRs). The 2024 value for BWRs is **10 percent lower** than the 5-year average annual collective TEDE per BWR, which represents a statistically significant decrease. The 2024 value for PWRs is **3 percent higher** than the 5-year average annual collective TEDE per PWR, which does not represent a statistically significant increase.

There were **22,509** individuals monitored by two or more licensees during the monitoring year. The assessment of the average measurable TEDE per individual is adjusted each year to account for the reporting of measurable doses for transient individuals by multiple licensees. The adjustments to account for transient individuals are noted in the footnotes for the applicable figures and tables.

FOREWORD

Through this annual report, the U.S. Nuclear Regulatory Commission (NRC) supports openness in its regulatory processes by providing the public with accurate and timely information about the radiation protection programs of NRC licensees. Toward that end, NUREG-0713, Volume 46, summarizes the 2024 occupational radiation exposure data maintained in the NRC Radiation Exposure Information and Reporting System (REIRS) database. The data used in this report are obtained through required and voluntary reporting to REIRS by April 30 of each year and then processed and evaluated before the report is made available for public use.

Seven categories of NRC licensees are required to report annually on individual exposure in accordance with Title 10 of the *Code of Federal Regulations* 20.2206, "Reports of individual monitoring." These categories are (1) commercial nuclear power reactors and test reactor facilities, (2) industrial radiographers, (3) fuel processors (including uranium enrichment facilities), fabricators, and reprocessors, (4) facilities involved in manufacturing and distribution of byproduct material, (5) independent spent fuel storage installations, (6) facilities for land disposal of low-level waste, and (7) geologic repositories for high-level waste. Because the NRC has not licensed any geologic repositories for high-level waste and all low-level waste disposal facilities are regulated by Agreement States, this report considers only the first five categories of licensees. It thus reflects the occupational radiation exposure data that the NRC received from 166 licensees.

The data submitted by licensees consist of radiation exposure records for each monitored individual. Accounting for transient individuals who worked at two or more facilities during the year, 90,579 individuals were monitored and 42,352 received a measurable TEDE in 2024. This report analyzes and presents these records in terms of collective TEDE and the distribution of TEDE across monitored individuals.

PREFACE

A number of U.S. Nuclear Regulatory Commission (NRC) licensees have asked how the NRC staff uses the occupational radiation exposure data that are compiled from the individual exposure reports required by Title 10 of the *Code of Federal Regulations* 20.2206, "Reports of individual monitoring." In combination with information from other sources, the principal use of the data is to provide facts about routine occupational exposures to radiation and radioactive material that occur in connection with certain NRC-licensed activities, for use in making decisions that impact public health and safety. Specifically, the NRC staff uses the data for the following purposes:

- The data permit the evaluation of trends, both favorable and unfavorable, in the outcomes of licensee implementation of the NRC's radiation protection framework.
- The data assist in the evaluation of the radiological risk associated with certain categories of NRC-licensed activities and are used for comparative analyses of radiation protection performance (e.g., U.S./foreign, boiling-water reactors/pressurized-water reactors, civilian/military, facility/facility, nuclear industry/other industries).
- The data are used within the NRC's Reactor Oversight Process to risk-inform inspection planning. They are also used in the significance determination process to disposition inspection findings in a risk-informed manner.
- The data are analyzed to make evidence-based decisions related to radiation exposure of transient individuals.
- The data are used to establish priorities for the use of NRC health physics resources, including research, standards development, regulatory program development, and inspections conducted at NRC-licensed facilities.
- The data enable the NRC to provide evidence-based responses to congressional and administrative inquiries and to questions raised by the public.
- The data are used to provide radiation exposure histories for individuals who were exposed to radiation at NRC-licensed facilities.
- The data provide information that may be used for epidemiological studies.

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ABBREVIATIONS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
Ac	actinium
ADP-CR3	Accelerated Decommissioning Partners—Crystal River Unit 3
AEC	U.S. Atomic Energy Commission
Ag	silver
ALARA	as low as is reasonably achievable
Am	americium
Bq	becquerel
BRP	Big Rock Point
BWR	boiling-water reactor
C	carbon
CDE	committed dose equivalent
CEDE	committed effective dose equivalent
CFR	<i>Code of Federal Regulations</i>
Ci	curie
Cm	curium
Co	cobalt
ComEd	Commonwealth Edison Company
Cs	cesium
DAEC	Duane Arnold Energy Center
DDE	deep dose equivalent
DECON	decontamination and dismantlement
DEK	Dominion Energy Kewaunee, Inc.
DOE	U.S. Department of Energy
DP	decommissioning plan
DPC	Dairyland Power Cooperative
EDE	effective dose equivalent
ENOI	Entergy Nuclear Operations, Inc.
ERDA	Energy Research and Development Administration
EVESR	ESADA Vallecitos Experimental Superheat Reactor
Fe	iron
GEH	General-Electric Hitachi
GTCC	greater than Class C
H	hydrogen
HDI	Holtec Decommissioning International, LLC
HTGR	high-temperature gas-cooled reactors
I	iodine
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
In	indium

INPO	Institute of Nuclear Power Operations
IPEC	Indian Point Energy Center
ISFSI	independent spent fuel storage installation
ISOE	Information System on Occupational Exposure
ISOEDAT	Information System on Occupational Exposure Database
km	kilometer
KPS	Kewaunee Power Station
LACBWR	La Crosse Boiling-Water Reactor
LAR	license amendment request
LDE	lens dose equivalent to the lens of the eye
LS	LaCrosse Solutions, LLC
LTP	license termination plan
LWR	light-water reactor
M&D	manufacturing and distribution
mi	mile
Mn	manganese
mSv	millisievert
MW	megawatts
MWe	megawatts electric
MW-hr	megawatt-hour
MWt	megawatt-thermal
MW-yr	megawatt-year
Nb	niobium
NEA	Nuclear Energy Agency
NextEra	NextEra Energy Duane Arnold, LLC
Ni	nickel
NMSS	Office of Nuclear Material Safety and Safeguards
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NS	Nuclear Ship
NSV	NorthStar Vallecitos, LLC
OECD	Organisation for Economic Co-operation and Development
OPPD	Omaha Public Power District
OCEP	Oyster Creek Environmental Protection, LLC
Pa	protactinium
Pb	lead
Po	polonium
PGE	Portland General Electric
PSDAR	post-shutdown decommissioning activities report
Pu	plutonium
PWR	pressurized-water reactor
Ra	radium
REIRS	Radiation Exposure Information and Reporting System

SAFSTOR	safe storage
SCE	Southern California Edison
SDE-ME	shallow dose equivalent to the maximally exposed extremity
SDE-WB	shallow dose equivalent to the whole body
SFP	spent fuel pool
SG	steam generator
SMUD	Sacramento Municipal Utility District
SONGS	San Onofre Nuclear Generating Station
Sr	strontium
Sv	sievert
TBD	to be determined
Tc	technetium
TEDE	total effective dose equivalent
Th	thorium
TMI	Three Mile Island
TODE	total organ dose equivalent
U	uranium
UF ₆	uranium hexafluoride
VBWR	Vallecitos Boiling-Water Reactor
YAEC	Yankee Atomic Electric Company
ZNPS	Zion Nuclear Power Station
Zr	zirconium

1 INTRODUCTION

1.1 Background

One of the basic purposes of the Atomic Energy Act of 1954, as amended, and the implementing regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection Against Radiation" [Ref. 1], is to protect public health and safety, including the health and safety of the employees of licensees operating under those regulations.

On November 4, 1968, the U.S. Atomic Energy Commission (AEC) published an amendment to 10 CFR Part 20 requiring the reporting of a statistical summary of occupational radiation exposure information (but not individual exposure records) to a central repository at AEC Headquarters. At that time, only four categories¹ of AEC licensees were required to report. These licensees' facilities were considered to have the greatest potential for significant occupational doses. Licensees were required to report the total number of individuals who were monitored per dose range (in accordance with the former 10 CFR 20.407, which addresses personnel monitoring reports) and provide cumulative radiation exposure reports for individuals no longer employed (in accordance with the former 10 CFR 20.408, which addresses reports of personnel monitoring upon termination of employment or work). Occupational exposure data were extracted from these reports and entered into the AEC Radiation Exposure Information and Reporting System (REIRS), a computer system that was maintained at the Oak Ridge National Laboratory Computer Technology Center in Oak Ridge, Tennessee, until May 1990.

At that time, the data were transferred to a database management system and are now maintained at the Oak Ridge Institute for Science and Education, which is managed by Oak Ridge Associated Universities. The computerization of these data facilitates their collection and analysis. The data maintained in REIRS have been summarized and published in a report every year since 1969. Annual reports for each of the years 1969 through 1973 presented the data reported by both AEC licensees and contractors and were published in six documents designated as WASH-1350-R1 through WASH-1350-R6.

In January 1975, with the separation of the AEC into the Energy Research and Development Administration (ERDA) and the U.S. Nuclear Regulatory Commission (NRC), each agency assumed responsibility for collecting and maintaining occupational radiation exposure information reported by the facilities under its jurisdiction. The annual reports published by the NRC on occupational exposure for calendar year 1974 and subsequent years do not contain information pertaining to ERDA facilities or contractors. Comparable information for facilities and contractors under ERDA, now the U.S. Department of Energy (DOE), is collected and published by the DOE Office of Environment, Safety and Health Reporting and Analysis within the Office of Environment, Health, Safety and Security in Germantown, Maryland.

In 1982 and 1983, 10 CFR 20.408(a) was amended to require three additional categories of NRC licensees to submit annual statistical exposure reports and individual termination exposure reports: (1) geologic repositories for high-level radioactive waste, (2) independent spent fuel storage installations (ISFSIs), and (3) facilities for the land disposal of low-level radioactive waste. Of these additional categories, this document presents the exposure information that was reported

¹ These four categories were (1) commercial nuclear power reactors, (2) industrial radiographers, (3) fuel processors (including uranium enrichment facilities as of 1997), fabricators, and reprocessors, and (4) facilities involved in manufacturing and distribution of specified quantities of byproduct material.

by NRC licensees for only the ISFSI category, because there are no geologic repositories for high-level waste currently licensed, and there are no low-level waste land disposal facilities currently in operation that report to the NRC.

In May 1991, the NRC revised 10 CFR Part 20 to redefine the radiation monitoring and reporting requirements for its licensees. Instead of submitting annual reports summarizing the total number of individuals who were monitored (as under 10 CFR 20.407) and termination reports (as under 10 CFR 20.408), licensees were required to submit an annual report of the dose received by each monitored individual under 10 CFR 20.2206, "Reports of individual monitoring." Licensees were to implement the new requirements no later than January 1994. The regulations in 10 CFR 20.1502, "Conditions requiring individual monitoring of external and internal occupational dose," specify the relevant conditions. Each licensee is also required, under 10 CFR 20.2106, "Records of individual monitoring results," to maintain records of the results of such monitoring until the NRC terminates the license.

This report summarizes information reported for the current year and the previous 10 years. More licensee-specific data for the previous 10 years, such as the annual reports submitted by each commercial nuclear power reactor under the former 10 CFR 20.407 and 10 CFR 20.2206 (after 1993) and their technical specifications (before Volume 20 of this report), can be found in the documents listed under "Previous Reports in This Series" on page ii of this report. Additional operating data and statistics for each commercial nuclear power reactor for the years 1973 through 1982 may be found in a series of reports entitled "Nuclear Power Plant Operating Experience" [Refs. 2–10]. These documents are available for viewing at all NRC public document rooms, as well as on the NRC public website (<https://www.nrc.gov>). They may also be purchased from the National Technical Information Service or the U.S. Government Printing Office, as explained in section 7.

1.2 Radiation Exposure Information on the Internet

In May 1995, the NRC began disseminating radiation exposure information on a public website linked to the main NRC website. Currently, the NRC's website at <https://reirs.nrc-gateway.gov/> allows interested parties to access the data electronically rather than in the most recently published NUREG-0713 document. The REIRS website contains up-to-date information on radiation exposure, as well as information and guidance on reporting radiation exposure information to the NRC. Interested parties may read the documents online or download information for further analysis. REIRView, a software package designed to validate a licensee's annual data submittal, is available for downloading on the website. There are also links to other websites dealing with the topics of radiation and health physics. Individuals may submit requests for their dose records contained in REIRS on the website. In addition, organizations that have provided documentation to the NRC may submit requests for dose records contained in REIRS on the website.

The NRC intends to continue disseminating radiation exposure information on the web and will focus more resources on distributing information electronically than on publishing hard-copy reports.

The home page of the NRC's [main](#) website is at the following URL:

<https://www.nrc.gov>

The URL for NRC radiation exposure information is the following:

<https://reirs.nrc-gateway.gov>

The home page for the NRC REIRS Dashboard is at the following URL:

<https://www.nrc.gov/about-nrc/radiation/health-effects/info/reirs-dashboard.html>

Comments on this report or on the NRC's radiation exposure website should be directed as follows:

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2 LIMITATIONS OF THE DATA

2.1 Limitations

All figures in this report relating to exposures and occupational doses are based on the results and interpretations of the readings of various types of personnel-monitoring devices used by each licensee. These data, obtained from routine personnel-monitoring programs, assist in characterizing the radiation exposure incident to individuals' work and are used in evaluating the licensee's radiation protection program.

Monitoring requirements are specified in 10 CFR 20.1502, which requires licensees to monitor individuals at levels sufficient to demonstrate compliance with occupational dose limits. As a minimum, monitoring must be provided for (1) adults likely to receive, in 1 year from sources external to the body, a dose in excess of 10 percent of the applicable limits in 10 CFR 20.1201(a), and (2) all individuals entering an area of high or very high radiation. Separate dose limits have been established for minors, declared pregnant women, and members of the public. Depending on the administrative policy of each licensee, persons, such as visitors and administrative individuals, may also be provided with monitoring devices, even though the probability of their exposure to measurable levels of radiation is extremely small.

Pursuant to 10 CFR 20.2206(b), certain categories of licensees must submit annual reports of the results of individual monitoring they have conducted for each individual for whom monitoring was required by 10 CFR 20.1502. Beyond this requirement, many licensees elect to report the doses for every individual monitored. This practice increases the number of individuals—both those with measurable dose and those without measurable dose—that are considered in this report and contributes to the representativeness and statistical power of the data presented here. For the purposes of this NUREG, the number of individuals reported as having “no measurable dose”² is shown separately and is subtracted from the total number of monitored individuals to determine the number of individuals with measurable dose. The number of individuals with measurable dose is then used to calculate the average measurable dose. The term “dose” throughout this report refers to the total effective dose equivalent (TEDE) unless otherwise specified.

This report can be obtained from the NRC's website at <https://reirs.nrc-gateway.gov/>. The report does not include compilations of nonoccupational exposures, such as exposures received by medical patients from x-rays, fluoroscopy, or accelerators.

This report contains information reported by NRC licensees. Because the NRC licenses all commercial nuclear power reactors, fuel processors and fabricators, and ISFSIs in the United States, the information shown for these categories reflects all relevant activity in the United States. This is not the case, however, for the remaining categories of industrial radiography, manufacturing and distribution (M&D) of specified quantities of byproduct material, and low-level waste disposal. Many facilities that conduct these types of activities are regulated by Agreement States. Agreement States license and regulate more than eight times as many such facilities as does the NRC. Agreement States are not required to adopt the reporting requirements in 10 CFR 20.2206. As a result, Agreement State licensees are not required to submit occupational dose reports to the NRC.

² The number of individuals with measurable dose includes any individual with a TEDE greater than 0 rem. Individuals reported with zero dose, or no detectable dose, are included in the number of individuals with no measurable exposure.

Although some Agreement State licensees voluntarily submit occupational dose reports to the NRC, these results are not included in the analyses in sections 3, 5, and 6 of this report. NUREG 2118, Volume 1, "Occupational Radiation Exposure at Agreement State-Licensed Materials Facilities, 1997–2010," issued July 2012 [Ref. 11], provides information on occupational radiation exposures at facilities licensed by Agreement States.

The average TEDE per individual, as well as the TEDE distributions shown for groups of licensees, may also be affected by the multiple reporting of "transient" individuals—those who were monitored by two or more licensees during the year. Licensees are only required to report the doses received by individuals at their licensed facilities. Section 5 contains an analysis that adjusts the data to account for transient individuals.

When examining the annual statistical data, it is important to note that not all the personnel included in the report were necessarily monitored throughout the entire year. Many licensees, such as radiography and commercial nuclear power reactor licensees, may monitor numerous individuals for periods of much less than a year.

Care should be taken when referencing the collective totals presented in this report. The differences between the totals presented for all licensees that reported and those for only the licensees that are required to report should be noted. Section 1.1 gives the categories of licensees that are required to report to REIRS. Many licensees that are not required to report to REIRS nevertheless do so voluntarily for the sake of convenient recordkeeping, or they have reported in the past and have decided to continue this practice. Appendix A, table A-2, lists these licensees.

The data in this report are subject to change, because licensees may submit corrections or additions to data for previous years, although such revisions are uncommon.

All dose equivalent values in this report are given in units of rem in accordance with the general provisions for records in 10 CFR 20.2101(a):

- 1 rem = 0.01 sievert (Sv)
- 1 rem = 10 millisievert (mSv)
- 1 curie (Ci) = 3.7×10^{10} becquerel (Bq)

2.2 Statistical Comparisons

For statistical comparisons of averages, a two-sided one-sample t-test with a 0.05 significance level (i.e., 95 percent confidence) is used to determine whether the difference between the two averages is statistically significant. For values that are not averages, such as total collective TEDE, a 95 percent confidence interval is calculated for the 5-year average from the previous 5 years (not including the year currently under consideration), based on the normal distribution. If the value for the current year falls within the 95 percent confidence interval for the 5-year average, then the difference between the current-year value and the 5-year average is not considered statistically significant. If the current-year value falls outside the 95 percent confidence interval (i.e., below the lower limit or above the upper limit), then the difference is considered statistically significant.

The following gives the two-sided one-sample t-test formula:

$$t = \frac{\bar{X} - \mu}{\frac{s}{\sqrt{n}}}$$

where

t = calculated t -statistic

\bar{X} = sample mean

μ = population mean

s = sample standard deviation

n = sample number

Example:

We wish to determine whether the average measurable TEDE for a type of nuclear reactor differs significantly from the previous 5-year average. The 5-year mean for the average measurable TEDE is 0.080. The population mean is the current year's average measurable TEDE, 0.060. The sample standard deviation is 0.01, and the sample number is 5. Using the formula above, we obtain a t -value of 4.472:

$$t = \frac{0.080 - 0.060}{\frac{0.01}{2.236}} = 4.472$$

The associated two-tailed probability value (as obtained from a table of values for Student's t -distribution) is 0.006, which indicates that the difference is statistically significant at a 0.05 significance level.

It should be noted that this report does not analyze the uncertainties associated with dosimetry and dose measurement, as the NRC does not require licensees to report the information necessary for such an analysis. The inferences and statements presented in this report are based on the data as reported by the licensees, which do not include uncertainty values for the dosimetric calculations. All statistical inferences are made at the population level (i.e., from aggregated doses for a licensee or group of licensees). More information on the NRC's statistical practices can be found in NUREG-1475, Revision 1, "Applying Statistics," issued March 2011 [Ref. 12].

3 ANNUAL PERSONNEL MONITORING REPORTS—10 CFR 20.2206

3.1 Definition of Terms and Methodologies

3.1.1 Number of Licensees Reporting

Table 3-1 gives the number of licensees in each of the seven³ categories that are required to report under 10 CFR 20.2206. The first column gives the NRC license category and the corresponding program codes. The program code is a five-digit number the NRC assigns to each licensee to designate the major activity or principal use authorized in the license. Program code descriptions and definitions are available on the NRC's public website at <https://www.nrc.gov/materials/miau/mat-toolkits.html>. In 2020, the NRC revised the program codes representing industrial radiography licensees. Industrial radiography licensees previously reported in NUREG-0713 under "Temporary Job Sites" are now reported under either "1–5 Temporary Job Sites" or "6–20 Temporary Job Sites."

The third column in table 3-1 shows the number of licensees that have filed reports under 10 CFR 20.2206 during the past 11 years. All commercial nuclear power reactor licensees, fuel processors and fabricators, and ISFSI licensees must report occupational exposures to the NRC, even if they are in an Agreement State.

Many companies that conduct industrial radiography and M&D activities are in and regulated by Agreement States and are, therefore, not subject to the reporting requirements of 10 CFR 20.2206. However, industrial radiography and M&D licensees that are licensed and regulated by the NRC must report occupational exposures to the NRC. Appendix A, table A-1, lists all nonreactor licensees that reported occupational exposure data to the NRC in 2024.

3.1.2 Number of Monitored Individuals

The term "number of monitored individuals" in this report refers to the total number of individuals that NRC licensees reported as being monitored for exposure to external or internal radiation during the year. This number includes both individuals for whom monitoring is required and individuals for whom monitoring was voluntarily conducted and reported (e.g., individuals receiving a minimal dose below the monitoring threshold, visitors, service representatives, contract personnel, and administrative staff).

The total number of monitored individuals was determined from the number of unique personal identification numbers submitted per licensee. Uniqueness is defined by the combination of identification number and identification type [Ref. 13].

3.1.3 Number of Individuals with a Measurable Total Effective Dose Equivalent

The number of individuals with a measurable TEDE includes any individual with a TEDE that is reported as a positive value greater than zero.

³ These categories are (1) commercial nuclear power reactors and test reactor facilities, (2) industrial radiographers, (3) fuel processors (including uranium enrichment facilities), fabricators, and reprocessors, (4) facilities involved in M&D of byproduct material, (5) ISFSIs, (6) facilities for land disposal of low-level waste, and (7) geologic repositories for high-level waste. There are currently no NRC licensees involved in low-level waste disposal and no geologic repositories for high-level waste.

Table 3-1 Average Annual Exposure Data for Certain Categories of NRC Licensees

NRC License Category* and Program Code	Calendar Year	Number of Licensees Reporting	Number of Monitored Individuals	Number of Individuals with Measurable TEDE	Collective TEDE (person-rem)	Average TEDE (rem)	Average Measurable TEDE per Individual (rem)
Industrial Radiography 03310 03320 04312 04313	2014	57	3,288	2,862	1,778.171	0.54	0.62
	2015	69	3,426	2,908	1,695.040	0.49	0.58
	2016	64	3,035	2,635	1,270.459	0.42	0.48
	2017	62	3,389	2,912	1,709.858	0.50	0.59
	2018	61	3,876	3,303	1,967.879	0.51	0.60
	2019	60	3,732	3,152	1,668.408	0.45	0.53
	2020	56	3,058	2,577	1,130.511	0.37	0.44
	2021	43	2,331	1,996	789.140	0.34	0.40
	2022	48	2,523	2,137	962.450	0.38	0.45
	2023	51	3,241	2,817	1,541.161	0.48	0.55
2024	51	3,158	2,746	1,384.854	0.44	0.50	
Manufacturing and Distribution 02500 03211 03212 03214	2014	19	962	656	138.631	0.14	0.21
	2015	21	949	634	155.688	0.16	0.25
	2016	21	905	606	142.958	0.16	0.24
	2017	21	940	615	139.071	0.15	0.23
	2018	14	1,086	718	136.505	0.13	0.19
	2019	16	1,188	804	147.927	0.12	0.18
	2020	13	1,112	799	134.045	0.12	0.17
	2021	16	1,258	896	181.531	0.14	0.20
	2022	16	1,287	998	182.718	0.14	0.18
	2023	17	1,300	1,034	192.289	0.15	0.19
2024	13	1,588	1,221	228.649	0.14	0.19	
Independent Spent Fuel Storage 23100 23200	2014	2	51	22	3.192	0.06	0.15
	2015	2	57	20	1.102	0.02	0.06
	2016	2	57	22	0.579	0.01	0.03
	2017	2	67	20	0.631	0.01	0.03
	2018	2	70	17	1.740	0.02	0.10
	2019	2	79	28	1.939	0.02	0.07
	2020	2	59	19	0.454	0.01	0.02
	2021	2	76	20	0.795	0.01	0.04
	2022	3	96	27	1.891	0.02	0.07
	2023	2	93	15	0.994	0.01	0.07
2024	2	82	22	1.550	0.02	0.07	
Fuel Cycle Licenses— Fabrication, Processing, and Uranium Enrichment, and UF ₆ Production Plants 11400 21200 21210	2014	9	6,689	3,685	366.224	0.05	0.10
	2015	7	5,296	3,033	327.112	0.06	0.11
	2016	7	5,413	2,999	277.687	0.05	0.09
	2017	7	5,058	2,930	254.997	0.05	0.09
	2018	7	4,737	2,783	229.530	0.05	0.08
	2019	7	4,347	2,690	250.522	0.06	0.09
	2020	7	3,900	2,755	244.264	0.06	0.09
	2021	7	4,267	2,769	238.564	0.06	0.09
	2022	7	4,933	3,464	304.805	0.06	0.09
	2023	7	6,036	4,001	329.353	0.05	0.08
2024	7	6,023	3,267	297.930	0.05	0.09	
Commercial LWRs** 41111	2014	100	174,853	70,847	7,124.519	0.04	0.10
	2015	99	176,886	70,798	7,019.088	0.04	0.10
	2016	99	155,574	59,353	5,365.709	0.03	0.09
	2017	99	157,072	64,761	6,416.548	0.04	0.10
	2018	98	150,219	61,014	5,829.471	0.04	0.10
	2019	96	134,897	53,615	5,080.795	0.04	0.09
	2020	95	125,010	52,820	4,899.128	0.04	0.09
	2021	93	122,681	50,667	5,303.198	0.04	0.10
	2022	92	125,338	51,010	5,085.286	0.04	0.10
	2023	92	124,892	51,049	5,552.061	0.04	0.11
2024	93	122,389	52,082	4,903.383	0.04	0.09	
Grand Totals and Averages	2014	187	185,843	78,072	9,410.737	0.05	0.12
	2015	198	186,614	77,393	9,198.030	0.05	0.12
	2016	193	164,984	65,615	7,057.392	0.04	0.11
	2017	190	159,355	67,341	7,909.670	0.05	0.12
	2018	182	159,988	67,835	8,165.125	0.05	0.12
	2019	174	143,026	59,765	6,590.069	0.05	0.11
	2020	163	132,942	58,501	6,109.158	0.05	0.10
	2021	167	131,520	57,293	6,755.062	0.05	0.12
	2022	166	134,177	57,636	6,537.150	0.05	0.11
	2023	169	135,562	58,916	7,615.858	0.06	0.13
2024	166	133,240	59,338	6,816.366	0.05	0.11	

NOTE: The data shown in this table for all categories of licensees have not been adjusted to account for transient individuals (see section 5).

* These categories include only NRC licensees required to submit an annual report (see section 2).

** This category includes all light-water reactors (LWRs) that had been in commercial operation for at least a full year as of December 31 of the year under consideration.

3.1.4 Collective Total Effective Dose Equivalent

Unless otherwise specified, this report uses the term “collective TEDE” to denote the sum of the TEDE received by all monitored individuals within a category. This definition is used because 10 CFR 20.2206 requires that the TEDE be reported. Collective doses are reported in units of person-rem.

Before the implementation of the revised dose-reporting requirements of 10 CFR 20.2206 in 1994, the collective dose, in some cases, was calculated from the dose distributions by multiplying the number of individuals reported in each dose range by the midpoint of that dose range and then summing the products. This procedure relied on the assumption that the midpoint of the range was equal to the arithmetic mean of the individual doses incurred within the range. Experience has shown that the actual mean of the individual doses falling within each dose range is generally less than the midpoint of the range. For this reason, the collective doses calculated by this procedure may be approximately 10 percent higher than the sum of the actual individual doses. Because of this change in methodology, care should be taken when comparing the collective dose values provided for 1994 to 2024 (which reflect the sum of the actual doses) with the collective dose values for years before 1994.

In addition, before 1994, doses included only the external whole-body dose, with no internal dose contribution. Although the contribution of internal dose to the TEDE is minimal for most licensees, it should be considered when comparing collective doses for 1994 and later with collective doses for years before 1994. One notable exception is for fuel fabrication facilities, where the committed effective dose equivalent (CEDE), in some cases, contributes the majority of the TEDE (see section 3.3.5).

3.1.5 Average Individual Total Effective Dose Equivalent

The average individual TEDE is obtained by dividing the collective TEDE by the total number of monitored individuals. This figure is usually less than the average measurable TEDE, because it includes the individuals who received zero or less than measurable TEDE.

3.1.6 Average Measurable Total Effective Dose Equivalent

The average measurable TEDE is obtained by dividing the collective TEDE by the number of individuals with a measurable TEDE. This is the most commonly used average in this and other reports when examining trends and comparing the TEDE received by individuals in various segments of the nuclear industry.

3.2 Annual Total Effective Dose Equivalent Distributions

Table 3-2 is a statistical compilation of the occupational dose reports by category of licensee (see section 3.3 for a description of each license category). The TEDE distributions are generated by summing the TEDE for each individual and counting the number of individuals in each dose range. In several license categories, many individuals received TEDEs that were less than measurable. Individuals monitored by commercial nuclear power reactor licensees accounted for 88 percent of the reported individuals with a measurable TEDE in 2024 (as shown in table 3-2). These individuals received 72 percent of the total collective TEDE.

Table 3-2 Distribution of TEDE by License Category 2024

License Category (Number of Sites Reporting)	Number of Individuals with TEDE in Range (rem) *											Number of Monitored Individuals	Number with Meas. TEDE	Total Collective TEDE (person-rem)
	No. Meas.	Meas. <0.10	0.10–0.25	0.25–0.50	0.50–0.75	0.75–1.0	1.0–2.0	2.0–3.0	3.0–4.0	4.0–5.0	>5.0			
INDUSTRIAL RADIOGRAPHY														
Fixed Locations (2)	6	6	-	-	-	-	-	-	-	-	-	12	6	0.239
1–5 Temporary Job Sites (44)	278	548	336	329	239	146	301	73	19	5	-	2,274	1,996	1,138.815
6–20 Temporary Job Sites (5)	128	263	153	154	88	40	41	4	1	-	-	872	744	245.800
Total (51)	412	817	489	483	327	186	342	77	20	5	-	3,158	2,746	1,384.854
MANUFACTURING AND DISTRIBUTION														
Broad-Type A (2)	138	386	103	62	20	11	46	9	-	-	-	778	640	171.474
Broad-Type B and Other (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuclear Pharmacies (11)	229	429	90	44	10	5	2	1	-	-	-	810	581	57.175
Total (13)	367	815	193	106	30	16	48	10	-	-	-	1,588	1,221	228.649
INDEPENDENT SPENT FUEL STORAGE														
Total (2)	60	16	3	3	-	-	-	-	-	-	-	82	22	1.550
FUEL CYCLE**														
Total (7)	2,756	2,431	445	301	66	17	7	-	-	-	-	6,023	3,267	297.930
COMMERCIAL POWER REACTORS***														
Boiling Water (31)	19,946	17,975	5,402	2,320	602	179	81	7	-	-	-	46,512	26,566	2,943.736
Pressurized Water (62)	50,361	19,688	4,329	1,210	213	51	25	-	-	-	-	75,877	25,516	1,959.647
Total (93)	70,307	37,663	9,731	3,530	815	230	106	7	-	-	-	122,389	52,082	4,903.383
GRAND TOTALS	73,902	41,742	10,861	4,423	1,238	449	503	94	20	5	0	133,240	59,338	6,816.366

NOTE: The data shown in this table for all categories of licensees have not been adjusted to account for transient individuals (see section 5).

* TEDE values exactly equal to the values separating ranges are reported in the higher range.

** This category includes fabrication, processing, and uranium enrichment plants (see section 3.3.5).

*** This category includes all reactors that had been in commercial operation for at least a full year as of December 31, 2024. Vogtle Electric Generating Plant, Unit 4 became operational on April 29, 2024, and is not included in these values.

3.3 Summary of Occupational Dose Data by Licensee Category

3.3.1 Industrial Radiography Licensees—Fixed Location and Temporary Job Sites

Industrial radiography licenses are issued to allow the use of sealed radioactive materials, usually in exposure devices or cameras that primarily emit gamma rays for nondestructive testing of pipeline weld joints, steel structures, boilers, aircraft and ship parts, and other high-stress alloy parts. Some firms are licensed to conduct such activities in one location, usually in a permanent facility designed and shielded for radiography; others perform radiography at temporary job sites in the field. The radioisotopes most commonly used are cobalt-60 and iridium-192. As shown in table 3-1, the NRC received annual reports from 51 industrial radiography licensees in 2024. Table 3-3 summarizes the data reported by these licensees for 2024, as well as the corresponding data from industrial radiography licensees for 2022 and 2023 for comparison. As noted earlier, in 2020, the NRC revised its program codes, which affected the categorization of industrial radiography licensees. The program code previously labeled in NUREG-0713 as “Industrial Radiography Temporary Job Sites” is now split into “1–5 Temporary Job Sites” and “6–20 Temporary Job Sites.”

Table 3-3 Annual Dose Data for Industrial Radiography Licensees, 2022–2024

Year	Type of License	Number of Licensees	Number of Monitored Individuals	Number of Individuals with Measurable TEDE	Collective TEDE (person-rem)	Average Measurable TEDE (rem)
2022	Fixed Location	2	11	6	1.565	0.26
	1–5 Temporary Job Sites	42	1,699	1,449	747.824	0.52
	6–20 Temporary Job Sites	4	813	682	213.061	0.31
	Total	48	2,523	2,137	962.450	0.45
2023	Fixed Location	2	12	8	0.409	0.05
	1–5 Temporary Job Sites	45	2,465	2,146	1,314.182	0.61
	6–20 Temporary Job Sites	4	764	663	226.570	0.34
	Total	51	3,241	2,817	1,541.161	0.55
2024	Fixed Location	2	12	6	0.239	0.04
	1–5 Temporary Job Sites	44	2,274	1,996	1,138.815	0.57
	6–20 Temporary Job Sites	5	872	744	245.800	0.33
	Total	51	3,158	2,746	1,384.854	0.50

High exposures in radiography can be directly attributed to the type and location of the radiography field work. For example, some locations, such as oil drilling platforms and aerial tanks, offer the radiographer little shielding and may not allow for the use of distance to reduce exposure. A relatively small number of exposed individuals involved in radiography activities usually receive average measurable TEDE that are higher than those received by individuals under other license categories.

Figure 3-1 shows the number of individuals with a measurable TEDE, the total collective TEDE, and the average measurable TEDE per individual for industrial radiography licensees from 1994 through 2024. In 2024, one fewer licensee reported in the category “1–5 Temporary Job Sites” than had done so in 2023. As this category generally accounts for more than half of the individuals monitored, many of the dose parameters decreased from 2023 to 2024. In particular, the number of individuals with a measurable TEDE decreased by 3 percent, and the collective TEDE decreased by 10 percent. However, the 2024 values for these parameters do not represent a statistically significant change from the 5-year averages of 2,536 individuals with a measurable TEDE, and a collective TEDE of 1,385 person-rem (13,850 person-mSv). Similarly, the average measurable

TEDE decreased by 9 percent to 0.50 rem (5.0 mSv) in 2024, but this does not represent a statistically significant decrease when compared to the 5-year average of 0.48 rem (4.8 mSv).

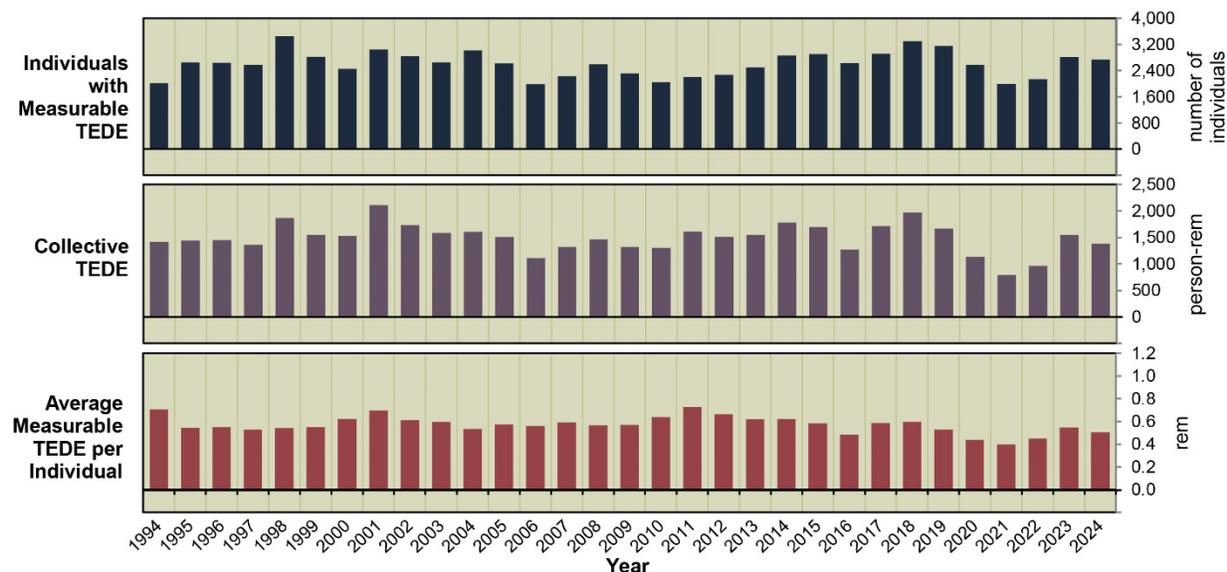


Figure 3-1 Number of Individuals with Measurable TEDE, Collective TEDE, and Average Measurable TEDE for Industrial Radiography Licensees, 1994–2024

3.3.2 Manufacturing and Distribution Licensees—Broad-Type A, Broad-Type B, Other, and Nuclear Pharmacies

M&D licenses are issued to allow the manufacture and distribution of radionuclides in various forms for diverse purposes. The products are usually distributed to organizations or companies specifically licensed by the NRC. Type A specific licenses of broad scope (Broad-Type A licenses) are issued to larger organizations that may use many different radionuclides in many ways and that have a comprehensive radiation protection program. Some Broad-Type A licensees are medical suppliers that process, package, or distribute such products as diagnostic test kits, radioactive surgical implants, and tagged radiochemicals for use in medical research, diagnosis, and therapy. Broad-Type B licenses involve the processing, encapsulation, packaging, and distribution of radionuclides purchased in bulk quantities from production reactors and cyclotrons. Major products include gamma radiography sources, cobalt irradiation sources, well-logging sources, sealed sources for gauges and smoke detectors, and radiochemicals for nonmedical research. Note that no Broad-Type B licensees have reported to the NRC since 2010. M&D Other licenses are usually issued to smaller organizations requiring more restrictive licenses. These licenses are usually more specific in identifying each radionuclide, the chemical and physical form, and the authorized activities and users. A third category of licensees, nuclear pharmacies, is involved in the compounding and dispensing of radioactive materials for use in nuclear medicine procedures.

Table 3-4 presents the annual data that were reported by the three types of licensees for 2022, 2023, and 2024. As shown in the table, the average measurable TEDE is generally the highest for the Broad-Type A licensees, of which there are only two among the NRC’s active licensees: Curium US, LLC, and International Isotopes Idaho, Inc. These two licensees also accounted for 75 percent of the total collective TEDE in 2024.

Table 3-4 and figure 3-2 both show the number of individuals with measurable TEDE, the total collective TEDE, and the average measurable TEDE per individual for Broad-Type A licensees, Broad-Type B and Other, and Nuclear Pharmacy licensees. From 2023 to 2024, the number of individuals with a measurable TEDE increased by 18 percent and the collective TEDE increased by 19 percent. The number of individuals with a measurable TEDE in 2024 was significantly higher (35 percent higher) than the 5-year average of 906. The collective TEDE in 2024 was significantly higher (36 percent higher) than the 5-year average of 168 rem. The average measurable TEDE in 2024 (0.19 rem) was nearly the same as the 5-year average of 0.18 rem.

Table 3-4 Annual Exposure Information for Manufacturing and Distribution Licensees, 2022–2024

Year	Type of License	Number of Licensees	Number of Monitored Individuals	Number of Individuals with Measurable TEDE	Collective TEDE (person-rem)	Average Measurable TEDE (rem)
2022	M&D—Broad-Type A	2	443	393	129.751	0.33
	M&D—Broad-Type B and Other	0	0	0	0.000	0.00
	M&D—Nuclear Pharmacies	14	844	605	52.967	0.09
	Total	16	1,287	998	182.718	0.18
2023	M&D—Broad-Type A	2	465	420	134.366	0.32
	M&D—Broad-Type B and Other	0	0	0	0.000	0.00
	M&D—Nuclear Pharmacies	15	835	614	57.923	0.09
	Total	17	1,300	1,034	192.289	0.19
2024	M&D—Broad-Type A	2	778	640	171.474	0.27
	M&D—Broad-Type B and Other	0	0	0	0.000	0.00
	M&D—Nuclear Pharmacies	11	810	581	57.175	0.10
	Total	13	1,588	1,221	228.649	0.19

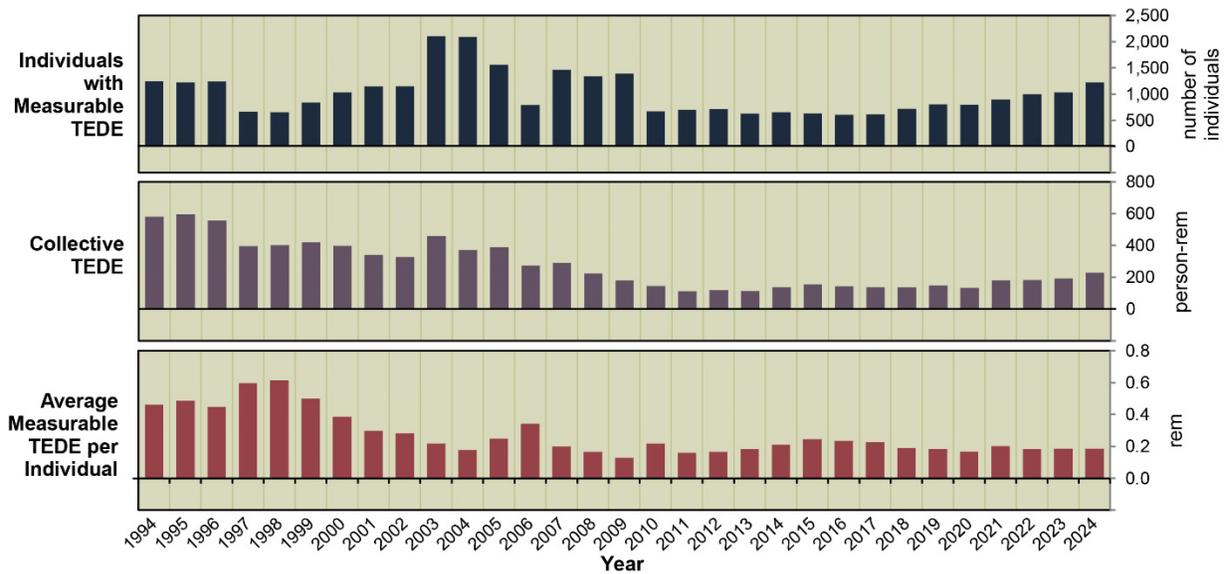


Figure 3-2 Number of Individuals with Measurable TEDE, Collective TEDE, and Average Measurable TEDE for Manufacturing and Distribution Licensees, 1994–2024

3.3.3 Low-Level Waste Disposal Licensees

Low-level waste disposal licenses are issued to allow the receipt, possession, and disposal of low-level radioactive waste at land disposal facilities. Licensees must have the appropriate facilities to receive waste from places such as hospitals and laboratories, store it for a short time, and dispose of it in a properly prepared burial ground. Since 1999, all licensees that have conducted these activities have been in Agreement States, which have primary regulatory authority over the licensees' activities; therefore, there are no NRC low-level waste licensees that report radiation exposure data to REIRS.

3.3.4 Independent Spent Fuel Storage Installation Licensees

The NRC issues ISFSI licenses to allow the possession of spent fuel and associated radioactive materials from commercial nuclear power reactors for the purpose of storage. According to 10 CFR 72.3, "Definitions" [Ref. 14], spent fuel means the following

[Fuel] that has been withdrawn from a nuclear reactor following irradiation, has undergone at least one year's decay since being used as a source of energy in a power reactor, and has not been chemically separated into its constituent elements by reprocessing. Spent fuel includes special nuclear material, byproduct material, source material, and other radioactive materials associated with fuel assemblies.

The spent fuel that is removed from the reactor is initially stored in a spent fuel pool and usually cooled for at least 5 years in the pool before it is transferred to dry cask storage at an ISFSI. The NRC has authorized transfer as early as 3 years after removal from the reactor; however, the industry norm is approximately 10 years. An ISFSI provides interim storage, protection, and safeguarding of spent fuel pending its final disposal.

Most ISFSI facilities are located on site at commercial nuclear power reactors. Consequently, the occupational dose information for an ISFSI facility is usually included with the dose information reported by the commercial nuclear power reactor licensee and is not reported separately to the NRC. Since 2005, only two ISFSI licensees have been reporting dose information to the NRC: the GE Morris facility in Illinois and the Trojan ISFSI in Oregon. The GE Morris facility is the only spent fuel pool that is not located at an existing or former reactor site; its ISFSI license has been renewed until 2042. The Trojan nuclear power reactor has been decommissioned and is no longer in commercial operation; however, the ISFSI facility at Trojan remains in operation, and the licensee reports occupational dose information to the NRC under the ISFSI license, which has been renewed until 2059. In addition, in 2022, the Rancho Seco ISFSI, based in Sacramento County, California, began reporting under an ISFSI license. However, in 2024, the Ranch Seco ISFSI reported to the NRC that no monitoring was required for the current year. Appendix A, table A-1, summarizes the occupational dose information reported by these two licensees.

Figure 3-3 shows the number of individuals with a measurable TEDE, the total collective TEDE, and the average measurable TEDE per individual for ISFSI facilities. Table 3-1 shows that the number of individuals with a measurable TEDE increased from 15 in 2023 to 22 in 2024. The collective TEDE increased by 56 percent, from 0.994 person-rem in 2023 to 1.550 person-rem in 2024, but this increase was not statistically significant. The average measurable TEDE per individual remained the same, at 0.07 rem, in both 2023 and 2024. The average measurable TEDE in 2024 was not significantly different from the 5-year average of 0.05 rem.

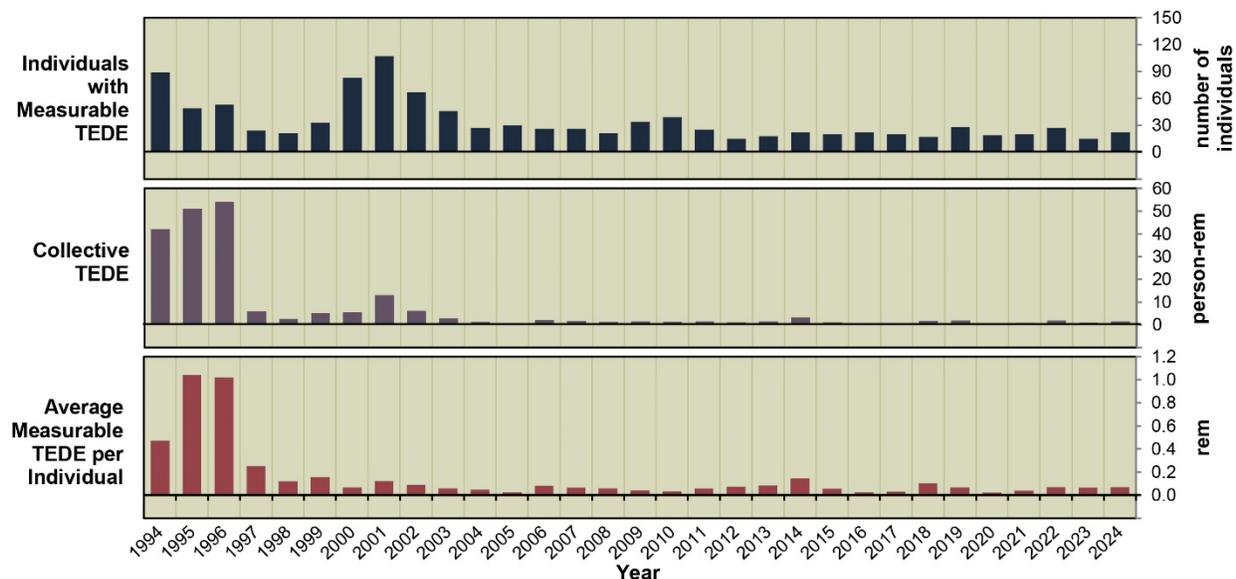


Figure 3-3 Number of Individuals with Measurable TEDE, Collective TEDE, and Average Measurable TEDE for ISFSI Licensees, 1994–2024

3.3.5 Fuel Cycle Licensees

The NRC licenses fuel cycle facilities to process and handle special nuclear material, source material, or both. These forms of nuclear material are highly regulated to ensure their safe use and security. The use and handling of special nuclear material are described in 10 CFR Part 70, “Domestic Licensing of Special Nuclear Material” [Ref. 15]. While most of the exposure discussed in this section is from reactor fuel production, some exposure may also result from the use of special nuclear material in education, research, and homeland security.

Most fuel cycle licenses are issued to allow reactor fuel processing, enrichment, and fabrication. Fuel cycle facilities vary in both purpose and technology, as different facilities encompass different stages of the nuclear fuel cycle. Currently operational fuel cycle facilities fall into three categories: uranium enrichment, uranium conversion, and fuel fabrication.

Figure 3-4 shows the number of individuals with a measurable TEDE, the total collective TEDE, and the average measurable TEDE per individual for fuel cycle licensees. The collective deep dose equivalent (DDE), the average measurable DDE, the collective CEDE, and the average measurable CEDE are also shown, because they contribute significantly to the TEDE for fuel fabrication facilities.

Table 3-5 shows that seven licensed fuel cycle facilities (engaged in fabrication, processing, uranium enrichment, and uranium hexafluoride [UF₆] production) reported to the NRC in 2024. From 2023 to 2024, the collective TEDE decreased by 10 percent, the collective DDE decreased by 11 percent, and the collective CEDE decreased by 6 percent. When compared to the 5-year average, the decreases in collective TEDE, collective CEDE, and collective DDE were not statistically significant.

Five fuel cycle licensees reported decreases in collective TEDE, while two reported increases. Of the two licensees reporting increases from 2023 to 2024, CentrusEnergy reported the largest increase (87 percent).

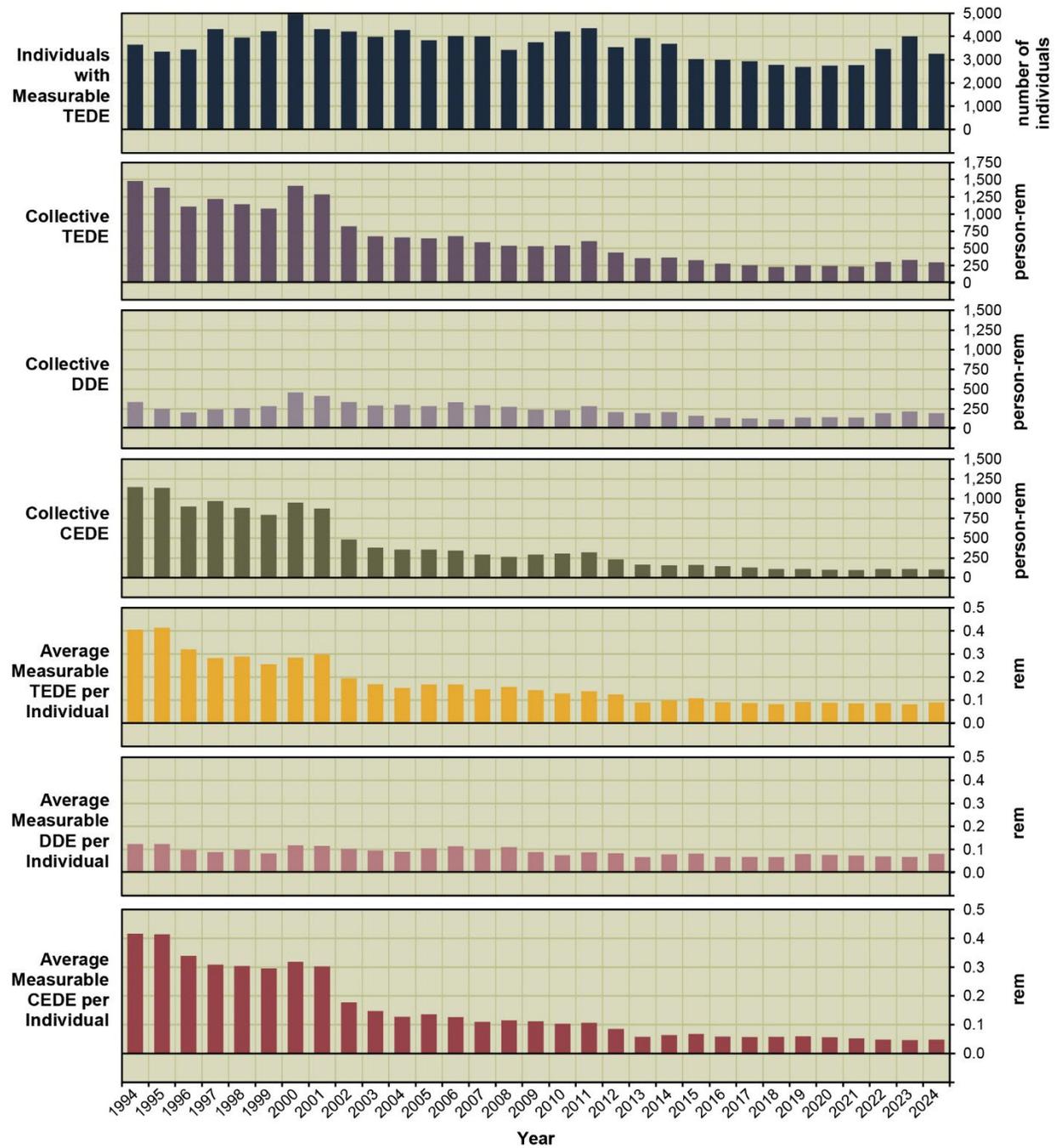


Figure 3-4 Annual Exposure Information for Fuel Cycle Licensees, 1994–2024

Table 3-5 Annual Exposure Information for Fuel Cycle Licensees, 2022–2024

Year	Type of License	Number of Licensees	Number of Monitored Individuals	Number of Individuals with Meas. TEDE	Collective TEDE (person-rem)	Average Meas. TEDE (rem)	Number of Individuals with Meas. DDE	Collective DDE (person-rem)	Average Meas. DDE (rem)	Number of Individuals with Meas. CEDE	Collective CEDE (person-rem)	Average Meas. CEDE (rem)
2022	Fuel Cycle	7	4,933	3,464	304.805	0.09	2,757	194.757	0.07	2,296	110.048	0.05
2023	Fuel Cycle	7	6,036	4,001	329.353	0.08	3,218	219.769	0.07	2,364	109.676	0.05
2024	Fuel Cycle	7	6,023	3,267	297.930	0.09	2,449	195.085	0.08	2,154	102.845	0.05

3.3.6 Light-Water Reactor Licensees

The NRC licenses light-water reactor (LWR) facilities that use special nuclear material in reactors to produce heat to generate electricity to be sold to consumers. There are two major types of commercial LWRs in the United States: pressurized-water reactors (PWRs) and boiling-water reactors (BWRs). Both types use water as the primary coolant.

Table 3-1 shows the number of licensees, number of monitored individuals, number of individuals with a measurable TEDE, total collective TEDE, average collective TEDE, and average measurable TEDE per individual for LWR facilities that had been in commercial operation for at least 1 full year at the end of each of the years 2014 through 2024. The data for each year do not include reactors that were permanently shut down or that had been in commercial operation for less than 1 full year by the end of that year. The one exception is Indian Point Nuclear Generating, Unit 2 (a PWR), which closed in April 2020: because the licensee reported the dose for that unit in combination with that of Indian Point Unit 3, the two units were jointly reported as operational in 2020. In 2021, Indian Point Unit 3 (a PWR) was added to the shutdown reactor list, so both units were removed from the operational list.

As of the publishing date of this report, several utilities have expressed interest in restarting reactors that were previously planned for decommissioning. Although these activities do not affect the data for 2024, future reports in this series may reflect changes in the status of reactors that were previously considered permanently shut down. In 2022, Palisades Nuclear Plant (a PWR) was removed from the operational list because Palisades permanently ceased operations on May 20, 2022. However, on February 1, 2023, Holtec, the licensee for Palisades, expressed an interest in returning the plant to an operational status and has been engaged in restoring Palisades to commercial operation. When Palisades restarts commercial operation, its dose monitoring results will be included in this report series. Vogtle Electric Generating Plant, Unit 3, which became operational July 31, 2023, is not included in the 2023 data, as it had been operational less than 1 full year as of the end of 2023. Vogtle Unit 4 became operational April 29, 2024, and is not included in 2024 values.

The data in table 3-1 have not been adjusted to account for the multiple counting of transient individuals (see section 5).

Appendix B presents the reported TEDE distribution of individuals monitored at each plant site for the year 2024 in alphabetical order by plant name. Sections 4 and 5 provide more details and analyses of the annual dose information reported by commercial nuclear power reactors.

3.3.7 Other Facilities Reporting to the NRC

Appendix A, table A-2, provides data for additional facilities that submitted occupational radiation dose reports to the NRC in 2024. These facilities are not among the seven categories of licensees required to report under 10 CFR 20.2206 and are not included in the analyses presented in this

report. However, the data from these facilities may be of interest to researchers and are included in this report for completeness.

3.4 Summary of Intake and Internal Dose Data by Licensee Category

All internal dose estimates use the amount of intake as the basis for the calculation. The intake is the total amount of radioactive material that enters the human body, and internal dose (as defined in 10 CFR 20.1003, “Definitions”) is the portion of the dose equivalent received from radioactive material taken into the body [Ref. 1]. For each intake recorded, licensees are required to list the radionuclide that was taken into the body, pulmonary clearance class, intake mode, and amount of the intake. Under 10 CFR 20.2206, licensees reporting intake data must complete and submit to the NRC an NRC Form 5, “Occupational Dose Record for a Monitoring Period”; its equivalent paper document; or an electronic document containing this information.

Tables 3-6 and 3-7 summarize the intake data reported to the NRC for 2024. The data are categorized by licensee type and radionuclide type. Table 3-6 lists the intakes for which the mode of intake into the body was recorded as ingestion or “other,” such as absorption through skin or injection through a puncture or wound.

Table 3-6 Intake by Licensee Category and Radionuclide—Mode of Intake: Ingestion or Other, 2024

Mode	Licensee Category	Program Code	Radionuclide	Number of Intake Records	Collective Intake (microcuries) (sci. notation)
Ingestion	Nuclear Power Reactor	41111	Ag-110M	1	1.00E-02
	Nuclear Power Reactor	41111	Am-241	1	5.00E-04
	Nuclear Power Reactor	41111	Cm-242	1	2.00E-02
	Nuclear Power Reactor	41111	Cm-243	1	1.00E-03
	Nuclear Power Reactor	41111	Co-60	10	2.74E+01
	Nuclear Power Reactor	41111	Fe-55	1	4.16E+01
	Nuclear Power Reactor	41111	Mn-54	4	5.88E-02
	Nuclear Power Reactor	41111	Ni-63	1	4.39E+00
	Nuclear Power Reactor	41111	Pu-238	1	3.00E-03
	Nuclear Power Reactor	41111	Pu-239	1	3.00E-03
	Nuclear Power Reactor	41111	Pu-241	1	3.00E-01
	Nuclear Power Reactor	41111	Sr-90	1	6.76E+00
	Nuclear Power Reactor	41111	Zr-95	1	4.18E+01

NOTE: The values shown in bold and boxed represent the highest value in each category.

Table 3-7 lists the intakes for which the mode of intake was inhalation from ambient airborne radioactive material in the workplace. These intakes are categorized according to their pulmonary clearance class or pulmonary solubility type, which describes the clearance half-time from the pulmonary region of the lung into the blood and gastrointestinal tract. Pulmonary clearance classes are recorded as D, W, or Y (days, weeks, or years), while pulmonary solubility types are recorded as F, M, or S (fast, medium, or slow). The nomenclature used depends on whether the licensee is following International Commission on Radiological Protection (ICRP) Publication 30, “Limits for Intakes of Radionuclides by Workers,” issued in 1979 [Ref. 16], which is described in 10 CFR Part 20, or ICRP Publication 68, “Dose Coefficients for Intakes of Radionuclides by Workers,” issued in 1994 [Ref. 17]. The former uses pulmonary clearance classes (D, W, Y), while

the latter uses pulmonary solubility types (F, M, S). The amount of material taken into the body is given in microcuries, a unit of measure of the quantity of radioactive material. For each licensee category, the table shows the maximum number of intake records and the maximum intake in bold and boxed for ease of reference.

Table 3-7 Intake by Licensee Category and Radionuclide—Mode of Intake: Inhalation, 2024

Licensee Category	Program Code	Radionuclide	Pulmonary Clearance Class or Solubility Type	Number of Intake Records *	Collective Intake (microcuries) (sci. notation)
Manufacturing and Distribution Broad-Type A	03211	In-111	D	1	5.75E+02
Nuclear Pharmacies	02500	I-123	W	16	1.64E-01
	02500	I-131	D	1	8.72E-02
	02500	I-131	W	73	2.14E+00
Nuclear Power Reactors	41111	Ag-110M	Y	1	9.00E+01
	41111	Am-241	W	15	4.53E-04
	41111	C-14	V	1	7.92E-06
	41111	Cm-243	W	1	8.63E-06
	41111	Co-58	Y	9	2.36E-01
	41111	Co-60	Y	10	5.56E-01
	41111	Cs-137	D	1	4.45E-02
	41111	Fe-55	D	1	8.94E-02
	41111	Fe-55	W	1	1.51E+00
	41111	H-3	D	4	9.03E+02
	41111	Mn-54	W	3	5.10E-02
	41111	Nb-95	Y	1	4.00E-03
	41111	Ni-63	D	1	1.83E-01
	41111	Ni-63	W	1	2.61E-02
	41111	Pu-238	W	1	7.11E-06
	41111	Pu-239	W	1	2.28E-06
	41111	Pu-241	W	1	8.35E-05
	41111	Sr-90	W	1	1.94E-04
	41111	Tc-99	W	1	1.04E-05
41111	U-234	Y	1	4.35E-06	
41111	U-238	Y	1	7.22E-07	
Uranium Fuel Processing Plants	21210	Am-241	M	17	1.70E-06
	21210	Pu-239	M	35	4.62E-05
	21210	Sr-90	S	279	2.21E+07
	21210	Th-232	M	6	2.69E-06
	21210	Th-232	S	22	1.58E-05
	21210	U-232	W	1	1.20E-07
	21210	U-232	Y	29	4.08E-05
21210	U-234	D	90	7.15E-02	

NOTE: The data values shown in bold and boxed represent the highest value in each category.

* An intake event may involve multiple nuclides; individuals may incur multiple intakes during the year. The number of intake records given here indicates the number of separate intake reports that were submitted using NRC Form 5 under 10 CFR 20.2206.

Table 3-7 Intake by Licensee Category and Radionuclide—Mode of Intake: Inhalation, 2024 (continued)

Licensee Category	Program Code	Radionuclide	Pulmonary Clearance Class or Solubility Type	Number of Intake Records *	Collective Intake (microcuries) (sci. notation)
Uranium Fuel Processing Plants (continued)	21210	U-234	F	703	6.34E-02
	21210	U-234	M	647	7.41E-03
	21210	U-234	S	1,831	1.72E+00
	21210	U-234	W	48	1.84E-02
	21210	U-234	Y	409	6.30E-01
	21210	U-235	D	82	2.59E-03
	21210	U-235	S	293	4.97E-02
	21210	U-235	W	48	6.82E-04
	21210	U-235	Y	214	2.32E-02
	21210	U-236	D	82	1.11E-04
	21210	U-236	F	650	1.09E-03
	21210	U-236	S	79	9.88E-04
	21210	U-236	W	48	3.26E-05
	21210	U-236	Y	214	2.26E-03
	21210	U-238	D	90	9.69E-03
	21210	U-238	M	590	3.66E-04
	21210	U-238	S	298	1.75E-01
Uranium Hexafluoride (UF ₆) Production Plants	21210	U-238	W	48	2.48E-03
	21210	U-238	Y	409	8.49E-02
	11400	Ac-227	W	265	6.08E-04
	11400	Pa-231	W	265	6.08E-04
	11400	Pb-210	W	240	4.85E-04
	11400	Po-210	W	211	3.88E-04
	11400	Ra-226	W	391	1.50E-03
	11400	Ra-228	W	200	3.51E-04
	11400	Th-228	W	200	3.51E-04
	11400	Th-230	D	1	5.00E-06
	11400	Th-230	W	615	1.52E-02
	11400	Th-232	W	200	3.51E-04
	11400	U-234	D	1	4.25E-04
	11400	U-234	W	621	1.41E+00
	11400	U-235	D	1	2.00E-05
	11400	U-235	W	621	6.56E-02
	11400	U-238	D	1	3.54E-04
11400	U-238	W	621	1.17E+00	

NOTE: The data values shown in bold and boxed represent the highest value in each category.

* An intake event may involve multiple nuclides; individuals may incur multiple intakes during the year. The number of intake records given here indicates the number of separate intake reports that were submitted using NRC Form 5 under 10 CFR 20.2206.

Table 3-8 lists the number of individuals with a measurable CEDE, the collective CEDE, and the average measurable CEDE per individual for each licensee category. From 2023 to 2024, the number of individuals with a measurable CEDE decreased by 256 to 2,217, which is not significantly lower than the 5-year average of 2,127. Almost all the internal doses reported in 2024 (99 percent of the total collective CEDE) were due to fuel fabrication facilities, which contributed 82.441 person-rem, together with the UF₆ production facility, which contributed 20.404 person-rem. The average measurable CEDE for fuel fabrication facilities was slightly lower in 2024 than in 2023, at 0.054 rem per individual, which is below the 5-year average of 0.058 rem. The fuel fabrication licensee with the highest doses reported a collective CEDE of 36.979 person-rem and an average measurable CEDE of 0.126 rem per individual. These doses were due to the exposure of individuals to uranium during the processing and fabrication of uranium fuel.

Table 3-8 Collective and Average CEDE by Licensee Category, 2024

Licensee Category	Licensee Name	License Number	Number with Meas. CEDE*	Collective CEDE (person-rem)	Average Meas. CEDE (rem)
MANUFACTURING AND DISTRIBUTION FACILITIES					
02500	CARDINAL HEALTH	34-29200-01MD	31	0.059	0.002
02500	CARDINAL HEALTH	34-31473-02MD	2	0.002	0.001
Totals and Averages			33	0.061	0.002
MANUFACTURING AND DISTRIBUTION FACILITIES					
03211	CURIUM US, LLC	24-04206-01	1	0.317	0.317
Totals and Averages			1	0.317	0.317
UF₆ PRODUCTION FACILITIES					
11400	HONEYWELL PERFORMANCE MATERIALS AND TECHNOLOGY	SUB-0526	621	20.404	0.033
Totals and Averages			621	20.404	0.033
FUEL FABRICATION FACILITIES					
21210	BWX TECHNOLOGIES, INC	SNM-0042	261	8.418	0.032
21210	FRAMATOME, INC	SNM-1227	214	18.804	0.088
21210	GLOBAL NUCLEAR FUEL—AMERICAS, LLC	SNM-1097	197	15.257	0.077
21210	NUCLEAR FUEL SERVICES, INC.	SNM-0124	568	2.983	0.005
21210	WESTINGHOUSE ELECTRIC COMPANY, LLC	SNM-1107	293	36.979	0.126
Totals and Averages			1,533	82.441	0.054
COMMERCIAL LIGHT-WATER REACTORS					
41111	ARKANSAS	DPR-51	4	0.014	0.004
41111	COLUMBIA GENERATING	NPF-21	1	0.004	0.004
41111	FERMI	NPF-43	6	0.011	0.002
41111	RIVER BEND	NPF-47	1	0.001	0.001
41111	SOUTH TEXAS	NPF-76	2	0.003	0.002
41111	COOK	DPR-58	10	0.198	0.020
41111	MILLSTONE	NPF-49	1	0.007	0.007
41111	FITZPATRICK	DPR-59	1	0.001	0.001
41111	SUMMER	NPF-12	1	0.010	0.010
41111	GRAND GULF	NPF-29	2	0.011	0.006
Totals and Averages			29	0.260	0.009
Grand Totals and Averages			2,217	103.483	0.047

NOTE: The data values shown in bold and boxed represent the highest value in each category.

Table 3-9 shows the distribution of internal doses (CEDE) from 1994 to 2024 for licensees required to report under 10 CFR 20.2206. For the purposes of this table, a measurable CEDE is defined as any reported value greater than zero. As noted in table 3-8, the vast majority of the internal doses reported were received by individuals working at fuel fabrication facilities. From 2023 to 2024, the collective CEDE for all licensees decreased by 6 percent, while the number of individuals with a measurable CEDE decreased by 10 percent. The collective CEDE in 2024 was not significantly higher than the 5-year average of 106.227 person-rem. The number of individuals with a measurable CEDE in 2024 (2,217) was not significantly higher than the 5-year average of 2,128. The collective CEDE in all facilities decreased from 110.230 person-rem in 2023 to 103.483 person-rem in 2024. The average measurable CEDE in 2024 was 0.047 rem, which was slightly more than the 2023 value of 0.045 rem but is not significantly lower than the 5-year average of 0.050 rem.

Table 3-9 Internal Dose (CEDE) Distribution, 1994–2024

Year	Number of Individuals with CEDE in Range (rem) *										Number with Meas. CEDE	Collective CEDE (person-rem)	Average Meas. CEDE (rem)
	Meas. – 0.020	0.020– 0.100	0.100– 0.250	0.250– 0.500	0.500– 0.750	0.750– 1.0	1.0– 2.0	2.0– 3.0	3.0– 4.0	4.0– 5.0			
1994	3,425	577	287	683	237	141	293	69	2	-	5,714	1,170.453	0.205
1995	2,869	691	338	730	254	147	290	49	2	-	5,370	1,167.105	0.217
1996	3,096	598	305	584	324	138	187	22	2	2	5,258	931.799	0.177
1997	3,835	869	381	827	267	148	169	30	-	-	6,526	998.406	0.153
1998	3,310	932	426	746	246	140	153	21	2	-	5,976	922.935	0.154
1999	3,423	752	466	438	206	117	173	29	-	-	5,604	813.605	0.145
2000	3,275	1,001	570	383	216	98	224	58	7	1	5,833	988.640	0.169
2001	1,774	827	716	364	128	53	146	82	15	1	4,106	884.134	0.215
2002	1,760	746	647	531	144	33	23	3	-	-	3,887	494.821	0.127
2003	2,208	778	726	388	116	17	5	-	-	-	4,238	395.573	0.093
2004	1,989	838	657	381	105	17	3	-	-	-	3,990	375.021	0.094
2005	1,205	706	685	341	98	33	2	-	-	-	3,070	365.258	0.119
2006	1,302	726	686	346	96	18	3	-	-	-	3,177	346.918	0.109
2007	1,480	805	646	310	52	5	3	-	-	-	3,301	300.863	0.091
2008	1,008	761	526	303	41	8	4	-	-	-	2,651	267.415	0.101
2009	1,115	711	597	229	80	21	7	-	-	-	2,760	293.251	0.106
2010	1,216	884	669	210	67	30	6	-	-	-	3,082	308.332	0.100
2011	1,243	916	628	270	72	19	14	1	-	-	3,163	322.615	0.102
2012	1,158	933	554	155	52	6	3	-	-	-	2,861	232.462	0.081
2013	1,632	758	353	149	20	1	-	-	-	-	2,913	164.799	0.057
2014	1,175	829	417	86	24	1	-	-	-	-	2,532	157.191	0.062
2015	1,036	838	442	103	16	-	-	-	-	-	2,435	162.670	0.067
2016	1,100	920	407	69	7	-	-	-	-	-	2,503	144.627	0.058
2017	1,073	766	324	99	6	-	-	-	-	-	2,268	128.373	0.057
2018	1,159	489	297	99	1	-	-	-	-	-	2,045	112.004	0.055
2019	1,096	482	318	91	3	1	-	-	-	-	1,991	111.187	0.056
2020	978	484	291	75	2	-	-	-	-	-	1,830	99.151	0.054
2021	1,141	475	268	81	2	1	-	-	-	-	1,968	99.971	0.051
2022	1,352	665	266	90	4	0	-	-	-	-	2,377	110.594	0.047
2023	1,446	657	302	65	3	0	-	-	-	-	2,473	110.230	0.045
2024	1,312	575	256	67	7	0	-	-	-	-	2,217	103.483	0.047

* CEDE values exactly equal to the values separating ranges are reported in the next higher range.

4 COMMERCIAL POWER REACTORS

4.1 Introduction

General trends in occupational radiation exposure at commercial nuclear power reactors are best analyzed within the context of other pertinent information. Some of the tables in this section and the appendices that summarize dose data also show the type, capacity, amount of electricity generated, and age of the reactor. Dose data are then presented as a function of this other information.

4.2 Definition of Terms and Sources of Data

4.2.1 Number of Reactors

The numbers of reactors shown in tables 4-1, 4-2, and 4-3 are the numbers of BWRs, PWRs, and LWRs (combination of BWRs and PWRs) that were in commercial operation during the year listed. These are the numbers of reactors on which the average number of individuals with a measurable TEDE and the average collective TEDE per reactor are based. Excluded are the reactors that had not yet completed a full year of commercial operation during the year listed and the reactors that were permanently shut down. The date that each reactor was declared to be in commercial operation was taken from the monthly operating report data provided by the Institute of Nuclear Power Operations (INPO) [Ref. 18].

Although Indian Point Unit 2 was permanently shut down in April 2020, its dose was reported in combination with that of Indian Point Unit 3 and was, therefore, included in the analysis for 2020. In April 2021, Indian Point Unit 3 ceased operation. Therefore, in 2021, the number of active PWRs dropped from 64 to 62. In 2022, Palisades ceased commercial operation, dropping the number of active PWRs from 62 to 61 (see section 3.3.6 for Palisades restart information). The dose information for these reactors and for others that are no longer in commercial operation is listed at the end of appendix B, and the status of plants no longer in operation can be found in appendix E.

Watts Bar Nuclear Plant, Unit 2, began commercial power operation on November 21, 2016, and its dose information was reported with that of Watts Bar Unit 1 beginning in 2017. Vogtle Unit 3 became operational on July 31, 2023, increasing the number of active PWRs in 2024 from 61 to 62. Vogtle Unit 4 became operational April 29, 2024, and will be included in the 2025 data after a full calendar year of operation.

As of the publishing date of this report, several utilities have expressed interest in restarting reactors that were previously planned for decommissioning. Although these activities do not affect the data for 2024, future reports in this series may reflect changes in the status of reactors that were previously considered permanently shut down.

4.2.2 Electricity Generated

Appendix D shows the number of megawatt-years (MW-yr) of electricity generated each year by each reactor. This number was obtained by dividing the number of megawatt-hours (MW-hr) of electricity generated each year by each reactor by 8,760, the number of hours in a year, except for leap years, for which the number is 8,784 hours. The number of megawatt-hours of electricity generated each year by each reactor was obtained from INPO's monthly operating report data [Ref. 18].

For the years 1973 to 1996, the reported data on electricity generated reflect the gross electricity output of each reactor. For 1997 to 2024, the data reflect the net electricity output, which is the gross electricity output minus the amount used for plant operations. This change is due to a revision to the NRC's power generation reporting requirements.

Tables 4-1, 4-2, and 4-3 give the total amount of electricity generated by all BWRs, PWRs, and LWRs in each year, which is obtained by summing the amounts generated by individual reactors (as given in appendix D). These totals are divided by the number of operating reactors included in each year to yield the average amount of electricity generated per reactor, which is also shown in the tables.

As shown in table 4-3, in 2020 the net electricity generated at LWRs dropped below 90,000 MW-yr for the first time since 2012. From 2023 to 2024, the net electricity generated increased by less than 1 percent, to 88,337 MW-yr; this does not represent a statistically significant increase from the 5-year average. Also, from 2023 to 2024, power production decreased at 30 reactor sites and increased at 24 reactor sites. Sequoyah Nuclear Plant, Units 2 and 3, and Waterford Steam Electric Station, Unit 3, had the largest percentage decrease in power production (30 percent and 21 percent decreases, respectively), while Vogtle Units 1, 2, and 3 experienced a 46 percent increase in power production, mainly from Vogtle Unit 3 becoming operational. The number of outage days in 2024 was 11 percent higher than in 2023 and was lower than the 5-year average, although not significantly. Prairie Island Nuclear Generating Plant, Units 1 and 2, were shut down for 211 days, primarily for refueling. Sequoyah Units 1 and 2 were shut down 180 days for refueling and 52 days for equipment failure. Waterford Unit 3, St. Lucie Plant, Units 1 and 2, and South Texas Project, Units 1 and 2, were each off line for more than 100 days, primarily for refueling and equipment failures.

As shown in table 4-3, the average amount of electricity generated per reactor (across all LWRs) decreased slightly from 958 MW-yr in 2023 to 950 MW-yr in 2024. This decrease was not significantly lower than the 5-year average of 954 MW-yr.

4.2.3 Average Collective Total Effective Dose Equivalent per Megawatt-Year

Tables 4-1, 4-2, and 4-3 present the average collective TEDE per megawatt-year for each year, for all BWRs, PWRs, and LWRs, respectively. This value is calculated by dividing the total collective TEDE for the year (in person-rem) by the number of megawatt-years of electricity generated that year. It measures the dose incurred by individuals at commercial nuclear power reactors in relation to the amount of electricity produced by those reactors. Appendix C presents the collective TEDE per megawatt-year for each reactor site individually.

As previously stated, the data for the years 1973 to 1996 reflect the gross electricity output of each reactor, while the data for the years 1997 to 2024 reflect the net electricity output.

In 2024, the average collective TEDE per MW-yr across all LWRs remained steady at 0.06 person-rem/MW-yr. This value is not significantly higher than the 5-year average.

4.2.4 Average Maximum Dependable Capacity

The average maximum dependable capacity for each year, as shown in tables 4-1, 4-2, and 4-3, is calculated by dividing the sum of the net maximum dependable capacities of the reactors in megawatts (net megawatts electric [MWe]) by the number of reactors included that year. The net maximum dependable capacity is defined as the gross electrical output measured at the output

terminals of the turbine generator during the most restrictive seasonal conditions, less the normal station service loads. The net maximum dependable capacity of each plant was obtained from INPO's monthly operating report data [Ref. 18].

The average maximum dependable capacity in 2024 is 1,043 MWe for BWRs, 1,013 for PWRs, and 1,023 for LWRs.

4.2.5 Percentage of Maximum Dependable Capacity Achieved

Table 4-3 shows the percentage of maximum dependable capacity achieved for all LWRs. This parameter indicates the overall power generation performance of LWRs, relative to the maximum dependable capacity that was available in a given year. It is calculated by dividing the average amount of electricity generated per reactor by the average maximum dependable capacity for each year.

The decrease in maximum dependable capacity from 1996 to 1997 was due to the change from measuring the gross electricity generated to measuring the net electricity generated. The percentage of maximum dependable capacity for LWRs decreased slightly from 94 percent in 2023 to 93 percent in 2024.

Table 4-1 Summary of Information Reported by Commercial BWRs, 1994–2024

Year	Number of Reactors Included*	Number of Individuals with Measurable TEDE**	Annual Collective TEDE (person-rem)	Average Measurable TEDE per Individual (rem)**	Average Collective TEDE per Reactor (person-rem)	Average Number of Individuals with Measurable TEDE per Reactor**	Electricity Generated*** (MW-yr)	Average Collective TEDE per MW-yr (person-rem/MW-yr)	Average Electricity Generated per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MWe)	Maximum Dependable Capacity Achieved
1994	37	39,171	12,098	0.31	327	1,059	22,139.0	0.55	598	801	75%
1995	37	35,686	9,471	0.27	256	964	24,737.0	0.38	669	835	80%
1996	37	37,792	9,466	0.25	256	1,021	24,322.2	0.39	657	838	78%
1997	37	34,021	7,603	0.22	205	919	22,866.1	0.33	618	845	73%
1998	36	32,899	6,829.296	0.21	190	914	23,781.2	0.29	661	874	76%
1999	35	31,482	6,434.430	0.20	184	899	26,962.6	0.24	770	885	87%
2000	35	31,186	6,089.676	0.20	174	891	28,476.9	0.21	814	893	91%
2001	35	28,797	4,835.397	0.17	138	823	28,730.4	0.17	821	895	92%
2002	35	30,978	6,107.767	0.20	175	885	29,460.0	0.21	842	907	93%
2003	35	30,759	5,659.434	0.18	162	879	29,094.4	0.19	831	912	91%
2004	35	33,948	5,450.982	0.16	156	970	29,424.8	0.19	841	893	94%
2005	35	33,544	5,995.975	0.18	171	958	29,386.8	0.20	840	946	89%
2006	35	34,159	4,989.761	0.15	143	976	30,238.4	0.17	864	954	91%
2007	35	37,515	5,388.416	0.14	154	1,072	30,189.3	0.18	863	955	90%
2008	35	34,642	4,522.413	0.13	129	990	31,248.3	0.14	893	957	93%
2009	35	36,207	5,282.869	0.15	151	1,034	30,762.7	0.17	879	959	92%
2010	35	37,214	4,807.656	0.13	137	1,063	31,274.6	0.15	894	961	93%
2011	35	38,202	4,976.503	0.13	142	1,091	30,549.7	0.16	873	937	93%
2012	35	38,164	4,200.281	0.11	120	1,090	30,485.4	0.14	871	968	90%
2013	35	36,513	4,459.270	0.12	127	1,043	31,221.1	0.14	892	967	92%
2014	35	33,706	3,798.108	0.11	109	963	31,904.2	0.12	912	976	93%
2015	34	35,346	4,155.273	0.12	122	1,040	31,720.1	0.13	933	992	94%
2016	34	31,299	3,339.055	0.11	98	921	31,464.8	0.11	925	995	93%
2017	34	32,234	4,007.342	0.12	118	948	31,820.0	0.13	936	995	94%
2018	33	31,169	3,659.588	0.12	111	945	30,722.7	0.12	931	1,008	92%
2019	32	29,100	3,372.909	0.12	105	909	31,237.4	0.11	976	1,018	96%
2020	31	26,398	2,946.746	0.11	95	852	30,249.1	0.10	976	1,032	95%
2021	31	26,540	3,345.582	0.13	108	856	30,946.5	0.11	998	1,043	96%
2022	31	25,318	3,111.590	0.12	100	817	30,335.1	0.10	979	1,042	94%
2023	31	26,135	3,607.444	0.14	116	843	30,465.2	0.12	983	1,043	94%
2024	31	26,566	2,943.736	0.11	95	857	30,864.1	0.10	996	1,043	95%

* Includes only those reactors that had been in commercial operation for at least a full year as of December 31 of each of the indicated years.

** Figures are not adjusted for the multiple reporting of transient individuals (see section 5).

*** Beginning in 1997, the data on electricity generated indicate the net electricity generated.

Table 4-2 Summary of Information Reported by Commercial PWRs, 1994–2024

Year	Number of Reactors Included*	Number of Individuals with Measurable TEDE**	Annual Collective TEDE (person-rem)	Average Measurable TEDE per Individual (rem)**	Average Collective TEDE per Reactor (person-rem)	Average Number of Individuals with Measurable TEDE per Reactor**	Electricity Generated*** (MW-yr)	Average Collective TEDE per MW-yr (person-rem/MW-yr)	Average Electricity Generated per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (MWe)	Maximum Dependable Capacity Achieved
1994	70	44,283	9,574	0.22	137	633	52,397.6	0.18	749	928	81%
1995	70	49,985	11,762	0.24	168	714	54,138.2	0.22	773	929	83%
1996	72	46,852	9,417	0.20	131	651	55,337.8	0.17	769	935	82%
1997	72	50,690	9,546	0.19	133	704	48,985.3	0.19	680	943	72%
1998	69	38,586	6,358.096	0.16	92	559	53,288.7	0.12	772	942	82%
1999	69	43,938	7,231.281	0.16	105	637	56,235.0	0.13	815	942	87%
2000	69	42,922	6,562.006	0.15	95	622	57,529.9	0.11	834	943	88%
2001	69	38,773	6,273.155	0.16	91	562	58,822.4	0.11	852	946	90%
2002	69	42,264	6,018.423	0.14	87	613	59,369.7	0.10	860	947	91%
2003	69	44,054	6,296.136	0.14	91	638	57,920.6	0.11	839	949	88%
2004	69	35,901	4,916.915	0.14	71	520	60,398.7	0.08	875	943	93%
2005	69	44,583	5,459.832	0.12	79	646	59,790.9	0.09	867	955	91%
2006	69	46,106	6,031.425	0.13	87	668	59,751.3	0.10	866	960	90%
2007	69	42,015	4,731.597	0.11	69	609	61,955.6	0.08	898	961	93%
2008	69	44,808	4,673.527	0.10	68	649	60,586.0	0.08	878	964	91%
2009	69	45,547	4,741.935	0.10	69	660	60,467.9	0.08	876	966	91%
2010	69	37,796	3,823.728	0.10	55	548	60,859.4	0.06	882	967	91%
2011	69	43,119	3,795.601	0.09	55	625	59,682.5	0.06	865	937	92%
2012	69	41,385	3,835.112	0.09	56	600	57,272.5	0.07	830	974	85%
2013	65	30,723	2,300.277	0.07	35	473	58,785.5	0.04	904	987	92%
2014	65	37,141	3,326.411	0.09	51	571	59,262.2	0.06	912	989	92%
2015	65	35,452	2,863.815	0.08	44	545	59,377.2	0.05	913	990	92%
2016	65	28,054	2,026.654	0.07	31	432	60,052.5	0.03	924	1,001	92%
2017	65	32,527	2,409.206	0.07	37	500	60,148.9	0.04	925	1,001	92%
2018	65	29,845	2,169.883	0.07	34	459	61,113.7	0.04	940	1,002	94%
2019	64	24,515	1,707.886	0.07	27	383	60,400.6	0.03	944	1,008	94%
2020	64	26,422	1,952.382	0.07	31	413	59,648.7	0.03	932	1,008	92%
2021	62	24,127	1,957.616	0.08	32	389	57,834.3	0.03	933	1,008	93%
2022	61	25,692	1,973.696	0.08	32	421	57,506.2	0.03	943	1,013	93%
2023	61	24,914	1,944.617	0.08	32	408	57,643.9	0.03	945	1,013	93%
2024	62	25,516	1,959.647	0.08	32	412	57,473.3	0.03	927	1,013	92%

* Includes only those reactors that had been in commercial operation for at least a full year as of December 31 of each of the indicated years.

** Figures are not adjusted for the multiple reporting of transient individuals (see section 5).

*** Beginning in 1997, the data on electricity generated indicate the net electricity generated.

Table 4-3 Summary of Information Reported by All Commercial LWRs, 1994–2024

Year	Number of Reactors Included*	Number of Individuals with Measurable TEDE**	Annual Collective TEDE (person-rem)	Average Measurable TEDE per Individual (rem)**	Average Collective TEDE per Reactor (person-rem)	Average Number of Individuals with Measurable TEDE per Reactor**	Electricity Generated*** (MW-yr)	Average Collective TEDE per MW-yr (person-rem/MW-yr)	Average Electricity Generated per Reactor (MW-yr)	Average Maximum Dependable Capacity Net (Mwe)	Maximum Dependable Capacity Achieved
1994	107	83,454	21,672	0.26	203	780	74,536.6	0.29	697	884	79%
1995	107	85,671	21,233	0.25	198	801	78,875.2	0.27	737	896	82%
1996	109	84,644	18,883	0.22	173	777	79,660.0	0.24	731	902	81%
1997	109	84,711	17,149	0.20	157	777	71,851.4	0.24	659	910	72%
1998	105	71,485	13,187.392	0.18	126	681	77,069.9	0.17	734	918	80%
1999	104	75,420	13,665.711	0.18	131	725	83,197.6	0.16	800	923	87%
2000	104	74,108	12,651.682	0.17	122	713	86,006.8	0.15	827	926	89%
2001	104	67,570	11,108.552	0.16	107	650	87,552.8	0.13	842	929	91%
2002	104	73,242	12,126.190	0.17	117	704	88,829.7	0.14	854	934	91%
2003	104	74,813	11,955.570	0.16	115	719	87,015.0	0.14	837	936	89%
2004	104	69,849	10,367.897	0.15	100	672	89,823.5	0.12	864	926	93%
2005	104	78,127	11,455.807	0.15	110	751	89,177.7	0.13	857	952	90%
2006	104	80,265	11,021.186	0.14	106	772	89,989.7	0.12	865	958	90%
2007	104	79,530	10,120.013	0.13	97	765	92,144.9	0.11	886	959	92%
2008	104	79,450	9,195.940	0.12	88	764	91,834.3	0.10	883	961	92%
2009	104	81,754	10,024.804	0.12	96	786	91,230.6	0.11	877	964	91%
2010	104	75,010	8,631.384	0.12	83	721	92,134.0	0.09	886	965	92%
2011	104	81,321	8,771.326	0.11	84	782	90,232.2	0.10	868	967	90%
2012	104	79,549	8,035.393	0.10	77	765	87,757.9	0.09	844	972	87%
2013	100	67,236	6,759.547	0.10	68	672	90,006.6	0.08	900	980	92%
2014	100	70,847	7,124.519	0.10	71	708	91,166.4	0.08	912	985	93%
2015	99	70,798	7,019.088	0.10	71	715	91,097.3	0.08	920	991	93%
2016	99	59,353	5,365.709	0.09	54	600	91,517.3	0.06	924	999	93%
2017	99	64,761	6,416.548	0.10	65	654	91,968.8	0.07	929	999	93%
2018	98	61,014	5,829.471	0.10	59	623	91,836.4	0.06	937	1,004	93%
2019	96	53,615	5,080.795	0.09	53	558	91,638.0	0.06	955	1,011	94%
2020	95	52,820	4,899.128	0.09	52	556	89,897.8	0.05	946	1,016	93%
2021	93	50,667	5,303.198	0.10	57	545	88,780.8	0.06	955	1,020	94%
2022	92	51,010	5,085.286	0.10	55	554	87,841.3	0.06	955	1,023	93%
2023	92	51,049	5,552.061	0.11	60	555	88,109.0	0.06	958	1,022	94%
2024	93	52,082	4,903.383	0.09	53	560	88,337.4	0.06	950	1,023	93%

* Includes only those reactors that had been in commercial operation for at least a full year as of December 31 of each of the indicated years.

** Figures are not adjusted for the multiple reporting of transient individuals (see section 5).

*** Beginning in 1997, the data on electricity generated indicate the net electricity generated.

4.3 Annual Total Effective Dose Equivalent Distributions

Table 4-4a summarizes the distribution of the annual TEDE received by individuals (not adjusted to account for transient individuals) at all commercial LWRs during each of the years 1994 through 2024. This distribution is the sum of the annual TEDE distributions reported by each LWR licensee each year. As previously noted, appendix B shows the distribution reported at each LWR site for 2024. The data for each year in table 4-4a include only those reactors that had been in operation for at least a full year at the end of that year. From 2023 to 2024, the total collective TEDE for all LWRs decreased by 12 percent to a value of 4,903 person-rem. While the collective TEDE for PWRs increased by less than 1 percent, the BWR collective TEDE decreased by 18 percent from 3,607 person-rem to 2,944 person-rem, which was significantly lower than the 5-year average of 3,277 person-rem.

Each year, this report identifies the reactors with the largest increases and decreases in collective TEDE since the previous year and identifies the main reasons for these changes. The changes generally are driven by increases or decreases in the number and duration of outages at each site. During an outage, more individuals are working in radiation areas, which increases the collective TEDE. This is particularly true during a refueling outage, which entails opening the reactor vessel by removing the vessel head and transferring spent fuel to the spent fuel pool. In addition, licensees usually schedule maintenance and inspections during refueling outages, which tends to increase the collective TEDE. The collective TEDE for a site is typically much lower in years when the site does not have a refueling outage.

Among PWRs, Shearon Harris Nuclear Power Plant, Unit 1, had the largest percentage increase in collective TEDE from 2023 to 2024, with TEDE of 0.286 person-rem in 2023 and 19.717 person-rem in 2024. The site had a 32.9-day refueling outage in 2024, and no outage days in 2023. Overall, PWRs experienced a 1 percent increase in collective TEDE from 2023 to 2024, which coincided with a 25 percent increase in the total number of outage days, from 1,689.1 days in 2023 to 2,103.7 days in 2024. The number of outage days at PWRs in 2024 ranged from 6.2 to 233.

Among BWRs, Grand Gulf Nuclear Station, Unit 1, had the largest percentage increase in collective TEDE from 2023 to 2024, with a collective TEDE of 17.410 person-rem and 15.8 total outage days (resulting from equipment failure) in 2023, and a collective TEDE of 171.031 person-rem and 42.6 outage days in 2024. Cooper Nuclear Station also had a large increase in collective TEDE from 2023 to 2024, due to a 37-day refueling outage in 2024. River Bend Station, Unit 1, had a 91 percent decrease in collective TEDE, with a collective TEDE of 292.989 person-rem and 148.5 outage days in 2023, and a collective TEDE of 27.251 person-rem and 0 total outage days in 2024. Perry Nuclear Power Plant also had a 91 percent decrease in collective TEDE, with a collective TEDE of 425.393 person-rem and 63 outage days in 2023, and a collective TEDE of 37.173 person-rem and 10 total outage days in 2024.

Across all LWRs, the number of refueling outage hours increased by 11 percent from 2023 to 2024 (with a decrease of 21 percent for BWRs and an increase of 25 percent for PWRs).

Table 4-4b summarizes the distribution of the annual TEDE received by unique individuals (i.e., with the collective data adjusted to account for transient individuals) at all commercial LWRs during each of the years 1994 through 2024. The data do not include reactors that were permanently shut down or reactors that had not been in commercial operation for a full year by the end of the year listed. Section 5 gives a detailed analysis of the impact of transient individuals on the distribution of annual doses in 2024.

Table 4-4a Summary of Distribution of Annual TEDE at Commercial LWRs,* 1994–2024

Year	Number of Individuals with TEDE in Range (rem)**											Total Number Monitored	Number with Measurable Exposure	Collective TEDE (person-rem)	Average Measurable TEDE (rem)
	No. Measurable Exposure	Measurable <0.01	0.10–0.25	0.25–0.50	0.50–0.75	0.75–1.0	1.0–2.0	2.0–3.0	3.0–4.0	4.0–5.0	>5.0				
1994	85,145	36,528	18,633	14,246	6,800	3,502	3,323	215	6	-	-	168,398	83,253	21,534.000	0.259
1995	81,032	38,575	20,245	15,279	6,884	3,336	3,077	125	5	-	-	168,558	87,526	21,674.000	0.248
1996	78,197	39,426	19,955	14,201	5,809	2,648	2,342	68	-	-	-	162,646	84,449	18,874.000	0.223
1997	80,163	41,759	19,951	13,396	5,394	2,240	1,671	59	3	-	-	164,636	84,473	17,136.000	0.203
1998	77,080	37,039	17,189	10,467	3,930	1,562	1,129	35	-	-	-	148,431	71,351	13,169.366	0.185
1999	74,867	39,663	18,063	10,964	3,994	1,569	1,141	24	2	-	-	150,287	75,420	13,665.711	0.181
2000	73,793	40,301	17,598	10,310	3,525	1,375	976	23	-	-	-	147,901	74,108	12,651.682	0.171
2001	73,206	37,461	16,078	9,231	2,930	1,060	747	63	-	-	-	140,776	67,570	11,108.552	0.164
2002	76,270	41,588	16,752	9,426	3,121	1,245	1,003	105	2	-	-	149,512	73,242	12,126.190	0.166
2003	77,889	42,720	17,231	9,589	3,139	1,233	864	37	-	-	-	152,702	74,813	11,955.570	0.160
2004	80,473	41,583	15,626	8,245	2,733	978	668	16	-	-	-	150,322	69,849	10,367.897	0.148
2005	82,574	46,444	17,754	9,191	2,934	1,104	683	17	-	-	-	160,701	78,127	11,455.807	0.147
2006	84,558	48,571	18,269	9,312	2,675	904	532	2	-	-	-	164,823	80,265	11,021.186	0.137
2007	84,551	49,998	17,672	8,294	2,329	824	402	11	-	-	-	164,081	79,530	10,120.013	0.127
2008	89,875	51,831	17,337	7,578	1,847	583	269	5	-	-	-	169,325	79,450	9,195.940	0.116
2009	94,627	52,670	17,417	8,352	2,161	741	413	-	-	-	-	176,381	81,754	10,024.804	0.123
2010	104,638	49,571	16,042	6,656	1,801	602	333	5	-	-	-	179,648	75,010	8,631.384	0.115
2011	110,217	55,407	16,651	6,753	1,675	559	276	-	-	-	-	191,538	81,321	8,771.326	0.108
2012	114,428	55,735	15,593	6,072	1,509	385	242	13	-	-	-	193,977	79,549	8,035.393	0.101
2013	107,378	47,190	13,158	5,088	1,227	380	191	2	-	-	-	174,614	67,236	6,759.547	0.101
2014	104,006	50,110	13,650	5,231	1,167	421	235	33	-	-	-	174,853	70,847	7,124.519	0.101
2015	106,088	50,067	13,856	4,980	1,230	421	242	2	-	-	-	176,886	70,798	7,019.088	0.099
2016	96,221	43,386	10,938	3,829	865	243	92	-	-	-	-	155,574	59,353	5,365.709	0.090
2017	92,311	45,920	12,376	4,745	1,184	382	154	-	-	-	-	157,072	64,761	6,416.548	0.099
2018	89,205	44,206	11,030	4,207	1,086	316	168	1	-	-	-	150,219	61,014	5,829.471	0.096
2019	81,282	39,068	9,512	3,636	942	300	156	1	-	-	-	134,897	53,615	5,080.795	0.095
2020	72,190	39,021	9,254	3,192	815	320	217	1	-	-	-	125,010	52,820	4,899.128	0.093
2021	72,014	36,168	9,206	3,521	999	478	286	9	-	-	-	122,681	50,667	5,303.198	0.105
2022	74,328	36,262	9,837	3,500	886	338	185	2	-	-	-	125,338	51,010	5,085.286	0.100
2023	73,843	35,725	9,635	3,840	1,113	423	308	5	-	-	-	124,892	51,049	5,552.061	0.109
2024	70,307	37,663	9,731	3,530	815	230	106	7	-	-	-	122,389	52,082	4,903.383	0.094

4-8

* Data are from reports submitted in accordance with 10 CFR 20.2206 for BWRs and PWRs that had been in commercial operation for at least a full year as of December 31 of each of the indicated years. Figures have not been adjusted to account for transient individuals (see table 4-4b and section 5).

** TEDE values exactly equal to the values separating ranges are reported in the next range.

Table 4-4b Summary of Distribution of Annual TEDE at Commercial LWRs,* Adjusted for Transient Individuals, 1994–2024

Year	Number of Individuals with TEDE in Range (rem)**											Total Number Monitored	Number with Measurable Exposure	Collective TEDE (person-rem)	Average Measurable TEDE (rem)
	No. Measurable Exposure	Measurable <0.01	0.10–0.25	0.25–0.50	0.50–0.75	0.75–1.0	1.0–2.0	2.0–3.0	3.0–4.0	4.0–5.0	>5.0				
1994	67,700	29,847	14,841	11,716	6,124	3,586	4,222	508	40	-	-	138,584	70,884	21,534.000	0.304
1995	61,505	29,588	15,097	12,020	6,121	3,300	3,906	595	133	2	-	132,267	70,762	21,674.000	0.306
1996	58,292	30,021	14,831	11,340	5,418	2,831	3,194	408	67	-	-	126,402	68,110	18,874.000	0.277
1997	58,647	31,751	14,881	10,902	5,228	2,447	2,598	286	41	-	-	126,781	68,134	17,136.000	0.252
1998	57,041	27,905	12,829	8,802	3,930	1,839	1,829	182	15	1	-	114,373	57,332	13,169.366	0.230
1999	55,121	29,271	13,278	9,017	3,806	1,908	1,898	245	18	-	-	114,562	59,441	13,665.711	0.230
2000	53,324	28,480	12,921	8,679	3,571	1,644	1,734	186	18	-	-	110,557	57,233	12,651.682	0.221
2001	52,636	27,246	11,491	7,659	2,907	1,323	1,392	221	53	-	-	104,928	52,292	11,108.552	0.212
2002	53,440	28,523	11,610	7,668	3,004	1,479	1,820	320	35	1	-	107,900	54,460	12,126.190	0.223
2003	54,028	29,161	11,971	8,190	3,253	1,527	1,651	184	18	-	-	109,983	55,955	11,955.570	0.214
2004	57,420	28,863	11,178	7,335	2,873	1,233	1,190	188	13	-	-	110,293	52,873	10,367.897	0.196
2005	56,709	31,035	12,422	7,813	3,106	1,537	1,490	147	3	-	-	114,262	57,553	11,455.807	0.199
2006	57,546	32,439	12,687	7,802	2,971	1,415	1,407	82	2	-	-	116,351	58,805	11,021.186	0.187
2007	57,314	32,706	11,961	7,396	2,714	1,284	1,100	97	9	-	-	114,581	57,267	10,120.013	0.177
2008	61,336	33,832	12,322	6,786	2,430	1,026	922	38	-	-	-	118,692	57,356	9,195.940	0.160
2009	66,310	35,877	12,318	7,317	2,562	1,174	1,144	68	4	-	-	126,774	60,464	10,024.804	0.166
2010	74,218	33,873	11,670	6,356	2,231	946	832	42	3	-	-	130,171	55,953	8,631.384	0.154
2011	78,090	36,745	12,119	6,307	2,226	1,008	837	23	-	-	-	137,355	59,265	8,771.326	0.148
2012	79,222	36,990	11,943	5,904	1,962	774	672	37	-	-	-	137,504	58,282	8,035.393	0.138
2013	76,261	32,326	10,166	5,231	1,680	674	430	18	-	-	-	126,786	50,525	6,759.547	0.134
2014	73,390	32,917	10,285	5,212	1,685	695	589	58	-	-	-	124,831	51,441	7,124.519	0.138
2015	71,980	31,806	10,208	5,034	1,686	708	647	27	3	-	-	122,099	50,119	7,019.088	0.140
2016	67,685	29,063	8,736	4,196	1,236	429	332	16	1	-	-	111,694	44,009	5,365.709	0.122
2017	62,882	29,448	9,210	4,695	1,666	671	532	11	-	-	-	109,115	46,233	6,416.548	0.139
2018	59,356	28,012	8,146	4,205	1,488	663	462	20	2	-	-	102,354	42,998	5,829.471	0.136
2019	55,718	25,322	7,167	3,798	1,272	554	402	4	-	-	-	94,237	38,519	5,080.795	0.132
2020	50,006	25,125	6,962	3,416	1,154	532	457	13	-	-	-	87,665	37,659	4,899.128	0.130
2021	48,780	22,249	6,640	3,489	1,292	676	646	24	-	-	-	83,796	35,016	5,303.198	0.151
2022	49,530	21,948	7,233	3,712	1,231	555	462	19	-	-	-	84,690	35,160	5,085.286	0.145
2023	49,291	21,363	6,708	3,568	1,404	679	732	39	-	-	-	83,784	34,493	5,552.061	0.161
2024	45,888	22,805	7,166	3,634	1,277	464	357	17	-	-	-	81,608	35,720	4,903.383	0.137

* Summary of reports submitted in accordance with 10 CFR 20.2206 for BWRs and PWRs that had been in commercial operation for at least a full year as of December 31 of each of the indicated years.

** TEDE values exactly equal to the values separating ranges are reported in the next higher range.

4.4 Average Annual Total Effective Dose Equivalent

Figure 4-1 graphically displays some of the data presented in tables 4-1, 4-2, and 4-3. This figure shows that the average collective TEDE and average number of individuals with measurable TEDE are consistently higher for BWRs than for PWRs. BWRs generally have higher collective TEDE because they produce electricity by using steam issuing directly from the reactor to drive turbines, so that radioactivity is present in both the reactor and the turbine systems. PWR systems are designed to keep the radioactivity within the reactor vessel and primary system and not in the turbine systems.

In 2024, the average collective TEDE per reactor was 95 person-rem for BWRs and 32 person-rem for PWRs. From 2023 to 2024, the average collective TEDE per reactor decreased by 18 percent for BWRs—a statistically significant decrease relative to the 5-year average—and remained static for PWRs. Across all LWRs, the average collective TEDE per reactor decreased by 12 percent, from 60 person-rem in 2023 to 53 person-rem in 2024. However, as of 2024, this value has remained below 90 person-rem for 15 years in a row, and overall, it has been decreasing since 1994, which suggests that licensees have been successfully implementing as low as is reasonably achievable (ALARA) dose reduction processes at their facilities.

In 2024, for BWRs, the average number of individuals with a measurable TEDE per reactor increased to 857, which does not represent a statistically significant increase from the 5-year average of 855. For PWRs, individuals with a measurable TEDE per reactor increased to 412, which represents a statistically insignificant increase from the 5-year average of 403. Across all LWRs, the average number of individuals with a measurable TEDE per reactor increased to 560, which represents a statistically significant increase from the 5-year average of 554.

Figures 4-2 and 4-3 show plots of most of the other information presented in tables 4-1, 4-2, and 4-3. Table 4-3 shows that the net electricity generated across all LWRs increased slightly from 88,109 MW-yr in 2023 to 88,337 MW-yr in 2024, while the number of operating reactors (93) increased by one unit (Vogtle Unit 3). The net electricity generated in 2024 was not significantly lower than the 5-year average. Table 4-3 also shows that the total collective TEDE across all LWRs decreased from 5,552 person-rem in 2023 to 4,903 person-rem in 2024; the 2024 value was not significantly different from the 5-year average. Finally, table 4-4b shows that the average measurable TEDE per individual (adjusted to account for transient individuals) decreased to 0.137 rem in 2024. The average collective TEDE across all LWRs in 2024 remained at 0.06 person-rem per MW-yr, which is not significantly higher than the 5-year average.

The downward trend in doses since 1994 can be attributed to several factors. For example, utilities have completed the tasks initiated in response to the lessons learned from the 1979 Three Mile Island accident, and they are continuing efforts to avoid and reduce exposure. Also, most utilities have established programs to collect and share information about exposure control processes, techniques, and procedures.

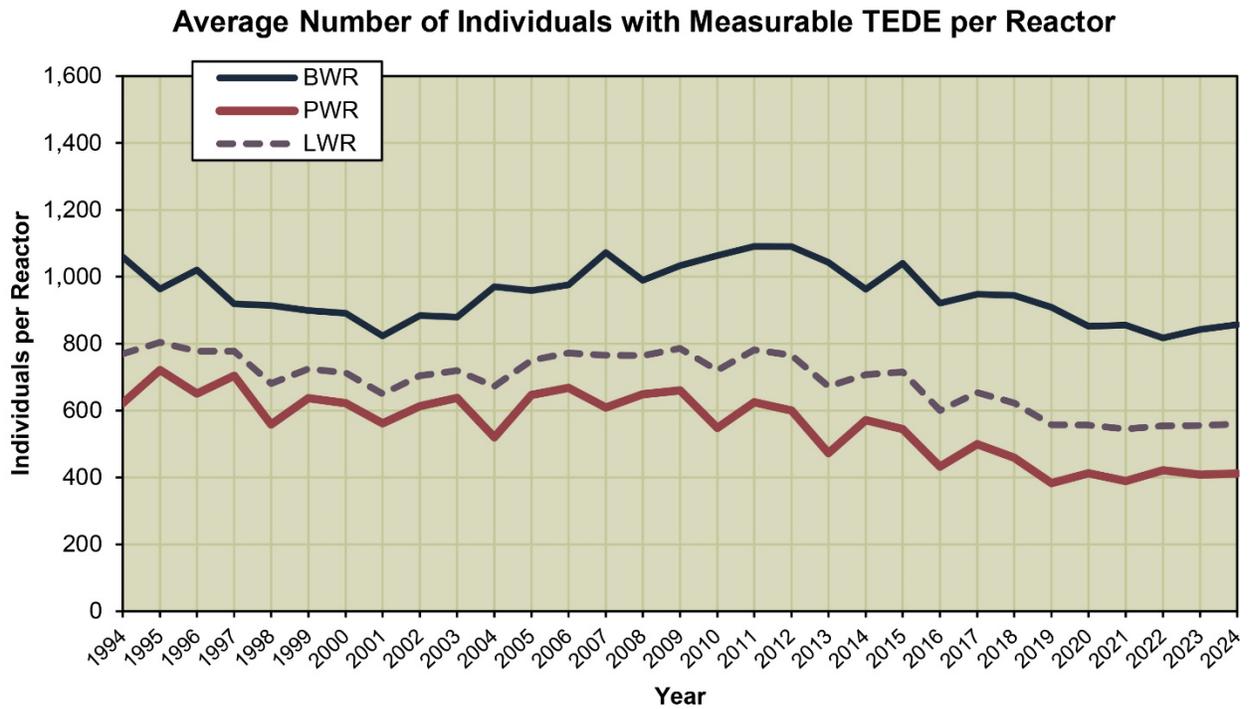
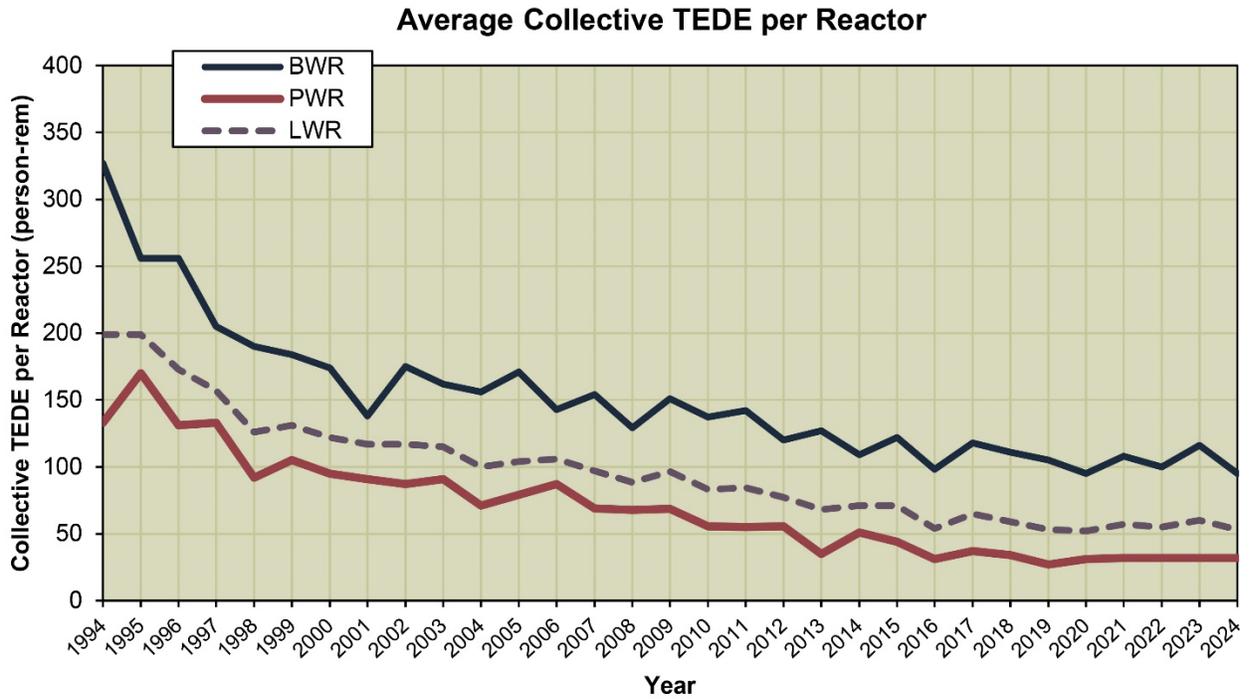
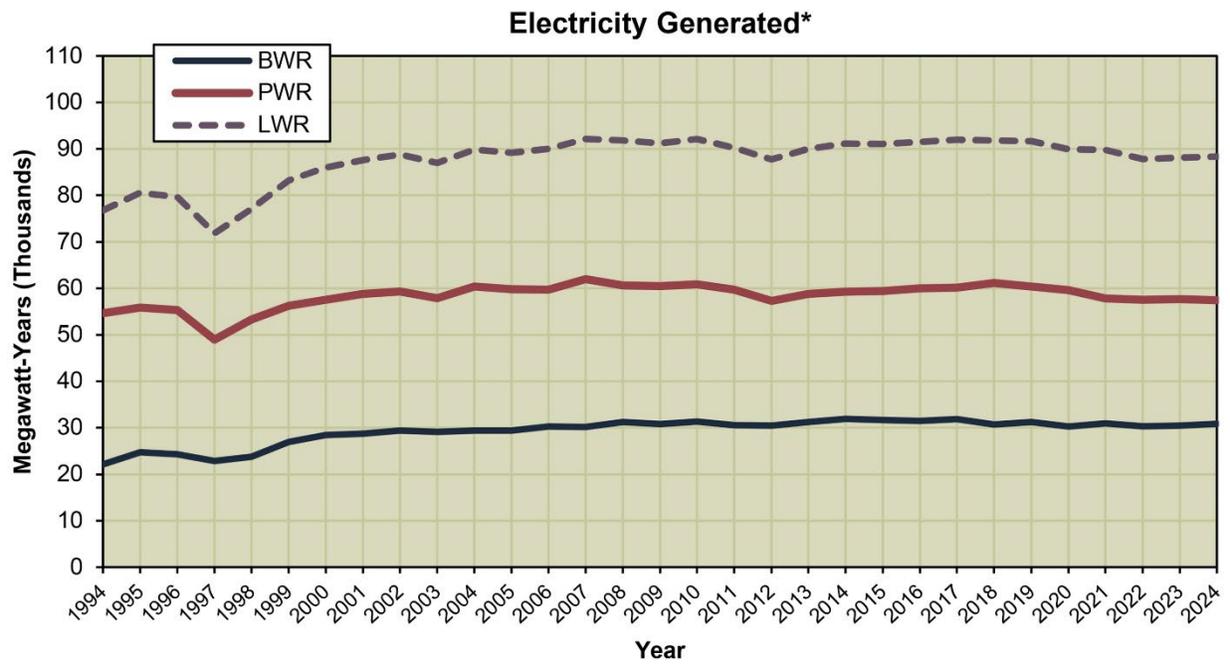
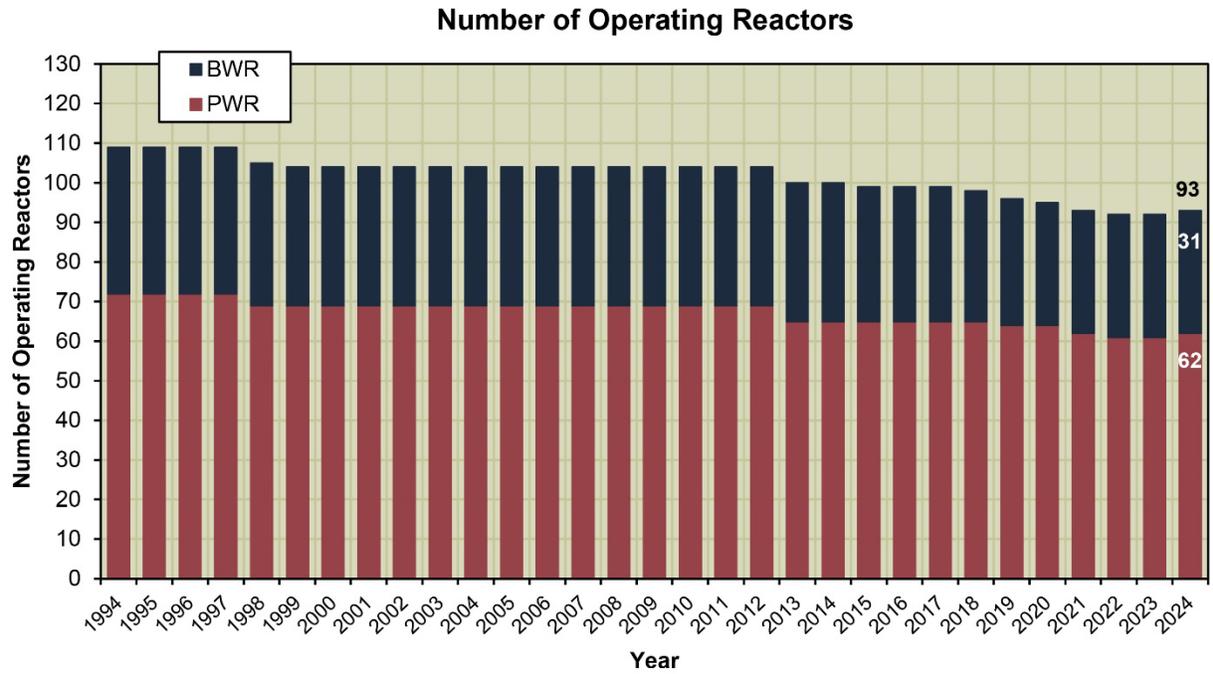
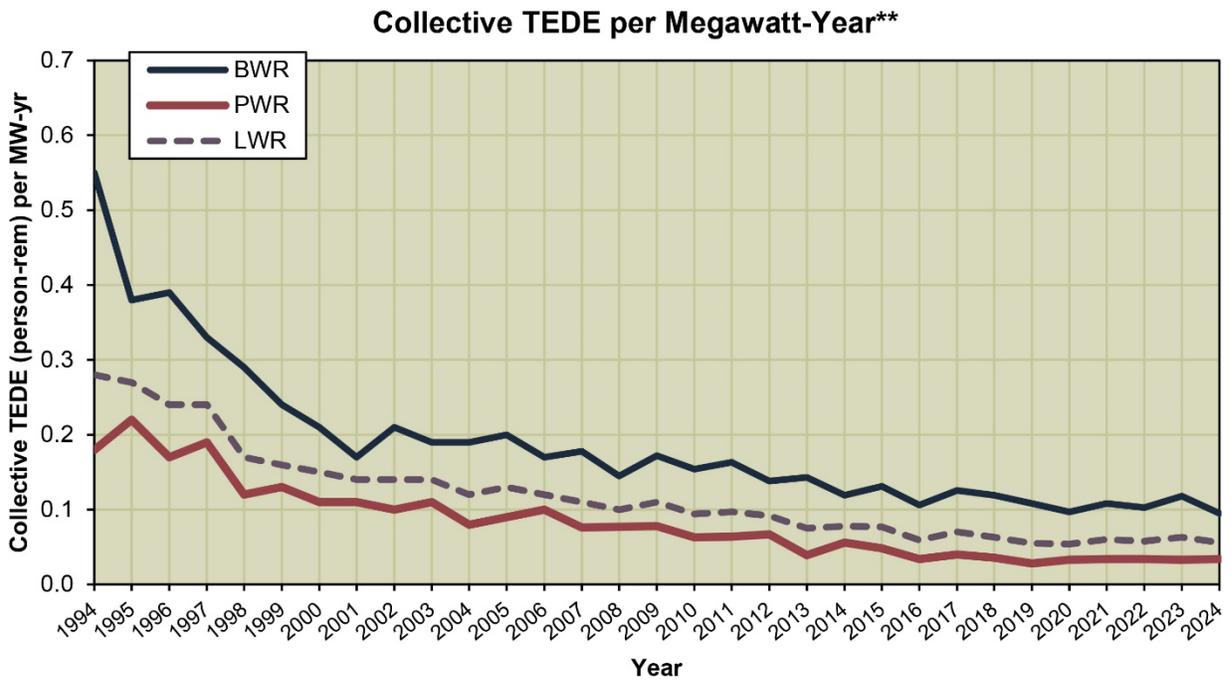
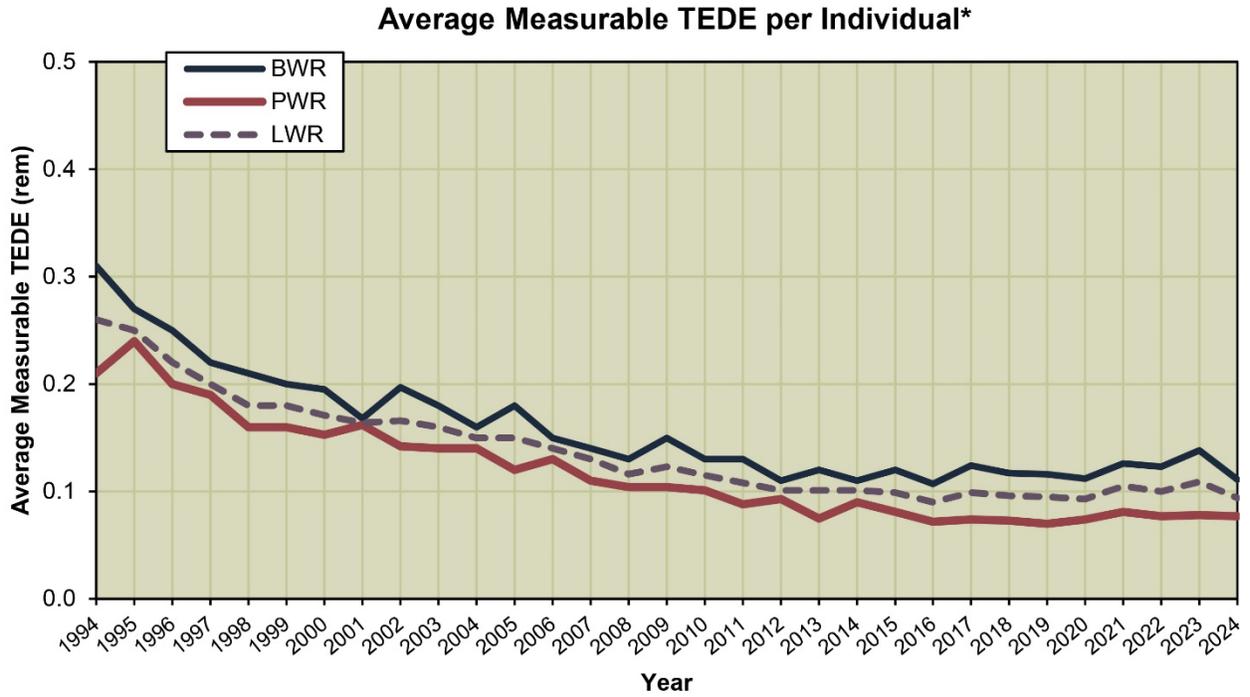


Figure 4-1 Average Collective TEDE per Reactor and Average Number of Individuals with Measurable TEDE per Reactor, 1994–2024



*Gross electricity is shown for 1994–1996; net electricity is shown for 1997–2024.

Figure 4-2 Number of Operating Reactors and Electricity Generated, 1994–2024



* Not adjusted to account for transient individuals; see section 5.

** Gross electricity is shown for 1994–1996; net electricity is shown for 1997–2024.

Figure 4-3 Average Measurable TEDE per Individual and Collective TEDE per Megawatt-Year, 1994–2024

To shed light on any other possible trends, figures 4-4a and 4-4b display the average and median values of the collective TEDE per reactor for BWRs and for PWRs for the years 1994 through 2024. The median values are included here for statistical completeness and are not used in other sections of this report. The range of values reported each year is shown by a vertical line, with a small bar at each end marking the two extreme values.

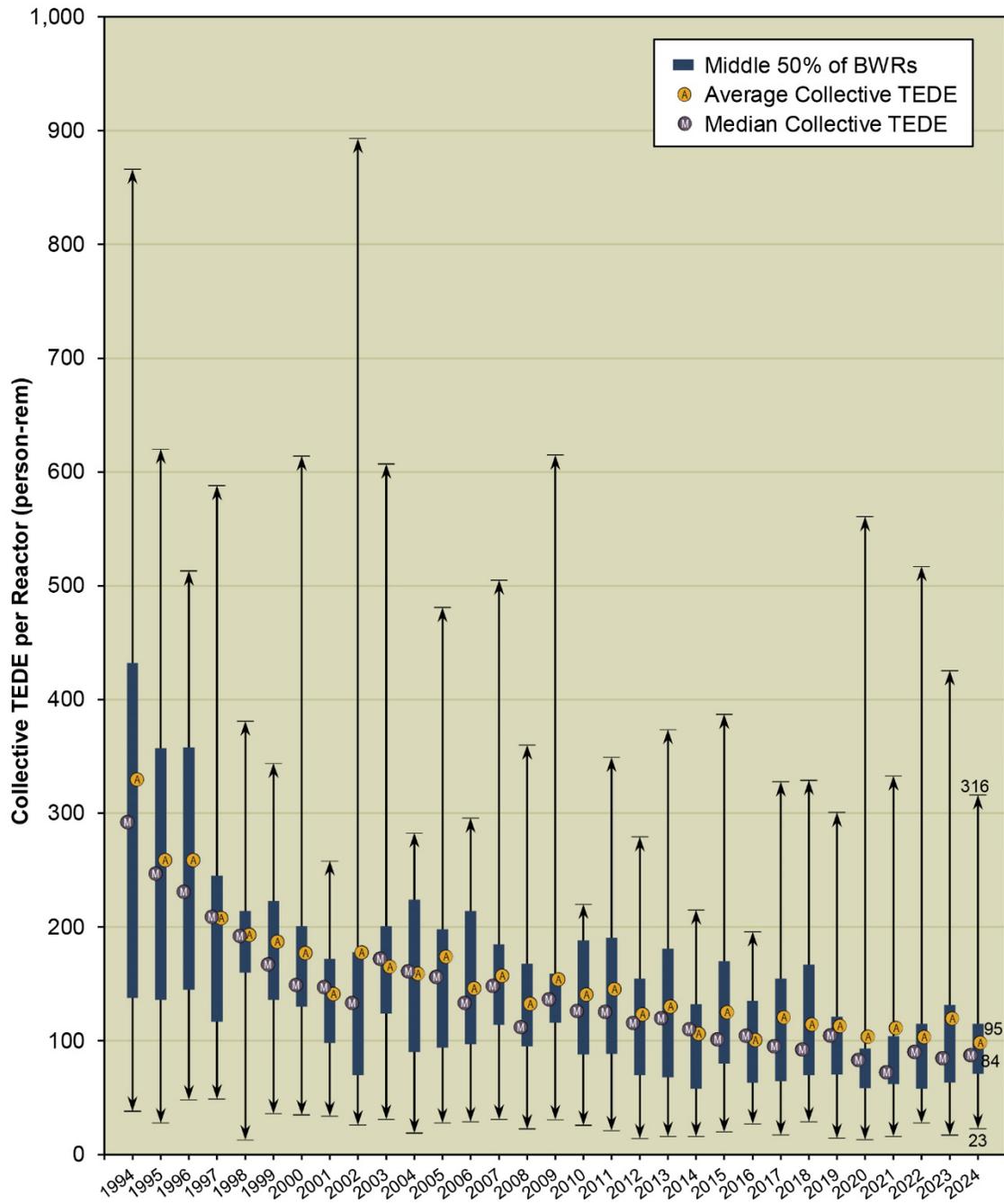


Figure 4-4a Average, Median, and Extreme Values of the Collective TEDE per BWR, 1994–2024

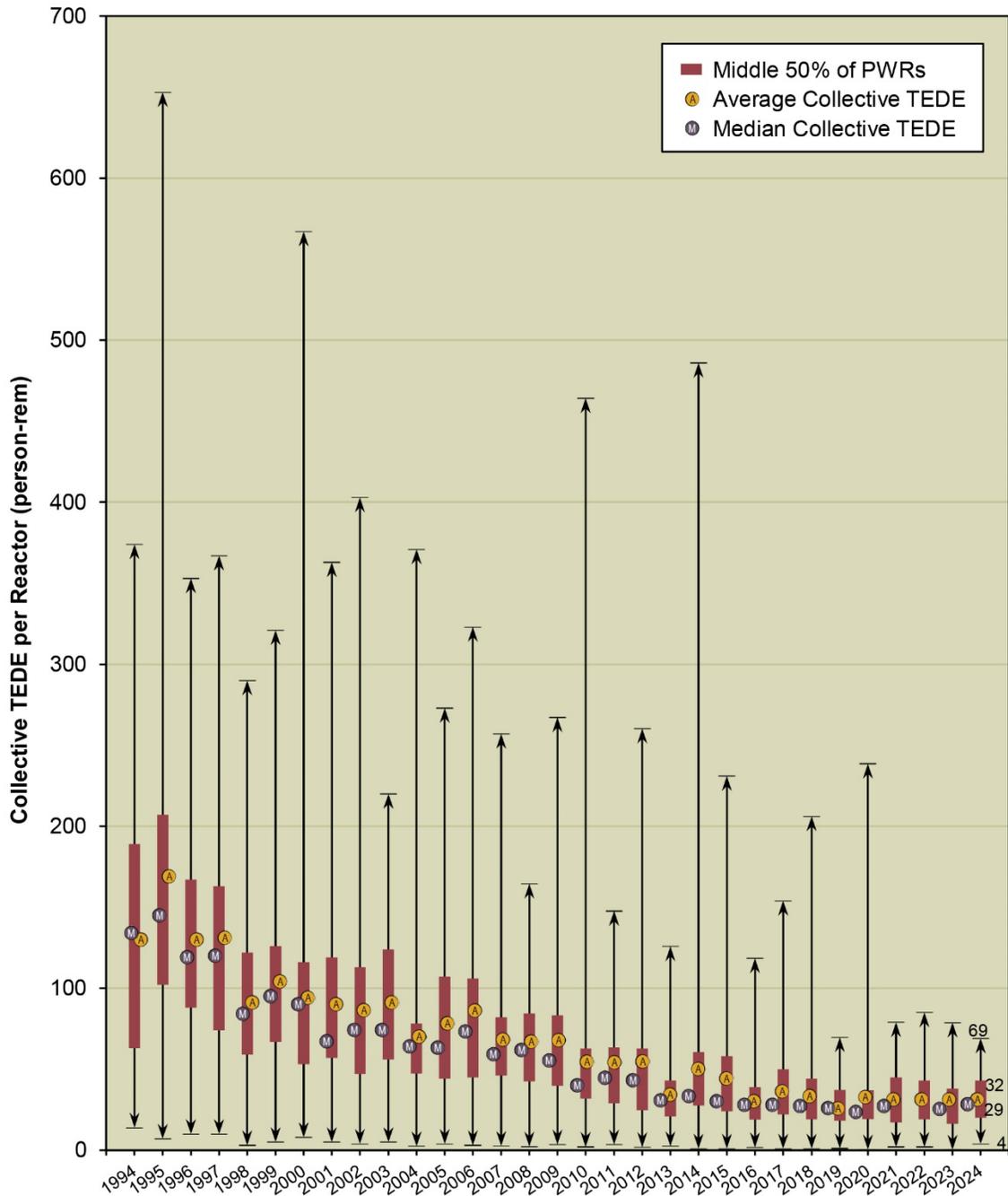


Figure 4-4b Average, Median, and Extreme Values of the Collective TEDE per PWR, 1994–2024

The rectangles in figures 4-4a and 4-4b indicate the values corresponding to the plants ranked in the 25th through the 75th percentiles. (These rankings are based on annual collective TEDE values, not the 3-year rolling average discussed in section 4.5.) The median collective TEDE for BWRs increased from 81 person-rem in 2023 to 84 person-rem in 2024; this change was not statistically significant. The median collective TEDE for PWRs increased from 26 person-rem in 2023 to 29 person-rem in 2024, which is not significantly higher than the 5-year average of the

median values (2019 - 2023) of 28 person-rem. Furthermore, in 2024, the middle 50 percent of the BWRs reported collective TEDE between 71 and 115 person-rem, while the middle 50 percent of the PWRs reported collective TEDE between 20 and 43 person-rem.

As the figures show, nearly every year, the median collective TEDE has been less than the average, which indicates that more reactors have collective TEDE below the average than above it. This is a result of the wide difference between the maximum and minimum annual collective TEDE at power plants and the fact that some plants accrue higher collective TEDE during refueling outages. The plants that have outages during the year (and thus higher collective TEDE) increase the average collective TEDE, but do not significantly increase the median.

4.5 Three-Year Average Collective Total Effective Dose Equivalent per Reactor

The 3-year average collective TEDE per reactor is one of the metrics that the NRC uses in its Reactor Oversight Process and significance determination process. Tables 4-5 and 4-6 list the sites that had been in commercial operation for at least 3 years as of December 31, 2024, and show the values of several parameters for each site. These tables also give averages for each type of reactor.

Based on the 93 reactor-years of operation accumulated over the 3-year period from 2022 to 2024 by the 31 BWRs listed, the average 3-year collective TEDE per reactor-year was 104 person-rem, the average measurable TEDE per individual was 0.124 rem, and the average collective TEDE per megawatt-year was 0.11 person-rem/MW-yr.

Based on the 184 reactor-years of operation accumulated over the 3-year period from 2022 to 2024 at the 62 PWRs listed, the average 3-year collective TEDE per reactor-year was 32 person-rem, the average measurable TEDE per individual was 0.077 rem, and the average collective TEDE per megawatt-year was 0.03 person-rem.

In addition to the data in tables 4-5 and 4-6, the NRC uses each site's quartile ranking as a factor in planning the number of inspection hours to be assigned to it. For this reason, this report includes tables 4-7 and 4-8 (for BWRs and PWRs, respectively), which show each plant's name, its 3-year collective TEDE per reactor-year, the percentage change in the 3-year average from the previous 3-year period, and the plant's quartile ranking from the previous period (if the ranking has changed).

Table 4-5 Three-Year Totals and Averages for BWRs, in Ascending Order of Collective TEDE per Reactor, 2022–2024

Plant Name*	Reactor-Years	3-Year Collective TEDE per Reactor Year, 2022–2024 (person-rem)	3-Year Collective TEDE per Site (person-rem)	Number of Individuals with Measurable TEDE	Average TEDE per Worker (rem)	Total Electricity Output (MW-yr)	Average TEDE per MW-Yr (rem)
PEACH BOTTOM 2, 3	6	63.706	382.233	4,320	0.088	7,553.1	0.05
HATCH 1, 2	6	64.810	388.862	3,750	0.104	4,891.8	0.08
DRESDEN 2, 3	6	69.736	418.417	5,585	0.075	5,238.1	0.08
CLINTON	3	70.224	210.673	2,000	0.105	3,062.1	0.07
SUSQUEHANNA 1, 2	6	76.341	458.047	3,340	0.137	6,878.6	0.07
MONTICELLO	3	80.359	241.077	1,827	0.132	1,805.4	0.13
BROWNS FERRY 1, 2, 3	9	81.229	731.058	7,315	0.100	10,213.8	0.07
LIMERICK 1, 2	6	82.231	493.388	5,328	0.093	6,571.7	0.08
COOPER STATION	3	88.248	264.744	2,420	0.109	2,126.0	0.12
COLUMBIA GENERATING	3	92.376	277.129	2,677	0.104	3,219.1	0.09
HOPE CREEK 1	3	92.877	278.631	2,677	0.104	3,214.2	0.09
FITZPATRICK	3	100.743	302.229	2,644	0.114	2,367.6	0.13
NINE MILE POINT 1, 2	6	104.330	625.980	4,217	0.148	5,271.4	0.12
BRUNSWICK 1, 2	6	104.947	629.681	4,446	0.142	5,322.9	0.12
RIVER BEND 1	3	117.968	353.904	2,808	0.126	2,419.2	0.15
GRAND GULF	3	123.818	371.455	3,052	0.122	3,549.9	0.10
QUAD CITIES 1, 2	6	127.886	767.317	5,754	0.133	5,228.9	0.15
PERRY	3	168.889	506.666	2,113	0.240	3,323.2	0.15
LASALLE 1, 2	6	173.724	1,042.342	6,210	0.168	6,634.1	0.16
FERMI 2	3	306.312	918.937	5,575	0.165	2,773.3	0.33
Totals and Averages	93	-	9,662.770	78,058	0.124	91,664.4	0.11
Average per Reactor-Year	-	103.901	-	839	-	985.6	-

* Sites where not all reactors had completed 3 full years of commercial operation as of December 31, 2024, are not included.

Table 4-6 Three-Year Totals and Averages for PWRs, in Ascending Order of Collective TEDE per Reactor, 2022–2024

Plant Name*	Reactor-Years	3-Year Collective TEDE per Reactor Year, 2022–2024 (person-rem)	3-Year Collective TEDE per Site (person-rem)	Number of Individuals with Measurable TEDE	Average TEDE per Worker (rem)	Total Electricity Output (MW-yr)	Average TEDE per MW-Yr (rem)
HARRIS 1	3	12.714	38.141	835	0.046	2,749.5	0.01
FARLEY 1, 2	6	14.266	85.593	1,459	0.059	4,886.6	0.02
PALO VERDE 1, 2, 3	9	15.098	135.885	2,427	0.056	10,931.6	0.01
OCONEE 1, 2, 3	9	18.017	162.157	3,480	0.047	7,421.3	0.02
DIABLO CANYON 1, 2	6	18.084	108.502	1,925	0.056	6,140.6	0.02
CALLAWAY 1	3	20.185	60.554	1,044	0.058	3,262.2	0.02
BYRON 1, 2	6	22.391	134.343	2,433	0.055	6,735.3	0.02
BRAIDWOOD 1, 2	6	23.830	142.977	2,529	0.057	6,813.2	0.02
PRAIRIE ISLAND 1, 2	6	25.701	154.207	2,066	0.075	2,591.5	0.06
SEABROOK	3	26.161	78.482	1,151	0.068	3,436.7	0.02
CALVERT CLIFFS 1, 2	6	26.796	160.773	2,124	0.076	5,075.3	0.03
COMANCHE PEAK 1, 2	6	27.176	163.056	2,062	0.079	6,690.1	0.02
SUMMER 1	3	27.249	81.748	1,200	0.068	2,683.7	0.03
NORTH ANNA 1, 2	6	27.646	165.875	2,143	0.077	5,253.0	0.03
DAVIS-BESSE 1	3	28.587	85.761	1,471	0.058	2,490.9	0.03
GINNA	3	29.743	89.228	1,206	0.074	1,651.7	0.05
VOGTLE 1, 2, 3	7	29.947	209.630	2,527	0.083	6,596.6	0.03
BEAVER VALLEY 1, 2	6	30.658	183.948	2,026	0.091	5,043.9	0.04
SOUTH TEXAS 1, 2	6	31.552	189.311	1,430	0.132	7,159.7	0.03
ST. LUCIE 1, 2	6	32.405	194.428	2,312	0.084	5,403.0	0.04
CATAWBA 1, 2	6	33.366	200.198	2,412	0.083	6,454.7	0.03
POINT BEACH 1, 2	6	37.648	225.889	1,556	0.145	3,413.4	0.07
COOK 1, 2	6	38.746	232.476	2,549	0.091	6,078.4	0.04
TURKEY POINT 3, 4	6	39.036	234.216	2,428	0.096	4,833.1	0.05
ROBINSON 2	3	39.711	119.132	1,650	0.072	2,118.6	0.06
MILLSTONE 2, 3	6	40.955	245.729	2,622	0.094	5,375.8	0.05
SEQUOYAH 1, 2	6	42.739	256.436	3,565	0.072	5,876.7	0.04
SURRY 1, 2	6	42.807	256.839	2,799	0.092	4,640.1	0.06
ARKANSAS 1, 2	6	43.304	259.826	3,673	0.071	5,010.9	0.05
WOLF CREEK 1	3	43.746	131.237	1,601	0.082	3,249.6	0.04
MCGUIRE 1, 2	6	44.680	268.082	3,260	0.082	6,569.4	0.04
WATERFORD 3	3	52.900	158.699	2,248	0.071	2,492.8	0.06
SALEM 1, 2	6	53.932	323.594	3,163	0.102	6,429.6	0.05
WATTS BAR 1, 2	6	56.835	341.008	4,745	0.072	6,189.6	0.06
Totals and Averages	184	-	5,877.960	76,121	0.077	171,749.1	0.03
Average per Reactor-Year	-	31.945	-	414	-	933.4	-

NOTE: These data do not include Palisades, which closed in May 2022 (see section 3.3.6 for Palisades restart information).

* Sites where not all reactors had completed 3 full years of commercial operation as of December 31, 2024, are not included.

Table 4-7 Three-Year Collective TEDE per Reactor-Year for BWRs, 2022–2024

	Plant Name	3-Year Coll. TEDE per Reactor-Year, 2022–2024	Percentage Change from 2021–2023	2021–2023 Quartile (If Changed)
1st Quartile	PEACH BOTTOM 2, 3	63.706	-1% ▼	-
	HATCH 1, 2	64.810	23% ▲	-
	DRESDEN 2, 3	69.736	7% ▲	-
	CLINTON	70.224	-29% ▼	3
	SUSQUEHANNA 1, 2	76.341	0% ▲	2
2nd Quartile	MONTICELLO	80.359	-27% ▼	3
	BROWNS FERRY 1, 2, 3	81.229	-8% ▼	-
	LIMERICK 1, 2	82.231	20% ▲	-
	COOPER STATION	88.248	60% ▲	1
	COLUMBIA GENERATING	92.376	-51% ▼	4
3rd Quartile	HOPE CREEK 1	92.877	-8% ▼	-
	FITZPATRICK	100.743	58% ▲	1
	NINE MILE POINT 1, 2	104.330	21% ▲	2
	BRUNSWICK 1, 2	104.947	0% ▲	-
	RIVER BEND 1	117.968	-34% ▼	4
4th Quartile	GRAND GULF	123.818	48% ▲	2
	QUAD CITIES 1, 2	127.886	26% ▲	3
	PERRY	168.889	-31% ▼	-
	LASALLE 1, 2	173.724	-31% ▼	-
	FERMI 2	306.312	38% ▲	-
Average per Reactor-Year		103.901	-4% ▼	

← Average 103.901

Table 4-8 Three-Year Collective TEDE per Reactor-Year for PWRs, 2022–2024

	Plant Name	3-Year Coll. TEDE per Reactor-Year, 2022–2024	Percentage Change from 2021–2023	2021–2023 Quartile (If Changed)
1st Quartile	HARRIS 1	12.714	3% ▲	-
	FARLEY 1, 2	14.266	-23% ▼	-
	PALO VERDE 1, 2, 3	15.098	6% ▲	-
	OCONEE 1, 2, 3	18.017	19% ▲	-
	DIABLO CANYON 1, 2	18.084	20% ▲	-
	CALLAWAY 1	20.185	1% ▲	-
	BYRON 1, 2	22.391	4% ▲	-
	BRAIDWOOD 1, 2	23.830	-15% ▼	2
	PRAIRIE ISLAND 1, 2	25.701	12% ▲	2
2nd Quartile	SEABROOK	26.161	-7% ▼	-
	CALVERT CLIFFS 1, 2	26.796	8% ▲	-
	COMANCHE PEAK 1, 2	27.176	-36% ▼	3
	SUMMER 1	27.249	30% ▲	1
	NORTH ANNA 1, 2	27.646	11% ▲	-
	DAVIS-BESSE 1	28.587	49% ▲	1
	GINNA	29.743	0% ▼	-
	VOGTLE 1, 2, 3	29.947	-15% ▼	3
3rd Quartile	BEAVER VALLEY 1, 2	30.658	-4% ▼	-
	SOUTH TEXAS 1, 2	31.552	22% ▲	2
	ST. LUCIE 1, 2	32.405	-6% ▼	-
	CATAWBA 1, 2	33.366	-22% ▼	4
	POINT BEACH 1, 2	37.648	-12% ▼	4
	COOK 1, 2	38.746	26% ▲	-
	TURKEY POINT 3, 4	39.036	-11% ▼	4
ROBINSON 2	39.711	67% ▲	2	
4th Quartile	MILLSTONE 2, 3	40.955	5% ▲	3
	SEQUOYAH 1, 2	42.739	9% ▲	3
	SURRY 1, 2	42.807	9% ▲	3
	ARKANSAS 1, 2	43.304	-11% ▼	-
	WOLF CREEK 1	43.746	-7% ▼	-
	MCGUIRE 1, 2	44.680	-5% ▼	-
	WATERFORD 3	52.900	4% ▲	-
	SALEM 1, 2	53.932	12% ▲	-
	WATTS BAR 1, 2	56.835	-7% ▼	-
Average per Reactor-Year		31.945	4% ▲	

< Average 31.945

NOTE: These data do not include Palisades, which closed in May 2022 (see section 3.3.6 for Palisades restart information).

* Sites where not all reactors had completed 3 full years of commercial operation as of December 31, 2024, are not included.

4.6 International Occupational Radiation Exposure

In 1992, the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (NEA/OECD), with sponsorship from the International Atomic Energy Agency (IAEA), created the Information System on Occupational Exposure (ISOE) Program as an international forum for representatives from nuclear electric utilities and regulatory agencies to share dose reduction information, operational experience, and information to optimize radiological protection at commercial nuclear power plants. The ISOE database (ISOEDAT) includes occupational exposure information for 354 operating units and 71 units in cold shutdown or some stage of decommissioning in 31 countries, covering about 90 percent of the world's operating commercial nuclear power reactors. One of the purposes of ISOEDAT is to allow comparison of radiation protection effectiveness and trends among the participating countries and among the various types of commercial nuclear power reactors.

As part of its international cooperative research program, the NRC joined the ISOE Program as a regulatory member in December 1994. The NRC's REIRS database is the U.S. counterpart to ISOEDAT on the global scale. Since joining the ISOE Program, the NRC has leveraged its experience in data management and analysis of the REIRS database to provide input to the NEA/OECD and the IAEA on ways to streamline certain ISOEDAT methods for capturing, maintaining, and displaying data.

Several new international reactors have come on line in 2024 and have begun to report dose to the ISOE, including new reactors in France, India, South Korea, China, and the United Arab Emirates. Figures 4-5 and 4-6 show the average collective dose per reactor for both U.S. and international reactors covered by ISOEDAT. For international PWRs, the average collective dose per reactor decreased from 51 to 50 person-rem in 2024, while the average for U.S. reactors remained 32 person-rem. For international BWRs, the average collective dose per reactor decreased to 20 person-rem in 2024, which is approximately 21 percent of the average for U.S. BWRs (95 person-rem per reactor).

It should be noted that the Fukushima Dai-ichi event in 2011 affected the information from reactor sites in Japan. Following the earthquake and tsunami at the Fukushima Dai-ichi and Dai-ni reactor sites, all Japanese reactors were shut down to assess safety concerns. While these plants ceased power production, they were still officially counted as "operational" reactors. Their collective dose decreased significantly, as most operational activities were not required when the reactors were not producing power. Similarly, the ISOEDAT data for German reactors includes reactors that the German government shut down in 2011 following the Fukushima event. These shutdowns significantly reduced the average collective dose per reactor, as operational activities ceased. The decreases in average collective dose per reactor in Japan and Germany have reduced the overall international averages for both PWRs and BWRs since 2011. In particular, because the Japan data represent a large proportion (30 percent) of the overall data for BWRs, the decrease in the average collective dose per BWR in Japan is the primary factor in the decrease in average collective dose per reactor for international BWRs since 2011, as illustrated in figure 4-6.

The data used for these figures were compiled from the ISOEDAT online database. The NEA publishes an annual report, "Occupational Exposures at Nuclear Power Plants," which is available on the ISOE website at www.isoe-network.net [Ref. 19].

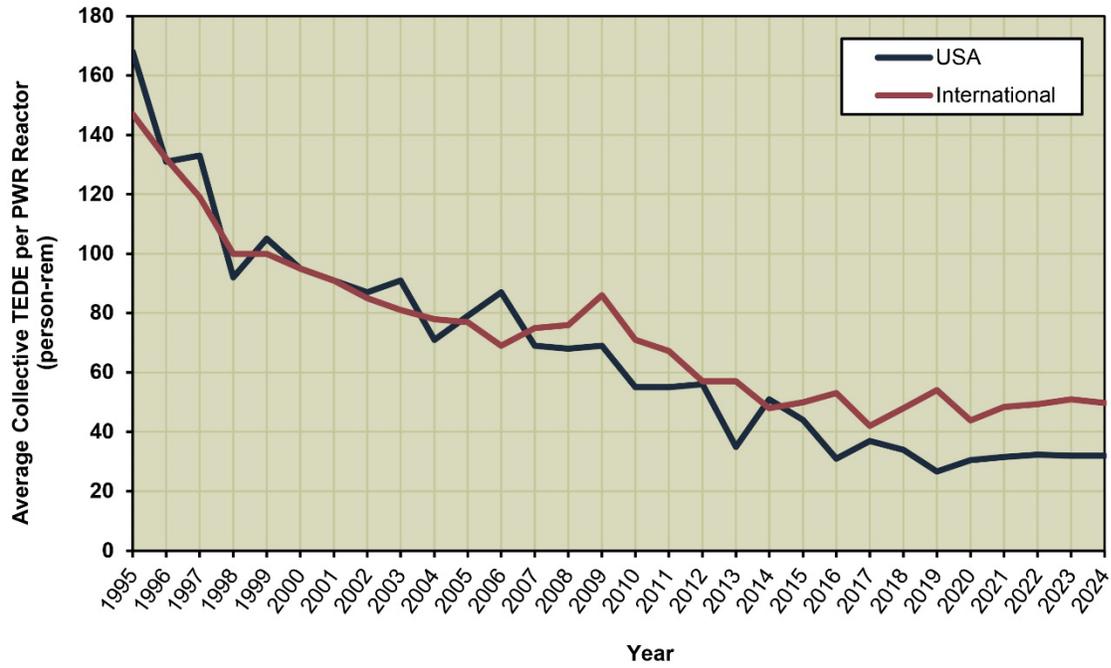


Figure 4-5 Average Collective TEDE per PWR, 1995–2024

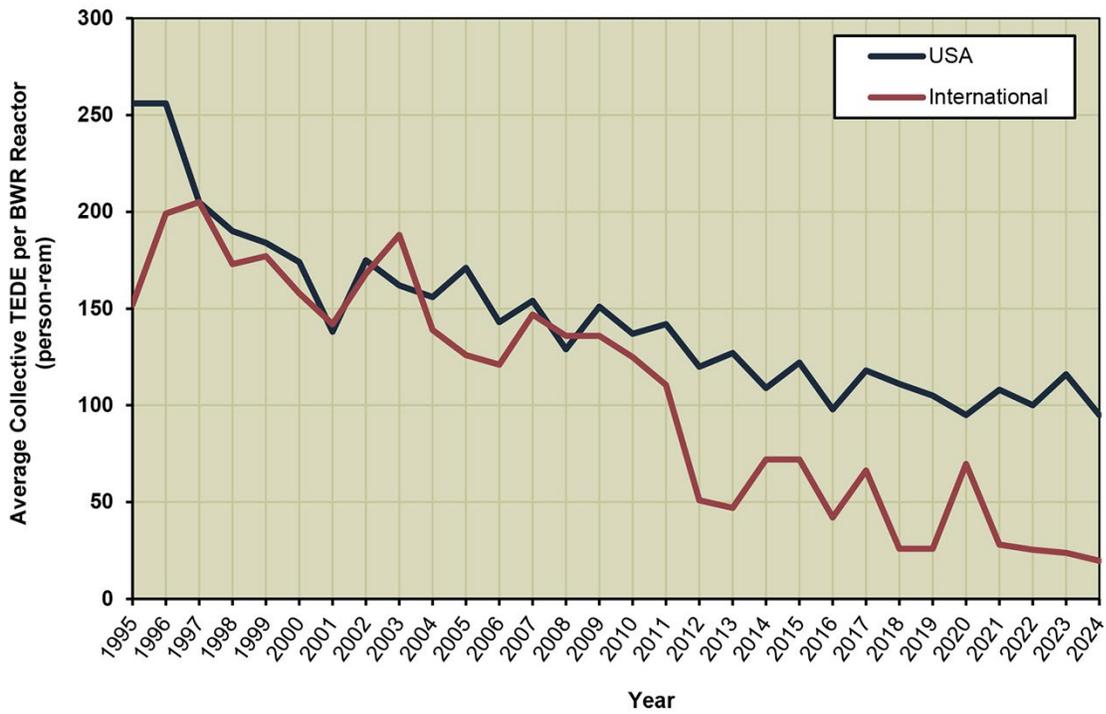


Figure 4-6 Average Collective TEDE per BWR, 1995–2024

4.7 Decommissioning of Commercial Nuclear Power Reactors

The NRC regulates the decommissioning of commercial nuclear power reactors. The purpose of the NRC's Decommissioning Program is to ensure that (1) NRC-licensed sites are decommissioned in a safe, timely, and effective manner so that they can be returned to beneficial use, and (2) stakeholders are informed about and involved in the decommissioning process as appropriate.

The NRC's Office of Nuclear Material Safety and Safeguards (NMSS) has project management responsibilities for decommissioning commercial nuclear power reactors. The NRC's decommissioning activities for commercial nuclear power reactors include project management, technical review of licensee submittals in support of decommissioning, the issuance of license amendments and exemptions in support of each stage of decommissioning, inspections of decommissioning activities, support for the development of rulemaking guidance, public outreach efforts, international activities, and participation in industry conferences and workshops. The NMSS staff regularly coordinates with other offices on issues affecting all commercial nuclear power reactors, both operating and decommissioning, and specifically on the ISFSIs at reactor sites undergoing decommissioning [Ref. 20].

4.7.1 Decommissioning Process

The decommissioning process begins when a licensee decides to permanently cease operations. The major steps in decommissioning a commercial nuclear power reactor are permanent cessation of operations; certification of permanent fuel removal; submittal and review of the post-shutdown decommissioning activities report (PSDAR); submittal, review, and approval of the license termination plan (LTP); implementation of the LTP; and completion of decommissioning. The flowchart in figure 4-7 illustrates the decommissioning process.

4.7.2 Notification

When a licensee has decided to permanently cease operations, it is required to submit a written notification to the NRC stating the date on which operations ceased or will cease. In addition, the licensee must notify the NRC in writing of the date and the disposition of the fuel once fuel has been permanently removed from the reactor vessel.

4.7.3 Post-Shutdown Decommissioning Activities Report

Before or within 2 years following permanent cessation of operations, the licensee must submit a PSDAR to the NRC and a copy to the affected State(s). The PSDAR must include a description and schedule for the planned decommissioning activities, an estimate of the expected costs, and a discussion of the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate, previously issued environmental impact statements. The NRC will provide notice of receipt of the PSDAR in the *Federal Register* and make the PSDAR available for public comment. In addition, the NRC will hold a public meeting in the vicinity of the licensee's facility to discuss the PSDAR. The licensee shall not perform major decommissioning activities until 90 days following NRC receipt of the licensee's PSDAR submittal, and until certifications of permanent cessation of operations and permanent removal of fuel from the reactor vessel have been submitted.

4.7.4 License Termination Plan

Each commercial nuclear power reactor licensee must apply for termination of its license. An LTP must be submitted at least 2 years before the license termination date. Licensees are encouraged to participate in pre-submittal meetings with NRC staff to agree on the format and content of the LTP. These meetings are intended to improve the efficiency of the LTP development and review process. The LTP must include the following: a site characterization; the identification of remaining dismantlement activities; plans for site remediation; detailed plans for the final radiation survey; a description of the end use of the site, if restricted; an updated site-specific estimate of remaining decommissioning costs; and a supplement to the environmental report describing any new information or significant environmental change associated with the licensee's proposed termination activities. In addition, the licensee must demonstrate that it will meet the applicable requirements of the License Termination Rule in 10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination."

The NRC will provide notice of receipt of the LTP in the *Federal Register* and make the LTP available for public comment. In addition, the NRC will hold a public meeting in the vicinity of the licensee's facility to discuss the LTP and the LTP review process.

4.7.5 Implementation of the License Termination Plan

After approval of the LTP, the licensee or responsible party must complete decommissioning in accordance with the approved LTP. The NRC staff will periodically inspect the decommissioning activities at the site to ensure compliance with the LTP. These inspections will normally include in-process and confirmatory radiological surveys.

Decommissioning must be completed within 60 years of permanent cessation of operations, unless otherwise approved by the NRC.

4.7.6 Completion of Decommissioning

At the conclusion of decommissioning activities, the licensee will submit final status survey reports, which identify the final radiological conditions of the site and request that the NRC either (1) terminate the license under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities" [Ref. 21], or (2) reduce the 10 CFR Part 50 license boundary to the footprint of the ISFSI. For decommissioning commercial nuclear power reactors with no ISFSI or an ISFSI holding a specific license under 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste," completion of reactor decommissioning will result in the termination of the 10 CFR Part 50 license. The NRC will approve the final status survey report and the licensee's request if it determines that the licensee has met both of the following conditions: (1) the remaining dismantlement has been performed in accordance with the approved LTP, and (2) the final radiation survey and associated documentation demonstrate that the facility and site have met the release criteria for decommissioning, including assessment of dose from partial site releases before the approval of the LTP.

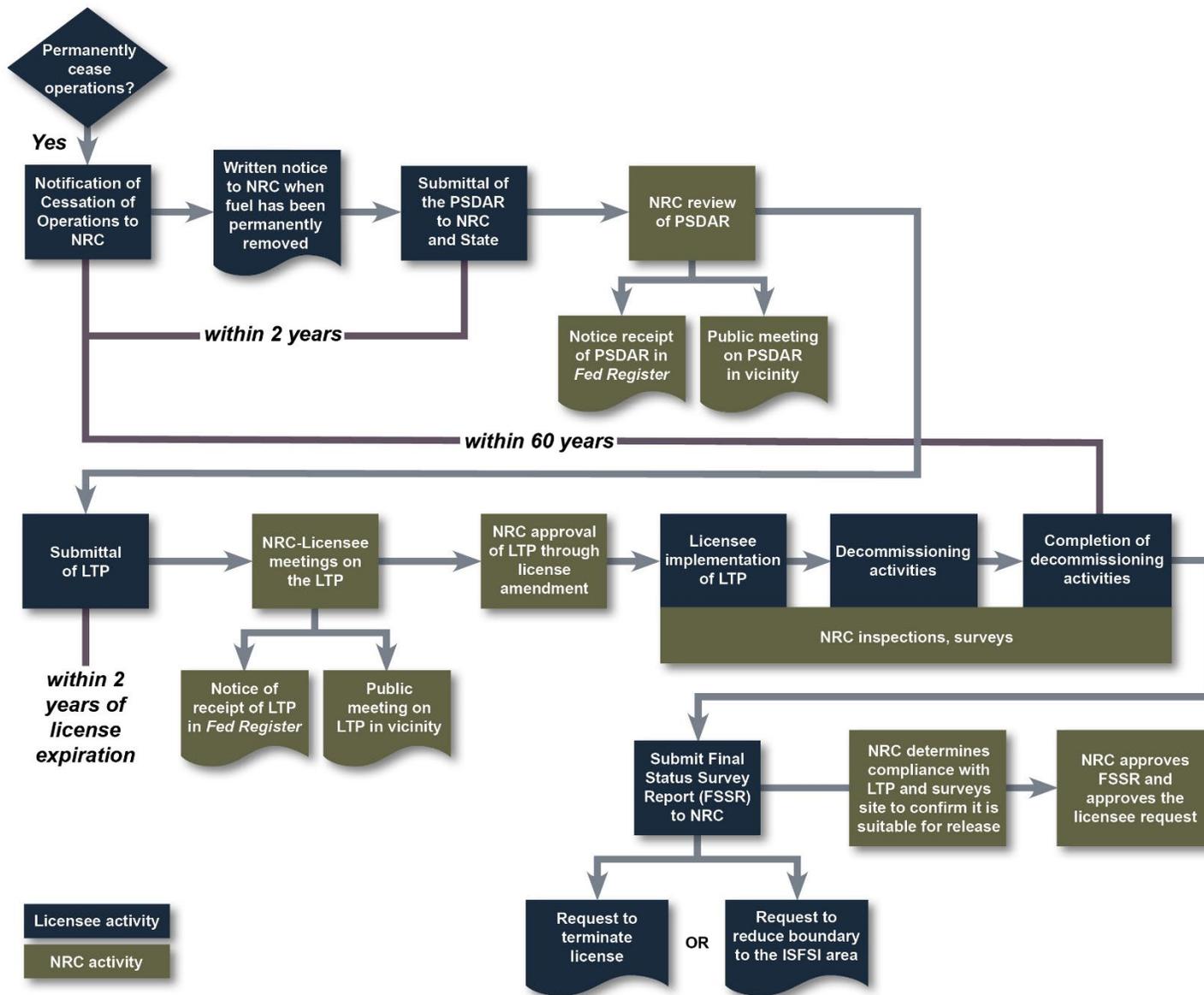


Figure 4-7 Commercial Nuclear Power Reactor Decommissioning Process Flowchart

4.7.7 Status of Decommissioning Activities at Commercial Nuclear Power Reactors

While 93 commercial nuclear power reactors are currently in operation, several shutdown power reactors have undergone the decommissioning process. As more commercial nuclear power reactors permanently shut down, either because they have reached the end of their operating license or for other reasons, there will be a commensurate increase in activities involving radiation exposure related to decommissioning. For this reason, there is an increased need to provide further information on plants undergoing decommissioning.

Appendix B lists the plants that are no longer in commercial operation as of 2024, along with the TEDE distribution and collective TEDE for these plants. (It should be noted that these plants may be in different stages of decommissioning, so a comparison of the dose at one plant versus another would not be meaningful.) In addition, appendix B lists the plant units that are no longer in commercial operation but report along with other units at the site. (Under the licensing conditions and reporting requirements, it is permissible to report the information for all units at one site together in one report.) Table 4-9 lists the plants that have ceased operation and have changed operational status as of the date shown [Ref. 22]. Appendix E describes the decommissioning activities currently underway at each of these plants, as well as the total collective TEDE for each plant, based on available data through 2024.

Table 4-9 Plants No Longer in Operation, 2024

Plant Name	Date of First Commercial Operation	Ceased Operations	License Termination Plan Approved by NRC	PSDAR Submitted	Plant Status †	Completion of Decommissioning ‡
CRYSTAL RIVER 3	3/13/1977	2/2013	TBD	6/2019	DECON	2026–2030
DRESDEN 1	8/10/1960	10/1978	TBD	6/1998	SAFSTOR	2036
DUANE ARNOLD	2/1/1975	8/2020	TBD	4/2020	SAFSTOR	2080
FERMI 1	8/7/1966	9/1972	TBD	4/1998	SAFSTOR	2032
FORT CALHOUN	9/26/1973	10/2016	1/2024	12/2019	DECON	2026
INDIAN POINT 1	8/1/1962	10/1974	TBD	12/2019	DECON	2033
INDIAN POINT 2	7/1/1974	4/2020	TBD	12/2019	DECON	2033
INDIAN POINT 3	8/30/1976	4/2021	TBD	12/2019	DECON	2033
KEWAUNEE	6/16/1974	5/2013	TBD	5/2013	DECON	2073
MILLSTONE 1	3/1/1971	7/1998	TBD	6/1999	SAFSTOR	2056
OYSTER CREEK	12/1/1969	9/2018	TBD	5/2018	DECON	2025
PALISADES *	12/31/1971	5/2022	TBD	12/2020	RESTART	2041
PEACH BOTTOM 1	6/1/1967	10/1974	TBD	6/1998	SAFSTOR	2034
PILGRIM 1	12/1/1972	5/2019	TBD	11/2018	DECON	2063
SAN ONOFRE 1	1/1/1968	11/1992	TBD	5/2020	DECON	2028
SAN ONOFRE 2	8/8/1983	6/2013	TBD	5/2020	DECON	2028
SAN ONOFRE 3	4/1/1984	6/2013	TBD	5/2020	DECON	2028
THREE MILE ISLAND 1	9/2/1974	9/2019	TBD	4/2019	SAFSTOR	2079
THREE MILE ISLAND 2	12/30/1978	3/1979	TBD	3/2024	DECON	2053
VERMONT YANKEE	11/30/1972	12/2014	TBD	12/2014	DECON	2026–2030
REACTOR DECOMMISSIONING COMPLETED §						
BIG ROCK POINT	3/29/1963	8/1997	3/2005	9/1997	ISFSI only	2007
HADDAM NECK	1/1/1968	12/1996	11/2002	8/1997	ISFSI only	2007
HUMBOLDT BAY 3	8/1/1963	7/1976	2012	2/1998	ISFSI only	2021¶
LACROSSE	11/1/1969	4/1987	5/2019	5/1991	ISFSI only	2023
MAINE YANKEE	12/28/1972	8/1997	2/2003	8/1997	ISFSI only	2005
RANCHO SECO	4/17/1975	6/1989	5/2008	3/1997	ISFSI only	2017
TROJAN	5/20/1976	11/1992	2/2001	8/1995	ISFSI only	2004¶
YANKEE ROWE	7/1/1961	10/1991	7/2005	-	ISFSI only	2007
ZION 1	12/31/1973	2/1997	9/2018	3/2008	ISFSI only	2023
ZION 2	9/17/1974	9/1996	9/2018	3/2008	ISFSI only	2023

* On February 1, 2023, Holtec, the licensee for Palisades, expressed an interest in returning the plant to operational status and has been engaged in restoring Palisades to commercial operation.

† Plant status as of 2024.

‡ Including the generally licensed ISFSI.

§ Not including ISFSI.

¶ 10 CFR Part 72 ISFSI, 10 CFR Part 50 license terminated.

NOTE: Information on the latest decommissioning status of plants listed in this table can be found in the August 26, 2024, “Status of the Decommissioning Program—2024 Annual Report” (Draft Report), dated August 26, 2024) [Ref. 22]. Rows displayed in gray represent plants that have completed decommissioning [Refs. 22–24].

TBD: To be determined.

SAFSTOR (often considered “delayed DECON”): The nuclear facility is maintained and monitored in a condition that allows the radioactivity to decay; afterwards, it is dismantled.

DECON (immediate dismantlement): Soon after the nuclear facility closes or transitions out of SAFSTOR, equipment, structures, and portions of the facility containing radioactive contaminants are removed or decontaminated to a level that permits release of the property and termination of the NRC license.

RESTART: Restarting a shuttered nuclear power plant.

5 TRANSIENT INDIVIDUALS AT NRC-LICENSED FACILITIES

The following analysis examines the data for individuals who had Form 5 dose records at more than one NRC-licensed facility during the monitoring year. These individuals are defined as “transient” because they worked at more than one facility during the monitoring year.

The term “monitoring year” is used here in accordance with the definition in 10 CFR 20.1003, which defines a “year” as follows:

[The] period of time beginning in January used to determine compliance with the provisions of [10 CFR Part 20]. The licensee may change the starting date of the year used to determine compliance by the licensee provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.

The data reported for individuals who were monitored at two or more different facilities within 1 monitoring year may be useful in many ways. For example, the total number of transient individuals and the individual doses they received can be determined by examining these data.

Additionally, by examining the distribution of the doses received by transient individuals, one can determine how the inclusion of these individuals in two or more licensees’ annual reports has affected the annual summary data for commercial nuclear power reactors (as reported in appendix B) and for all NRC licensees combined (one of the issues mentioned in section 2). Individuals who have been monitored at multiple facilities within the same year are reported separately on each licensee’s dose records. Thus, for example, an individual who visits five different facilities in a year will appear in the annual summary data (not adjusted for transients) as five different people. However, if the dose records are summed per individual (i.e., adjusting for transients), then the summary data will correctly identify the individual as one person, with a total annual dose equal to the sum of the doses they received at the five facilities they visited. The unadjusted and adjusted summary data will therefore reflect the same total collective dose, but they will show different values for the total number of individuals, their dose distributions, and average doses.

Table 5-1 shows the actual distribution of transient individual doses for 2024, as determined from the NRC Form 5 reports, and compares it with the reported distribution of the doses of these individuals as they would have appeared in a simple summation of licensees’ annual reports. (In 2024, 96 percent of all transient individuals were reported by commercial nuclear power reactor licensees, and the rest by other licensees. For this reason, table 5-1 shows the data for commercial nuclear power reactor licensees separately.)

For example, table 5-1 shows that, according to the initial summation of Form 5 reports across all licensees (see row 2b, “Transients, as Reported”), in 2024, five individuals received TEDE doses between 2.0 and 3.0 rem. However, accounting for the doses received by individuals across multiple facilities (see row 3b, “Transients, Actual”), the corrected distribution indicates that 16 transient individuals received TEDE doses between 2.0 and 3.0 rem. Correcting for transients also affected the average measurable TEDE calculated for these individuals, increasing it by 45 percent: the average measurable TEDE for transient individuals was 0.10 rem according to the initial summation and 0.21 rem according to the corrected distribution. Across all reporting licensees, transient individuals represented 38 percent of the workforce that received a measurable TEDE.

This analysis does not account for individuals who may have been exposed at facilities that are not required to report to the NRC (see section 1), such as facilities regulated by Agreement States or the DOE.

One purpose of the REIRS database, which tracks occupational radiation exposures at NRC-licensed facilities, is to identify individuals who may have exceeded the occupational radiation dose limits because of multiple exposures at different facilities throughout the year. The REIRS database stores the radiation dose information for each individual under the individual's unique identification number and identification type [Ref. 13, section 1.5], and includes the sum of the doses received by that individual at all facilities visited during the monitoring year. An individual whose total dose exceeded the regulatory limit of 5 rem per year (TEDE) would be identified in table 5-1 in the TEDE range greater than 5 rem. In 2024, across all licensees, 105 unique individuals received TEDE doses between 2 and 3 rem, 20 individuals received between 3 and 4 rem, and 5 individuals received between 4 and 5 rem. As reported by NRC licensees to the REIRS database in 2024, no individuals received TEDE doses exceeding the regulatory limit of 5 rem. Section 6 contains more information on individuals who received doses in excess of the NRC regulatory limits during the 2014-2024 period.

Table 5-1 Effects of Transient Individuals on Annual Statistical Compilations,* 2024

License Category	Number of Individuals with TEDE in Range (rem)**											Total Number Monitored	Number with Measurable TEDE	Collective TEDE (person-rem)	Average Measurable TEDE (rem)
	No. Measurable Exposure	Measurable <0.01	0.10–0.25	0.25–0.50	0.50–0.75	0.75–1.0	1.0–2.0	2.0–3.0	3.0–4.0	4.0–5.0	>5.0				
COMMERCIAL LIGHT-WATER REACTORS															
(1a) Form 5 Summation	70,307	37,663	9,731	3,530	815	230	106	7	-	-	-	122,389	52,082	4,903.383	0.09
(2a) Transients, as Reported	30,690	22,232	6,464	2,358	523	140	60	3	-	-	-	62,470	31,780	3,157.517	0.10
(3a) Transients, Actual	6,271	7,374	3,899	2,462	985	374	311	13	-	-	-	21,689	15,418	3,157.517	0.20
Corrected Distribution (1- [2 - 3]) **	45,888	22,805	7,166	3,634	1,277	464	357	17	-	-	-	81,608	35,720	4,903.383	0.14
ALL LICENSEES															
(1b) Form 5 Summation	73,902	41,742	10,861	4,423	1,238	442	502	94	20	5	-	133,240	59,338	6,816.366	0.11
(2b) Transients, as Reported	32,219	22,890	6,724	2,508	582	153	87	5	2	-	-	65,170	32,951	3,368.906	0.10
(3b) Transients, Actual	6,544	7,586	3,990	2,551	1,042	416	362	16	2	-	-	22,509	15,965	3,368.906	0.21
Corrected Distribution (1- [2 - 3]) **	48,227	26,438	8,127	4,466	1,698	705	777	105	20	5	-	90,579	42,352	6,816.37	0.16

* TEDE values exactly equal to the values separating ranges are reported in the next higher range.

** The corrected distribution applies only to the number of individuals and is calculated by the total number in (1) minus the difference between (2) and (3).

6 EXPOSURES OF PERSONNEL IN EXCESS OF REGULATORY LIMITS

6.1 Reporting Categories

Doses in excess of regulatory limits are sometimes referred to as “overexposures.” The phrase “doses in excess of regulatory limits” is preferred to “overexposures” because the latter suggests that an individual has been subjected to an unacceptable biological risk, which may or may not be the case.

Regulations in 10 CFR 20.2202, “Notification of incidents,” and 10 CFR 20.2203, “Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits,” require that all licensees submit reports of all incidents involving personnel radiation doses that exceed certain levels, thereby providing for investigations and corrective actions, as necessary. Based on the magnitude of the dose, the occurrence may be placed into one of three categories:

(1) Category A:

10 CFR 20.2202(a)(1)—To any individual, a TEDE of 25 rem or more, a lens dose equivalent of 75 rem or more, or a shallow dose equivalent to the skin or extremities of 250 rad or more. The Commission must be notified immediately of these events, and the U.S. Congress is notified annually through the NRC’s Abnormal Occurrence Report.

(2) Category B:

10 CFR 20.2202(b)(1)—To any individual, a TEDE exceeding 5 rem, a lens dose equivalent exceeding 15 rem, or a shallow dose equivalent to the skin or extremities exceeding 50 rem. The Commission must be notified of such events within 24 hours of their discovery.

(3) Category C:

10 CFR 20.2203—In addition to the notification required by 10 CFR 20.2202 (Category A or B events), each licensee must submit a written report within 30 days of learning of any of the following occurrences:

- a. any incident for which notification is required by 10 CFR 20.2202
- b. doses that exceed the limits in 10 CFR 20.1201, 10 CFR 20.1207, 10 CFR 20.1208, or 10 CFR 20.1301 (for adults, minors, the embryo/fetus of a declared pregnant woman, or members of the public, respectively) or any applicable limit in the license
- c. levels of radiation or concentrations of radioactive material that exceed any applicable license limit for restricted areas or that, for unrestricted areas, are in excess of 10 times any applicable limit stated in 10 CFR Part 20 or in the license (whether or not involving a dose of any individual in excess of the limits in 10 CFR 20.1301, “Dose limits for individual members of the public”)

- d. for licensees subject to the provisions of the U.S. Environmental Protection Agency's generally applicable environmental radiation standards in 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations" [Ref. 24], levels of radiation or releases of radioactive material more than those standards or license conditions related to those standards

Occurrences reported as Category A, B, or C typically undergo review and evaluation by the licensee, NRC inspectors, and NRC Headquarters staff. Preliminary dose estimates submitted by licensees are often conservatively high and do not represent the final (legal) dose of record assigned for the event. It is, therefore, not uncommon for a dose reported as exceeding a regulatory limit to be reassessed and ultimately categorized as not having exceeded a regulatory limit. In other cases, the exposure event may not be identified until a later date, such as during the next scheduled audit or inspection of the licensee's event records.

6.2 Summary of Occupational Radiation Doses in Excess of NRC Regulatory Limits

The exposure events summary presented here is for events that occurred in 2024. Events that have been reassessed and determined not to involve a dose in excess of a regulatory limit are not included in this report. Events that occurred in prior years have been added to the summary in the year of their occurrence. The reader should note that the summary represents a snapshot of the status of events as of the publication date of this report. The events identified may not correlate exactly with previous or future reports because of the review cycle and possible reassessment of events.

It is important to note that this summary of events includes the following:

- occupational radiation TEDE doses in excess of the annual 5-rem regulatory limit
- events at NRC-licensed facilities
- the dose of record assigned to an individual

It **does not** include the following:

- medical events as defined in 10 CFR Part 35, "Medical Use of Byproduct Material" [Ref. 25]
- doses in excess of the regulatory limits to the general public
- Agreement State-licensed activities or DOE facilities
- exposures to dosimeters that, upon evaluation, have been determined to be high dosimeter readings only and have not been assigned to an individual as the dose of record by the licensee

In 2024, no occurrences in Category A, B, or C were reported under the licensed activities included in this report.

6.3 Summary of Annual Dose Distributions for Certain NRC Licensees

Table 6-1 summarizes the annual occupational dose records reported to the NRC, as required by 10 CFR 20.2206, by certain categories of NRC licensees. The table shows that for the past 11 years, more than 99 percent of the individuals receiving TEDE doses have received less than 2 rem.

Table 6-1 Summary of Annual TEDE Distributions for Certain NRC Licensees,* 2014–2024

Year	Total Number of Monitored Individuals		Individuals with Measurable TEDE ***			
			<2 rem	>2 rem	<5 rem	>5 rem
	Reported Number	Corrected Number **	%	Number	%	Number
2014	185,843	135,817	99.8%	224	100%	-
2015	186,614	131,827	99.9%	133	99.9%	2
2016	164,984	121,129	99.9%	81	100%	-
2017	166,526	118,715	99.9%	164	99.9%	2
2018	159,988	110,861	99.8%	188	99.9%	1
2019	144,243	102,182	99.9%	110	100%	-
2020	133,139	94,779	99.9%	74	99.9%	2
2021	130,613	90,470	99.9%	84	100%	-
2022	134,177	107,070	99.9%	92	100%	-
2023	135,562	93,489	99.8%	166	100%	-
2024	133,240	90,579	99.9%	130	100%	-

* Licensees required to submit radiation exposure reports to the NRC under 10 CFR 20.2206.

** The values in this column have been corrected to account for transient individuals (i.e., individuals who may have been counted more than once because they worked at more than one facility during the monitoring year; see section 5).

*** The data for 2014–2024 are based on the distribution of individual doses after adjusting for the multiple counting of transient individuals (see section 5).

6.4 Maximum Occupational Radiation Doses Below NRC Regulatory Limits

Certain researchers have expressed interest in a list of the maximum doses received at NRC licensee facilities that do not exceed the regulatory limits. This information could provide insight into ways to improve licensees' radiation protection programs. Table 6-2 shows the maximum doses received for each dose category required to be reported to the NRC. The table also gives the number of doses that were within 25, 50, 75, and 95 percent of regulatory limits. As shown in the table, 57 individuals received doses exceeding 50 percent of the TEDE limit, 7 individuals received doses exceeding 75 percent of the TEDE limit, and no individuals received doses exceeding 95 percent of the TEDE limit. The other dose category for which some individuals received doses exceeding 50 percent of the dose limit was the shallow dose equivalent to the maximally exposed extremity (SDE-ME).

Table 6-2 Maximum Occupational Doses for Each Exposure Category,* 2024

Dose Category**	Annual Dose Limit, 10 CFR 20***	Maximum Annual Dose Reported (rem)	Max Dose Percentage of Limit	Number of Individuals with Measurable Dose	Number of Individuals with >25% of Limit	Number of Individuals with >50% of Limit	Number of Individuals with >75% of Limit	Number of Individuals with >95% of Limit	Number of Individuals with Dose > Limit
SDE-ME	50 rem	38.100	76%	36,682	71	9	1	-	-
SDE-WB	50 rem	4.717	9%	42,441	-	-	-	-	-
LDE	15 rem	0.596	4%	41,818	7	-	-	-	-
CEDE		0.565		2,217					
CDE		4.724		2,009					
DDE		4.453		42,435					
TEDE	5 rem	4.453	89%	42,352	522	57	7	-	-
TODE	50 rem	4.842	10%	42,460	-	-	-	-	-

* Only records reported by licensees required to report under 10 CFR 20.2206 are included. Numbers have been adjusted for the multiple reporting of transient individuals (see section 5).

- ** SDE-ME = shallow dose equivalent to the maximally exposed extremity
 SDE-WB = shallow dose equivalent to the whole body
 LDE = lens dose equivalent to the lens of the eye
 CEDE = committed effective dose equivalent
 CDE = committed dose equivalent
 DDE = deep dose equivalent
 TEDE = total effective dose equivalent
 TODE = total organ dose equivalent

*** Shaded boxes represent dose categories that do not have specific dose limits defined in 10 CFR Part 20.

7 REFERENCES

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¹ Report is available for purchase from the National Technical Information Service, Springfield, Virginia, 22161, and from the Superintendent of Documents, U.S. Government Publishing Office, P.O. Box 37082, Washington, DC 20402-9328.

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APPENDIX A

**ANNUAL TOTAL EFFECTIVE DOSE EQUIVALENT AT
NONREACTOR NRC LICENSEES AND OTHER FACILITIES
REPORTING TO THE NRC**

2024

ANNUAL TOTAL EFFECTIVE DOSE EQUIVALENT AT NONREACTOR NRC LICENSEES AND OTHER FACILITIES REPORTING TO THE NRC

Table A-1 Annual Total Effective Dose Equivalent for Nonreactor NRC Licensees

PROGRAM CODE— LICENSEE NAME	LICENSE #	Number of Individuals with Whole-Body TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE (person- rem)	Average Meas. TEDE (rem)	
		No Meas. Exposure	Meas. <0.10	0.10– 0.25	0.25– 0.50	0.50– 0.75	0.75– 1.0	1.0– 2.0	2.0– 3.0	3.0– 4.0	4.0– 5.0	>5.0					
INDUSTRIAL RADIOGRAPHY—FIXED LOCATION—03310																	
HARRISON STEEL CASTINGS CO.	13-02141-01	6	1	-	-	-	-	-	-	-	-	-	-	7	1	0.011	0.011
METALTEK INTERNATIONAL	24-26136-01	-	5	-	-	-	-	-	-	-	-	-	-	5	5	0.228	0.046
Total	2	6	6	-	-	-	-	-	-	-	-	-	-	12	6	0.239	0.040
INDUSTRIAL RADIOGRAPHY—TEMPORARY JOB SITE—03320																	
ADVEX CORPORATION	45-16452-01	2	2	-	-	-	-	-	-	-	-	-	-	4	2	0.089	0.045
AEGUS INSPECTION SOLUTIONS, INC.	04-29076-02	27	47	15	23	16	13	16	-	-	-	-	-	157	130	52.918	0.407
ALASKA INDUSTRIAL X-RAY	50-16084-01	-	1	2	2	1	1	1	1	-	-	-	-	9	9	6.364	0.707
AMERICAN ENGINEERING TESTING, INC.	22-20271-02	-	2	1	1	-	-	-	-	-	-	-	-	4	4	0.624	0.156
AMERICAN PIPING INSPECTION	35-35011-01	29	71	80	77	56	43	89	26	11	3	-	-	485	456	357.127	0.783
APPLIED TECHNICAL SERVICES, INC.	10-35278-01	-	-	1	-	-	-	3	-	-	-	-	-	4	4	4.373	1.093
CONCRETE IMAGING, INC.	47-31316-01	2	1	2	-	-	-	2	-	-	-	-	-	7	5	2.791	0.558
CONSUMERS ENERGY LABORATORY SERVICES	21-08606-03	9	6	9	1	5	-	-	-	-	-	-	-	30	21	4.924	0.234
DIAMOND TECHNICAL SERVICES INC	37-31259-01	1	2	3	3	3	2	-	-	-	-	-	-	14	13	4.911	0.378
DOMINION NDT SERVICES, INC.	45-35118-01	1	-	1	2	-	1	1	-	-	-	-	-	6	5	3.278	0.656
ELECTRIC BOAT CORPORATION	06-01781-03	15	65	-	-	-	-	-	-	-	-	-	-	80	65	0.894	0.014
ENGINEERING & INSPECTIONS - HAWAII	53-27731-01	1	1	2	3	-	1	5	-	-	-	-	-	13	12	8.510	0.709
GIR SOLUTIONS	17-35759-01	1	11	18	6	1	-	2	-	-	-	-	-	39	38	8.864	0.233
H & H X-RAY SERVICES, INC.	17-19236-01	17	10	22	17	15	7	8	2	-	-	-	-	98	81	40.732	0.503
HIGH COUNTRY FABRICATION	49-29300-01	-	4	1	1	-	1	1	-	-	-	-	-	8	8	2.662	0.333
HIGH MOUNTAIN INSPECTION SERVICES	49-26808-02	4	10	5	4	5	6	18	15	3	-	-	-	70	66	80.469	1.219
HUNTINGTON INGALLS, INC.	45-09428-02	10	52	4	-	-	-	-	-	-	-	-	-	66	56	1.909	0.034
HUNTINGTON INGALLS, INC.	45-09428-03	6	1	-	-	-	-	-	-	-	-	-	-	7	1	0.001	0.001
IIA LAB SERVICES, LLC	24-00188-02	3	7	2	3	2	-	4	-	-	-	-	-	21	18	7.494	0.416
INDY TESTING SOLUTION	13-35720-01	3	3	1	3	1	2	-	-	-	-	-	-	13	10	3.439	0.344
INTEGRITY TESTLAB	07-30791-01	3	9	11	5	8	2	4	-	-	-	-	-	42	39	16.390	0.420
INTERTEK ASSET INTEGRITY MGMT, INC.	17-29308-01	4	7	1	1	1	-	1	-	-	-	-	-	15	11	2.988	0.272

NOTE: The data values shown in bold and boxed represent the highest value in each category. These values have not been adjusted for the multiple counting of transient workers (see section 5).

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

A-1

Table A-1 Annual Total Effective Dose Equivalent for Nonreactor NRC Licensees (continued)

PROGRAM CODE— LICENSEE NAME	LICENSE #	Number of Individuals with Whole-Body TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE (person- rem)	Average Meas. TEDE (rem)	
		No Meas. Exposure	Meas. <0.10	0.10– 0.25	0.25– 0.50	0.50– 0.75	0.75– 1.0	1.0– 2.0	2.0– 3.0	3.0– 4.0	4.0– 5.0	>5.0					
<i>INDUSTRIAL RADIOGRAPHY—TEMPORARY JOB SITE—03320 (Continued)</i>																	
J CORE DRILLING, INC.	45-30846-01	2	3	-	-	-	-	-	-	-	-	-	5	3	0.013	0.004	
JRGO, LLC.	04-24888-01	1	6	1	-	-	-	-	-	-	-	-	8	7	0.501	0.072	
MARYLAND Q.C. LABORATORIES, INC.	19-28683-01	6	5	2	-	1	-	-	-	-	-	-	14	8	0.939	0.117	
MATERIALS INTEGRITY, INC.	50-27722-01	1	2	1	-	-	-	-	-	-	-	-	4	3	0.126	0.042	
METALS TESTING SERVICES, INC.	37-29406-02	7	7	2	7	6	3	6	-	-	-	-	38	31	18.141	0.585	
MID AMERICAN INSPECTION SERVICES	21-26060-01	1	5	1	11	4	1	1	-	-	-	-	24	23	9.134	0.397	
NONDESTRUCTIVE & VISUAL INSPECTION	17-29410-01	-	5	7	12	10	4	17	2	-	-	-	57	57	44.163	0.775	
PEAK NDT SERVICES, INC.	37-35630-01	1	6	1	3	1	2	6	5	-	-	-	25	24	24.366	1.015	
PREMIER TECHNOLOGY, INC.	11-27746-01	2	2	-	-	-	-	-	-	-	-	-	4	2	0.057	0.029	
PRIME NDT SERVICES, INC.	37-23370-01	4	10	19	18	18	8	14	1	-	-	-	92	88	50.051	0.569	
PROTECT, LLC.	15-29301-02	21	59	45	40	37	26	62	16	5	2	-	313	292	216.792	0.742	
QUALITY CONTROL INSPECTION & TESTING LABORATORIES	11-29245-01	-	1	1	1	1	-	-	-	-	-	-	4	4	0.990	0.248	
QUALITY INSPECTION & TESTING	17-35492-01	2	5	1	6	3	-	-	-	-	-	-	17	15	4.669	0.311	
QUALITY INSPECTION & TESTING	50-29038-014	1	2	-	1	3	-	1	-	-	-	-	8	7	3.767	0.538	
RELIABLE TESTING SERVICES	24-35592-01	1	4	2	-	1	-	-	-	-	-	-	8	7	1.236	0.177	
RNDT, INC.	37-30942-02	3	9	2	9	7	-	4	-	-	-	-	34	31	14.075	0.454	
SHAW PIPELINE SERVICES, INC.	35-23193-03	39	59	42	31	13	4	4	-	-	-	-	192	153	35.793	0.234	
SI-TECH LABS	45-24882-01	5	1	-	-	-	-	-	-	-	-	-	6	1	0.068	0.068	
TESTING TECHNOLOGIES, INC.	45-25007-01	2	2	2	6	1	-	-	-	-	-	-	13	11	2.917	0.265	
THERMAL ENGINEERING INTERNATIONAL	24-19500-01	6	-	-	-	-	-	-	-	-	-	-	6	-	-	-	
TVA ADMIN PROGRAM	41-06832-06	4	4	3	-	-	-	-	-	-	-	-	11	7	0.741	0.106	
XCEL NDT LLC	15-35544-01	31	39	23	32	19	19	31	5	-	-	-	199	168	98.525	0.586	
Total	44	278	548	336	329	239	146	301	73	19	5	-	2,274	1,996	1,138.815	0.571	

NOTE: The data values shown in bold and boxed represent the highest value in each category. These values have not been adjusted for the multiple counting of transient workers (see section 5).

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

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Table A-1 Annual Total Effective Dose Equivalent for Nonreactor NRC Licensees (continued)

PROGRAM CODE— LICENSEE NAME	LICENSE #	Number of Individuals with Whole-Body TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE (person- rem)	Average Meas. TEDE (rem)	
		No Meas. Exposure	Meas. <0.10	0.10– 0.25	0.25– 0.50	0.50– 0.75	0.75– 1.0	1.0– 2.0	2.0– 3.0	3.0– 4.0	4.0– 5.0	>5.0					
INDUSTRIAL RADIOGRAPHY—MULTIPLE LOCATIONS – 04312																	
ACUREN INSPECTION	22-27593-01	42	62	31	25	20	8	6	2	-	-	-	196	154	49.453	0.321	
JAN X-RAY SERVICES, INC.	21-16560-01	20	36	14	41	33	16	17	1	-	-	-	178	158	76.752	0.486	
KAKIVIK ASSET MANAGEMENT	50-27667-01	8	31	10	7	4	1	3	-	-	-	-	64	56	13.282	0.237	
MISTRAS GROUP, INC.	12-16559-02	33	83	61	60	23	8	6	-	-	-	-	274	241	61.574	0.255	
TEAM INDUSTRIAL SERVICES, INC.	42-32219-01	25	51	37	21	8	7	9	1	1	-	-	160	135	44.739	0.331	
Total	5	128	263	153	154	88	40	41	4	1	-	-	872	744	245.800	0.330	
MANUFACTURING AND DISTRIBUTION—NUCLEAR PHARMACIES—02500																	
ADVANCED ISOTOPES OF MONTANA	11-35661-01MD	-	1	1	-	-	-	-	-	-	-	-	2	2	0.246	0.123	
CARDINAL HEALTH	34-29200-01MD	150	338	70	32	3	1	-	-	-	-	-	594	444	34.453	0.078	
CARDINAL HEALTH	34-31473-02MD	4	8	9	-	-	-	-	-	-	-	-	21	17	1.663	0.098	
GUARDIAN PHARMACY OF INDIANAPOLIS NUCLEAR	13-32637-01MD	16	2	2	4	1	-	-	-	-	-	-	25	9	2.536	0.282	
JUBILANT RADIOPHARMA	09-32781-02MD	8	12	1	1	-	-	-	-	-	-	-	22	14	0.917	0.066	
JUBILANT RADIOPHARMA	09-32781-04MD	4	10	-	-	-	-	-	-	-	-	-	14	10	0.223	0.022	
MID-AMERICA ISOTOPES, INC.	24-26241-01MD	14	11	1	2	1	-	1	1	-	-	-	31	17	5.411	0.318	
PHARMALOGIC MT, INC.	09-29398-01MD	2	17	-	3	-	-	-	-	-	-	-	22	20	1.229	0.061	
PHARMALOGIC PUERTO RICO	52-25361-01MD	3	19	4	1	5	4	1	-	-	-	-	37	34	9.647	0.284	
PHARMALOGIC WY, INC.	49-27629-01MD	11	4	-	-	-	-	-	-	-	-	-	15	4	0.042	0.011	
RADIOPHARMACY, INC.	13-26246-01MD	17	7	2	1	-	-	-	-	-	-	-	27	10	0.808	0.081	
Total	11	229	429	90	44	10	5	2	1	0	0	0	810	581	57.175	0.098	
MANUFACTURING AND DISTRIBUTION—BROAD-TYPE A—03211																	
CURIUM US, LLC.	24-04206-01	138	375	98	60	19	9	34	6	-	-	-	739	601	130.770	0.218	
INTERNATIONAL ISOTOPES IDAHO, INC.	11-27680-01MD	-	11	5	2	1	2	12	3	3	-	-	39	39	40.704	1.044	
Total	2	138	386	103	62	20	11	46	9	-	-	-	778	640	171.474	0.268	
INDEPENDENT SPENT FUEL STORAGE INSTALLATION—23200																	
GENERAL ELECTRIC - MORRIS ISFSI	SNM-2500	3	16	3	3	-	-	-	-	-	-	-	25	22	1.550	0.070	
PORTLAND GENERAL ELECTRIC - TROJAN ISFSI	SNM-2509	57	-	-	-	-	-	-	-	-	-	-	57	-	-	-	
Total	2	60	16	3	3	-	-	-	-	-	-	-	82	22	1.550	0.070	

NOTE: The data values shown in bold and boxed represent the highest value in each category. These values have not been adjusted for the multiple counting of transient workers (see section 5).

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

Table A-1 Annual Total Effective Dose Equivalent for Nonreactor NRC Licensees (continued)

PROGRAM CODE— LICENSEE NAME	LICENSE #	Number of Individuals with Whole-Body TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE (person- rem)	Average Meas. TEDE (rem)
		No Meas. Exposure	Meas. <0.10	0.10– 0.25	0.25– 0.50	0.50– 0.75	0.75– 1.0	1.0– 2.0	2.0– 3.0	3.0– 4.0	4.0– 5.0	>5.0				
URANIUM HEXAFLUORIDE (UF₆) PRODUCTION PLANTS—11400																
HONEYWELL INTERNATIONAL, INC.	SUB-0526	12	477	116	71	21	7	1	-	-	-	-	705	693	80.366	0.116
Total	1	12	477	116	71	21	7	1	-	-	-	-	705	693	80.366	0.116
FUEL CYCLE URANIUM ENRICHMENT PLANTS—21200																
CENTRUSENERGY	SNM-2011	221	7	-	-	-	-	-	-	-	-	-	228	7	0.097	0.014
Total	1	221	7	-	-	-	-	-	-	-	-	-	228	7	0.097	0.014
FUEL CYCLE FUEL FABRICATION FACILITIES—21210																
BWXT NUCLEAR OPERATIONS GROUP, INC	SNM-0042	63	273	11	3	-	-	1	-	-	-	-	351	288	11.527	0.040
FRAMATOME INC.	SNM-1227	1,399	518	67	33	7	-	-	-	-	-	-	2,024	625	34.249	0.055
GLOBAL NUCLEAR FUEL - AMERICAS, LLC	SNM-1097	163	350	103	83	19	9	5	-	-	-	-	732	569	83.026	0.146
NUCLEAR FUEL SERVICES, INC.	SNM-0124	820	568	7	-	-	-	-	-	-	-	-	1,395	575	5.864	0.010
WESTINGHOUSE ELECTRIC COMPANY	SNM-1107	78	238	141	111	19	1	-	-	-	-	-	588	510	82.801	0.162
Total	5	2,523	1,947	329	230	45	10	6	-	-	-	-	5,090	2,567	217.467	0.085

NOTE: The data values shown in bold and boxed represent the highest value in each category. These values have not been adjusted for the multiple counting of transient workers (see section 5).

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

Table A-2 Other Facilities Reporting to the NRC

PROGRAM CODE— LICENSEE NAME	LICENSE #	Number of Individuals with Whole-Body TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE (person- rem)	Average Meas. TEDE (rem)
		No Meas. Exposure	Meas. <0.10	0.10– 0.25	0.25– 0.50	0.50– 0.75	0.75– 1.0	1.0– 2.0	2.0– 3.0	3.0– 4.0	4.0– 5.0	>5.0				
HIGH DOSE RATE REMOTE AFTERLOADER—02230																
BOZEMAN DEACONESS FOUNDATION	25-10994-04	27	36	6	5	-	1	1	-	-	-	-	76	49	5.399	0.110
Total	1	27	36	6	5	0	1	1	-	-	-	-	76	49	5.399	0.110
OTHER SERVICES—03225																
VEGA AMERICAS, INC.	34-00639-04	15	11	2	7	-	-	-	-	-	-	-	35	20	3.081	0.154
Total	1	15	11	2	7	-	-	-	-	-	-	-	35	20	3.081	0.154
MASTER MATERIALS—ISSUED TO GOVERNMENT AGENCIES—03614																
NAVY, DEPARTMENT OF THE	10-44466-A1NP	6	14	-	-	-	-	-	-	-	-	-	20	14	0.091	0.007
NAVY, DEPARTMENT OF THE	28-39040-A1NP	2	12	-	-	-	-	-	-	-	-	-	14	12	0.197	0.016
NAVY, DEPARTMENT OF THE	45-42158-A1NP	5	18	-	-	-	-	-	-	-	-	-	23	18	0.117	0.007
NAVY, DEPARTMENT OF THE	46-4523A-A1NP	3	19	-	-	-	-	-	-	-	-	-	22	19	0.074	0.004
NAVY, DEPARTMENT OF THE	46-68438-A1NP	2	7	-	-	-	-	-	-	-	-	-	9	7	0.036	0.005
NAVY, DEPARTMENT OF THE	53-32253-A1NP	15	1	-	-	-	-	-	-	-	-	-	16	1	0.001	0.001
Total	6	33	71	-	-	-	-	-	-	-	-	-	104	71	0.516	0.007
RESEARCH AND DEVELOPMENT, OTHER—03620																
APS TECHNOLOGY	06-35157-01	2	1	-	-	-	-	-	-	-	-	-	3	1	0.024	0.024
U.S. ENVIRONMENTAL PROTECTION AGENCY	27-05861-02	14	1	-	-	-	-	-	-	-	-	-	15	1	0.025	0.025
Total	2	16	2	-	-	-	-	-	-	-	-	-	18	2	0.049	0.025
WASTE DISPOSAL SERVICE PROCESSING AND/OR REPACKAGING—03234																
ENERGYSOLUTIONS	39-35044-01	12	3	-	-	-	-	-	-	-	-	-	15	3	0.059	0.020
Total	1	12	3	-	-	-	-	-	-	-	-	-	15	3	0.059	0.020
CRITICAL MASS MATERIAL – Other Than Universities																
GENERAL ELECTRIC CO.	SNM-0960	68	40	-	-	-	-	-	-	-	-	-	108	40	0.960	0.024
Total	1	68	40	-	-	-	-	-	-	-	-	-	108	40	0.960	0.024
TEST REACTOR FACILITIES—42140**																
NAT'L INSTITUTE OF STANDARDS & TECH	TR-5	22	124	5	-	-	-	-	-	-	-	-	151	129	3.244	0.025
Total	1	22	124	5	0	0	-	-	-	-	-	-	151	129	3.244	0.025
TEST REACTOR MISCELLANEOUS—42150																
AEROTEST OPERATIONS, INC.	R-98	4	-	1	-	-	-	-	-	-	-	-	5	1	0.144	0.144
Total	1	4	0	1	0	0	-	-	-	-	-	-	5	1	0.144	0.144

NOTE: The data values shown in bold and boxed represent the highest value in each category. These values have not been adjusted for the multiple counting of transient workers (see section 5).

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

** Test reactor facilities are required to report to the NRC, but only two facilities report under this category and one of them is in decommissioning.

APPENDIX B

**ANNUAL TOTAL EFFECTIVE DOSE EQUIVALENT
AT LICENSED NUCLEAR POWER FACILITIES**

2024

ANNUAL TOTAL EFFECTIVE DOSE EQUIVALENT AT LICENSED NUCLEAR POWER FACILITIES, 2024

Table B-1 Annual Total Effective Dose Equivalent at Licensed Nuclear Power Facilities

PLANT NAME	TYPE	Number of Individuals with Annual TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE per Site (person-rem)
		No Meas. Exposure	Meas. <0.10	0.10–0.25	0.25–0.50	0.50–0.75	0.75–1.0	1.0–2.0	2.0–3.0	3.0–4.0	4.0–5.0	>5.0			
ARKANSAS 1, 2	PWR	1,280	1,101	176	73	19	7	-	-	-	-	-	2,656	1,376	102.181
BEAVER VALLEY 1, 2	PWR	1,568	749	168	54	19	4	-	-	-	-	-	2,562	994	86.459
BRAIDWOOD 1, 2	PWR	1,823	744	136	31	1	-	-	-	-	-	-	2,735	912	57.407
BROWNS FERRY 1, 2, 3	BWR	1,238	1,933	466	201	47	3	4	-	-	-	-	3,892	2,654	249.988
BRUNSWICK 1, 2	BWR	1,420	902	372	135	24	3	4	7	-	-	-	2,867	1,447	178.531
BYRON 1, 2	PWR	1,718	576	46	3	-	-	-	-	-	-	-	2,343	625	26.734
CALLAWAY 1	PWR	955	101	4	2	-	-	-	-	-	-	-	1,062	107	4.031
CALVERT CLIFFS 1, 2	PWR	1,420	490	132	38	2	-	-	-	-	-	-	2,082	662	52.728
CATAWBA 1, 2	PWR	1,697	701	157	20	-	-	-	-	-	-	-	2,575	878	56.258
CLINTON	BWR	839	217	62	15	1	-	-	-	-	-	-	1,134	295	22.806
COLUMBIA GENERATING	BWR	711	566	60	9	2	-	-	-	-	-	-	1,348	637	24.808
COMANCHE PEAK 1, 2	PWR	1,128	563	114	23	6	2	-	-	-	-	-	1,836	708	49.712
COOK 1, 2	PWR	1,546	582	185	67	10	2	-	-	-	-	-	2,392	846	82.416
COOPER STATION	BWR	820	730	200	85	26	10	2	-	-	-	-	1,873	1,053	114.672
DAVIS-BESSE 1	PWR	1,010	486	96	18	-	-	-	-	-	-	-	1,610	600	35.824
DIABLO CANYON 1, 2	PWR	1,862	507	79	6	-	-	-	-	-	-	-	2,454	592	31.050
DRESDEN 2, 3	BWR	1,098	1,702	350	66	3	-	-	-	-	-	-	3,219	2,121	142.518
FARLEY 1, 2	PWR	1,481	290	45	4	-	-	-	-	-	-	-	1,820	339	17.736
FERMI 2	BWR	639	1,256	353	254	118	47	21	-	-	-	-	2,688	2,049	315.919
FITZPATRICK	BWR	1,188	839	231	115	31	9	2	-	-	-	-	2,415	1,227	134.692
GINNA	PWR	1,204	415	82	17	2	-	-	-	-	-	-	1,720	516	33.431
GRAND GULF	BWR	1,301	812	247	170	52	11	6	-	-	-	-	2,599	1,298	171.031
HARRIS 1	PWR	1,462	379	30	6	-	-	-	-	-	-	-	1,877	415	19.717
HATCH 1, 2	BWR	1,105	980	305	140	24	15	5	-	-	-	-	2,574	1,469	167.951
HOPE CREEK 1	BWR	1,097	808	246	113	14	5	2	-	-	-	-	2,285	1,189	118.265
LASALLE 1, 2	BWR	1,036	1,410	444	139	22	8	3	-	-	-	-	3,062	2,026	188.026
LIMERICK 1, 2	BWR	1,136	1,444	458	157	32	3	3	-	-	-	-	3,233	2,097	204.488
MCGUIRE 1, 2	PWR	1,420	635	111	16	2	-	-	-	-	-	-	2,184	764	44.415
MILLSTONE 2, 3	PWR	1,721	554	133	51	3	2	-	-	-	-	-	2,464	743	61.861
MONTECELLO	BWR	746	366	78	10	4	-	-	-	-	-	-	1,242	496	42.704
NINE MILE POINT 1, 2	BWR	1,360	764	285	164	81	35	15	-	-	-	-	2,704	1,344	231.653
NORTH ANNA 1, 2	PWR	2,631	522	109	38	6	1	-	-	-	-	-	3,307	676	53.705

NOTE: The data values shown in bold and boxed represent the highest value in each category. Totals corrected for transients are on page B-2.

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

Table B-1 Annual Total Effective Dose Equivalent at Licensed Nuclear Power Facilities (continued)

PLANT NAME	TYPE	Number of Individuals with Annual TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE per Site (person-rem)
		No Meas. Exposure	Meas. <0.10	0.10–0.25	0.25–0.50	0.50–0.75	0.75–1.0	1.0–2.0	2.0–3.0	3.0–4.0	4.0–5.0	>5.0			
OCONEE 1, 2, 3	PWR	2,718	1,054	130	12	-	-	-	-	-	-	-	3,914	1,196	58.622
PALO VERDE 1, 2, 3	PWR	2,854	602	99	23	3	-	-	-	-	-	-	3,581	727	44.651
PEACH BOTTOM 2, 3	BWR	1,431	1,022	264	101	20	1	-	-	-	-	-	2,839	1,408	129.191
PERRY	BWR	647	184	79	34	6	-	1	-	-	-	-	951	304	37.173
POINT BEACH 1, 2	PWR	659	219	107	30	5	-	2	-	-	-	-	1,022	363	41.019
PRAIRIE ISLAND 1, 2	PWR	781	702	163	42	3	-	-	-	-	-	-	1,691	910	62.556
QUAD CITIES 1, 2	BWR	1,107	1,073	579	260	56	22	10	-	-	-	-	3,107	2,000	295.131
RIVER BEND 1	BWR	896	226	63	24	3	1	-	-	-	-	-	1,213	317	27.251
ROBINSON 2	PWR	1,070	596	150	25	1	-	-	-	-	-	-	1,842	772	55.140
SALEM 1, 2	PWR	934	688	210	97	12	4	2	-	-	-	-	1,947	1,012	100.744
SEABROOK	PWR	902	363	95	16	2	-	-	-	-	-	-	1,378	476	33.874
SEQUOYAH 1, 2	PWR	1,913	1,120	296	79	23	6	3	-	-	-	-	3,440	1,527	138.381
SOUTH TEXAS 1, 2	PWR	-	-	183	91	23	6	5	-	-	-	-	308	308	85.810
ST LUCIE 1, 2	PWR	1,129	697	162	63	19	7	5	-	-	-	-	2,082	953	96.326
SUMMER 1	PWR	1,386	378	122	37	2	-	-	-	-	-	-	1,925	539	46.334
SURRY 1, 2	PWR	2,890	883	252	96	21	3	1	-	-	-	-	4,146	1,256	121.327
SUSQUEHANNA 1, 2	BWR	131	741	260	128	36	6	3	-	-	-	-	2,505	1,174	146.938
TURKEY POINT 3, 4	PWR	1,109	465	137	41	12	-	-	-	-	-	-	1,764	655	60.442
VOGTLE 1, 2, 3	PWR	2,735	802	140	23	4	-	-	-	-	-	-	3,704	969	60.674
WATERFORD 3	PWR	874	309	8	2	-	-	-	-	-	-	-	1,193	319	7.573
WATTS BAR 1, 2	PWR	1,737	918	156	25	1	-	-	-	-	-	-	2,837	1,100	61.484
WOLF CREEK 1	PWR	744	497	116	41	12	7	7	-	-	-	-	1,424	680	69.025
Total BWRs (31 Units)	BWR	19,946	17,975	5,402	2,320	602	179	81	7	-	-	-	46,512	26,566	2,943.736
Total PWRs (62 Units)	PWR	50,361	19,688	4,329	1,210	213	51	25	-	-	-	-	75,877	25,516	1,959.647
Total LWRs (93 Units)	LWRs	70,307	37,663	9,731	3,530	815	230	106	7	-	-	-	122,389	52,082	4,903.383
Corrected for Transients**	LWRs	45,888	22,805	7,166	3,634	1,277	464	357	17	-	-	-	81,608	35,720	4,903.383

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

** Totals are corrected for transients and include all light-water reactors in commercial operation for a full year.

Table B-1 Annual Total Effective Dose Equivalent at Licensed Nuclear Power Facilities (continued)

PLANT NAME	TYPE	Number of Individuals with Annual TEDE in the Ranges (rem)*											Number of Individuals Monitored	Number with Meas. TEDE	Total Collective TEDE per Site (person-rem)	
		No Meas. Exposure	Meas. <0.10	0.10-0.25	0.25-0.50	0.50-0.75	0.75-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	>5.0				
REACTORS NO LONGER IN COMMERCIAL OPERATION																
CRYSTAL RIVER 3	PWR	121	115	10	1	-	-	-	-	-	-	-	-	247	126	5.258
DUANE ARNOLD	BWR	38	6	-	-	-	-	-	-	-	-	-	-	44	6	0.096
FERMI 1	FBR	78	-	-	-	-	-	-	-	-	-	-	-	78	-	-
FORT CALHOUN	PWR	326	64	20	9	5	-	-	-	-	-	-	-	424	98	11.139
GEH ESADA VALLECITOS	EVESR	No longer required to report.														
GEH VALLECITOS	VBWR	No longer required to report.														
INDIAN POINT 1, 2, 3	PWR	272	165	32	32	11	9	10	10	-	-	-	-	541	269	71.061
KEWAUNEE	PWR	479	98	26	18	4	4	6	-	-	-	-	-	635	156	28.332
OYSTER CREEK	BWR	180	51	16	13	14	8	6	-	-	-	-	-	288	108	33.186
PALISADES	PWR	1,087	271	156	102	32	3	1	-	-	-	-	-	1,652	565	93.581
PEACH BOTTOM 1	HTGR	No longer required to report.														
PILGRIM 1	BWR	144	53	33	14	4	5	5	-	-	-	-	-	258	114	25.101
SAN ONOFRE 1, 2, 3	PWR	381	137	65	42	26	18	35	16	-	-	-	-	720	339	150.537
SAVANNAH, NUCLEAR SHIP	NS	No longer required to report.														
THREE MILE ISLAND 1	PWR	368	101	22	6	-	-	-	-	-	-	-	-	497	129	9.212
THREE MILE ISLAND 2	PWR	165	77	32	30	14	17	48	7	-	-	-	-	390	225	129.911
VERMONT YANKEE	BWR	49	53	12	13	12	6	11	3	11	-	-	-	170	121	79.368
Total Reporting**	13	3,688	1,191	424	280	122	70	122	36	11	-	-	-	5,944	2,256	636.782
REACTORS NO LONGER IN COMMERCIAL OPERATION, REPORTED WITH OTHER UNITS																
DRESDEN 1	BWR	Reported with Dresden Units 2, 3.														
INDIAN POINT 1	PWR	Reported with Indian Point Units 2, 3.														
MILLSTONE 1	BWR	Reported with Millstone Units 2, 3.														
REACTORS NO LONGER IN COMMERCIAL OPERATION, DECOMMISSIONED																
BIG ROCK POINT	BWR	34	-	-	-	-	-	-	-	-	-	-	-	34	-	-
HADDAM NECK	PWR	No longer required to report.														
HUMBOLDT BAY 3	BWR	Did not monitor in 2024 (no operations occurred)														
LACROSSE	BWR	19	8	-	-	-	-	-	-	-	-	-	-	27	8	0.023
MAINE YANKEE	PWR	39	1	-	-	-	-	-	-	-	-	-	-	40	1	0.017
RANCHO SECO	PWR	Licensee notified NRC that no monitoring was required or reported for the monitoring year.														
TROJAN	PWR	57	-	-	-	-	-	-	-	-	-	-	-	57	-	-
YANKEE ROWE	PWR	24	16	-	-	-	-	-	-	-	-	-	-	40	16	0.254
ZION 1, 2	PWR	27	-	-	-	-	-	-	-	-	-	-	-	27	-	-
Total Reporting***	6	200	25	-	-	-	-	-	-	-	-	-	-	225	25	0.294

NOTE: Totals corrected for transients are on page B-2.

FBR: A fast breeder reactor (FBR) power plant cooled by sodium and operated at essentially atmospheric pressure.

* Dose values exactly equal to the values separating ranges are reported in the next higher range.

** These numbers are for the reactors no longer in commercial operation that report their doses separately (i.e., do not report their doses with other units).

APPENDIX C

PERSONNEL, TOTAL EFFECTIVE DOSE EQUIVALENT, AND POWER GENERATION SUMMARY

1969–2024

Sections 3.1 and 4.2 of the main document discuss the methods used to collect and calculate the information in this appendix.

PERSONNEL, TOTAL EFFECTIVE DOSE EQUIVALENT, AND POWER GENERATION SUMMARY, 1969–2024

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person- rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
ARKANSAS 1, 2 Docket 50-313, 50-368; DPR-51; NPF-6 1st commercial operation 12/74, 3/80 Type—PWRs Capacity—836, 988 MWe	1975	588.0	76.5	147	21	0.14	0.04
	1976	464.6	56.6	476	289	0.61	0.62
	1977	610.3	76.8	601	256	0.43	0.42
	1978	627.2	77.5	722	189	0.26	0.30
	1979	397.0	55.3	1,321	369	0.28	0.93
	1980	452.8	63.7	1,233	342	0.28	0.76
	1981	1,104.7	68.3	2,225	1,102	0.50	1.00
	1982	905.4	58.6	1,608	803	0.50	0.89
	1983	915.0	54.7	2,109	1,397	0.66	1.53
	1984	1,289.1	77.4	1,742	806	0.46	0.63
	1985	1,192.3	73.6	1,262	286	0.23	0.24
	1986	1,070.3	66.9	2,135	1,141	0.53	1.07
	1987	1,366.1	88.9	1,123	382	0.34	0.28
	1988	1,070.3	69.4	2,421	1,387	0.57	1.30
	1989	1,066.3	72.0	2,063	711	0.34	0.67
	1990	1,351.9	84.2	2,493	762	0.31	0.56
	1991	1,515.8	88.4	2,064	351	0.17	0.23
	1992	1,352.1	77.4	3,114	876	0.28	0.65
	1993	1,606.0	91.3	1,981	268	0.14	0.17
	1994	1,662.8	93.6	1,361	172	0.13	0.10
	1995	1,397.0	82.7	2,259	386	0.17	0.28
	1996	1,596.0	89.5	1,441	203	0.14	0.13
	1997	1,621.9	95.9	1,195	119	0.10	0.07
	1998	1,494.6	88.1	1,249	166,599	0.13	0.11
	1999	1,477.3	86.9	1,463	183,997	0.13	0.12
	2000	1,329.2	79.5	1,977	242,326	0.12	0.18
	2001	1,684.0	95.8	1,082	106,040	0.10	0.06
	2002	1,659.0	91.8	1,581	265,337	0.17	0.16
	2003	1,675.8	93.1	973	99,003	0.10	0.06
	2004	1,759.5	95.0	1,227	106,172	0.09	0.06
2005	1,560.0	84.5	2,335	475,784	0.20	0.30	
2006	1,739.8	95.0	1,184	143,296	0.12	0.08	
2007	1,769.3	96.0	1,387	105,310	0.08	0.06	
2008	1,614.8	89.7	1,791	196,047	0.11	0.12	
2009	1,733.7	95.5	1,139	102,732	0.09	0.06	
2010	1,716.6	93.7	1,388	99,376	0.07	0.06	
2011	1,621.9	90.5	1,526	116,884	0.08	0.07	
2012	1,764.5	96.2	931	43,908	0.05	0.02	
2013	1,366.6	74.3	1,098	50,041	0.05	0.04	
2014	1,654.6	92.3	1,372	71,561	0.05	0.04	
2015	1,582.0	87.5	1,881	136,727	0.07	0.09	
2016	1,535.7	84.0	1,674	111,105	0.07	0.07	
2017	1,451.4	83.4	1,757	86,504	0.05	0.06	
2018	1,456.8	81.8	1,970	136,374	0.07	0.09	
2019	1,553.8	85.3	1,459	84,085	0.06	0.05	
2020	1,720.4	94.1	1,151	56,708	0.05	0.03	
2021	1,547.5	86.9	1,787	134,669	0.08	0.09	
2022	1,634.7	88.9	1,279	86,621	0.07	0.05	
2023	1,709.8	94.4	1,018	71,024	0.07	0.04	
2024	1,666.4	92.2	1,376	102,181	0.07	0.06	
BEAVER VALLEY 1, 2 Docket 50-334, 50-412; DPR-66; NPF-73 1st commercial operation 10/76, 11/87 Type—PWRs Capacity—908, 905 MWe	1977	355.6	57.0	331	87	0.26	0.24
	1978	304.2	40.8	646	190	0.29	0.62
	1979	221.0	40.0	704	132	0.19	0.60
	1980	39.8	6.8	1,817	553	0.30	13.89
	1981	573.4	73.6	1,237	229	0.19	0.40
	1982	326.7	41.6	1,755	599	0.34	1.83
	1983	561.2	68.2	1,485	772	0.52	1.38
	1984	576.7	71.8	1,393	504	0.36	0.87
	1985	717.7	91.9	619	60	0.10	0.08
	1986	581.3	70.7	1,575	627	0.40	1.08
1987	684.1	83.8	1,282	210	0.16	0.31	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
BEAVER VALLEY 1, 2 (continued)	1988	1,386.1	87.4	1,764	530	0.30	0.38
	1989	1,017.4	69.6	2,349	1,378	0.59	1.35
	1990	1,271.0	85.3	1,675	348	0.21	0.27
	1991	1,267.5	78.6	1,689	495	0.29	0.39
	1992	1,441.9	89.1	1,414	289	0.20	0.20
	1993	1,157.9	73.1	2,087	621	0.30	0.54
	1994	1,514.6	88.6	487	44	0.09	0.03
	1995	1,389.2	83.1	1,536	453	0.29	0.33
	1996	1,269.0	76.5	1,688	449	0.27	0.35
	1997	1,159.3	72.1	1,391	306	0.22	0.26
	1998	523.1	33.5	700	59.311	0.08	0.11
	1999	1,353.7	85.9	841	99.461	0.12	0.07
	2000	1,378.7	87.3	1,730	337.867	0.20	0.25
	2001	1,500.8	92.3	1,202	184.361	0.15	0.12
	2002	1,548.0	95.4	1,048	90.479	0.09	0.06
	2003	1,437.0	88.4	1,623	277.168	0.17	0.19
	2004	1,593.1	96.3	1,270	156.509	0.12	0.10
	2005	1,590.4	96.7	978	79.055	0.08	0.05
	2006	1,385.6	84.0	2,174	370.146	0.17	0.27
	2007	1,664.1	96.0	955	86.595	0.09	0.05
	2008	1,670.2	94.4	991	83.394	0.08	0.05
	2009	1,599.3	89.6	1,504	224.516	0.15	0.14
	2010	1,714.2	95.6	750	49.983	0.07	0.03
	2011	1,705.5	95.1	831	72.206	0.09	0.04
	2012	1,622.6	90.4	1,272	125.166	0.10	0.08
	2013	1,687.4	93.3	746	41.712	0.06	0.02
2014	1,684.6	92.5	907	62.951	0.07	0.04	
2015	1,659.6	91.1	1,115	95.208	0.09	0.06	
2016	1,737.4	94.8	687	44.146	0.06	0.03	
2017	1,747.9	95.5	776	53.706	0.07	0.03	
2018	1,672.8	93.0	985	74.802	0.08	0.04	
2019	1,764.4	96.9	461	25.416	0.06	0.01	
2020	1,757.2	96.7	570	38.612	0.07	0.02	
2021	1,641.6	90.6	883	93.727	0.11	0.06	
2022	1,683.8	92.7	498	30.145	0.06	0.02	
2023	1,713.8	94.3	534	67.344	0.13	0.04	
2024	1,646.3	90.5	994	86.459	0.09	0.05	
BIG ROCK POINT ¹ Docket 50-155; DPR-6 1st commercial operation 3/63 Type—BWR Capacity—(67) MWe	1969	48.1	---	165	136	0.82	2.83
	1970	43.5	---	290	194	0.67	4.46
	1971	44.4	---	260	184	0.71	4.14
	1972	43.5	---	195	181	0.93	4.16
	1973	50.9	---	241	285	1.18	5.60
	1974	40.7	70.3	281	276	0.98	6.78
	1975	35.1	59.8	300	180	0.60	5.13
	1976	29.5	50.1	488	289	0.59	9.80
	1977	43.6	73.4	465	334	0.72	7.66
	1978	48.5	77.9	285	175	0.61	3.61
	1979	13.0	23.5	623	455	0.73	35.00
	1980	48.9	79.0	599	354	0.59	7.24
	1981	56.9	90.6	479	160	0.33	2.81
	1982	43.6	70.8	521	328	0.63	7.52
	1983	42.3	71.0	493	263	0.53	6.22
	1984	50.3	78.6	297	155	0.52	3.08
	1985	43.8	73.5	435	291	0.67	6.64
	1986	61.0	95.5	202	84	0.42	1.38
1987	45.3	71.0	251	222	0.88	4.90	
1988	46.1	72.8	303	170	0.56	3.69	
1989	50.2	79.0	418	177	0.42	3.53	
1990	51.3	77.2	351	232	0.66	4.52	
1991	59.1	85.2	435	226	0.52	3.82	
1992	32.7	54.5	496	277	0.56	8.47	
1993	51.2	79.4	419	152	0.36	2.97	

¹ Big Rock Point ceased operations in August 1997 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
BIG ROCK POINT¹ (continued)	1994	49.5	75.3	310	119	0.38	2.40
	1995	62.2	95.0	205	54	0.26	0.87
	1996	41.5	76.5	1,688	449	0.27	0.35
	1997	22.4	54.1	258	55	0.21	2.46
	1998	---	---	432	104.130	0.24	---
	1999	---	---	285	86.577	0.30	---
	2000	---	---	226	89.271	0.40	---
	2001	---	---	167	47.556	0.28	---
	2002	---	---	170	43.538	0.26	---
	2003	---	---	336	121.045	0.36	---
	2004	---	---	227	57.599	0.25	---
	2005	---	---	223	20.227	0.09	---
	2006	---	---	27	0.382	0.01	---
	2007	---	---	---	---	---	---
2008	---	---	---	---	---	---	
2009	---	---	---	---	---	---	
BRAIDWOOD 1, 2 Docket 50-456, 50-457; NPF-72, NPF-77 1st commercial operation 7/88, 10/88 Type—PWRs Capacity—1,166, 1,144 MWe	1989	1,381.8	75.4	1,460	296	0.20	0.21
	1990	1,740.2	84.1	1,081	186	0.17	0.11
	1991	1,377.2	68.9	1,641	550	0.34	0.40
	1992	1,885.9	89.0	1,059	228	0.22	0.12
	1993	1,899.3	86.9	1,043	273	0.26	0.14
	1994	1,666.1	77.2	1,237	298	0.24	0.18
	1995	1,914.7	85.4	1,134	236	0.21	0.12
	1996	1,854.9	82.1	1,356	334	0.25	0.18
	1997	1,863.3	85.4	1,693	321	0.19	0.17
	1998	1,979.1	88.9	1,869	259.236	0.14	0.13
	1999	2,161.6	95.8	1,153	145.976	0.13	0.07
	2000	2,142.8	94.9	1,562	194.126	0.12	0.09
	2001	2,186.4	95.8	881	100.570	0.11	0.05
	2002	2,284.0	96.8	975	90.716	0.09	0.04
	2003	2,279.9	95.6	1,572	244.860	0.16	0.11
	2004	2,277.8	97.3	986	94.942	0.10	0.04
	2005	2,253.7	96.6	926	88.084	0.10	0.04
	2006	2,234.1	95.0	1,624	199.168	0.12	0.09
	2007	2,244.0	96.0	1,258	98.040	0.08	0.04
	2008	2,252.5	96.3	1,235	103.180	0.08	0.05
	2009	2,195.0	93.8	1,397	142.066	0.10	0.06
	2010	2,111.9	94.0	870	63.856	0.07	0.03
	2011	2,257.5	96.8	1,071	70.165	0.07	0.03
	2012	2,141.0	92.1	1,818	167.655	0.09	0.08
2013	2,244.2	96.2	633	31.847	0.05	0.01	
2014	2,313.9	97.3	866	42.493	0.05	0.02	
2015	2,250.0	94.9	986	52.468	0.05	0.02	
2016	2,265.9	96.0	733	39.695	0.05	0.02	
2017	2,281.4	96.4	1,052	78.668	0.07	0.03	
2018	2,201.3	93.8	926	61.100	0.07	0.03	
2019	2,311.8	97.9	532	19.553	0.04	0.01	
2020	2,325.5	97.9	626	29.324	0.05	0.01	
2021	2,223.1	94.9	1,137	82.673	0.07	0.04	
2022	2,300.9	97.7	670	33.376	0.05	0.01	
2023	2,296.1	97.5	947	52.194	0.06	0.02	
2024	2,216.2	94.8	912	57.407	0.06	0.03	
BROWNS FERRY 1,² 2, 3 Docket 50-259, 50-260, 50-296; DPR-33, DPR-52, DPR-68 1st commercial operation 8/74, 3/75, 3/77 Type—BWRs Capacity—1,227, 1,208, 1,227 MWe	1975	161.7	17.8	2,743	347	0.13	2.15
	1976	337.6	26.9	2,530	232	0.09	0.69
	1977	1,327.5	73.7	1,985	876	0.44	0.66
	1978	1,992.1	73.5	2,479	1,776	0.72	0.89
	1979	2,393.0	79.1	2,869	1,593	0.56	0.67
	1980	2,182.1	73.6	2,838	1,768	0.62	0.81
	1981	2,132.9	69.5	3,497	2,398	0.69	1.12
1982	2,025.4	67.6	3,360	2,230	0.66	1.10	

¹ Big Rock Point ceased operations in August 1997 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

² All three Browns Ferry units were placed on administrative hold in 1985. Units 2 and 3 were restarted in 1991 and 1995, respectively. Browns Ferry Unit 1 was restarted during 2007.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
BROWNS FERRY 1, 2, 3 (continued)	1983	1,641.0	54.3	3,410	3,375	0.99	2.06
	1984	1,431.9	54.2	3,172	1,954	0.62	1.36
	1985	368.2	11.9	2,854	1,164	0.41	3.16
	1986	---	---	3,074	1,054	0.34	---
	1987	---	---	3,184	1,186	0.37	---
	1988	---	---	3,390	1,158	0.34	---
	1989	---	---	2,707	657	0.24	---
	1990	---	---	2,725	1,311	0.48	---
	1991	445.0	17.7	1,831	356	0.19	0.80
	1992	979.9	32.2	2,670	519	0.19	0.53
	1993	675.1	66.8	3,594	870	0.24	1.29
	1994	860.2	83.4	3,362	861	0.26	1.00
	1995	1,165.8	98.6	2,567	413	0.16	0.35
	1996	1,972.8	93.0	1,904	389	0.20	0.20
	1997	1,928.8	90.2	2,268	522	0.23	0.27
	1998	1,961.9	87.7	1,612	367.716	0.23	0.19
	1999	2,091.0	85.1	1,741	446.941	0.26	0.21
	2000	2,143.8	97.1	1,657	333.215	0.20	0.16
	2001	2,074.0	90.7	1,525	293.879	0.19	0.14
	2002	2,069.0	95.4	1,977	357.573	0.18	0.17
	2003	2,014.5	93.6	2,608	602.535	0.23	0.30
	2004	2,104.7	95.5	3,242	672.714	0.21	0.32
	2005	2,044.2	94.3	3,743	636.282	0.17	0.31
	2006	2,040.1	94.0	3,618	641.154	0.18	0.31
	2007	2,420.2	90.0	3,027	554.314	0.18	0.23
	2008	2,837.4	88.5	2,633	482.127	0.18	0.17
2009	2,933.1	91.2	2,188	348.257	0.16	0.12	
2010	2,828.0	92.3	2,825	556.749	0.20	0.20	
2011	2,845.8	87.9	2,079	296.642	0.14	0.10	
2012	2,969.2	91.2	3,139	464.325	0.15	0.16	
2013	3,050.0	93.5	2,543	382.609	0.15	0.13	
2014	3,052.3	94.0	2,401	389.854	0.16	0.13	
2015	3,158.6	96.4	2,282	288.063	0.13	0.09	
2016	2,992.6	93.3	3,077	404.585	0.13	0.14	
2017	3,179.0	96.9	2,819	350.062	0.12	0.11	
2018	2,930.8	90.5	3,389	498.650	0.15	0.17	
2019	3,381.3	93.8	2,617	362.997	0.14	0.11	
2020	3,284.8	91.8	2,729	324.007	0.12	0.10	
2021	3,544.9	95.1	2,852	310.720	0.11	0.09	
2022	3,347.7	92.8	2,491	261.523	0.10	0.08	
2023	3,518.9	96.0	2,170	219.547	0.10	0.06	
2024	3,347.2	92.2	2,654	249.988	0.09	0.07	
BRUNSWICK 1, 2 Docket 50-324, 50-325; DPR-62, DPR-71 1st commercial operation 3/77, 11/75 Type—BWRs Capacity—938, 932 MWe	1976	297.2	56.0	1,265	326	0.26	1.10
	1977	291.1	55.7	1,512	1,120	0.74	3.85
	1978	1,173.1	83.7	1,458	1,004	0.69	0.86
	1979	810.0	60.1	2,891	2,602	0.90	3.21
	1980	687.2	52.2	3,788	3,870	1.02	5.63
	1981	925.2	56.9	3,854	2,638	0.68	2.85
	1982	540.3	50.3	4,957	3,792	0.76	7.02
	1983	636.7	44.3	5,602	3,475	0.62	5.46
	1984	761.3	51.5	5,046	3,260	0.65	4.28
	1985	822.2	58.4	4,057	2,804	0.69	3.41
	1986	1,051.3	69.1	3,370	1,909	0.57	1.82
	1987	1,152.4	80.6	3,052	1,419	0.46	1.23
	1988	990.8	70.1	2,648	1,747	0.66	1.76
	1989	990.9	65.8	3,844	1,786	0.46	1.80
1990	991.6	67.8	3,182	1,548	0.49	1.56	
1991	952.8	64.5	2,586	778	0.30	0.82	
1992	375.9	27.9	2,690	623	0.23	1.66	
1993	470.0	33.8	2,921	872	0.30	1.86	
1994	1,268.4	83.0	3,049	999	0.33	0.79	
1995	1,411.7	92.9	2,657	683	0.26	0.48	
1996	1,261.1	85.9	2,784	716	0.26	0.57	

² All three Browns Ferry units were placed on administrative hold in 1985. Units 2 and 3 were restarted in 1991 and 1995, respectively. Browns Ferry Unit 1 was restarted during 2007.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
BRUNSWICK 1, 2 (continued)	1997	1,474.0	94.1	2,212	411	0.19	0.28
	1998	1,521.0	94.3	2,005	395.526	0.20	0.26
	1999	1,494.7	92.8	1,818	418.417	0.23	0.28
	2000	1,571.2	95.6	1,648	321.785	0.20	0.20
	2001	1,576.0	95.8	1,623	302.812	0.19	0.19
	2002	1,568.0	94.5	1,743	275.534	0.16	0.18
	2003	1,676.9	95.6	1,794	248.622	0.14	0.15
	2004	1,690.6	94.5	2,140	244.577	0.11	0.14
	2005	1,654.9	92.2	1,944	305.978	0.16	0.18
	2006	1,661.2	90.0	2,103	280.465	0.13	0.17
	2007	1,714.9	92.0	2,186	290.093	0.13	0.17
	2008	1,694.5	91.7	2,546	354.212	0.14	0.21
	2009	1,647.9	89.6	2,683	350.347	0.13	0.21
	2010	1,690.7	91.3	3,227	407.424	0.13	0.24
	2011	1,662.7	90.5	2,778	381.057	0.14	0.23
	2012	1,629.3	89.4	3,368	369.873	0.11	0.23
	2013	1,650.6	89.9	3,978	361.148	0.09	0.22
	2014	1,750.6	94.5	3,498	261.897	0.07	0.15
	2015	1,745.6	93.7	2,660	230.570	0.09	0.13
	2016	1,756.7	95.7	1,756	167.236	0.10	0.10
	2017	1,754.6	96.0	1,748	216.013	0.12	0.12
	2018	1,669.7	93.2	1,543	183.275	0.12	0.11
	2019	1,680.0	91.5	1,673	222.735	0.13	0.13
	2020	1,713.0	93.0	1,471	159.738	0.11	0.09
2021	1,765.9	94.5	1,396	178.105	0.13	0.10	
2022	1,756.5	95.3	1,441	187.807	0.13	0.11	
2023	1,787.5	96.0	1,558	263.343	0.17	0.15	
2024	1,778.9	94.6	1,447	178.531	0.12	0.10	
BYRON 1, 2 Docket 50-454, 50-455; NPF-37, NPF-66 1st commercial operation 9/85, 8/87 Type—PWRs Capacity—1,157, 1,127 MWe	1986	894.5	88.6	1,081	76	0.07	0.08
	1987	650.9	70.9	1,826	769	0.42	1.18
	1988	1,534.7	86.3	1,222	459	0.38	0.30
	1989	1,812.6	90.2	1,109	172	0.16	0.09
	1990	1,567.3	78.8	1,396	434	0.31	0.28
	1991	1,816.3	89.9	1,077	268	0.25	0.15
	1992	1,888.4	90.1	1,021	199	0.19	0.11
	1993	1,785.6	83.5	1,370	432	0.32	0.24
	1994	1,953.3	90.7	962	280	0.29	0.14
	1995	1,900.6	85.5	1,107	306	0.28	0.16
	1996	1,758.4	79.3	1,610	455	0.28	0.26
	1997	1,856.7	86.6	1,546	241	0.16	0.13
	1998	1,869.8	85.9	1,809	275.221	0.15	0.15
	1999	2,064.2	92.3	1,478	239.102	0.16	0.12
	2000	2,196.9	97.4	959	193.871	0.20	0.09
	2001	2,301.5	97.8	719	59.451	0.08	0.03
	2002	2,205.0	93.8	1,287	195.013	0.15	0.09
	2003	2,294.8	97.2	824	87.129	0.11	0.04
	2004	2,277.4	97.7	906	89.147	0.10	0.04
	2005	2,175.6	94.2	1,542	199.812	0.13	0.09
	2006	2,223.3	95.0	1,163	134.497	0.12	0.06
	2007	2,152.1	93.0	1,311	128.797	0.10	0.06
	2008	2,203.7	94.6	1,483	140.809	0.09	0.06
	2009	2,250.9	96.7	985	83.443	0.08	0.04
2010	2,266.6	97.4	922	56.425	0.06	0.02	
2011	2,077.9	91.0	1,849	244.104	0.13	0.12	
2012	2,085.4	94.6	924	50.973	0.06	0.02	
2013	2,231.4	96.8	1,002	57.708	0.06	0.03	
2014	2,197.8	94.2	1,184	80.774	0.07	0.04	
2015	2,222.8	96.8	878	42.935	0.05	0.02	
2016	2,237.5	96.0	884	54.012	0.06	0.02	
2017	2,186.4	93.7	1,280	87.846	0.07	0.04	
2018	2,288.9	97.9	615	25.155	0.04	0.01	
2019	2,296.6	97.9	693	36.322	0.05	0.02	
2020	2,228.9	95.7	972	54.661	0.06	0.02	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
BYRON 1, 2 (continued)	2021	2,279.6	97.6	509	21.402	0.04	0.01
	2022	2,253.6	96.8	865	51.43	0.06	0.02
	2023	2,222.1	95.2	943	56.179	0.06	0.03
	2024	2,259.6	97.2	625	26.734	0.04	0.01
CALLAWAY 1 Docket 50-483; NPF-30 1st commercial operation 12/84 Type—PWR Capacity—1,190 MWe	1985	967.4	90.0	964	36	0.04	0.04
	1986	865.2	81.3	1,052	225	0.21	0.26
	1987	759.0	71.1	1,082	393	0.36	0.52
	1988	1,069.2	93.4	353	27	0.08	0.03
	1989	1,000.3	85.4	1,055	283	0.27	0.28
	1990	960.7	84.1	1,134	442	0.39	0.46
	1991	1,193.1	99.7	280	21	0.08	0.02
	1992	967.5	83.0	1,133	336	0.30	0.35
	1993	1,002.9	86.4	1,126	225	0.20	0.22
	1994	1,196.4	100.0	191	14	0.07	0.01
	1995	989.6	84.7	1,062	187	0.18	0.19
	1996	1,066.0	90.5	980	248	0.25	0.23
	1997	1,022.2	100.0	248	12	0.05	0.01
	1998	972.2	91.3	929	200.729	0.22	0.21
	1999	981.3	88.7	1,098	320.554	0.29	0.33
	2000	1,137.5	99.8	244	16.058	0.07	0.01
	2001	954.5	86.7	873	106.782	0.12	0.11
	2002	955.0	86.2	983	95.648	0.10	0.10
	2003	1,104.3	96.2	252	8.297	0.03	0.01
	2004	892.8	78.9	1,124	120.621	0.11	0.14
	2005	913.2	80.7	1,600	222.629	0.14	0.24
	2006	1,152.8	95.0	225	6.308	0.03	0.01
	2007	1,069.7	89.0	1,079	73.236	0.07	0.07
	2008	1,067.6	89.8	729	45.738	0.06	0.04
	2009	1,170.3	97.6	164	4.821	0.03	---
	2010	1,029.9	84.8	800	58.735	0.07	0.06
2011	1,071.7	88.9	838	80.215	0.10	0.07	
2012	1,220.2	100.0	169	4.525	0.03	---	
2013	959.9	80.9	680	43.123	0.06	0.04	
2014	1,061.3	88.0	649	37.173	0.06	0.04	
2015	1,192.2	99.1	96	3.128	0.03	---	
2016	1,078.3	89.8	641	46.770	0.07	0.04	
2017	951.9	80.3	507	23.713	0.05	0.02	
2018	1,216.6	100.0	84	3.211	0.04	---	
2019	1,053.4	87.3	436	37.630	0.09	0.04	
2020	890.4	74.5	388	20.082	0.05	0.02	
2021	493.8	41.5	77	3.32	0.04	0.01	
2022	1,013.9	84.2	554	38.17	0.07	0.04	
2023	1,049.7	87.2	383	18.353	0.05	0.02	
2024	1,198.6	99.0	107	4.031	0.04	0.00	
CALVERT CLIFFS 1, 2 Docket 50-317, 50-318; DPR-53, DPR-69 1st commercial operation 5/75, 4/77 Type—PWRs Capacity—877, 855 MWe	1976	753.4	95.2	507	74	0.15	0.10
	1977	583.0	72.1	2,265	547	0.24	0.94
	1978	1,188.5	75.8	1,391	500	0.36	0.42
	1979	1,161.0	74.0	1,428	805	0.56	0.69
	1980	1,309.9	84.1	1,496	677	0.45	0.52
	1981	1,379.7	83.1	1,555	607	0.39	0.44
	1982	1,238.3	73.7	1,805	1,057	0.59	0.85
	1983	1,397.2	81.6	1,915	668	0.35	0.48
	1984	1,389.4	79.3	1,369	479	0.35	0.34
	1985	1,189.8	68.4	1,598	694	0.43	0.58
	1986	1,530.0	87.2	1,296	347	0.27	0.23
	1987	1,207.3	71.8	1,384	412	0.30	0.34
	1988	1,397.7	81.0	1,296	291	0.22	0.21
	1989	333.6	20.1	1,786	346	0.19	1.04
	1990	161.1	11.0	2,019	304	0.15	1.89
	1991	1,085.0	64.7	1,974	132	0.07	0.12
	1992	1,271.2	73.9	1,979	330	0.17	0.26
1993	1,462.1	83.9	1,462	405	0.28	0.28	
1994	1,342.1	79.4	1,482	454	0.31	0.34	
1995	1,542.8	89.9	1,203	235	0.20	0.15	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
CALVERT CLIFFS 1, 2 (continued)	1996	1,438.5	82.4	1,167	239	0.20	0.17
	1997	1,499.6	89.1	1,091	229	0.21	0.15
	1998	1,523.1	89.3	1,042	186.887	0.18	0.12
	1999	1,521.4	90.1	1,134	191.778	0.17	0.13
	2000	1,575.7	92.7	912	134.689	0.15	0.09
	2001	1,554.7	91.7	895	166.864	0.19	0.11
	2002	1,380.0	81.7	1,582	245.075	0.16	0.18
	2003	1,558.4	90.9	1,671	265.164	0.16	0.17
	2004	1,653.7	95.7	1,205	143.944	0.12	0.09
	2005	1,678.1	97.2	942	168.390	0.18	0.10
	2006	1,581.8	92.0	1,215	203.790	0.17	0.13
	2007	1,641.6	95.0	1,191	153.335	0.13	0.09
	2008	1,670.7	97.4	745	74.149	0.10	0.04
	2009	1,660.9	96.6	891	95.756	0.11	0.06
	2010	1,597.3	93.5	834	128.581	0.15	0.08
	2011	1,635.9	95.7	703	95.233	0.14	0.06
	2012	1,545.6	89.9	725	115.525	0.16	0.07
	2013	1,632.6	94.0	580	61.079	0.11	0.04
	2014	1,638.3	94.9	586	62.065	0.11	0.04
	2015	1,672.4	95.6	583	45.624	0.08	0.03
	2016	1,685.6	96.3	904	85.891	0.10	0.05
	2017	1,725.0	97.2	686	49.283	0.07	0.03
	2018	1,711.0	96.5	875	56.494	0.06	0.03
	2019	1,713.8	96.5	837	59.246	0.07	0.03
2020	1,721.4	96.7	716	54.514	0.08	0.03	
2021	1,715.4	96.8	751	40.841	0.05	0.02	
2022	1,688.6	96.3	755	55.969	0.07	0.03	
2023	1,710.5	96.9	707	52.076	0.07	0.03	
2024	1,676.2	96.3	662	52.728	0.08	0.03	
CATAWBA 1, 2 Docket 50-413, 50-414; NPF-35, NPF-52 1st commercial operation 6/85, 8/86 Type—PWRs Capacity—1,150, 1,150 MWe	1986	638.9	49.9	1,724	286	0.17	0.45
	1987	1,651.2	75.9	1,865	449	0.24	0.27
	1988	1,675.2	77.2	2,009	556	0.28	0.33
	1989	1,733.6	79.5	1,660	334	0.20	0.19
	1990	1,616.3	70.8	2,174	809	0.37	0.50
	1991	1,691.5	74.6	1,871	462	0.25	0.27
	1992	1,962.8	83.9	1,515	414	0.27	0.21
	1993	1,896.1	81.5	1,564	396	0.25	0.21
	1994	2,105.2	90.2	1,268	207	0.16	0.10
	1995	2,011.9	85.3	1,892	462	0.24	0.23
	1996	1,879.1	80.5	1,588	302	0.19	0.16
	1997	2,028.2	89.3	1,561	266	0.17	0.13
	1998	2,006.4	89.6	1,123	162.068	0.14	0.08
	1999	2,046.7	90.2	1,024	118.662	0.12	0.06
	2000	2,038.3	90.3	1,185	186.532	0.16	0.09
	2001	2,119.9	92.9	960	116.241	0.12	0.05
	2002	2,238.0	97.2	884	81.325	0.09	0.04
	2003	1,991.8	89.2	1,409	210.617	0.15	0.11
	2004	2,111.4	93.0	1,123	122.831	0.11	0.06
	2005	2,194.5	96.0	1,019	83.679	0.08	0.04
	2006	1,928.6	85.0	1,792	212.570	0.12	0.11
	2007	2,102.5	92.0	1,399	144.218	0.10	0.07
	2008	2,160.3	93.5	1,110	85.080	0.08	0.04
	2009	2,044.8	89.1	1,385	169.409	0.12	0.08
2010	2,164.8	94.8	1,045	97.010	0.09	0.04	
2011	2,144.2	93.9	961	52.321	0.05	0.02	
2012	2,029.7	88.8	1,157	94.734	0.08	0.05	
2013	2,187.9	95.5	1,053	82.906	0.08	0.04	
2014	2,136.0	93.3	996	50.777	0.05	0.02	
2015	2,098.6	92.2	1,299	97.678	0.08	0.05	
2016	2,232.7	96.1	1,000	77.097	0.08	0.03	
2017	2,249.6	96.8	642	32.236	0.05	0.01	
2018	2,143.8	93.0	1,211	87.302	0.07	0.04	
2019	2,236.7	96.7	886	68.370	0.08	0.03	
2020	2,209.7	95.6	742	38.669	0.05	0.02	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
CATAWBA 1, 2 (continued)	2021	2,122.2	92.6	1,037	112.875	0.11	0.05
	2022	2,164.7	93.5	792	89.874	0.11	0.04
	2023	2,187.8	94.7	742	54.066	0.07	0.02
	2024	2,102.2	92.2	878	56.258	0.06	0.03
CLINTON Docket 50-461; NPF-62 1st commercial operation 11/87 Type—BWR Capacity—1,022 MWe	1988	701.3	84.2	769	130	0.17	0.19
	1989	348.3	48.5	1,196	372	0.31	1.07
	1990	435.8	55.1	1,390	553	0.40	1.27
	1991	722.7	80.8	1,010	233	0.23	0.32
	1992	589.7	68.6	1,195	431	0.36	0.73
	1993	701.5	79.6	1,253	498	0.40	0.71
	1994	883.3	94.8	409	63	0.15	0.07
	1995	731.1	83.0	1,182	316	0.27	0.43
	1996	634.7	66.7	1,154	350	0.30	0.55
	1997	---	---	738	172	0.23	---
	1998	---	---	866	144.140	0.17	---
	1999	537.0	63.5	637	87.489	0.14	0.16
	2000	784.2	87.8	1,248	253.382	0.20	0.32
	2001	896.8	98.5	329	33.770	0.10	0.04
	2002	872.0	90.5	1,418	208.094	0.15	0.24
	2003	990.5	99.1	372	57.118	0.15	0.06
	2004	910.8	92.6	1,622	282.833	0.17	0.31
	2005	989.1	97.4	298	36.019	0.12	0.04
	2006	939.9	92.0	1,649	295.720	0.18	0.32
	2007	1,049.2	100.0	310	30.618	0.10	0.03
	2008	973.0	93.3	1,381	205.086	0.15	0.21
	2009	1,014.6	96.6	435	48.009	0.11	0.05
	2010	983.1	93.5	1,540	219.954	0.14	0.22
	2011	989.9	94.4	1,683	228.447	0.14	0.23
2012	1,067.1	100.0	215	14.250	0.07	0.01	
2013	950.2	91.9	1,182	128.781	0.11	0.14	
2014	1,038.6	98.8	186	17.866	0.10	0.02	
2015	922.9	94.1	1,197	97.634	0.08	0.11	
2016	1,017.8	97.2	480	33.218	0.07	0.03	
2017	954.1	91.9	1,341	154.579	0.12	0.16	
2018	958.7	92.3	1,137	77.813	0.07	0.08	
2019	957.6	91.2	1,372	158.832	0.12	0.17	
2020	1,080.2	100.0	201	13.216	0.07	0.01	
2021	959.0	92.0	1,011	108.836	0.11	0.11	
2022	1,053.0	99.2	354	27.805	0.08	0.03	
2023	919.0	88.5	1,351	160.062	0.12	0.17	
2024	1,090.1	100.0	295	22.806	0.08	0.02	
COLUMBIA GENERATING³ Docket 50-397; NPF-21 1st commercial operation 12/84 Type—BWR Capacity—1,131 MWe	1985	616.0	87.6	755	119	0.16	0.19
	1986	616.0	74.4	1,013	222	0.22	0.36
	1987	639.0	70.8	1,201	406	0.34	0.64
	1988	707.7	71.8	1,050	353	0.34	0.50
	1989	727.2	78.3	1,299	492	0.38	0.68
	1990	684.7	67.5	1,348	536	0.40	0.78
	1991	508.5	50.3	1,088	387	0.36	0.76
	1992	682.3	65.6	1,489	612	0.41	0.90
	1993	849.6	79.5	1,385	469	0.34	0.55
	1994	803.8	75.2	1,870	866	0.46	1.08
	1995	824.7	83.8	1,694	456	0.27	0.55
	1996	662.9	82.2	1,453	373	0.26	0.56
	1997	697.0	72.7	1,218	251	0.21	0.36
	1998	789.5	75.3	1,220	286.020	0.23	0.36
	1999	694.7	70.0	1,022	155.109	0.15	0.22
	2000	979.6	96.3	706	53.152	0.08	0.05
2001	939.3	88.1	1,515	226.675	0.15	0.24	
2002	1,023.0	97.5	647	46.650	0.07	0.05	
2003	866.9	81.8	1,618	205.225	0.13	0.24	
2004	1,022.5	94.6	716	66.130	0.09	0.06	
2005	938.3	87.3	1,718	325.025	0.19	0.35	
2006	1,064.9	98.0	623	55.817	0.09	0.05	
2007	925.6	87.0	2,147	306.443	0.14	0.33	
2008	1,055.3	98.3	715	54.957	0.08	0.05	

³ Energy Northwest changed the name of Washington Nuclear 2 to Columbia Generating Station in 2001.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
COLUMBIA GENERATING³ (continued)	2009	757.2	76.3	1,958	305.163	0.16	0.40
	2010	1,054.9	100.0	733	54.712	0.07	0.05
	2011	548.7	54.4	2,309	335.657	0.15	0.61
	2012	1,062.6	97.6	1,155	45.462	0.04	0.04
	2013	965.9	88.4	1,787	223.809	0.13	0.23
	2014	1,084.2	100.0	775	33.771	0.04	0.03
	2015	931.6	87.0	2,088	289.135	0.14	0.31
	2016	1,098.8	97.8	586	26.825	0.05	0.02
	2017	927.9	87.7	1,724	180.255	0.10	0.19
	2018	1,108.3	98.6	494	43.078	0.09	0.04
	2019	1,012.2	89.7	1,389	190.694	0.14	0.19
	2020	1,075.7	100.0	250	18.453	0.07	0.02
	2021	971.6	87.6	1,573	312.807	0.20	0.32
	2022	1,124.6	100.0	623	28.862	0.05	0.03
2023	959.8	88.4	1,417	223.459	0.16	0.23	
2024	1,134.7	100.0	637	24.808	0.04	0.02	
COMANCHE PEAK 1, 2 Docket 50-445, 50-446; NPF-87, NPF-89 1st commercial operation 8/90, 8/93 Type—PWR Capacity—1,205, 1,195 MWe	1991	644.4	82.2	985	148	0.15	0.23
	1992	830.8	84.0	1,128	188	0.17	0.23
	1993	853.8	81.2	945	109	0.12	0.13
	1994	1,750.0	93.7	970	90	0.09	0.05
	1995	2,022.6	92.5	951	179	0.19	0.09
	1996	1,804.8	81.4	1,462	288	0.20	0.16
	1997	2,002.4	93.4	870	146	0.17	0.07
	1998	2,037.8	94.9	967	232.026	0.24	0.11
	1999	1,981.5	90.9	1,316	251.276	0.19	0.13
	2000	2,104.7	95.3	759	77.679	0.10	0.04
	2001	2,085.9	94.7	853	114.968	0.13	0.06
	2002	1,887.0	86.9	1,106	225.317	0.20	0.12
	2003	2,020.6	91.6	639	66.313	0.10	0.03
	2004	2,169.5	95.1	864	135.388	0.16	0.06
	2005	2,099.6	91.5	1,365	242.481	0.18	0.12
	2006	2,271.3	97.0	686	59.959	0.09	0.03
	2007	2,151.3	93.0	1,616	219.799	0.14	0.10
	2008	2,189.7	94.3	1,037	168.836	0.16	0.08
	2009	2,299.3	96.7	938	51.420	0.05	0.02
	2010	2,316.8	96.3	1,037	70.807	0.07	0.03
	2011	2,216.8	92.6	1,580	154.716	0.10	0.07
	2012	2,279.9	94.6	1,001	66.742	0.07	0.03
	2013	2,353.5	96.8	745	45.237	0.06	0.02
	2014	2,141.7	88.6	1,123	139.246	0.12	0.07
2015	2,294.6	94.7	641	42.889	0.07	0.02	
2016	2,340.7	96.0	624	36.648	0.06	0.02	
2017	1,947.3	81.5	1,052	120.996	0.12	0.06	
2018	2,346.3	96.5	554	41.677	0.08	0.02	
2019	2,219.0	93.0	790	58.051	0.07	0.03	
2020	2,240.3	93.0	651	45.754	0.07	0.02	
2021	2,230.6	92.7	786	139.957	0.18	0.06	
2022	2,263.1	94.5	620	37.516	0.06	0.02	
2023	2,172.4	91.5	734	75.828	0.10	0.03	
2024	2,254.6	94.4	708	49.712	0.07	0.02	
COOK 1, 2 Docket 50-315, 50-316; DPR-58, DPR-74 1st commercial operation 8/75, 7/78 Type—PWRs Capacity—1,048, 1,184 MWe	1976	807.4	83.1	395	116	0.29	0.14
	1977	573.0	76.1	802	300	0.37	0.52
	1978	744.8	73.6	778	336	0.43	0.45
	1979	1,373.0	65.3	1,445	718	0.50	0.52
	1980	1,552.4	74.1	1,345	493	0.37	0.32
	1981	1,557.3	73.4	1,341	656	0.49	0.42
	1982	1,461.6	69.8	1,527	699	0.46	0.48
	1983	1,456.5	71.2	1,418	658	0.46	0.45
	1984	1,526.0	75.3	1,559	762	0.49	0.50
	1985	925.4	47.6	1,984	945	0.48	1.02
	1986	1,307.1	73.4	1,774	745	0.42	0.57
	1987	1,199.5	70.2	1,696	666	0.39	0.56
	1988	1,160.4	63.5	2,266	867	0.38	0.75
	1989	1,433.1	72.8	1,575	493	0.31	0.34
1990	1,318.5	67.9	1,851	580	0.31	0.44	

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Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
COOK 1, 2 (continued)	1991	1,837.4	90.2	815	69	0.08	0.04
	1992	760.9	50.8	1,954	492	0.25	0.65
	1993	1,927.7	98.5	587	44	0.07	0.02
	1994	1,105.2	65.2	1,748	479	0.27	0.43
	1995	1,656.0	82.1	1,310	203	0.15	0.12
	1996	1,938.9	92.7	1,114	214	0.19	0.11
	1997	1,189.7	59.7	1,864	550	0.30	0.46
	1998	---	---	1,155	104.638	0.09	---
	1999	---	---	1,662	171.479	0.10	---
	2000	560.1	28.1	2,506	337.584	0.13	0.60
	2001	1,794.3	89.2	423	27.290	0.06	0.02
	2002	1,756.0	87.3	1,624	278.001	0.17	0.16
	2003	1,557.6	75.7	1,408	209.526	0.15	0.13
	2004	1,909.2	91.4	1,015	156.213	0.15	0.08
	2005	1,989.0	95.0	852	91.192	0.11	0.05
	2006	1,790.5	86.0	1,780	312.214	0.18	0.17
	2007	1,983.7	93.0	1,310	238.829	0.18	0.12
	2008	1,711.8	80.8	971	76.460	0.08	0.04
	2009	950.5	45.3	693	40.007	0.06	0.04
	2010	1,786.1	86.7	1,116	83.276	0.07	0.05
	2011	1,981.5	94.2	842	57.169	0.07	0.03
	2012	2,017.5	94.7	754	49.112	0.07	0.02
	2013	1,858.5	87.1	1,187	103.772	0.09	0.06
	2014	2,012.7	94.3	727	53.798	0.07	0.03
2015	1,885.7	87.4	626	29.827	0.05	0.02	
2016	1,753.5	82.3	1,123	93.715	0.08	0.05	
2017	2,008.2	89.7	830	57.999	0.07	0.03	
2018	2,010.4	90.5	825	40.511	0.05	0.02	
2019	1,844.7	84.4	1,071	82.888	0.08	0.04	
2020	2,085.5	94.2	494	29.391	0.06	0.01	
2021	2,050.3	92.9	541	34.791	0.06	0.02	
2022	1,897.8	86.1	1,077	120.343	0.11	0.06	
2023	2,128.1	95.8	626	29.717	0.05	0.01	
2024	2,052.5	93.5	846	82.416	0.10	0.04	
COOPER STATION Docket 50-298; DPR-46 1st commercial operation 7/74 Type—BWR Capacity—765 MWe	1975	456.4	83.6	579	117	0.20	0.26
	1976	433.3	75.5	763	350	0.46	0.81
	1977	538.2	86.2	315	198	0.63	0.37
	1978	576.0	91.0	297	158	0.53	0.27
	1979	591.0	87.6	426	221	0.52	0.37
	1980	448.3	71.2	785	859	1.09	1.92
	1981	457.1	71.2	935	579	0.62	1.27
	1982	622.3	84.6	743	542	0.73	0.87
	1983	396.6	63.3	1,383	1,293	0.93	3.26
	1984	411.9	67.2	1,598	799	0.50	1.94
	1985	127.3	21.5	1,980	1,333	0.67	10.47
	1986	480.0	74.7	895	320	0.36	0.67
	1987	652.3	96.2	549	103	0.19	0.16
	1988	493.4	67.9	942	251	0.27	0.51
	1989	564.3	76.2	1,202	343	0.29	0.61
	1990	602.0	79.4	1,174	379	0.32	0.63
	1991	566.3	78.8	1,099	405	0.37	0.72
	1992	731.0	96.4	463	84	0.18	0.11
	1993	436.1	58.8	1,130	391	0.35	0.90
	1994	262.2	35.1	333	79	0.24	0.30
1995	486.5	66.8	1,095	228	0.21	0.47	
1996	742.1	97.9	468	48	0.10	0.06	
1997	622.8	84.4	1,125	174	0.15	0.28	
1998	555.9	75.9	977	181.858	0.19	0.33	
1999	743.2	98.1	318	47.815	0.15	0.06	
2000	539.2	74.2	963	199.589	0.21	0.37	
2001	592.7	80.9	1,309	168.665	0.13	0.28	
2002	719.0	98.6	362	38.739	0.11	0.05	
2003	511.4	74.1	882	135.249	0.15	0.26	
2004	702.6	94.7	481	47.064	0.10	0.07	
2005	670.8	89.4	1,266	275.652	0.22	0.41	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
COOPER STATION (continued)	2006	674.7	90.0	1,265	270.135	0.21	0.40
	2007	761.6	99.0	730	49.902	0.07	0.07
	2008	679.0	89.9	1,715	359.926	0.21	0.53
	2009	654.6	86.6	1,638	254.032	0.16	0.39
	2010	775.4	100.0	773	61.303	0.08	0.08
	2011	658.5	84.8	1,737	349.247	0.20	0.53
	2012	662.9	87.6	1,800	279.301	0.16	0.42
	2013	776.5	100.0	548	35.870	0.07	0.05
	2014	675.3	88.8	1,274	202.670	0.16	0.30
	2015	776.1	99.4	408	27.634	0.07	0.04
	2016	676.1	88.2	1,291	195.518	0.15	0.29
	2017	789.1	100.0	394	30.193	0.08	0.04
	2018	642.9	84.5	996	132.984	0.13	0.21
	2019	793.6	100.0	286	14.463	0.05	0.02
2020	706.5	91.5	924	93.227	0.10	0.13	
2021	785.5	100.0	313	15.685	0.05	0.02	
2022	641.4	87.7	1,057	132.961	0.13	0.21	
2023	790.6	100.0	310	17.111	0.06	0.02	
2024	694.0	90.4	1,053	114.672	0.11	0.17	
CRYSTAL RIVER 3⁴ Docket 50-302; DPR-72 1st commercial operation 12/76 Type—PWR Capacity—(860) MWe	1978	311.5	41.4	643	321	0.50	1.03
	1979	453.0	58.9	1,150	495	0.43	1.09
	1980	404.1	53.2	1,053	625	0.59	1.55
	1981	490.4	62.2	1,120	408	0.36	0.83
	1982	589.8	76.0	780	177	0.23	0.30
	1983	452.1	58.8	1,720	552	0.32	1.22
	1984	774.2	94.5	549	49	0.09	0.06
	1985	344.2	47.6	1,976	689	0.35	2.00
	1986	319.5	41.8	1,057	472	0.45	1.48
	1987	436.0	60.9	1,384	488	0.35	1.12
	1988	690.2	84.0	569	64	0.11	0.09
	1989	352.8	48.8	880	234	0.27	0.66
	1990	497.8	63.8	1,441	476	0.33	0.96
	1991	654.6	82.0	821	116	0.14	0.18
	1992	632.1	76.1	1,403	424	0.30	0.67
	1993	722.4	85.0	683	60	0.09	0.08
	1994	711.9	84.3	1,079	228	0.21	0.32
	1995	866.3	100.0	209	8	0.04	0.01
	1996	290.8	37.7	1,192	353	0.30	1.21
	1997	---	---	973	179	0.18	---
	1998	739.9	90.3	313	19.298	0.06	0.03
	1999	727.5	87.8	1,324	251.077	0.19	0.35
	2000	819.4	97.6	257	14.649	0.06	0.02
	2001	741.6	89.2	902	147.946	0.16	0.20
	2002	831.0	99.4	128	5.039	0.04	0.01
	2003	749.0	90.8	961	126.554	0.13	0.17
	2004	831.4	98.1	131	4.044	0.03	---
2005	723.0	88.5	939	122.608	0.13	0.17	
2006	793.8	95.0	138	4.474	0.03	0.01	
2007	761.7	91.0	1,135	184.554	0.16	0.24	
2008	796.9	93.7	282	16.110	0.06	0.02	
2009	615.0	72.5	1,705	222.344	0.13	0.36	
2010	---	---	666	31.922	0.05	---	
2011	---	---	251	8.292	0.03	---	
2012	---	---	94	1.876	0.02	---	
2013	---	---	40	0.794	0.02	---	
2014	---	---	26	0.696	0.03	---	
2015	---	---	20	0.700	0.04	---	
2016	---	---	95	14.746	0.16	---	
2017	---	---	68	4.133	0.06	---	
2018	---	---	25	1.215	0.05	---	
2019	---	---	2	0.022	0.01	---	
2020	---	---	42	2.268	0.05	---	
2021	---	---	161	16.733	0.10	---	

⁴ Crystal River ceased power generation in 2010 due to problems associated with containment building delamination. In June 2013, it was decided that the plant would not be put in commercial operation again. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
CRYSTAL RIVER 3⁴ (continued)	2022	---	---	77	18.750	0.24	---
	2023	---	---	215	60.224	0.28	---
	2024	---	---	126	5.258	0.04	---
DAVIS-BESSE 1 Docket 50-346; NPF-3 1st commercial operation 7/78 Type—PWR Capacity—894 MWe	1978	326.4	48.7	421	48	0.11	0.15
	1979	381.0	67.0	304	30	0.10	0.08
	1980	256.4	36.2	1,283	154	0.12	0.60
	1981	531.4	67.4	578	58	0.10	0.11
	1982	390.8	51.5	1,350	164	0.12	0.42
	1983	592.1	73.0	718	80	0.11	0.14
	1984	518.5	62.5	1,088	177	0.16	0.34
	1985	238.3	31.2	718	71	0.10	0.30
	1986	3.3	1.3	981	124	0.13	37.58
	1987	618.0	89.6	625	47	0.08	0.08
	1988	144.1	27.1	1,183	307	0.26	2.13
	1989	880.0	98.6	404	38	0.09	0.04
	1990	500.0	56.7	1,377	489	0.36	0.98
	1991	703.6	81.8	1,000	216	0.22	0.31
	1992	915.2	100.0	287	19	0.07	0.02
	1993	729.5	83.4	1,244	348	0.28	0.48
	1994	768.4	88.0	861	144	0.17	0.19
	1995	920.4	100.0	256	7	0.03	0.01
	1996	775.8	85.3	949	167	0.18	0.22
	1997	820.0	94.0	213	10	0.05	0.01
	1998	699.8	83.2	980	155.269	0.16	0.22
	1999	841.3	95.6	397	27.951	0.07	0.03
	2000	770.8	87.3	1,109	168.044	0.15	0.22
	2001	875.6	100.0	119	5.505	0.05	0.01
	2002	106.0	12.6	1,983	402.766	0.20	3.80
	2003	---	---	1,047	219.696	0.21	---
	2004	657.8	77.6	161	6.594	0.04	0.01
2005	817.1	93.3	577	51.332	0.09	0.06	
2006	727.8	84.0	1,331	204.201	0.15	0.28	
2007	879.7	100.0	189	7.088	0.04	0.01	
2008	777.5	89.4	985	106.603	0.11	0.14	
2009	868.7	95.7	115	3.621	0.03	---	
2010	598.0	67.1	1,649	464.095	0.28	0.78	
2011	723.7	80.7	1,182	73.360	0.06	0.10	
2012	808.5	90.0	659	43.071	0.07	0.05	
2013	876.6	96.6	92	2.558	0.03	---	
2014	681.8	74.1	2,029	200.466	0.10	0.29	
2015	901.1	99.5	32	0.995	0.03	---	
2016	730.0	84.7	996	118.472	0.12	0.16	
2017	899.1	100.0	69	1.621	0.02	---	
2018	842.5	93.7	742	51.003	0.07	0.06	
2019	894.9	98.9	175	11.405	0.07	0.01	
2020	825.1	93.0	698	42.228	0.06	0.05	
2021	888.4	99.4	123	7.811	0.06	0.01	
2022	740.5	84.3	725	46.220	0.06	0.06	
2023	911.6	100.0	146	3.717	0.03	0.00	
2024	838.8	93.0	600	35.824	0.06	0.04	
DIABLO CANYON 1, 2 Docket 50-275, 50-323; DPR-80, DPR-82 1st commercial operation 5/85, 3/86 Type—PWRs Capacity—1,122, 1,118 MWe	1986	641.5	80.6	1,260	304	0.24	0.47
	1987	1,688.6	83.0	1,170	336	0.29	0.20
	1988	1,386.1	67.6	1,826	877	0.48	0.63
	1989	1,899.0	87.5	1,646	465	0.28	0.24
	1990	1,952.6	91.0	1,441	323	0.22	0.17
	1991	1,809.6	83.8	2,040	546	0.27	0.30
	1992	1,995.7	90.9	1,850	459	0.25	0.23
	1993	2,008.6	91.4	1,508	281	0.19	0.14
	1994	1,832.6	83.3	2,317	590	0.25	0.32
	1995	1,950.3	90.0	1,615	286	0.18	0.15
	1996	2,003.6	90.7	1,462	176	0.12	0.09
1997	1,948.7	92.7	1,331	219	0.16	0.11	

⁴ Crystal River ceased power generation in 2010 due to problems associated with containment building delamination. In June 2013, it was decided that the plant would not be put in commercial operation again. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
DIABLO CANYON 1, 2 (continued)	1998	1,955.1	92.8	1,313	173.238	0.13	0.09
	1999	1,902.8	90.1	1,566	448.634	0.29	0.24
	2000	1,940.1	92.0	1,057	180.792	0.17	0.09
	2001	2,067.7	96.4	1,074	117.804	0.11	0.06
	2002	1,860.0	88.4	1,016	148.690	0.15	0.08
	2003	1,970.7	91.6	1,004	135.482	0.13	0.07
	2004	1,736.3	83.5	1,230	254.367	0.21	0.15
	2005	2,022.4	94.8	955	124.469	0.13	0.06
	2006	2,109.0	94.0	1,086	82.248	0.08	0.04
	2007	2,131.4	95.0	1,269	111.866	0.09	0.05
	2008	1,952.1	87.7	2,121	235.034	0.11	0.12
	2009	1,873.0	85.3	2,534	337.831	0.13	0.18
	2010	2,115.2	94.7	1,367	125.457	0.09	0.06
	2011	2,131.1	94.6	747	31.625	0.04	0.01
	2012	2,023.0	91.8	894	43.531	0.05	0.02
	2013	2,064.1	92.4	760	28.767	0.04	0.01
	2014	1,947.1	88.8	979	67.599	0.07	0.03
	2015	2,116.8	94.9	807	57.244	0.07	0.03
	2016	2,162.2	95.7	794	37.734	0.05	0.02
	2017	2,051.4	92.0	787	47.910	0.06	0.02
	2018	2,088.4	94.6	718	32.013	0.04	0.02
	2019	1,851.7	84.1	774	51.135	0.07	0.03
	2020	1,871.3	84.1	550	30.260	0.06	0.02
	2021	1,892.3	86.3	394	13.204	0.03	0.01
2022	2,015.5	91.2	657	37.303	0.06	0.02	
2023	2,027.6	93.1	676	40.149	0.06	0.02	
2024	2,097.5	94.2	592	31.050	0.05	0.01	
DRESDEN 1,⁵ 2, 3 Docket 50-010, 50-237, 50-249; DPR-2, DPR-19, DPR-25 1st commercial operation 8/60, 6/70, 11/71 Type—BWRs Capacity—(197), 870, 869 MWe	1969	99.7	---	---	286	---	2.87
	1970	163.1	---	---	143	---	0.88
	1971	394.5	---	---	715	---	1.81
	1972	1,243.7	---	---	728	---	0.59
	1973	1,112.2	---	1,341	939	0.70	0.84
	1974	842.5	54.9	1,594	1,662	1.04	1.97
	1975	708.1	54.6	2,310	3,423	1.48	4.83
	1976	1,127.2	80.8	1,746	1,680	0.96	1.49
	1977	1,132.9	77.0	1,862	1,694	0.91	1.50
	1978	1,242.2	79.5	1,946	1,529	0.79	1.23
	1979	1,013.0	74.7	2,407	1,800	0.75	1.78
	1980	1,074.4	55.0	2,717	2,105	0.77	1.96
	1981	1,035.7	51.5	2,331	2,802	1.20	2.71
	1982	1,085.3	77.9	2,572	2,923	1.14	2.69
	1983	913.6	65.6	2,854	3,582	1.26	3.92
	1984	789.8	55.3	2,261	1,774	0.78	2.25
	1985	903.0	64.5	2,817	1,686	0.60	1.87
	1986	740.5	52.6	3,111	2,668	0.86	3.60
	1987	933.9	74.0	2,052	1,145	0.56	1.23
	1988	1,014.7	75.8	2,414	1,409	0.58	1.39
	1989	1,184.2	83.1	2,259	1,131	0.50	0.96
	1990	1,107.8	76.6	2,235	1,400	0.63	1.26
	1991	675.2	60.7	2,044	1,005	0.49	1.49
	1992	872.4	75.4	1,812	619	0.34	0.71
1993	960.1	68.5	2,751	1,655	0.60	1.72	
1994	690.2	51.7	2,336	833	0.36	1.21	
1995	643.1	49.8	2,482	875	0.35	1.36	
1996	612.6	47.7	1,788	456	0.26	0.74	
1997	1,096.2	79.5	2,747	467	0.17	0.43	
1998	1,354.7	90.6	2,311	426.918	0.18	0.32	
1999	1,410.9	92.5	3,243	591.443	0.18	0.42	
2000	1,506.4	97.3	2,341	261.684	0.11	0.17	
2001	1,427.4	94.5	2,769	400.702	0.14	0.28	
2002	1,547.0	95.7	2,819	355.011	0.13	0.23	
2003	1,555.9	93.5	2,098	356.572	0.17	0.23	
2004	1,405.5	84.8	2,044	381.054	0.19	0.27	

⁵ Dresden 1 ceased power generation in 1978, and in 1985, it was decided that the plant would not be put in commercial operation again. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
DRESDEN 1,⁵ 2, 3 (continued)	2005	1,550.8	92.0	2,006	258.799	0.13	0.17
	2006	1,649.0	96.0	2,042	289.167	0.14	0.18
	2007	1,658.8	97.0	2,310	275.697	0.12	0.17
	2008	1,638.0	95.9	2,307	198.153	0.09	0.12
	2009	1,628.7	95.4	1,932	231.688	0.12	0.14
	2010	1,665.9	96.3	2,152	213.825	0.10	0.13
	2011	1,679.7	96.7	2,382	236.427	0.10	0.14
	2012	1,685.5	96.3	2,084	139.615	0.07	0.08
	2013	1,759.9	96.8	1,823	136.942	0.08	0.08
	2014	1,727.8	95.9	1,782	116.933	0.07	0.07
	2015	1,734.4	95.8	1,900	138.864	0.07	0.08
	2016	1,763.2	97.8	1,878	141.827	0.08	0.08
	2017	1,763.3	97.5	1,928	129.266	0.07	0.07
	2018	1,776.9	98.1	1,883	118.831	0.06	0.07
	2019	1,721.7	96.6	2,155	202.866	0.09	0.12
	2020	1,767.1	97.5	2,004	121.878	0.06	0.07
	2021	1,707.4	95.5	1,949	116.532	0.06	0.07
2022	1,759.0	97.1	1,607	115.855	0.07	0.07	
2023	1,742.7	97.0	1,857	160.044	0.09	0.09	
2024	1,736.4	97.0	2,121	142.518	0.07	0.08	
DUANE ARNOLD⁶ Docket 50-331; DPR-49 1st commercial operation 2/75 Type—BWR Capacity—(602) MWe	1976	305.2	78.0	350	105	0.30	0.34
	1977	353.6	78.9	538	299	0.56	0.85
	1978	149.2	33.2	1,112	974	0.88	6.53
	1979	352.0	78.0	757	275	0.36	0.78
	1980	339.1	73.3	1,108	671	0.61	1.98
	1981	277.7	69.8	1,286	790	0.61	2.84
	1982	278.5	74.7	524	229	0.44	0.82
	1983	283.0	62.9	1,468	1,135	0.77	4.01
	1984	329.4	72.9	611	189	0.31	0.57
	1985	236.2	53.8	1,414	1,112	0.79	4.71
	1986	365.5	82.0	476	187	0.39	0.51
	1987	308.4	64.7	1,094	667	0.61	2.16
	1988	386.5	75.2	1,136	614	0.54	1.59
	1989	388.5	79.0	425	194	0.46	0.50
	1990	367.4	75.8	1,460	861	0.59	2.34
	1991	503.7	94.5	336	202	0.60	0.40
	1992	416.5	81.9	1,043	502	0.48	1.21
	1993	393.4	79.5	1,043	407	0.39	1.03
	1994	498.6	94.0	493	120	0.24	0.24
	1995	452.5	83.8	1,129	357	0.32	0.79
	1996	476.8	90.7	1,093	270	0.25	0.57
	1997	474.4	94.4	352	63	0.18	0.13
	1998	438.3	86.6	1,019	236.693	0.23	0.54
	1999	416.6	84.3	834	201.196	0.24	0.48
	2000	507.3	98.4	317	44.181	0.14	0.09
	2001	439.5	86.8	898	137.564	0.15	0.31
	2002	522.0	94.4	319	35.061	0.11	0.07
2003	455.2	84.8	829	124.402	0.15	0.27	
2004	561.2	98.3	220	18.993	0.09	0.03	
2005	517.4	90.5	879	139.622	0.16	0.27	
2006	581.7	99.0	254	29.392	0.12	0.05	
2007	515.8	88.0	1,062	183.609	0.17	0.36	
2008	601.4	100.0	276	24.187	0.09	0.04	
2009	534.1	91.3	960	140.206	0.15	0.26	
2010	508.1	86.9	1,093	200.601	0.18	0.39	
2011	595.3	98.6	400	29.663	0.07	0.05	
2012	494.9	84.9	1,169	134.515	0.12	0.27	
2013	598.6	100.0	262	16.414	0.06	0.03	
2014	474.0	86.0	1,043	121.986	0.12	0.26	
2015	598.6	100.0	391	20.441	0.05	0.03	

⁵ Dresden 1 ceased power generation in 1978, and in 1985, it was decided that the plant would not be put in commercial operation again. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

⁶ Duane Arnold ceased power generation in August 2020 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
DUANE ARNOLD⁶ (continued)	2016	536.8	92.5	1,106	110.613	0.10	0.21
	2017	595.2	99.3	228	17.336	0.08	0.03
	2018	558.8	94.7	697	77.984	0.11	0.14
	2019	597.7	99.6	187	15.569	0.08	0.03
	2020	---	---	191	16.486	0.09	---
	2021	---	---	125	7.837	0.06	---
	2022	---	---	106	21.068	0.20	---
	2023	---	---	16	0.832	0.05	---
	2024	---	---	6	0.096	0.02	---
FARLEY 1, 2 Docket 50-348, 50-364; NPF-2, NPF-8 1st commercial operation 12/77, 7/81 Type—PWRs Capacity—874, 883 MWe	1978	713.8	86.5	527	108	0.20	0.15
	1979	211.0	28.6	1,227	643	0.52	3.05
	1980	557.3	69.3	1,330	435	0.33	0.78
	1981	310.2	41.4	1,331	512	0.38	1.65
	1982	1,271.5	79.2	1,453	484	0.33	0.38
	1983	1,356.5	83.0	1,938	1,021	0.53	0.75
	1984	1,447.0	86.6	2,046	902	0.44	0.62
	1985	1,368.2	81.1	2,551	799	0.31	0.58
	1986	1,409.4	83.8	2,314	858	0.37	0.61
	1987	1,369.7	84.7	1,871	598	0.32	0.44
	1988	1,567.7	92.3	1,840	552	0.30	0.35
	1989	1,402.9	84.6	2,206	749	0.34	0.53
	1990	1,464.0	86.7	1,700	457	0.27	0.31
	1991	1,464.0	88.1	1,645	648	0.39	0.44
	1992	1,331.7	81.8	2,018	805	0.40	0.60
	1993	1,455.5	88.3	1,284	333	0.26	0.23
	1994	1,587.2	93.0	1,035	250	0.24	0.16
	1995	1,311.2	83.8	1,574	460	0.29	0.35
	1996	1,549.2	90.9	1,150	232	0.20	0.15
	1997	1,449.7	89.0	1,105	278	0.25	0.19
	1998	1,313.9	80.9	1,380	431.821	0.31	0.33
	1999	1,436.0	91.4	1,102	190.463	0.17	0.13
	2000	1,430.1	88.6	1,683	359.855	0.21	0.25
	2001	1,384.3	84.4	1,810	320.509	0.18	0.23
	2002	1,558.0	93.5	772	96.431	0.12	0.06
	2003	1,592.6	95.3	788	111.016	0.14	0.07
	2004	1,496.8	89.4	1,141	107.227	0.09	0.07
	2005	1,564.2	93.3	810	67.826	0.08	0.04
	2006	1,602.7	94.0	747	66.189	0.09	0.04
	2007	1,495.8	88.0	1,226	139.716	0.11	0.09
	2008	1,602.6	94.4	669	40.833	0.06	0.03
	2009	1,595.2	94.1	657	41.851	0.06	0.03
2010	1,503.4	89.0	1,321	121.313	0.09	0.08	
2011	1,647.4	95.1	723	37.510	0.05	0.02	
2012	1,680.7	95.8	563	29.817	0.05	0.02	
2013	1,609.4	92.8	775	53.212	0.07	0.03	
2014	1,655.9	94.5	713	37.703	0.05	0.02	
2015	1,631.0	93.6	888	55.942	0.06	0.03	
2016	1,563.7	90.0	957	59.840	0.06	0.04	
2017	1,690.0	96.1	575	31.351	0.05	0.02	
2018	1,605.6	94.2	592	36.355	0.06	0.02	
2019	1,613.8	92.3	896	63.320	0.07	0.04	
2020	1,686.7	95.4	628	46.633	0.07	0.03	
2021	1,710.4	96.1	670	43.420	0.06	0.03	
2022	1,484.6	83.8	689	44.326	0.06	0.03	
2023	1,684.8	93.8	431	23.531	0.05	0.01	
2024	1,717.2	95.4	339	17.736	0.05	0.01	
FERMI 2 Docket 50-341; NPF-43 1st commercial operation 1/88 Type—BWR Capacity—1,094 MWe	1989	624.0	68.5	1,270	255	0.20	0.41
	1990	848.2	84.7	462	83	0.18	0.10
	1991	739.0	77.0	1,223	228	0.19	0.31
	1992	874.3	81.3	1,213	245	0.20	0.28
	1993	984.3	92.9	360	35	0.10	0.04
	1994	---	2.2	1,130	213	0.19	---
1995	618.3	86.9	390	28	0.07	0.05	

⁶ Duane Arnold ceased power generation in August 2020 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
FERMI 2 (continued)	1996	577.5	69.1	1,402	157	0.11	0.27
	1997	637.0	66.6	623	49	0.08	0.08
	1998	815.8	79.9	1,362	207.593	0.15	0.25
	1999	1,082.7	99.5	461	36.152	0.08	0.03
	2000	939.6	87.6	1,266	145.964	0.12	0.16
	2001	975.0	90.9	1,202	168.689	0.14	0.17
	2002	1,059.0	98.7	463	38.235	0.08	0.04
	2003	925.3	86.9	1,207	168.138	0.14	0.18
	2004	962.3	90.0	1,302	145.090	0.11	0.15
	2005	998.1	91.7	538	61.626	0.11	0.06
	2006	855.9	83.0	1,430	181.300	0.13	0.21
	2007	950.2	87.0	1,484	194.039	0.13	0.20
	2008	1,094.5	99.5	460	35.186	0.08	0.03
	2009	847.8	79.3	1,497	148.846	0.10	0.18
	2010	885.0	86.4	1,625	146.490	0.09	0.17
	2011	1,017.9	95.7	387	24.080	0.06	0.02
	2012	589.3	65.2	1,420	144.973	0.10	0.25
	2013	754.5	93.0	704	26.179	0.04	0.03
	2014	891.5	85.9	1,806	199.698	0.11	0.22
	2015	838.6	75.8	1,866	234.853	0.13	0.28
	2016	1,045.0	96.2	779	54.761	0.07	0.05
	2017	993.0	91.2	2,025	265.082	0.13	0.27
	2018	849.2	78.3	2,451	329.015	0.13	0.39
	2019	1,128.6	100.0	1,417	65.282	0.05	0.06
2020	---	---	---	---	---	---	---
2021	1,070.1	98.4	1,073	63.345	0.06	0.06	
2022	762.8	74.0	2,429	517.175	0.21	0.68	
2023	1,069.3	95.0	1,097	85.843	0.08	0.08	
2024	941.2	86.2	2,049	315.919	0.15	0.34	
FITZPATRICK Docket 50-333; DPR-59 1st commercial operation 7/75 Type—BWR Capacity—813 MWe	1976	489.0	71.6	600	202	0.34	0.41
	1977	460.5	68.4	1,380	1,080	0.78	2.35
	1978	497.0	72.1	904	909	1.01	1.83
	1979	349.0	50.8	850	859	1.01	2.46
	1980	509.5	70.3	2,056	2,040	0.99	4.00
	1981	562.9	74.7	2,490	1,425	0.57	2.53
	1982	583.6	75.0	2,322	1,190	0.51	2.04
	1983	546.2	70.6	1,715	1,090	0.64	2.00
	1984	576.2	76.8	1,610	971	0.60	1.69
	1985	492.3	63.7	1,845	1,051	0.57	2.13
	1986	711.2	90.6	1,185	411	0.35	0.58
	1987	496.2	70.3	1,578	940	0.60	1.89
	1988	514.0	69.0	1,553	786	0.51	1.53
	1989	727.5	92.3	1,027	377	0.37	0.52
	1990	543.8	72.6	1,536	884	0.58	1.63
	1991	399.7	53.4	1,269	333	0.26	0.83
	1992	---	---	2,374	674	0.28	---
	1993	559.6	81.7	1,427	232	0.16	0.41
	1994	588.4	83.2	1,595	322	0.20	0.55
	1995	569.8	74.5	1,249	327	0.26	0.57
	1996	623.3	83.1	1,384	357	0.26	0.57
1997	756.2	95.9	662	91	0.14	0.12	
1998	562.8	78.0	1,781	357.826	0.20	0.64	
1999	749.7	95.5	558	68.409	0.12	0.09	
2000	685.9	88.4	1,267	300.997	0.24	0.44	
2001	807.2	98.9	665	63.229	0.10	0.08	
2002	751.0	93.3	1,234	230.523	0.19	0.31	
2003	793.0	97.9	298	51.156	0.17	0.06	
2004	735.0	92.1	1,091	186.055	0.17	0.25	
2005	802.9	96.3	382	62.697	0.16	0.08	
2006	771.5	93.0	1,527	234.425	0.15	0.30	
2007	790.1	96.0	526	58.741	0.11	0.07	
2008	761.7	92.9	1,430	184.772	0.13	0.24	
2009	844.5	100.0	487	35.119	0.07	0.04	
2010	726.2	91.3	1,429	219.887	0.15	0.30	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
FITZPATRICK (continued)	2011	826.9	100.0	513	35.217	0.07	0.04
	2012	691.1	87.2	1,546	169.886	0.11	0.25
	2013	780.8	98.9	603	39.392	0.07	0.05
	2014	665.4	87.8	1,674	135.890	0.08	0.20
	2015	842.7	100.0	250	20.785	0.08	0.02
	2016	668.7	95.4	362	28.304	0.08	0.04
	2017	705.8	89.0	1,139	162.196	0.14	0.23
	2018	745.2	92.6	1,456	231.548	0.16	0.31
	2019	839.5	100.0	381	24.160	0.06	0.03
	2020	752.2	92.6	1,180	149.183	0.13	0.20
	2021	844.5	100.0	237	23.553	0.10	0.03
	2022	754.9	94.4	1,135	141.131	0.12	0.19
	2023	841.7	100.0	282	26.406	0.09	0.03
2024	771.0	95.9	1,227	134.692	0.11	0.17	
FORT CALHOUN⁷ Docket 50-285; DPR-40 1st commercial operation 8/73 Type—PWR Capacity—(482) MWe	1975	252.3	67.4	469	294	0.63	1.17
	1976	265.9	69.5	516	313	0.61	1.18
	1977	351.8	79.4	535	297	0.56	0.84
	1978	342.3	75.1	596	410	0.69	1.20
	1979	440.0	95.7	451	126	0.28	0.29
	1980	242.3	60.4	891	668	0.75	2.76
	1981	260.9	72.3	822	458	0.56	1.76
	1982	418.0	89.7	604	217	0.36	0.52
	1983	330.4	73.1	860	433	0.50	1.31
	1984	279.2	59.9	913	563	0.62	2.02
	1985	367.0	73.7	982	373	0.38	1.02
	1986	431.8	94.3	756	75	0.10	0.17
	1987	366.0	75.4	1,247	388	0.31	1.06
	1988	315.5	74.1	1,594	272	0.17	0.86
	1989	395.7	89.2	1,210	93	0.08	0.24
	1990	290.0	64.2	760	290	0.38	1.00
	1991	391.1	91.7	284	57	0.20	0.15
	1992	303.4	65.9	802	272	0.34	0.90
	1993	369.7	80.8	713	157	0.22	0.42
	1994	492.8	99.6	211	23	0.11	0.05
	1995	402.8	83.2	627	139	0.22	0.35
	1996	374.9	79.5	740	226	0.31	0.60
	1997	435.9	93.6	258	41	0.16	0.09
	1998	387.7	82.5	788	223.847	0.28	0.58
	1999	409.2	89.2	676	158.843	0.23	0.39
	2000	443.8	93.5	249	35.215	0.14	0.08
	2001	401.2	88.3	770	225.891	0.29	0.56
	2002	434.0	92.3	742	163.806	0.22	0.38
	2003	399.6	87.0	914	212.422	0.23	0.53
	2004	463.5	97.0	215	21.574	0.10	0.05
	2005	332.4	72.2	1,069	272.876	0.26	0.82
	2006	353.9	75.0	1,591	289.100	0.18	0.82
	2007	499.9	100.0	100	3.990	0.04	0.01
2008	400.4	82.2	839	96.155	0.11	0.24	
2009	422.7	87.0	870	110.918	0.13	0.26	
2010	486.5	98.5	171	9.763	0.06	0.02	
2011	134.4	26.8	1,042	79.226	0.08	0.59	
2012	---	---	494	39.377	0.08	---	
2013	10.9	3.6	678	63.853	0.09	5.86	
2014	477.7	97.7	159	5.053	0.03	0.01	
2015	402.5	81.5	747	75.987	0.10	0.19	
2016	---	---	166	11.255	0.07	---	
2017	---	---	72	2.770	0.04	---	
2018	---	---	74	6.939	0.09	---	
2019	---	---	110	11.120	0.10	---	
2020	---	---	167	16.272	0.10	---	
2021	---	---	304	95.322	0.31	---	
2022	---	---	331	41.344	0.12	---	
2023	---	---	233	93.416	0.40	---	
2024	---	---	98	11.139	0.11	---	

⁷ Fort Calhoun ceased power generation in October 2016 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
GINNA Docket 50-244; DPR-18 1st commercial operation 7/70 Type—PWR Capacity—560 MWe	1971	327.8	---	340	430	1.26	1.31
	1972	293.6	---	677	1,032	1.52	3.51
	1973	409.5	---	319	224	0.70	0.55
	1974	253.7	62.4	884	1,225	1.39	4.83
	1975	365.2	76.7	685	538	0.79	1.47
	1976	248.8	58.2	758	636	0.84	2.56
	1977	365.6	85.5	530	401	0.76	1.10
	1978	386.5	80.6	657	450	0.68	1.16
	1979	355.0	72.8	878	592	0.67	1.67
	1980	370.5	76.0	1,073	708	0.66	1.91
	1981	399.0	82.1	925	655	0.71	1.64
	1982	289.0	58.8	1,117	1,140	1.02	3.94
	1983	365.0	74.6	969	855	0.88	2.34
	1984	378.1	77.2	713	395	0.55	1.04
	1985	436.7	87.9	845	426	0.50	0.98
	1986	433.3	87.4	901	357	0.40	0.82
	1987	459.0	91.5	773	344	0.45	0.75
	1988	423.1	87.4	897	295	0.33	0.70
	1989	369.2	75.9	1,254	605	0.48	1.64
	1990	414.3	84.4	991	347	0.35	0.84
	1991	418.6	86.7	947	328	0.35	0.78
	1992	417.6	86.9	832	261	0.31	0.63
	1993	419.6	86.3	856	193	0.23	0.46
	1994	405.3	83.2	679	138	0.20	0.34
	1995	437.0	89.6	738	136	0.18	0.31
	1996	347.9	71.1	976	168	0.17	0.48
	1997	444.6	91.8	533	81	0.15	0.18
	1998	491.8	100.0	161	14.892	0.09	0.03
	1999	403.4	85.6	641	175.173	0.27	0.43
2000	434.2	91.6	429	76.435	0.18	0.18	
2001	488.0	100.0	140	10.156	0.07	0.02	
2002	438.0	91.3	535	80.432	0.15	0.18	
2003	440.4	91.1	510	74.533	0.15	0.17	
2004	490.5	99.5	111	7.486	0.07	0.02	
2005	455.0	93.9	564	72.841	0.13	0.16	
2006	470.2	94.0	514	44.580	0.09	0.09	
2007	564.4	99.0	111	4.412	0.04	0.01	
2008	540.1	94.5	976	101.996	0.10	0.19	
2009	529.2	94.3	633	41.809	0.07	0.08	
2010	564.9	98.9	75	3.168	0.04	0.01	
2011	492.1	86.4	931	100.711	0.11	0.20	
2012	523.9	92.1	654	54.636	0.08	0.10	
2013	570.0	99.1	104	3.434	0.03	0.01	
2014	532.2	93.5	621	58.380	0.09	0.11	
2015	544.5	95.1	415	24.163	0.06	0.04	
2016	575.6	100.0	79	1.882	0.02	---	
2017	536.3	94.5	614	46.173	0.08	0.09	
2018	536.4	94.9	462	27.931	0.06	0.05	
2019	570.1	99.5	57	2.023	0.04	---	
2020	494.6	87.1	520	46.280	0.09	0.09	
2021	536.5	94.9	560	33.499	0.06	0.06	
2022	575.2	100.0	64	1.808	0.03	---	
2023	530.2	93.6	626	53.989	0.09	0.10	
2024	546.3	95.9	516	33.431	0.06	0.06	
GRAND GULF Docket 50-416; NPF-29 1st commercial operation 7/85 Type—BWR Capacity—1,428 MWe	1986	494.7	60.9	1,486	436	0.29	0.88
	1987	920.7	82.2	1,358	420	0.31	0.46
	1988	1,136.6	96.7	692	147	0.21	0.13
	1989	932.6	80.0	1,972	498	0.25	0.53
	1990	883.5	78.9	1,765	482	0.27	0.55
	1991	1,085.2	94.0	699	94	0.13	0.09
	1992	969.0	83.7	2,032	484	0.24	0.50
1993	936.4	81.5	1,807	332	0.18	0.35	
1994	1,143.2	96.6	455	56	0.12	0.05	
1995	952.9	80.4	1,589	342	0.22	0.36	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
GRAND GULF (continued)	1996	1,096.2	88.7	1,564	357	0.23	0.33
	1997	1,234.9	100.0	514	105	0.20	0.09
	1998	1,049.2	88.9	1,410	303.695	0.22	0.29
	1999	962.1	81.3	1,180	226.277	0.19	0.23
	2000	1,217.5	99.4	289	34.877	0.12	0.03
	2001	1,129.8	93.0	1,109	185.214	0.17	0.16
	2002	1,145.0	93.6	1,060	176.396	0.17	0.15
	2003	1,241.2	98.6	290	31.250	0.11	0.03
	2004	1,165.2	92.2	1,243	158.112	0.13	0.14
	2005	1,147.3	91.9	1,326	167.914	0.13	0.15
	2006	1,233.7	98.0	1,016	59.935	0.06	0.05
	2007	1,070.5	88.0	1,750	177.884	0.10	0.17
	2008	1,072.1	89.5	1,843	167.859	0.09	0.16
	2009	1,255.5	100.0	521	30.721	0.06	0.02
	2010	1,102.0	91.5	1,822	188.370	0.10	0.17
	2011	1,180.0	100.0	530	21.084	0.04	0.02
	2012	835.2	67.8	2,446	276.378	0.11	0.33
	2013	1,231.1	92.2	396	35.449	0.09	0.03
	2014	1,173.5	89.5	1,726	181.746	0.11	0.15
	2015	1,337.8	98.2	587	25.241	0.04	0.02
	2016	682.8	52.4	1,443	194.755	0.13	0.29
	2017	849.1	75.4	538	40.251	0.07	0.05
	2018	794.3	69.4	1,284	166.908	0.13	0.21
	2019	1,259.4	93.8	948	35.139	0.04	0.03
2020	742.7	62.6	2,628	227.519	0.09	0.31	
2021	1,344.3	97.0	762	50.892	0.07	0.04	
2022	1,000.1	74.9	1,424	183.014	0.13	0.18	
2023	1,341.3	95.7	330	17.410	0.05	0.01	
2024	1,208.5	89.5	1,298	171.031	0.13	0.14	
HADDAM NECK⁸ Docket 50-213; DPR-61 1st commercial operation 1/68 Type—PWR Capacity—(560) MWe	1969	438.5	---	138	106	0.77	0.24
	1970	424.7	---	734	689	0.94	1.62
	1971	502.2	---	289	342	1.18	0.68
	1972	515.6	---	355	325	0.92	0.63
	1973	293.1	---	951	697	0.73	2.38
	1974	521.4	91.2	550	201	0.37	0.39
	1975	494.3	89.9	795	703	0.88	1.42
	1976	482.9	82.5	644	449	0.70	0.93
	1977	480.7	83.9	894	641	0.72	1.33
	1978	563.4	98.6	216	117	0.54	0.21
	1979	493.0	87.5	1,226	1,162	0.95	2.36
	1980	426.8	75.0	1,860	1,353	0.73	3.17
	1981	487.5	84.3	1,554	1,036	0.67	2.13
	1982	543.9	93.4	559	126	0.23	0.23
	1983	453.7	77.8	1,645	1,384	0.84	3.05
	1984	404.0	71.7	1,430	1,216	0.85	3.01
	1985	556.1	98.4	384	101	0.26	0.18
	1986	294.8	53.6	1,945	1,567	0.81	5.32
	1987	304.6	54.0	1,763	750	0.43	2.46
	1988	397.4	70.3	735	237	0.32	0.60
	1989	356.4	67.2	1,455	596	0.41	1.67
	1990	142.7	32.2	979	421	0.43	2.95
	1991	444.4	76.4	1,168	590	0.51	1.33
	1992	465.2	80.1	797	202	0.25	0.43
1993	448.6	81.6	1,004	408	0.41	0.91	
1994	455.6	77.7	463	135	0.29	0.30	
1995	439.4	77.7	1,006	442	0.44	1.01	
1996	331.8	55.7	673	175	0.26	0.53	
1997	-1.3	---	219	11	0.05	---	
1998	---	---	423	93.743	0.22	---	
1999	---	---	545	108.602	0.20	---	
2000	---	---	555	262.192	0.47	---	
2001	---	---	361	95.348	0.26	---	

⁸ Haddam Neck (also known as Connecticut Yankee) ceased operations on December 4, 1996, and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
HADDAM NECK⁸ (continued)	2002	---	---	258	51.668	0.20	---
	2003	---	---	400	82.022	0.21	---
	2004	---	---	564	91.981	0.16	---
	2005	---	---	350	36.479	0.10	---
	2006	---	---	124	11.883	0.10	---
	2007	---	---	---	---	---	---
	2008	---	---	1	0.011	0.01	---
	2009	---	---	1	0.010	0.01	---
	2010	---	---	2	0.024	0.01	---
	2011	---	---	6	0.364	0.06	---
	2012	---	---	2	0.024	0.01	---
	2013	---	---	9	0.182	0.02	---
	2014	---	---	11	0.185	0.02	---
	2015	---	---	13	0.204	0.02	---
	2016	---	---	15	0.244	0.02	---
	2017	---	---	11	0.182	0.02	---
	2018	---	---	15	0.250	0.02	---
	2019	---	---	---	---	---	---
	2020	---	---	11	0.457	0.04	---
	2021	---	---	22	0.658	0.03	---
	2022	---	---	---	---	---	---
	2023	---	---	14	0.329	0.02	---
	2024	---	---	---	---	---	---
	HARRIS 1 Docket 50-400; NPF-63 1st commercial operation 5/87 Type—PWR Capacity—964 MWe	1988	652.9	75.0	721	169	0.23
1989		690.6	79.5	929	156	0.17	0.23
1990		776.4	89.6	453	85	0.19	0.11
1991		724.8	81.5	872	226	0.26	0.31
1992		661.8	74.9	930	213	0.23	0.32
1993		913.0	99.7	327	31	0.09	0.03
1994		740.8	82.7	1,089	222	0.20	0.30
1995		731.1	83.8	1,068	174	0.16	0.24
1996		860.6	95.4	444	17	0.04	0.02
1997		673.6	80.4	1,131	149	0.13	0.22
1998		766.2	90.4	931	133.497	0.14	0.17
1999		827.0	97.9	247	15.538	0.06	0.02
2000		783.0	92.5	888	100.981	0.11	0.13
2001		611.2	72.4	1,586	252.241	0.16	0.41
2002		892.0	99.4	145	6.674	0.05	0.01
2003		823.9	93.2	786	68.463	0.09	0.08
2004		797.9	88.2	747	57.103	0.08	0.07
2005		902.9	99.5	164	8.483	0.05	0.01
2006		802.4	89.0	917	87.225	0.10	0.11
2007		845.1	94.0	870	64.808	0.07	0.08
2008		890.4	97.4	192	10.356	0.05	0.01
2009		845.1	92.7	742	41.401	0.06	0.05
2010		808.3	89.0	1,069	82.578	0.08	0.10
2011		926.0	100.0	157	4.724	0.03	0.01
2012		810.8	87.4	1,066	79.845	0.07	0.10
2013		786.3	85.4	861	54.874	0.06	0.07
2014		918.8	97.5	52	1.275	0.02	---
2015	830.2	88.4	875	57.978	0.07	0.07	
2016	857.7	91.1	687	43.876	0.06	0.05	
2017	937.1	99.7	12	0.217	0.02	---	
2018	866.2	90.0	596	31.736	0.05	0.04	
2019	868.8	90.0	626	37.223	0.06	0.04	
2020	944.7	97.8	30	0.458	0.02	---	
2021	916.0	93.7	476	18.621	0.04	0.02	
2022	891.2	92.8	403	18.138	0.05	0.02	
2023	982.8	100.0	17	0.286	0.02	0.00	
2024	875.5	90.8	415	19.717	0.05	0.02	

⁸ Haddam Neck (also known as Connecticut Yankee) ceased operations on December 4, 1996, and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
HATCH 1, 2 Docket 50-321, 50-366; DPR-57; NPF-5 1st commercial operation 12/75, 9/79 Type—BWRs Capacity—876, 883 MWe	1976	496.3	83.8	630	134	0.21	0.27
	1977	446.8	66.3	1,303	465	0.36	1.04
	1978	513.0	72.8	1,304	248	0.19	0.48
	1979	401.0	54.6	2,131	582	0.27	1.45
	1980	1,008.7	70.9	1,930	449	0.23	0.45
	1981	870.9	64.3	2,899	1,337	0.46	1.54
	1982	768.0	56.6	3,418	1,460	0.43	1.90
	1983	934.7	68.6	3,428	1,299	0.38	1.39
	1984	658.6	47.3	4,110	2,218	0.54	3.37
	1985	1,211.0	79.6	2,841	818	0.29	0.68
	1986	872.0	64.8	3,486	1,497	0.43	1.72
	1987	1,295.4	89.7	2,202	816	0.37	0.63
	1988	1,001.4	70.4	2,509	1,401	0.56	1.40
	1989	1,271.1	87.1	1,350	556	0.41	0.44
	1990	1,268.0	83.5	2,902	1,455	0.50	1.15
	1991	1,152.4	77.4	2,508	1,161	0.46	1.01
	1992	1,293.8	88.6	1,615	550	0.34	0.43
	1993	1,189.6	85.5	1,733	669	0.39	0.56
	1994	1,289.0	87.1	2,243	864	0.39	0.67
	1995	1,376.3	90.6	1,458	488	0.33	0.35
	1996	1,519.6	94.0	1,495	441	0.29	0.29
	1997	1,374.7	88.1	1,945	722	0.37	0.53
	1998	1,458.4	91.7	1,610	320.469	0.20	0.22
	1999	1,487.4	90.0	1,866	328.583	0.18	0.22
2000	1,515.0	88.7	1,913	401.891	0.21	0.27	
2001	1,603.0	93.5	1,407	230.242	0.16	0.14	
2002	1,600.0	94.0	1,299	214.441	0.17	0.13	
2003	1,606.3	94.5	1,295	168.281	0.13	0.10	
2004	1,641.3	95.3	1,209	180.129	0.15	0.11	
2005	1,562.1	91.3	1,288	207.295	0.16	0.13	
2006	1,604.9	94.0	1,405	259.313	0.18	0.16	
2007	1,626.5	94.0	1,341	137.273	0.10	0.08	
2008	1,584.0	92.7	1,397	189.433	0.14	0.12	
2009	1,416.5	83.2	1,310	186.013	0.14	0.13	
2010	1,586.9	93.0	1,734	245.797	0.14	0.15	
2011	1,550.4	93.1	1,681	176.976	0.11	0.11	
2012	1,637.5	94.5	1,592	191.189	0.12	0.12	
2013	1,578.1	92.1	1,348	140.994	0.10	0.09	
2014	1,656.4	95.6	1,608	189.428	0.12	0.11	
2015	1,654.9	95.6	1,584	83.419	0.05	0.05	
2016	1,672.1	95.8	1,669	222.865	0.13	0.13	
2017	1,658.8	95.7	1,126	101.422	0.09	0.06	
2018	1,644.2	95.9	1,297	139.368	0.11	0.08	
2019	1,588.7	92.3	1,154	94.104	0.08	0.06	
2020	1,595.6	92.4	1,413	129.170	0.09	0.08	
2021	1,617.4	94.2	1,065	94.042	0.09	0.06	
2022	1,657.5	95.7	1,203	127.476	0.11	0.08	
2023	1,638.3	94.9	1,078	93.435	0.09	0.06	
2024	1,596.0	93.6	1,469	167.951	0.11	0.11	
HOPE CREEK 1 Docket 50-354; NPF-57 1st commercial operation 12/86 Type—BWR Capacity—1,172 MWe	1987	869.2	86.4	589	117	0.20	0.13
	1988	832.7	80.7	1,734	287	0.17	0.34
	1989	791.1	77.8	1,873	465	0.25	0.59
	1990	966.4	91.6	1,394	196	0.14	0.20
	1991	882.5	84.2	1,700	373	0.22	0.42
	1992	841.9	80.8	1,694	436	0.26	0.52
	1993	1,049.2	97.8	688	98	0.14	0.09
	1994	852.0	81.2	1,779	326	0.18	0.38
	1995	844.5	79.8	1,571	196	0.12	0.23
	1996	806.9	77.4	1,069	158	0.15	0.20
	1997	731.8	77.8	1,747	350	0.20	0.48
1998	993.2	98.0	620	54.816	0.09	0.06	
1999	879.1	86.7	1,111	279.063	0.25	0.32	
2000	827.8	87.9	1,236	188.295	0.15	0.23	
2001	918.2	91.1	1,532	156.180	0.10	0.17	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
HOPE CREEK 1 (continued)	2002	1,007.0	99.2	220	25.922	0.12	0.03
	2003	826.6	84.6	1,597	139.295	0.09	0.17
	2004	688.6	71.3	2,440	239.540	0.10	0.35
	2005	874.9	88.6	881	67.063	0.08	0.08
	2006	983.8	93.0	2,135	133.570	0.06	0.14
	2007	929.3	91.0	2,221	191.068	0.09	0.21
	2008	1,139.1	100.0	999	34.510	0.03	0.03
	2009	1,111.4	93.3	2,090	169.362	0.08	0.15
	2010	1,082.0	92.1	1,985	160.910	0.08	0.15
	2011	1,199.3	99.4	426	24.677	0.06	0.02
	2012	1,091.3	93.4	2,207	153.866	0.07	0.14
	2013	1,040.3	89.7	2,019	150.568	0.07	0.14
	2014	1,187.9	98.8	853	36.543	0.04	0.03
	2015	1,078.9	91.7	2,915	169.862	0.06	0.16
	2016	1,100.4	92.8	1,661	139.883	0.08	0.13
	2017	1,216.7	100.0	412	31.919	0.08	0.03
	2018	1,094.0	92.6	1,593	150.044	0.09	0.14
	2019	1,000.8	89.2	1,356	169.220	0.12	0.17
	2020	1,211.6	100	175	16.625	0.10	0.01
	2021	1,040.0	91.6	1,242	141.166	0.11	0.14
	2022	1,053.6	90.7	1,214	132.562	0.11	0.13
	2023	1,136.3	97.2	274	27.804	0.10	0.02
	2024	1,024.3	89.3	1,189	118.265	0.10	0.12
	HUMBOLDT BAY⁹ Docket 50-133; DPR-7 1st commercial operation 8/63 Type—BWR Capacity—(63) MWe	1969	44.6	---	125	164	1.31
1970		49.3	---	115	209	1.82	4.24
1971		39.6	---	140	292	2.09	7.37
1972		43.1	---	127	253	1.99	5.87
1973		50.1	---	210	266	1.27	5.31
1974		43.4	83.8	296	318	1.07	7.33
1975		45.3	83.9	265	339	1.28	7.48
1976		23.5	46.4	523	683	1.31	29.06
1977		---	---	1,063	1,905	1.79	---
1978		---	---	320	335	1.05	---
1979		---	---	135	31	0.23	---
1980		---	---	142	22	0.15	---
1981		---	---	75	9	0.12	---
1982		---	---	71	19	0.27	---
1983		---	---	84	17	0.20	---
1984		---	---	"Data not available"		---	---
1985		---	---	178	51	0.29	---
1986		---	---	115	50	0.43	---
1987		---	---	"Data not available"		---	---
1988		---	---	10	1	0.10	---
1989		---	---	---	---	---	---
1990		---	---	---	---	---	---
1991		---	---	---	---	---	---
1992		---	---	8	---	---	---
1993		---	---	24	1	0.04	---
1994		---	---	21	1	0.05	---
1995		---	---	42	2	0.05	---
1996		---	---	66	5	0.08	---
1997		---	---	105	16	0.15	---
1998		---	---	38	0.929	0.02	---
1999	---	---	28	0.720	0.03	---	
2000	---	---	20	0.911	0.05	---	
2001	---	---	10	0.360	0.04	---	
2002	---	---	18	1.504	0.08	---	
2003	---	---	14	0.351	0.03	---	
2004	---	---	11	0.454	0.04	---	
2005	---	---	11	0.547	0.05	---	
2006	---	---	40	4.086	0.10	---	
2007	---	---	45	3.271	0.07	---	

⁹ Humboldt Bay had been shut down since 1976, and in 1983, Pacific Gas and Electric Company announced its intention to decommission the unit. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
HUMBOLDT BAY⁹ (continued)	2008	---	---	56	2.051	0.04	---
	2009	---	---	30	0.631	0.02	---
	2010	---	---	136	7.691	0.06	---
	2011	---	---	158	6.709	0.04	---
	2012	---	---	156	15.859	0.10	---
	2013	---	---	172	24.121	0.14	---
	2014	---	---	125	12.381	0.10	---
	2015	---	---	54	4.391	0.08	---
	2016	---	---	---	---	---	---
	2017	---	---	---	---	---	---
2018	---	---	---	---	---	---	
INDIAN POINT 1,¹⁰ 2, 3¹¹ Docket 50-3, 50-247, 50-286; DPR-5, DPR-26, DPR-64 1st commercial operation 8/62, 8/74, 8/76 Type—PWRs Capacity—(265), (998), (1,030) MWe	1969	206.2	---	---	298	---	1.45
	1970	43.3	---	---	1,639	---	37.85
	1971	154.0	---	---	768	---	4.99
	1972	142.3	---	---	967	---	6.80
	1973	---	---	2,998	5,262	1.76	---
	1974	556.1	59.4	1,019	910	0.89	1.64
	1975	584.4	74.8	891	705	0.79	1.21
	1976	273.9	34.8	1,590	1,950	1.23	7.12
	1977	1,278.3	75.3	1,391	1,070	0.77	0.84
	1978	1,172.3	67.8	1,909	2,006	1.05	1.71
	<i>Please see the following Indian Point site reporting for years 1979–2023</i>						
2024	---	---	269	71.061	0.26	---	
INDIAN POINT 1,¹⁰ 2 Docket 50-3, 50-247; DPR-5, DPR-26 1st commercial operation 8/62, 8/74 Type—PWRs Capacity—(265), (998) MWe	1979	574.0	71.4	1,349	1,279	0.95	2.23
	1980	510.8	64.8	1,577	971	0.62	1.90
	1981	367.5	46.0	2,595	2,731	1.05	7.43
	1982	532.4	65.4	2,144	1,635	0.76	3.07
	1983	702.6	84.0	1,057	486	0.46	0.69
	1984	416.7	51.9	2,919	2,644	0.91	6.35
	1985	791.4	95.7	708	192	0.27	0.24
	1986	457.5	56.2	1,926	1,250	0.65	2.73
	1987	611.4	73.4	1,980	1,217	0.61	1.99
	1988	719.3	86.9	890	235	0.26	0.33
	1989	532.5	64.6	2,093	1,436	0.69	2.70
	1990	618.0	66.6	1,061	608	0.57	0.98
	1991	461.2	55.7	1,810	1,468	0.81	3.18
	1992	930.9	99.1	489	97	0.20	0.10
	1993	702.1	75.7	1,514	675	0.45	0.96
	1994	903.8	100.0	381	48	0.13	0.05
	1995	582.4	70.8	1,690	548	0.32	0.94
	1996	927.8	94.8	388	54	0.14	0.06
	1997	360.6	45.1	1,340	367	0.27	1.02
	1998	282.8	31.5	1,154	289,600	0.25	1.02
	1999	831.8	88.2	350	40,931	0.12	0.05
	2000	115.4	13.0	2,003	567,224	0.28	4.92
2001	887.2	97.2	399	22,067	0.06	0.02	
2002	860.0	91.3	1,361	248,487	0.18	0.29	
2003	953.0	98.9	241	11,778	0.05	0.01	
2004	---	---	156	3	0.02	---	
INDIAN POINT 1¹⁰ Docket 50-3; DPR-05 1st commercial operation 8/62 Type—PWR Capacity—(265) MWe	2005	---	---	151	6.692	0.04	---
	2006	---	---	193	7.670	0.04	---
	2007	---	---	210	2.554	0.01	---
	2008	---	---	234	4.322	0.02	---
	2009	---	---	140	0.404	---	---
	2010	---	---	157	0.833	0.01	---
	2011	---	---	103	0.262	---	---
	2012	---	---	106	0.343	---	---
	2013	---	---	3	0.283	0.09	---

⁹ Humboldt Bay had been shut down since 1976, and in 1983, Pacific Gas and Electric Company announced its intention to decommission the unit. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

¹⁰ Indian Point 1 was defueled in 1976, and in 1984, it was decided that the plant would not be placed in operation again. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

¹¹ Indian Point 3 was purchased by a different utility in 1979 and subsequently reported its dose separately. Indian Point 1, 2, and 3 have been owned by the same utility since 2001 and report together.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
INDIAN POINT 3¹¹ Docket 50-286; DPR-64 1st commercial operation 8/76 Type—PWR Capacity—(1,030) MWe	1979	574.0	66.5	808	636	0.79	1.11
	1980	367.3	53.2	977	308	0.32	0.84
	1981	367.5	59.8	677	364	0.54	0.99
	1982	171.5	22.5	1,477	1,226	0.83	7.15
	1983	7.8	2.6	941	607	0.65	77.82
	1984	714.4	76.3	658	230	0.35	0.32
	1985	566.5	66.0	1,093	570	0.52	1.01
	1986	655.3	73.4	588	202	0.34	0.31
	1987	574.6	62.7	1,308	500	0.38	0.87
	1988	792.5	83.3	451	93	0.21	0.12
	1989	587.8	61.1	1,800	876	0.49	1.49
	1990	595.3	62.9	1,066	358	0.34	0.60
	1991	862.8	87.5	299	40	0.13	0.05
	1992	561.7	61.4	1,003	212	0.21	0.38
	1993	140.5	14.9	478	60	0.13	0.43
	1994	---	---	529	58	0.11	---
	1995	174.8	21.4	638	67	0.11	0.38
	1996	695.3	74.8	289	22	0.08	0.03
	1997	495.1	54.9	1,608	234	0.15	0.47
	1998	874.0	95.3	213	14.774	0.07	0.02
1999	829.8	88.3	893	116.920	0.13	0.14	
2000	960.0	99.3	143	8.693	0.06	0.01	
2001	903.9	93.1	1,014	118.115	0.12	0.13	
2002	960.0	98.5	156	6.797	0.04	0.01	
2003	866.2	89.8	902	96.059	0.11	0.11	
INDIAN POINT 2, 3¹¹ Docket 50-247, 50-286; DPR-26, DPR-64 1st commercial operation 8/74, 8/76 Type—PWRs Capacity—(998), (1,030) MWe	2004	1,851.1	191.0	1,370	199.862	0.15	0.11
	2005	1,922.2	191.7	1,363	85.280	0.06	0.04
	2006	1,936.0	191.0	1,634	289.701	0.18	0.15
	2007	1,899.3	188.0	1,971	109.969	0.06	0.06
	2008	1,977.2	192.6	1,456	142.728	0.10	0.07
	2009	1,884.2	187.5	1,853	79.090	0.04	0.04
	2010	1,859.2	183.6	1,962	200.382	0.10	0.11
	2011	1,938.8	95.1	1,185	63.267	0.05	0.03
	2012	1,921.0	94.7	1,289	109.807	0.09	0.06
	2013	1,946.6	95.6	1,297	74.038	0.06	0.04
	2014	1,973.1	96.5	1,313	142.195	0.11	0.07
	2015	1,870.1	92.6	1,277	60.475	0.05	0.03
	2016	1,723.7	85.9	958	72.915	0.08	0.04
	2017	1,740.7	86.6	1,899	102.735	0.05	0.06
	2018	1,863.6	92.0	1,624	88.211	0.05	0.05
2019	1,905.9	93.7	1,552	51.414	0.03	0.03	
2020	1,354.8	100.0	804	25.855	0.03	0.02	
2021	---	---	671	22.790	---	---	
2022	---	---	580	96.677	---	---	
2023	---	---	709	160.589	0.23	---	
KEWAUNEE¹² Docket 50-305; DPR-43 1st commercial operation 6/74 Type—PWR Capacity—(556) MWe	1975	401.9	88.2	104	28	0.27	0.07
	1976	405.9	78.9	381	270	0.71	0.67
	1977	425.0	79.9	312	140	0.45	0.33
	1978	466.6	89.5	335	154	0.46	0.33
	1979	412.0	79.0	343	127	0.37	0.31
	1980	433.8	82.1	401	165	0.41	0.38
	1981	451.8	86.7	383	141	0.37	0.31
	1982	458.4	87.6	353	101	0.29	0.22
	1983	444.1	83.7	445	165	0.37	0.37
	1984	455.3	85.7	482	139	0.29	0.31
	1985	443.1	82.4	519	176	0.34	0.40
	1986	461.7	85.8	502	169	0.34	0.37
	1987	480.0	89.7	755	226	0.30	0.47
	1988	467.5	88.3	705	210	0.30	0.45
1989	449.1	84.9	570	239	0.42	0.53	

¹¹ Indian Point 3 was purchased by a different utility in 1979 and subsequently reported its dose separately. Indian Point 1, 2, and 3 have been owned by the same utility since 2001 and report together.

¹² Kewaunee ceased operations in May 2013 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
KEWAUNEE¹² (continued)	1990	468.8	87.9	490	145	0.30	0.31
	1991	441.8	83.4	495	221	0.45	0.50
	1992	471.4	88.0	450	122	0.27	0.26
	1993	457.1	86.8	436	106	0.24	0.23
	1994	475.6	88.8	364	72	0.20	0.15
	1995	455.6	87.8	415	109	0.26	0.24
	1996	380.4	71.8	474	126	0.27	0.33
	1997	269.8	56.0	278	56	0.20	0.21
	1998	423.0	87.2	384	88.205	0.23	0.21
	1999	505.1	100.0	103	5.055	0.05	0.01
	2000	432.6	88.8	394	99.864	0.25	0.23
	2001	394.1	80.8	1,110	200.245	0.18	0.51
	2002	509.0	97.4	102	4.449	0.04	0.01
	2003	473.5	90.5	439	73.108	0.17	0.15
	2004	441.0	81.0	565	91.168	0.16	0.21
	2005	346.4	62.7	97	4.000	0.04	0.01
	2006	419.4	77.0	539	74.734	0.14	0.18
	2007	528.0	95.0	145	11.126	0.08	0.02
	2008	499.5	88.9	598	92.951	0.16	0.19
	2009	515.4	92.0	595	56.215	0.09	0.11
	2010	569.7	100.0	135	4.690	0.03	0.01
	2011	524.5	92.3	757	79.396	0.10	0.15
	2012	514.1	90.9	585	39.093	0.07	0.08
	2013	---	---	114	4.915	0.04	---
	2014	---	---	57	1.964	0.03	---
	2015	---	---	7	0.156	0.02	---
2016	---	---	5	0.092	0.02	---	
2017	---	---	64	6.167	0.10	---	
2018	---	---	8	1.002	0.13	---	
2019	---	---	2	0.021	0.01	---	
2020	---	---	---	---	---	---	
2021	---	---	2	0.011	---	---	
2022	---	---	3	0.019	---	---	
2023	---	---	16	0.251	0.02	---	
2024	---	---	156	28.332	0.18	---	
LA CROSSE¹³ Docket 50-409; DPR-45 1st commercial operation 11/69 Type—BWR Capacity—(48) MWe	1970	15.3	---	---	111	---	7.25
	1971	33.1	---	218	158	0.72	4.77
	1972	29.2	---	151	172	1.14	5.89
	1973	24.4	---	157	221	1.41	9.06
	1974	37.9	81.0	115	139	1.21	3.67
	1975	32.0	69.6	165	234	1.42	7.31
	1976	21.2	47.6	118	110	0.93	5.19
	1977	11.3	33.7	141	225	1.60	19.91
	1978	21.6	62.0	182	164	0.90	7.59
	1979	24.0	71.8	153	186	1.22	7.75
	1980	26.4	68.5	124	218	1.76	8.26
	1981	29.6	76.0	187	123	0.66	4.16
	1982	17.2	44.6	148	205	1.39	11.92
	1983	24.8	59.7	160	313	1.96	12.62
	1984	38.5	80.5	288	252	0.88	6.55
	1985	39.2	86.7	373	173	0.46	4.41
	1986	19.6	46.1	260	290	1.12	14.80
	1987	---	---	127	68	0.54	---
1988	---	---	49	31	0.63	---	
1989	---	---	60	15	0.25	---	
1990	---	---	51	9	0.18	---	
1991	---	---	42	8	0.19	---	
1992	---	---	28	6	0.21	---	
1993	---	---	48	8	0.17	---	
1994	---	---	65	8	0.12	---	

¹² Kewaunee ceased operations in May 2013 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

¹³ La Crosse ceased operations in 1987 and will not be put in commercial operation again. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
LA CROSSE ¹³ (continued)	1995	---	---	31	3	0.10	---
	1996	---	---	25	4	0.16	---
	1997	---	---	23	2	0.09	---
	1998	---	---	27	1,530	0.06	---
	1999	---	---	66	3,725	0.06	---
	2000	---	---	37	3,548	0.10	---
	2001	---	---	45	2,782	0.06	---
	2002	---	---	47	2,314	0.05	---
	2003	---	---	65	1,836	0.03	---
	2004	---	---	56	0,918	0.02	---
	2005	---	---	51	8,139	0.16	---
	2006	---	---	---	---	---	---
	2007	---	---	86	37,092	0.43	---
	2008	---	---	40	1,759	0.04	---
	2009	---	---	48	1,307	0.03	---
	2010	---	---	78	2,971	0.04	---
	2011	---	---	110	5,296	0.05	---
	2012	---	---	100	7,652	0.08	---
	2013	---	---	51	3,411	0.07	---
	2014	---	---	59	5,499	0.09	---
	2015	---	---	22	1,587	0.07	---
	2016	---	---	34	3,904	0.11	---
	2017	---	---	58	6,356	0.11	---
	2018	---	---	21	0,633	0.03	---
2019	---	---	---	---	---	---	
2020	---	---	---	---	---	---	
2021	---	---	3	0,009	---	---	
2022	---	---	---	---	---	---	
2023	---	---	13	0,043	0.00	---	
2024	---	---	8	0,023	0.00	---	
LASALLE 1, 2 Docket 50-373, 50-374; NPF-11, NPF-18 1st commercial operation 1/84, 6/84 Type—BWRs Capacity—1,111, 1,111 MWe	1984	677.8	77.8	1,245	252	0.20	0.37
	1985	987.9	53.0	1,635	685	0.42	0.69
	1986	929.5	50.6	1,614	898	0.56	0.97
	1987	1,030.0	59.3	1,744	1,396	0.80	1.36
	1988	1,317.6	71.6	2,737	2,471	0.90	1.88
	1989	1,503.5	73.1	2,475	1,386	0.56	0.92
	1990	1,754.3	84.6	1,830	948	0.52	0.54
	1991	1,837.0	86.7	1,985	806	0.41	0.44
	1992	1,447.4	72.0	2,418	1,167	0.48	0.81
	1993	1,542.0	76.0	1,701	854	0.50	0.55
	1994	1,580.0	77.6	1,812	726	0.40	0.46
	1995	1,696.6	82.1	1,623	512	0.32	0.30
	1996	1,053.8	54.3	2,782	819	0.29	0.78
	1997	---	---	1,661	316	0.19	---
	1998	380.9	19.3	2,099	422,249	0.20	1.11
	1999	1,671.9	81.8	2,689	576,354	0.21	0.34
	2000	2,138.6	97.1	1,831	260,320	0.14	0.12
	2001	2,223.8	98.9	535	82,721	0.15	0.04
	2002	2,040.0	92.1	2,012	449,587	0.22	0.22
	2003	2,100.2	94.8	2,253	464,427	0.21	0.22
2004	2,162.1	96.0	2,366	359,470	0.15	0.17	
2005	2,130.4	95.0	2,097	334,558	0.16	0.16	
2006	2,181.3	97.0	2,006	248,454	0.12	0.11	
2007	2,166.7	98.0	1,953	228,373	0.12	0.11	
2008	2,145.8	96.4	2,402	217,567	0.09	0.10	
2009	2,141.0	95.7	1,986	296,659	0.15	0.14	
2010	2,184.1	96.5	2,386	384,434	0.16	0.18	
2011	2,198.2	96.1	2,805	340,529	0.12	0.15	
2012	2,230.8	96.9	1,973	224,711	0.11	0.10	
2013	2,141.6	94.1	1,960	383,622	0.20	0.18	
2014	2,141.0	94.0	2,151	366,524	0.17	0.17	
2015	2,132.9	95.7	2,492	501,666	0.20	0.24	
2016	2,185.5	96.0	2,653	338,985	0.13	0.16	

¹³ La Crosse ceased operations in 1987 and will not be put in commercial operation again. Therefore, it is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/MW-yr
LASALLE 1, 2 (continued)	2017	2,158.5	94.5	2,824	570.389	0.20	0.26
	2018	2,214.7	96.3	2,923	349.268	0.12	0.16
	2019	2,218.6	97.1	2,295	309.129	0.13	0.14
	2020	2,248.4	97.7	2,097	182.552	0.09	0.08
	2021	2,112.4	92.5	2,454	666.001	0.27	0.32
	2022	2,193.7	96.2	1,886	248.156	0.13	0.11
	2023	2,219.6	96.8	2,298	606.160	0.26	0.27
	2024	2,220.8	97.5	2,026	188.026	0.09	0.08
LIMERICK 1, 2 Docket 50-352, 50-353; NPF-39, NPF-85 1st commercial operation 2/86, 1/90 Type—BWRs Capacity—1,099, 1,108 MWe	1987	636.1	70.2	2,156	174	0.08	0.27
	1988	794.9	96.5	950	52	0.05	0.07
	1989	628.4	66.0	1,818	266	0.15	0.42
	1990	1,527.7	78.2	1,422	175	0.12	0.11
	1991	1,810.9	86.8	1,151	106	0.09	0.06
	1992	1,741.4	84.8	1,559	330	0.21	0.19
	1993	1,913.2	91.6	1,287	217	0.17	0.11
	1994	1,944.4	94.9	1,543	275	0.18	0.14
	1995	1,957.1	93.0	1,581	260	0.16	0.13
	1996	2,026.2	93.3	1,654	234	0.14	0.12
	1997	2,001.7	95.8	1,463	234	0.16	0.12
	1998	1,907.2	89.5	1,854	357.139	0.19	0.19
	1999	2,089.6	94.2	1,800	271.547	0.15	0.13
	2000	2,154.9	95.8	1,279	260.611	0.20	0.12
	2001	2,205.9	97.3	1,127	210.336	0.19	0.10
	2002	2,197.0	97.1	1,248	160.324	0.13	0.07
	2003	2,213.6	97.2	1,298	147.047	0.11	0.07
	2004	2,218.9	97.6	1,265	149.433	0.12	0.07
	2005	2,168.9	96.3	1,460	187.609	0.13	0.09
	2006	2,207.2	97.0	1,509	193.429	0.13	0.09
	2007	2,185.8	96.0	1,570	197.104	0.13	0.09
	2008	2,169.2	96.0	1,393	176.825	0.13	0.08
	2009	2,211.4	97.2	1,606	234.742	0.15	0.11
	2010	2,165.2	96.7	1,525	167.797	0.11	0.08
2011	2,112.7	94.5	2,007	184.415	0.09	0.09	
2012	2,071.4	92.8	2,011	159.812	0.08	0.08	
2013	2,235.7	96.8	1,663	133.531	0.08	0.06	
2014	2,182.1	94.8	1,523	138.396	0.09	0.06	
2015	2,165.6	95.9	1,516	124.787	0.08	0.06	
2016	2,219.1	96.3	1,626	126.799	0.08	0.06	
2017	2,123.1	93.4	1,808	183.736	0.10	0.09	
2018	2,214.9	97.2	1,676	121.053	0.07	0.05	
2019	2,213.1	97.2	1,906	157.471	0.08	0.07	
2020	2,212.3	97.5	1,396	116.596	0.08	0.05	
2021	2,204.3	97.5	1,560	123.712	0.08	0.06	
2022	2,188.0	96.7	1,744	162.049	0.09	0.07	
2023	2,179.7	97.1	1,487	126.851	0.09	0.06	
2024	2,204.0	97.2	2,097	204.488	0.10	0.09	
MAINE YANKEE¹⁴ Docket 50-309; DPR-36 1st commercial operation 12/72 Type—PWR Capacity—(860) MWe	1973	408.7	---	782	117	0.15	0.29
	1974	432.6	68.7	619	420	0.68	0.97
	1975	542.9	79.9	440	319	0.73	0.59
	1976	712.2	95.0	244	85	0.35	0.12
	1977	617.6	82.2	508	245	0.48	0.40
	1978	642.7	84.1	638	420	0.66	0.65
	1979	537.0	68.4	393	154	0.39	0.29
	1980	527.0	72.2	735	462	0.63	0.88
	1981	624.2	78.2	868	424	0.49	0.68
	1982	542.5	69.1	1,295	619	0.48	1.14
	1983	677.1	83.6	592	165	0.28	0.24
	1984	605.7	74.4	1,262	884	0.70	1.46
	1985	635.4	79.2	1,009	700	0.69	1.10
	1986	737.6	87.8	495	100	0.20	0.14
	1987	478.1	65.3	1,100	722	0.66	1.51
	1988	591.9	79.1	1,058	725	0.69	1.22
1989	819.2	93.7	375	99	0.26	0.12	

¹⁴ Maine Yankee ceased operations in August 1997 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
MAINE YANKEE¹⁴ (continued)	1990	573.0	71.0	1,359	682	0.50	1.19
	1991	738.1	86.6	426	105	0.25	0.14
	1992	631.7	79.1	1,189	461	0.39	0.73
	1993	674.8	79.8	1,016	377	0.37	0.56
	1994	782.8	90.9	297	84	0.28	0.11
	1995	23.6	3.7	1,167	653	0.56	27.67
	1996	602.9	78.1	408	56	0.14	0.09
	1997	---	---	991	153	0.15	---
	1998	---	---	438	163.008	0.37	---
	1999	---	---	365	135.057	0.37	---
	2000	---	---	490	121.133	0.25	---
	2001	---	---	412	68.121	0.17	---
	2002	---	---	452	66.226	0.15	---
	2003	---	---	342	43.775	0.13	---
	2004	---	---	190	21.313	0.11	---
	2005	---	---	2	0.048	0.02	---
	2006	---	---	---	---	---	---
	2007	---	---	---	---	---	---
	2008	---	---	1	0.013	0.01	---
	2009	---	---	3	0.137	0.05	---
	2010	---	---	1	0.084	0.08	---
	2011	---	---	2	0.060	0.03	---
	2012	---	---	6	0.238	0.04	---
	2013	---	---	4	0.186	0.05	---
	2014	---	---	3	0.079	0.03	---
	2015	---	---	9	0.176	0.02	---
2016	---	---	2	0.038	0.02	---	
2017	---	---	3	0.054	0.02	---	
2018	---	---	6	0.089	0.01	---	
2019	---	---	14	0.188	0.01	---	
2020	---	---	13	0.226	0.02	---	
2021	---	---	1	0.013	0.01	---	
2022	---	---	---	---	---	---	
2023	---	---	5	0.061	0.01	---	
2024	---	---	1	0.017	0.02	---	
MCGUIRE 1, 2 Docket 50-369, 50-370; NPF-9, NPF-17 1st commercial operation 12/81, 3/84 Type—PWRs Capacity—1,158, 1,158 MWe	1982	524.9	80.4	1,560	169	0.11	0.32
	1983	558.3	55.4	1,751	521	0.30	0.93
	1984	764.1	68.5	1,663	507	0.30	0.66
	1985	808.4	77.0	2,217	771	0.35	0.95
	1986	1,360.0	60.1	2,326	1,015	0.44	0.75
	1987	1,774.7	79.2	2,865	1,043	0.36	0.59
	1988	1,830.7	80.2	2,808	1,104	0.39	0.60
	1989	1,810.2	80.8	1,994	620	0.31	0.34
	1990	1,340.3	61.3	2,289	727	0.32	0.54
	1991	1,945.1	85.0	1,723	361	0.21	0.19
	1992	1,696.8	74.4	1,619	418	0.26	0.25
	1993	1,470.4	66.2	1,685	463	0.27	0.31
	1994	1,848.0	80.2	1,637	397	0.24	0.21
	1995	2,132.3	92.9	1,259	138	0.11	0.06
	1996	1,881.8	82.8	1,622	238	0.15	0.13
	1997	1,558.2	73.0	2,193	492	0.22	0.32
	1998	2,139.8	95.1	1,045	142.245	0.14	0.07
	1999	1,961.7	88.9	1,274	256.524	0.20	0.13
	2000	2,100.1	94.2	940	132.513	0.14	0.06
	2001	2,113.3	93.9	963	136.581	0.14	0.06
2002	2,051.0	91.7	1,167	180.618	0.15	0.09	
2003	2,156.2	96.0	841	71.323	0.08	0.03	
2004	2,075.7	91.8	1,116	196.193	0.18	0.09	
2005	1,993.9	89.2	1,401	173.972	0.12	0.09	
2006	2,100.2	93.0	1,218	108.285	0.09	0.05	
2007	2,011.4	89.0	1,375	156.035	0.11	0.08	
2008	1,943.3	86.2	1,613	165.767	0.10	0.09	
2009	2,170.6	95.3	1,165	79.773	0.07	0.04	

¹⁴ Maine Yankee ceased operations in August 1997 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
MCGUIRE 1, 2 (continued)	2010	2,151.9	94.8	1,225	81.321	0.07	0.04
	2011	2,038.3	89.9	1,648	119.637	0.07	0.06
	2012	2,045.6	90.4	1,222	62.690	0.05	0.03
	2013	2,157.3	94.4	1,447	109.423	0.08	0.05
	2014	2,008.0	87.0	1,760	138.257	0.08	0.07
	2015	2,230.1	95.5	1,074	49.399	0.05	0.02
	2016	2,269.9	96.1	1,201	67.654	0.06	0.03
	2017	2,145.6	92.0	1,607	147.589	0.09	0.07
	2018	2,267.4	96.2	881	40.005	0.05	0.02
	2019	2,236.1	96.6	858	54.230	0.06	0.02
	2020	2,174.3	92.6	1,061	70.343	0.07	0.03
	2021	2,244.5	96.0	922	59.253	0.06	0.03
	2022	2,226.6	94.6	1,043	87.503	0.08	0.04
	2023	2,063.3	88.7	1,453	136.164	0.09	0.07
2024	2,279.5	97.2	764	44.415	0.06	0.02	
MILLSTONE 1¹⁵ Docket 50-245; DPR-21 1st commercial operation 12/70 Type—BWR Capacity—(641) MWe	1972	377.6	---	612	596	0.97	1.58
	1973	225.1	---	1,184	663	0.56	2.95
	1974	430.3	79.1	2,477	1,430	0.58	3.32
	1975	465.4	75.6	2,587	2,022	0.78	4.34
	1976	449.8	76.1	1,387	1,194	0.86	2.65
	1977	575.7	89.6	1,075	394	0.37	0.68
	1978	556.6	87.6	1,391	1,416	1.02	2.54
	1979	505.0	77.3	2,001	1,795	0.90	3.55
	1980	405.8	69.0	3,024	2,157	0.71	5.32
	1981	304.3	51.6	2,506	1,496	0.60	4.92
	1982	490.2	79.9	1,370	929	0.68	1.90
	1983	640.1	95.6	309	244	0.79	0.38
	1984	516.1	78.8	1,992	836	0.42	1.62
	1985	548.5	83.6	732	608	0.83	1.11
	1986	626.8	95.4	389	150	0.39	0.24
	1987	523.4	79.6	1,588	684	0.43	1.31
	1988	658.8	98.6	327	144	0.44	0.22
	1989	554.6	84.2	852	462	0.54	0.83
	1990	608.3	91.6	365	131	0.36	0.22
	1991	213.1	35.4	1,154	409	0.35	1.92
	1992	431.8	68.1	348	99	0.28	0.23
	1993	627.9	96.8	305	81	0.27	0.13
	1994	394.0	63.6	1,321	391	0.30	0.99
	1995	520.6	80.0	910	620	0.68	1.19
	1996	---	---	747	431	0.58	---
	1997	-2.9	---	1,053	195	0.19	---
	1998	-2.7	---	347	12.741	0.04	---
	1999	---	---	397	9.790	0.02	---
	2000	---	---	478	59.955	0.13	---
	2001	---	---	414	14.946	0.04	---
	2002	---	---	185	4.151	0.02	---
	2003	---	---	195	10.675	0.05	---
	2004	---	---	147	11.152	0.08	---
2005	---	---	145	0.897	0.01	---	
2006	---	---	4	0.607	0.15	---	
2007	---	---	33	0.901	0.03	---	
2008	---	---	---	0.222	---	---	
2009	---	---	---	0.114	---	---	
2010	---	---	---	0.142	---	---	
2011	---	---	---	0.265	---	---	
2012	---	---	---	0.137	---	---	
2013	---	---	---	0.313	---	---	
2014	---	---	---	0.313	---	---	
2015	---	---	---	---	---	---	
2016	---	---	---	---	---	---	
2017	---	---	---	---	---	---	

¹⁵ Millstone 1 ceased operations in 1998 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational. From 2008–2014, Millstone 1 voluntarily provided an estimate of the collective dose for Unit 1 but not the number of individuals with measurable dose.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person- rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
MILLSTONE 2, 3 Docket 50-336, 50-423; DPR-65; NPF-49 1st commercial operation 12/75, 4/86 Type—PWRs Capacity—870, 1,223 MWe	1976	545.7	78.7	620	168	0.27	0.31
	1977	518.7	65.7	667	242	0.36	0.47
	1978	536.6	67.3	1,420	1,444	1.02	2.69
	1979	520.0	62.8	525	471	0.90	0.91
	1980	579.3	69.2	893	637	0.71	1.10
	1981	722.4	82.6	890	531	0.60	0.74
	1982	595.9	70.6	2,083	1,413	0.68	2.37
	1983	294.0	34.2	2,383	1,881	0.79	6.40
	1984	782.7	93.5	285	120	0.42	0.15
	1985	417.8	49.4	1,905	1,581	0.83	3.78
	1986	1,313.8	80.4	2,393	993	0.41	0.76
	1987	1,624.5	84.1	1,441	505	0.35	0.31
	1988	1,594.8	83.2	1,827	804	0.44	0.50
	1989	1,428.3	72.9	1,984	1,079	0.54	0.76
	1990	1,614.9	87.1	1,652	593	0.36	0.37
	1991	819.5	69.7	1,084	381	0.35	0.46
	1992	1,115.1	59.9	3,190	1,280	0.40	1.15
	1993	1,525.2	79.7	2,064	557	0.27	0.37
	1994	1,556.6	73.1	1,249	188	0.15	0.12
	1995	1,278.1	60.5	1,691	416	0.25	0.33
	1996	418.1	19.3	983	126	0.13	0.30
	1997	---	---	1,435	253	0.18	---
	1998	374.9	20.9	1,179	112.543	0.10	0.30
	1999	1,446.3	73.3	1,688	252.138	0.15	0.17
2000	1,865.8	92.4	1,385	142.664	0.10	0.08	
2001	1,759.3	92.0	1,327	174.238	0.13	0.10	
2002	1,703.0	87.5	1,548	292.197	0.19	0.17	
2003	1,834.6	91.0	1,274	322.923	0.25	0.18	
2004	1,887.5	95.0	803	136.459	0.17	0.07	
2005	1,777.1	88.8	1,329	202.490	0.15	0.11	
2006	1,898.5	93.0	1,160	174.164	0.15	0.09	
2007	1,875.1	94.0	1,150	163.780	0.14	0.09	
2008	1,761.1	87.7	1,467	272.693	0.19	0.15	
2009	1,906.1	89.6	983	159.203	0.16	0.08	
2010	1,916.8	93.1	718	81.589	0.11	0.04	
2011	1,822.7	87.7	1,044	169.417	0.16	0.09	
2012	1,948.9	92.2	726	73.270	0.10	0.04	
2013	1,954.5	94.6	747	64.232	0.09	0.03	
2014	1,812.7	87.5	1,250	160.502	0.13	0.09	
2015	1,992.4	95.0	818	63.940	0.08	0.03	
2016	1,896.1	93.1	856	64.125	0.07	0.03	
2017	1,888.0	91.2	1,118	112.598	0.10	0.06	
2018	1,931.7	91.5	777	66.110	0.09	0.03	
2019	1,914.9	94.8	715	47.673	0.07	0.02	
2020	1,798.0	87.1	1,028	82.459	0.08	0.05	
2021	1,970.8	94.4	685	50.289	0.07	0.03	
2022	1,886.3	91.8	707	53.570	0.08	0.03	
2023	1,565.2	77.8	1,172	130.298	0.11	0.08	
2024	1,924.3	92.4	743	61.861	0.08	0.03	
MONTICELLO Docket 50-263; DPR-22 1st commercial operation 6/71 Type—BWR Capacity—628 MWe	1972	424.4	---	99	61	0.62	0.14
	1973	389.5	---	401	176	0.44	0.45
	1974	349.3	74.9	842	349	0.41	1.00
	1975	344.8	72.2	1,353	1,353	1.00	3.92
	1976	476.4	91.5	325	263	0.81	0.55
	1977	425.6	79.9	860	1,000	1.16	2.35
	1978	459.4	87.2	679	375	0.55	0.82
	1979	522.0	97.6	372	157	0.42	0.30
	1980	411.8	78.2	1,114	531	0.48	1.29
	1981	389.3	72.6	1,446	1,004	0.69	2.58
	1982	291.1	63.3	1,307	993	0.76	3.41
	1983	494.6	96.3	416	121	0.29	0.24
1984	33.7	9.2	1,872	2,462	1.32	73.06	
1985	509.8	91.7	586	327	0.56	0.64	
1986	402.7	79.1	895	596	0.67	1.48	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
MONTICELLO (continued)	1987	422.5	81.9	941	568	0.60	1.34
	1988	542.5	99.8	375	110	0.29	0.20
	1989	318.2	76.2	1,102	507	0.46	1.59
	1990	536.0	96.9	336	94	0.28	0.18
	1991	429.4	80.8	964	465	0.48	1.08
	1992	528.3	97.5	454	114	0.25	0.22
	1993	458.1	84.4	954	494	0.52	1.08
	1994	471.3	87.0	788	395	0.50	0.84
	1995	564.7	100.0	200	44	0.22	0.08
	1996	461.6	86.9	757	240	0.32	0.52
	1997	417.4	75.9	399	106	0.27	0.25
	1998	470.2	88.1	674	209.137	0.31	0.44
	1999	530.7	92.9	451	70.075	0.16	0.13
	2000	483.2	84.2	792	216.136	0.27	0.45
	2001	441.3	78.5	834	220.683	0.26	0.50
	2002	571.0	99.0	399	40.030	0.10	0.07
	2003	522.8	91.7	858	168.896	0.20	0.32
	2004	573.2	99.2	279	35.081	0.13	0.06
	2005	509.4	90.0	919	175.201	0.19	0.34
	2006	579.1	100.0	273	33.416	0.12	0.06
	2007	478.6	85.0	1,075	191.398	0.18	0.40
	2008	555.3	95.8	351	43.777	0.12	0.08
	2009	473.1	85.2	1,235	173.624	0.14	0.37
	2010	536.0	98.5	534	56.116	0.11	0.10
	2011	383.4	71.3	1,903	236.997	0.12	0.62
	2012	556.7	98.6	528	38.786	0.07	0.07
2013	342.3	62.5	1,247	198.968	0.16	0.58	
2014	493.6	95.0	282	35.306	0.13	0.07	
2015	532.4	85.5	846	130.057	0.15	0.24	
2016	639.0	100.0	313	28.547	0.09	0.04	
2017	589.0	92.2	815	115.814	0.14	0.20	
2018	641.3	100.0	273	29.238	0.11	0.05	
2019	566.7	91.9	1,055	128.425	0.12	0.23	
2020	638.5	100.0	249	21.790	0.09	0.03	
2021	570.0	91.2	808	133.174	0.16	0.23	
2022	633.0	99.3	374	44.589	0.12	0.07	
2023	547.2	88.1	957	153.784	0.16	0.28	
2024	625.2	98.0	496	42.704	0.09	0.07	
NINE MILE POINT 1, 2 Docket 50-220, 50-410; DPR-63; NPF-69 1st commercial operation 12/69, 4/88 Type—BWRs Capacity—565, 1,277 MWe	1970	227.0	---	821	44	0.05	0.19
	1971	346.5	---	1,006	195	0.19	0.56
	1972	381.8	---	735	285	0.39	0.75
	1973	411.0	---	550	567	1.03	1.38
	1974	385.9	70.5	740	824	1.11	2.14
	1975	359.0	72.1	649	681	1.05	1.90
	1976	484.6	88.2	392	428	1.09	0.88
	1977	347.4	59.2	1,093	1,383	1.27	3.98
	1978	527.7	95.1	561	314	0.56	0.60
	1979	354.0	66.1	1,326	1,497	1.13	4.23
	1980	533.9	92.3	1,174	591	0.50	1.11
	1981	385.2	66.0	2,029	1,592	0.78	4.13
	1982	133.5	21.4	1,352	1,264	0.93	9.47
	1983	329.8	56.2	1,405	860	0.61	2.61
	1984	426.8	71.9	1,530	890	0.58	2.09
	1985	580.9	96.4	1,007	265	0.26	0.46
	1986	371.0	65.3	1,878	1,275	0.68	3.44
	1987	542.6	93.3	1,190	141	0.12	0.26
	1988	---	---	2,626	854	0.33	---
	1989	527.5	29.7	2,737	564	0.21	1.07
1990	656.2	46.6	2,405	699	0.29	1.07	
1991	1,250.8	79.7	1,543	292	0.19	0.23	
1992	965.9	61.8	1,800	563	0.31	0.58	
1993	1,380.2	84.6	2,352	633	0.27	0.46	
1994	1,589.6	95.9	800	149	0.19	0.09	
1995	1,382.2	82.5	2,304	759	0.33	0.55	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
NINE MILE POINT 1, 2 (continued)	1996	1,598.6	91.6	1,596	290	0.18	0.18
	1997	1,321.5	74.8	1,425	429	0.30	0.32
	1998	1,387.3	87.0	1,744	378.484	0.22	0.27
	1999	1,409.5	81.3	1,709	446.699	0.26	0.32
	2000	1,443.9	88.1	1,783	282.838	0.16	0.20
	2001	1,506.9	88.9	1,371	343.197	0.25	0.23
	2002	1,517.0	90.4	2,449	516.663	0.21	0.34
	2003	1,585.6	91.4	1,501	374.775	0.25	0.24
	2004	1,551.9	92.0	1,362	448.509	0.33	0.29
	2005	1,656.5	94.5	1,366	401.719	0.29	0.24
	2006	1,647.1	96.0	1,130	229.551	0.20	0.14
	2007	1,598.3	93.0	1,826	329.307	0.18	0.21
	2008	1,642.1	95.8	1,391	301.824	0.22	0.18
	2009	1,706.2	97.1	1,456	237.552	0.16	0.14
	2010	1,627.1	95.2	1,703	375.424	0.22	0.23
	2011	1,616.8	92.5	1,362	244.395	0.18	0.15
	2012	1,504.6	87.3	1,764	407.900	0.23	0.27
	2013	1,804.9	95.0	1,411	217.056	0.15	0.12
	2014	1,737.8	94.7	1,483	263.710	0.18	0.15
	2015	1,823.7	95.7	1,604	160.380	0.10	0.09
	2016	1,765.5	95.1	1,679	256.794	0.15	0.15
	2017	1,827.3	97.2	1,401	141.150	0.10	0.08
	2018	1,758.9	95.8	1,905	385.491	0.20	0.22
	2019	1,777.2	94.2	1,338	151.719	0.11	0.09
2020	1,785.4	96.2	1,564	258.503	0.17	0.14	
2021	1,829.8	97.5	1,332	123.737	0.09	0.07	
2022	1,730.6	95.8	1,335	229.158	0.17	0.13	
2023	1,778.0	94.4	1,538	165.169	0.11	0.09	
2024	1,762.8	96.5	1,344	231.653	0.17	0.13	
NORTH ANNA 1, 2 Docket 50-338, 50-339; NPF-4, NPF-7 1st commercial operation 6/78, 12/80 Type—PWRs Capacity—948, 944 MWe	1979	507.0	61.7	2,025	449	0.22	0.89
	1980	681.8	86.5	2,086	218	0.10	0.32
	1981	1,241.9	71.5	2,416	680	0.28	0.55
	1982	777.7	45.8	2,872	1,915	0.67	2.46
	1983	1,338.4	76.1	2,228	665	0.30	0.50
	1984	1,021.3	58.8	3,062	1,945	0.64	1.90
	1985	1,516.9	86.1	2,436	838	0.34	0.55
	1986	1,484.5	83.0	2,831	722	0.26	0.49
	1987	1,112.6	67.8	2,624	1,521	0.58	1.37
	1988	1,772.7	96.7	992	112	0.11	0.06
	1989	1,226.8	72.5	2,861	1,471	0.51	1.20
	1990	1,590.4	90.5	2,161	590	0.27	0.37
	1991	1,597.5	88.6	2,085	629	0.30	0.39
	1992	1,403.2	84.1	2,159	576	0.27	0.41
	1993	1,428.4	80.1	2,768	908	0.33	0.64
	1994	1,717.1	95.9	1,036	193	0.19	0.11
	1995	1,666.4	90.8	1,551	367	0.24	0.22
	1996	1,569.6	89.1	1,203	291	0.24	0.19
	1997	1,711.5	96.2	856	103	0.12	0.06
	1998	1,632.8	92.7	1,201	265.922	0.22	0.16
	1999	1,747.7	96.1	727	94.402	0.13	0.05
	2000	1,734.1	95.8	730	65.405	0.09	0.04
	2001	1,491.0	84.8	1,231	308.907	0.25	0.21
	2002	1,557.0	84.3	914	143.312	0.16	0.09
2003	1,569.1	87.2	1,041	187.014	0.18	0.12	
2004	1,685.6	92.0	965	129.686	0.13	0.08	
2005	1,751.5	96.0	686	58.844	0.09	0.03	
2006	1,723.0	95.0	749	82.069	0.11	0.05	
2007	1,596.7	88.0	1,581	309.237	0.20	0.19	
2008	1,643.1	91.2	795	61.003	0.08	0.04	
2009	1,735.5	95.6	745	78.126	0.10	0.05	
2010	1,529.6	84.9	1,032	182.289	0.18	0.12	
2011	1,429.1	76.5	792	90.763	0.11	0.06	
2012	1,745.6	91.4	762	106.518	0.14	0.06	
2013	1,712.9	89.2	948	121.803	0.13	0.07	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
NORTH ANNA 1, 2 (continued)	2014	1,813.8	94.1	753	71.914	0.10	0.04
	2015	1,857.4	96.6	663	43.838	0.07	0.02
	2016	1,726.2	90.0	1,109	119.339	0.11	0.07
	2017	1,840.9	95.6	678	44.884	0.07	0.02
	2018	1,826.2	95.1	796	56.845	0.07	0.03
	2019	1,749.4	91.9	837	95.288	0.11	0.05
	2020	1,803.6	94.1	667	46.569	0.07	0.03
	2021	1,754.8	91.9	578	36.851	0.06	0.02
	2022	1,629.1	85.3	767	68.844	0.09	0.04
	2023	1,799.7	94.5	700	43.326	0.06	0.02
	2024	1,824.2	94.9	676	53.705	0.08	0.03
OCONEE 1, 2, 3 Docket 50-269, 50-270, 50-287; DPR-38, DPR-47, DPR-55 1st commercial operation 7/73, 9/74, 12/74 Type—PWRs Capacity—847, 848, 859 MWe	1974	650.6	60.1	844	517	0.61	0.79
	1975	1,838.3	75.5	829	497	0.60	0.27
	1976	1,561.4	63.0	1,215	1,026	0.84	0.66
	1977	1,566.4	65.9	1,595	1,329	0.83	0.85
	1978	1,909.0	75.8	1,636	1,393	0.85	0.73
	1979	1,708.0	67.7	2,100	1,001	0.48	0.59
	1980	1,703.7	70.1	2,124	1,055	0.50	0.62
	1981	1,661.5	66.8	2,445	1,211	0.50	0.73
	1982	1,293.1	52.5	2,445	1,792	0.73	1.39
	1983	2,141.5	82.2	1,902	1,207	0.63	0.56
	1984	2,242.9	85.7	2,085	1,106	0.53	0.49
	1985	2,036.3	80.5	2,729	1,304	0.48	0.64
	1986	1,995.6	79.0	2,499	949	0.38	0.48
	1987	1,962.6	82.4	2,672	1,142	0.43	0.58
	1988	2,228.9	87.2	2,672	871	0.33	0.39
	1989	2,188.6	85.4	2,205	684	0.31	0.31
	1990	2,405.2	91.4	1,948	404	0.21	0.17
	1991	2,275.0	86.7	1,966	551	0.28	0.24
	1992	2,110.7	82.0	1,954	612	0.31	0.29
	1993	2,399.2	91.3	1,499	237	0.16	0.10
	1994	2,144.3	82.2	1,923	537	0.28	0.25
	1995	2,366.1	89.5	1,586	304	0.19	0.13
	1996	1,847.9	70.3	1,479	257	0.17	0.14
	1997	1,563.7	67.7	1,379	223	0.16	0.14
	1998	1,989.1	81.3	1,695	366.028	0.22	0.18
	1999	2,264.5	90.3	1,568	202.025	0.13	0.09
	2000	2,321.0	91.6	1,686	272.697	0.16	0.12
	2001	2,167.6	86.8	2,002	579.209	0.29	0.27
	2002	2,355.0	92.5	1,723	224.672	0.13	0.10
	2003	2,177.7	86.3	2,180	245.349	0.11	0.11
	2004	2,125.2	84.1	2,295	367.891	0.16	0.17
	2005	2,349.5	92.3	1,516	148.694	0.10	0.06
	2006	2,274.8	90.0	1,859	221.222	0.12	0.10
	2007	2,347.8	92.0	1,915	252.936	0.13	0.11
2008	2,298.5	90.9	1,924	186.335	0.10	0.08	
2009	2,385.7	92.6	1,830	180.868	0.10	0.08	
2010	2,391.1	93.3	1,953	193.088	0.10	0.08	
2011	2,321.6	90.7	2,142	182.261	0.09	0.08	
2012	2,351.0	91.8	1,777	131.442	0.07	0.06	
2013	2,400.1	93.1	1,549	106.414	0.07	0.04	
2014	2,419.3	94.1	2,005	109.011	0.05	0.05	
2015	2,504.5	97.4	1,339	69.050	0.05	0.03	
2016	2,417.5	93.9	1,179	53.398	0.05	0.02	
2017	2,488.4	96.7	966	37.301	0.04	0.01	
2018	2,430.8	94.4	1,141	57.201	0.05	0.02	
2019	2,498.3	97.0	715	31.137	0.04	0.01	
2020	2,459.2	94.6	1,155	61.604	0.05	0.03	
2021	2,535.0	97.6	796	32.452	0.04	0.01	
2022	2,411.5	93.7	1,345	66.673	0.05	0.03	
2023	2,539.6	97.6	939	36.862	0.04	0.01	
2024	2,470.2	94.7	1,196	58.622	0.05	0.02	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
OYSTER CREEK¹⁶ Docket 50-219; DPR-16 1st commercial operation 12/69 Type—BWR Capacity—(619) MWe	1970	413.6	---	95	63	0.66	0.15
	1971	448.9	---	249	240	0.96	0.53
	1972	515.0	---	339	582	1.72	1.13
	1973	424.6	---	782	1,236	1.58	2.91
	1974	434.5	70.4	935	984	1.05	2.26
	1975	373.6	73.3	1,210	1,140	0.94	3.05
	1976	456.5	79.3	1,582	1,078	0.68	2.36
	1977	385.7	70.1	1,673	1,614	0.96	4.18
	1978	431.8	74.3	1,411	1,279	0.91	2.96
	1979	541.0	85.9	842	467	0.55	0.86
	1980	232.9	41.4	1,966	1,733	0.88	7.44
	1981	314.8	59.8	1,689	917	0.54	2.91
	1982	242.7	62.5	1,270	865	0.68	3.56
	1983	27.9	11.5	2,303	2,257	0.98	80.90
	1984	37.1	9.6	2,369	2,054	0.87	55.36
	1985	446.1	89.4	2,342	748	0.32	1.68
	1986	157.3	31.5	3,740	2,436	0.65	15.49
	1987	371.0	64.2	1,932	522	0.27	1.41
	1988	419.6	65.9	2,875	1,504	0.52	3.58
	1989	287.5	57.3	2,395	910	0.38	3.17
	1990	511.8	89.1	1,941	310	0.16	0.61
	1991	351.6	60.5	3,089	1,185	0.38	3.37
	1992	536.3	85.9	2,771	657	0.24	1.23
	1993	551.9	87.8	2,560	416	0.16	0.75
	1994	431.7	70.8	2,382	844	0.35	1.96
	1995	615.4	97.4	761	90	0.12	0.15
	1996	515.0	82.6	1,833	449	0.24	0.87
	1997	579.1	94.3	509	50	0.10	0.09
	1998	490.8	82.4	1,408	308.323	0.22	0.63
	1999	615.1	100.0	466	41.664	0.09	0.07
2000	444.9	83.3	2,044	614.379	0.30	1.38	
2001	595.0	97.6	442	45.817	0.10	0.08	
2002	573.0	94.0	1,468	265.810	0.18	0.46	
2003	598.4	97.2	416	43.363	0.10	0.07	
2004	551.8	91.6	1,346	226.880	0.17	0.41	
2005	611.9	99.5	316	27.813	0.09	0.05	
2006	530.2	90.0	1,443	189.950	0.13	0.36	
2007	579.7	97.0	464	46.590	0.10	0.08	
2008	531.0	91.0	1,511	211.932	0.14	0.40	
2009	568.3	96.4	382	37.272	0.10	0.07	
2010	525.7	89.9	1,655	206.284	0.12	0.39	
2011	604.8	98.0	434	46.984	0.11	0.08	
2012	537.1	88.5	1,359	165.164	0.12	0.31	
2013	584.1	96.5	299	29.981	0.10	0.05	
2014	551.8	91.2	1,160	145.487	0.13	0.26	
2015	602.3	97.7	275	22.710	0.08	0.04	
2016	523.4	87.5	1,286	133.603	0.10	0.26	
2017	619.8	99.5	249	17.511	0.07	0.03	
2018	---	---	357	37.887	0.11	---	
2019	---	---	123	21.886	0.18	---	
2020	---	---	181	22.755	0.13	---	
2021	---	---	350	67.601	0.19	---	
2022	---	---	167	49.829	0.30	---	
2023	---	---	115	30.409	0.26	---	
2024	---	---	108	33.186	0.31	---	
PALISADES¹⁷ Docket 50-255; DPR-20 1st commercial operation 12/71 Type—PWR Capacity—(777) MWe	1972	216.8	---	---	78	---	0.36
	1973	286.8	---	975	1,133	1.16	3.95
	1974	10.7	5.5	774	627	0.81	58.60
	1975	302.0	64.5	495	306	0.62	1.01
	1976	346.9	55.2	742	696	0.94	2.01
	1977	616.6	91.4	332	100	0.30	0.16
	1978	320.2	49.7	849	764	0.90	2.39

¹⁶ Oyster Creek ceased operations in September 2018 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

¹⁷ Palisades ceased operations in May 2022 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
PALISADES¹⁷ (continued)	1979	415.0	59.9	1,599	854	0.53	2.06
	1980	288.3	42.9	1,307	424	0.32	1.47
	1981	418.2	57.2	2,151	902	0.42	2.16
	1982	404.3	54.7	1,554	330	0.21	0.82
	1983	454.4	60.3	2,167	977	0.45	2.15
	1984	98.7	15.2	1,344	573	0.43	5.81
	1985	639.2	83.8	1,355	507	0.37	0.79
	1986	102.3	15.1	1,438	672	0.47	6.57
	1987	319.2	48.2	1,122	456	0.41	1.43
	1988	413.4	56.8	1,472	730	0.50	1.77
	1989	442.8	69.1	1,026	314	0.31	0.71
	1990	366.7	58.7	2,414	766	0.32	2.09
	1991	587.0	78.1	1,315	211	0.16	0.36
	1992	581.9	76.1	1,267	295	0.23	0.51
	1993	424.4	53.7	908	289	0.32	0.68
	1994	541.8	67.0	397	60	0.15	0.11
	1995	583.5	75.8	1,230	462	0.38	0.79
	1996	638.2	81.4	1,109	318	0.29	0.50
	1997	662.5	89.9	338	48	0.14	0.07
	1998	615.4	83.5	895	216.563	0.24	0.35
	1999	585.4	80.2	939	218.451	0.23	0.37
	2000	654.4	88.0	255	26.305	0.10	0.04
	2001	268.2	36.3	1,032	362.723	0.35	1.35
	2002	725.0	94.8	224	24.380	0.11	0.03
	2003	701.1	90.7	822	202.571	0.25	0.29
	2004	608.6	82.3	974	370.895	0.38	0.61
2005	756.6	98.0	156	10.459	0.07	0.01	
2006	675.5	86.0	882	239.652	0.27	0.35	
2007	665.6	85.0	1,065	256.632	0.24	0.39	
2008	778.4	98.2	272	23.478	0.09	0.03	
2009	698.5	89.0	975	267.295	0.27	0.38	
2010	712.5	90.8	908	219.873	0.24	0.31	
2011	758.1	96.5	340	21.654	0.06	0.03	
2012	589.5	77.1	1,096	245.129	0.22	0.42	
2013	689.7	86.7	339	15.830	0.05	0.02	
2014	665.6	83.4	1,231	486.062	0.39	0.73	
2015	721.3	90.9	940	230.687	0.25	0.32	
2016	803.8	100.0	161	5.667	0.04	0.01	
2017	696.1	91.3	794	154.142	0.19	0.22	
2018	622.8	78.8	958	206.284	0.22	0.33	
2019	783.6	98.2	161	10.051	0.06	0.01	
2020	684.3	86.0	889	238.487	0.27	0.35	
2021	800.8	100.0	108	4.556	0.04	0.01	
2022	---	---	245	31.958	---	---	
2023	---	---	30	2.377	0.08	---	
2024	---	---	565	93.581	0.17	---	
PALO VERDE 1, 2, 3 Docket 50-528, 50-529, 50-530; NPF-41, NPF-51, NPF-74 1st commercial operation 1/86, 9/86, 1/88 Type—PWRs Capacity—1,311, 1,314, 1,312 MWe	1987	1,638.1	66.1	1,792	669	0.37	0.41
	1988	1,700.9	65.5	2,173	688	0.32	0.40
	1989	965.3	26.5	2,615	720	0.28	0.75
	1990	2,500.9	67.5	2,236	499	0.22	0.20
	1991	3,043.9	78.9	2,242	605	0.27	0.20
	1992	3,102.3	82.0	1,981	541	0.27	0.17
	1993	2,677.1	74.3	2,124	592	0.28	0.22
	1994	2,827.6	79.1	2,048	462	0.23	0.16
	1995	3,265.2	85.6	1,875	482	0.26	0.15
	1996	3,482.7	90.0	1,717	302	0.18	0.09
	1997	3,369.2	92.2	1,585	246	0.16	0.07
	1998	3,454.4	93.2	1,410	192.425	0.14	0.06
1999	3,471.2	93.2	1,275	146.328	0.11	0.04	
2000	3,458.6	93.0	1,279	158.105	0.12	0.05	
2001	3,280.2	88.6	1,361	182.043	0.13	0.06	
2002	3,513.0	94.0	1,343	140.057	0.10	0.04	
2003	3,254.4	88.6	1,943	210.842	0.11	0.06	
2004	3,201.4	86.3	1,324	199.016	0.15	0.06	

¹⁷ Palisades ceased operations in May 2022 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
PALO VERDE 1, 2, 3 (continued)	2005	2,937.6	80.4	2,014	200.300	0.10	0.07
	2006	2,741.1	79.0	1,585	151.516	0.10	0.06
	2007	3,058.5	81.0	2,372	148.660	0.06	0.05
	2008	3,330.0	86.1	1,706	159.913	0.09	0.05
	2009	3,500.2	89.6	1,695	97.902	0.06	0.03
	2010	3,561.6	90.9	1,655	112.612	0.07	0.03
	2011	3,570.5	91.9	1,248	61.374	0.05	0.02
	2012	3,635.5	93.6	1,126	59.593	0.05	0.02
	2013	3,588.0	91.8	1,164	93.713	0.08	0.03
	2014	3,689.9	94.1	1,085	60.002	0.06	0.02
	2015	3,711.7	94.1	1,142	57.996	0.05	0.02
	2016	3,680.7	93.6	1,177	64.796	0.06	0.02
	2017	3,691.8	94.1	1,088	53.888	0.05	0.01
	2018	3,551.0	91.5	1,036	41.103	0.04	0.01
	2019	3,643.8	92.6	937	41.262	0.04	0.01
	2020	3,601.9	91.4	908	35.139	0.04	0.01
	2021	3,610.7	93.0	865	37.023	0.04	0.01
	2022	3,645.3	92.8	871	42.075	0.05	0.01
	2023	3,599.1	92.7	829	49.159	0.06	0.01
	2024	3,687.2	93.4	727	44.651	0.06	0.01
PEACH BOTTOM 2, 3 Docket 50-277, 50-278; DPR-44, DPR-56 1st commercial operation 7/74, 12/74 Type—BWRs Capacity—1,232, 1,251 MWe	1975	1,234.3	80.9	971	228	0.23	0.18
	1976	1,379.2	73.0	2,136	840	0.39	0.61
	1977	1,052.4	58.7	2,827	2,036	0.72	1.93
	1978	1,636.3	84.0	2,244	1,317	0.59	0.80
	1979	1,740.0	84.5	2,276	1,388	0.61	0.80
	1980	1,374.2	66.3	2,774	2,302	0.83	1.68
	1981	1,161.8	58.0	2,857	2,506	0.88	2.16
	1982	1,583.3	76.9	2,734	1,977	0.72	1.25
	1983	824.7	41.0	3,107	2,963	0.95	3.59
	1984	1,165.8	57.5	3,313	2,450	0.74	2.10
	1985	682.7	37.5	4,209	3,354	0.80	4.91
	1986	1,395.0	71.7	2,454	1,080	0.44	0.77
	1987	365.7	20.3	4,363	2,195	0.50	6.00
	1988	---	---	4,204	2,327	0.55	---
	1989	491.0	35.0	2,301	728	0.32	1.48
	1990	1,684.0	85.7	1,585	377	0.24	0.22
	1991	1,210.9	62.3	2,702	934	0.35	0.77
	1992	1,516.6	78.7	1,911	502	0.26	0.33
	1993	1,654.0	81.9	1,757	552	0.31	0.33
	1994	1,927.4	93.8	2,133	579	0.27	0.30
	1995	1,955.9	95.1	1,940	398	0.21	0.20
	1996	2,012.4	96.9	1,657	282	0.17	0.14
	1997	1,956.3	95.0	1,872	490	0.26	0.25
	1998	1,881.2	93.2	1,903	366.040	0.19	0.19
	1999	2,057.2	96.0	1,630	319.307	0.20	0.16
	2000	2,058.3	96.7	1,729	330.928	0.19	0.16
	2001	2,037.1	95.8	1,445	344.283	0.24	0.17
	2002	2,105.0	96.7	1,915	333.056	0.17	0.16
	2003	2,072.4	94.9	1,641	355.969	0.22	0.17
	2004	2,148.8	96.4	1,422	264.727	0.19	0.12
2005	2,102.0	95.6	1,801	306.201	0.17	0.15	
2006	2,169.1	97.0	1,513	247.676	0.16	0.11	
2007	2,163.8	97.0	1,906	384.795	0.20	0.18	
2008	2,115.3	95.1	1,816	212.741	0.12	0.10	
2009	2,130.4	95.5	2,032	310.517	0.15	0.15	
2010	2,145.3	96.2	1,716	219.372	0.13	0.10	
2011	2,152.0	95.7	2,758	389.814	0.14	0.18	
2012	2,142.5	94.8	2,460	305.431	0.12	0.14	
2013	2,143.5	94.7	2,902	483.936	0.17	0.23	
2014	2,142.3	94.2	3,053	430.941	0.14	0.20	
2015	2,267.6	95.6	2,938	395.597	0.13	0.17	
2016	2,498.1	97.7	2,052	202.221	0.10	0.08	
2017	2,481.1	98.0	1,824	197.814	0.11	0.08	
2018	2,474.9	96.6	1,717	177.337	0.10	0.07	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
PEACH BOTTOM 2, 3 (continued)	2019	2,545.2	97.9	1,767	167.083	0.09	0.07
	2020	2,488.0	98.0	1,521	170.827	0.11	0.07
	2021	2,542.1	98.2	1,403	132.570	0.09	0.05
	2022	2,532.4	98.0	1,367	114.994	0.08	0.05
	2023	2,533.9	98.3	1,545	138.048	0.09	0.05
	2024	2,486.8	97.2	1,408	129.191	0.09	0.05
PERRY Docket 50-440; NPF-58 1st commercial operation 11/87 Type—BWR Capacity—1,240 MWe	1988	869.3	79.0	782	105	0.13	0.12
	1989	642.2	57.0	1,883	767	0.41	1.19
	1990	792.7	67.1	1,537	638	0.42	0.80
	1991	1,074.2	91.9	600	146	0.24	0.14
	1992	856.2	75.5	1,487	571	0.38	0.67
	1993	479.2	48.2	1,235	278	0.23	0.58
	1994	550.8	50.2	2,098	691	0.33	1.25
	1995	1,090.9	95.6	587	64	0.11	0.06
	1996	895.6	77.2	1,622	307	0.19	0.34
	1997	930.6	84.7	1,524	272	0.18	0.29
	1998	1,163.1	99.3	385	41.945	0.11	0.04
	1999	1,041.7	89.9	1,758	326.014	0.19	0.31
	2000	1,148.2	97.1	501	55.827	0.11	0.05
	2001	885.9	79.6	1,392	258.268	0.19	0.29
	2002	1,136.0	95.0	436	70.258	0.16	0.06
	2003	973.7	83.8	1,880	607.384	0.32	0.62
	2004	1,164.3	95.9	496	73.481	0.15	0.06
	2005	872.9	73.8	1,734	416.608	0.24	0.48
	2006	1,195.8	99.0	488	65.152	0.13	0.05
	2007	919.7	79.0	1,650	505.121	0.31	0.55
	2008	1,215.9	97.9	528	52.058	0.10	0.04
	2009	869.2	73.3	1,818	614.959	0.34	0.71
	2010	1,213.3	98.5	278	32.186	0.12	0.03
	2011	978.2	82.4	1,640	307.866	0.19	0.31
	2012	1,194.3	98.6	408	43.374	0.11	0.04
	2013	964.5	82.1	1,630	373.747	0.23	0.39
2014	1,193.5	97.4	442	84.578	0.19	0.07	
2015	1,082.5	87.5	1,644	386.778	0.24	0.36	
2016	1,189.5	96.9	351	36.389	0.10	0.03	
2017	1,120.1	92.2	1,449	327.717	0.23	0.29	
2018	1,223.6	100.0	217	29.848	0.14	0.02	
2019	1,047.2	91.0	1,222	301.067	0.25	0.29	
2020	1,254.7	100.0	202	31.161	0.15	0.02	
2021	1,107.7	91.3	1,140	259.656	0.23	0.23	
2022	1,179.7	98.2	299	44.100	0.15	0.04	
2023	939.2	84.8	1,510	425.393	0.28	0.45	
2024	1,204.3	97.9	304	37.173	0.12	0.03	
PILGRIM 1¹⁸ Docket 50-293; DPR-35 1st commercial operation 12/72 Type—BWR Capacity—(685) MWe	1973	484.0	---	230	126	0.55	0.26
	1974	234.1	39.2	454	415	0.91	1.77
	1975	308.1	71.3	473	798	1.69	2.59
	1976	287.8	60.7	1,317	2,648	2.01	9.20
	1977	316.6	61.4	1,875	3,142	1.68	9.92
	1978	519.5	83.1	1,667	1,327	0.80	2.55
	1979	574.0	89.4	2,458	1,015	0.41	1.77
	1980	360.3	56.2	3,549	3,626	1.02	10.06
	1981	408.9	65.9	2,803	1,836	0.66	4.49
	1982	389.9	63.9	2,854	1,539	0.54	3.95
	1983	559.5	87.2	2,326	1,162	0.50	2.08
	1984	1.4	0.4	4,542	4,082	0.90	2,915.71
	1985	587.3	91.5	2,209	893	0.40	1.52
	1986	121.9	18.8	2,635	874	0.33	7.17
	1987	---	---	4,710	1,579	0.34	---
	1988	---	---	2,073	392	0.19	---
	1989	204.6	64.1	1,797	207	0.12	1.01
1990	503.5	82.1	1,898	225	0.12	0.45	

¹⁸ Pilgrim 1 ceased operations in May 2019 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
PILGRIM 1 ¹⁸ (continued)	1991	406.3	65.8	2,836	605	0.21	1.49
	1992	561.0	85.4	1,332	281	0.21	0.50
	1993	513.7	80.9	1,328	435	0.33	0.85
	1994	453.6	71.4	758	200	0.26	0.44
	1995	531.7	80.7	1,294	482	0.37	0.91
	1996	631.3	95.4	517	116	0.22	0.18
	1997	492.1	80.7	1,655	588	0.36	1.19
	1998	650.5	100.0	530	71.446	0.13	0.11
	1999	510.7	84.4	1,222	344.270	0.28	0.67
	2000	627.5	98.3	422	50.797	0.12	0.08
	2001	585.6	91.0	1,113	179.585	0.16	0.31
	2002	657.0	100.0	463	38.280	0.08	0.06
	2003	566.6	87.5	1,437	250.192	0.17	0.44
	2004	676.1	99.5	427	41.109	0.10	0.06
	2005	623.2	93.7	1,212	206.089	0.17	0.33
	2006	665.4	100.0	654	43.531	0.07	0.07
	2007	584.5	90.0	1,407	240.526	0.17	0.41
	2008	668.1	99.0	377	22.568	0.06	0.03
	2009	616.0	91.7	1,301	264.215	0.20	0.43
	2010	675.5	100.0	303	25.739	0.08	0.04
	2011	580.5	89.0	1,179	241.402	0.20	0.42
	2012	669.0	99.4	284	21.620	0.08	0.03
	2013	493.9	80.4	1,188	176.012	0.15	0.36
	2014	658.6	98.9	421	36.716	0.09	0.06
	2015	570.0	86.9	1,392	218.609	0.16	0.38
	2016	617.9	94.7	634	44.242	0.07	0.07
2017	576.1	88.2	1,614	162.998	0.10	0.28	
2018	507.0	83.8	629	38.777	0.06	0.08	
2019	---	---	367	18.041	0.05	---	
2020	---	---	179	62.086	0.35	---	
2021	---	---	233	39.887	0.17	---	
2022	---	---	153	23.888	0.16	---	
2023	---	---	261	39.024	0.15	---	
2024	---	---	114	25.101	0.22	---	
POINT BEACH 1, 2 Docket 50-266, 50-301; DPR-24, DPR-27 1st commercial operation 12/70, 10/72 Type—PWRs Capacity—576, 578 MWe	1971	393.4	---	---	164	---	0.42
	1972	378.3	---	---	580	---	1.53
	1973	693.7	---	501	588	1.17	0.85
	1974	760.2	81.3	400	295	0.74	0.39
	1975	801.2	82.9	339	459	1.35	0.57
	1976	857.3	86.7	313	370	1.18	0.43
	1977	873.9	87.3	417	430	1.03	0.49
	1978	914.4	90.9	336	320	0.95	0.35
	1979	808.0	80.8	610	644	1.06	0.80
	1980	727.2	82.5	561	598	1.07	0.82
	1981	760.4	83.6	773	596	0.77	0.78
	1982	757.2	84.3	767	609	0.79	0.80
	1983	648.2	72.7	1,702	1,403	0.82	2.16
	1984	788.9	78.6	1,372	789	0.58	1.00
	1985	831.3	82.5	671	482	0.72	0.58
	1986	858.9	85.7	664	402	0.61	0.47
	1987	857.5	85.5	720	554	0.77	0.65
	1988	899.3	88.6	734	410	0.56	0.46
	1989	847.8	85.5	736	504	0.68	0.59
	1990	875.5	86.5	617	378	0.61	0.43
1991	874.8	87.1	724	265	0.37	0.30	
1992	866.7	85.8	617	256	0.41	0.30	
1993	911.0	90.0	559	186	0.33	0.20	
1994	914.5	91.2	548	170	0.31	0.19	
1995	858.4	86.1	548	190	0.35	0.22	
1996	831.6	84.7	1,029	276	0.27	0.33	
1997	186.8	21.8	670	92	0.14	0.49	
1998	649.7	69.7	881	169.253	0.19	0.26	

¹⁸ Pilgrim 1 ceased operations in May 2019 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
POINT BEACH 1, 2 (continued)	1999	806.0	83.1	962	194.489	0.20	0.24
	2000	872.0	88.7	765	138.989	0.18	0.16
	2001	915.9	93.4	740	131.667	0.18	0.14
	2002	909.0	91.1	945	180.654	0.19	0.20
	2003	917.2	92.1	627	84.965	0.14	0.09
	2004	912.3	90.1	627	109.515	0.17	0.12
	2005	782.5	78.1	851	128.646	0.15	0.16
	2006	977.2	96.0	453	39.597	0.09	0.04
	2007	958.5	94.0	535	52.023	0.10	0.05
	2008	889.4	87.8	958	144.021	0.15	0.16
	2009	902.3	92.9	766	93.270	0.12	0.10
	2010	952.8	93.8	869	95.695	0.11	0.10
	2011	796.2	75.8	1,027	159.684	0.16	0.20
	2012	1,114.3	95.2	581	69.755	0.12	0.06
	2013	1,135.3	95.9	547	63.146	0.12	0.06
	2014	1,079.4	91.4	759	127.523	0.17	0.12
	2015	1,142.9	95.8	446	47.473	0.11	0.04
	2016	1,159.0	96.8	515	57.294	0.11	0.05
	2017	1,102.0	93.1	755	87.479	0.12	0.08
	2018	1,156.7	97.2	511	43.228	0.08	0.04
	2019	1,145.3	96.4	533	74.485	0.14	0.07
	2020	1,116.1	93.8	634	77.997	0.12	0.07
	2021	1,138.5	96.4	490	70.910	0.14	0.06
	2022	1,152.6	96.3	514	90.223	0.18	0.08
2023	1,105.6	93.4	679	94.647	0.14	0.09	
2024	1,155.2	97.4	363	41.019	0.11	0.04	
PRAIRIE ISLAND 1, 2 Docket 50-282, 50-306; DPR-42, DPR-60 1st commercial operation 12/73, 12/74 Type—PWRs Capacity—522, 519 MWe	1974	181.9	43.9	150	18	0.12	0.10
	1975	836.0	83.3	477	123	0.26	0.15
	1976	725.2	76.6	818	447	0.55	0.62
	1977	922.9	87.2	718	300	0.42	0.33
	1978	941.1	92.2	546	221	0.40	0.23
	1979	865.0	86.0	594	180	0.30	0.21
	1980	800.7	79.9	983	353	0.36	0.44
	1981	844.9	80.5	836	329	0.39	0.39
	1982	944.9	90.4	645	229	0.36	0.24
	1983	921.1	86.8	654	233	0.36	0.25
	1984	972.4	91.7	546	147	0.27	0.15
	1985	882.6	84.0	1,082	416	0.38	0.47
	1986	930.6	90.3	818	255	0.31	0.27
	1987	969.6	91.6	593	135	0.23	0.14
	1988	932.0	89.1	732	199	0.27	0.21
	1989	1,001.8	94.7	476	99	0.21	0.10
	1990	925.4	89.2	737	188	0.26	0.20
	1991	1,023.3	95.6	586	98	0.17	0.10
	1992	811.6	76.2	845	211	0.25	0.26
	1993	978.3	90.7	532	106	0.20	0.11
	1994	996.9	91.5	478	109	0.23	0.11
	1995	1,023.2	93.9	499	107	0.21	0.10
	1996	992.1	91.4	558	112	0.20	0.11
	1997	817.6	81.4	753	174	0.23	0.21
1998	860.3	83.4	582	116.649	0.20	0.14	
1999	989.3	93.8	542	72.496	0.13	0.07	
2000	992.2	93.1	632	106.091	0.17	0.11	
2001	900.8	85.8	691	124.708	0.18	0.14	
2002	987.0	93.6	969	127.713	0.13	0.13	
2003	1,006.1	96.4	594	61.137	0.10	0.06	
2004	940.4	89.9	1,186	143.806	0.12	0.15	
2005	952.5	90.8	782	84.337	0.11	0.09	
2006	926.4	89.0	1,103	137.352	0.12	0.15	
2007	1,014.8	98.0	130	6.276	0.05	0.01	
2008	924.3	88.9	1,060	126.723	0.12	0.14	
2009	942.2	89.9	560	53.590	0.10	0.06	
2010	1,002.6	94.9	661	54.933	0.08	0.05	
2011	982.4	92.0	678	58.029	0.09	0.06	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
PRAIRIE ISLAND 1, 2 (continued)	2012	803.8	76.7	909	119.166	0.13	0.15
	2013	881.8	86.0	1,383	129.989	0.09	0.15
	2014	957.0	91.1	768	70.860	0.09	0.07
	2015	842.2	81.2	802	62.441	0.08	0.07
	2016	944.5	87.9	705	48.078	0.07	0.05
	2017	998.3	95.0	558	34.322	0.06	0.03
	2018	1,025.5	95.5	559	37.731	0.07	0.04
	2019	1,043.4	96.9	417	24.593	0.06	0.02
	2020	1,037.0	96.2	370	20.018	0.05	0.02
	2021	1,036.0	96.3	516	46.326	0.09	0.04
	2022	1,044.6	96.6	477	24.002	0.05	0.02
	2023	813.9	76.2	679	67.649	0.10	0.08
	2024	733.0	72.1	910	62.556	0.07	0.09
QUAD CITIES 1, 2 Docket 50-254, 50-265; DPR-29, DPR-30 1st commercial operation 2/73, 3/73 Type—BWRs Capacity—887, 888 MWe	1974	958.1	72.3	678	482	0.71	0.50
	1975	833.6	68.4	1,083	1,618	1.49	1.94
	1976	951.2	73.1	1,225	1,651	1.35	1.74
	1977	970.1	84.0	907	1,031	1.14	1.06
	1978	1,124.5	88.6	1,207	1,618	1.34	1.44
	1979	1,075.0	84.6	1,688	2,158	1.28	2.01
	1980	866.9	64.4	3,089	4,838	1.57	5.58
	1981	1,156.9	81.1	2,246	3,146	1.40	2.72
	1982	1,018.7	76.0	2,314	3,757	1.62	3.69
	1983	1,088.5	79.2	1,802	2,491	1.38	2.29
	1984	994.6	65.7	1,678	1,579	0.94	1.59
	1985	1,268.0	82.7	1,184	990	0.84	0.78
	1986	1,093.2	71.0	1,451	950	0.65	0.87
	1987	1,126.6	75.3	1,429	720	0.50	0.64
	1988	1,173.7	84.1	1,486	827	0.56	0.70
	1989	1,196.3	85.9	1,721	900	0.52	0.75
	1990	1,148.9	77.8	2,186	1,028	0.47	0.89
	1991	1,044.5	73.2	1,722	509	0.30	0.49
	1992	960.8	68.0	2,413	1,157	0.48	1.20
	1993	974.9	67.0	2,150	849	0.39	0.87
	1994	681.5	48.7	2,163	1,128	0.52	1.66
	1995	1,002.5	70.4	2,041	736	0.36	0.73
	1996	876.6	60.1	2,248	1,025	0.46	1.17
	1997	935.3	66.5	2,474	654	0.26	0.70
	1998	794.8	55.1	2,177	760.596	0.35	0.96
	1999	1,476.5	95.9	1,000	200.556	0.20	0.14
	2000	1,410.4	93.9	2,840	893.766	0.31	0.63
	2001	1,478.2	95.9	736	143.849	0.20	0.10
	2002	1,396.0	89.0	3,818	1,786.021	0.47	1.28
	2003	1,569.4	93.1	998	438.144	0.44	0.28
	2004	1,443.8	95.5	2,334	510.521	0.22	0.35
	2005	1,516.2	94.2	2,869	961.026	0.33	0.63
2006	1,524.9	93.0	2,329	559.362	0.24	0.37	
2007	1,650.3	97.0	1,945	249.927	0.13	0.15	
2008	1,619.4	95.2	2,065	274.444	0.13	0.17	
2009	1,662.6	95.4	2,366	318.418	0.13	0.19	
2010	1,688.9	95.0	2,267	241.444	0.11	0.14	
2011	1,735.3	95.9	2,453	288.618	0.12	0.17	
2012	1,765.3	95.9	2,173	194.311	0.09	0.11	
2013	1,776.0	96.3	2,210	192.059	0.09	0.11	
2014	1,756.7	95.2	2,068	156.168	0.08	0.09	
2015	1,776.5	96.9	1,860	170.123	0.09	0.10	
2016	1,787.1	97.6	1,875	142.607	0.08	0.08	
2017	1,758.2	96.8	1,888	173.167	0.09	0.10	
2018	1,766.7	97.1	1,678	162.171	0.10	0.09	
2019	1,763.7	96.8	1,896	204.958	0.11	0.12	
2020	1,793.7	98.0	1,780	181.823	0.10	0.10	
2021	1,796.8	97.9	1,569	137.801	0.09	0.08	
2022	1,726.3	94.9	1,842	230.257	0.13	0.13	
2023	1,731.2	95.9	1,912	241.929	0.13	0.14	
2024	1,771.4	96.7	2,000	295.131	0.15	0.17	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
RANCHO SECO ¹⁹ Docket 50-312; DPR-54 1st commercial operation 4/75 Type—PWR Capacity—(873) MWe	1976	268.1	30.4	297	58	0.20	0.22
	1977	706.4	77.1	515	391	0.76	0.55
	1978	607.7	80.5	508	323	0.64	0.53
	1979	687.0	91.1	287	126	0.44	0.18
	1980	530.9	60.4	890	412	0.46	0.78
	1981	321.2	40.2	772	402	0.52	1.25
	1982	409.5	53.3	766	337	0.44	0.82
	1983	347.9	46.8	1,338	787	0.59	2.26
	1984	460.0	58.3	802	222	0.28	0.48
	1985	238.7	30.8	1,764	756	0.43	3.17
	1986	---	---	1,513	402	0.27	---
	1987	---	---	1,533	300	0.20	---
	1988	355.8	63.1	693	78	0.11	0.22
	1989	179.9	54.7	603	81	0.13	0.45
	1990	---	---	111	13	0.12	---
	1991	---	---	101	9	0.09	---
	1992	---	---	70	7	0.10	---
	1993	---	---	35	4	0.11	---
	1994	---	---	18	1	0.06	---
	1995	---	---	16	1	0.06	---
	1996	---	---	16	1	0.06	---
	1997	---	---	16	---	---	---
	1998	---	---	61	2,661	0.04	---
	1999	---	---	302	11,191	0.04	---
2000	---	---	219	25,795	0.12	---	
2001	---	---	210	18,432	0.09	---	
2002	---	---	193	27,346	0.14	---	
2003	---	---	121	18,300	0.15	---	
2004	---	---	122	14,890	0.12	---	
2005	---	---	157	33,444	0.21	---	
2006	---	---	143	31,793	0.22	---	
2007	---	---	129	12,524	0.10	---	
2008	---	---	84	2,434	0.03	---	
RIVER BEND 1 Docket 50-458; NPF-47 1st commercial operation 6/86 Type—BWR Capacity—967 MWe	1987	605.2	68.4	1,268	378	0.30	0.62
	1988	880.7	94.3	513	107	0.21	0.12
	1989	584.5	69.1	1,566	558	0.36	0.95
	1990	682.2	78.0	1,616	489	0.30	0.72
	1991	814.7	87.2	780	144	0.18	0.18
	1992	336.1	39.7	2,022	710	0.35	2.11
	1993	640.0	71.6	847	180	0.21	0.28
	1994	595.7	64.9	2,209	519	0.23	0.87
	1995	967.1	99.6	667	85	0.13	0.09
	1996	836.1	85.3	2,093	473	0.23	0.57
	1997	778.8	86.3	1,671	347	0.21	0.45
	1998	894.2	96.2	466	57,749	0.12	0.06
	1999	651.2	75.2	1,327	343,858	0.26	0.53
	2000	837.1	89.7	1,104	216,053	0.20	0.26
	2001	889.3	93.6	1,249	207,614	0.17	0.23
	2002	965.0	98.5	373	35,145	0.09	0.04
	2003	871.3	92.7	1,296	216,950	0.17	0.25
	2004	845.6	90.1	1,378	235,749	0.17	0.28
	2005	890.5	94.4	498	55,816	0.11	0.06
	2006	853.7	92.0	1,494	214,409	0.14	0.25
2007	823.0	92.0	1,131	131,373	0.12	0.16	
2008	724.8	78.7	1,809	311,697	0.17	0.43	
2009	895.6	92.6	1,978	219,446	0.11	0.25	
2010	955.1	98.9	888	40,356	0.05	0.04	
2011	878.6	91.9	1,880	211,212	0.11	0.24	
2012	890.2	94.5	648	34,178	0.05	0.04	
2013	867.6	90.8	1,915	188,331	0.10	0.22	
2014	935.8	98.1	343	16,138	0.05	0.02	
2015	791.6	87.9	888	128,492	0.14	0.16	
2016	811.5	86.6	532	71,142	0.13	0.09	

¹⁹ Rancho Seco ceased operations in June 1989 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
RIVER BEND 1 (continued)	2017	804.5	87.7	1,500	273.004	0.18	0.34
	2018	804.3	88.6	573	69.580	0.12	0.09
	2019	750.5	86.0	1,447	255.918	0.18	0.34
	2020	913.6	106.9	366	37.420	0.10	0.04
	2021	850.5	98.7	1,542	208.460	0.14	0.25
	2022	950.0	100.0	497	33.664	0.07	0.04
	2023	502.1	60.4	1,994	292.989	0.15	0.58
	2024	967.1	100.0	317	27.251	0.09	0.03
ROBINSON 2 Docket 50-261; DPR-23 1st commercial operation 3/71 Type—PWR Capacity—759 MWe	1972	580.0	---	245	215	0.88	0.37
	1973	455.1	---	831	695	0.84	1.53
	1974	578.1	83.3	853	672	0.79	1.16
	1975	501.8	72.7	849	1,142	1.35	2.28
	1976	585.5	84.7	597	715	1.20	1.22
	1977	511.5	85.2	634	455	0.72	0.89
	1978	480.5	72.0	943	963	1.02	2.00
	1979	482.0	70.8	1,454	1,188	0.82	2.46
	1980	387.3	62.2	2,009	1,852	0.92	4.78
	1981	426.6	73.0	1,462	733	0.50	1.72
	1982	277.5	48.9	2,011	1,426	0.71	5.14
	1983	409.8	75.5	2,244	923	0.41	2.25
	1984	28.0	7.0	4,127	2,880	0.70	102.86
	1985	629.5	87.9	1,378	311	0.23	0.49
	1986	577.1	80.3	1,571	539	0.34	0.93
	1987	510.1	72.5	1,379	499	0.36	0.98
	1988	385.0	65.9	1,351	564	0.42	1.46
	1989	336.6	48.7	1,098	195	0.18	0.58
	1990	400.3	64.8	1,626	437	0.27	1.09
	1991	575.1	81.4	885	193	0.22	0.34
	1992	487.2	66.8	1,267	352	0.28	0.72
	1993	502.7	70.7	1,221	337	0.28	0.67
	1994	560.3	79.5	420	63	0.15	0.11
	1995	618.7	84.7	1,058	215	0.20	0.35
	1996	654.8	88.6	1,031	167	0.16	0.26
	1997	707.5	99.0	304	13	0.04	0.02
	1998	628.5	88.9	978	170.476	0.17	0.27
	1999	648.9	91.8	807	123.952	0.15	0.19
	2000	710.0	99.7	138	8.396	0.06	0.01
	2001	627.9	90.6	827	124.750	0.15	0.20
	2002	638.0	91.2	830	110.631	0.13	0.17
	2003	733.1	100.0	109	4.838	0.04	0.01
	2004	653.7	89.3	952	118.159	0.12	0.18
	2005	656.9	89.7	791	64.662	0.08	0.10
2006	735.5	100.0	86	3.320	0.04	---	
2007	655.0	90.0	890	80.752	0.09	0.12	
2008	618.1	84.6	788	68.381	0.09	0.11	
2009	738.9	99.3	126	6.643	0.05	0.01	
2010	410.8	57.0	996	85.917	0.09	0.21	
2011	726.5	99.3	137	3.630	0.03	---	
2012	613.4	82.2	1,027	65.258	0.06	0.11	
2013	650.3	85.3	1,116	80.595	0.07	0.12	
2014	703.1	91.2	477	28.666	0.06	0.04	
2015	653.4	84.9	957	56.373	0.06	0.09	
2016	734.3	96.3	133	3.704	0.03	0.01	
2017	676.9	89.1	883	58.739	0.07	0.09	
2018	602.5	80.3	958	61.998	0.06	0.10	
2019	727.9	93.8	48	1.668	0.03	---	
2020	699.2	98.2	744	48.121	0.06	0.07	
2021	733.6	96.0	154	7.443	0.05	0.01	
2022	650.2	84.5	812	62.183	0.08	0.10	
2023	764.2	99.5	66	1.809	0.03	0.00	
2024	704.2	91.8	772	55.140	0.07	0.08	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
SALEM 1, 2	1978	546.4	55.6	574	122	0.21	0.22
Docket 50-272, 50-311; DPR-70, DPR-75	1979	250.0	25.5	1,488	584	0.39	2.34
1st commercial operation 6/77, 10/81	1980	680.6	69.2	1,704	449	0.26	0.66
Type—PWRs	1981	743.0	78.1	1,652	254	0.15	0.34
Capacity—1,116, 1,134 MWe	1982	1,440.4	72.6	3,228	1,203	0.37	0.84
	1983	742.0	30.5	2,383	581	0.24	0.78
	1984	650.1	31.8	1,395	681	0.49	1.05
	1985	1,657.7	75.8	1,112	204	0.18	0.12
	1986	1,484.3	70.4	3,554	599	0.17	0.40
	1987	1,478.2	73.3	2,543	600	0.24	0.41
	1988	1,591.6	73.6	1,609	503	0.31	0.32
	1989	1,675.4	79.5	2,944	338	0.11	0.20
	1990	1,362.6	65.1	3,636	272	0.07	0.20
	1991	1,726.4	79.3	4,201	458	0.11	0.27
	1992	1,200.9	61.1	4,376	431	0.10	0.36
	1993	1,366.3	65.4	3,559	408	0.11	0.30
	1994	1,367.4	73.8	950	188	0.20	0.14
	1995	558.1	29.3	1,195	218	0.18	0.39
	1996	---	---	1,671	300	0.18	---
	1997	279.3	17.8	894	175	0.20	0.63
	1998	1,629.3	79.1	408	41.100	0.10	0.03
	1999	1,821.8	86.8	1,200	317.545	0.27	0.17
	2000	1,973.4	93.0	1,191	198.068	0.17	0.10
	2001	1,961.2	91.1	1,274	153.088	0.12	0.08
	2002	1,934.0	89.4	2,460	292.692	0.12	0.15
	2003	1,957.2	90.7	1,301	124.042	0.10	0.06
	2004	1,850.2	85.8	1,496	148.694	0.10	0.08
	2005	2,086.4	91.7	3,162	240.567	0.08	0.12
	2006	2,211.8	97.0	1,446	90.541	0.06	0.04
	2007	2,158.2	96.0	1,365	117.604	0.09	0.05
	2008	1,998.6	87.8	3,362	328.761	0.10	0.16
	2009	2,252.9	96.2	1,249	101.186	0.08	0.04
	2010	2,147.3	93.9	964	77.828	0.08	0.04
	2011	2,054.6	91.4	2,180	126.716	0.06	0.06
	2012	2,123.8	93.4	674	47.003	0.07	0.02
	2013	2,213.1	94.7	797	59.430	0.07	0.03
	2014	1,870.1	81.7	2,558	109.633	0.04	0.06
	2015	2,131.3	93.8	580	33.810	0.06	0.02
	2016	1,800.9	84.2	1,108	93.255	0.08	0.05
	2017	2,060.5	89.7	1,745	135.197	0.08	0.07
	2018	2,165.1	95.2	521	49.086	0.09	0.02
	2019	2,053.6	90.4	803	100.110	0.12	0.05
	2020	1,852.8	81.4	1,705	162.912	0.10	0.09
	2021	2,184.0	94.4	579	65.822	0.11	0.03
	2022	2,198.1	94.4	598	65.292	0.11	0.03
	2023	2,101.5	91.6	1,553	157.558	0.10	0.07
	2024	2,130.0	93.2	1,012	100.744	0.10	0.05
SAN ONOFRE 1,²⁰ 2, 3²¹	1969	314.1	---	123	42	0.34	0.13
Docket 50-206, 50-361, 50-362; DPR-13; NPF-10, NPF-15	1970	365.9	---	251	155	0.62	0.42
1st commercial operation 1/68, 7/83, 4/84	1971	362.1	---	121	50	0.41	0.14
Type—PWRs	1972	338.5	---	326	256	0.79	0.76
Capacity—(436), (1,070), (1,080) MWe	1973	273.7	---	570	353	0.62	1.29
	1974	377.8	86.1	219	71	0.32	0.19
	1975	389.0	87.4	424	292	0.69	0.75
	1976	297.9	70.2	1,330	880	0.66	2.95
	1977	281.2	63.7	985	847	0.86	3.01
	1978	323.2	80.2	764	401	0.52	1.24
	1979	401.0	90.2	521	139	0.27	0.35
	1980	97.3	22.3	3,063	2,386	0.78	24.52
	1981	95.9	26.7	2,902	3,223	1.11	33.61

²⁰ San Onofre 1 ceased operations in November 1992 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when plant was operational. Please see Appendix E for more information.

²¹ San Onofre 2 and 3 ceased power generation in June 2013, and it was decided that they would not be put back into commercial operation. Therefore, they are no longer included in the count of operating reactors. Parentheses indicate plant capacities when plants were operational. Please see Appendix E for more information.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
SAN ONOFRE 1, ²⁰ 2, 3 ²¹ (continued)	1982	61.6	15.7	3,055	832	0.27	13.51
	1983	---	---	1,701	155	0.09	---
	1984	670.4	68.3	7,514	986	0.13	1.47
	1985	1,381.8	132.9	5,742	722	0.13	0.52
	1986	1,698.2	61.1	3,594	824	0.23	0.49
	1987	1,983.0	78.8	2,138	696	0.33	0.35
	1988	1,982.3	68.4	2,324	781	0.34	0.39
	1989	1,840.8	64.9	2,237	567	0.25	0.31
	1990	1,980.5	69.1	2,224	885	0.40	0.45
	1991	1,987.6	75.3	1,814	412	0.23	0.21
	1992	2,228.6	87.1	1,651	324	0.20	0.15
	1993	1,771.3	79.9	2,193	767	0.35	0.43
	1994	2,220.7	100.0	528	32	0.06	0.01
	1995	1,686.9	79.1	1,914	455	0.24	0.27
	1996	2,089.3	93.2	1,272	129	0.10	0.06
	1997	1,533.9	72.9	1,652	341	0.21	0.22
1998	1,996.4	92.0	1,091	195.600	0.18	0.10	
SAN ONOFRE 1 ²⁰ Docket 50-206; DPR-13 1st commercial operation 1/68 Type—PWR Capacity—(436) MWe	1999	---	---	241	15.863	0.07	---
	2000	---	---	416	71.214	0.17	---
	2001	---	---	338	57.785	0.17	---
	2002	---	---	308	61.214	0.20	---
	2003	---	---	226	35.596	0.16	---
	2004	---	---	169	14.899	0.09	---
	2005	---	---	198	20.624	0.10	---
	2006	---	---	183	22.490	0.12	---
	2007	---	---	20	0.417	0.02	---
2008	---	---	2	0.043	0.02	---	
SAN ONOFRE 2, 3 ²¹ Docket 50-361, 50-362; NPF-10, NPF-15 1st commercial operation 7/83, 4/84 Type—PWRs Capacity—(1,070), (1,080) MWe	1999	1,901.4	86.9	1,477	353.765	0.24	0.19
	2000	2,067.2	94.7	1,073	115.499	0.11	0.06
	2001	1,727.2	78.9	1,083	131.384	0.12	0.08
	2002	2,056.0	93.4	1,140	136.443	0.12	0.07
	2003	2,084.3	94.0	1,275	163.804	0.13	0.08
	2004	1,713.8	79.1	1,761	407.063	0.23	0.24
	2005	2,094.7	96.0	305	11.332	0.04	0.01
	2006	1,552.2	73.0	1,632	315.087	0.19	0.20
	2007	1,964.6	89.0	1,065	91.545	0.09	0.05
2008	1,753.0	82.7	1,014	125.320	0.12	0.07	
SAN ONOFRE 1, ²⁰ 2, 3 ²¹ Docket 50-206, 50-361, 50-362; DPR-13; NPF-10, NPF-15 1st commercial operation 1/68, 7/83, 4/84 Type—PWRs Capacity—(436), (1,070), (1,080) MWe	2009	1,774.5	79.9	1,575	178.131	0.11	0.10
	2010	1,578.9	75.3	1,642	199.399	0.12	0.13
	2011	2,067.1	93.0	641	29.658	0.05	0.01
	2012	115.2	5.4	2,150	221.463	0.10	1.92
	2013	---	---	210	5.701	0.03	---
	2014	---	---	68	1.369	0.02	---
	2015	---	---	136	1.202	0.01	---
	2016	---	---	87	1.787	0.02	---
	2017	---	---	1	0.005	0.01	---
	2018	---	---	127	24.574	0.19	---
	2019	---	---	76	12.774	0.17	---
	2020	---	---	203	31.108	0.15	---
	2021	---	---	240	26.697	0.11	---
	2022	---	---	296	32.718	0.11	---
2023	---	---	380	83.794	0.22	---	
2024	---	---	339	150.537	0.44	---	
SEABROOK Docket 50-443; NPF-86 1st commercial operation 8/90 Type—PWR Capacity—1,246 MWe	1991	810.4	75.9	699	92	0.13	0.11
	1992	932.4	81.3	806	147	0.18	0.16
	1993	1,071.5	93.6	110	6	0.05	0.01
	1994	736.4	63.5	852	113	0.13	0.15
	1995	995.5	87.5	800	102	0.13	0.10
1996	1,168.6	99.6	206	10	0.05	0.01	

²⁰ San Onofre 1 ceased operations in November 1992 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when plant was operational. Please see Appendix E for more information.

²¹ San Onofre 2 and 3 ceased power generation in June 2013, and it was decided that they would not be put back into commercial operation. Therefore, they are no longer included in the count of operating reactors. Parentheses indicate plant capacities when plants were operational. Please see Appendix E for more information.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
SEABROOK (continued)	1997	907.0	79.8	1,571	186	0.12	0.21
	1998	957.6	84.5	559	18.509	0.03	0.02
	1999	991.5	87.5	1,339	105.723	0.08	0.11
	2000	901.8	79.3	1,158	70.091	0.06	0.08
	2001	989.6	89.1	423	8.672	0.02	0.01
	2002	1,058.0	92.8	1,095	66.583	0.06	0.06
	2003	1,055.9	93.6	981	70.953	0.07	0.07
	2004	1,158.6	100.0	291	5.858	0.02	0.01
	2005	1,076.4	91.5	1,034	52.216	0.05	0.05
	2006	1,072.8	89.0	1,246	76.583	0.06	0.07
	2007	1,228.7	100.0	349	4.332	0.01	---
	2008	1,064.4	86.9	1,297	74.992	0.06	0.07
	2009	1,006.4	86.5	1,233	87.372	0.07	0.09
	2010	1,245.4	100.0	335	4.488	0.01	---
	2011	954.5	80.5	1,156	65.593	0.06	0.07
	2012	932.2	87.8	1,092	53.636	0.05	0.06
	2013	1,247.3	100.0	291	2.442	0.01	---
	2014	1,160.7	93.8	1,056	39.983	0.04	0.03
	2015	1,082.6	88.3	1,219	96.053	0.08	0.09
	2016	1,228.4	98.8	59	1.672	0.03	---
	2017	1,140.4	92.0	519	29.191	0.06	0.03
	2018	1,148.5	92.7	464	33.418	0.07	0.03
	2019	1,245.0	100.0	69	1.084	0.02	---
	2020	1,126.1	91.1	516	28.464	0.06	0.03
2021	1,125.1	90.8	509	40.122	0.08	0.04	
2022	1,246.7	100.0	84	2.490	0.03	---	
2023	1,088.4	88.6	591	42.118	0.07	0.04	
2024	1,101.6	90.0	476	33.874	0.07	0.03	
SEQUOYAH 1, 2 Docket 50-327, 50-328; DPR-77, DPR-79 1st commercial operation 7/81, 6/82 Type—PWR Capacity—1,152, 1,140 MWe	1982	583.5	52.8	1,968	570	0.29	0.98
	1983	1,663.7	75.1	1,769	491	0.28	0.30
	1984	1,481.9	69.0	2,373	1,119	0.47	0.76
	1985	1,151.3	51.3	1,853	1,072	0.58	0.93
	1986	---	---	1,738	527	0.30	---
	1987	---	---	2,080	420	0.20	---
	1988	490.8	31.8	2,441	678	0.28	1.38
	1989	1,851.7	85.7	2,007	657	0.33	0.35
	1990	1,662.6	77.2	2,935	1,687	0.57	1.01
	1991	1,965.4	88.0	1,933	700	0.36	0.36
	1992	1,849.0	85.4	1,714	465	0.27	0.25
	1993	405.7	21.8	1,631	373	0.23	0.92
	1994	1,418.7	66.3	1,702	295	0.17	0.21
	1995	1,864.2	86.1	1,650	368	0.22	0.20
	1996	2,003.9	87.9	1,444	269	0.19	0.13
	1997	1,946.1	89.0	1,962	420	0.21	0.22
	1998	2,135.3	95.3	1,530	265.980	0.17	0.12
	1999	2,165.1	97.0	1,346	164.569	0.12	0.08
	2000	1,910.0	86.8	2,039	357.220	0.18	0.19
	2001	2,158.3	95.7	1,292	145.066	0.11	0.07
	2002	2,106.0	94.1	1,257	108.252	0.09	0.05
2003	1,776.4	80.0	2,484	430.889	0.17	0.24	
2004	2,135.2	93.9	1,161	85.941	0.07	0.04	
2005	2,162.9	94.9	1,125	95.133	0.08	0.04	
2006	2,054.9	91.0	1,752	242.016	0.14	0.12	
2007	2,129.1	94.0	1,197	123.540	0.10	0.06	
2008	2,153.6	94.3	960	83.730	0.09	0.04	
2009	2,026.8	90.1	1,415	166.776	0.12	0.08	
2010	2,054.9	92.2	828	56.956	0.07	0.03	
2011	2,133.3	95.3	1,354	109.417	0.08	0.05	
2012	1,888.2	84.6	2,555	290.840	0.11	0.15	
2013	2,108.1	94.2	666	44.478	0.07	0.02	
2014	2,156.7	95.5	842	77.569	0.09	0.04	
2015	1,884.9	87.0	1,484	136.826	0.09	0.07	
2016	1,971.4	88.8	1,133	105.764	0.09	0.05	
2017	2,080.7	94.0	831	47.200	0.06	0.02	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
SEQUOYAH 1, 2 (continued)	2018	2,021.0	90.8	1,367	121.426	0.09	0.06
	2019	2,062.2	93.1	846	76.085	0.09	0.04
	2020	2,180.3	96.6	847	56.282	0.07	0.03
	2021	2,015.4	89.8	1,312	117.287	0.09	0.06
	2022	2,149.2	95.6	999	67.243	0.07	0.03
	2023	2,194.9	96.3	1,039	50.812	0.05	0.02
	2024	1,532.6	69.2	1,527	138.381	0.09	0.09
SOUTH TEXAS 1, 2 Docket 50-498, 50-499; NPF-76, NPF-80 1st commercial operation 8/88, 6/89 Type—PWRs Capacity—1,251, 1,251 MWe	1989	769.3	65.6	989	161	0.16	0.21
	1990	1,504.1	65.9	1,136	206	0.18	0.14
	1991	1,741.5	72.4	1,144	257	0.22	0.15
	1992	2,096.0	83.8	923	147	0.16	0.07
	1993	163.1	8.3	1,138	251	0.22	1.54
	1994	1,700.2	70.6	661	47	0.07	0.03
	1995	2,294.2	89.9	1,485	291	0.20	0.13
	1996	2,465.9	95.0	1,145	137	0.12	0.06
	1997	2,265.5	93.6	1,583	273	0.17	0.12
	1998	2,379.4	96.9	1,171	183.977	0.16	0.08
	1999	2,219.7	91.6	1,328	259.770	0.20	0.12
	2000	2,180.0	89.7	1,372	231.634	0.17	0.11
	2001	2,262.7	92.2	1,325	237.645	0.18	0.11
	2002	2,173.0	87.5	1,510	329.091	0.22	0.15
	2003	1,796.3	72.1	909	143.495	0.16	0.08
	2004	2,437.1	96.0	842	119.834	0.14	0.05
	2005	2,258.5	90.0	1,268	247.655	0.20	0.11
	2006	2,439.6	95.0	1,078	150.323	0.14	0.06
	2007	2,527.3	96.0	881	91.613	0.10	0.04
	2008	2,452.1	92.3	1,181	187.295	0.16	0.08
	2009	2,444.5	91.9	1,138	79.687	0.07	0.03
	2010	2,418.7	91.5	867	79.159	0.09	0.03
	2011	2,333.3	87.7	1,153	139.274	0.12	0.06
	2012	2,122.4	79.8	611	49.104	0.08	0.02
2013	2,062.4	78.4	832	59.736	0.07	0.03	
2014	2,363.4	90.0	422	34.576	0.08	0.01	
2015	2,224.5	85.5	900	83.993	0.09	0.04	
2016	2,481.9	94.9	426	32.837	0.08	0.01	
2017	2,467.1	94.6	620	55.025	0.09	0.02	
2018	2,367.7	91.0	703	70.050	0.10	0.03	
2019	2,515.3	95.9	676	56.887	0.08	0.02	
2020	2,504.0	95.5	593	48.458	0.08	0.02	
2021	2,386.5	91.4	662	51.686	0.08	0.02	
2022	2,506.1	95.6	656	70.818	0.11	0.03	
2023	2,490.4	95.6	466	32.683	0.07	0.01	
2024	2,163.2	85.0	308	85.810	0.28	0.04	
ST. LUCIE 1, 2 Docket 50-335, 50-389; DPR-67; NPF-16 1st commercial operation 12/76, 8/83 Type—PWRs Capacity—981, 987 MWe	1977	649.1	84.7	445	152	0.34	0.23
	1978	606.4	76.5	797	337	0.42	0.56
	1979	592.0	74.0	907	438	0.48	0.74
	1980	627.9	77.5	1,074	532	0.50	0.85
	1981	599.1	72.7	1,473	929	0.63	1.55
	1982	816.8	94.0	1,045	272	0.26	0.33
	1983	290.3	15.4	2,211	1,204	0.54	4.15
	1984	1,183.0	69.6	2,090	1,263	0.60	1.07
	1985	1,445.8	82.5	1,971	1,344	0.68	0.93
	1986	1,588.6	89.1	1,279	491	0.38	0.31
	1987	1,407.9	81.9	2,012	951	0.47	0.68
	1988	1,639.7	93.0	1,448	611	0.42	0.37
	1989	1,493.1	85.1	1,414	495	0.35	0.33
	1990	1,188.4	70.0	1,876	777	0.41	0.65
	1991	1,592.8	90.8	1,282	479	0.37	0.30
	1992	1,511.9	87.3	1,251	264	0.21	0.17
	1993	1,227.6	77.7	1,462	492	0.34	0.40
	1994	1,424.8	85.0	1,896	505	0.27	0.35
	1995	1,306.6	76.0	1,498	413	0.28	0.32
1996	1,473.4	86.5	1,433	385	0.27	0.26	
1997	1,394.6	83.6	2,314	646	0.28	0.46	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person- rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
ST. LUCIE 1, 2 (continued)	1998	1,572.5	94.2	1,170	134.459	0.11	0.09
	1999	1,569.1	93.8	1,107	176.878	0.16	0.11
	2000	1,630.0	96.0	990	98.691	0.10	0.06
	2001	1,527.5	91.6	1,375	228.071	0.17	0.15
	2002	1,633.0	96.6	992	155.946	0.16	0.10
	2003	1,524.7	91.5	937	141.734	0.15	0.09
	2004	1,492.0	89.3	1,157	159.436	0.14	0.11
	2005	1,408.4	85.1	2,262	406.171	0.18	0.29
	2006	1,542.4	93.0	1,226	119.963	0.10	0.08
	2007	1,302.1	78.0	2,447	409.958	0.17	0.31
	2008	1,566.5	92.7	1,127	112.234	0.10	0.07
	2009	1,490.6	88.8	1,139	132.861	0.12	0.09
	2010	1,440.2	88.4	1,357	197.359	0.15	0.14
	2011	1,200.9	77.3	2,050	295.228	0.14	0.25
	2012	1,139.5	70.6	1,750	185.426	0.11	0.16
	2013	1,783.4	90.3	964	74.926	0.08	0.04
	2014	1,805.7	90.9	1,068	121.092	0.11	0.07
	2015	1,720.9	87.2	1,477	188.087	0.13	0.11
	2016	1,779.5	89.8	920	76.628	0.08	0.04
	2017	1,875.3	94.2	933	71.123	0.08	0.04
	2018	1,777.1	89.9	1,107	112.919	0.10	0.06
	2019	1,709.5	85.5	729	53.336	0.07	0.03
	2020	1,917.9	95.8	620	59.808	0.10	0.03
	2021	1,782.0	90.0	969	108.386	0.11	0.06
2022	1,859.6	93.9	767	47.891	0.06	0.03	
2023	1,879.2	94.8	592	50.211	0.08	0.03	
2024	1,664.2	86.1	953	96.326	0.10	0.06	
SUMMER 1 Docket 50-395; NPF-12 1st commercial operation 1/84 Type—PWR Capacity—966 MWe	1984	504.6	61.1	1,120	295	0.26	0.58
	1985	627.7	71.6	1,201	379	0.32	0.60
	1986	853.7	95.3	392	23	0.06	0.03
	1987	618.7	71.0	1,075	560	0.52	0.91
	1988	605.3	69.1	1,127	511	0.45	0.84
	1989	652.4	83.1	374	52	0.14	0.08
	1990	730.0	83.9	1,090	376	0.34	0.52
	1991	642.5	82.9	984	291	0.30	0.45
	1992	892.6	97.4	249	27	0.11	0.03
	1993	728.3	84.0	1,121	297	0.26	0.41
	1994	536.7	69.5	1,549	374	0.24	0.70
	1995	899.8	97.2	257	13	0.05	0.01
	1996	850.4	90.3	701	97	0.14	0.11
	1997	829.7	89.8	820	163	0.20	0.20
	1998	934.8	98.8	285	13.513	0.05	0.01
	1999	842.0	89.4	827	120.172	0.15	0.14
	2000	723.9	76.6	933	166.561	0.18	0.23
	2001	769.3	83.3	486	69.398	0.14	0.09
	2002	840.0	87.9	685	59.644	0.09	0.07
	2003	837.0	87.4	745	70.828	0.10	0.08
	2004	938.4	96.8	200	10.085	0.05	0.01
	2005	850.3	88.9	734	72.454	0.10	0.09
	2006	858.6	90.0	676	61.333	0.09	0.07
	2007	967.9	100.0	75	2.691	0.04	---
2008	817.2	84.8	623	49.091	0.08	0.06	
2009	784.5	82.6	767	56.050	0.07	0.07	
2010	968.8	99.4	104	2.129	0.02	---	
2011	847.7	87.6	598	31.580	0.05	0.04	
2012	829.0	85.3	766	82.261	0.11	0.10	
2013	955.5	97.2	172	5.113	0.03	0.01	
2014	789.4	82.6	934	110.929	0.12	0.14	
2015	812.3	83.8	811	64.958	0.08	0.08	
2016	988.4	100.0	137	2.862	0.02	---	
2017	789.2	81.3	856	50.308	0.06	0.06	
2018	840.9	86.4	718	49.251	0.07	0.06	
2019	941.6	96.2	135	4.557	0.03	---	
2020	882.1	91.6	468	30.997	0.07	0.04	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
SUMMER 1 (continued)	2021	798.8	82.8	465	27.699	0.06	0.03
	2022	980.7	100.0	136	3.510	0.03	---
	2023	858.1	88.1	525	31.904	0.06	0.04
	2024	844.9	87.7	539	46.334	0.09	0.05
SURRY 1, 2 Docket 50-280, 50-281; DPR-32, DPR-37 1st commercial operation 12/72, 5/73 Type—PWRs Capacity—838, 838 MWe	1973	420.6	---	936	152	0.16	0.36
	1974	717.4	49.8	1,715	884	0.52	1.23
	1975	1,079.0	70.8	1,948	1,649	0.85	1.53
	1976	930.7	60.4	2,753	3,165	1.15	3.40
	1977	1,139.0	72.2	1,860	2,307	1.24	2.03
	1978	1,210.6	77.2	2,203	1,837	0.83	1.52
	1979	343.0	42.3	5,065	3,584	0.71	10.45
	1980	568.2	40.3	5,317	3,836	0.72	6.75
	1981	907.6	59.3	3,753	4,244	1.13	4.68
	1982	1,323.3	88.5	1,878	1,490	0.79	1.13
	1983	916.2	61.3	2,754	3,220	1.17	3.51
	1984	1,026.7	71.0	3,198	2,247	0.70	2.19
	1985	1,166.4	78.2	3,206	1,815	0.57	1.56
	1986	1,080.5	69.0	3,763	2,356	0.63	2.18
	1987	1,132.7	72.7	2,675	712	0.27	0.63
	1988	750.4	50.0	3,184	1,542	0.48	2.05
	1989	489.3	33.0	3,100	836	0.27	1.71
	1990	1,276.4	83.9	1,947	575	0.30	0.45
	1991	1,271.9	84.5	1,547	510	0.33	0.40
	1992	1,396.3	88.9	1,660	539	0.32	0.39
	1993	1,283.1	84.6	1,402	383	0.27	0.30
	1994	1,320.9	85.2	1,530	378	0.25	0.29
	1995	1,333.0	84.2	1,883	406	0.22	0.30
	1996	1,562.9	93.1	983	209	0.21	0.13
	1997	1,380.3	87.1	1,335	320	0.24	0.23
	1998	1,476.2	91.6	1,165	188.831	0.16	0.13
	1999	1,483.0	93.5	995	137.891	0.14	0.09
	2000	1,490.0	92.7	1,197	193.169	0.16	0.13
	2001	1,441.5	89.5	1,243	328.650	0.26	0.23
	2002	1,557.0	96.0	799	87.778	0.11	0.06
	2003	1,255.9	79.7	1,628	325.729	0.20	0.26
	2004	1,537.9	94.6	1,028	119.654	0.12	0.08
2005	1,506.7	94.2	877	87.717	0.10	0.06	
2006	1,427.0	90.0	1,227	234.978	0.19	0.16	
2007	1,516.2	94.0	1,111	207.130	0.19	0.14	
2008	1,536.6	95.7	1,069	150.269	0.14	0.10	
2009	1,485.1	93.1	1,241	193.703	0.16	0.13	
2010	1,503.7	93.7	958	111.129	0.12	0.07	
2011	1,487.4	88.1	1,121	113.718	0.10	0.08	
2012	1,549.9	91.6	1,205	168.755	0.14	0.11	
2013	1,644.4	95.7	770	67.528	0.09	0.04	
2014	1,636.1	95.2	743	57.491	0.08	0.04	
2015	1,345.9	80.1	1,275	182.980	0.14	0.14	
2016	1,667.9	96.8	645	44.432	0.07	0.03	
2017	1,647.0	96.0	781	58.012	0.07	0.04	
2018	1,509.0	88.6	1,170	117.837	0.10	0.08	
2019	1,617.9	94.4	714	52.101	0.07	0.03	
2020	1,634.7	95.7	632	40.143	0.06	0.02	
2021	1,506.8	89.6	849	100.997	0.12	0.07	
2022	1,589.8	93.6	773	69.193	0.09	0.04	
2023	1,579.3	93.1	770	66.319	0.09	0.04	
2024	1,471.0	86.6	1,256	121.327	0.10	0.08	
SUSQUEHANNA 1, 2 Docket 50-387, 50-388; NPF-14; NPF-22 1st commercial operation 6/83, 2/85 Type—BWRs Capacity—1,257, 1,257 MWe	1984	719.9	72.6	2,827	308	0.11	0.43
	1985	1,452.2	76.4	3,669	1,106	0.30	0.76
	1986	1,344.8	67.0	2,996	828	0.28	0.62
	1987	1,749.5	85.3	2,548	621	0.24	0.35
	1988	1,691.0	83.5	1,904	516	0.27	0.31
	1989	1,572.5	77.1	2,063	704	0.34	0.45
1990	1,746.9	85.4	1,691	440	0.26	0.25	
1991	1,878.0	89.8	1,844	507	0.27	0.27	

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
SUSQUEHANNA 1, 2 (continued)	1992	1,604.2	79.7	1,885	724	0.38	0.45
	1993	1,602.1	77.3	1,488	335	0.23	0.21
	1994	1,814.4	85.4	1,580	442	0.28	0.24
	1995	1,850.8	85.3	1,773	476	0.27	0.26
	1996	1,998.7	90.7	1,430	289	0.20	0.14
	1997	1,918.9	89.6	1,646	433	0.26	0.23
	1998	1,879.6	88.3	1,575	360.778	0.23	0.19
	1999	1,896.0	89.6	1,787	431.397	0.24	0.23
	2000	1,994.6	92.6	1,812	331.163	0.18	0.17
	2001	2,027.6	94.2	1,807	288.413	0.16	0.14
	2002	1,973.0	91.6	1,890	259.968	0.14	0.13
	2003	2,050.8	93.4	1,934	250.096	0.13	0.12
	2004	2,058.8	92.7	2,144	272.202	0.13	0.13
	2005	2,086.6	93.5	1,898	181.360	0.10	0.09
	2006	2,040.4	91.0	1,873	184.901	0.10	0.09
	2007	2,089.2	93.0	2,303	263.021	0.11	0.13
	2008	2,174.1	94.2	1,895	192.892	0.10	0.09
	2009	2,231.1	94.7	1,956	266.597	0.14	0.12
	2010	2,121.6	90.4	1,950	176.161	0.09	0.08
	2011	1,992.0	82.2	1,847	168.968	0.09	0.08
	2012	1,936.5	81.4	2,140	175.881	0.08	0.09
	2013	2,166.2	88.6	1,861	233.532	0.13	0.11
	2014	2,153.1	87.3	1,956	214.467	0.11	0.10
	2015	2,354.3	93.3	1,763	206.154	0.12	0.09
2016	2,217.2	89.4	2,210	237.336	0.11	0.11	
2017	2,375.6	95.1	1,440	165.468	0.11	0.07	
2018	2,343.4	95.2	1,357	147.327	0.11	0.06	
2019	2,394.1	96.2	1,239	141.078	0.11	0.06	
2020	2,287.7	95.2	1,543	132.342	0.09	0.06	
2021	2,282.3	94.1	1,259	144.788	0.12	0.06	
2022	2,290.3	94.8	996	148.452	0.15	0.06	
2023	2,288.9	94.6	1,170	162.657	0.14	0.07	
2024	2,299.4	95.5	1,174	146.938	0.13	0.06	
THREE MILE ISLAND 1,²² 2²³	1975	675.9	82.2	131	73	0.56	0.11
Docket 50-289, 50-320;	1976	530.0	65.4	819	286	0.35	0.54
DPR-50, DPR-73	1977	664.5	80.9	1,122	360	0.32	0.54
1st commercial operation	1978	690.0	85.1	1,929	504	0.26	0.73
9/74, 12/78	1979	266.0	21.9	3,975	1,392	0.35	5.23
Type—PWRs	1980	---	---	2,328	394	0.17	---
Capacity—(802), (880) MWe	1981	---	---	2,103	376	0.18	---
	1982	---	---	2,123	1,004	0.47	---
	1983	---	---	1,592	1,159	0.73	---
	1984	---	---	1,079	688	0.64	---
	1985	103.6	10.6	1,890	857	0.45	8.27
THREE MILE ISLAND 1²²	1986	585.2	70.9	1,360	213	0.16	0.36
Docket 50-289;	1987	610.7	73.6	1,259	149	0.12	0.24
DPR-50	1988	661.0	77.8	1,012	210	0.21	0.32
1st commercial operation 9/74	1989	871.3	100.0	670	54	0.08	0.06
Type—PWR	1990	645.5	84.6	1,319	264	0.20	0.41
Capacity—(802) MWe	1991	688.7	86.4	1,542	198	0.13	0.29
	1992	836.8	100.0	558	34	0.06	0.04
	1993	722.0	88.5	1,835	206	0.11	0.29
	1994	798.7	95.5	434	40	0.09	0.05
	1995	772.9	90.8	1,220	213	0.17	0.28
	1996	857.4	100.0	267	16	0.06	0.02
	1997	675.7	84.3	1,049	204	0.19	0.30

²² Three Mile Island 1 resumed commercial power generation in October 1985 after being under regulatory restraint since 1979. Three Mile Island 1 ceased operations in September 2019 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

²³ Three Mile Island 2 has been shut down since the 1979 accident but was still included in the count of reactors through 1988, since the dose was still being accumulated to defuel and decontaminate the unit during this time period. Parentheses indicate plant capacity when the plant was operational. From 2001–2015, Three Mile Island voluntarily provided an estimate of the collective dose for Unit 2 but not the number of individuals with measurable dose.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
THREE MILE ISLAND 1 ²² (continued)	1998	805.8	100.0	280	16.722	0.06	0.02
	1999	722.4	89.7	1,171	154.936	0.13	0.21
	2000	813.4	100.0	183	8.689	0.05	0.01
	2001	616.7	84.2	1,196	196.699	0.16	0.32
	2002	833.0	100.0	172	6.533	0.04	0.01
	2003	706.4	87.1	1,230	155.101	0.13	0.22
	2004	828.0	100.0	105	3.573	0.03	---
	2005	769.1	93.2	955	65.576	0.07	0.09
	2006	825.0	99.0	125	5.155	0.04	0.01
	2007	758.6	92.0	1,266	114.203	0.09	0.15
	2008	838.5	100.0	64	2.219	0.03	---
	2009	672.6	81.7	2,019	241.780	0.12	0.36
	2010	757.3	93.1	790	38.994	0.05	0.05
	2011	744.2	91.4	1,224	129.775	0.11	0.17
	2012	820.7	96.3	280	13.073	0.05	0.02
	2013	762.5	92.2	1,294	125.803	0.10	0.16
	2014	834.3	100.0	204	12.518	0.06	0.02
	2015	753.2	92.1	1,454	171.431	0.12	0.23
	2016	808.5	97.0	309	16.843	0.05	0.02
	2017	783.3	94.4	1,009	82.657	0.08	0.11
	2018	837.4	100.0	78	2.641	0.03	---
	2019	---	---	189	7.252	0.04	---
	2020	---	---	91	3.779	0.04	---
	2021	---	---	127	4.719	0.04	---
2022	---	---	168	20.733	0.12	---	
2023	---	---	67	2.635	0.04	---	
2024	---	---	129	9.212	0.07	---	
THREE MILE ISLAND 2 ²³ Docket 50-320; DPR-73 1st commercial operation 12/78 Type—PWR Capacity—(880) MWe	1986	---	---	1,497	915	0.61	---
	1987	---	---	1,378	977	0.71	---
	1988	---	---	1,247	917	0.74	---
	1989	---	---	1,014	639	0.63	---
	1990	---	---	484	136	0.28	---
	1991	---	---	153	37	0.24	---
	1992	---	---	315	157	0.50	---
	1993	---	---	167	33	0.20	---
	1994	---	---	259	7	0.03	---
	1995	---	---	191	2	0.01	---
	1996	---	---	122	2	0.02	---
	1997	---	---	232	1	---	---
	1998	---	---	105	0.697	0.01	---
	1999	---	---	203	0.512	---	---
	2000	---	---	70	0.401	0.01	---
	2001	---	---	---	0.228	---	---
	2002	---	---	---	---	---	---
	2003	---	---	---	0.260	---	---
	2004	---	---	---	0.216	---	---
	2005	---	---	---	---	---	---
2006	---	---	---	0.372	---	---	
2007	---	---	---	0.082	---	---	
2008	---	---	---	0.138	---	---	
2009	---	---	---	0.113	---	---	
2010	---	---	---	0.359	---	---	
2011	---	---	---	0.291	---	---	
2012	---	---	---	0.194	---	---	
2013	---	---	---	0.229	---	---	

²² Three Mile Island 1 resumed commercial power generation in October 1985 after being under regulatory restraint since 1979. Three Mile Island 1 ceased operations in September 2019 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

²³ Three Mile Island 2 has been shut down since the 1979 accident but was still included in the count of reactors through 1988, since the dose was still being accumulated to defuel and decontaminate the unit during this time period. Parentheses indicate plant capacity when the plant was operational. From 2001–2015, Three Mile Island voluntarily provided an estimate of the collective dose for Unit 2 but not the number of individuals with measurable dose.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
THREE MILE ISLAND 2²³ (continued)	2014	---	---	---	0.188	---	---
	2015	---	---	---	0.255	---	---
	<i>Please see Three Mile Island 1 for years 2016-2021</i>						
	2022	---	---	69	14.635	0.21	---
	2023	---	---	127	54.456	0.43	---
2024	---	---	225	129.911	0.58	---	
TROJAN²⁴ Docket 50-344; NPF-1 1st commercial operation 5/76 Type—PWR Capacity—(1,080) MWe	1977	792.0	92.6	591	174	0.29	0.22
	1978	205.5	20.6	711	319	0.45	1.55
	1979	631.0	58.1	736	258	0.35	0.41
	1980	727.5	72.5	1,159	421	0.36	0.58
	1981	775.6	74.1	1,311	609	0.46	0.79
	1982	579.5	60.8	977	419	0.43	0.72
	1983	494.2	62.4	969	307	0.32	0.62
	1984	567.0	54.4	1,042	433	0.42	0.76
	1985	829.1	76.7	852	363	0.43	0.44
	1986	852.4	79.7	1,321	381	0.29	0.45
	1987	525.5	54.0	1,209	363	0.30	0.69
	1988	758.6	67.5	1,408	401	0.28	0.53
	1989	666.8	61.9	1,360	421	0.31	0.63
	1990	732.4	66.3	1,169	258	0.22	0.35
	1991	181.6	16.1	1,496	567	0.38	3.12
	1992	553.9	68.4	567	84	0.15	0.15
	1993	---	68.4	54	21	0.39	---
	1994	---	---	51	9	0.18	---
	1995	---	---	141	44	0.31	---
	1996	---	---	112	41	0.37	---
1997	---	---	227	41	0.18	---	
1998	---	---	283	46.417	0.16	---	
1999	---	---	274	51.504	0.19	---	
2000	---	---	127	17.631	0.14	---	
2001	---	---	14	1.091	0.08	---	
2002	---	---	13	0.536	0.04	---	
2003	---	---	105	23.996	0.23	---	
2004	---	---	5	0.079	0.02	---	
TURKEY POINT 3, 4 Docket 50-250, 50-251; DPR-31, DPR-41 1st commercial operation 12/72, 9/73 Type—PWRs Capacity—837, 844 MWe	1973	401.9	---	444	78	0.18	0.19
	1974	953.6	---	794	454	0.57	0.48
	1975	1,003.7	74.9	1,176	876	0.74	0.87
	1976	974.2	71.2	1,647	1,184	0.72	1.22
	1977	979.5	72.1	1,319	1,036	0.79	1.06
	1978	1,000.2	78.8	1,336	1,032	0.77	1.03
	1979	811.0	62.4	2,002	1,680	0.84	2.07
	1980	990.6	73.6	1,803	1,651	0.92	1.67
	1981	654.0	46.8	2,932	2,251	0.77	3.44
	1982	915.7	65.2	2,956	2,119	0.72	2.31
	1983	878.4	62.8	2,930	2,681	0.92	3.05
	1984	946.7	68.5	2,010	1,255	0.62	1.33
	1985	1,034.9	74.7	1,905	1,253	0.66	1.21
	1986	754.1	54.9	1,808	946	0.52	1.25
	1987	431.3	36.6	1,980	1,371	0.69	3.18
	1988	809.8	59.5	1,841	738	0.40	0.91
	1989	689.9	56.8	1,625	433	0.27	0.63
1990	933.1	69.0	2,099	730	0.35	0.78	
1991	258.2	21.0	2,087	939	0.45	3.64	
1992	968.9	75.5	1,374	325	0.24	0.34	
1993	1,244.8	91.0	1,271	275	0.22	0.22	
1994	1,172.9	87.2	1,489	476	0.32	0.41	

²³ Three Mile Island 2 has been shut down since the 1979 accident but was still included in the count of reactors through 1988, since the dose was still being accumulated to defuel and decontaminate the unit during this time period. Parentheses indicate plant capacity when the plant was operational. From 2001–2015, Three Mile Island voluntarily provided an estimate of the collective dose for Unit 2 but not the number of individuals with measurable dose.

²⁴ Trojan ceased operations in 1992 and will not be put in commercial operation again. It is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational. As of 2005, Trojan no longer reports under its reactor license but does report under its independent spent fuel storage installation license (see appendix A).

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
TURKEY POINT 3, 4 (continued)	1995	1,320.3	94.6	1,142	215	0.19	0.16
	1996	1,307.8	94.0	1,157	187	0.16	0.14
	1997	1,220.9	88.6	1,581	414	0.26	0.34
	1998	1,323.0	94.5	1,045	156.415	0.15	0.12
	1999	1,352.5	96.5	919	127.567	0.14	0.09
	2000	1,283.7	92.2	1,292	219.852	0.17	0.17
	2001	1,324.1	95.0	827	101.575	0.12	0.08
	2002	1,374.0	97.9	793	73.764	0.09	0.05
	2003	1,253.2	91.6	1,442	247.053	0.17	0.20
	2004	1,231.0	89.9	1,089	117.404	0.11	0.10
	2005	1,143.0	84.9	1,136	109.996	0.10	0.10
	2006	1,251.8	90.0	1,321	149.208	0.11	0.12
	2007	1,281.5	91.0	1,085	107.601	0.10	0.08
	2008	1,294.9	92.0	1,067	97.357	0.09	0.08
	2009	1,219.7	87.6	1,359	166.217	0.12	0.14
	2010	1,290.9	91.9	1,025	86.749	0.08	0.07
	2011	1,245.7	89.6	921	62.326	0.07	0.05
	2012	878.0	67.9	2,024	241.151	0.12	0.27
	2013	1,245.9	82.7	882	82.215	0.09	0.07
	2014	1,375.7	89.4	1,271	114.326	0.09	0.08
	2015	1,489.7	92.7	933	79.124	0.08	0.05
	2016	1,567.7	95.6	892	76.269	0.09	0.05
	2017	1,451.9	88.8	1,104	108.200	0.10	0.07
	2018	1,570.2	94.9	651	51.088	0.08	0.03
2019	1,614.4	95.8	905	84.610	0.09	0.05	
2020	1,440.5	88.2	1,059	82.672	0.08	0.06	
2021	1,587.3	93.5	849	90.454	0.11	0.06	
2022	1,652.8	95.9	785	72.840	0.09	0.04	
2023	1,537.2	90.3	988	100.934	0.10	0.07	
2024	1,643.1	95.2	655	60.442	0.09	0.04	
VERMONT YANKEE²⁵ Docket 50-271; DPR-28 1st commercial operation 11/72 Type—BWR Capacity—(605) MWe	1973	222.1	---	244	85	0.35	0.38
	1974	303.5	---	357	216	0.61	0.71
	1975	429.0	87.8	282	153	0.54	0.36
	1976	389.6	77.1	815	411	0.50	1.05
	1977	423.5	85.1	641	258	0.40	0.61
	1978	387.5	75.9	934	339	0.36	0.87
	1979	414.0	82.1	1,220	1,170	0.96	2.83
	1980	357.8	71.5	1,443	1,338	0.93	3.74
	1981	429.1	84.6	1,264	731	0.58	1.70
	1982	501.0	96.0	481	205	0.43	0.41
	1983	346.1	69.3	1,316	1,527	1.16	4.41
	1984	398.1	79.0	954	626	0.66	1.57
	1985	361.4	71.8	1,392	1,051	0.76	2.91
	1986	248.1	48.9	1,389	1,188	0.86	4.79
	1987	423.6	84.2	827	303	0.37	0.72
	1988	492.1	95.7	379	124	0.33	0.25
	1989	432.8	84.7	832	288	0.35	0.67
	1990	433.1	85.9	849	307	0.36	0.71
	1991	492.3	94.3	310	118	0.38	0.24
	1992	446.8	88.1	921	381	0.41	0.85
1993	402.3	80.1	833	217	0.26	0.54	
1994	515.8	98.7	220	38	0.17	0.07	
1995	462.1	87.0	737	182	0.25	0.39	
1996	452.7	85.2	951	231	0.24	0.51	
1997	487.1	96.0	260	57	0.22	0.12	
1998	383.4	77.9	944	199.399	0.21	0.52	
1999	463.4	91.0	854	175.795	0.21	0.38	
2000	517.8	99.6	198	37.846	0.19	0.07	
2001	474.9	93.5	863	143.010	0.17	0.30	
2002	451.0	91.7	946	150.446	0.16	0.33	
2003	505.9	98.8	359	54.348	0.15	0.11	
2004	439.2	87.2	1,379	211.529	0.15	0.48	

²⁵ Vermont Yankee ceased operations in December 2014 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
VERMONT YANKEE ²⁵ (continued)	2005	467.5	94.2	1,105	198.003	0.18	0.42
	2006	582.9	100.0	380	49.537	0.13	0.08
	2007	537.0	93.0	1,191	171.200	0.14	0.32
	2008	557.3	94.1	1,402	213.680	0.15	0.38
	2009	611.9	100.0	392	61.105	0.16	0.10
	2010	548.6	91.2	1,071	206.321	0.19	0.38
	2011	562.1	93.3	1,029	176.129	0.17	0.31
	2013	555.5	92.9	1,034	170.340	0.16	0.31
	2014	580.4	99.3	196	21.350	0.11	0.04
	2015	---	---	413	49.557	0.12	---
	2016	---	---	128	12.513	0.10	---
	2017	---	---	128	13.698	0.11	---
	2018	---	---	185	17.807	0.10	---
	2019	---	---	179	45.432	0.25	---
	2020	---	---	225	53.065	0.24	---
	2021	---	---	227	57.462	0.25	---
	2022	---	---	217	119.583	0.55	---
2023	---	---	126	106.459	0.84	---	
2024	---	---	121	79.368	0.66	---	
VOGTLE 1, 2 ²⁶ Docket 50-424; 50-425; NPF-68, NPF-81 1st commercial operation 6/87, 5/89 Type—PWRs Capacity— 1,150, 1,152 MWe	1988	820.4	77.7	1,108	138	0.12	0.17
	1989	1,045.8	96.0	427	32	0.07	0.03
	1990	1,710.9	82.7	1,602	466	0.29	0.27
	1991	1,966.5	89.2	1,357	362	0.27	0.18
	1992	2,047.9	90.0	1,262	426	0.34	0.21
	1993	2,060.4	88.3	1,338	367	0.27	0.18
	1994	2,170.1	91.3	1,048	217	0.21	0.10
	1995	2,285.4	95.2	953	199	0.21	0.09
	1996	2,056.8	86.5	1,395	452	0.32	0.22
	1997	2,121.1	91.4	994	158	0.16	0.07
	1998	2,123.9	92.3	994	162.210	0.16	0.08
	1999	2,106.0	91.5	1,359	228.942	0.17	0.11
	2000	2,223.9	95.6	899	121.312	0.14	0.05
	2001	2,231.5	96.2	870	129.270	0.15	0.06
	2002	1,942.0	85.3	1,152	243.957	0.21	0.13
	2003	2,179.9	94.8	806	84.344	0.10	0.04
	2004	2,200.7	95.7	765	80.763	0.11	0.04
	2005	2,027.9	88.6	1,099	151.096	0.14	0.07
	2006	2,048.8	89.0	892	115.509	0.13	0.06
	2007	2,089.9	92.0	951	120.515	0.13	0.06
	2008	2,023.9	89.3	1,185	137.620	0.12	0.07
	2009	2,201.6	95.7	931	79.681	0.09	0.04
	2010	2,238.6	95.8	924	89.182	0.10	0.04
	2011	2,138.0	92.6	1,179	118.931	0.10	0.06
	2012	2,226.6	95.7	776	59.317	0.08	0.03
	2013	2,178.4	95.3	857	78.298	0.09	0.04
2014	2,065.8	91.6	1,404	156.744	0.11	0.08	
2015	2,210.0	95.3	843	60.565	0.07	0.03	
2016	2,267.1	97.0	778	58.472	0.08	0.03	
2017	2,189.0	94.3	938	80.556	0.09	0.04	
2018	2,278.4	97.1	641	46.855	0.07	0.02	
2019	2,255.0	96.6	625	50.668	0.08	0.02	
2020	2,152.7	92.3	950	86.646	0.09	0.04	
2021	2,258.8	96.6	682	61.951	0.09	0.03	
2022	2,227.8	95.7	727	80.894	0.11	0.04	
2023	2,132.5	93.0	831	68.062	0.08	0.03	

²⁵ Vermont Yankee ceased operations in December 2014 and is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

²⁶ Vogtle Unit 3 became operational in July 2023. It is not included in the count of operating reactors for 2023 because it did not complete a full year of operation, but the dose for Unit 3 is included in the total dose for Units 1 and 2.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
VOGTLE 1, 2, 3^{26, 27} Docket 50-424; 50-425; 52-025 NPF-68, NPF-81, NPF-91 1st commercial operation 6/87, 5/89, 7/23 Type—PWRs Capacity— 1,150, 1,152, 1,078 MWe	2024	3,110.6	91.5	969	60.674	0.06	0.02
WATERFORD 3 Docket 50-382; NPF-38 1st commercial operation 9/85 Type—PWR Capacity—1,152 MWe	1986	875.7	79.1	1,244	223	0.18	0.25
	1987	891.8	82.5	959	156	0.16	0.17
	1988	784.3	75.4	1,246	259	0.21	0.33
	1989	909.8	82.6	1,306	265	0.20	0.29
	1990	1,027.9	92.8	432	47	0.11	0.05
	1991	870.6	79.8	1,301	364	0.28	0.42
	1992	909.6	83.2	1,213	226	0.19	0.25
	1993	1,088.3	99.4	195	15	0.08	0.01
	1994	949.1	87.0	1,167	191	0.16	0.20
	1995	927.4	83.4	1,092	153	0.14	0.16
	1996	1,064.8	94.2	342	27	0.08	0.03
	1997	767.2	71.2	1,186	148	0.13	0.19
	1998	984.1	91.9	282	24.032	0.09	0.02
	1999	849.5	79.6	833	123.198	0.15	0.15
	2000	965.1	88.8	825	131.701	0.16	0.14
	2001	1,086.0	99.6	91	4.677	0.05	---
	2002	1,007.0	93.2	811	109.439	0.13	0.11
	2003	968.0	90.9	710	95.332	0.13	0.10
	2004	1,099.1	100.0	60	2.517	0.04	---
	2005	900.9	80.2	902	136.318	0.15	0.15
	2006	1,059.3	92.0	1,190	109.682	0.09	0.10
	2007	1,130.2	96.0	469	20.125	0.04	0.02
	2008	1,030.7	88.0	1,268	134.221	0.11	0.13
	2009	1,023.4	88.0	1,479	255.088	0.17	0.25
	2010	1,173.1	100.0	216	4.913	0.02	---
	2011	1,020.8	90.4	1,144	100.053	0.09	0.10
	2012	897.1	78.0	1,919	260.202	0.14	0.29
	2013	1,071.6	93.7	130	3.129	0.02	---
	2014	1,046.4	91.5	965	69.462	0.07	0.07
	2015	959.5	85.1	979	65.826	0.07	0.07
	2016	1,152.5	98.4	248	3.392	0.01	---
	2017	959.1	83.8	894	60.728	0.07	0.06
	2018	1,175.6	100.0	98	1.130	0.01	---
	2019	869.0	75.8	931	69.780	0.07	0.08
	2020	1,023.0	88.9	705	37.090	0.05	0.04
	2021	1,119.5	96.7	127	1.999	0.02	---
	2022	897.6	77.9	1,157	84.524	0.07	0.09
	2023	892.7	77.2	772	66.602	0.09	0.07
	2024	702.5	73.5	319	7.573	0.02	0.01
WATTS BAR 1, 2 Docket 50-390, 50-391; NPF-90, NPF-96 1st commercial operation 5/96, 10/16 Type—PWR Capacity—1,157, 1,121 MWe	1997	867.6	83.8	1,103	113	0.10	0.13
	1998	1,105.1	99.1	96	3.106	0.03	---
	1999	943.1	87.2	975	98.946	0.10	0.10
	2000	1,033.3	92.8	1,053	122.453	0.12	0.12
	2001	1,095.9	96.5	197	5.912	0.03	0.01
	2002	1,034.0	92.1	909	93.598	0.10	0.09
	2003	973.3	86.7	1,392	165.741	0.12	0.17
	2004	1,122.1	99.1	220	5.893	0.03	0.01
	2005	1,003.7	90.0	1,244	143.506	0.12	0.14
	2006	764.5	70.0	2,070	322.682	0.16	0.42
	2007	1,150.6	100.0	128	4.414	0.03	---
	2008	923.5	83.2	887	70.648	0.08	0.08

²⁶ Vogtle Unit 3 became operational in July 2023. It is not included in the count of operating reactors for 2023 because it did not complete a full year of operation, but the dose for Unit 3 is included in the total dose for Units 1 and 2.

²⁷ Vogtle Unit 4 became operational in April 2024. It is not included in the count of operating reactors for 2024 because it did not complete a full year of operation, but the dose for Unit 4 is included in the total dose for Units 1, 2, and 3.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
WATTS BAR 1, 2 (continued)	2009	1,051.1	92.1	853	63.846	0.07	0.06
	2010	1,111.7	98.3	129	6.193	0.05	0.01
	2011	939.6	85.4	900	51.021	0.06	0.05
	2012	969.5	86.5	1,002	62.779	0.06	0.06
	2013	1,137.9	99.5	85	2.616	0.03	---
	2014	1,003.4	89.0	600	28.268	0.05	0.03
	2015	964.5	87.5	976	64.320	0.07	0.07
	2016	1,284.1	97.8	189	4.489	0.02	---
	2017	1,558.2	69.6	1,074	75.672	0.07	0.05
	2018	2,110.1	92.3	779	36.920	0.05	0.02
	2019	2,018.4	88.8	832	45.017	0.05	0.02
	2020	2,007.9	90.6	1,186	76.820	0.06	0.04
	2021	2,018.8	92.5	1,329	86.650	0.07	0.04
	2022	1,918.2	83.4	2,127	163.361	0.08	0.09
2023	2,135.8	92.8	1,518	116.163	0.08	0.05	
2024	2,135.6	92.7	1,100	61.484	0.06	0.03	
WOLF CREEK 1 Docket 50-482; NPF-42 1st commercial operation 9/85 Type—PWR Capacity—1,164 MWe	1986	832.8	73.3	682	143	0.21	0.17
	1987	778.8	71.1	675	138	0.20	0.18
	1988	794.7	70.7	1,010	297	0.29	0.37
	1989	1,108.4	99.5	186	18	0.10	0.02
	1990	940.2	81.0	798	195	0.24	0.21
	1991	707.6	71.9	1,010	331	0.33	0.47
	1992	1,010.8	86.7	446	78	0.17	0.08
	1993	940.5	80.6	975	183	0.19	0.19
	1994	1,017.2	86.8	1,082	235	0.22	0.23
	1995	1,198.0	98.7	242	14	0.06	0.01
	1996	980.6	81.2	986	171	0.17	0.17
	1997	964.3	83.8	989	265	0.27	0.27
	1998	1,187.3	100.0	184	10.382	0.06	0.01
	1999	1,045.3	90.1	812	147.704	0.18	0.14
	2000	1,032.7	89.5	861	143.417	0.17	0.14
	2001	1,177.9	100.0	105	5.176	0.05	---
	2002	1,029.0	88.7	816	99.987	0.12	0.10
	2003	1,013.5	87.2	820	88.941	0.11	0.09
	2004	1,153.5	98.8	93	3.388	0.04	---
	2005	1,004.2	86.7	856	106.870	0.12	0.11
	2006	1,067.4	91.0	789	96.788	0.12	0.09
	2007	1,183.7	100.0	91	4.307	0.05	---
	2008	968.3	83.1	911	94.997	0.10	0.10
	2009	1,001.0	86.9	1,504	73.637	0.05	0.07
	2010	1,090.8	94.2	463	10.516	0.02	0.01
	2011	839.1	73.0	1,266	133.960	0.11	0.16
	2012	944.4	80.0	306	7.888	0.03	0.01
	2013	819.2	72.5	1,452	111.257	0.08	0.14
2014	978.2	81.9	709	27.500	0.04	0.03	
2015	987.9	82.5	1,190	74.804	0.06	0.08	
2016	942.0	78.5	1,267	90.631	0.07	0.10	
2017	1,215.5	100.0	238	3.437	0.01	---	
2018	1,047.5	86.9	1,153	72.882	0.06	0.07	
2019	1,056.6	87.4	784	45.183	0.06	0.04	
2020	1,196.6	99.7	145	1.924	0.01	---	
2021	978.9	84.0	950	78.650	0.08	0.08	
2022	1,025.3	86.8	699	59.328	0.08	0.06	
2023	1,176.0	100.0	222	2.884	0.01	0.00	
2024	1,048.3	87.3	680	69.025	0.10	0.07	
YANKEE ROWE²⁸ Docket 50-29; DPR-3 1st commercial operation 7/61 Type—PWR Capacity—(175) MWe	1969	138.3	---	193	215	1.11	1.55
	1970	146.1	---	355	255	0.72	1.75
	1971	173.5	---	155	90	0.58	0.52
	1972	78.7	---	282	255	0.90	3.24
	1973	127.1	---	133	99	0.74	0.78
	1974	111.3	---	243	205	0.84	1.84

²⁸ Yankee Rowe ceased operations as of October 1991 and will not be put in commercial operation again. It is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr	
YANKEE ROWE ²⁸ (continued)	1975	145.1	82.4	249	116	0.47	0.80	
	1976	152.2	89.8	152	59	0.39	0.39	
	1977	124.6	73.9	725	356	0.49	2.86	
	1978	145.0	81.0	565	282	0.50	1.94	
	1979	149.0	81.6	441	127	0.29	0.85	
	1980	35.6	22.0	502	213	0.42	5.98	
	1981	109.0	74.4	515	302	0.59	2.77	
	1982	108.6	73.4	814	474	0.58	4.36	
	1983	163.5	91.4	395	68	0.17	0.42	
	1984	124.8	71.4	654	348	0.53	2.79	
	1985	144.3	85.3	653	211	0.32	1.46	
	1986	169.7	95.0	384	45	0.12	0.27	
	1987	138.7	82.7	593	217	0.37	1.56	
	1988	136.4	85.2	738	227	0.31	1.66	
	1989	159.4	92.9	496	62	0.13	0.39	
	1990	101.1	61.5	702	246	0.35	2.43	
	1991	121.2	72.3	162	40	0.25	0.33	
	1992	---	---	---	324	94	0.29	---
	1993	---	---	---	313	163	0.52	---
	1994	---	---	---	222	156	0.70	---
	1995	---	---	---	191	78	0.41	---
	1996	---	---	---	239	95	0.40	---
	1997	---	---	---	323	65	0.20	---
	1998	---	---	---	125	4.603	0.04	---
	1999	---	---	---	83	2.291	0.02	---
	2000	---	---	---	38	2.406	0.06	---
	2001	---	---	---	48	3.969	0.08	---
	2002	---	---	---	128	20.024	0.16	---
	2003	---	---	---	136	30.934	0.23	---
	2004	---	---	---	70	6.502	0.09	---
	2005	---	---	---	63	1.456	0.02	---
	2006	---	---	---	45	0.975	0.02	---
	2007	---	---	---	---	---	---	---
2008	---	---	---	1	0.019	0.02	---	
2009	---	---	---	5	0.114	0.02	---	
2010	---	---	---	3	0.083	0.03	---	
2011	---	---	---	8	0.113	0.01	---	
2012	---	---	---	1	0.013	0.01	---	
2013	---	---	---	2	0.043	0.02	---	
2014	---	---	---	10	0.145	0.01	---	
2015	---	---	---	25	0.463	0.02	---	
2016	---	---	---	5	0.073	0.01	---	
2017	---	---	---	7	0.112	0.02	---	
2018	---	---	---	4	0.045	0.01	---	
2019	---	---	---	7	0.113	0.02	---	
2020	---	---	---	18	0.266	0.01	---	
2021	---	---	---	22	0.428	0.02	---	
2022	---	---	---	-	---	---	---	
2023	---	---	---	1	0.016	0.02	---	
2024	---	---	---	16	0.254	0.02	---	
ZION 1, 2 ²⁹	1974	425.3	71.1	306	56	0.18	0.13	
Docket 50-295; 50-304; DPR-39, DPR-48	1975	1,181.5	74.9	436	127	0.29	0.11	
1st commercial operation 12/73, 9/74	1976	1,134.9	61.9	774	571	0.74	0.50	
Type—PWRs	1977	1,358.6	75.0	784	1,003	1.28	0.74	
Capacity—(1,040), (1,040) MWe	1978	1,613.5	80.2	1,104	1,017	0.92	0.63	
	1979	1,238.0	67.6	1,472	1,274	0.87	1.03	
	1980	1,411.2	74.1	1,363	920	0.67	0.65	
	1981	1,366.9	72.3	1,754	1,720	0.98	1.26	
	1982	1,186.4	64.3	1,575	2,103	1.34	1.77	
	1983	1,222.3	69.4	1,285	1,311	1.02	1.07	

²⁸ Yankee Rowe ceased operations as of October 1991 and will not be put in commercial operation again. It is no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plant was operational.

²⁹ Zion Units 1 and 2 ceased operations in 1997 and 1996, respectively, and are no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plants were operational.

Reporting Organization	Year	Megawatt Years (MW-yr)	Unit Availability Factor	Total Personnel with Measurable TEDE	Collective TEDE per Site (person-rem)	Average Measurable TEDE (rem)	Collective TEDE/ MW-yr
ZION 1, 2 ²⁹ (continued)	1984	1,389.9	69.6	1,110	786	0.71	0.57
	1985	1,187.9	62.9	1,498	1,166	0.78	0.98
	1986	1,462.0	73.2	967	474	0.49	0.32
	1987	1,337.0	71.0	1,046	653	0.62	0.49
	1988	1,549.1	78.3	1,926	1,260	0.65	0.81
	1989	1,514.1	77.6	1,282	624	0.49	0.41
	1990	860.4	46.9	1,385	696	0.50	0.81
	1991	1,125.7	58.2	902	173	0.19	0.15
	1992	1,128.8	59.0	1,732	1,043	0.60	0.92
	1993	1,458.2	70.9	1,772	643	0.36	0.44
	1994	1,224.9	59.9	1,176	306	0.26	0.25
	1995	1,471.6	72.4	1,807	797	0.44	0.54
	1996	1,538.4	75.8	1,567	437	0.28	0.28
	1997	123.2	7.1	924	119	0.13	0.97
	1998	---	---	246	12.417	0.05	---
	1999	---	---	67	4.194	0.06	---
	2000	---	---	26	3.015	0.12	---
	2001	---	---	6	0.274	0.05	---
	2002	---	---	12	0.276	0.02	---
	2003	---	---	2	0.049	0.02	---
	2004	---	---	6	0.167	0.03	---
	2005	---	---	5	0.109	0.02	---
	2006	---	---	7	0.109	0.02	---
	2007	---	---	8	0.224	0.03	---
	2008	---	---	7	0.147	0.02	---
	2009	---	---	---	---	---	---
	2010	---	---	17	0.562	0.03	---
	2011	---	---	128	28.794	0.22	---
	2012	---	---	183	75.801	0.41	---
2013	---	---	218	44.689	0.20	---	
2014	---	---	358	78.730	0.22	---	
2015	---	---	340	142.605	0.42	---	
2016	---	---	194	45.788	0.24	---	
2017	---	---	75	4.542	0.06	---	
2018	---	---	7	0.085	0.01	---	
2019	---	---	4	0.123	0.03	---	
2020	---	---	---	---	---	---	
2021	---	---	4	0.048	---	---	
2022	---	---	3	0.041	0.01	---	
2023	---	---	5	0.081	0.02	---	
2024	---	---	---	---	---	---	

²⁹ Zion Units 1 and 2 ceased operations in 1997 and 1996, respectively, and are no longer included in the count of operating reactors. Parentheses indicate plant capacity when the plants were operational.

APPENDIX D

**DOSE PERFORMANCE TRENDS BY
REACTOR SITE**

1973–2024

Appendix D contains data only on plants still operating in 2024.

DOSE PERFORMANCE TRENDS BY REACTOR SITE 1973–2024

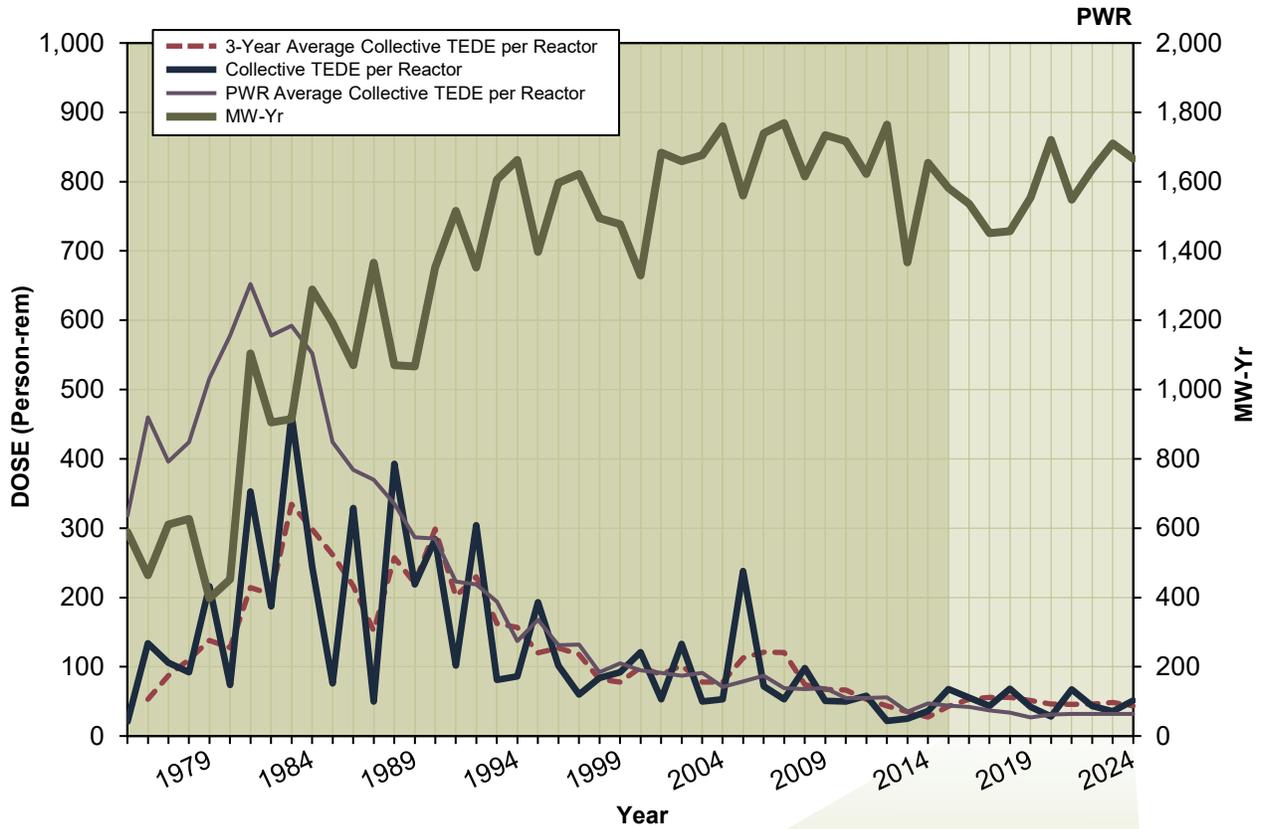
GRAPHICAL REPRESENTATION OF DOSE TRENDS IN APPENDIX D

Each page of appendix D presents a graph of selected dose performance trends from 1973 through 2024. The graphs illustrate the history of the Collective TEDE per Reactor for the site, the rolling 3-year average Collective TEDE per Reactor, and the electricity generated at the site. These data are plotted, beginning with each plant's first full year of commercial operation and continuing through 2024. Data for years when a plant was not in commercial operation have been included when available; however, any data reported before 1973 are not included. The data on the 3-year average Collective TEDE per Reactor are included because they provide an overall indication of each plant's general trend in collective dose.

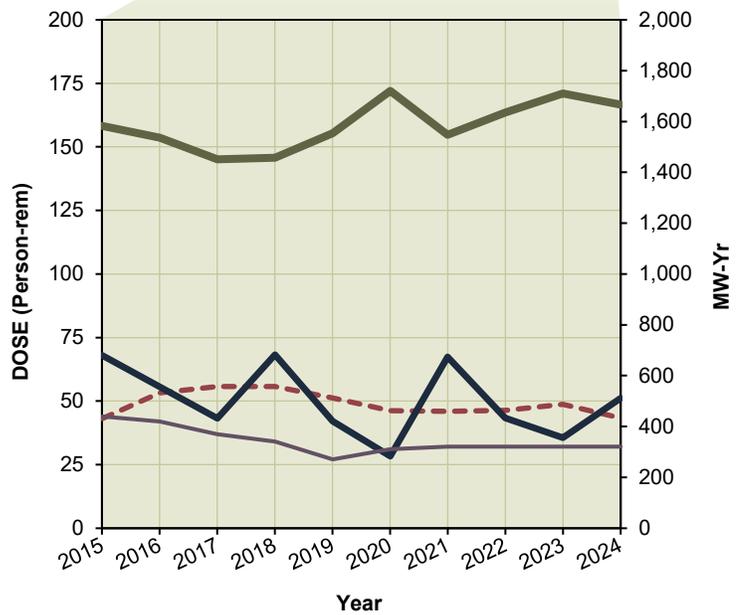
The 3-year average Collective TEDE per Reactor is also one of the metrics used by the U.S. Nuclear Regulatory Commission in the Reactor Oversight Process to evaluate a licensee's as low as is reasonably achievable program. This average is determined by summing the Collective TEDE per Reactor for the current year and the previous 2 years and then dividing this sum by 3, which is the number of years considered. Depicting dose trends by using a 3-year average reduces the sporadic effects on annual doses of refueling operations (usually an 18- to 24-month cycle) and occasional high-dose maintenance activities and provides a more representative depiction of collective dose trends over the life of a plant. The graph also shows the annual average Collective TEDE per Reactor for all reactors of the same type.

ARKANSAS 1, 2

Dose Performance Trends

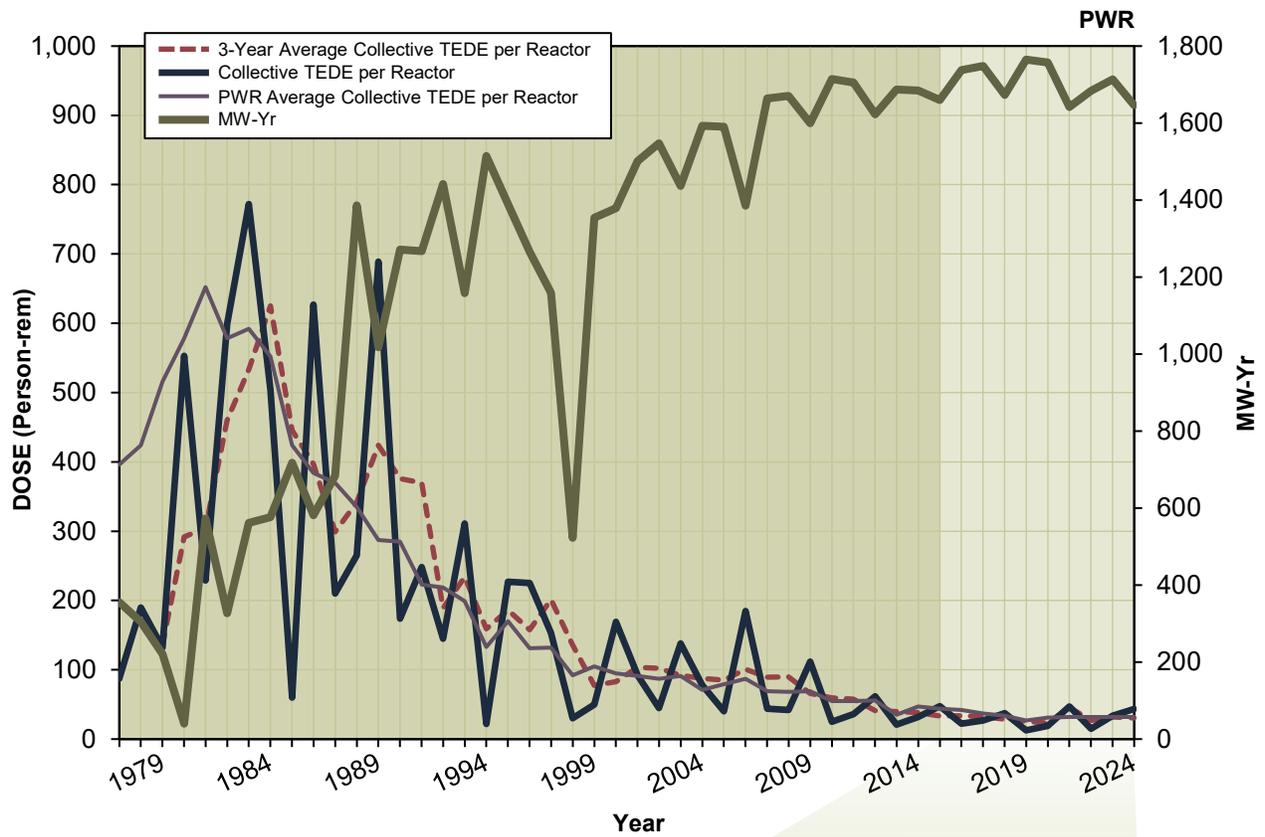


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	43.055	68.000	1,582.0
2016	53.232	55.553	1,535.7
2017	55.723	43.250	1,451.4
2018	55.664	68.187	1,456.8
2019	51.161	42.043	1,553.8
2020	46.195	28.354	1,720.4
2021	45.910	67.335	1,547.5
2022	46.333	43.311	1,634.7
2023	48.719	35.512	1,709.8
2024	43.304	51.091	1,666.4

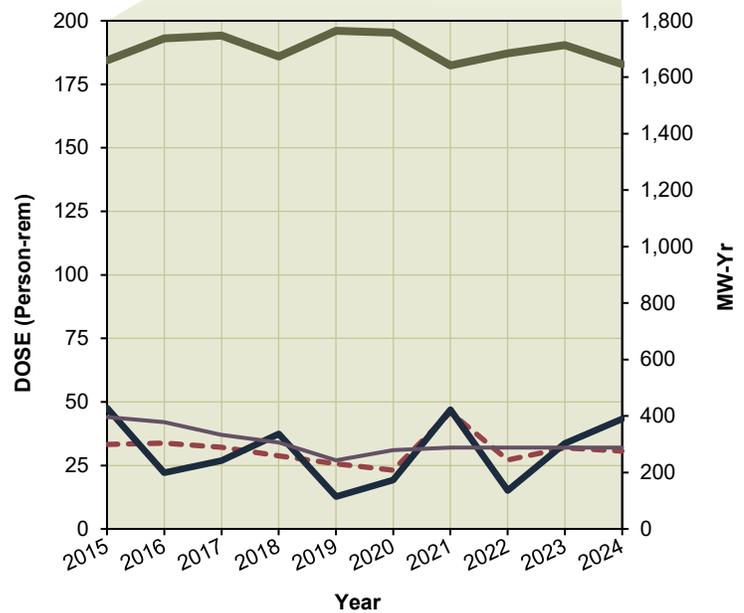


BEAVER VALLEY 1, 2

Dose Performance Trends

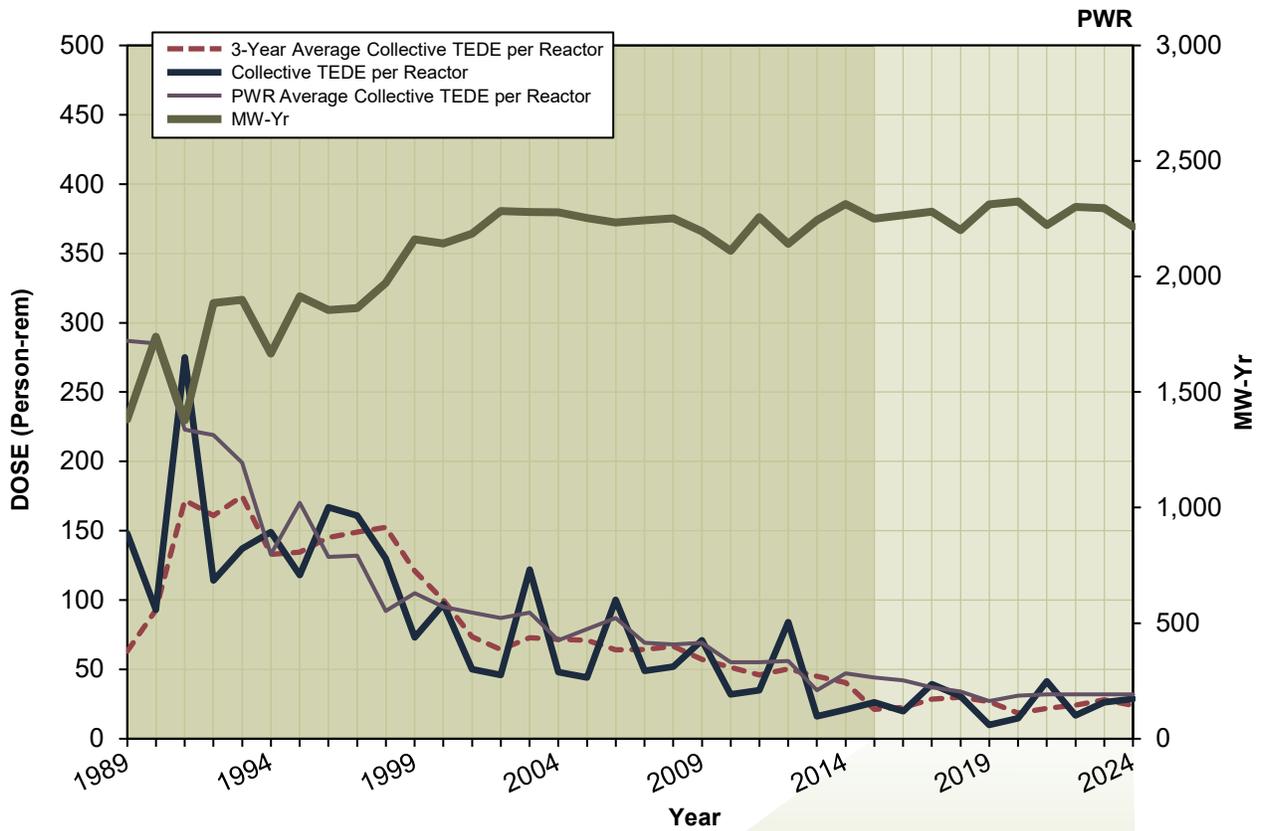


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	33.312	47.604	1,659.6
2016	33.718	22.073	1,737.4
2017	32.177	26.853	1,747.9
2018	28.776	37.401	1,672.8
2019	25.654	12.708	1,764.4
2020	23.138	19.306	1,757.2
2021	45.910	46.864	1,641.6
2022	27.081	15.073	1,683.8
2023	31.869	33.670	1,713.8
2024	30.658	43.230	1,646.3

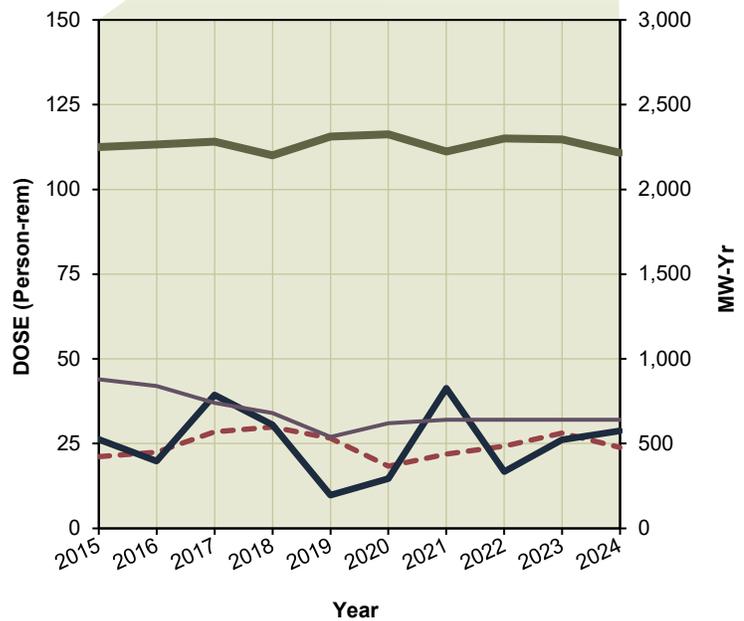


BRAIDWOOD 1, 2

Dose Performance Trends

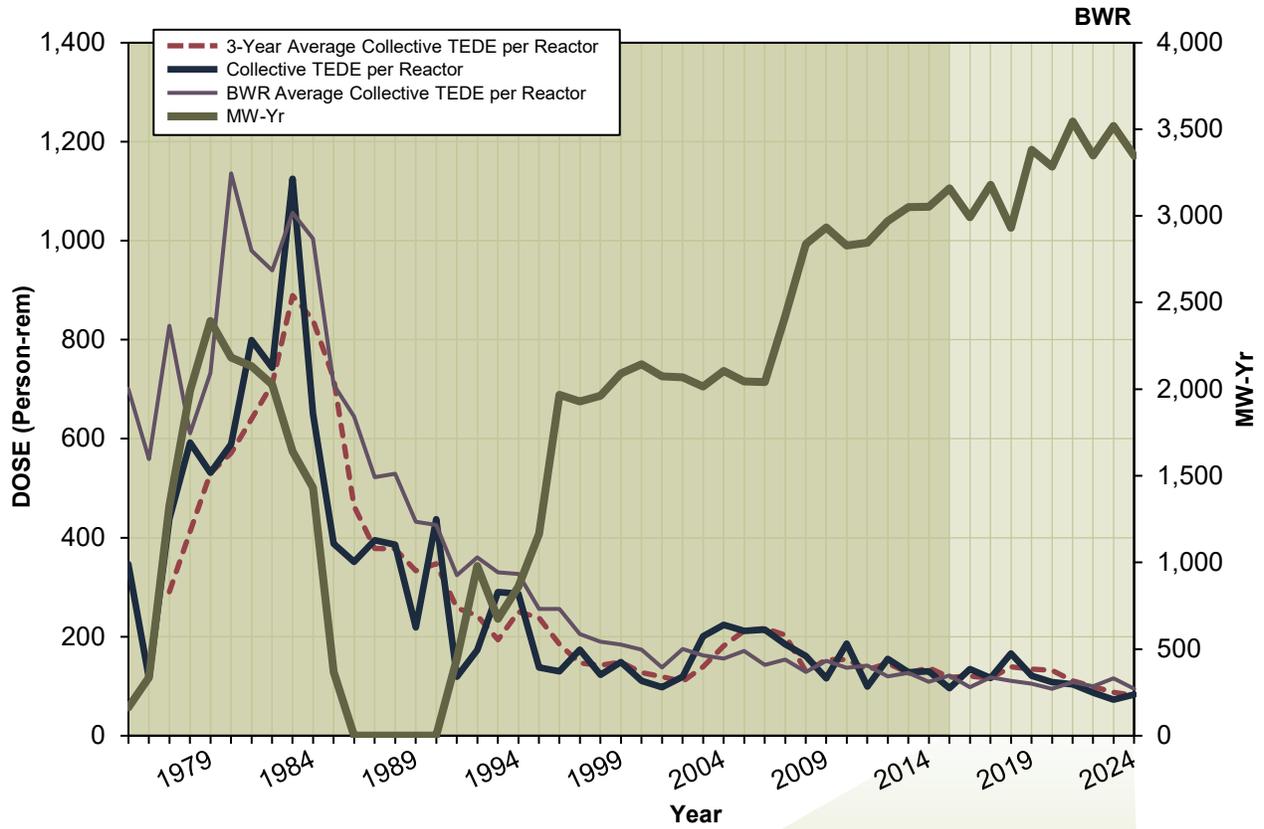


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	21.135	26.234	2,250.0
2016	22.443	19.848	2,265.9
2017	28.472	39.334	2,281.4
2018	29.911	30.550	2,201.3
2019	26.554	9.777	2,311.8
2020	18.330	14.662	2,325.5
2021	21.925	41.337	2,223.1
2022	24.229	16.688	2,300.9
2023	28.041	26.100	2,296.1
2024	23.830	28.704	2,216.2

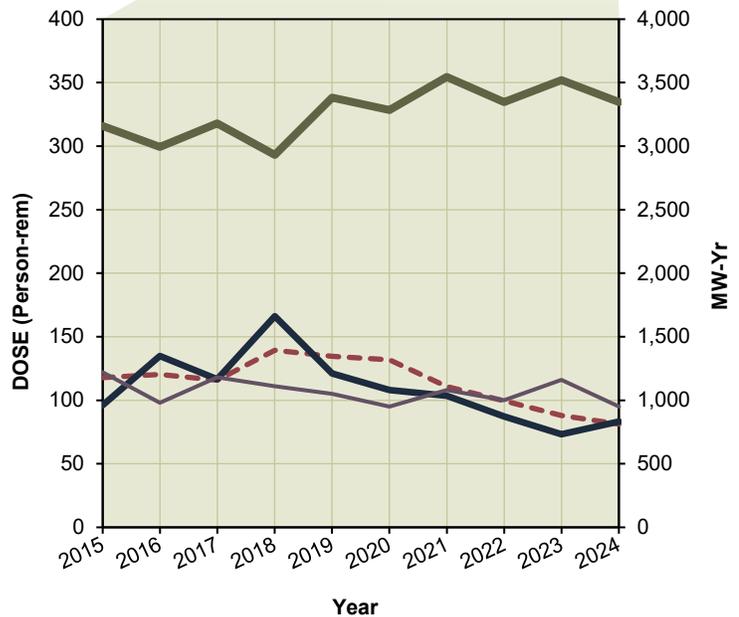


BROWNS FERRY 1, 2, 3*

Dose Performance Trends



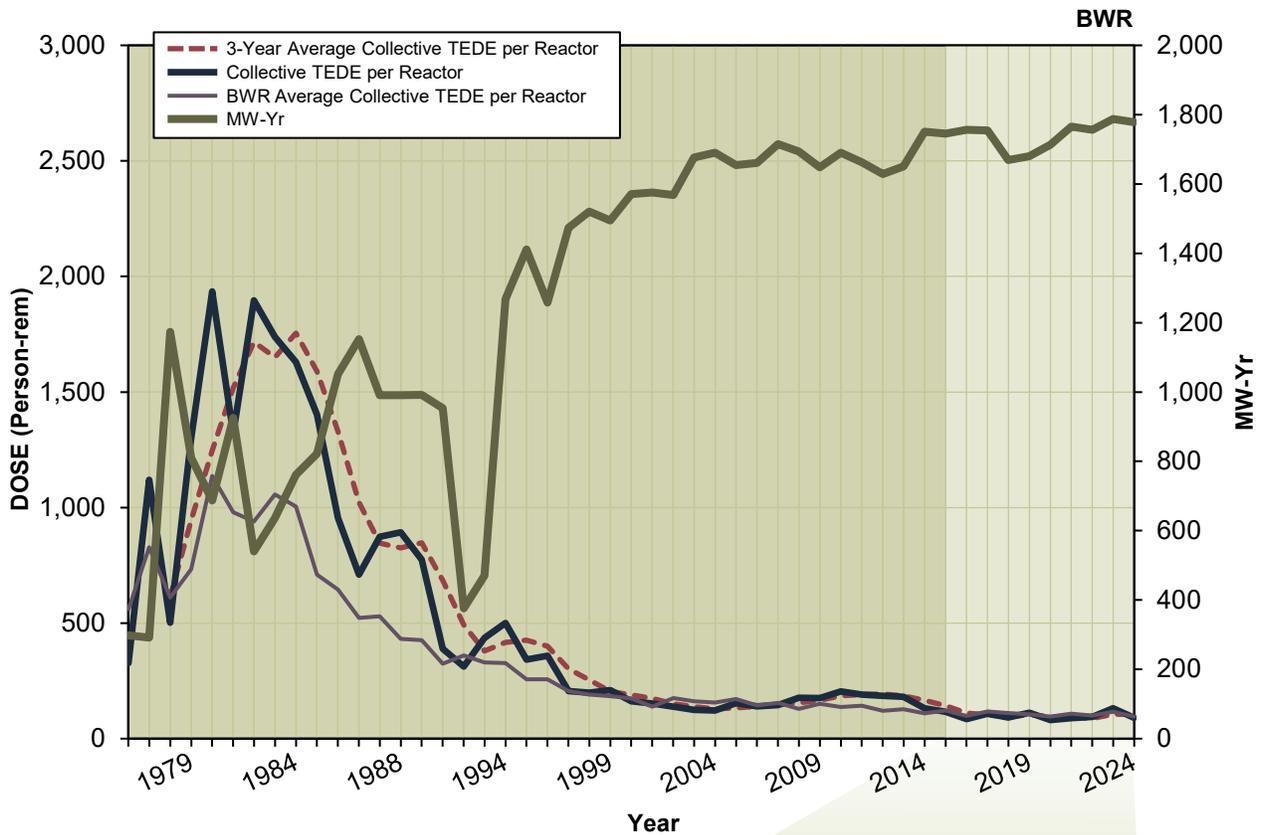
Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	117.836	96.021	3,158.6
2016	120.278	134.862	2,992.6
2017	115.857	116.687	3,179.0
2018	139.255	166.217	2,930.8
2019	134.634	120.999	3,381.3
2020	131.739	108.002	3,284.8
2021	110.858	103.573	3,544.9
2022	99.583	87.174	3,347.7
2023	87.977	73.180	3,518.9
2024	81.229	83.329	3,347.2



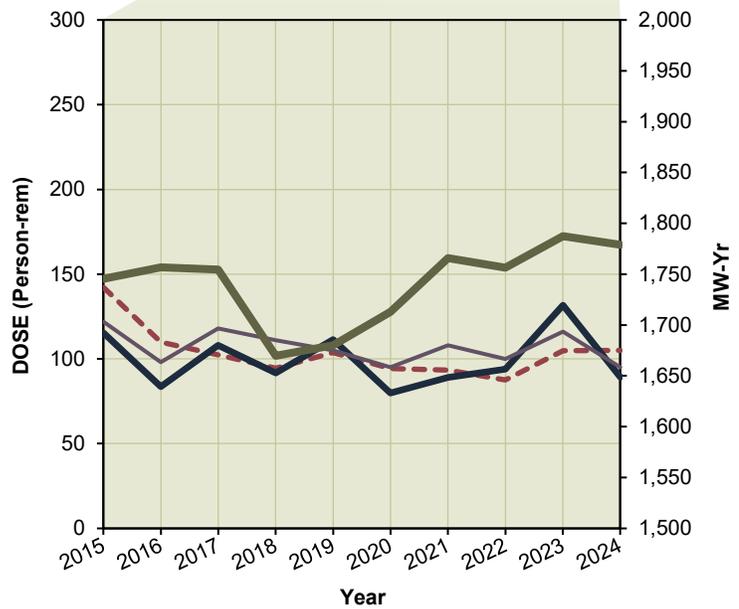
*Browns Ferry Unit 1 resumed power generation in 2007.

BRUNSWICK 1, 2

Dose Performance Trends

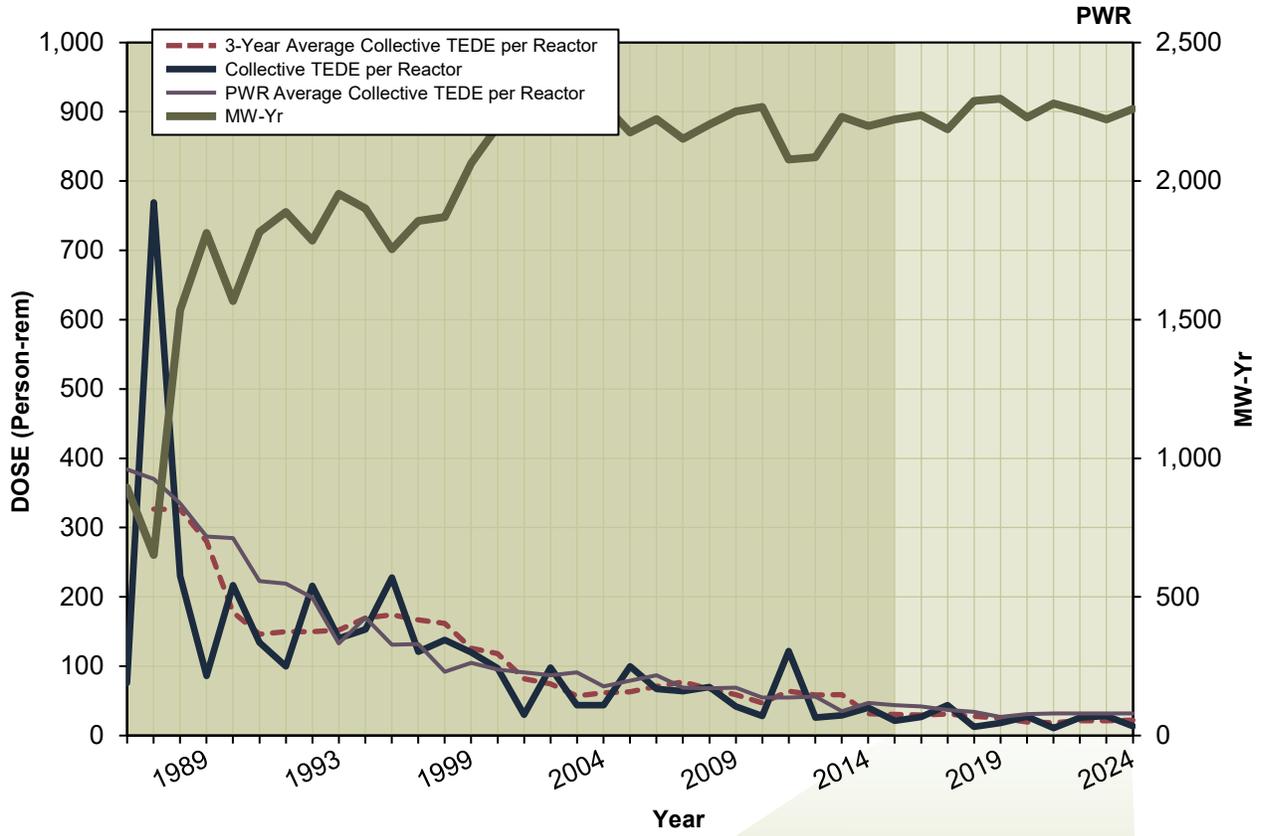


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	142.270	115.285	1,745.6
2016	109.952	83.618	1,756.7
2017	102.303	108.007	1,754.6
2018	94.421	91.638	1,669.7
2019	103.671	111.368	1,680.0
2020	94.291	79.869	1,713.0
2021	93.430	89.053	1,765.9
2022	87.608	93.904	1,756.5
2023	104.876	131.670	1,787.5
2024	104.947	89.266	1,778.9

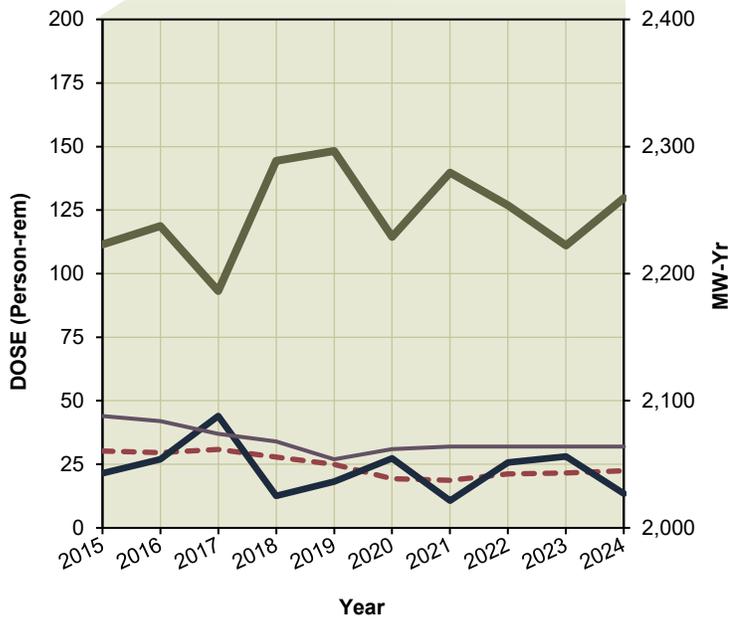


BYRON 1, 2

Dose Performance Trends

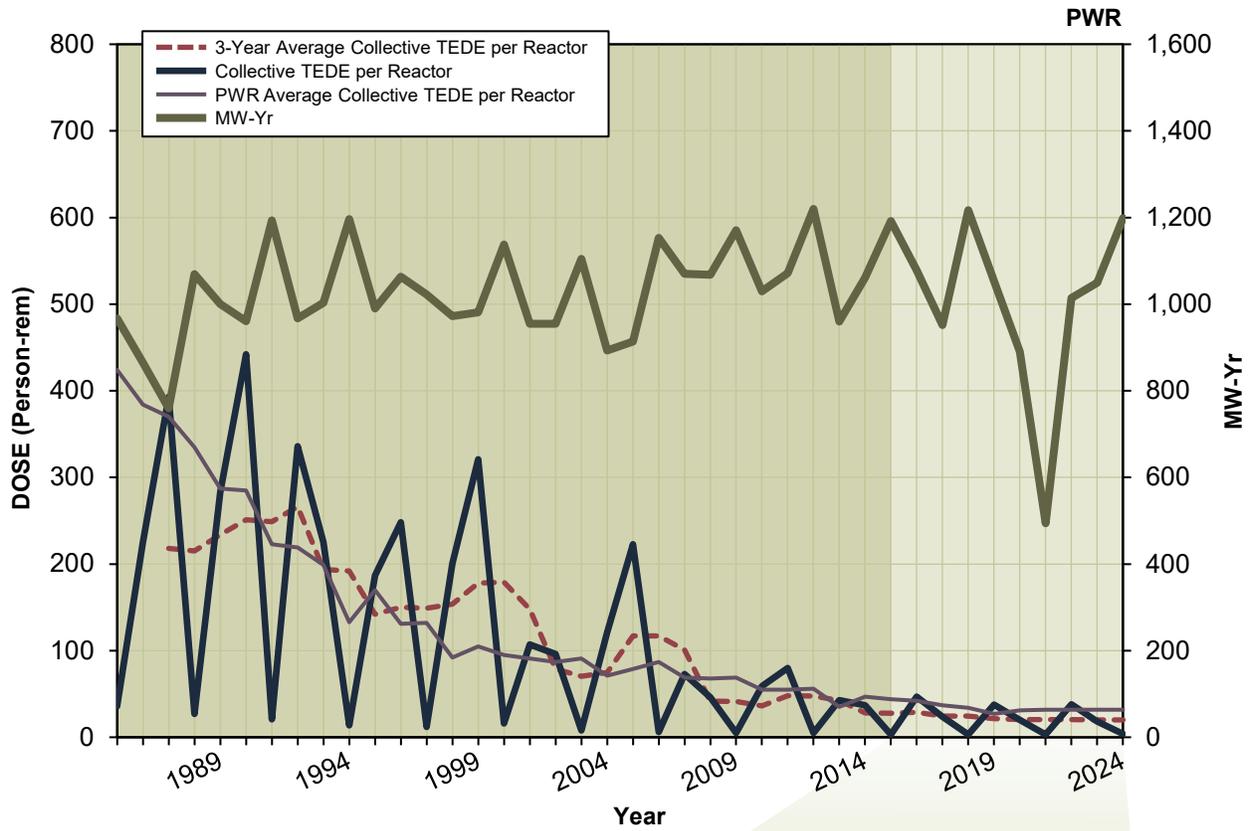


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	30.236	21.468	2,222.8
2016	29.620	27.006	2,237.5
2017	30.799	43.923	2,186.4
2018	27.836	12.578	2,288.9
2019	24.887	18.161	2,296.6
2020	19.356	27.331	2,228.9
2021	18.731	10.701	2,279.6
2022	21.249	25.715	2,253.6
2023	21.502	28.090	2,222.1
2024	22.391	13.367	2,259.6

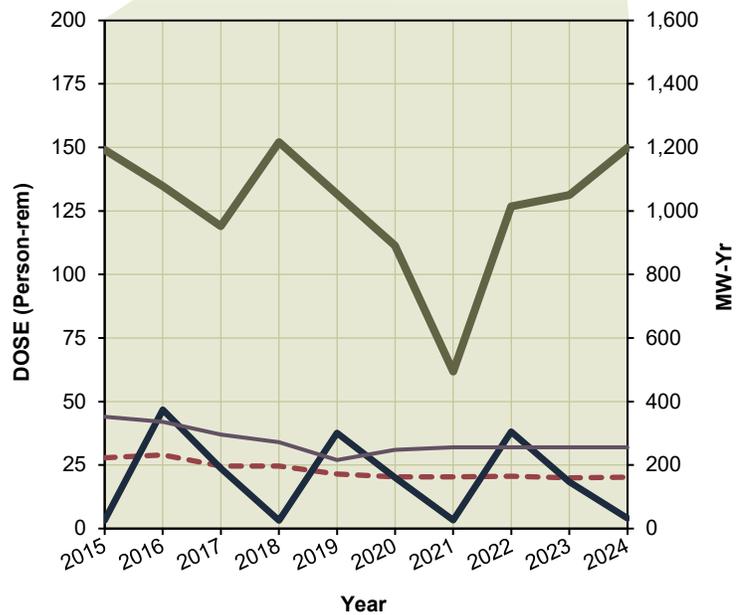


CALLAWAY 1

Dose Performance Trends

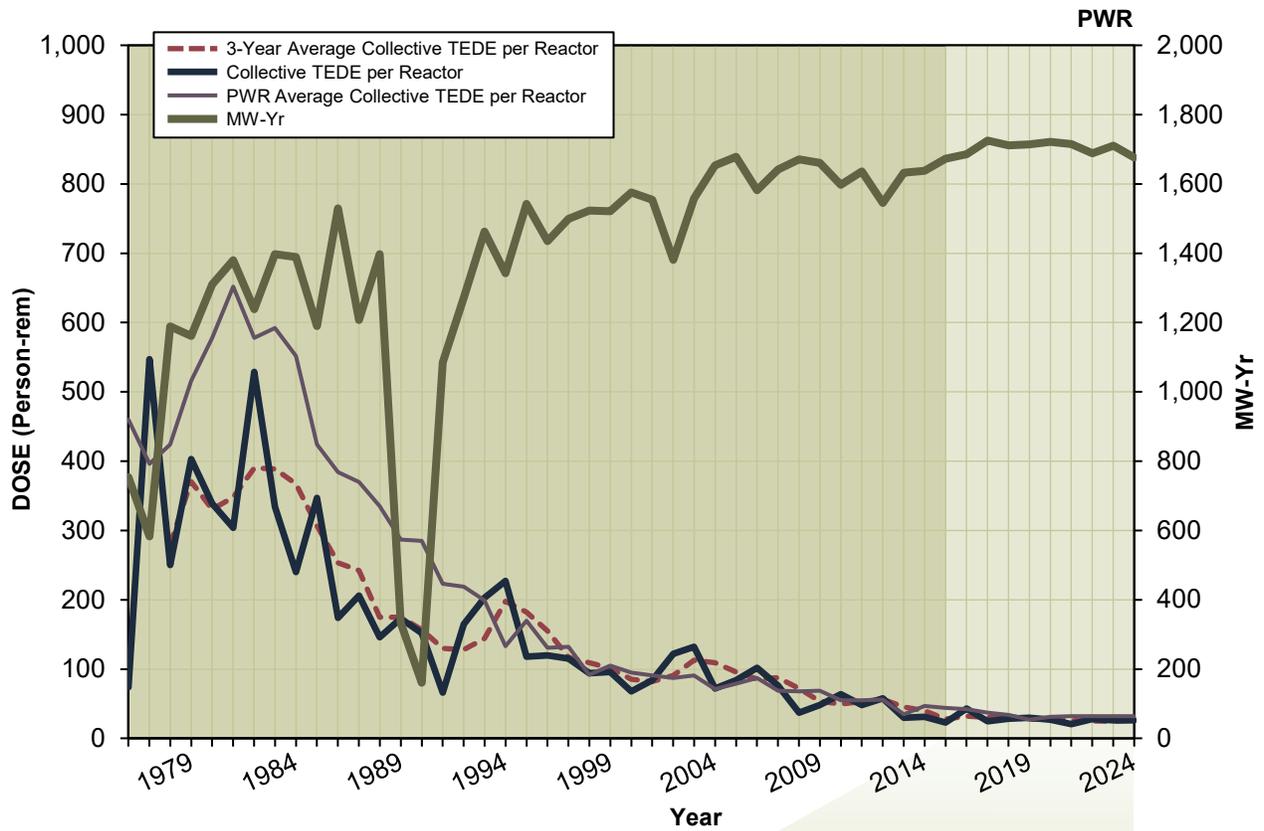


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	27.808	3.128	1,192.2
2016	29.024	46.770	1,078.3
2017	24.537	23.713	951.9
2018	24.565	3.211	1,216.6
2019	21.518	37.630	1,053.4
2020	20.308	20.082	890.4
2021	20.344	3.320	493.8
2022	20.524	38.170	1,013.9
2023	19.948	18.353	1,049.7
2024	20.185	4.031	1,198.6

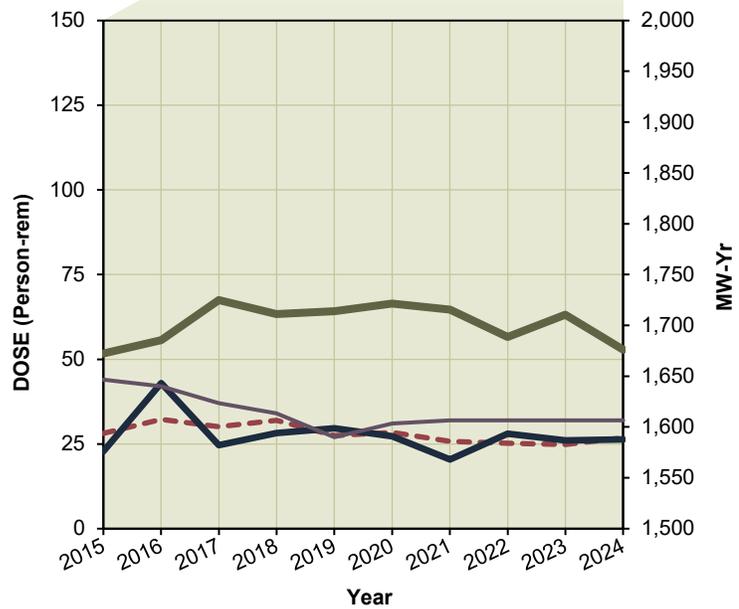


CALVERT CLIFFS 1, 2

Dose Performance Trends

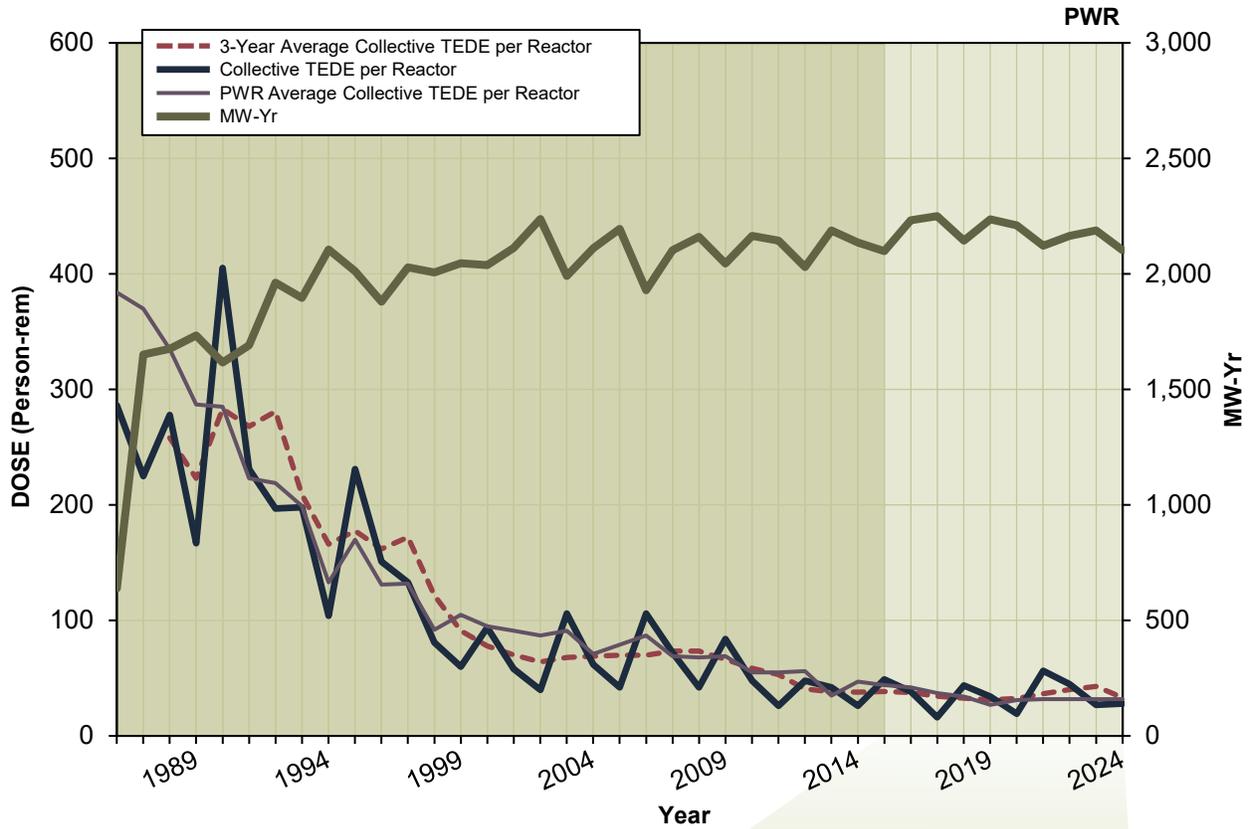


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	28.128	22.812	1,672.4
2016	32.263	42.946	1,685.6
2017	30.133	24.642	1,725.0
2018	31.945	28.247	1,711.0
2019	27.504	29.623	1,713.8
2020	28.376	27.257	1,721.4
2021	25.767	20.421	1,715.4
2022	25.221	27.985	1,688.6
2023	24.814	26.040	1,710.5
2024	26.796	26.364	1,676.2

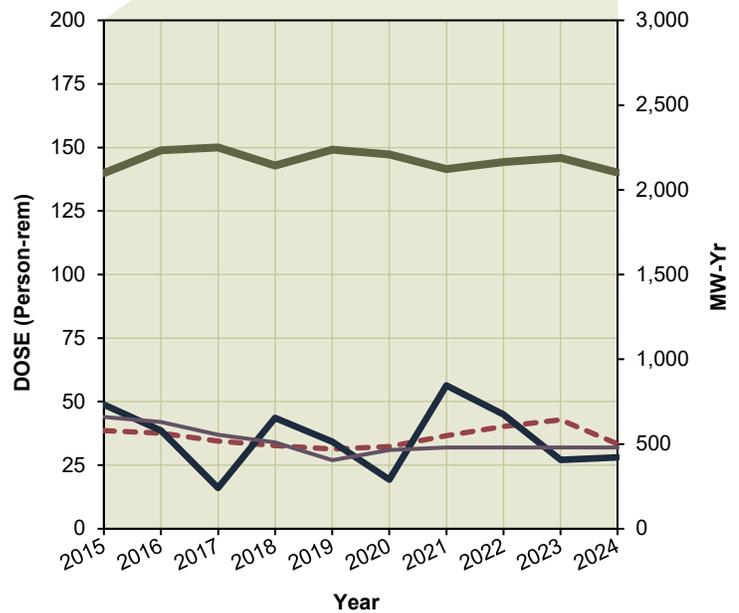


CATAWBA 1, 2

Dose Performance Trends

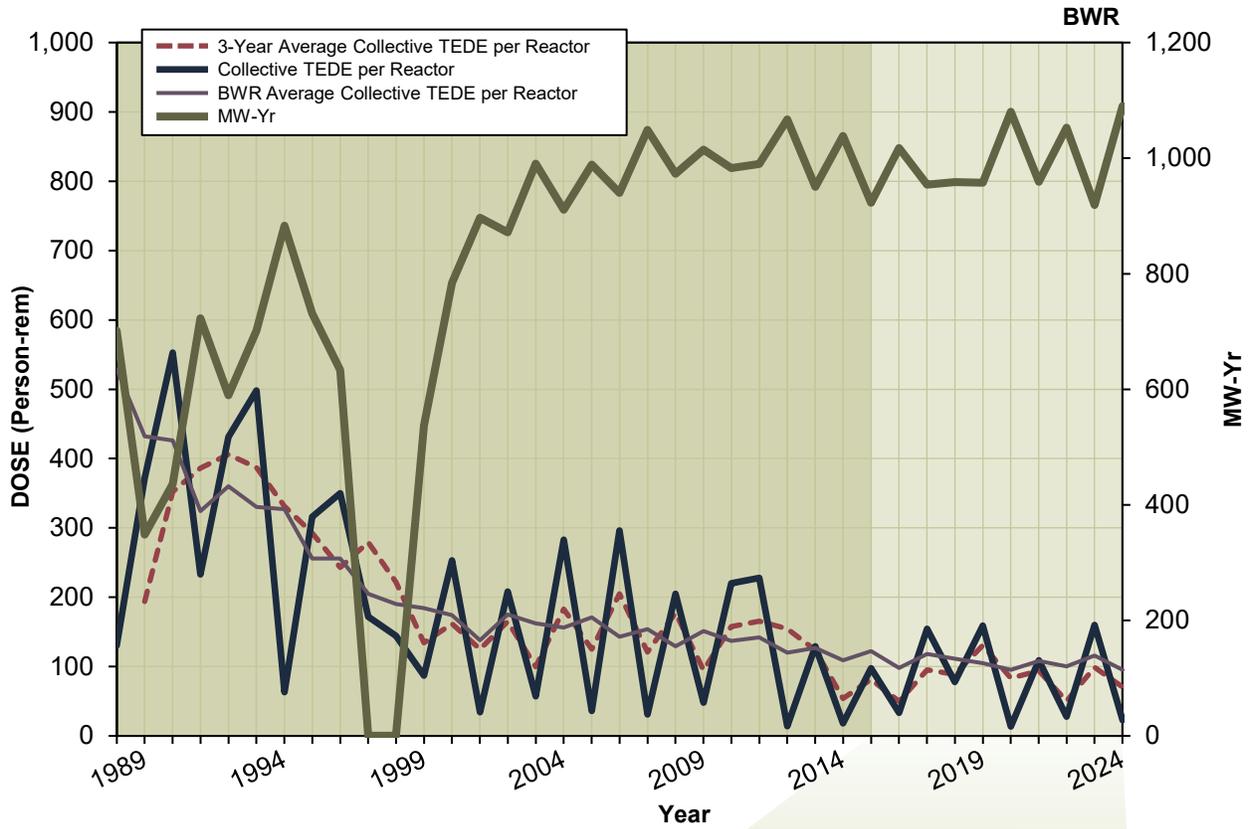


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	38.560	48.839	2,098.6
2016	37.592	38.549	2,232.7
2017	34.502	16.118	2,249.6
2018	32.773	43.651	2,143.8
2019	31.318	34.185	2,236.7
2020	32.390	19.335	2,209.7
2021	36.652	56.438	2,122.2
2022	40.236	44.937	2,164.7
2023	42.803	27.030	2,187.8
2024	33.366	28.129	2,102.2

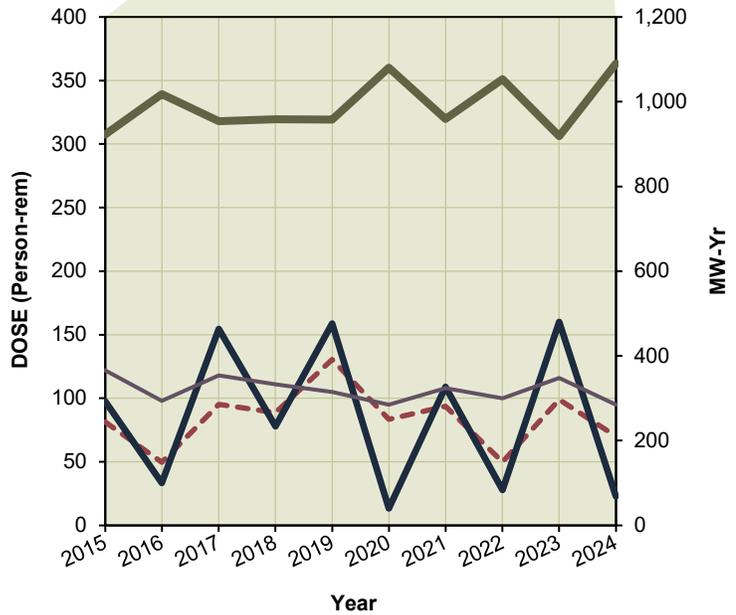


CLINTON

Dose Performance Trends

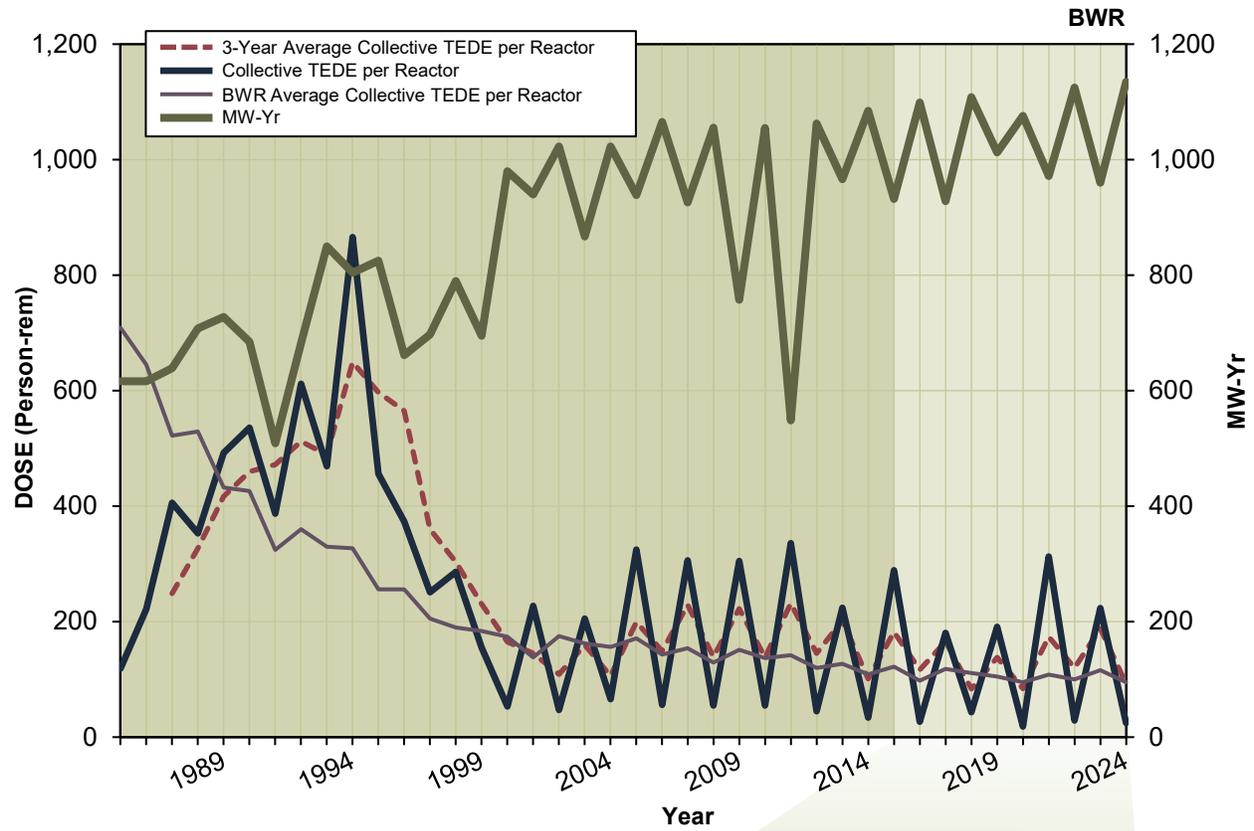


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	81.427	97.634	922.9
2016	49.573	33.218	1,017.8
2017	95.144	154.579	954.1
2018	88.537	77.813	958.7
2019	130.408	158.832	957.6
2020	83.287	13.216	1,080.2
2021	93.628	108.836	959.0
2022	49.952	27.805	1,053.0
2023	98.901	160.062	919.0
2024	70.224	22.806	1,090.1

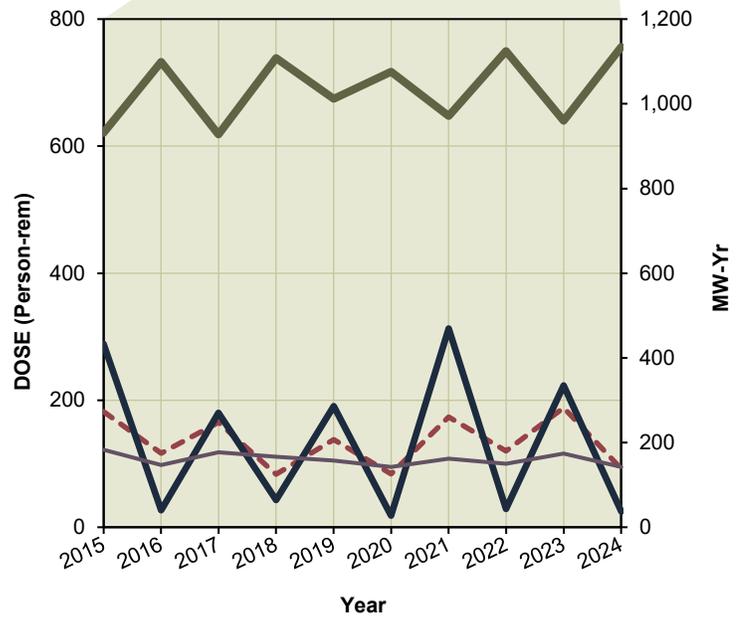


COLUMBIA GENERATING

Dose Performance Trends

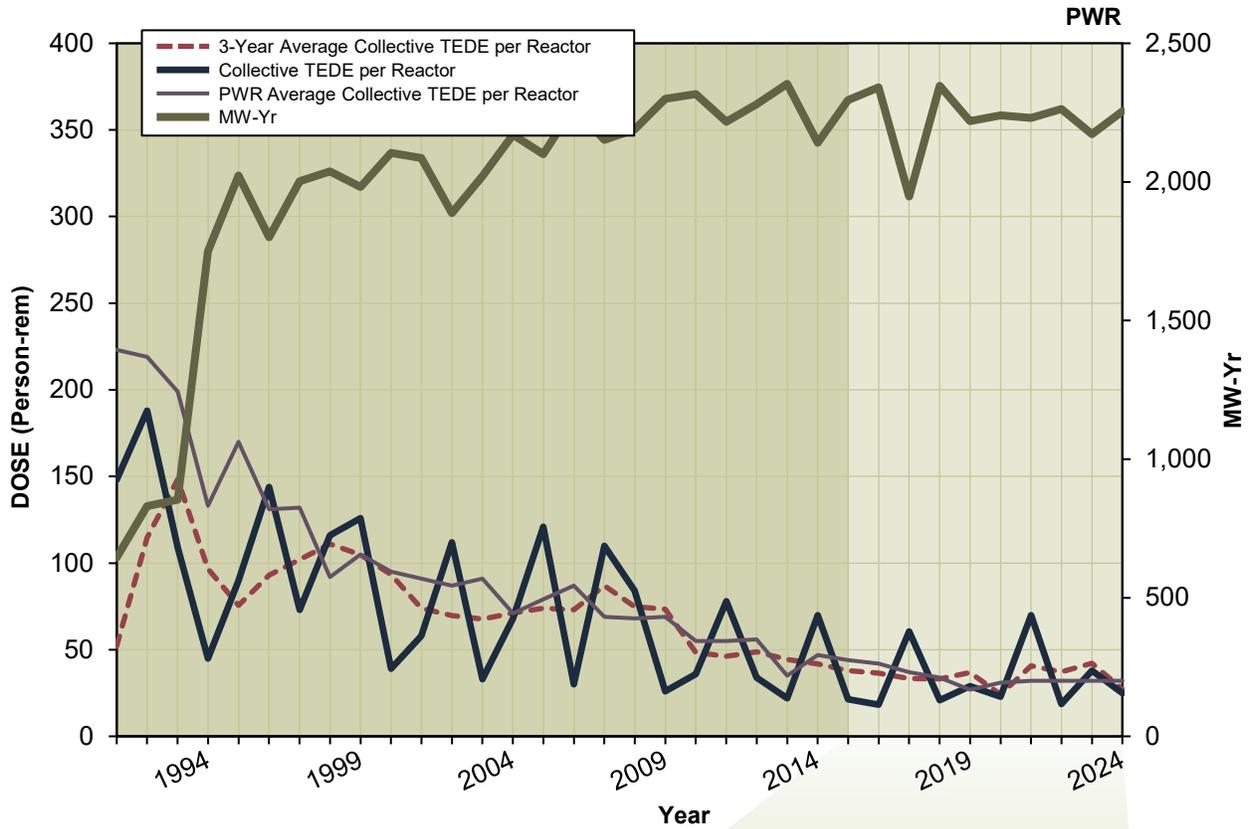


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	182.257	289.135	931.6
2016	116.577	26.825	1,098.8
2017	165.405	180.255	927.9
2018	83.386	43.078	1,108.3
2019	138.009	190.694	1,012.2
2020	84.075	18.453	1,075.7
2021	173.985	312.807	971.6
2022	120.041	28.862	1,124.6
2023	188.376	223.459	959.8
2024	92.376	24.808	1,134.7

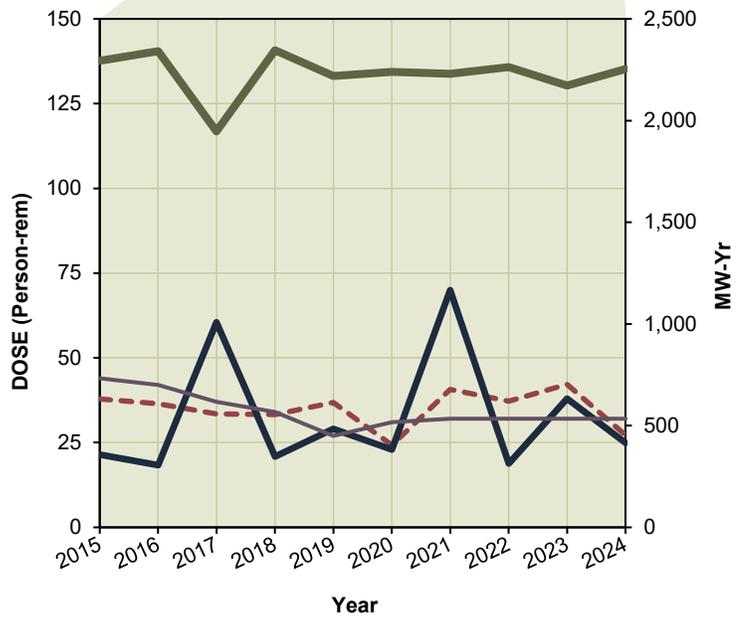


COMANCHE PEAK 1, 2

Dose Performance Trends

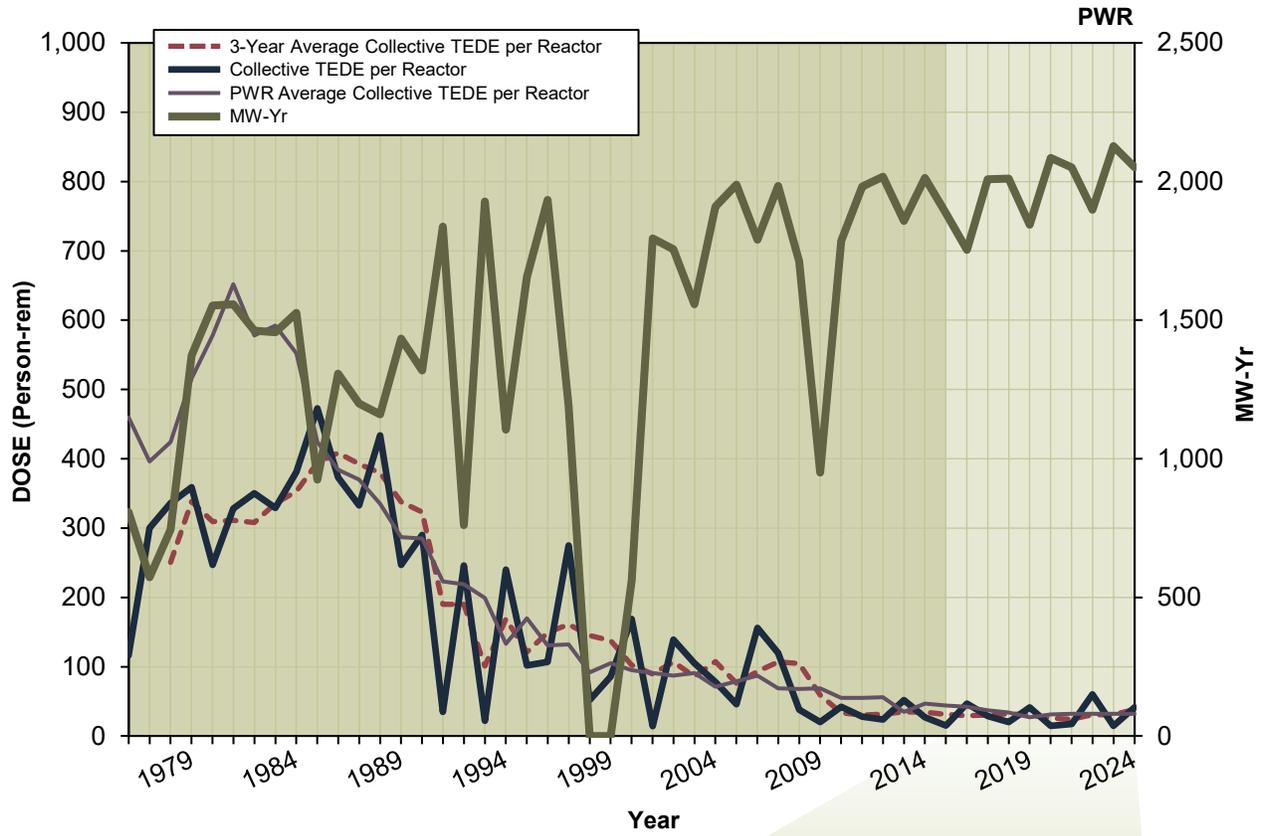


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	37.895	21.445	2,294.6
2016	36.464	18.324	2,340.7
2017	33.422	60.498	1,947.3
2018	33.220	20.839	2,346.3
2019	36.787	29.026	2,219.0
2020	24.247	22.877	2,240.3
2021	40.627	69.979	2,230.6
2022	37.205	18.758	2,263.1
2023	42.217	37.910	2,172.4
2024	27.176	24.856	2,254.6

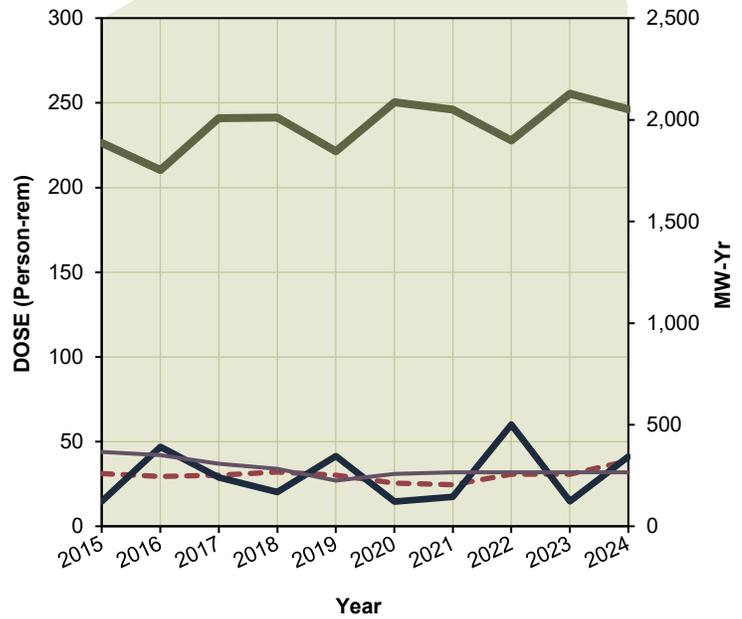


COOK 1, 2

Dose Performance Trends

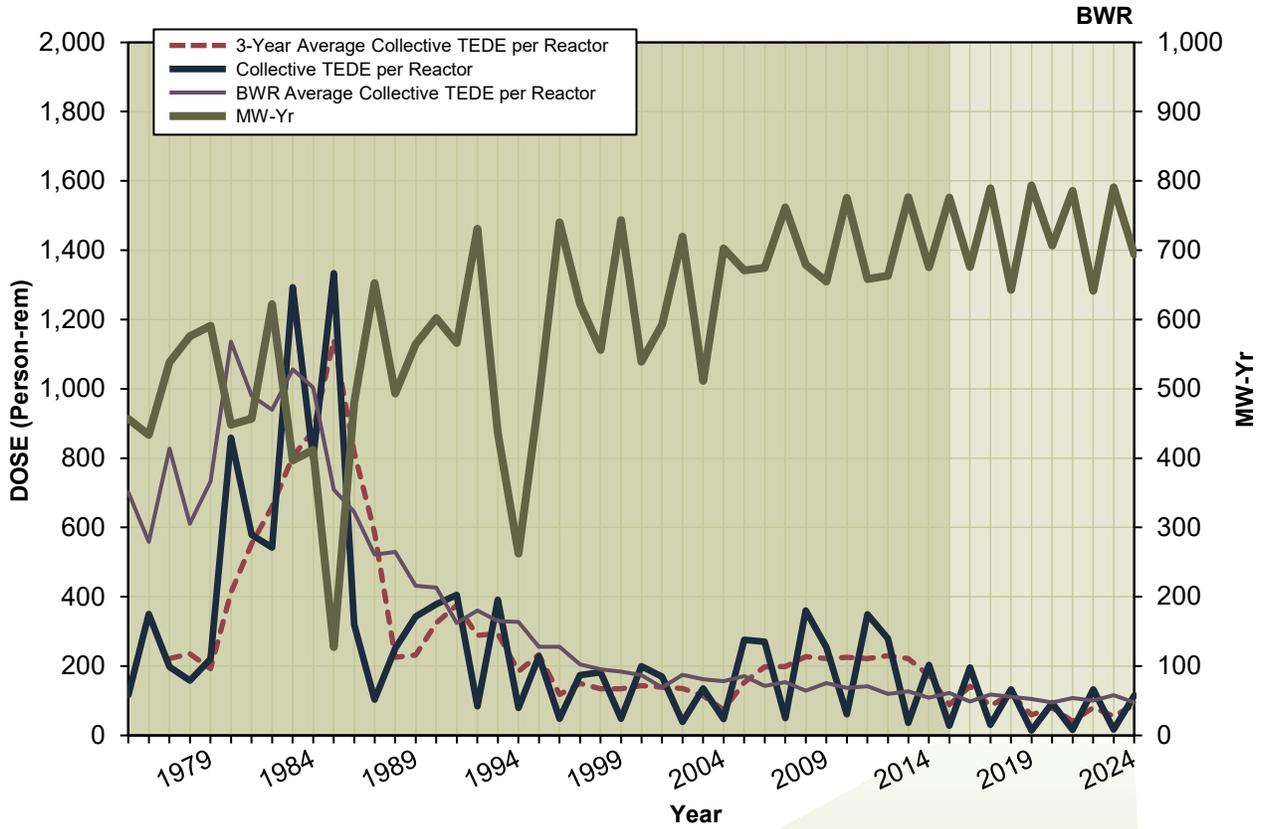


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	31.233	14.914	1,885.7
2016	29.557	46.858	1,753.5
2017	30.257	29.000	2,008.2
2018	32.038	20.256	2,010.4
2019	30.233	41.444	1,844.7
2020	25.465	14.696	2,085.5
2021	24.512	17.396	2,050.3
2022	30.754	60.172	1,897.8
2023	30.809	14.860	2,128.1
2024	38.746	41.208	2,052.5

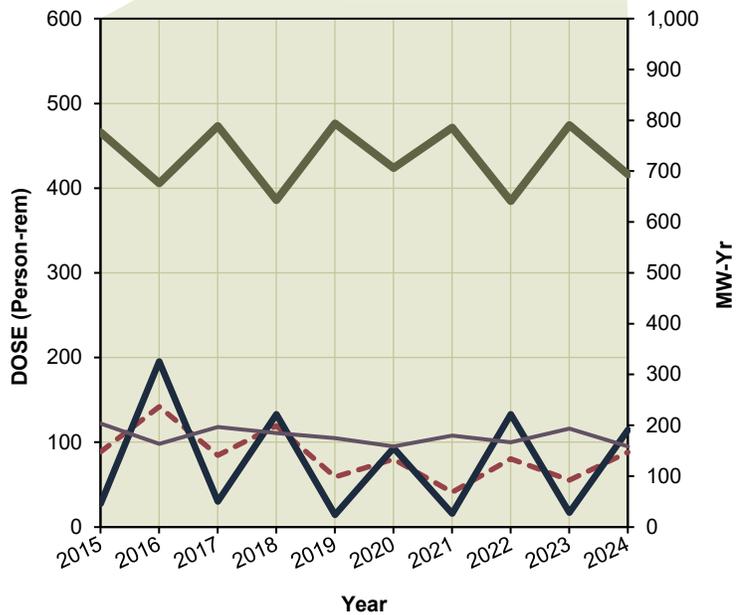


COOPER STATION

Dose Performance Trends

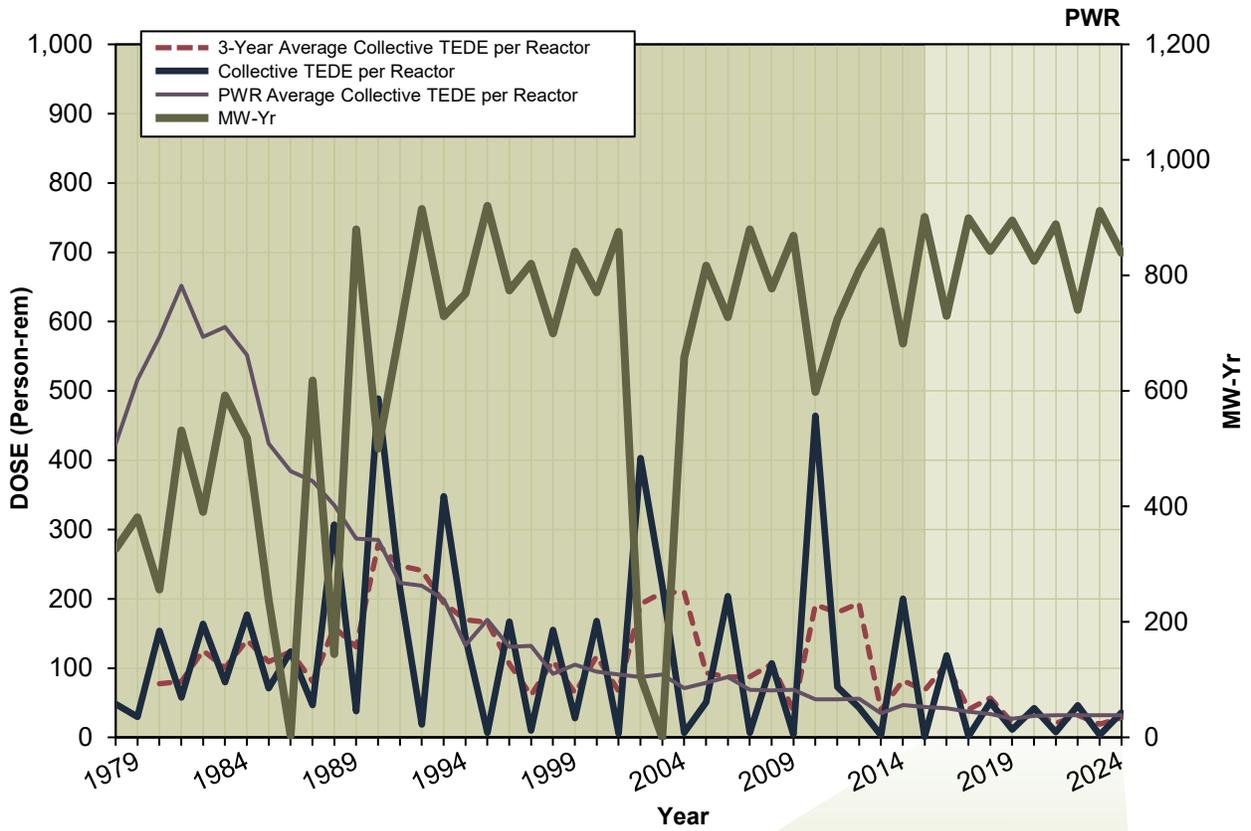


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	88.725	27.634	776.1
2016	141.941	195.518	676.1
2017	84.448	30.193	789.1
2018	119.565	132.984	642.9
2019	59.213	14.463	793.6
2020	80.225	93.227	706.5
2021	41.125	15.685	785.5
2022	80.624	132.961	641.4
2023	55.252	17.111	790.6
2024	88.248	114.672	694.0

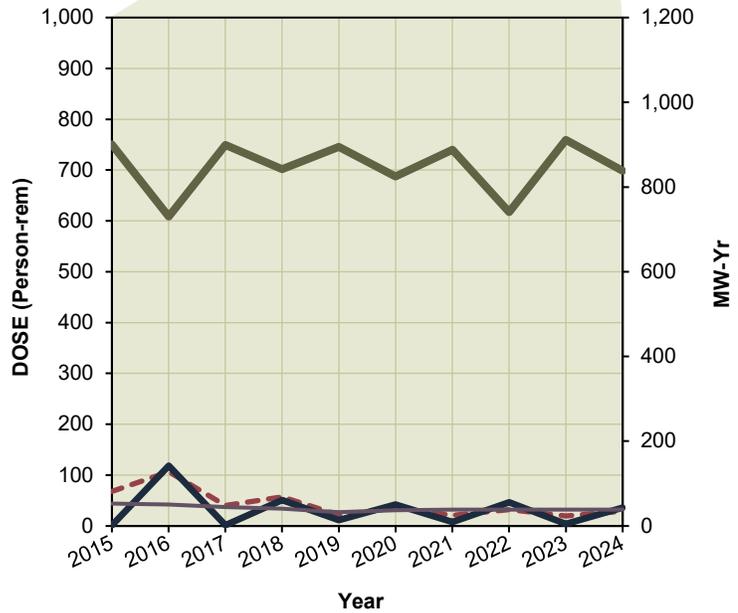


DAVIS-BESSE 1

Dose Performance Trends

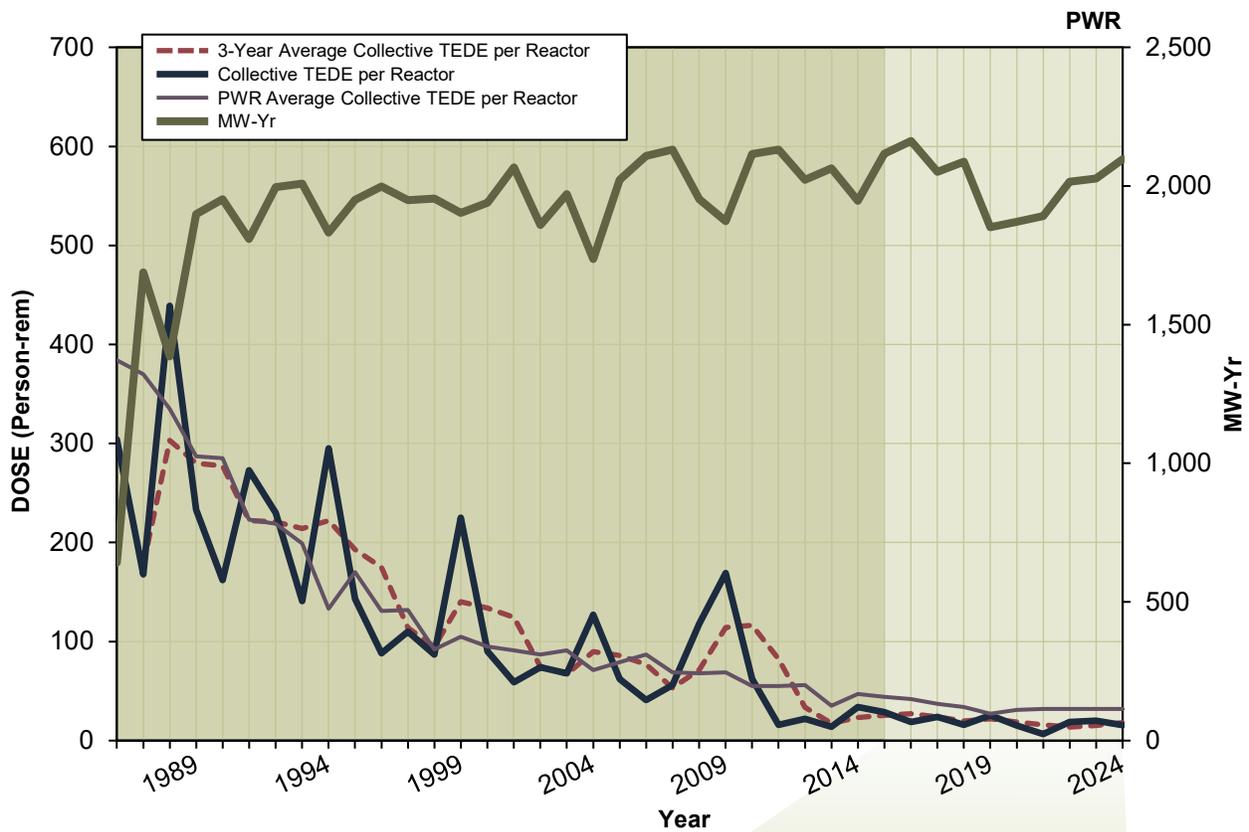


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	68.006	0.995	901.1
2016	106.644	118.472	730.0
2017	40.363	1.621	899.1
2018	57.032	51.003	842.5
2019	21.343	11.405	894.9
2020	34.879	42.228	825.1
2021	20.481	7.811	888.4
2022	32.086	46.220	740.5
2023	19.249	3.717	911.6
2024	28.587	35.824	838.8

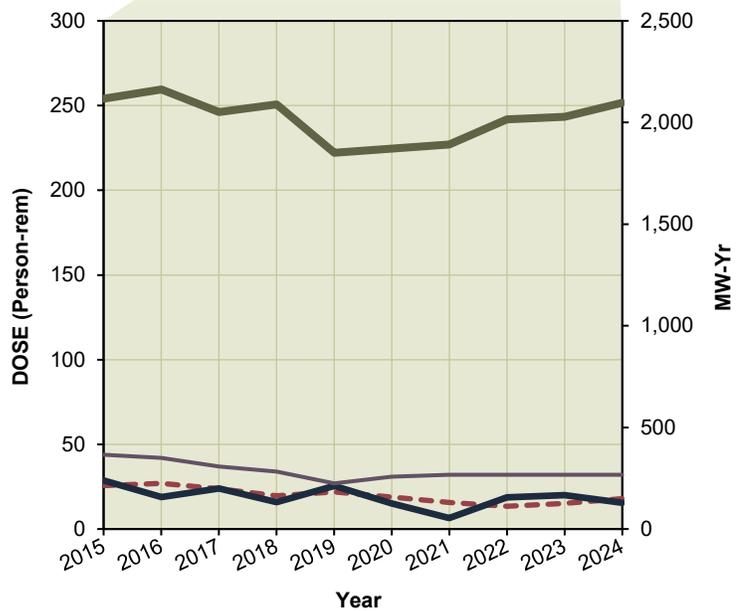


DIABLO CANYON 1, 2

Dose Performance Trends

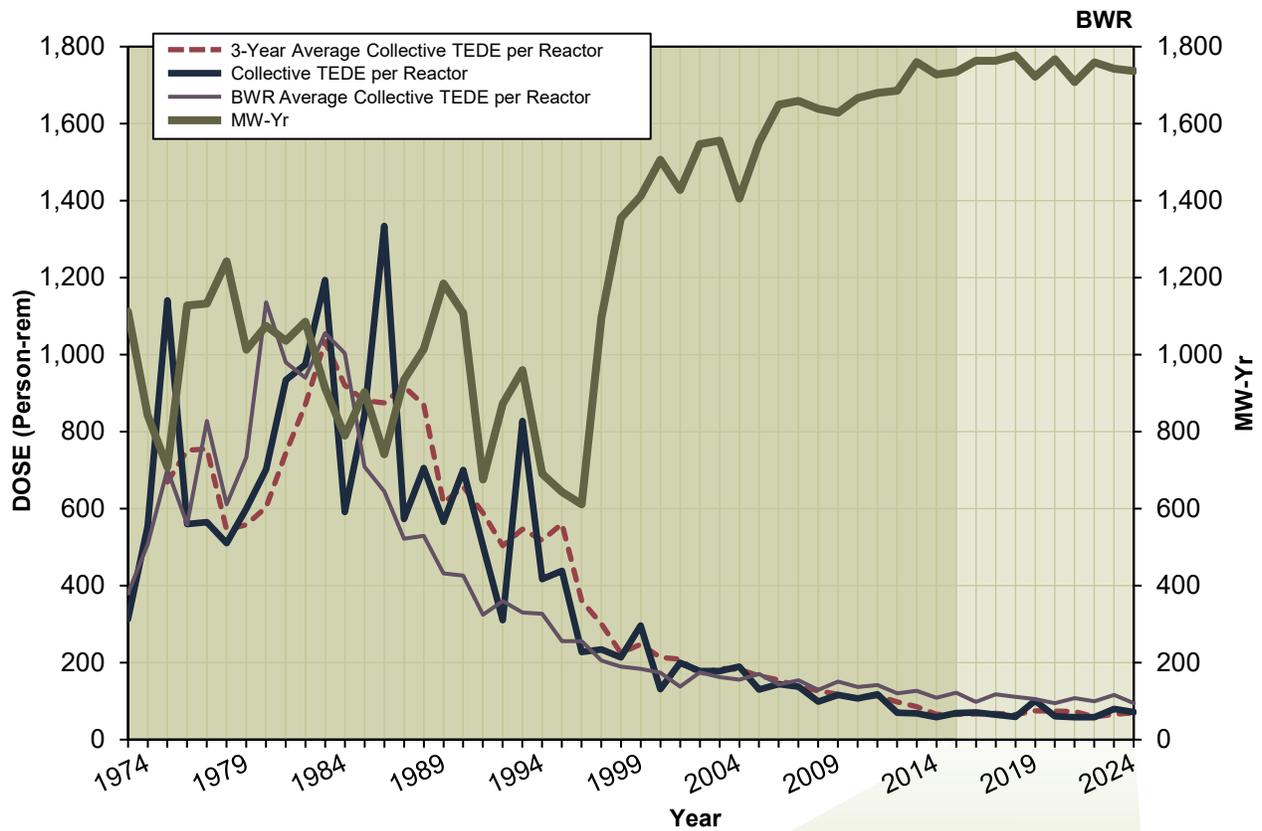


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	25.602	28.622	2,116.8
2016	27.096	18.867	2,162.2
2017	23.815	23.955	2,051.4
2018	19.610	16.007	2,088.4
2019	21.843	25.568	1,851.7
2020	18.901	15.130	1,871.3
2021	15.767	6.602	1,892.3
2022	13.461	18.652	2,015.5
2023	15.109	20.070	2,027.6
2024	18.084	15.525	2,097.5

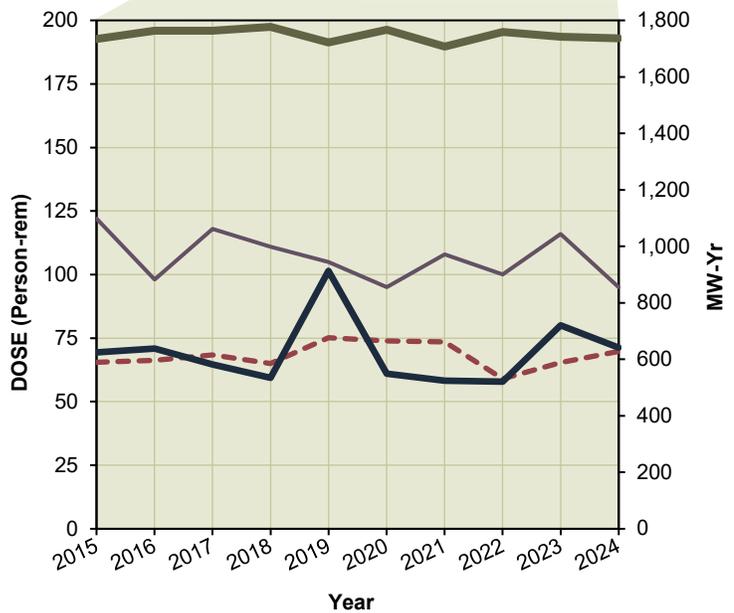


DRESDEN 2, 3

Dose Performance Trends

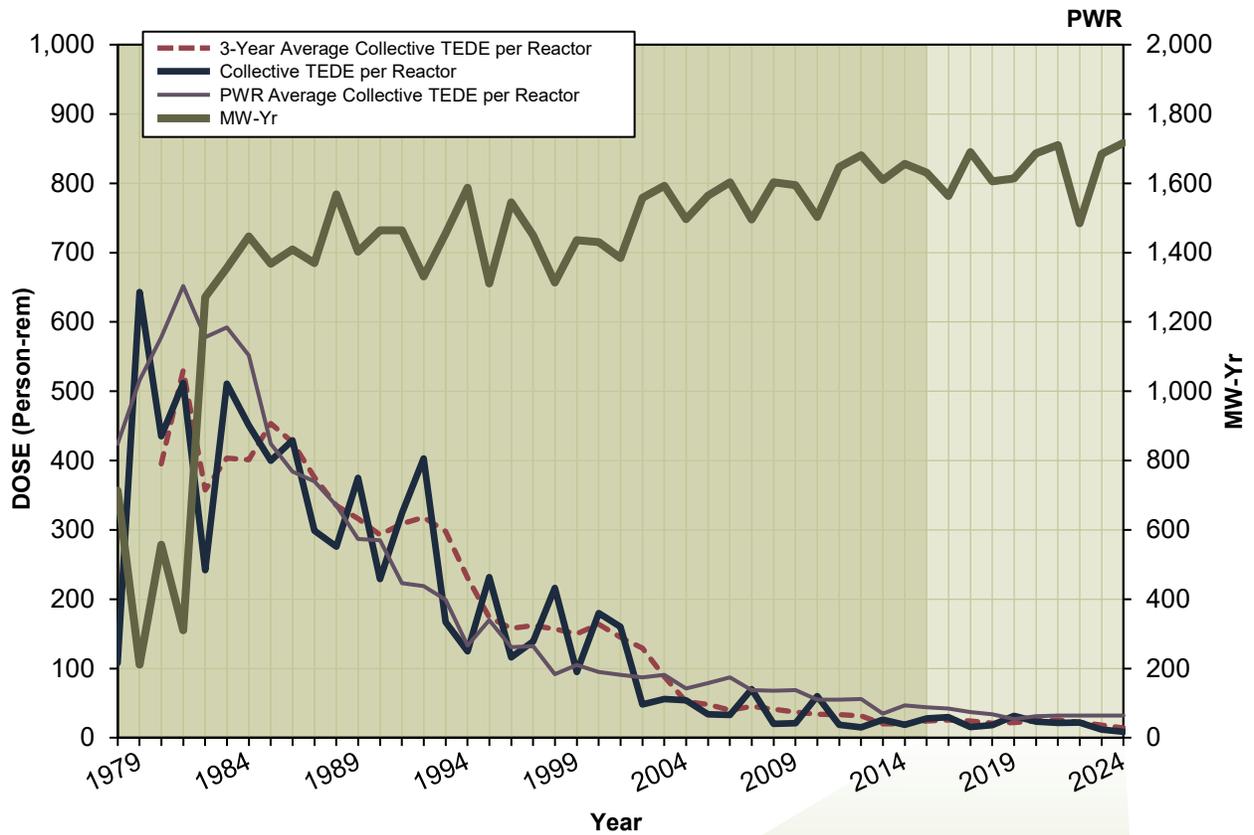


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	65.457	69.432	1,734.4
2016	66.271	70.914	1,763.2
2017	68.326	64.633	1,763.3
2018	64.987	59.416	1,776.9
2019	75.161	101.433	1,721.7
2020	73.929	60.939	1,767.1
2021	73.546	58.266	1,707.4
2022	59.044	57.928	1,759.0
2023	65.405	80.020	1,742.7
2024	69.736	71.259	1,736.4

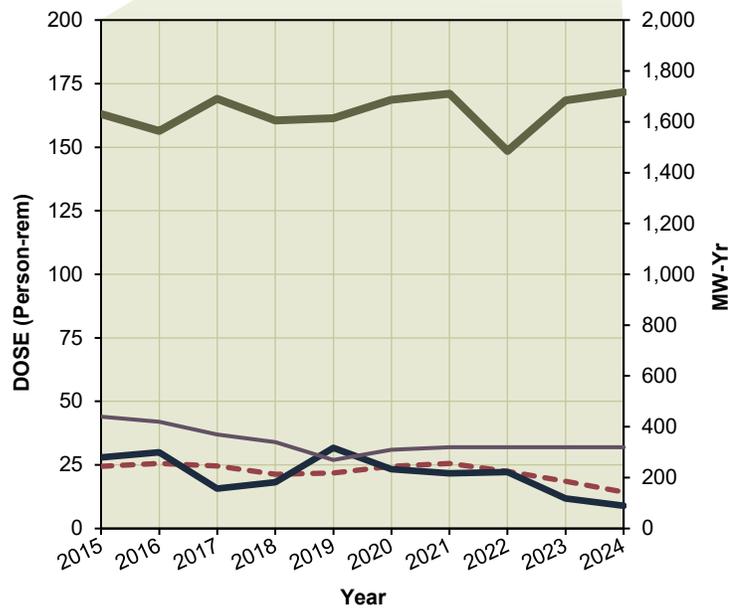


FARLEY 1, 2

Dose Performance Trends

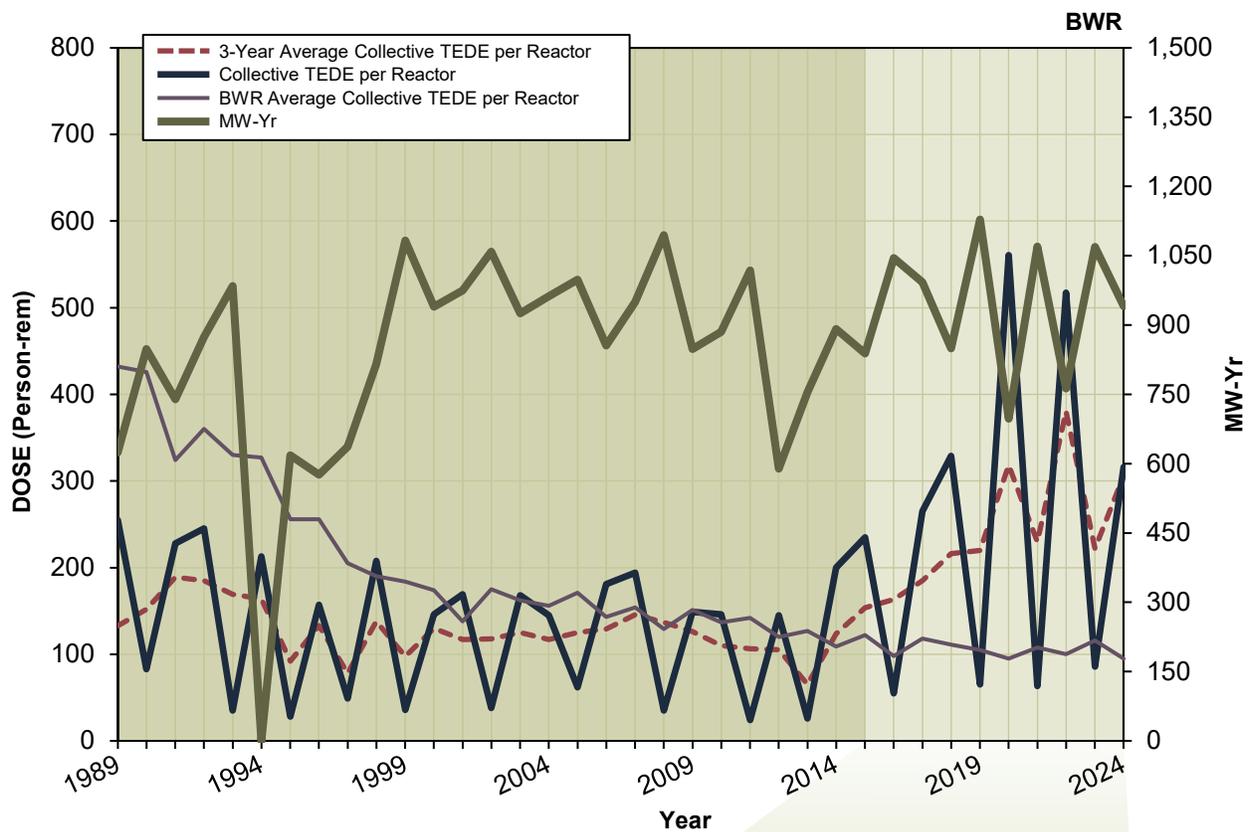


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	24.476	27.971	1,631.0
2016	25.581	29.920	1,563.7
2017	24.522	15.676	1,690.0
2018	21.258	18.178	1,605.6
2019	21.837	31.660	1,613.8
2020	24.385	23.317	1,686.7
2021	25.562	21.710	1,710.4
2022	22.397	22.163	1,484.6
2023	18.546	11.770	1,684.8
2024	14.266	8.868	1,717.2

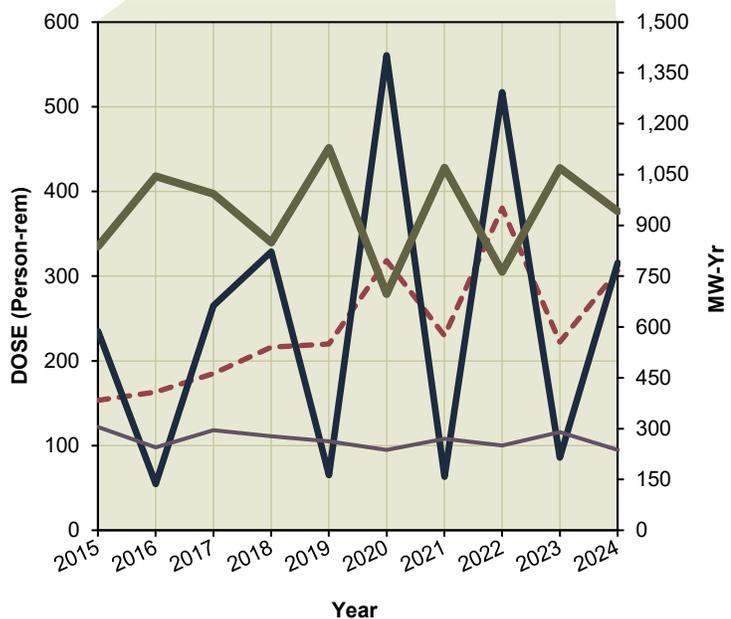


FERMI 2

Dose Performance Trends

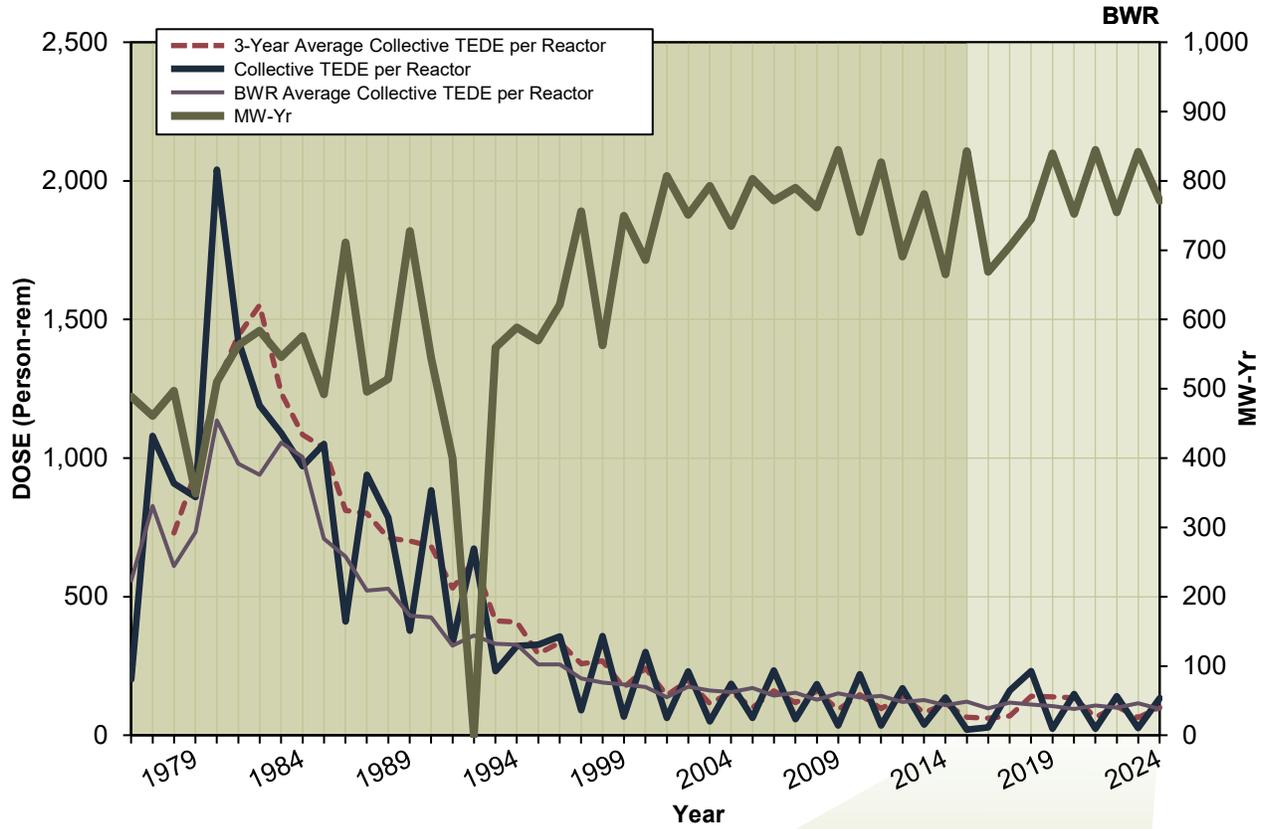


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	153.577	234.853	838.6
2016	163.104	54.761	1,045.0
2017	184.899	265.082	993.0
2018	216.286	329.015	849.2
2019	219.793	65.282	1,128.6
2020	318.338	560.716	697.4
2021	229.781	63.345	1,070.1
2022	380.412	517.175	762.8
2023	222.121	85.843	1,069.3
2024	306.312	315.919	941.2

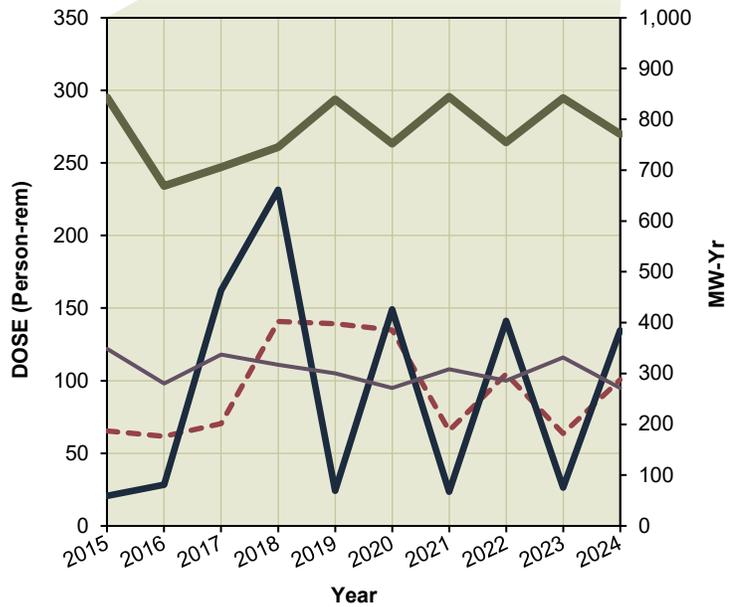


FITZPATRICK

Dose Performance Trends

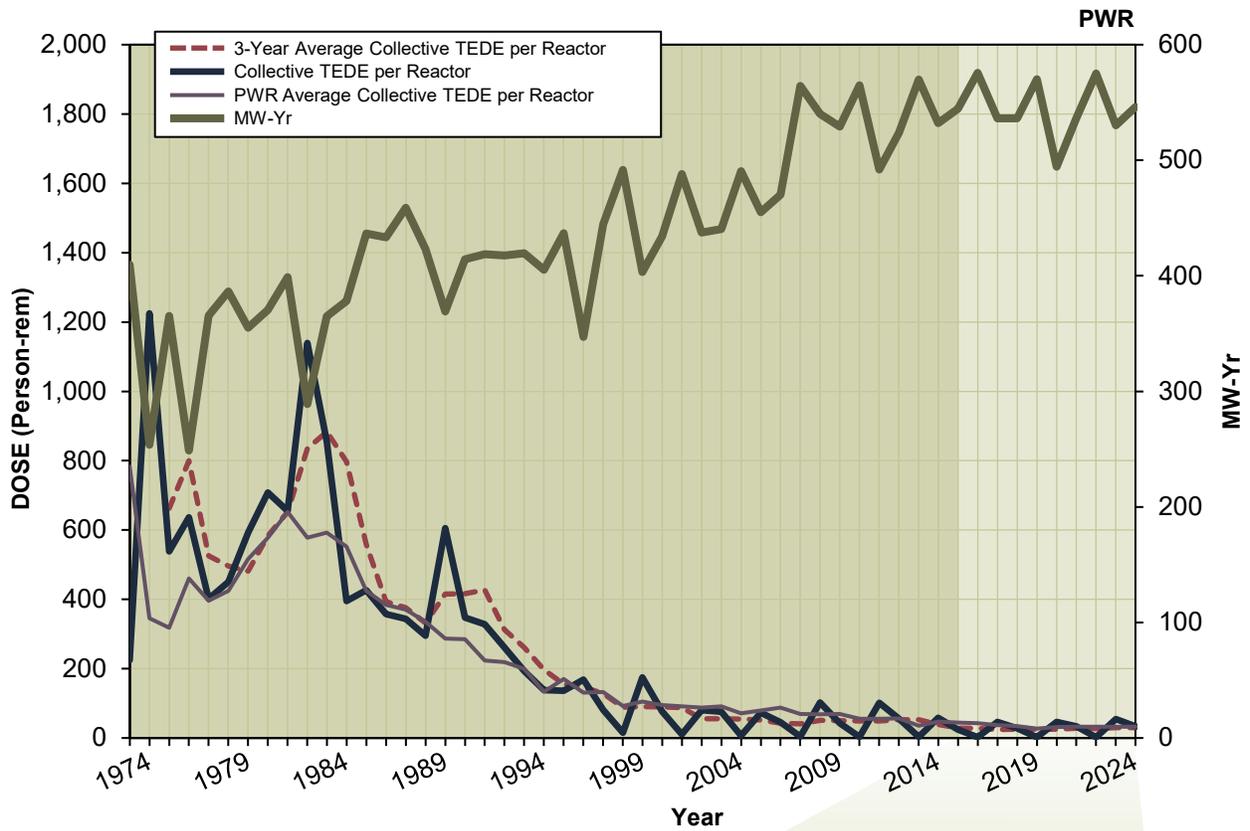


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	65.356	20.785	842.7
2016	61.660	28.304	668.7
2017	70.428	162.196	705.8
2018	140.683	231.548	745.2
2019	139.301	24.160	839.5
2020	134.964	149.183	752.2
2021	65.632	23.553	844.5
2022	104.622	141.131	754.9
2023	63.697	26.406	841.7
2024	100.743	134.692	771.0

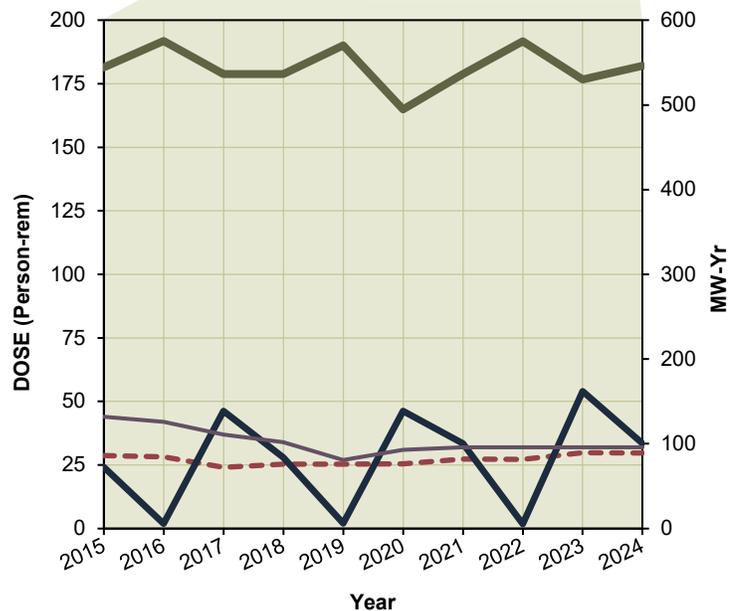


GINNA

Dose Performance Trends

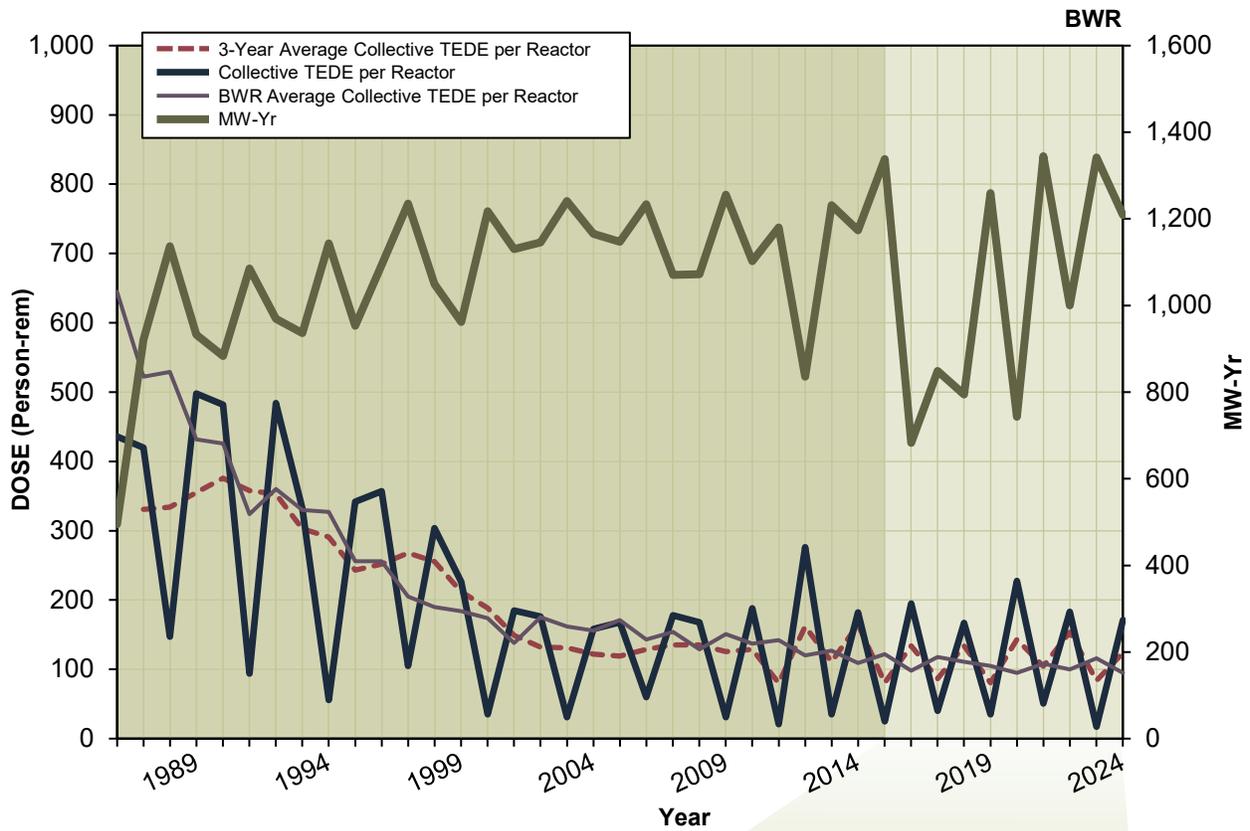


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	28.659	24.163	544.5
2016	28.142	1.882	575.6
2017	24.073	46.173	536.3
2018	25.329	27.931	536.4
2019	25.376	2.023	570.1
2020	25.411	46.280	494.6
2021	27.267	33.499	536.5
2022	27.196	1.808	575.2
2023	29.765	53.989	530.2
2024	29.743	33.431	546.3

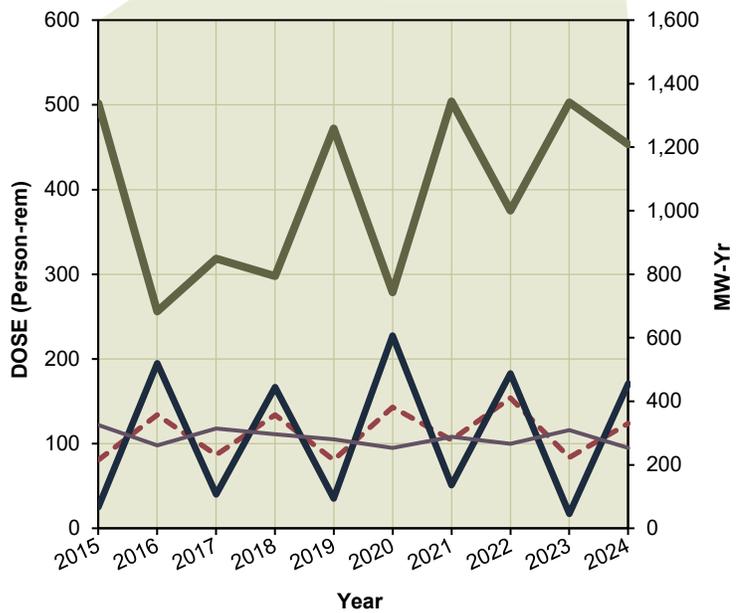


GRAND GULF

Dose Performance Trends

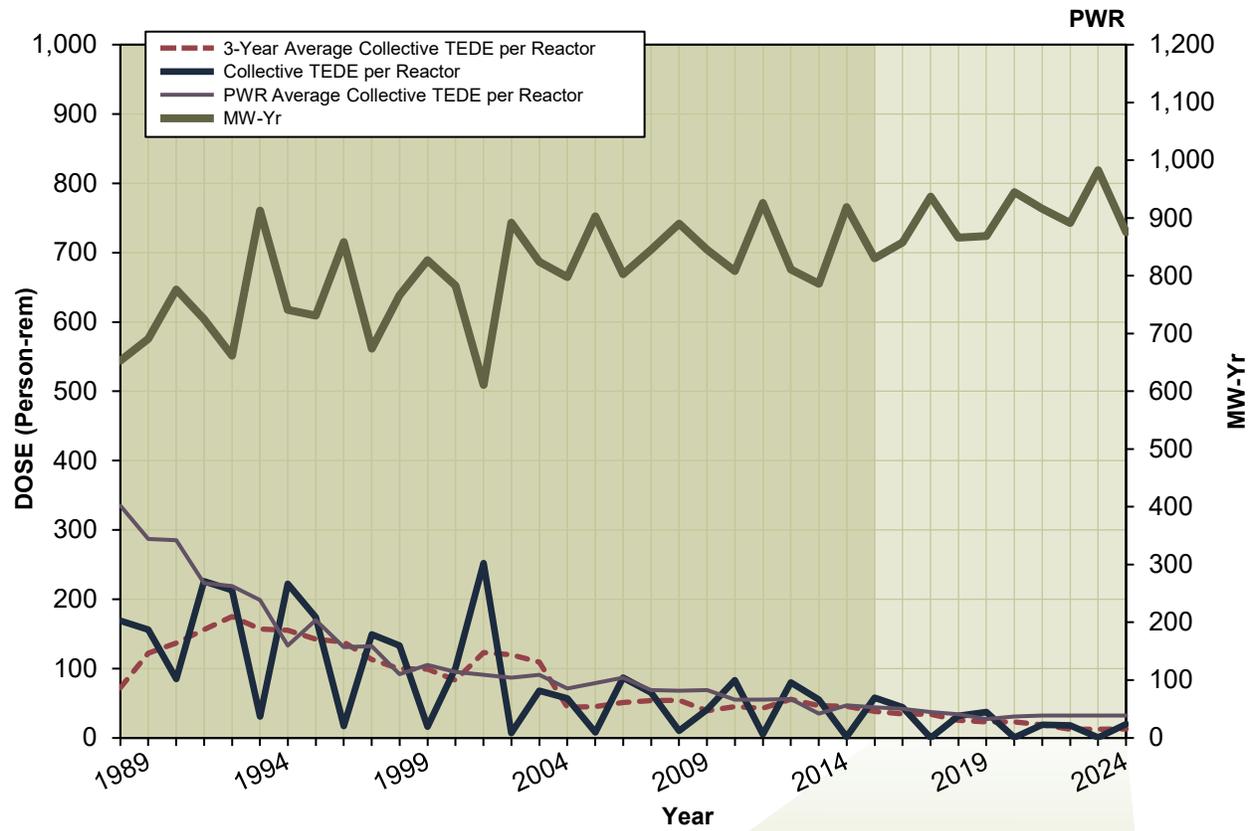


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	80.812	25.241	1,337.8
2016	133.914	194.755	682.8
2017	86.749	40.251	849.1
2018	133.971	166.908	794.3
2019	80.766	35.139	1,259.4
2020	143.189	227.519	742.7
2021	104.517	50.892	1,344.3
2022	153.808	183.014	1,000.1
2023	83.772	17.410	1,341.3
2024	123.818	171.031	1,208.5

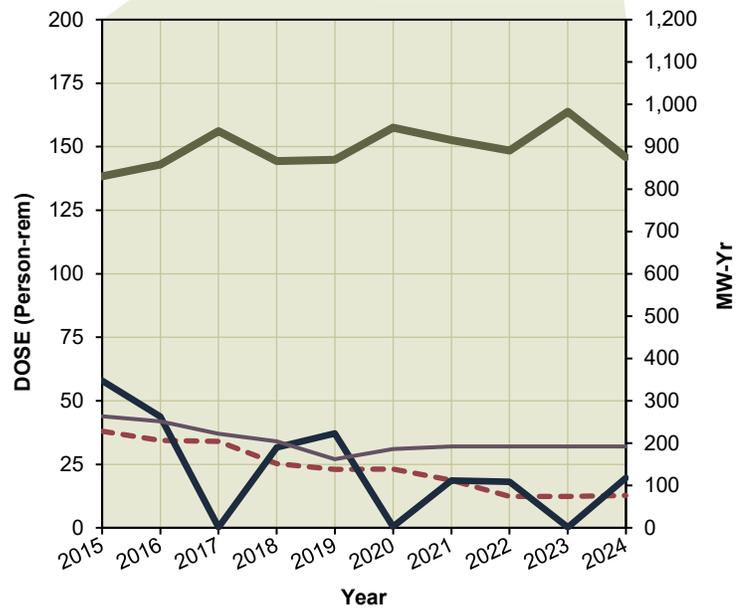


HARRIS 1

Dose Performance Trends

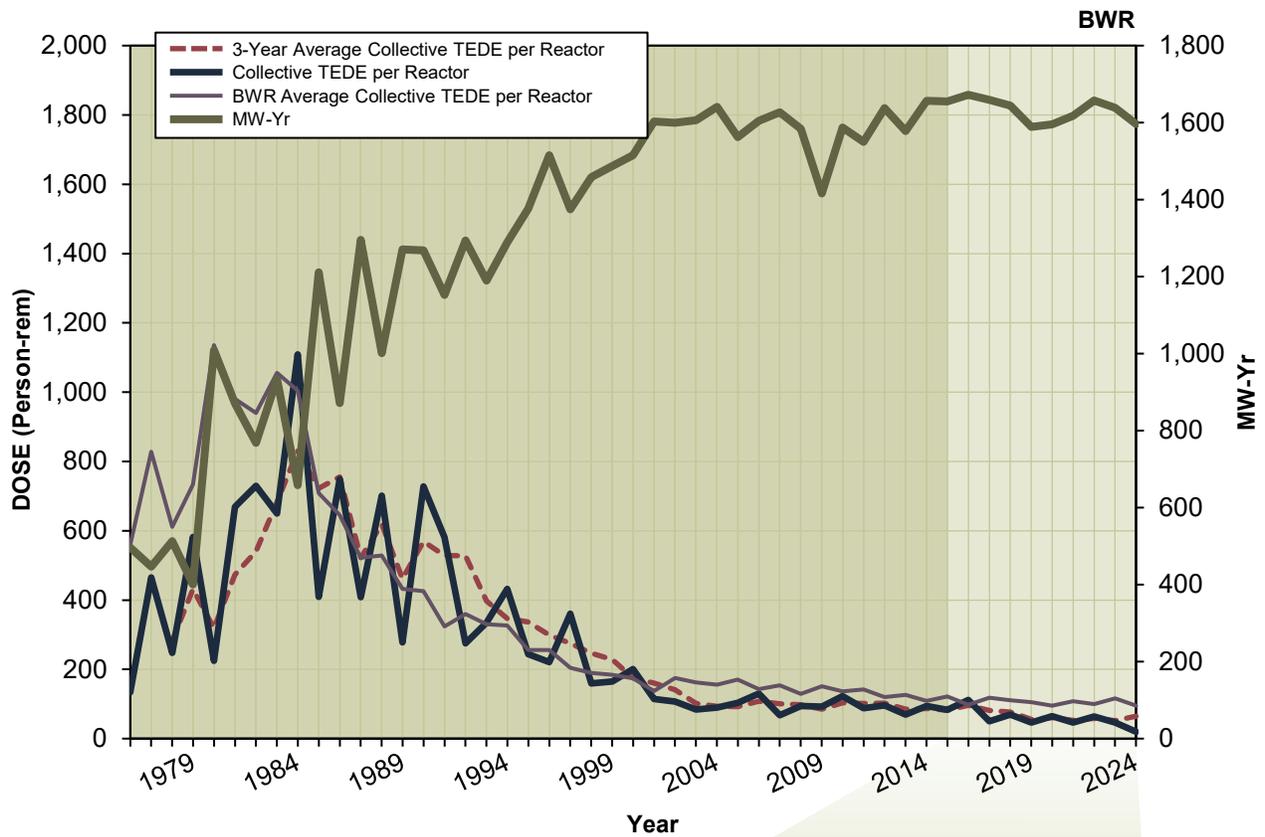


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	38.047	57.978	830.2
2016	34.381	43.876	857.7
2017	34.024	0.217	937.1
2018	25.276	31.736	866.2
2019	23.059	37.223	868.8
2020	23.139	0.458	944.7
2021	18.767	18.621	916.0
2022	12.406	18.138	891.2
2023	12.348	0.286	982.8
2024	12.714	19.717	875.5

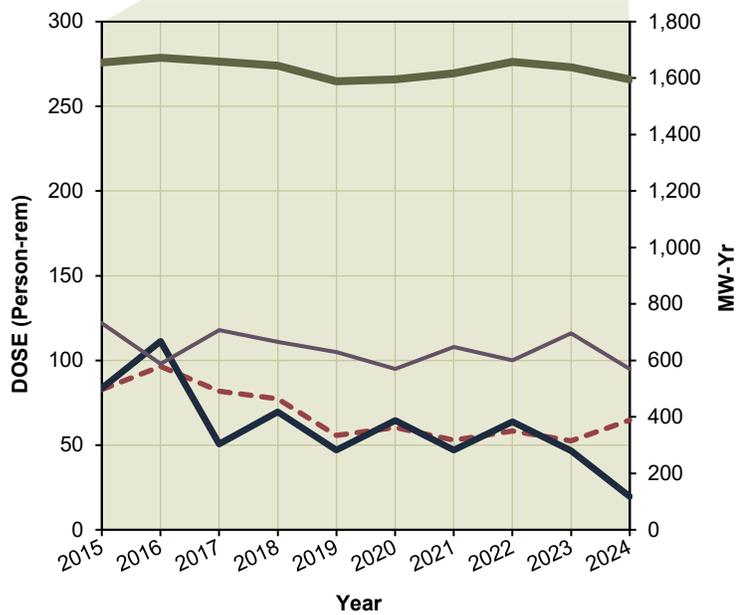


HATCH 1, 2

Dose Performance Trends

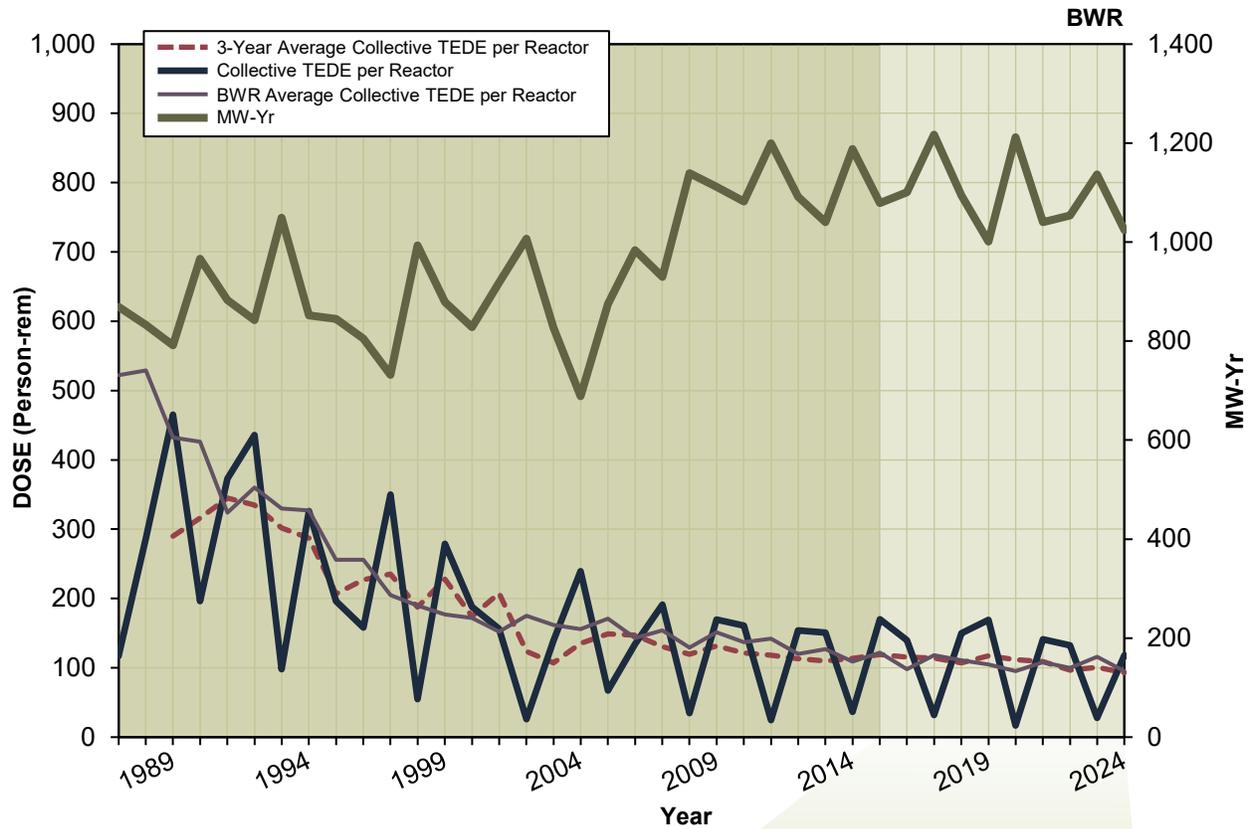


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	82.877	83.500	1,654.9
2016	96.522	111.433	1,672.1
2017	81.854	50.711	1,658.8
2018	77.276	69.684	1,644.2
2019	55.816	47.052	1,588.7
2020	60.440	64.585	1,595.6
2021	52.886	47.021	1,617.4
2022	58.448	63.738	1,657.5
2023	52.492	46.720	1,638.3
2024	64.810	19.717	1,596.0

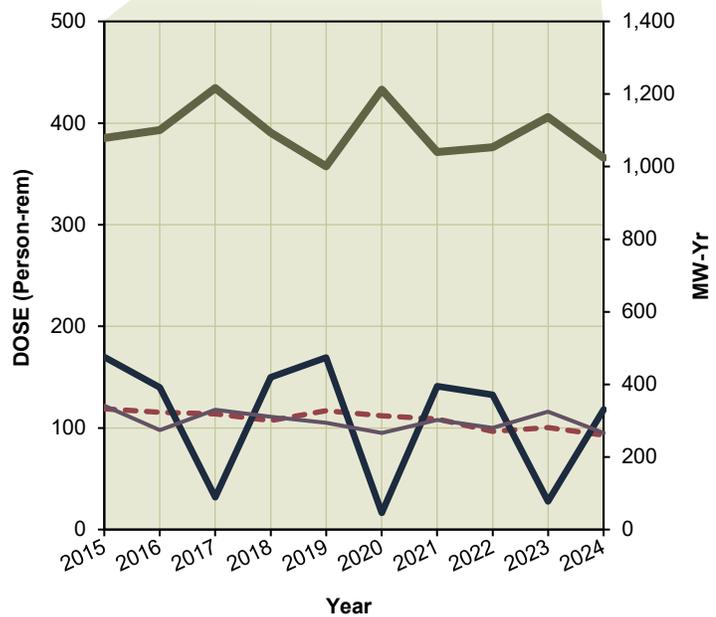


HOPE CREEK 1

Dose Performance Trends

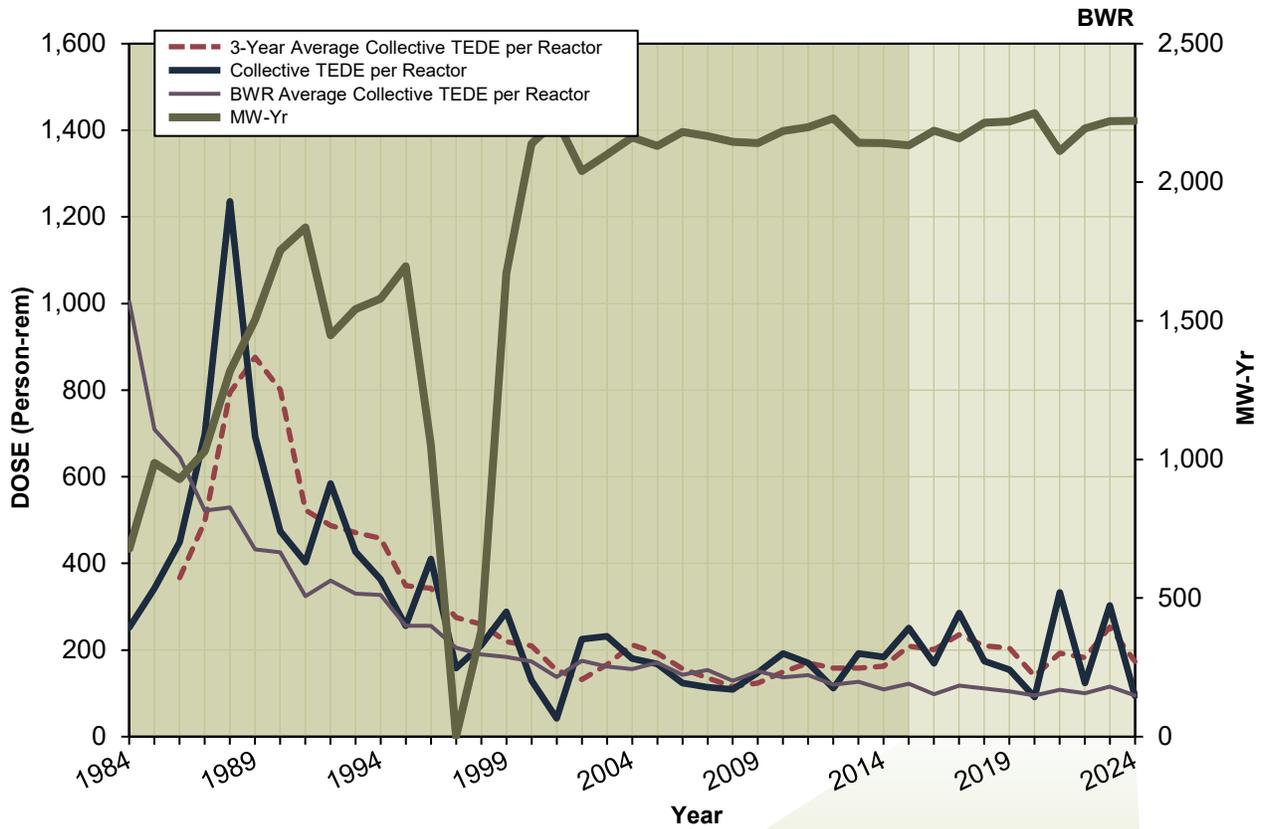


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	118.991	169.862	1,078.9
2016	115.429	139.883	1,100.4
2017	113.888	31.919	1,216.7
2018	107.282	150.044	1,094.0
2019	117.061	169.220	1,000.8
2020	111.963	16.625	1,211.6
2021	109.004	141.166	1,040.0
2022	96.784	132.562	1,053.6
2023	100.511	27.804	1,136.3
2024	92.877	118.265	1,024.3

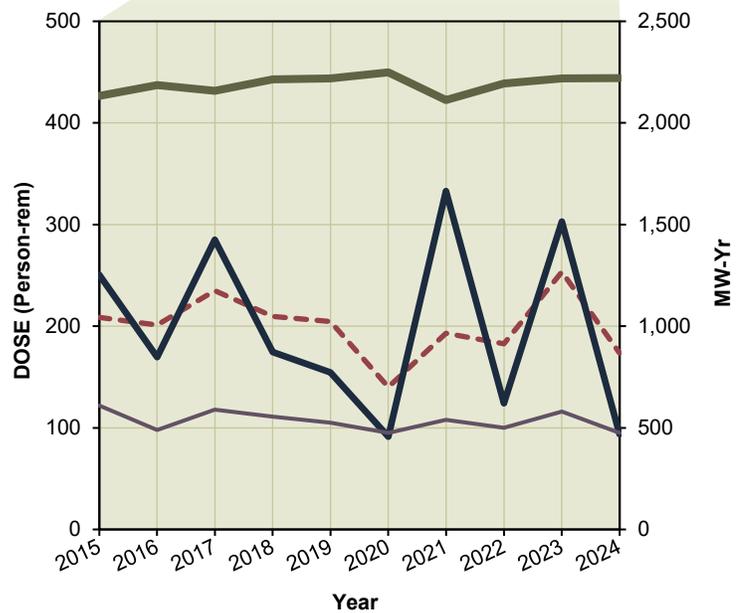


LASALLE 1, 2

Dose Performance Trends

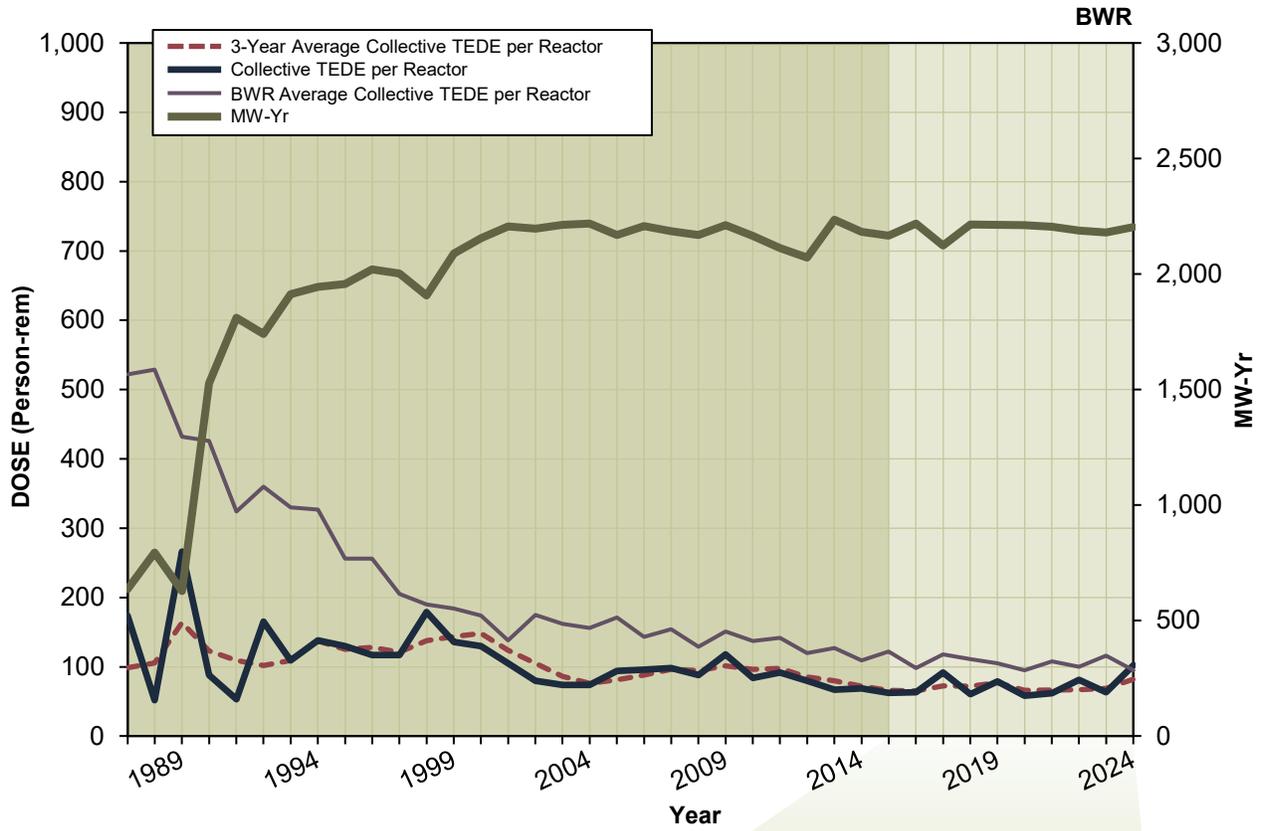


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	208.635	250.833	2,132.9
2016	201.196	169.493	2,185.5
2017	235.173	285.195	2,158.5
2018	209.774	174.634	2,214.7
2019	204.798	154.565	2,218.6
2020	140.158	91.276	2,248.4
2021	192.947	333.001	2,112.4
2022	182.785	124.078	2,193.7
2023	253.386	303.080	2,219.6
2024	173.724	94.013	2,220.8

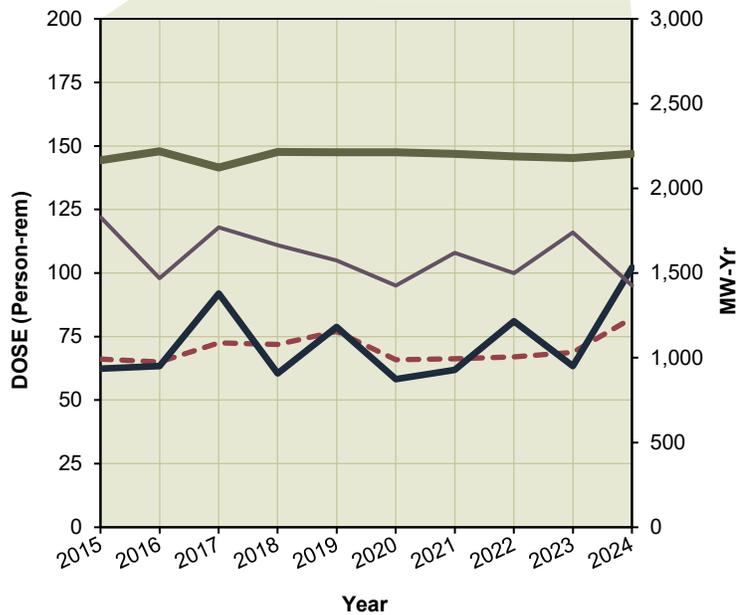


LIMERICK 1, 2

Dose Performance Trends

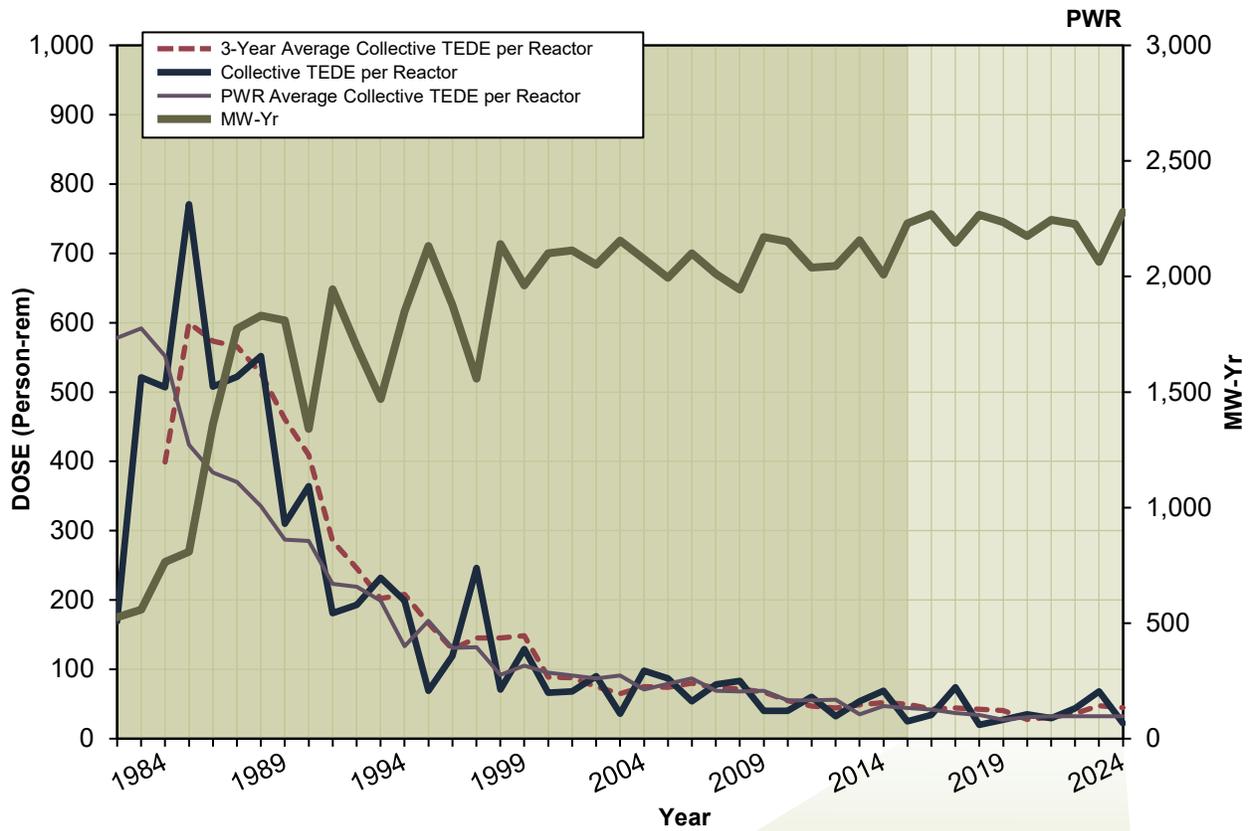


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	66.119	62.394	2,165.6
2016	64.997	63.400	2,219.1
2017	72.554	91.868	2,123.1
2018	71.931	60.527	2,214.9
2019	77.043	78.736	2,213.1
2020	65.853	58.298	2,212.3
2021	66.297	61.856	2,204.3
2022	67.060	81.025	2,188.0
2023	68.769	63.430	2,179.7
2024	82.231	102.244	2,204.0

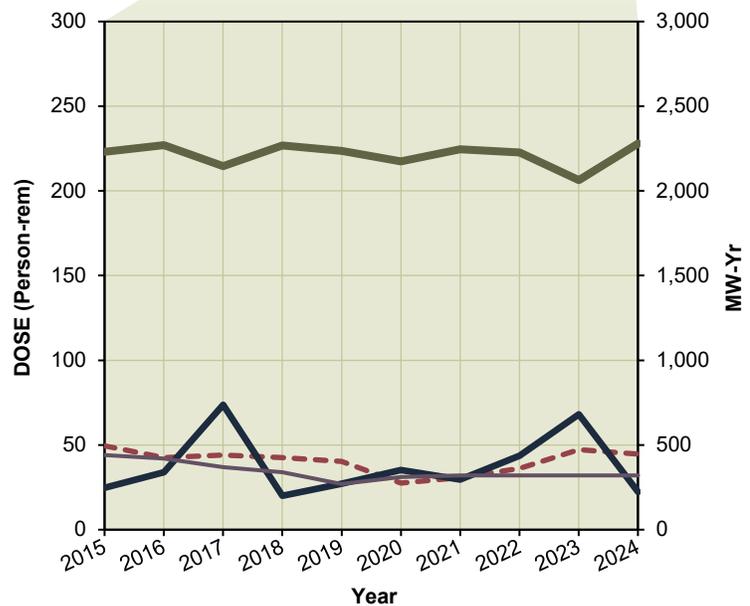


MCGUIRE 1, 2

Dose Performance Trends

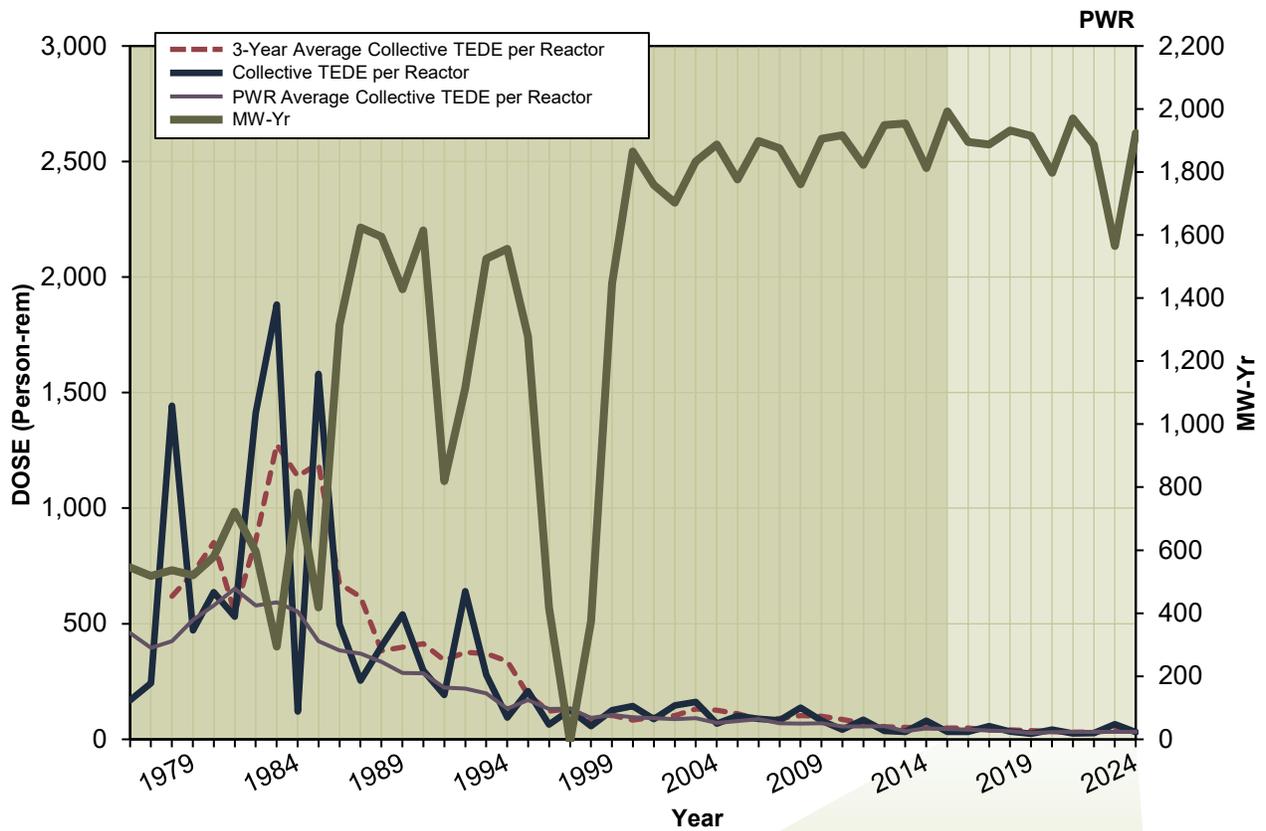


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	49.513	24.700	2,230.1
2016	42.552	33.827	2,269.9
2017	44.107	73.795	2,145.6
2018	42.541	20.003	2,267.4
2019	40.304	27.115	2,236.1
2020	27.430	35.172	2,174.3
2021	30.638	29.627	2,244.5
2022	36.183	43.752	2,226.6
2023	47.153	68.080	2,063.3
2024	44.680	22.208	2,279.5

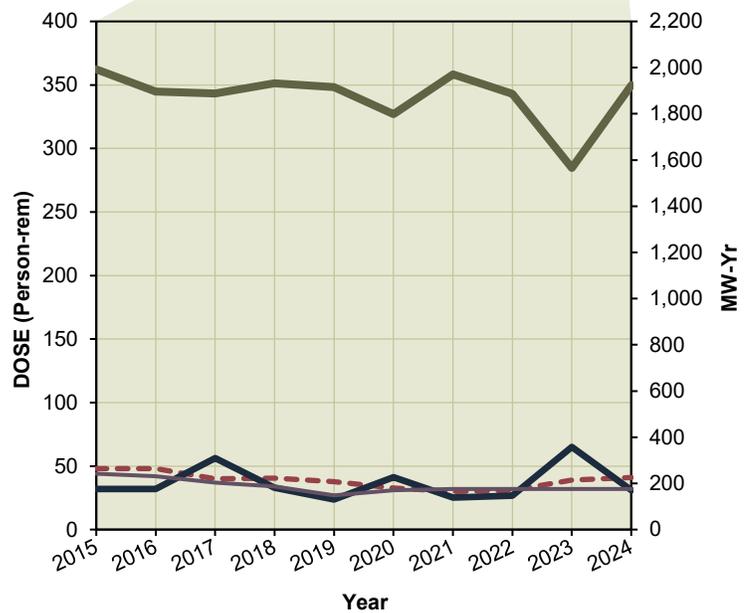


MILLSTONE 2, 3

Dose Performance Trends

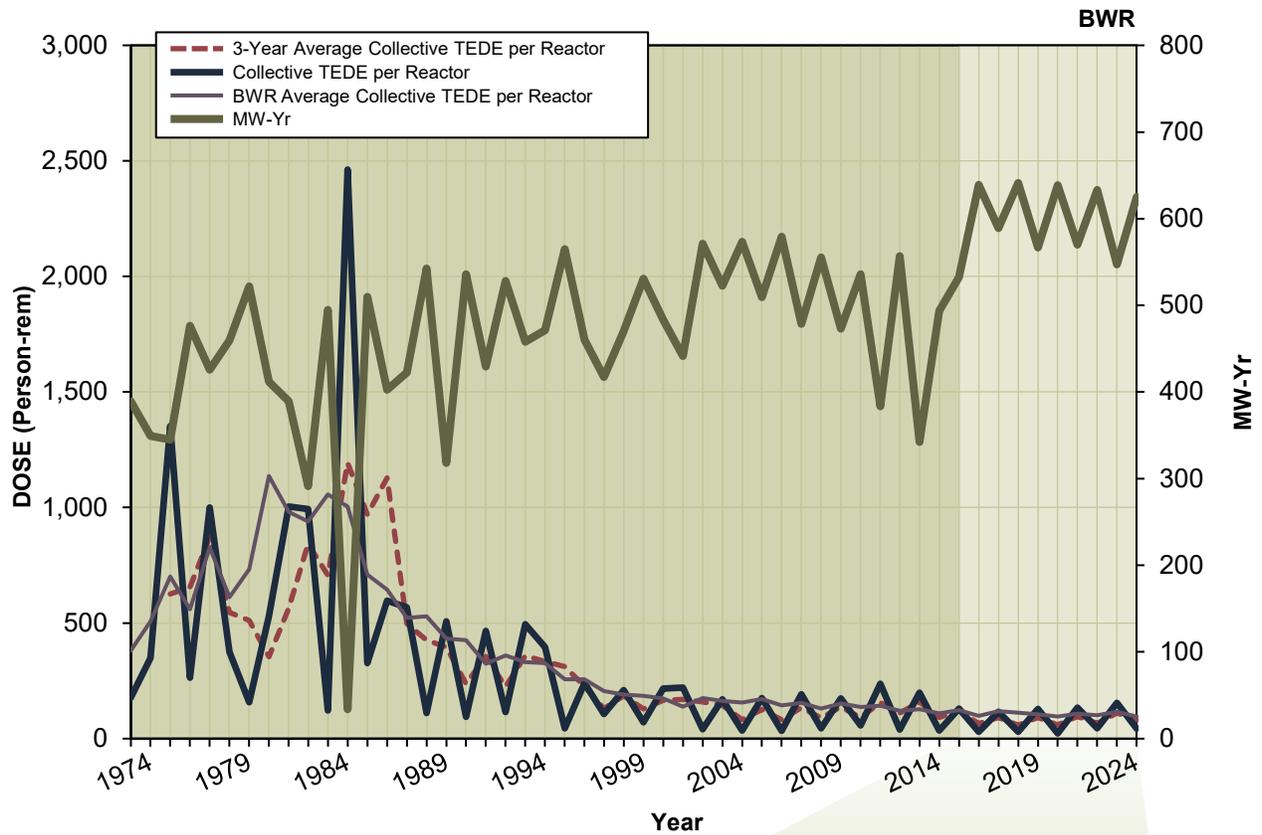


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	48.112	31.970	1,992.4
2016	48.095	32.063	1,896.1
2017	40.111	56.299	1,888.0
2018	40.472	33.055	1,931.7
2019	37.730	23.837	1,914.9
2020	32.707	41.230	1,798.0
2021	30.070	25.145	1,970.8
2022	31.053	26.785	1,886.3
2023	39.026	65.150	1,565.2
2024	40.955	30.931	1,924.3

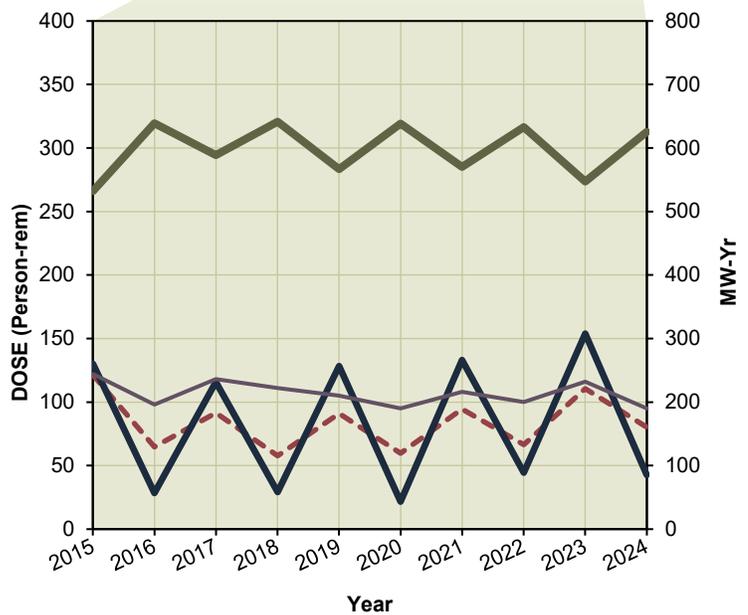


MONTICELLO

Dose Performance Trends

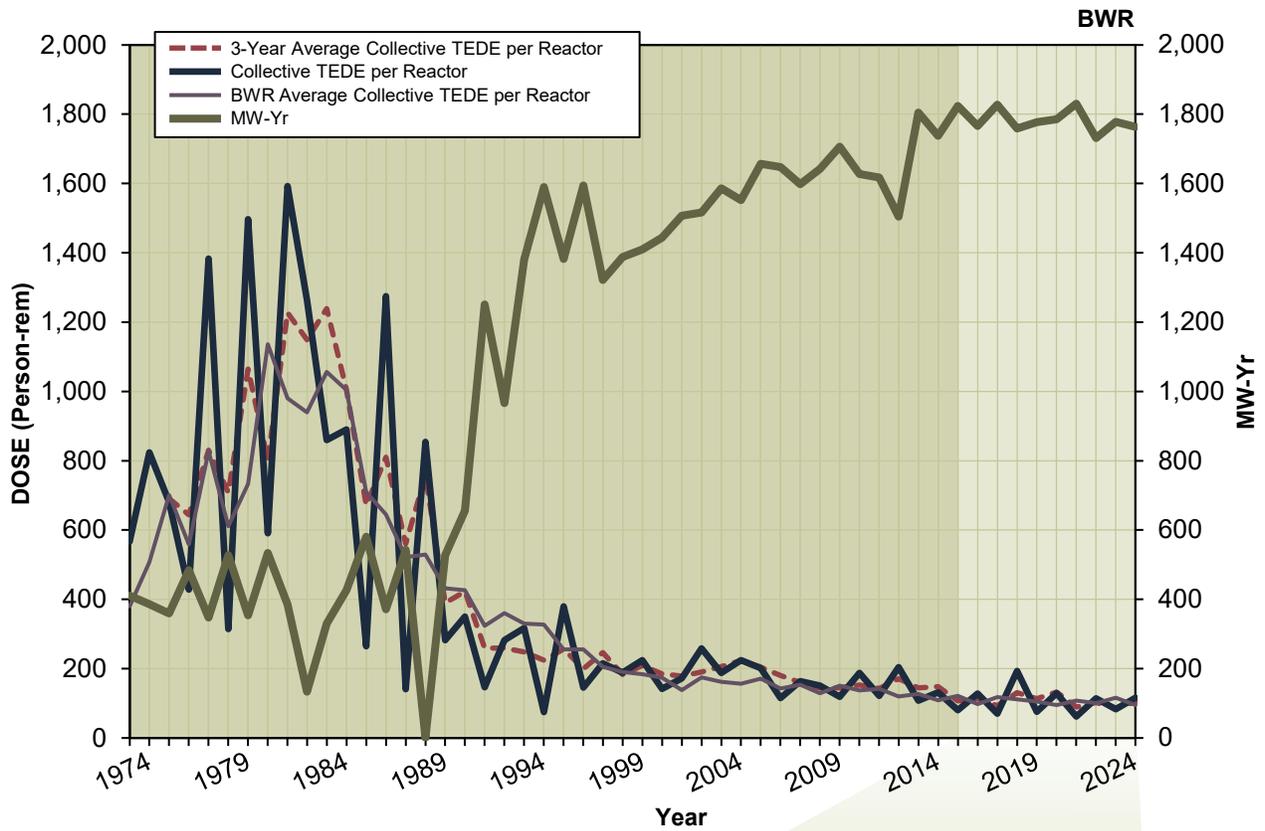


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	121.444	130.057	532.4
2016	64.637	28.547	639.0
2017	91.473	115.814	589.0
2018	57.866	29.238	641.3
2019	91.159	128.425	566.7
2020	59.818	21.790	638.5
2021	94.463	133.174	570.0
2022	66.518	44.589	633.0
2023	110.516	153.784	547.2
2024	80.359	42.704	625.2

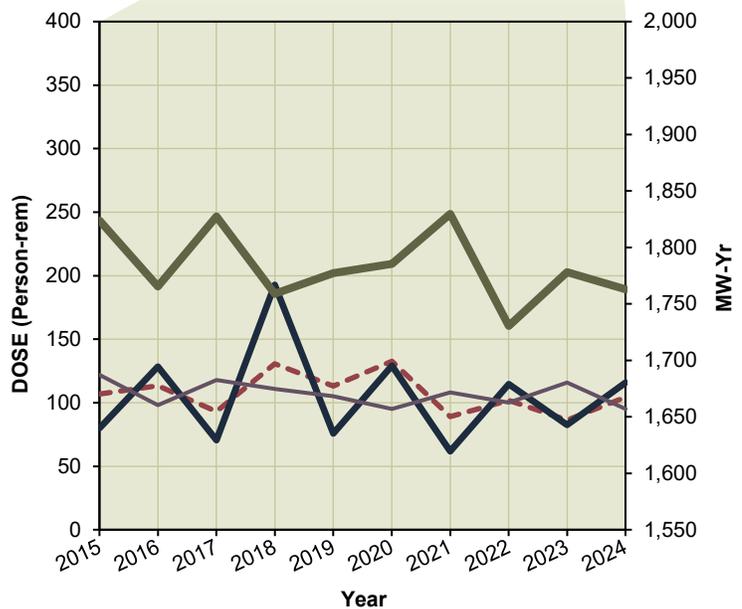


NINE MILE POINT 1, 2

Dose Performance Trends

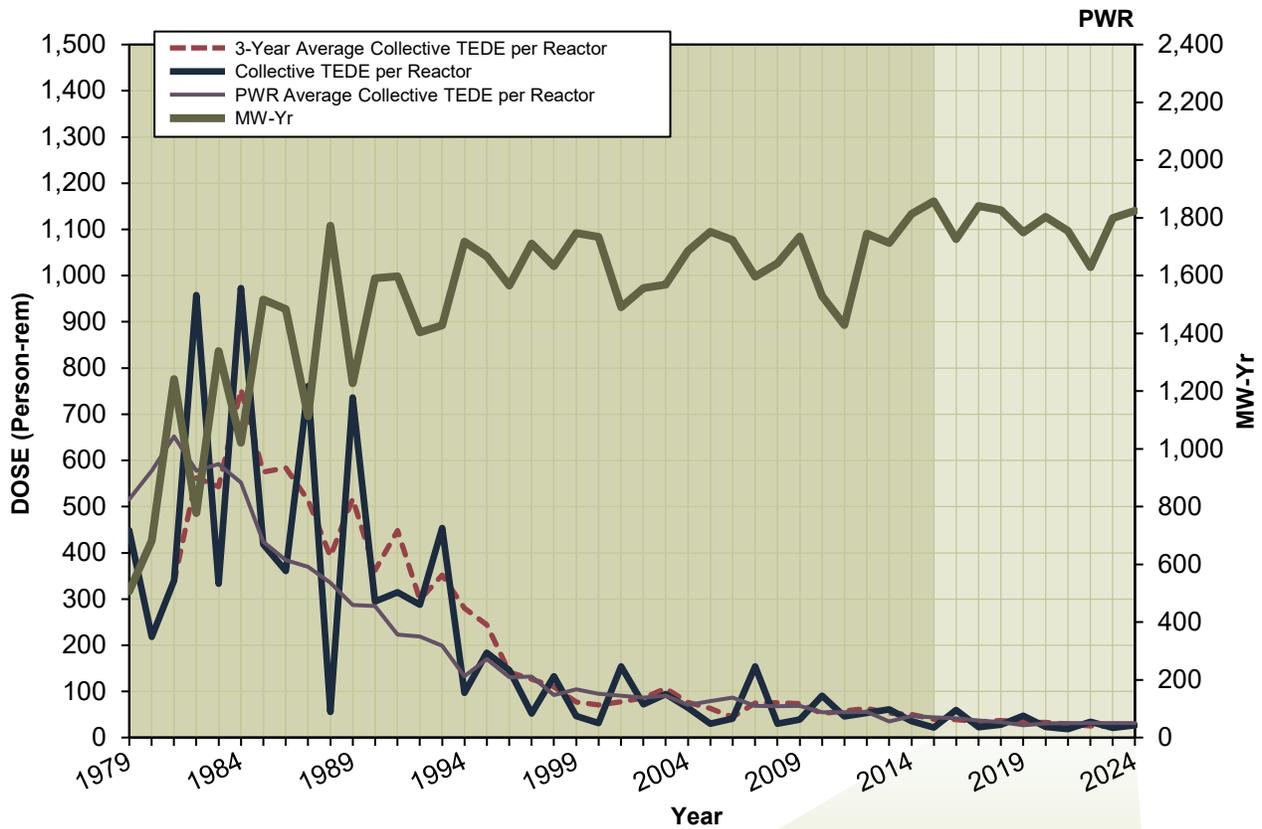


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	106.858	80.190	1,823.7
2016	113.481	128.397	1,765.5
2017	93.054	70.575	1,827.3
2018	130.573	192.746	1,758.9
2019	113.060	75.860	1,777.2
2020	132.619	129.252	1,785.4
2021	88.993	61.869	1,829.8
2022	101.900	114.579	1,730.6
2023	86.344	82.580	1,778.0
2024	104.330	115.827	1,762.8

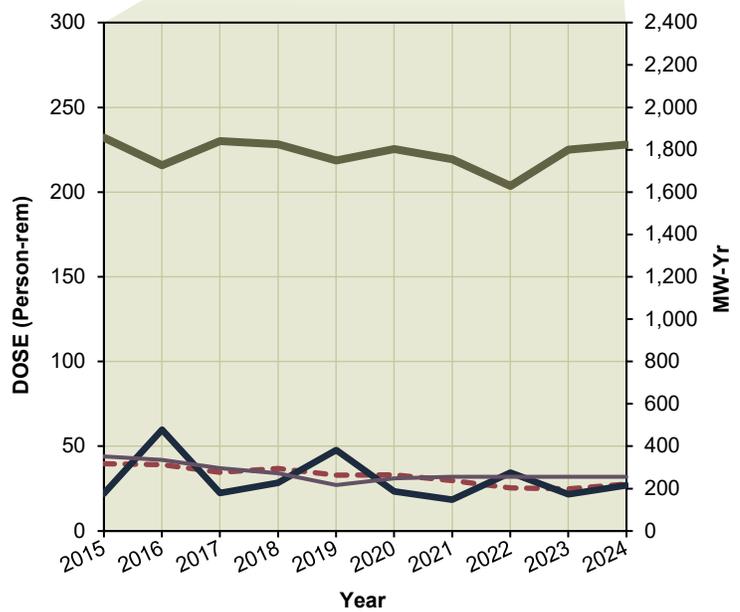


NORTH ANNA 1, 2

Dose Performance Trends

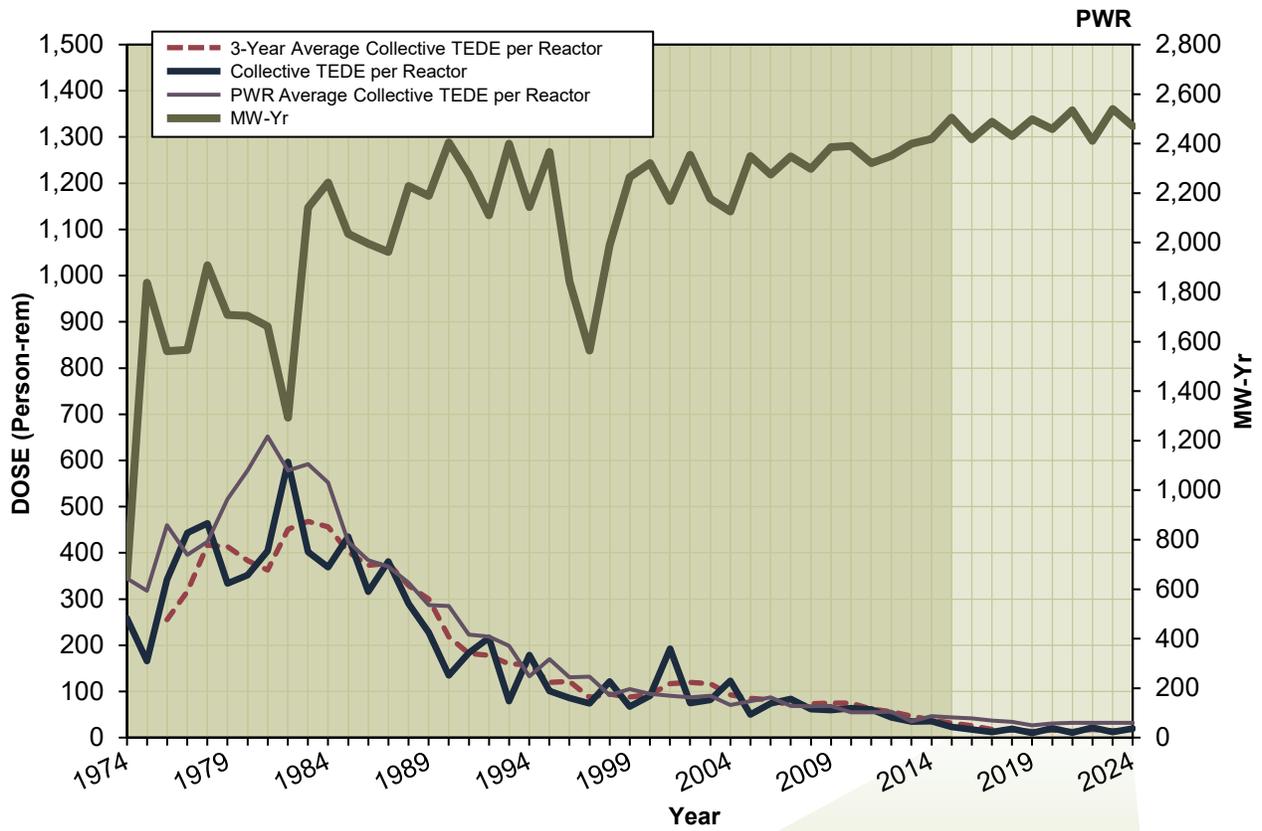


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	39.593	21.919	1,857.4
2016	39.182	59.670	1,726.2
2017	34.677	22.442	1,840.9
2018	36.845	28.423	1,826.2
2019	32.836	47.644	1,749.4
2020	33.117	23.285	1,803.6
2021	29.785	18.426	1,754.8
2022	25.377	34.422	1,629.1
2023	24.837	21.660	1,799.7
2024	27.646	26.853	1,824.2

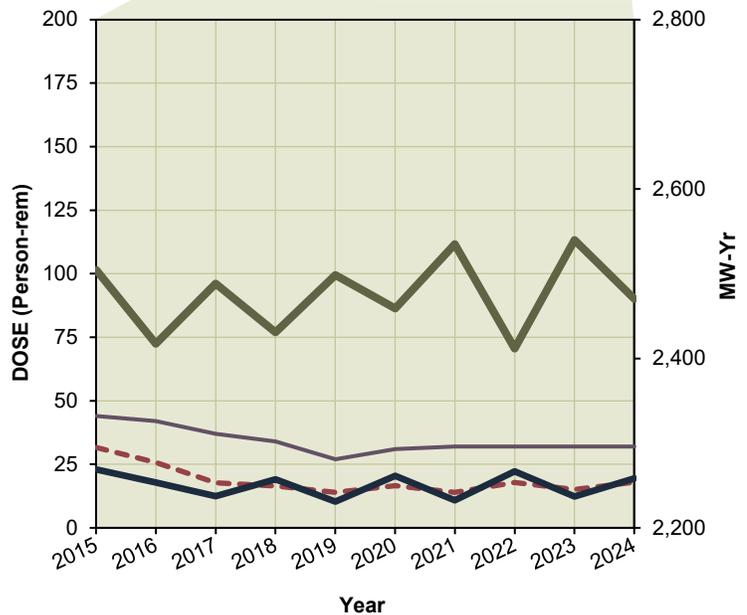


OCONEE 1, 2, 3

Dose Performance Trends

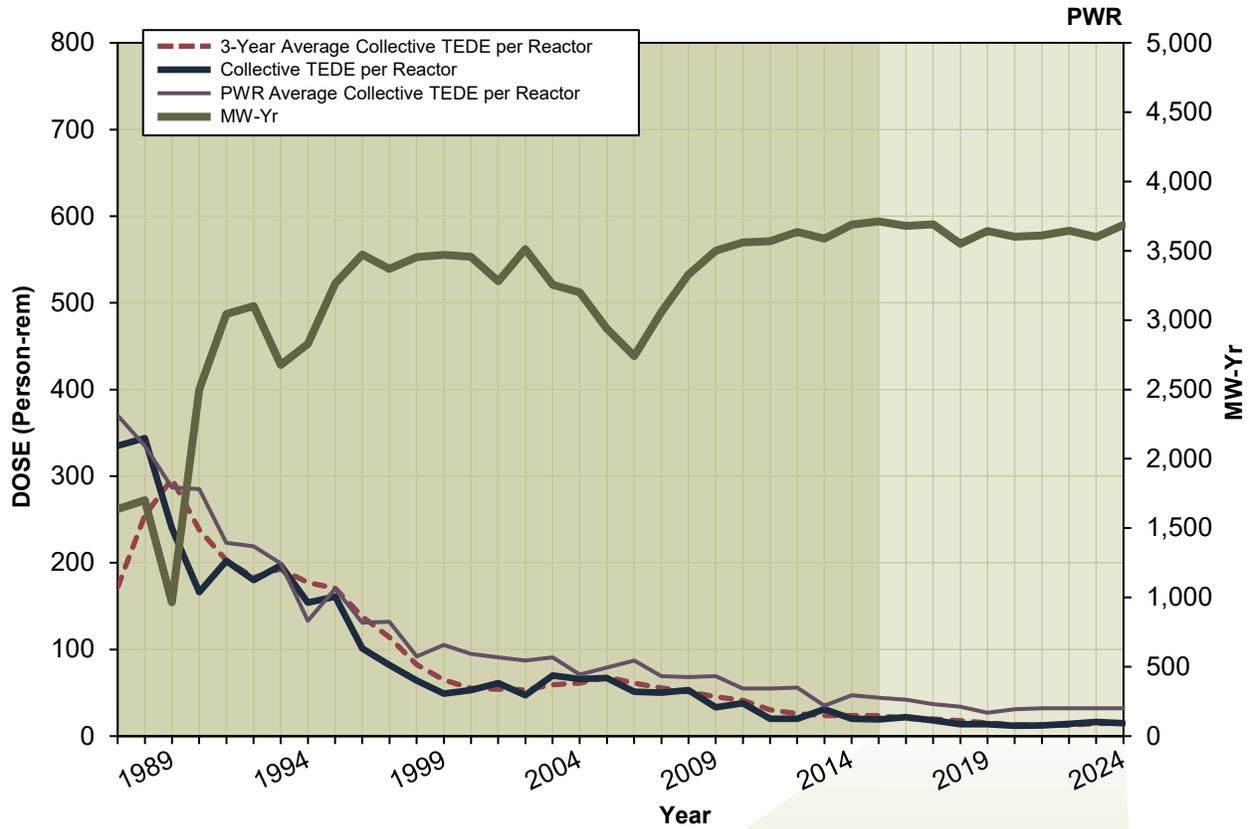


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	31.608	23.017	2,504.5
2016	25.718	17.799	2,417.5
2017	17.750	12.434	2,488.4
2018	16.433	19.067	2,430.8
2019	13.960	10.379	2,498.3
2020	16.660	20.535	2,459.2
2021	13.910	10.817	2,535.0
2022	17.859	22.224	2,411.5
2023	15.110	12.290	2,539.6
2024	18.017	19.541	2,470.2

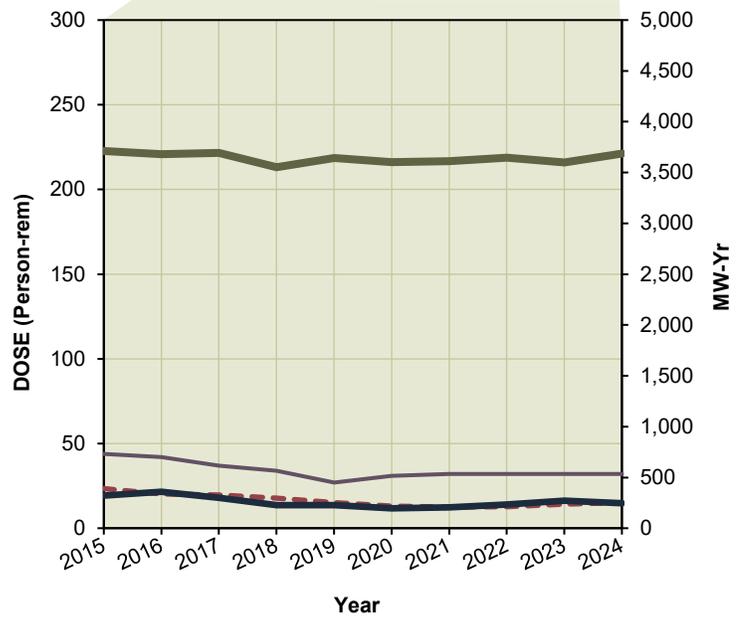


PALO VERDE 1, 2, 3

Dose Performance Trends

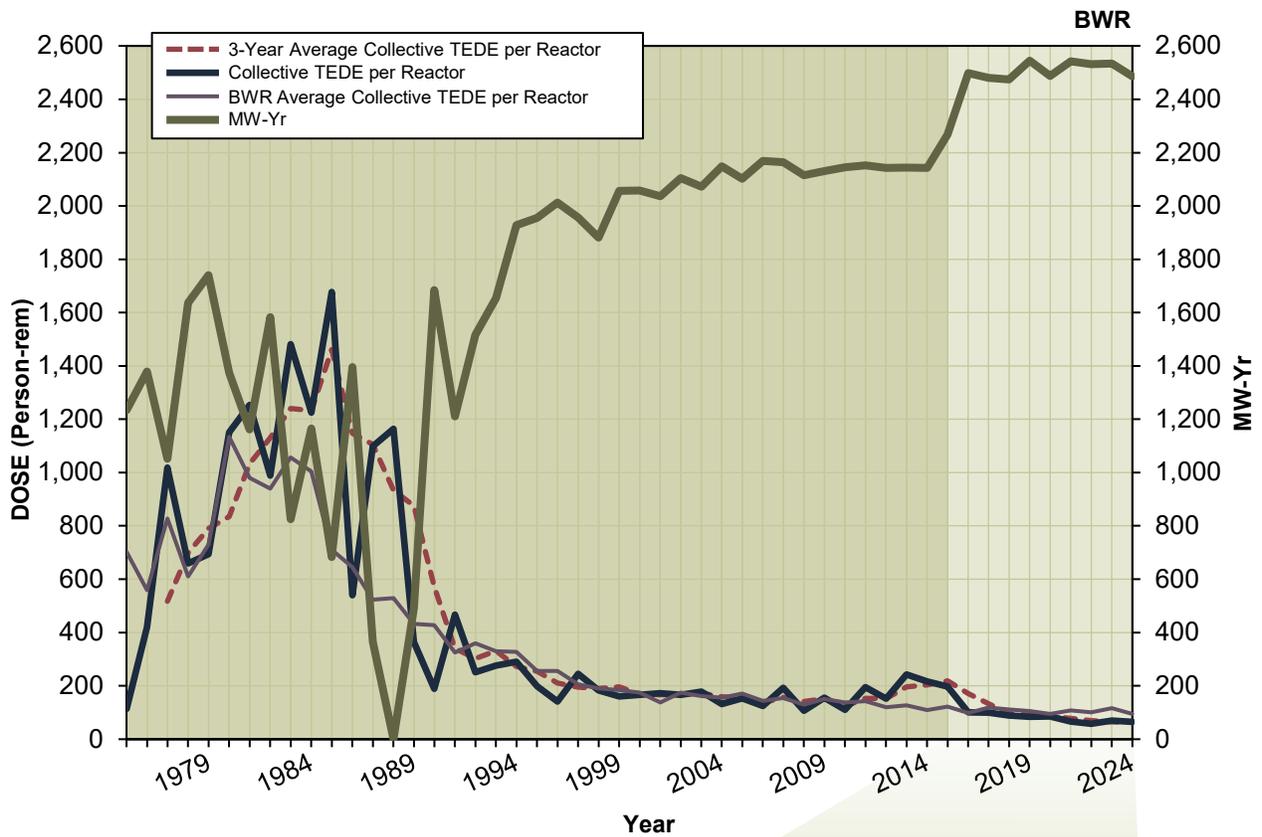


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	23.523	19.332	3,711.7
2016	20.310	21.599	3,680.7
2017	19.631	17.963	3,691.8
2018	17.754	13.701	3,551.0
2019	15.139	13.754	3,643.8
2020	13.056	11.713	3,601.9
2021	12.603	12.341	3,610.7
2022	12.693	14.025	3,645.3
2023	14.251	16.390	3,599.1
2024	15.098	14.884	3,687.2

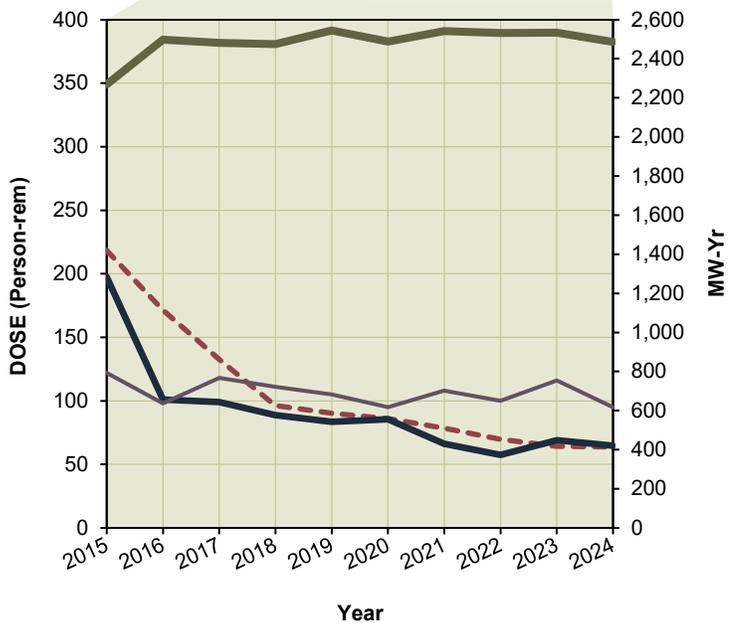


PEACH BOTTOM 2, 3

Dose Performance Trends

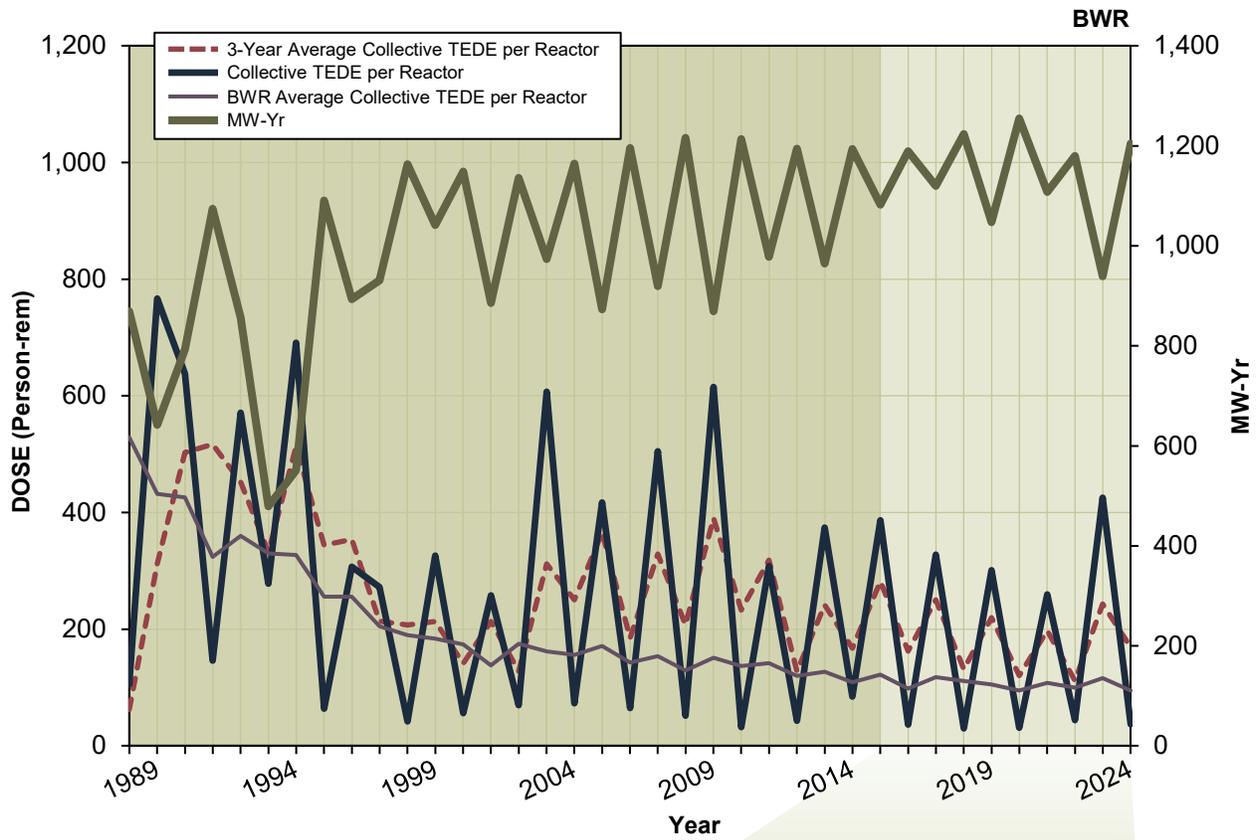


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	218.412	197.799	2,267.6
2016	171.460	101.111	2,498.1
2017	132.605	98.907	2,481.1
2018	96.229	88.669	2,474.9
2019	90.372	83.542	2,545.2
2020	85.875	85.414	2,488.0
2021	78.413	66.285	2,542.1
2022	69.732	57.497	2,532.4
2023	64.269	69.020	2,533.9
2024	63.706	64.596	2,486.8

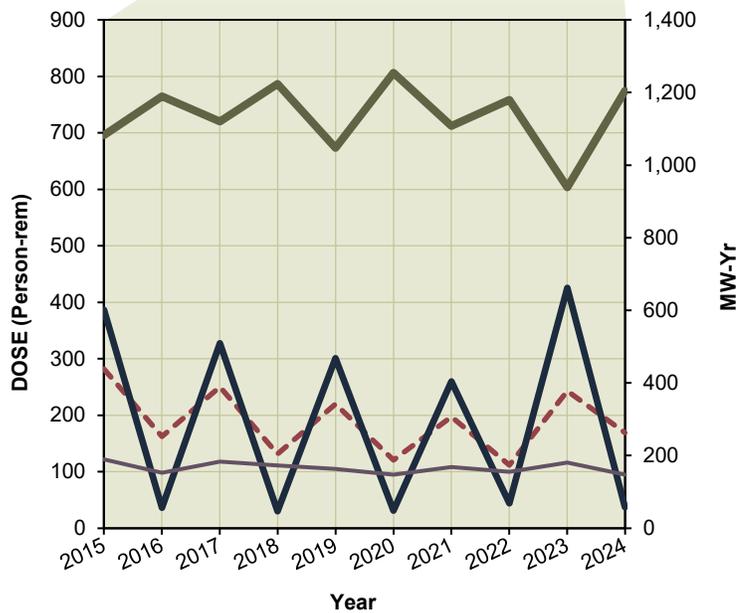


PERRY

Dose Performance Trends

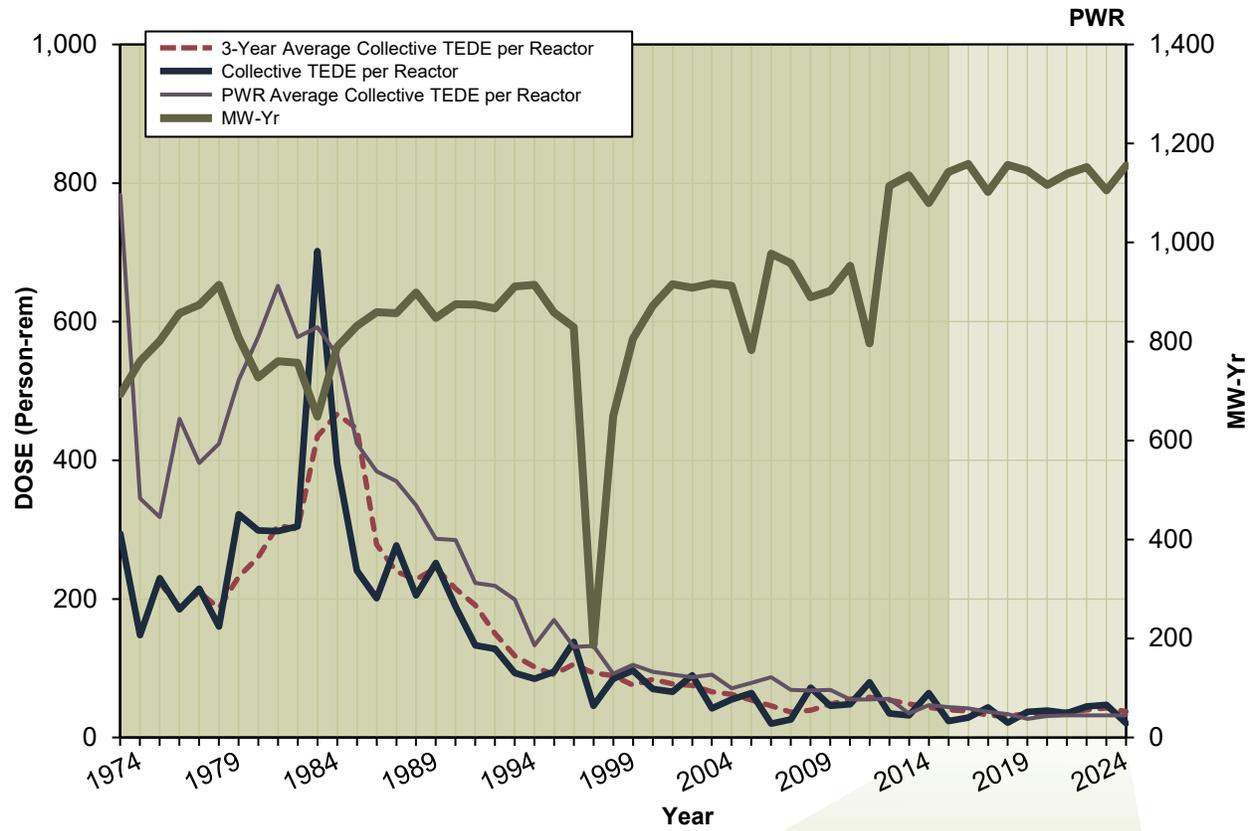


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	281.714	386.778	1,082.5
2016	162.261	36.389	1,189.5
2017	250.295	327.717	1,120.1
2018	131.318	29.848	1,223.6
2019	219.544	301.067	1,047.2
2020	120.692	31.161	1,254.7
2021	197.295	259.656	1,107.7
2022	111.639	44.100	1,179.7
2023	243.050	425.393	939.2
2024	168.889	37.173	1,204.3

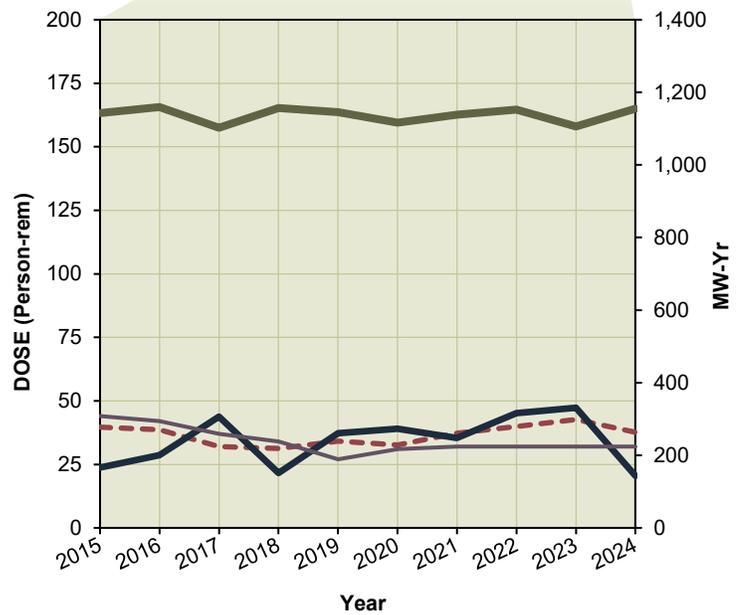


POINT BEACH 1, 2

Dose Performance Trends

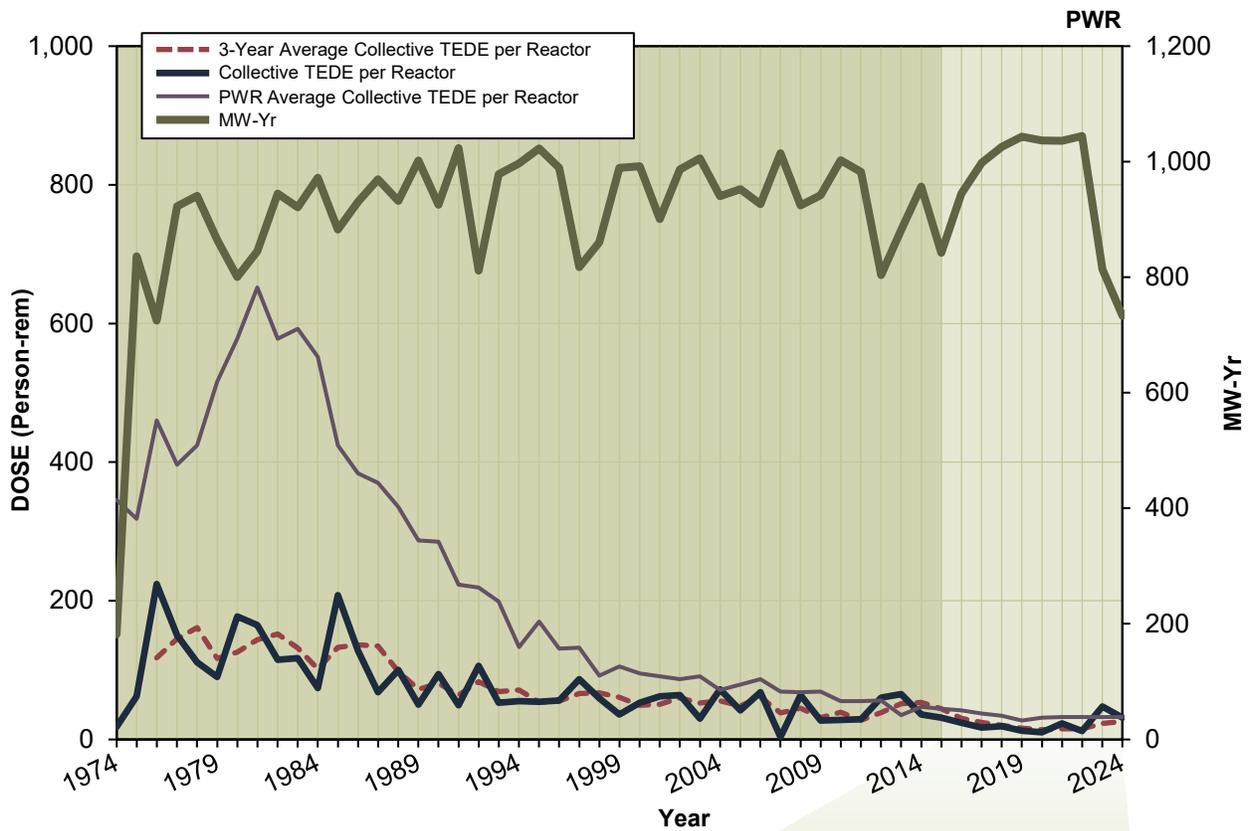


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	39.690	23.737	1,142.9
2016	38.715	28.647	1,159.0
2017	32.041	43.740	1,102.0
2018	31.334	21.614	1,156.7
2019	34.199	37.243	1,145.3
2020	32.618	38.999	1,116.1
2021	37.232	35.455	1,138.5
2022	39.855	45.112	1,152.6
2023	42.630	47.320	1,105.6
2024	37.648	20.510	1,155.2

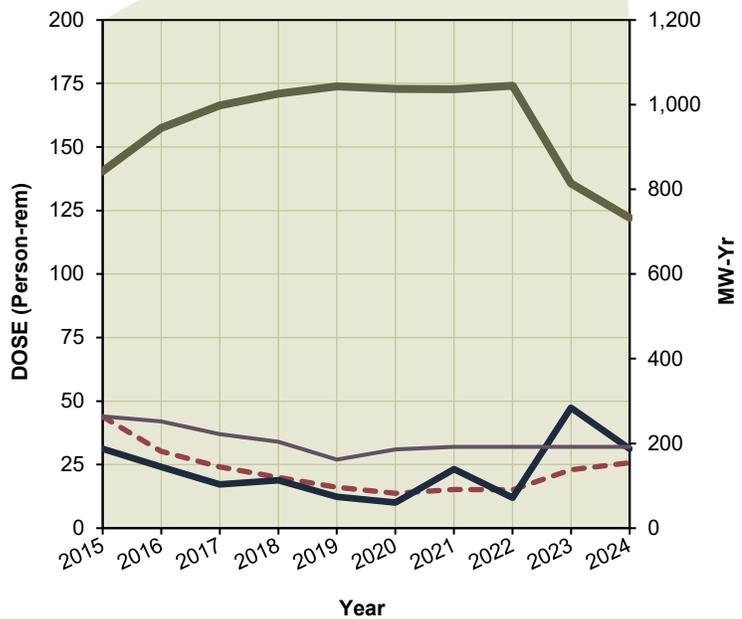


PRAIRIE ISLAND 1, 2

Dose Performance Trends

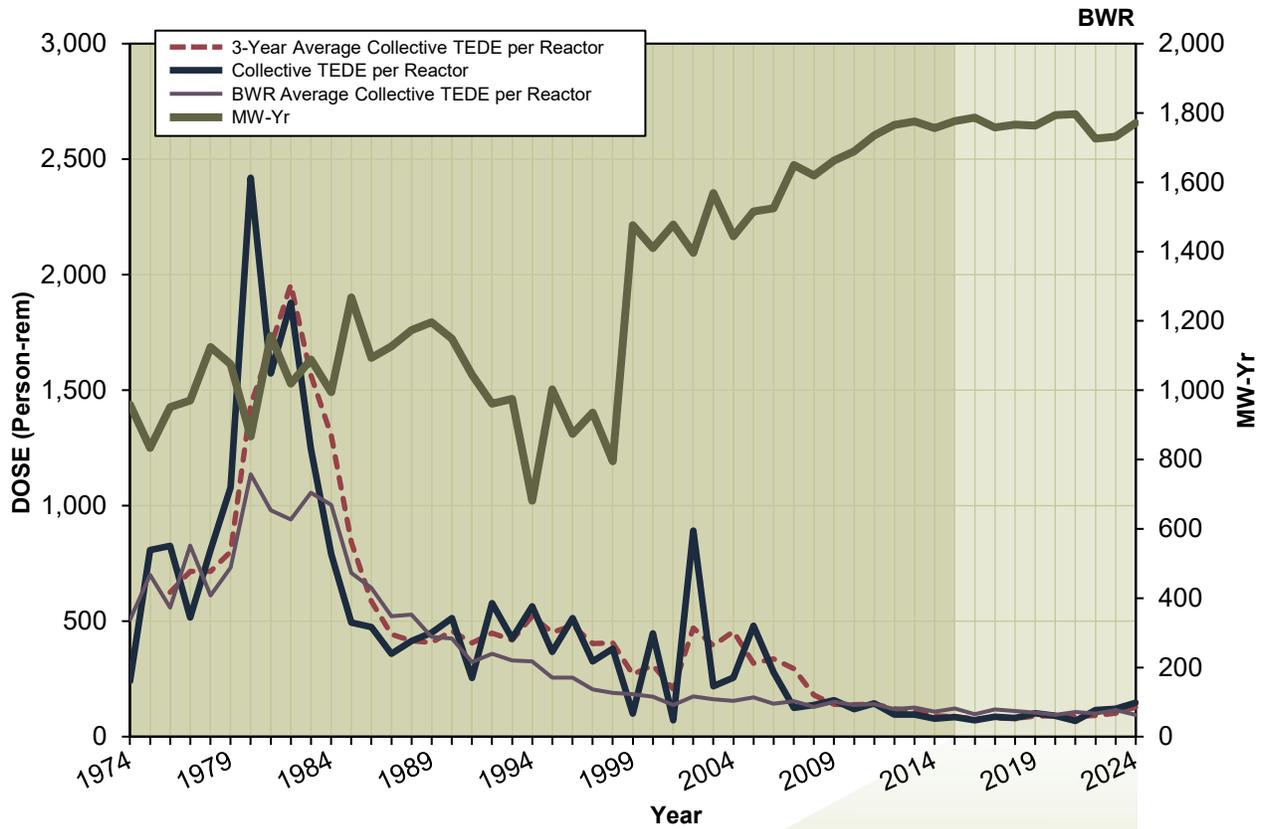


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	43.882	31.221	842.2
2016	30.230	24.039	944.5
2017	24.140	17.161	998.3
2018	20.022	18.866	1,025.5
2019	16.108	12.297	1,043.4
2020	13.724	10.009	1,037.0
2021	15.156	23.163	1,036.0
2022	15.058	12.001	1,044.6
2023	22.996	47.320	813.9
2024	25.701	31.278	733.00

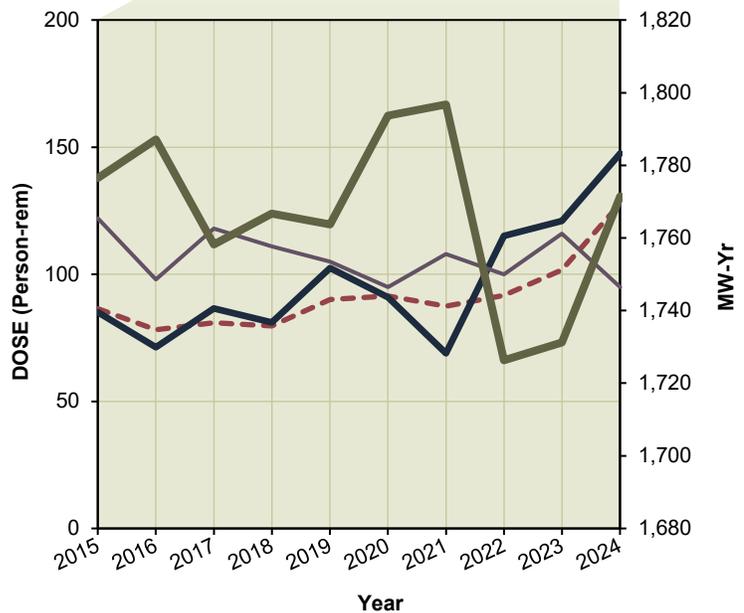


QUAD CITIES 1, 2

Dose Performance Trends

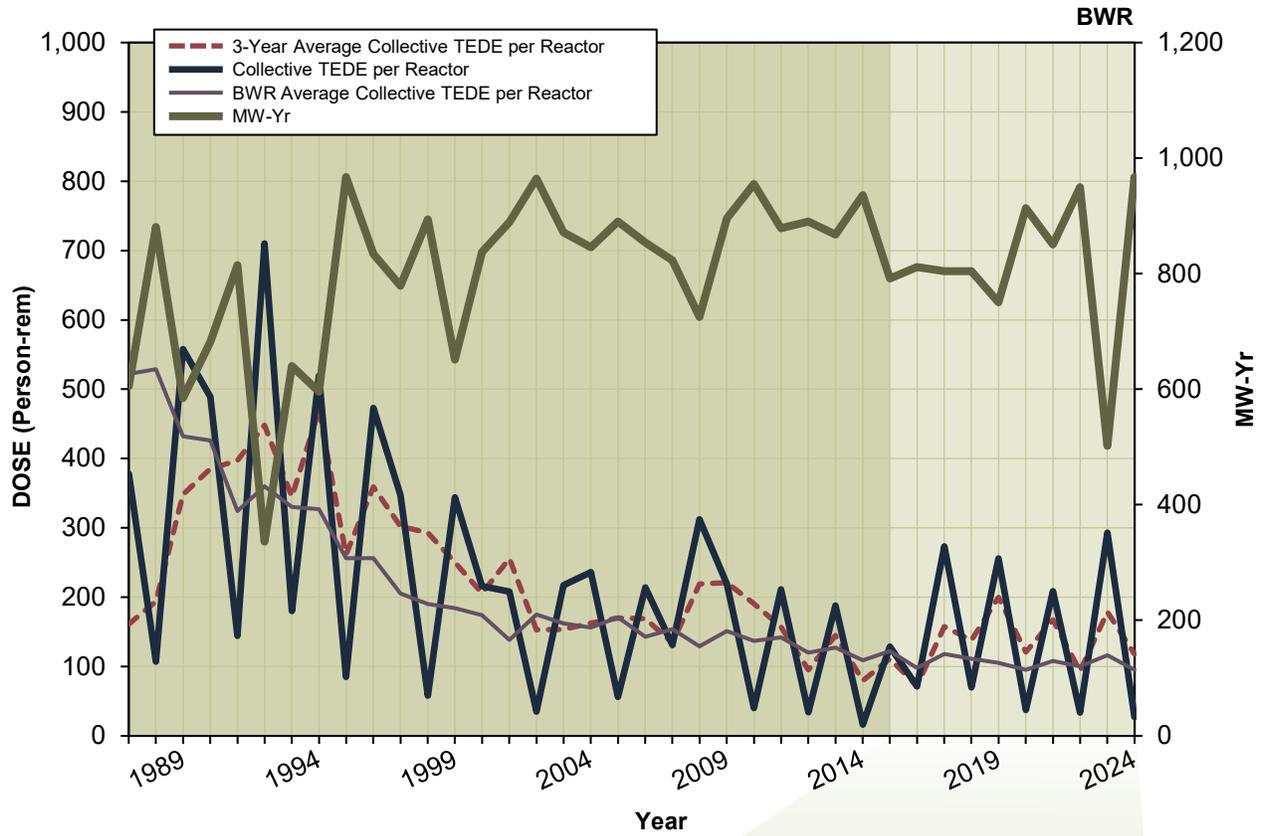


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	86.392	85.062	1,776.5
2016	78.150	71.304	1,787.1
2017	80.983	86.584	1,758.2
2018	79.658	81.086	1,766.7
2019	90.049	102.479	1,763.7
2020	91.492	90.912	1,793.7
2021	87.430	68.901	1,796.8
2022	91.647	115.129	1,726.3
2023	101.665	120.960	1,731.2
2024	127.886	147.566	1,771.4

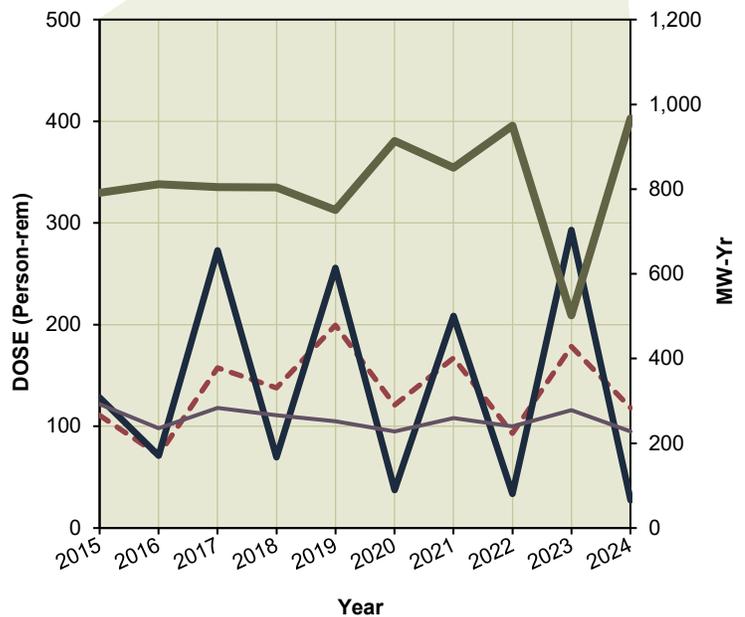


RIVER BEND 1

Dose Performance Trends

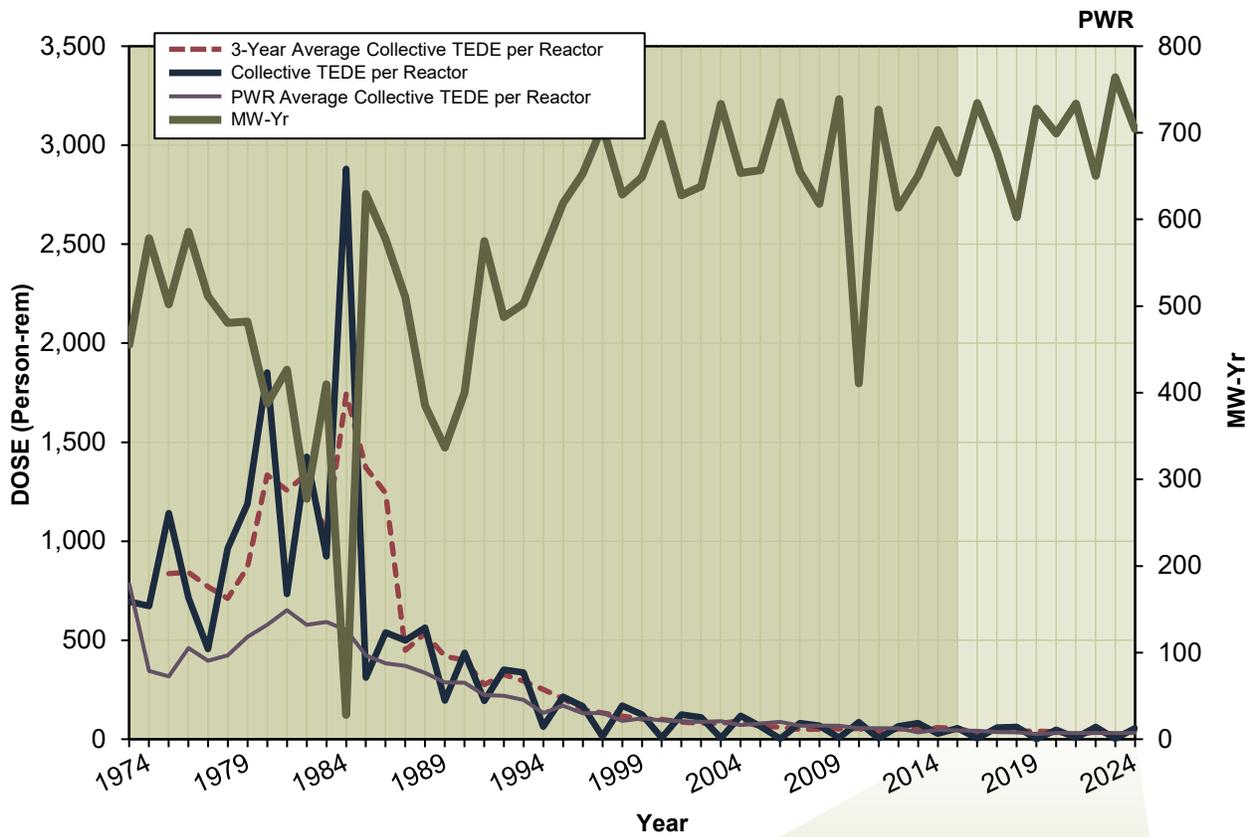


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	110.99	128.492	791.6
2016	71.924	71.142	811.5
2017	157.546	273.004	804.5
2018	137.909	69.580	804.3
2019	199.501	255.918	750.5
2020	120.973	37.420	913.6
2021	167.266	208.460	850.5
2022	93.181	33.664	950.0
2023	178.371	292.989	502.1
2024	117.968	27.251	967.1

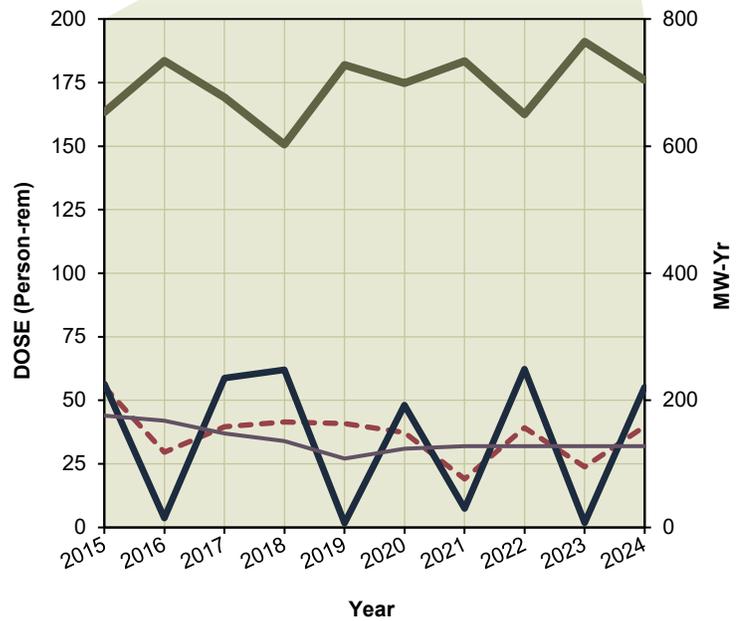


ROBINSON 2

Dose Performance Trends

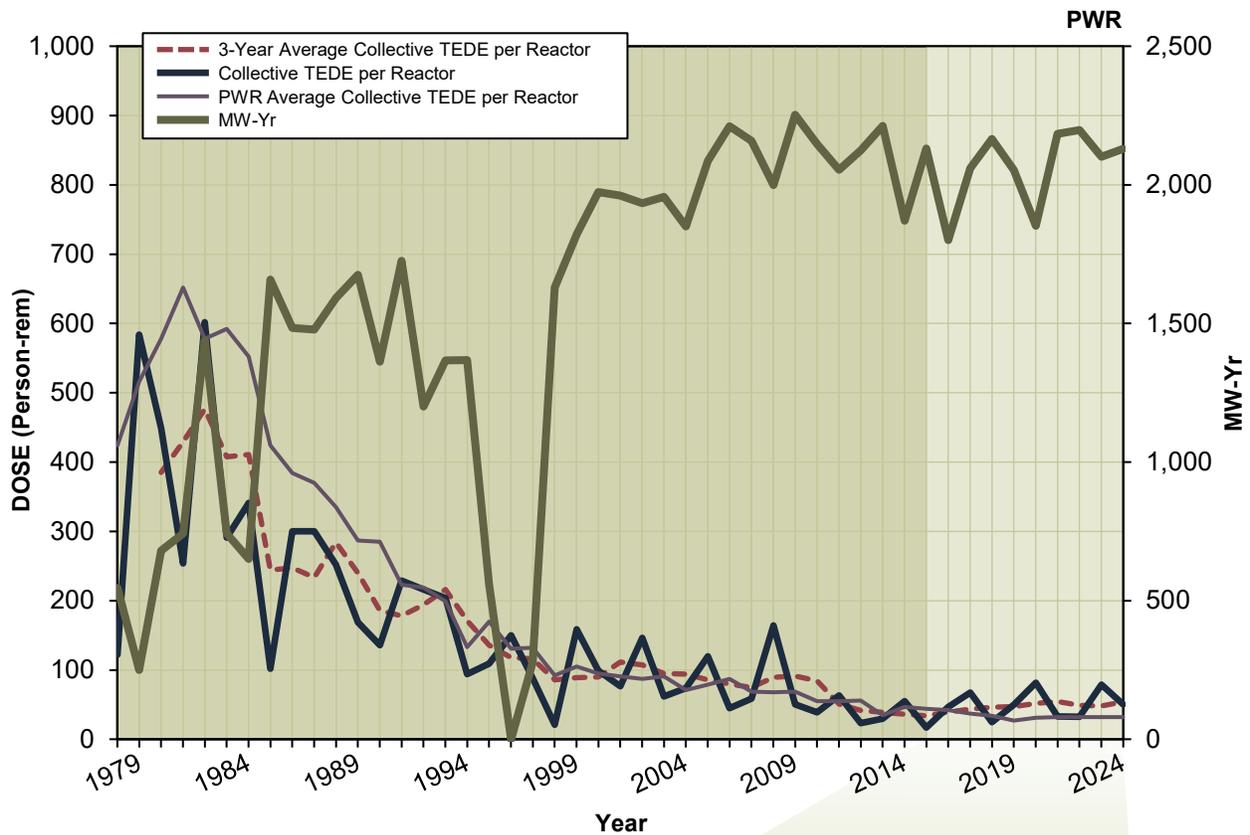


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	55.211	56.373	653.4
2016	29.581	3.704	734.3
2017	39.605	58.739	676.9
2018	41.480	61.998	602.5
2019	40.802	1.668	727.9
2020	37.262	48.121	699.2
2021	19.077	7.443	733.6
2022	39.249	62.183	650.2
2023	23.812	1.809	764.2
2024	39.711	55.140	704.2

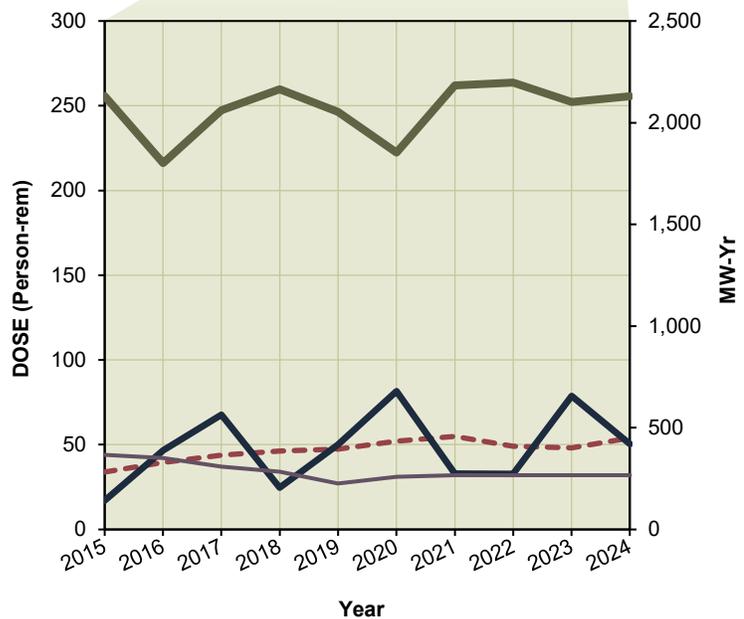


SALEM 1, 2

Dose Performance Trends

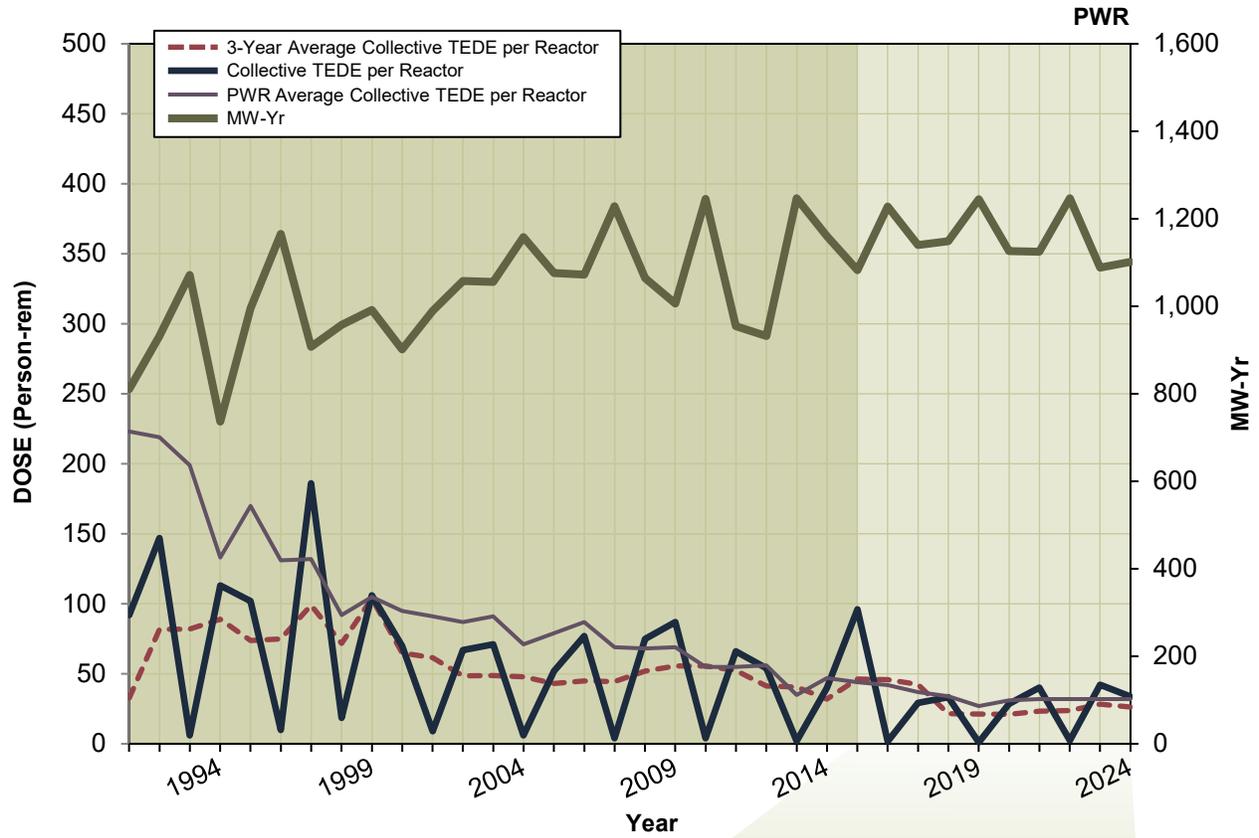


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	33.812	16.905	2,131.3
2016	39.450	46.628	1,800.9
2017	43.710	67.599	2,060.5
2018	46.256	24.543	2,165.1
2019	47.399	50.055	2,053.6
2020	52.018	81.456	1,852.8
2021	54.807	32.911	2,184.0
2022	49.004	32.646	2,198.1
2023	48.112	78.780	2,101.5
2024	53.932	50.372	2,130.0

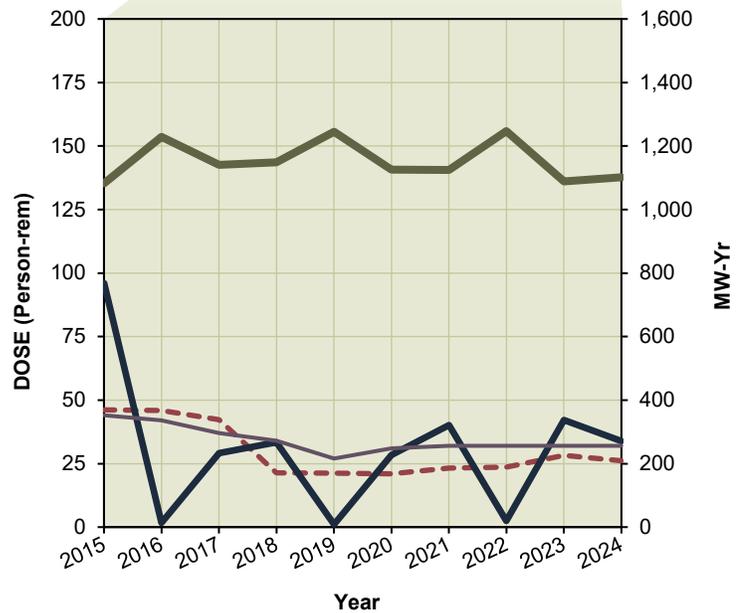


SEABROOK

Dose Performance Trends

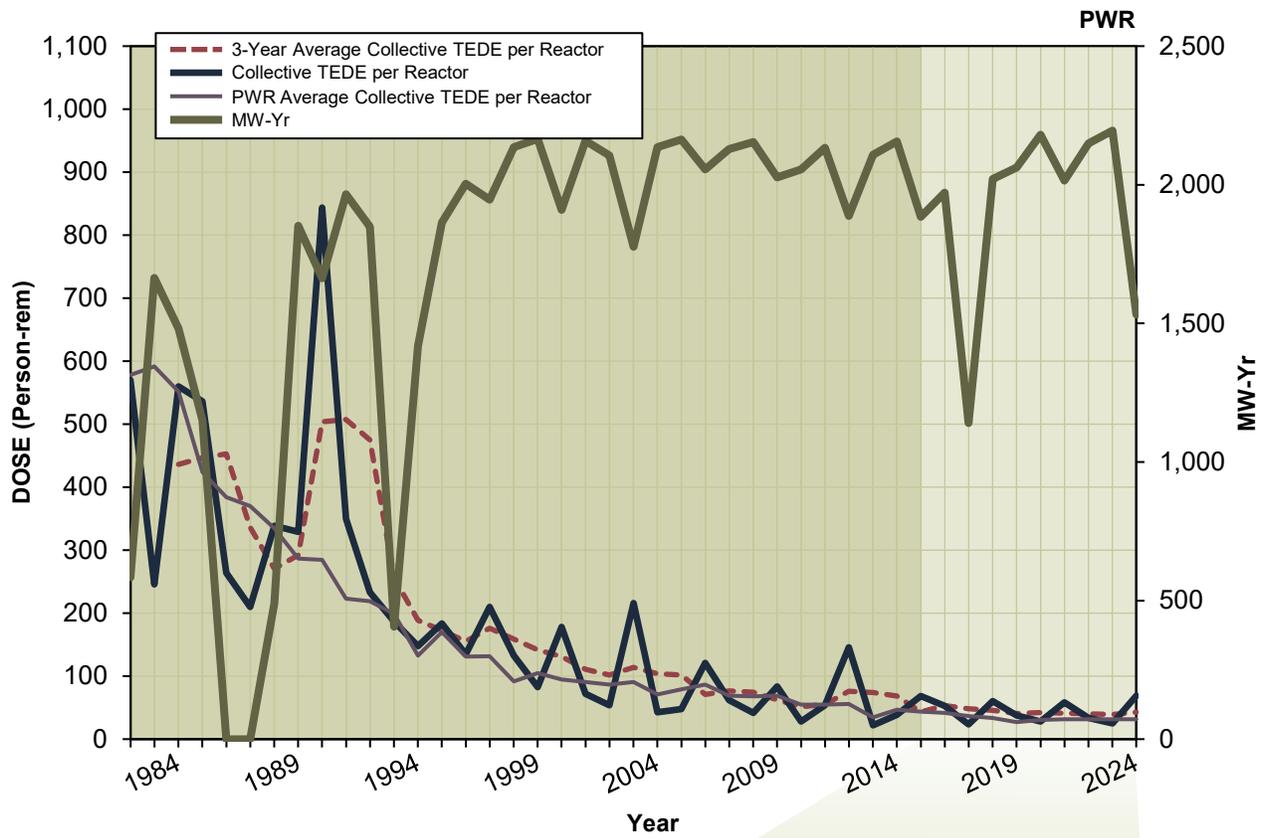


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	46.159	96.053	1,082.6
2016	45.903	1.672	1,228.4
2017	42.305	29.191	1,140.4
2018	21.427	33.418	1,148.5
2019	21.231	1.084	1,245.0
2020	20.989	28.464	1,126.1
2021	23.223	40.122	1,125.1
2022	23.692	2.490	1,246.7
2023	28.243	42.180	1,088.4
2024	26.161	33.874	1,101.6

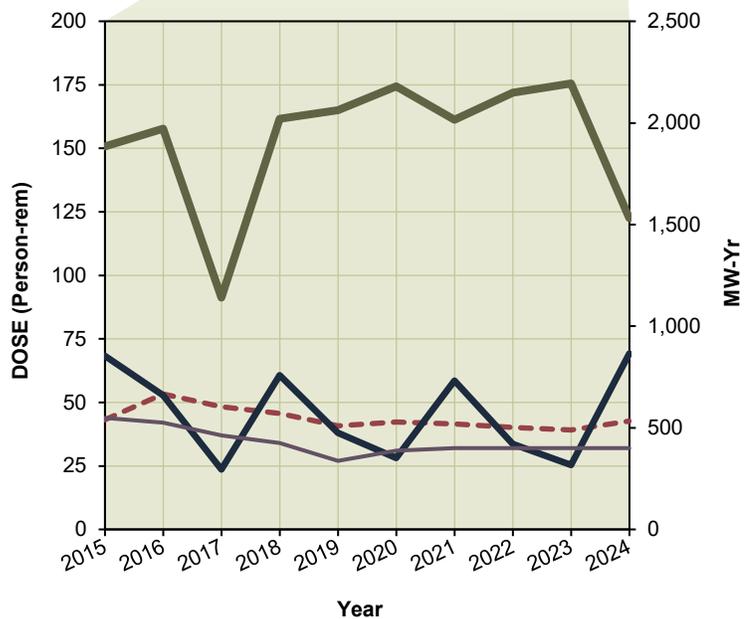


SEQUOYAH 1, 2

Dose Performance Trends

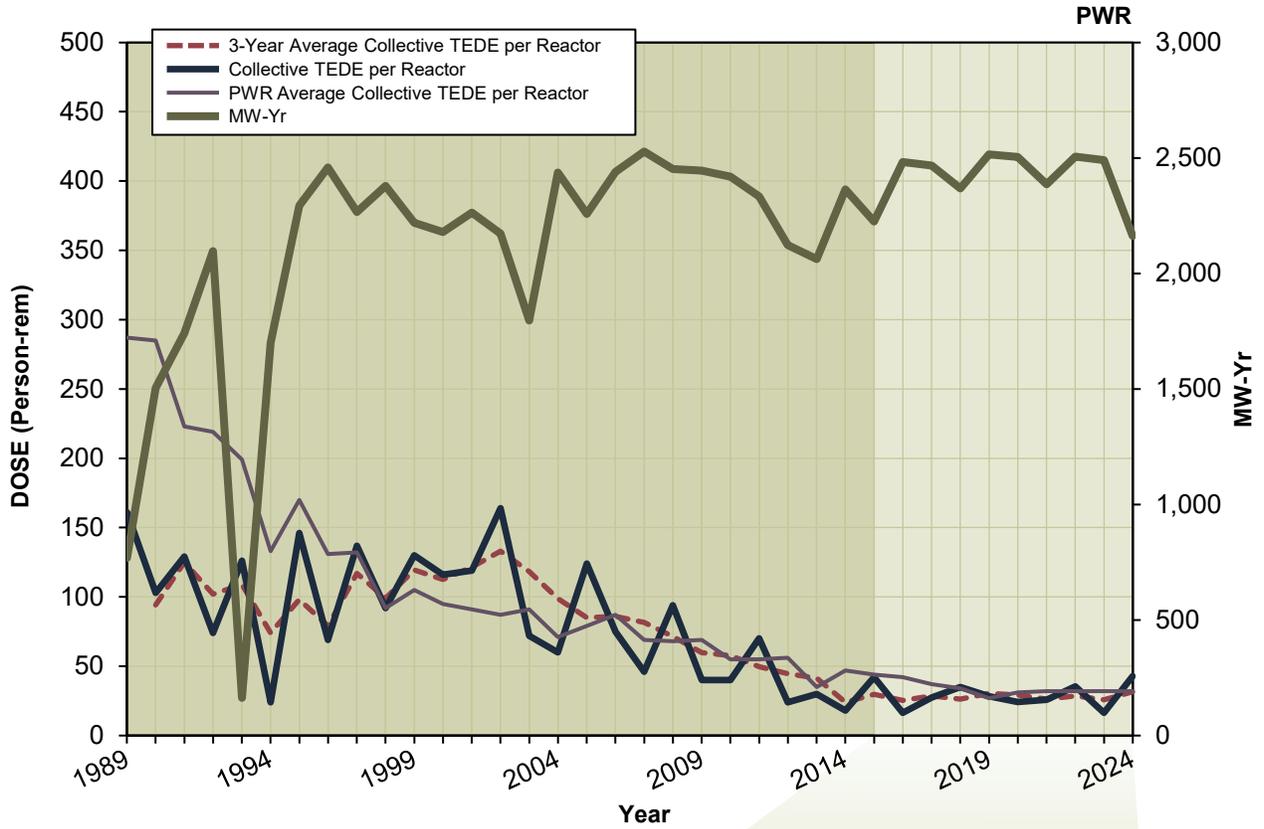


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	43.148	68.413	1,884.9
2016	53.360	52.882	1,971.4
2017	48.298	23.600	1,140.4
2018	45.732	60.713	2,021.0
2019	40.785	38.043	2,062.2
2020	42.299	28.141	2,180.3
2021	41.609	58.644	2,015.4
2022	40.135	33.622	2,149.2
2023	39.224	25.410	2,194.9
2024	42.739	69.191	1,532.6

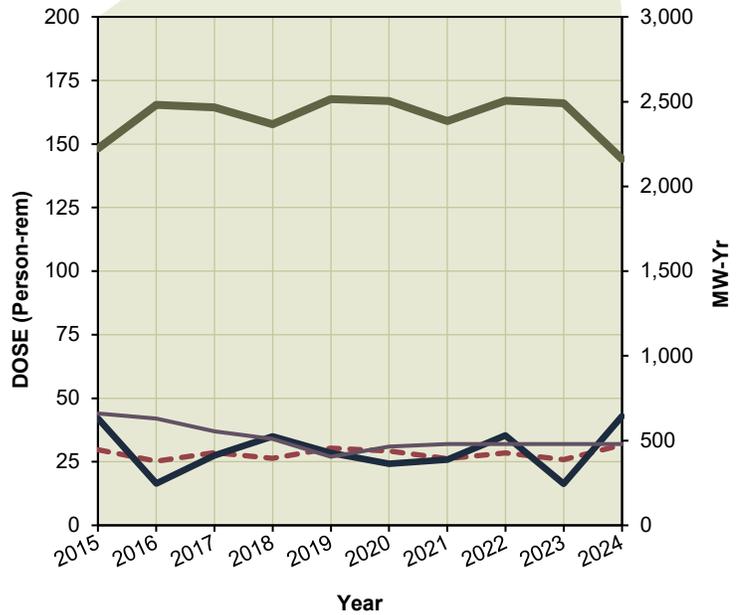


SOUTH TEXAS 1, 2

Dose Performance Trends

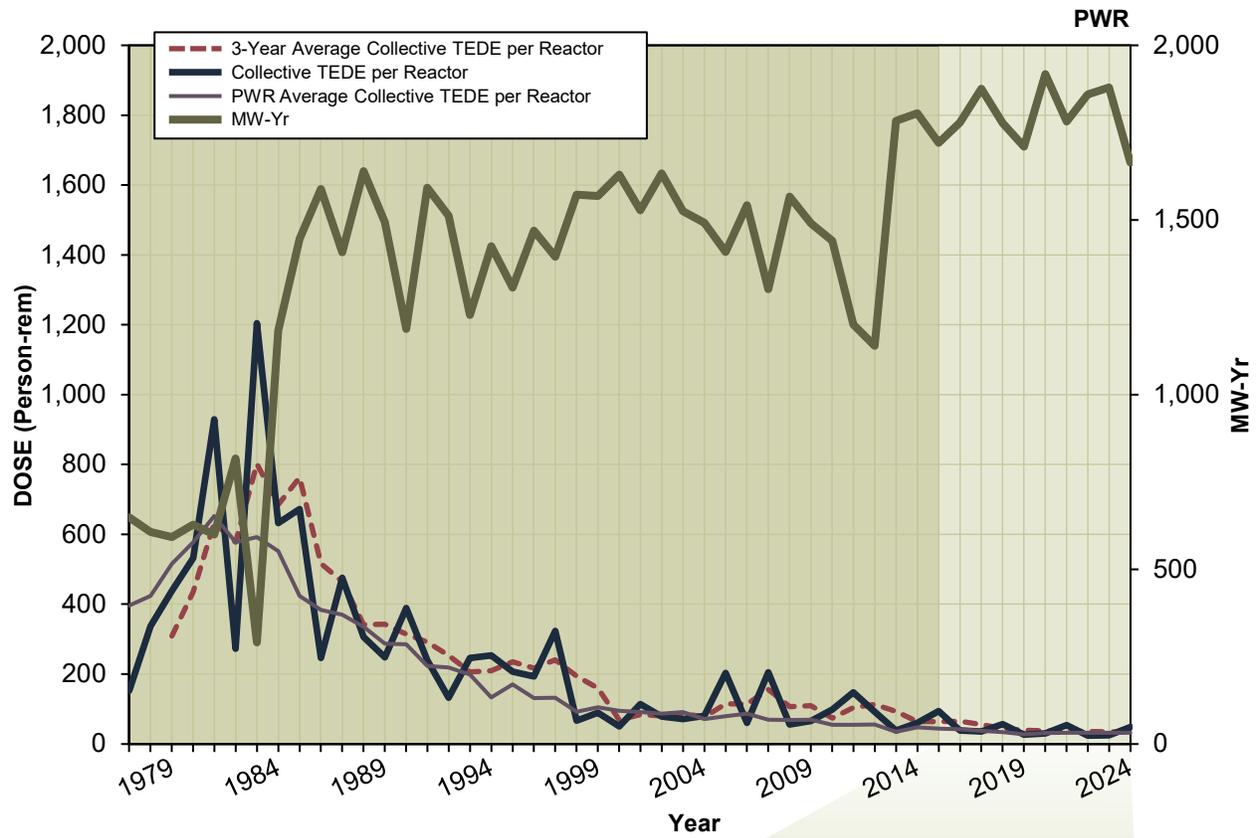


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	29.718	41.997	2,224.5
2016	25.234	16.419	2,481.9
2017	28.643	27.513	2,467.1
2018	26.319	35.025	2,367.7
2019	30.327	28.444	2,515.3
2020	29.233	24.229	2,504.0
2021	26.172	25.843	2,386.5
2022	28.494	35.409	2,506.1
2023	25.865	16.340	2,490.4
2024	31.552	42.905	2,163.2

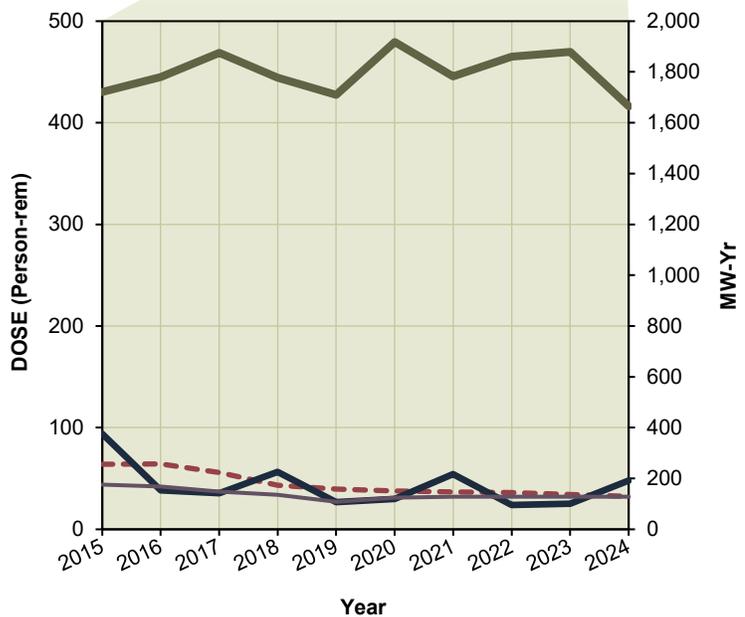


ST. LUCIE 1, 2

Dose Performance Trends

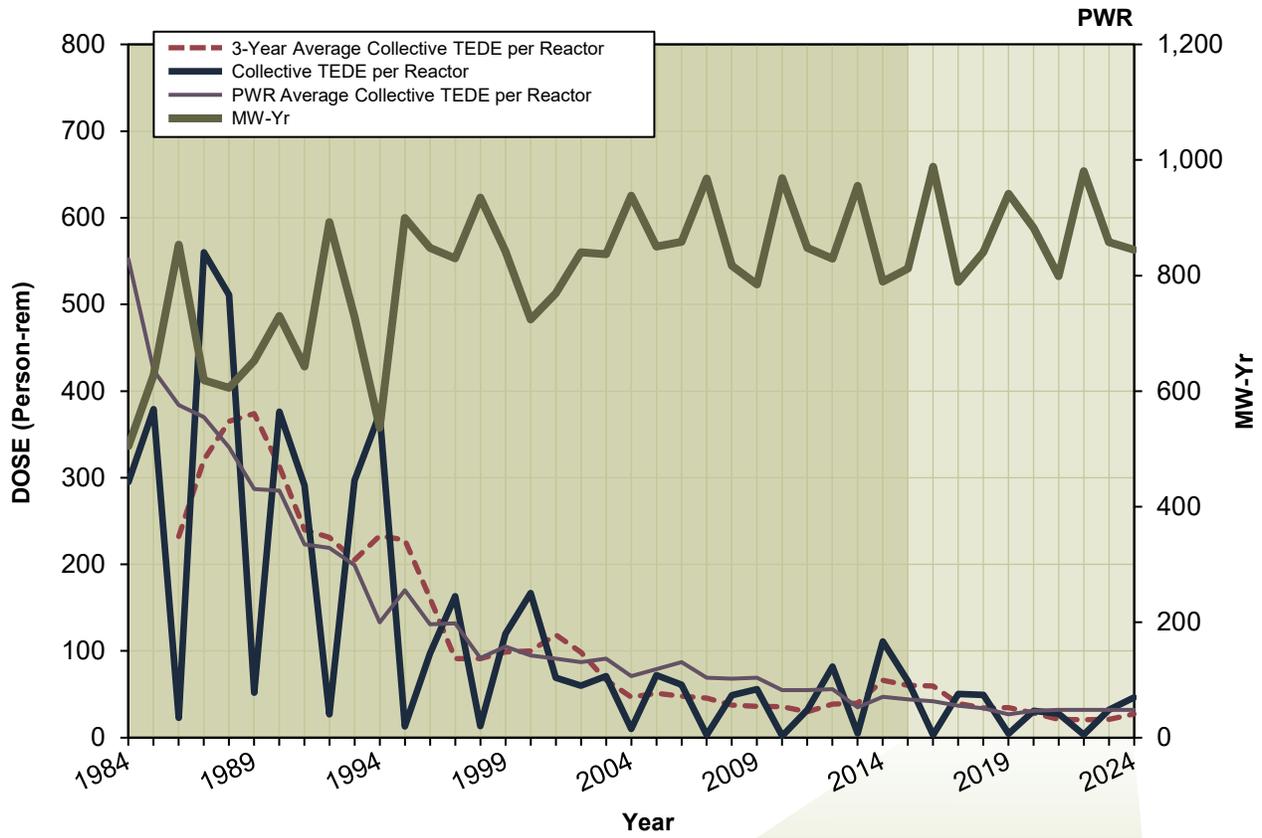


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	64.018	94.044	1,720.9
2016	64.301	38.314	1,779.5
2017	55.973	35.562	1,875.3
2018	43.445	56.460	1,777.1
2019	39.563	26.668	1,709.5
2020	37.677	29.904	1,917.9
2021	36.922	54.193	1,782.0
2022	36.014	23.946	1,859.6
2023	34.415	25.110	1,879.2
2024	32.405	48.163	1,664.2

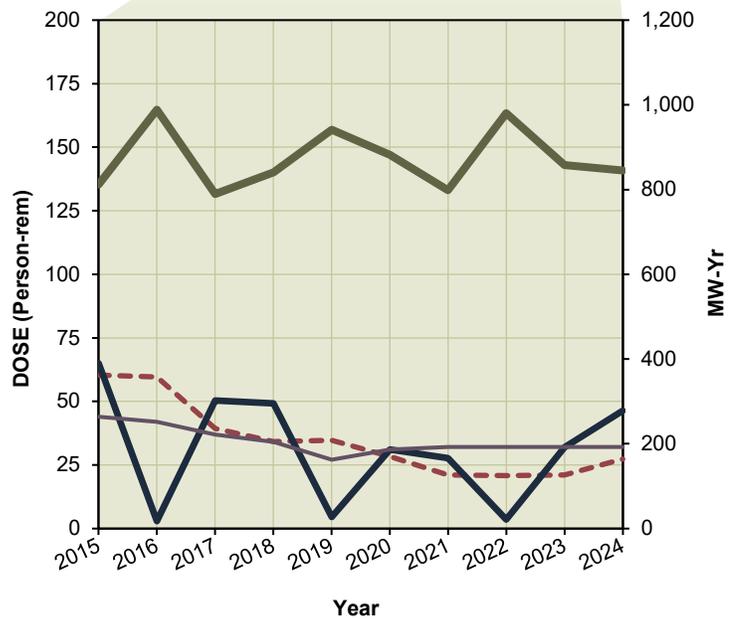


SUMMER 1

Dose Performance Trends

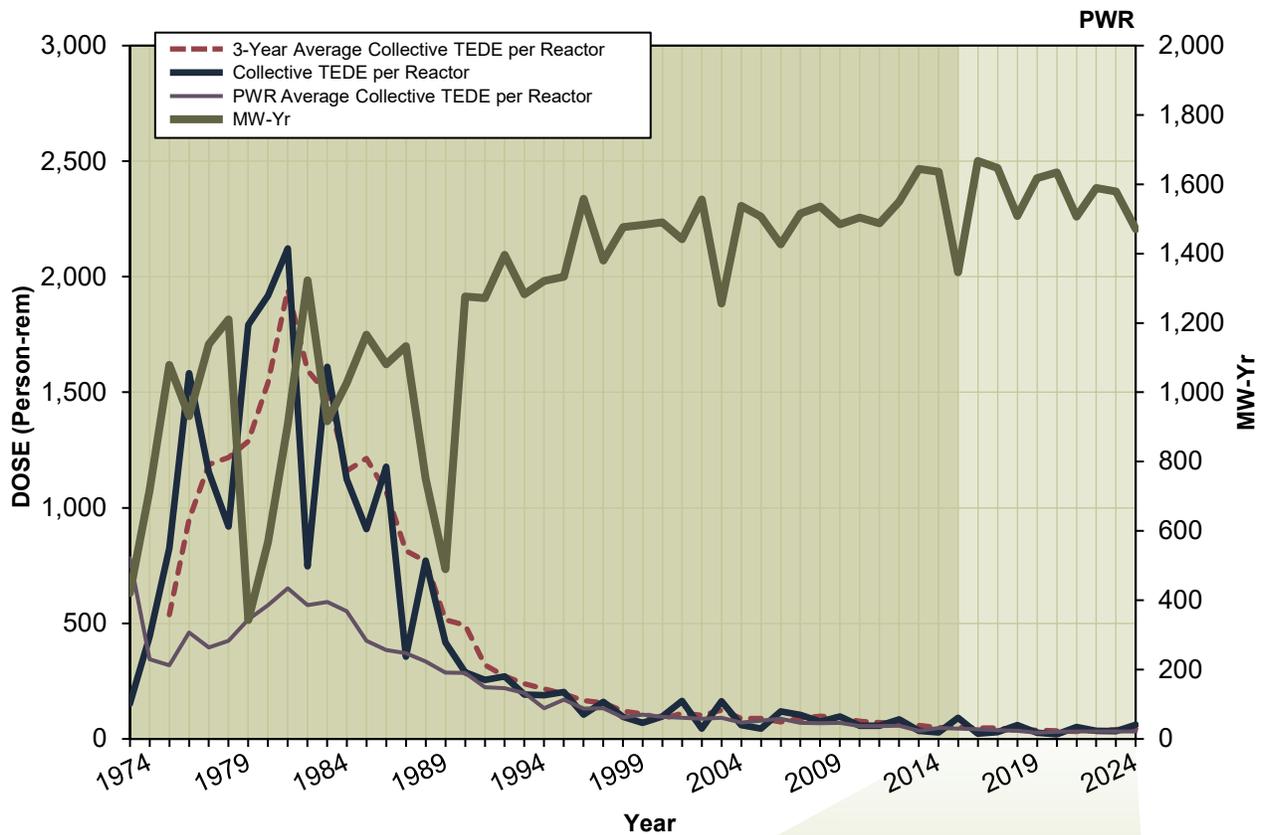


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	60.333	64.958	812.3
2016	59.583	2.862	988.4
2017	39.376	50.308	789.2
2018	34.140	49.251	840.9
2019	34.705	4.557	941.6
2020	28.268	30.997	882.1
2021	21.084	27.699	798.8
2022	20.735	3.510	980.7
2023	21.038	31.904	858.1
2024	27.249	46.334	844.9

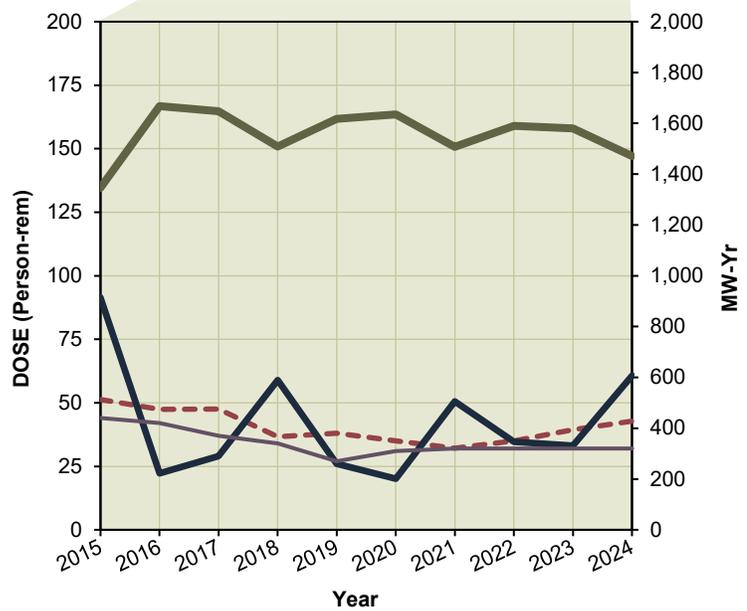


SURRY 1, 2

Dose Performance Trends

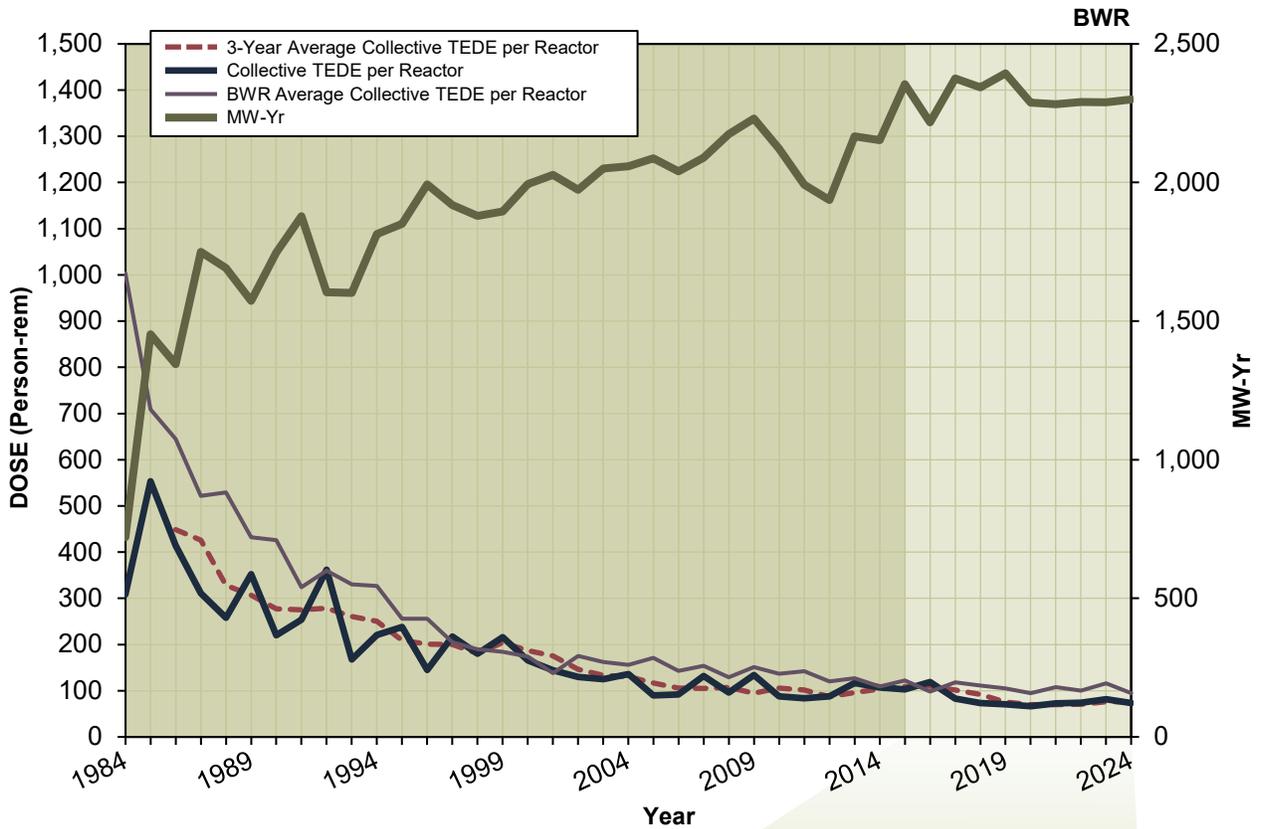


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	51.333	91.490	1,345.9
2016	47.484	22.216	1,667.9
2017	47.571	29.006	1,647.0
2018	36.714	58.919	1,509.0
2019	37.992	26.051	1,617.9
2020	35.014	20.072	1,634.7
2021	32.207	50.499	1,506.8
2022	35.056	34.597	1,589.8
2023	39.418	33.160	1,579.3
2024	42.807	60.664	1,471.0

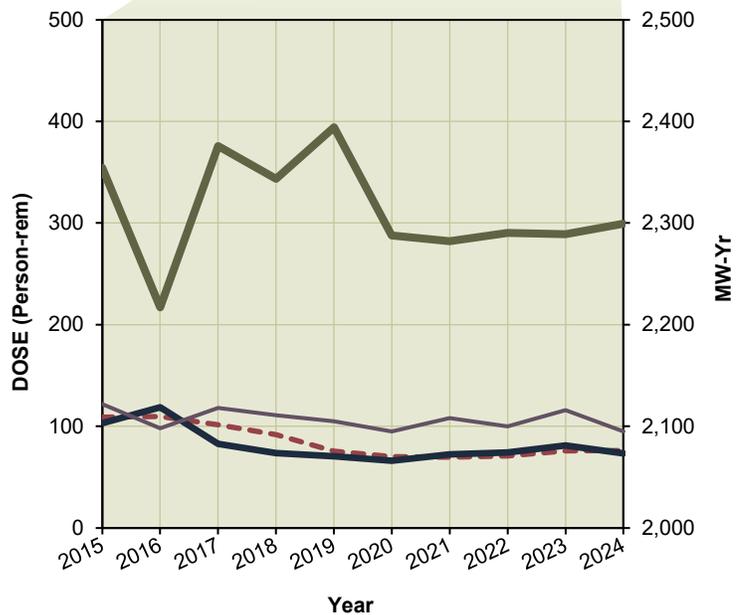


SUSQUEHANNA 1, 2

Dose Performance Trends

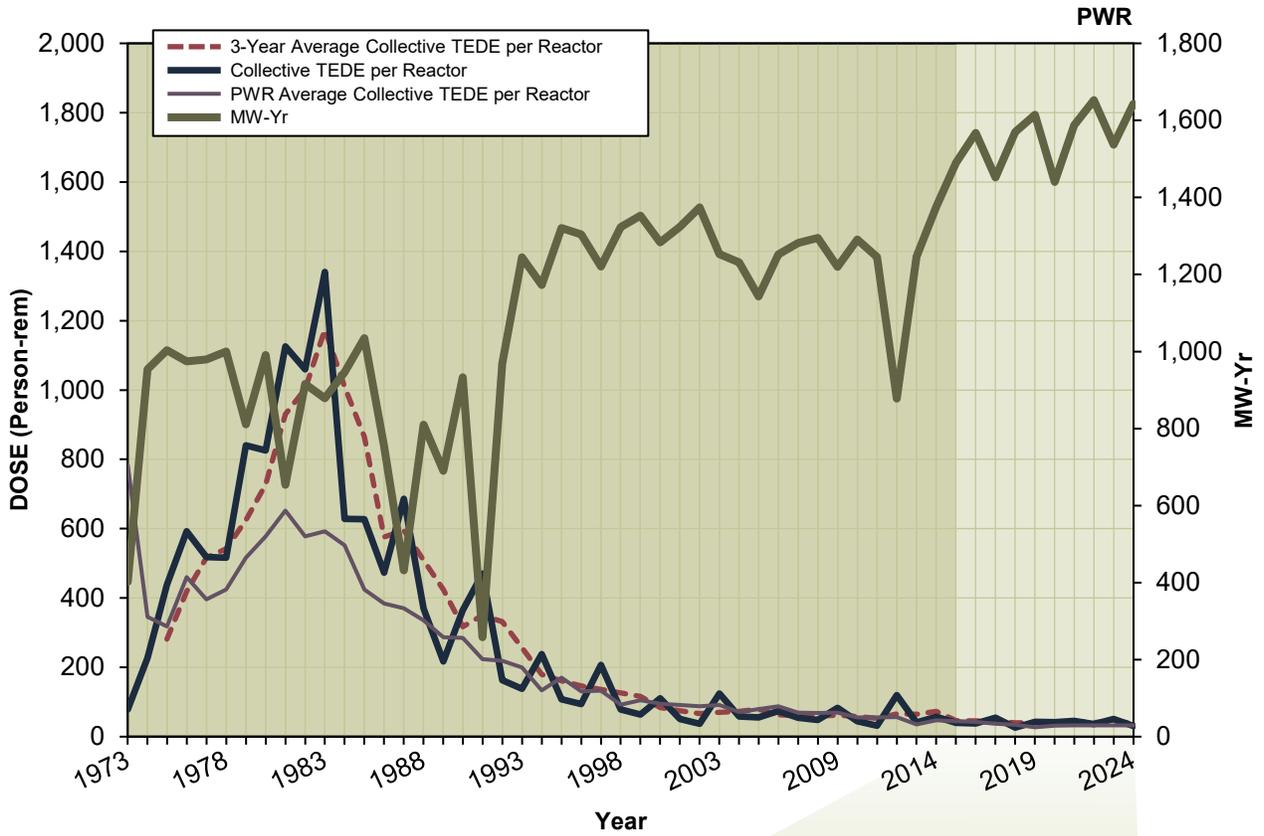


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	109.026	103.077	2,354.3
2016	109.660	118.668	2,217.2
2017	101.493	82.734	2,375.6
2018	91.689	73.664	2,343.4
2019	75.646	70.539	2,394.1
2020	70.125	66.171	2,287.7
2021	69.701	72.394	2,282.3
2022	70.930	74.226	2,290.3
2023	75.983	81.330	2,288.9
2024	76.341	73.469	2,299.4

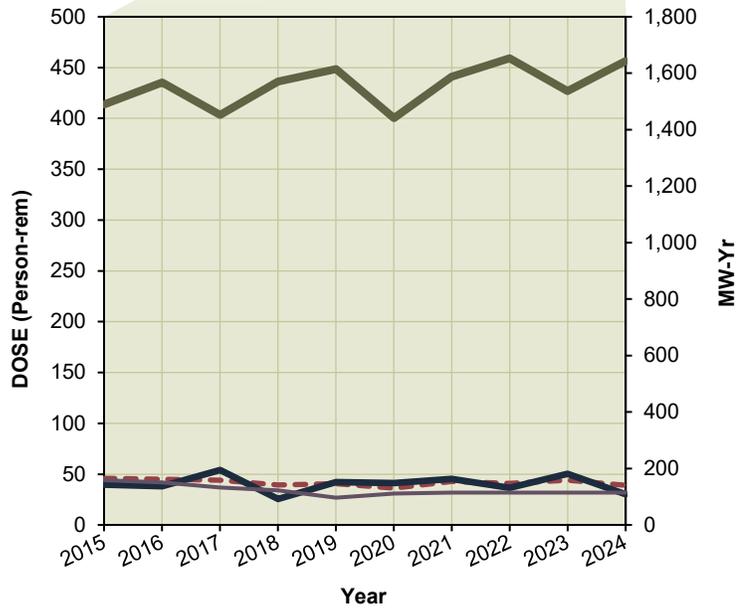


TURKEY POINT 3, 4

Dose Performance Trends

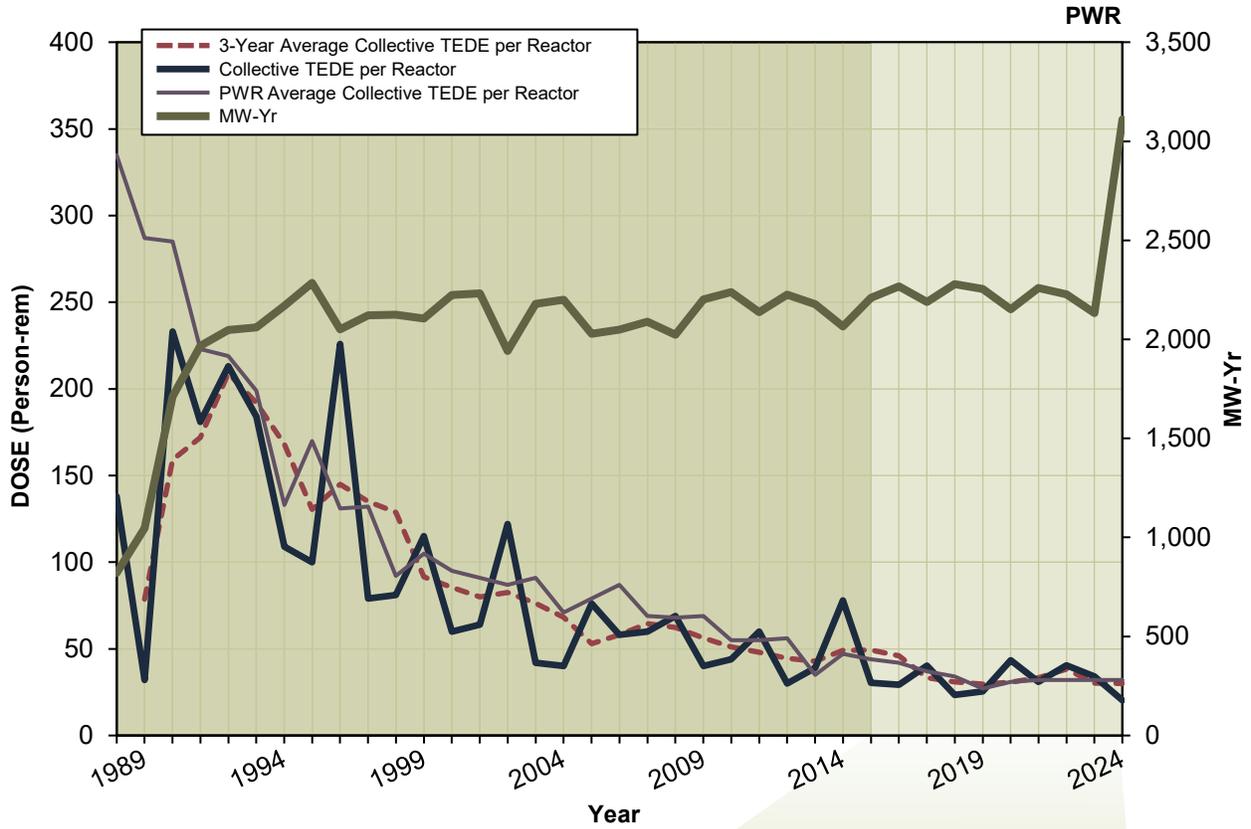


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	45.944	39.562	1,489.7
2016	44.953	38.135	1,567.7
2017	43.932	54.100	1,451.9
2018	39.260	25.544	1,570.2
2019	40.650	42.305	1,614.4
2020	36.395	41.336	1,440.5
2021	42.956	45.227	1,587.3
2022	40.994	36.420	1,652.8
2023	44.038	50.470	1,537.2
2024	39.036	30.221	1,643.1

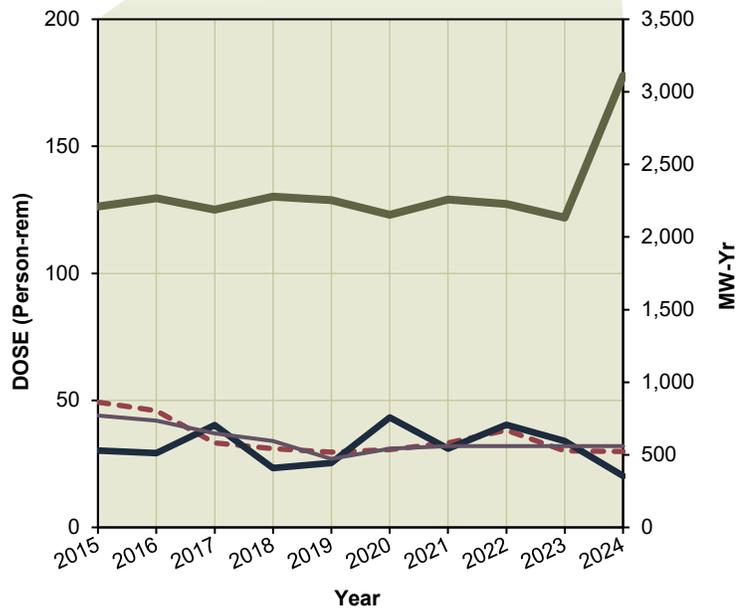


VOGTLE 1, 2, 3*

Dose Performance Trends



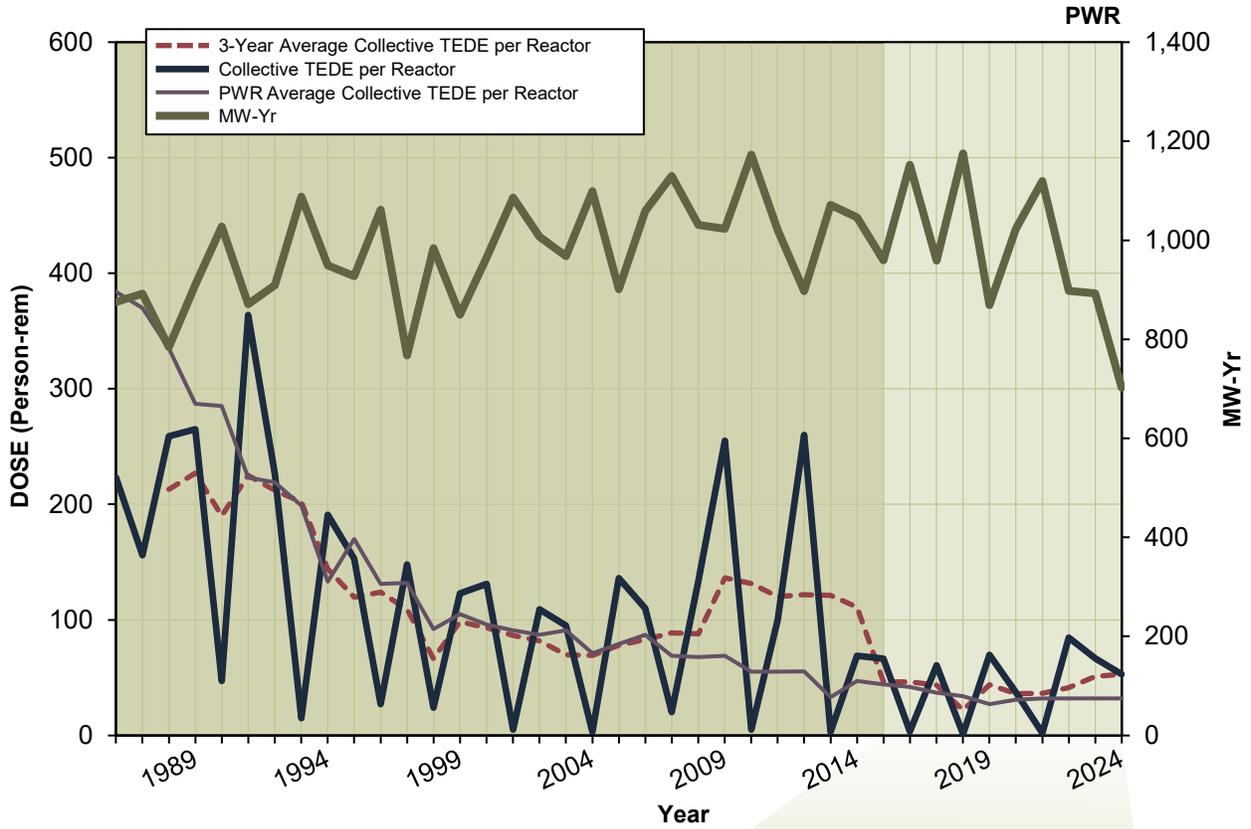
Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	49.268	30.283	2,210.0
2016	45.964	29.236	2,267.1
2017	33.266	40.278	2,189.0
2018	30.981	23.428	2,278.4
2019	29.680	25.334	2,255.0
2020	30.695	43.323	2,152.7
2021	33.211	30.976	2,258.8
2022	38.249	40.447	2,227.8
2023	30.130	34.030	2,132.5
2024	29.947	20.225	3,110.6



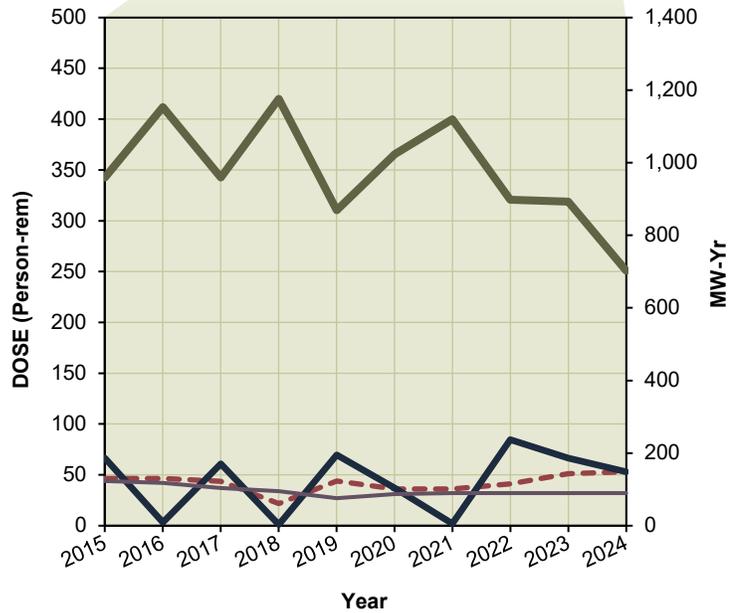
* Vogtle Unit 4 became operational in April 2024. It is not included in the count of operating reactors for 2024 because it did not complete a full year of operation, but the dose for Unit 4 is included in the total dose for Units 1, 2, and 3.

WATERFORD 3

Dose Performance Trends

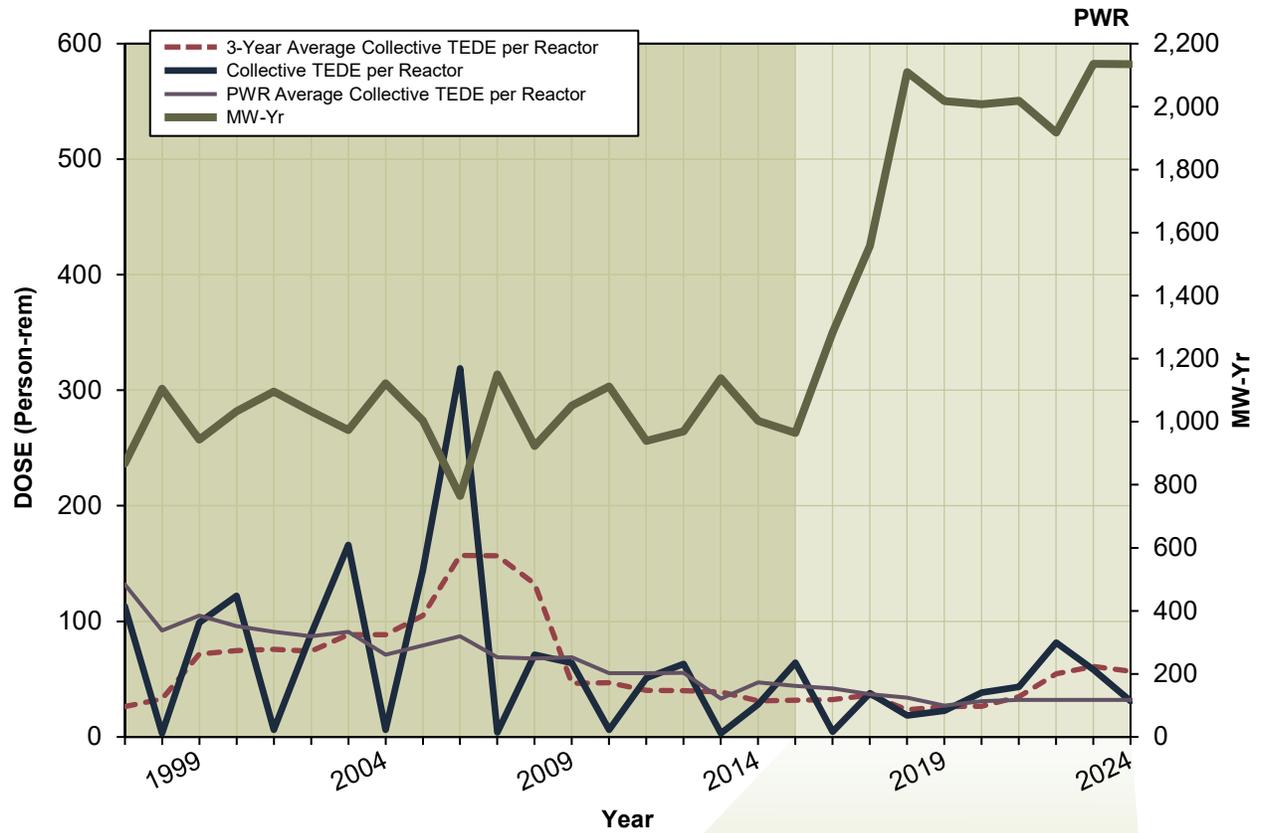


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	46.330	66.399	959.5
2016	46.418	3.392	1,152.5
2017	43.506	60.728	959.1
2018	21.750	1.130	1,175.6
2019	43.879	69.780	869.0
2020	36.000	37.090	1,023.0
2021	36.290	1.999	1,119.5
2022	41.204	84.524	897.6
2023	51.042	66.602	892.7
2024	52.900	52.900	702.5

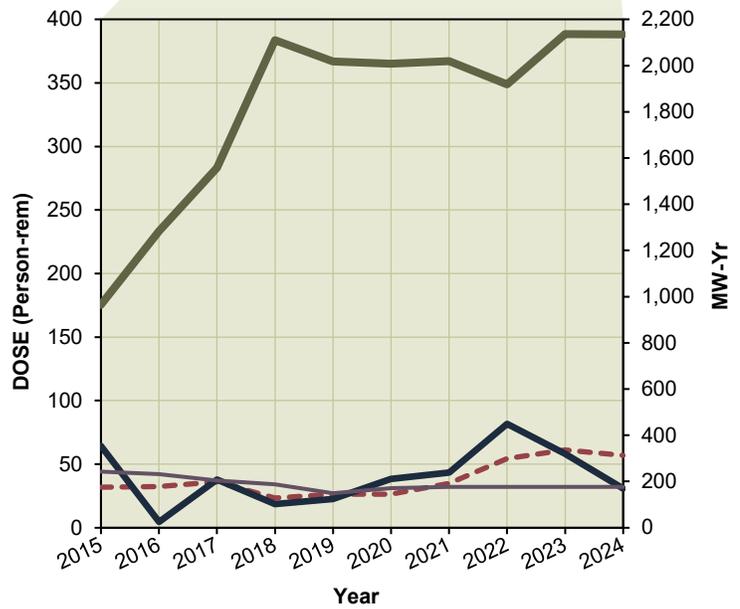


WATTS BAR 1, 2

Dose Performance Trends

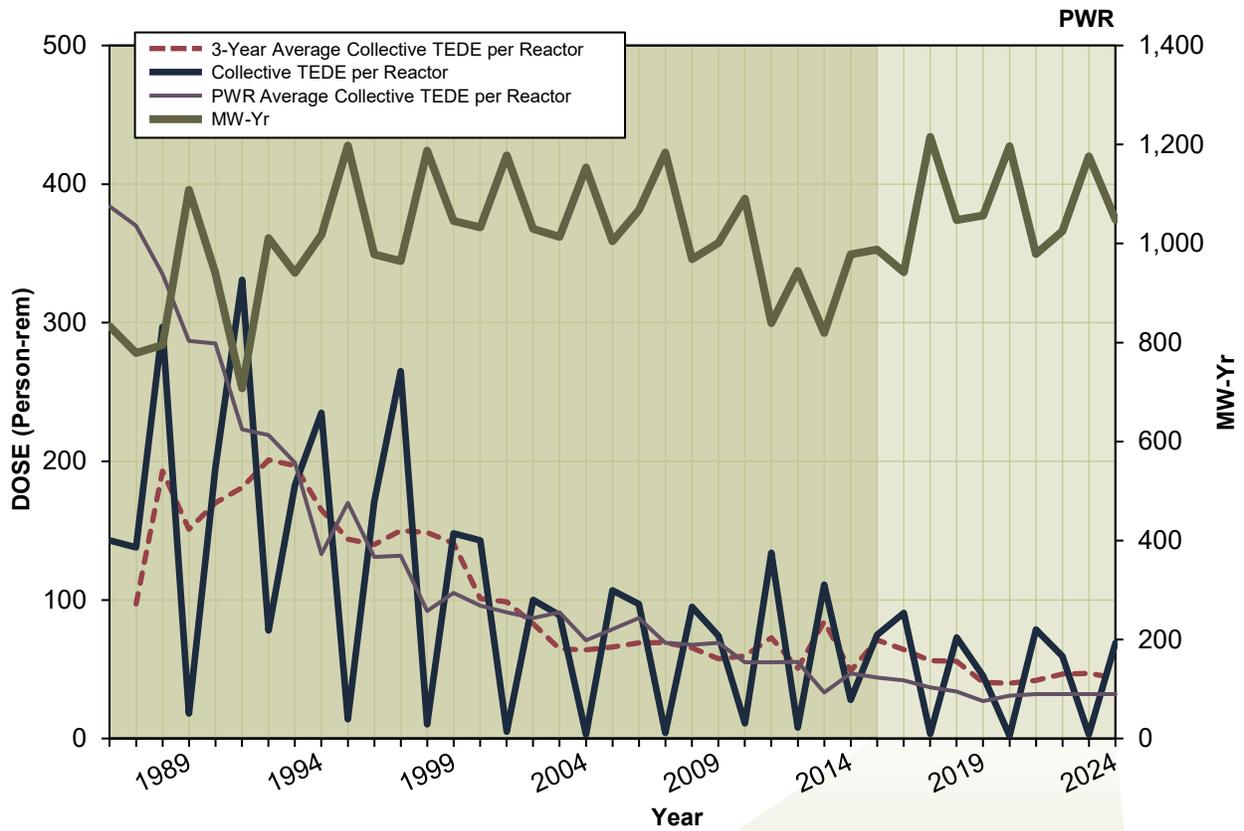


Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	31.735	64.320	964.5
2016	32.359	4.489	1,284.1
2017	36.120	37.836	1,558.2
2018	23.416	18.460	2,110.1
2019	26.268	22.509	2,018.4
2020	26.460	38.410	2,007.9
2021	34.748	43.325	2,018.8
2022	54.472	81.681	1,918.2
2023	61.029	58.080	2,135.8
2024	56.835	30.742	2,135.6

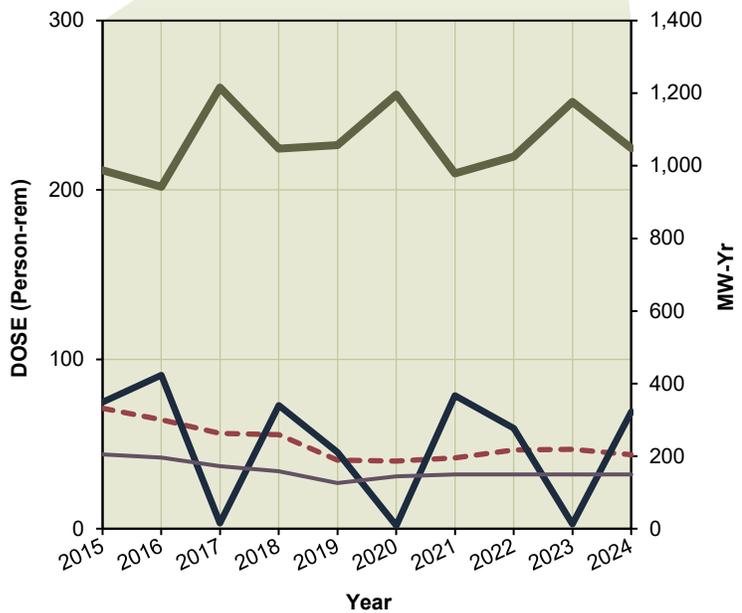


WOLF CREEK 1

Dose Performance Trends



Year	3-Year Average Collective TEDE per Reactor	Collective TEDE per Reactor	MW-Yr
2015	71.187	74.804	987.9
2016	64.312	90.631	942.0
2017	56.291	3.437	1,215.5
2018	55.650	72.882	1,047.5
2019	40.501	45.183	1,056.6
2020	39.996	1.924	1,196.6
2021	41.919	78.650	978.9
2022	46.634	59.328	1,025.3
2023	46.954	2.884	1,176.0
2024	43.746	69.025	1,048.3



APPENDIX E

PLANTS NO LONGER IN OPERATION

2024

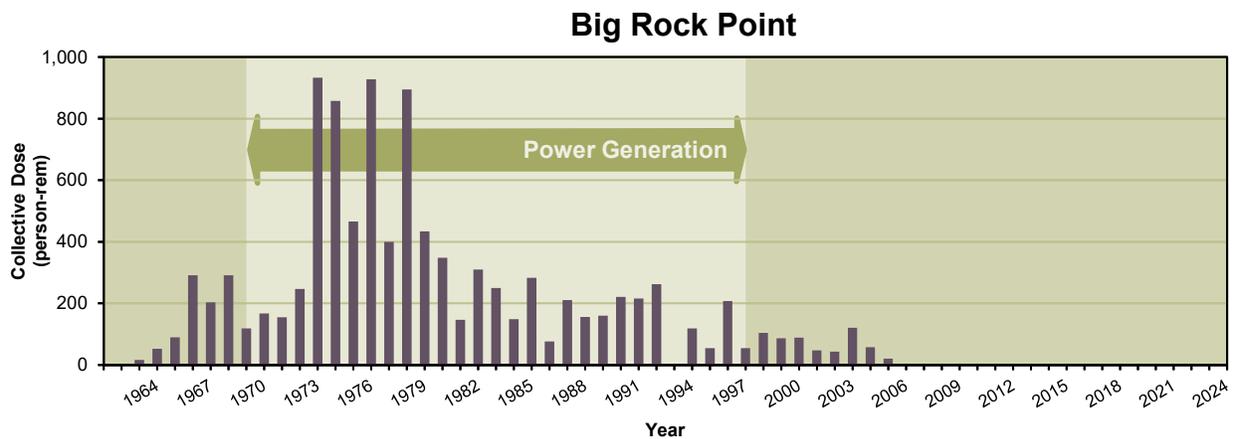
Information in this appendix was obtained from References 20, 22, and 23.

PLANTS NO LONGER IN OPERATION 2024

Big Rock Point

Big Rock Point (BRP) was a boiling-water reactor rated at 75 megawatts electric (MWe), designed by General Electric Company and owned by Consumers Energy Company. BRP was permanently shut down on August 29, 1997, and fuel was transferred to the spent fuel pool (SFP) by September 20, 1997. All fuel was transferred to the independent spent fuel storage installation (ISFSI) by March 2003. The site completed decommissioning to a “green field” status in 2007. BRP will retain its license under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, “Domestic Licensing of Production and Utilization Facilities,” until the fuel is removed from the ISFSI.

After fuel is removed from the site to a U.S. Department of Energy (DOE) facility, the ISFSI will be decommissioned and the 10 CFR Part 50 license terminated.



Crystal River 3

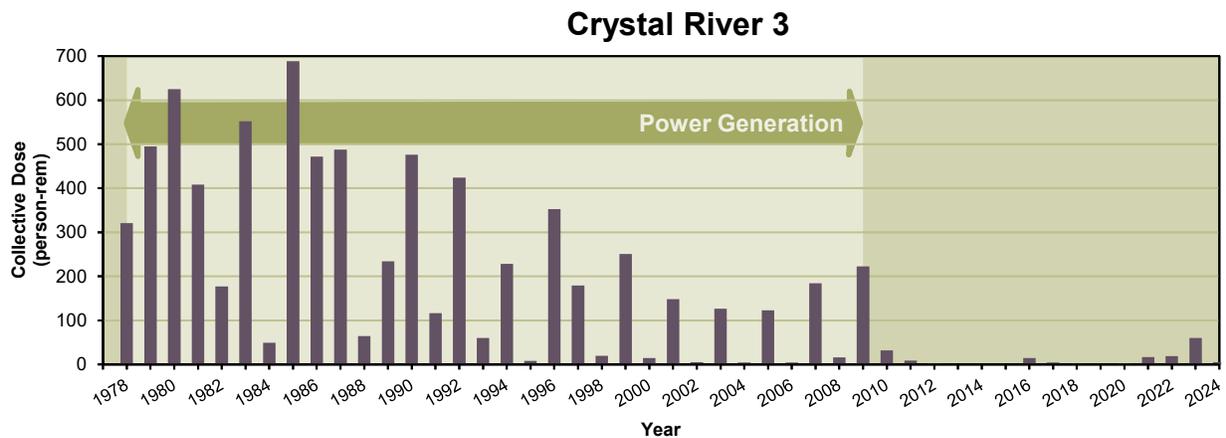
Crystal River Nuclear Generating Plant (Crystal River), Unit 3, was a 2,609 megawatt-thermal (MWt) pressurized-water reactor that was licensed to operate from December 1976 to February 20, 2013. During a refueling outage that started on September 26, 2009, Crystal River Unit 3 replaced the steam generators (SGs), requiring a large hole to be made in the containment building structure. In the attempt to restore the containment structure following the SG replacement, damage to the containment structure was observed. The licensee attempted to repair the damage but later decided to decommission the reactor.

The licensee submitted the original Crystal River Unit 3 post-shutdown decommissioning activities report (PSDAR), including the site-specific cost estimate, on December 2, 2013, describing a safe storage (SAFSTOR) strategy for decommissioning the plant. The plant began construction of an ISFSI in 2016 and began loading fuel in summer 2017. Fuel transfer to the ISFSI was completed in January 2018.

The U.S. Nuclear Regulatory Commission (NRC) approved the transfer of the Crystal River Unit 3 license from Duke Energy Florida, LLC, to Accelerated Decommissioning Partners-Crystal River Unit 3, LLC (ADP-CR3), on April 10, 2020, and issued the associated conforming amendments on October 1, 2020.

To support the license transfer, ADP-CR3 submitted a revised PSDAR to the NRC on June 26, 2019. On December 12, 2022, ADP-CR3 submitted a license amendment request (LAR) to add a license condition to include the requirements of a license termination plan (LTP) for ADP-CR3. The NRC staff accepted the LAR on July 25, 2023, but in 2024 the request was withdrawn, citing the need for additional detail.

The estimated date for closure is 2037.



Dresden Unit 1

Dresden Generating Station, Unit 1, produced power commercially from August 1, 1960, to October 31, 1978, and is now designated a Nuclear Historic Landmark by the American Nuclear Society. Dresden Unit 1 was shut down on October 31, 1978, and is currently in SAFSTOR. The NRC approved the decommissioning plan (DP) in September 1993.

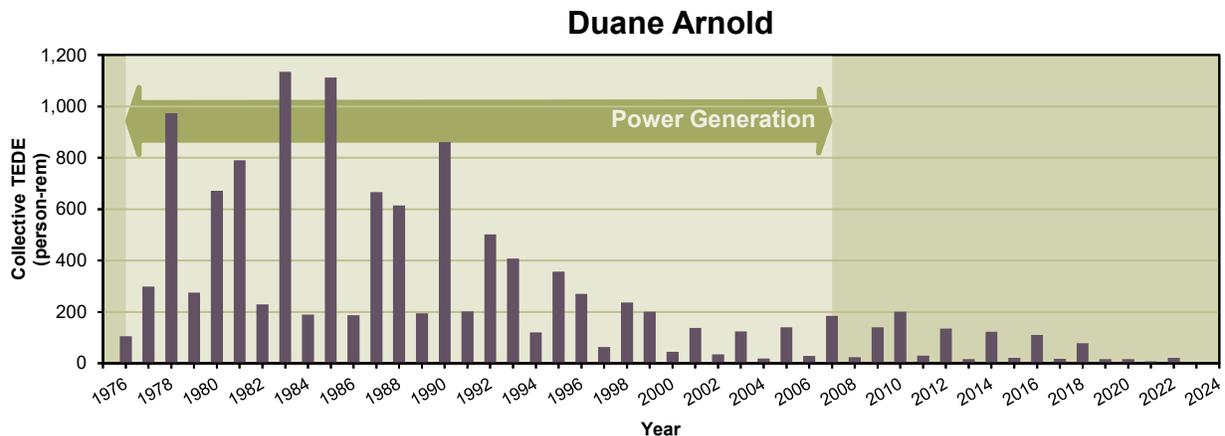
During the SAFSTOR period, through 2027, the Dresden Unit 1 facility will be subject to periodic inspection and monitoring. The licensee plans that the decontamination and dismantlement (DECON) of Dresden Unit 1 will take place from 2029 through 2031. A 4-year site restoration delay will follow the major DECON of Dresden Unit 1 to allow for the DECON of Units 2 and 3, with completion of these activities tentatively planned for 2035. Site restoration will be conducted in 2035 and 2036, concluding with a final site survey in late 2036. The licensee will monitor the Dresden ISFSI complex with site security and periodic inspections until final transfer of the spent fuel to the DOE. Final decommissioning activities are currently required to be completed by October 31, 2038.

Duane Arnold

The Duane Arnold Energy Center (DAEC) was a 1,912 MWt boiling-water reactor that began operation in February 1975 and is owned and operated by NextEra Energy Duane Arnold, LLC (NextEra). DAEC had stated its intention to permanently cease power operations in

October 2020, but the reactor permanently shut down on August 10, 2020, when a derecho (a land-based hurricane) damaged non-safety-related portions of the plant, including the cooling towers.

By letter dated October 12, 2020, NextEra certified that all fuel had been removed from the reactor. NextEra submitted the DAEC PSDAR to the NRC on April 2, 2020. In the PSDAR, NextEra stated its intention to move all the spent nuclear fuel into dry cask storage and put the plant into SAFSTOR, which was completed in April 2022. Full decommissioning of the facility is expected to start in 2075.



Fermi Unit 1

The Enrico Fermi Atomic Power Plant, Unit 1, was a fast breeder reactor power plant cooled by sodium and operated at essentially atmospheric pressure. The reactor plant was designed for a maximum capacity of 430 megawatts (MW); however, the maximum reactor power was 200 MW. The primary system was filled with sodium in December 1960, and criticality was achieved in August 1963. The reactor was tested at low power in the first few years of operation.

Power ascension testing above 1 MW began in December 1965, immediately following receipt of the high-power operating license. In October 1966, during power ascension, a zirconium plate at the bottom of the reactor vessel became loose and blocked sodium coolant flow to some fuel subassemblies. Two subassemblies started to melt. Radiation monitors alarmed, and the operators manually shut down the reactor. No abnormal releases to the environment occurred. Three years and nine months later, the cause had been determined, cleanup was completed, and fuel was replaced; Fermi Unit 1 was restarted. In 1972, the core was approaching the burnup limit. In November 1972, the Power Reactor Development Company decided to decommission Fermi Unit 1.

The fuel and blanket subassemblies were shipped off site in 1973. The nonradioactive secondary sodium system was drained, and the sodium was sent to Fike Chemical Company. The radioactive primary sodium was stored in storage tanks and in 55-gallon drums until the sodium was shipped off site in 1984. Decommissioning of the majority of the Fermi 1 plant was originally completed in December 1975. The licensee submitted a revised LTP in March 2010, and the NRC staff completed an expanded acceptance review of the revised LTP for

Fermi Unit 1. The facility is in SAFSTOR. There is no spent fuel on site. Bulk sodium has been removed from the site, and the reactor vessel, primary system piping, and major components have been removed. The license for Fermi Unit 1 expires in 2032, and the estimated date for closure is 2032.

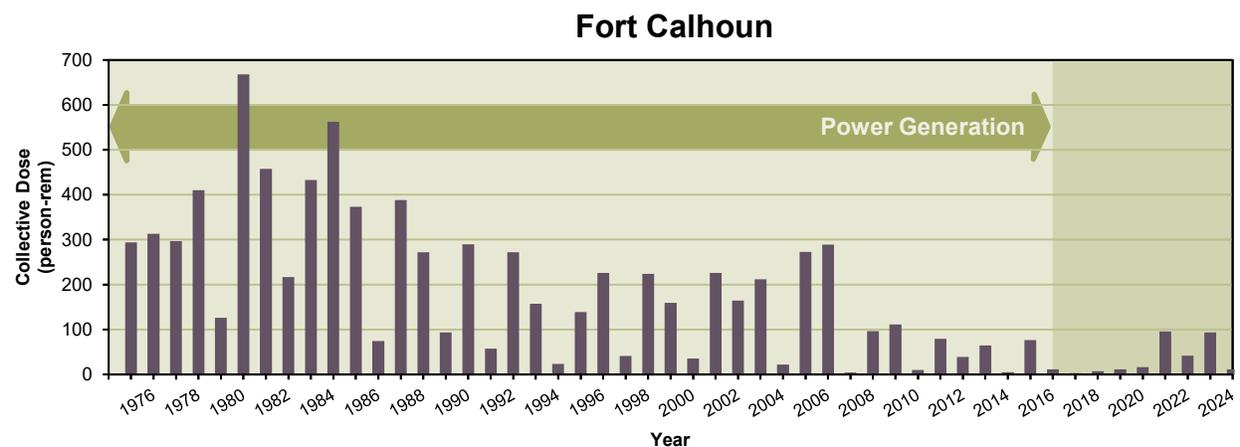
Fort Calhoun

Fort Calhoun Station was a 1,500 Mwt pressurized-water reactor that began operation in August 1973 and is owned by the Omaha Public Power District (OPPD). The reactor was permanently shut down on October 24, 2016. By letter dated November 13, 2016, OPPD certified that it had removed all the fuel from the reactor.

In December 2019, OPPD formally changed its decommissioning strategy for Fort Calhoun from SAFSTOR to DECON with the submission of a revised PSDAR. Fuel transfer to the ISFSI was completed in May 2020, and the site has transitioned to ISFSI-only security plans, emergency plans, and technical specifications. Active decommissioning is ongoing, and release of the reactor operations area and the bulk of the site, except the ISFSI area, is now expected to occur in 2026. The revised PSDAR explains that the spent nuclear fuel that is stored on site will remain until 2058 when it is expected to be transferred to the DOE and removed from the site. Decommissioning of the ISFSI and restoration of the site are planned to be completed in 2059.

In June 2018, the licensee asked to release a nonimpacted part of its site from the 10 CFR Part 50 license for unrestricted use. The NRC approved the request in April 2019. In August 2021, OPPD submitted its LTP, which was approved on January 31, 2024.

In June 2024, OPPD submitted a revision to the LTP, which the NRC accepted.



General Electric-Hitachi ESADA Vallecitos Experimental Superheat Reactor

On April 15, 1970, NRC authorized General Electric-Hitachi (GEH) to possess but not operate the reactor. The license was renewed on June 11, 1976, and remains in effect under the provisions of 10 CFR 50.51(b). The facility has been maintained in SAFSTOR condition. The facility is next to the Vallecitos Boiling Water Reactor currently under active decommissioning.

In 2015, the licensee, GEH, began a licensing process to exempt the ESADA Vallecitos Experimental Superheat Reactor from the 60 year decommissioning schedule limit of

10 CFR 50.82(a)(3). On August 6, 2021, the Commission disapproved the exemption requested under 10 CFR 50.12, "Specific exemptions." GEH subsequently withdrew the exemption request by letter dated August 25, 2021.

General Electric-Hitachi Vallecitos Boiling-Water Reactor

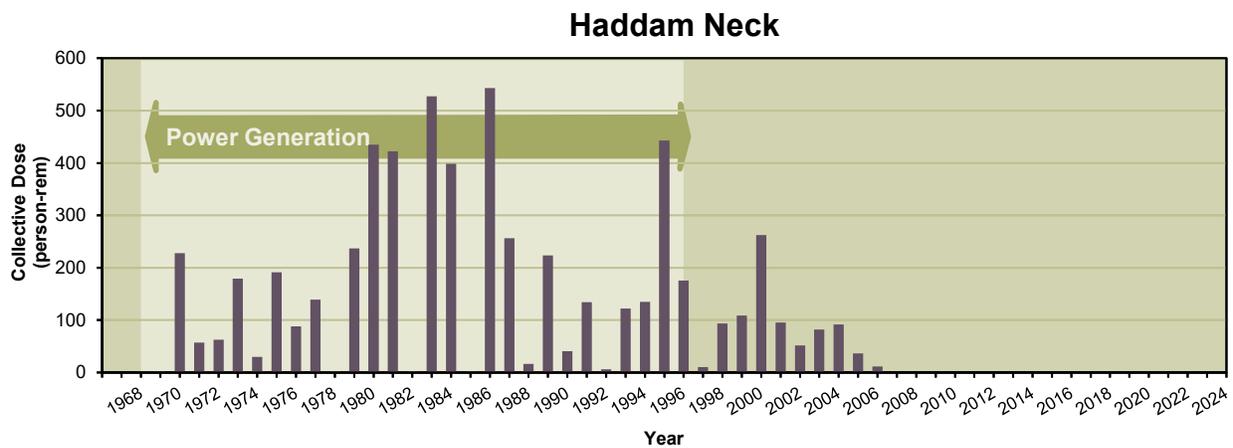
The Vallecitos Boiling-Water Reactor (VBWR) was shut down in 1963, and the NRC issued a possession-only license in 1965. The license was renewed in 1973 and has remained effective under the provisions of 10 CFR 50.51(b). The facility has been maintained in SAFSTOR condition, and the spent fuel has been removed from the site.

The licensee, GEH, submitted a limited PSDAR in 2022 that describes a change to active decommissioning (DECON) of the VBWR. GEH submitted a limited LTP on September 7, 2023, which was approved on November 27, 2024. On March 14, 2025, GEH transferred the license to NorthStar Vallecitos, LLC (NSV).

Haddam Neck – Connecticut Yankee

Haddam Neck (Connecticut Yankee Nuclear Power Plant) was a 619 MWe (1,825 MWt) pressurized-water reactor that began commercial operation in December 1974 and ceased power operations in August 1996. Decommissioning activities began in May 1998. SGs, reactor coolant pumps, the pressurizer, the reactor vessel, and shield wall blocks from the reactor building were disposed of off site, and demolition of the administration and turbine buildings began in spring 2004. As of March 30, 2005, all spent fuel and greater-than-Class-C waste had been transferred to the ISFSI, which is currently operational.

Decommissioning at Haddam Neck was completed in 2007, and the licensee will retain its license under 10 CFR Part 50 until the fuel is removed from the ISFSI.

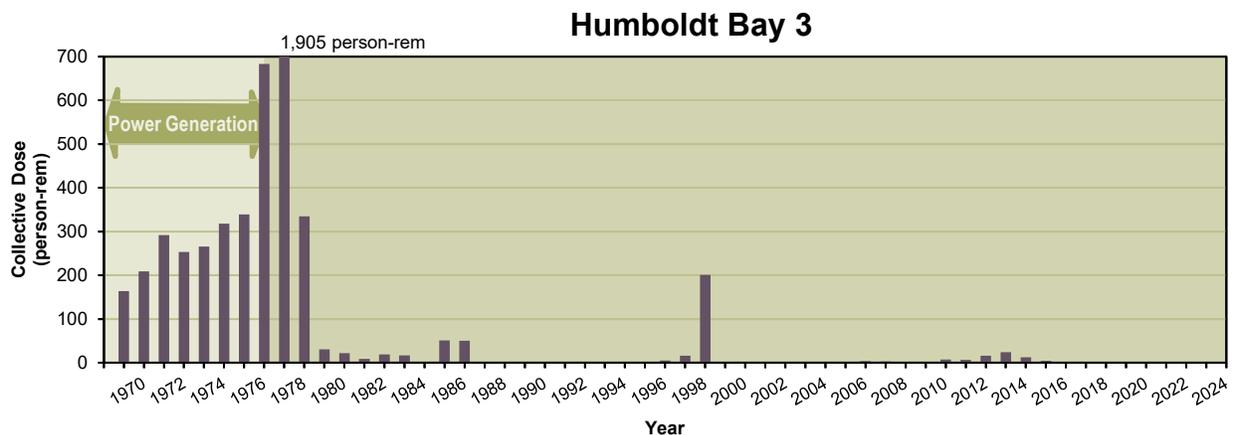


Humboldt Bay Unit 3

Humboldt Bay Power Plant, Unit 3, was a 63 MWe boiling-water reactor that produced power commercially from August 1, 1963, to July 1976, when it was shut down for annual refueling and to conduct seismic modifications. In 1983, with the plant still shut down, Pacific Gas and Electric Company, the owner of the facility, determined that required seismic modifications and the requirements imposed as a result of the accident at Three Mile Island made continued

operations no longer economically feasible and decided to decommission the plant. The NRC approved the licensee’s DP in July 1988.

The licensee submitted a PSDAR in February 1998 and has begun incremental decommissioning activities. In December 2003, the licensee submitted an ISFSI application to the NRC. Humboldt Bay was to have unique dry cask storage because of the short length of its fuel assemblies. Moreover, the casks were to be stored below grade to accommodate regional seismicity issues, security concerns, and site boundary dose limits. The NRC issued the ISFSI license on November 18, 2005, and the licensee began constructing the ISFSI in 2007. Following the completion of fuel loading into the ISFSI in December 2008, the licensee began constructing new combustion units in 2008 and 2009 to replace the old Humboldt Bay fossil Units 1 and 2. Decommissioning activities at the old fossil Units 1 and 2 were completed in 2013. During this period, decommissioning of Unit 3 began, and Humboldt Bay successfully completed removal of the reactor vessel internals in September 2013. On May 4, 2016, the NRC approved the LTP, with an amended LTP approved June 24, 2021, as corrected on July 9, 2021. The 10 CFR Part 50 license for Humboldt Bay was terminated on November 18, 2021. The ISFSI remains under a separate NRC license under 10 CFR Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste.”

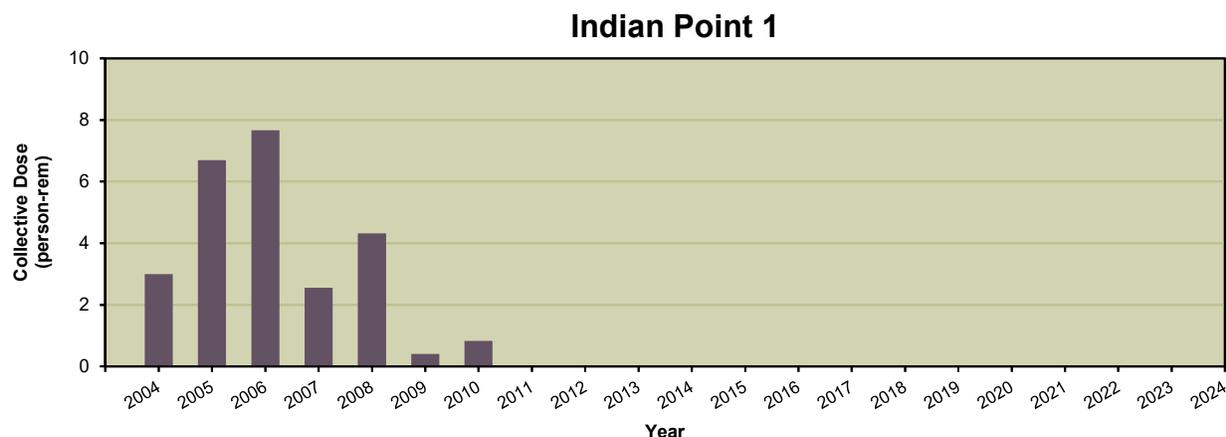


Indian Point Nuclear Generating, Unit 1

Indian Point Nuclear Generating, Unit 1, produced power commercially from August 1962 to October 1974. Indian Point Unit 1 was shut down on October 31, 1974, because the emergency core cooling system did not meet regulatory requirements. Some decommissioning work associated with spent fuel storage was performed from 1974 through 1978. By January 1976, all spent fuel had been removed from the reactor vessel, and the spent fuel was transferred to the ISFSI by December 2008. The NRC issued the order approving SAFSTOR in January 1996. A PSDAR public meeting took place on January 20, 1999.

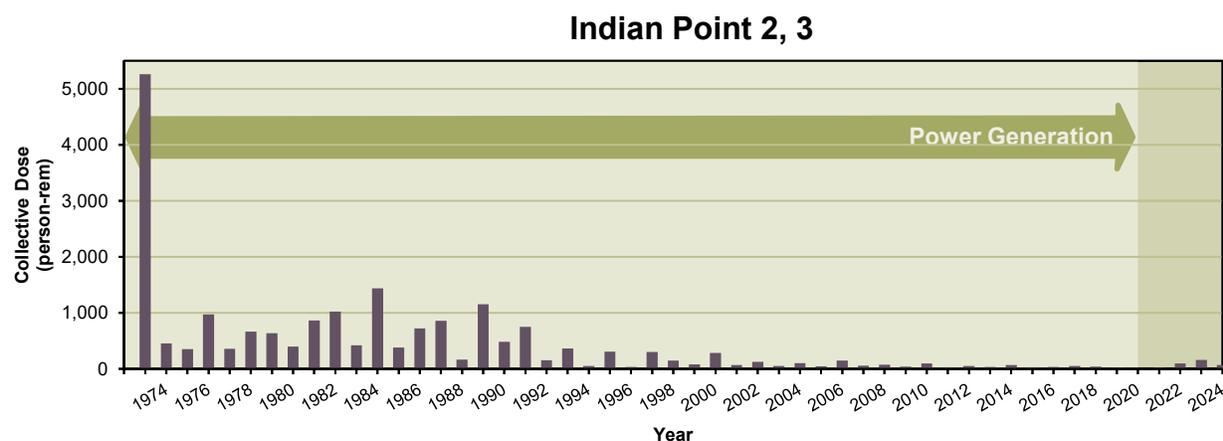
By letter dated November 21, 2019, Entergy Nuclear Operations, Inc. (ENOI) requested NRC approval of the direct transfer of Indian Point Energy Center (IPEC), as well as the general license for the IPEC ISFSI, from ENOI to Holtec Decommissioning International, LLC (HDI). On November 23, 2020, the NRC issued an order approving the transfer and draft conforming license amendments and concluded that Holtec and HDI are financially and technically qualified to own and decommission Indian Point and to manage spent fuel at IPEC.

HDI projects that all decommissioning activities, except for decommissioning the ISFSI, will be completed by early 2032. License termination is estimated for 2062.



Indian Point Generating, Units 2 and 3

Indian Point Unit 2 produced power commercially from August 1974 to April 2020. Power operations ceased at Indian Point Unit 2 on April 30, 2020, and the fuel was permanently removed from the reactor vessel and placed in the SFP on May 12, 2020. Indian Point Unit 3 produced power commercially from August 1976 to April 2021. Power operations ceased at Indian Point Unit 3 on April 30, 2021, and the fuel was permanently removed from the reactor vessel and placed in the SFP on May 11, 2021. Indian Point Unit 2 completed transfer of the spent fuel to the ISFSI in February 2023, with Indian Point Unit 3 completing transfer of the spent fuel to the ISFSI in October 2023.



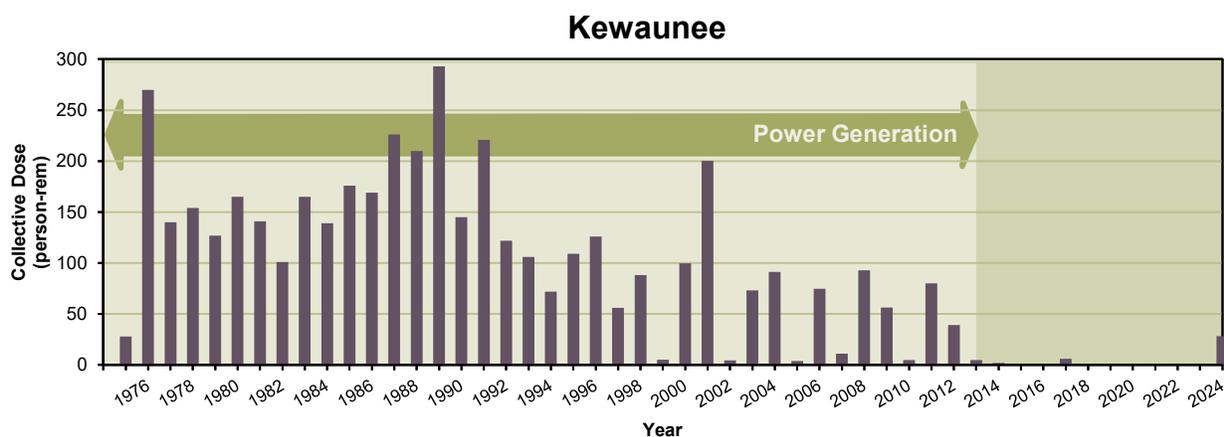
On November 21, 2019, Entergy and Holtec submitted a license transfer application requesting NRC approval to transfer the Indian Point facility operating licenses for Units 1, 2, and 3, as well as the general license for the ISFSI, to Holtec, as the licensed owner, and to HDI, as the licensed operator. On November 23, 2020, the NRC issued an order approving the transfer and draft conforming license amendments and concluded that Holtec and HDI are financially and technically qualified to own and decommission Indian Point and to manage spent fuel at IPEC. The license transfer was completed in May 2021. A PSDAR public meeting for IPEC was held on July 29, 2021 (in person) and on August 18, 2021 (virtual meeting). License termination is estimated for 2062.

Kewaunee

The Kewaunee Power Station (KPS) was a two-loop pressurized-water reactor designed by Westinghouse Electric Corporation and licensed by the NRC to generate an approximate maximum power output of 1,772 MWt in the Town of Carlton along the coast of Lake Michigan in Kewaunee County, Wisconsin. The operating license for KPS was issued on December 21, 1973, with an expiration date of December 21, 2013. Commercial operation commenced on June 16, 1974. On February 24, 2011, the NRC approved a license renewal application for KPS, which extended the expiration date of the KPS license to December 21, 2033.

KPS permanently ceased power operations on May 7, 2013, and Dominion Energy Kewaunee, Inc. (DEK, the licensee at that time) certified to the NRC by letter dated May 14, 2013, that as of May 14, 2013, all the fuel was permanently removed from the KPS reactor vessel and placed into the KPS SFP. Accordingly, pursuant to 10 CFR 50.82(a)(2), the KPS license no longer authorizes operation of the KPS reactor or emplacement or retention of fuel into the KPS reactor vessel.

In accordance with 10 CFR 50.82(a)(4)(i), on February 26, 2013, DEK submitted to the NRC the PSDAR for KPS, which identified SAFSTOR as the method of decommissioning KPS and updated the Irradiated Fuel Management Plan. A public meeting was conducted near the site on April 24, 2013. DEK updated the PSDAR and provided Revision 1 to the NRC by letter dated April 25, 2014. DEK completed transferring the spent nuclear fuel from the SFP to the onsite ISFSI in 2017. In 2018, DEK finished removing all the spent fuel storage racks from the SFP and completed all SFP activities.



By letter dated May 10, 2021, as supplemented by letters dated May 13, 2021, October 28, 2021, February 16, 2022, and March 15, 2022, DEK and EnergySolutions, LLC (EnergySolutions) (together, the applicants) requested that the NRC consent to the indirect transfer of control of Renewed Facility Operating License (RFOL) No. DPR-43 for KPS and the general license for the KPS ISFSI.

On March 31, 2022, an order was issued that approved the indirect transfer of RFOL No. DPR-43 for the KPS and the general license for the KPS ISFSI, held by DEK, to Kewaunee Solutions, Inc. and approved a draft conforming license amendment to reflect the indirect

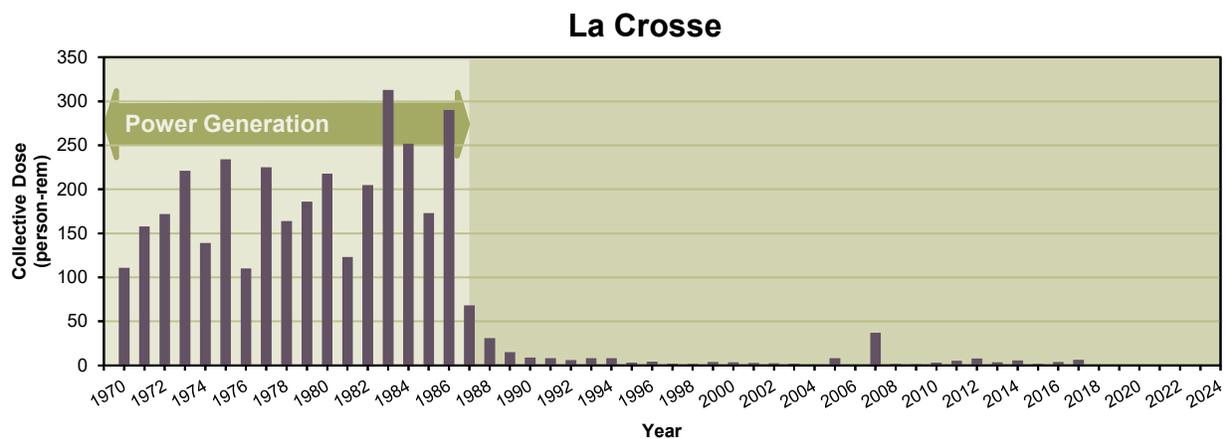
license transfer. The conforming amendment was approved on June 28, 2022, and noted that Revision 2 of the KPS PSDAR, submitted by EnergySolutions on May 13, 2021, was effective upon the indirect license transfer.

Major decommissioning and dismantlement activities began in 2022 and are scheduled to end by 2055 to include decommissioning of the on-site ISFSI.

La Crosse

The La Crosse Boiling-Water Reactor (LACBWR) produced power commercially starting on November 1, 1969. The plant was one of a series of demonstration plants funded, in part, by the U.S. Atomic Energy Commission (AEC). The nuclear steam supply system and its auxiliaries were funded by the AEC, and the balance-of-plant equipment was funded by the Allis-Chalmers Company. The AEC later sold the plant to Dairyland Power Cooperative (DPC) and gave it a provisional operating license. LACBWR was shut down on April 30, 1987, and the NRC approved its DP on August 7, 1991.

Because the NRC approved DPC’s DP before August 28, 1996 (the effective date of an NRC final rule concerning reactor decommissioning [61 FR 39278; July 29, 1996]), the DP is considered the PSDAR for LACBWR (see 10 CFR 50.82, “Termination of license”). The PSDAR public meeting took place on May 13, 1998, and subsequent updates to the LACBWR decommissioning report have combined the DP and PSDAR into the “LACBWR Decommissioning Plan and Post-Shutdown Decommissioning Activities Report.” DPC constructed an onsite ISFSI and completed the movement of all 333 spent nuclear fuel elements from the fuel element storage well to dry cask storage at the ISFSI by September 19, 2012.

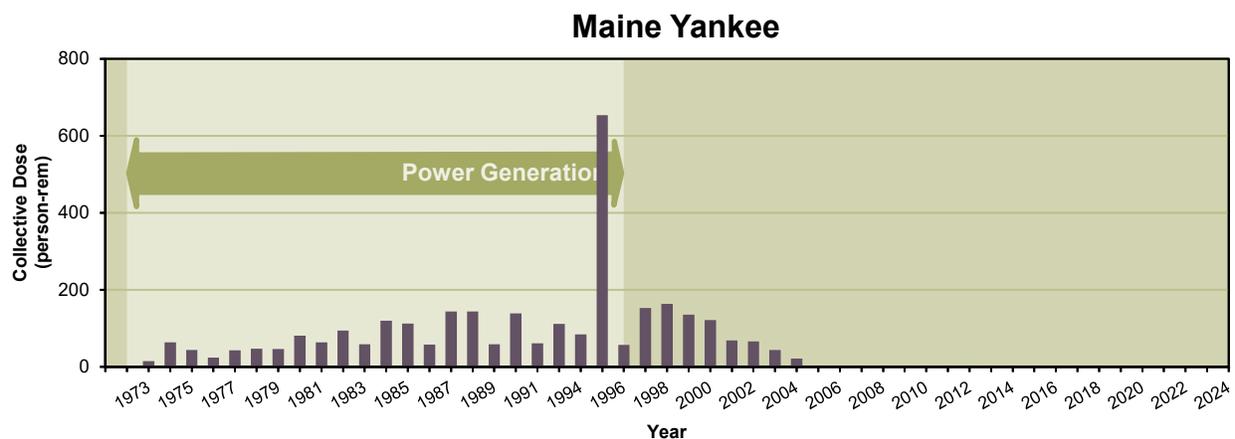


By order dated May 20, 2016, the NRC approved the direct transfer of Possession Only License No. DPR-45 for LACBWR from DPC to LaCrosse Solutions, LLC (LS), a wholly owned subsidiary of EnergySolutions, LLC. The order was published in the Federal Register on June 2, 2016 (81 FR 35383). The transfer assigns DPC’s licensed possession, maintenance, and decommissioning authorities for LACBWR to LS to expedite decommissioning at the LACBWR site. The LTP for LACBWR was submitted on June 27, 2016. The staff issued the LTP amendment, safety evaluation, and environmental assessment on May 21, 2019. On September 24, 2019, the NRC approved an order that allows the LACBWR license to be transferred back to DPC upon completion of decommissioning at the site and termination of the

10 CFR Part 50 license outside of the ISFSI. Final license termination activities at LACBWR have been completed, and the 10 CFR Part 50 license outside of the ISFSI boundary was terminated in 2023 and the site was released for unrestricted public use. The license transfer to DPC is expected to follow.

Maine Yankee

Maine Yankee Atomic Power Station was an 860 MWe pressurized-water reactor that started commercial operation on December 28, 1972. The Maine Yankee plant was located on the west shore of the Back River approximately 3.9 miles south of the center of Wiscasset, Maine. Maine Yankee ceased power production on December 6, 1996, to address cable separation and other issues. By June 20, 1997, the reactor had been completely defueled and all spent fuel was resident in the SFP. On August 7, 1997, Maine Yankee provided written certification to the NRC, pursuant to 10 CFR 50.82 (a)(1)(1) and(ii), that the Maine Yankee Atomic Power Company had permanently ceased operations of the Maine Yankee Atomic Power Station and that all nuclear fuel had been removed from the reactor. The NRC approved the LTP on February 28, 2003.



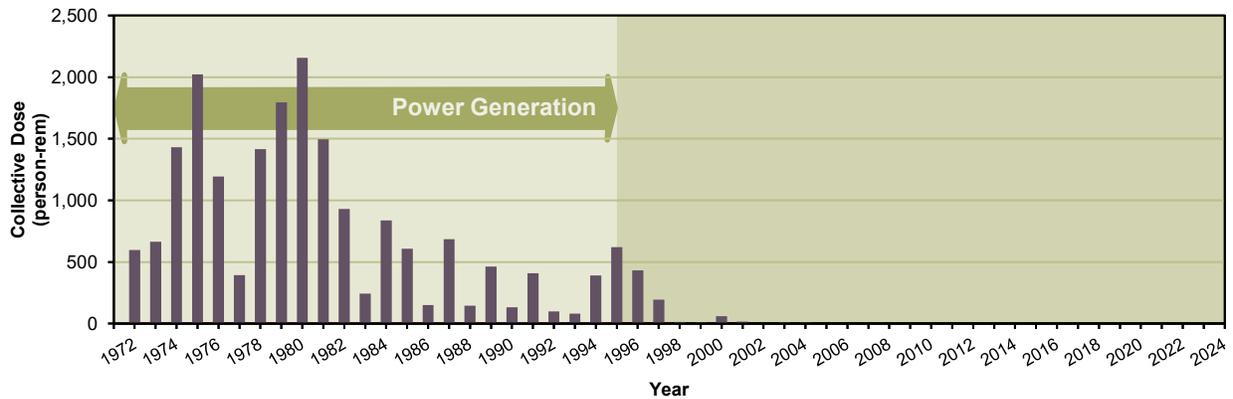
In 2003, the reactor pressure vessel was shipped to Barnwell, South Carolina, by barge. As of March 2004, spent fuel and greater-than-Class C waste were transferred to the ISFSI. Decommissioning was completed in June 2005, and Maine Yankee will retain its 10 CFR Part 50 license until the fuel is removed from the ISFSI.

Millstone Unit 1

Millstone Power Station, Unit 1, was a single-cycle, boiling-water reactor with a thermal output of 2,011 MWt and a net electrical output of 641 MWe. The reactor began producing power commercially on December 28, 1970. On July 21, 1998, Northwest Utilities, pursuant to 10 CFR 50.82(a)(1)(i) and 10 CFR 50.82(a)(1)(ii), certified to the NRC that, as of July 17, 1998, Millstone Unit 1 had permanently ceased operations and that fuel had been permanently removed from the reactor vessel. The owner of the facility submitted its PSDAR to the NRC on June 14, 1999, which included a combination of DECON and SAFSTOR options. Owner responsibility for the Millstone site was transferred from Northeast Utilities to Dominion Nuclear Connecticut Inc. on March 31, 2001. After a formal assessment of spent fuel storage options in 2007, the licensee concluded that it would keep the Millstone Unit 1 fuel in the SFP, in a SAFSTOR status, until 2048 rather than move the fuel to an ISFSI.

Safety-related structures, systems, and components and those important to safety remaining at Millstone Unit 1 are associated with the SFP island where the spent fuel is stored. Besides nonessential systems that support the balance-of-plant facilities, the remaining plant equipment has been deenergized, disabled, or removed from the unit and can no longer be used for power generation. Irradiated reactor vessel components have been removed. The reactor cavity and vessel have been drained, and a radiation shield has been installed to limit occupational radiation doses to workers. Currently, the licensee has estimated 2056 for completion of all decommissioning activities and the estimated closure date of this site.

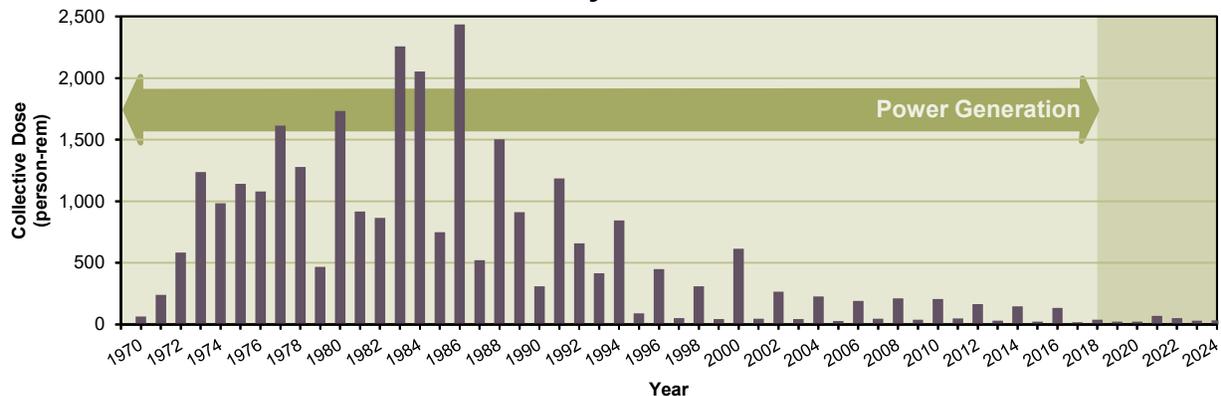
Millstone 1



Oyster Creek

Oyster Creek Nuclear Generation Station produced power commercially from December 1969 to September 17, 2018. Oyster Creek was a 1,930 MWt single-cycle, boiling-water reactor with a net electrical output of 619 MW. The unit was shut down on September 17, 2018. By letter dated September 25, 2018, Exelon Generation Company, prior owner of the facility, certified that all fuel had been removed from the reactor. In the PSDAR submitted to the NRC on May 21, 2018, Exelon stated its intention to move all the spent nuclear fuel into dry cask storage by the end of 2024 and put the plant into SAFSTOR until it is ready to fully decommission the facility starting in 2075. HDI completed transfer of the spent fuel to the ISFSI in May 2021. On August 1, 2024, the licensee submitted an LTP which is currently under review by the NRC staff.

Oyster Creek



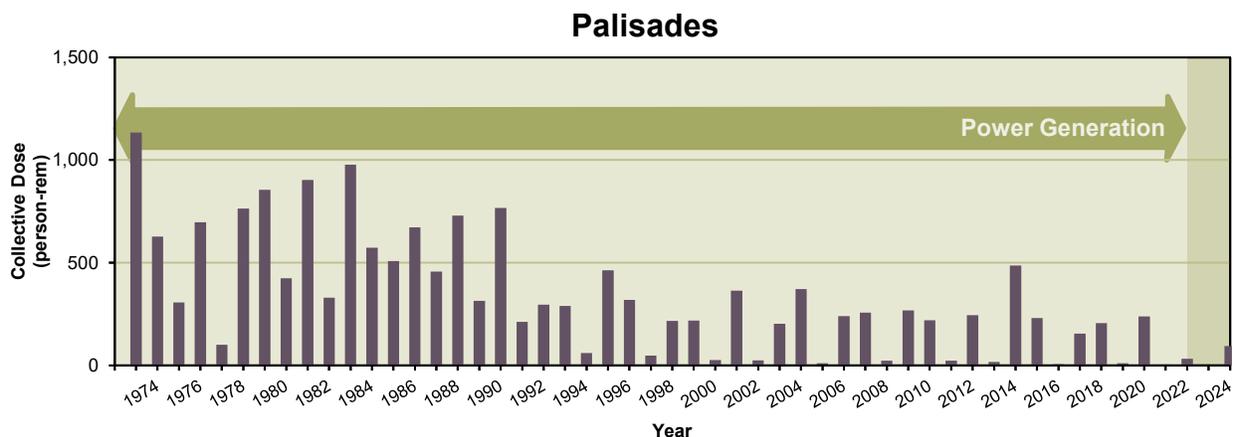
On August 31, 2018, Exelon and Holtec submitted a license transfer application requesting NRC approval to transfer the Oyster Creek RFOL and the general license for the Oyster Creek ISFSI to Oyster Creek Environmental Protection, LLC (OCEP), as the licensed owner, and to HDI, as the licensed operator. The NRC issued an order for the transfer to OCEP (as the licensed owner) and HDI (as the licensed operator) in June 2019, and the transfer was completed in July 2019. Partial site release (except for the ISFSI) is scheduled for 2029, and license termination would take place by 2035.

Palisades

Palisades Nuclear Plant was a 2,565 MWt single-unit pressurized-water reactor that operated from March 1971 until it permanently ceased power operations on May 20, 2022. The fuel was permanently removed from the Palisades reactor vessel and placed in the SFP as of June 10, 2022. The NRC issued an order approving the transfer of the Palisades license to Holtec Palisades, LLC (as the licensed owner) and Holtec Decommissioning International, LLC (HDI) (as the licensed operator) in December 2021, and the transfer was completed in June 2022. The license transfer specifically assigned authority to HDI to decommission and dismantle Palisades but did not grant it operating authority or status for the facility.

By letter dated March 13, 2023, HDI submitted a letter to the NRC describing its regulatory path for potential restart of the Palisades facility. HDI's overall plan was, with the use of an exemption, a license transfer, and license amendments, to return the Palisades licensing basis to that which existed at the time the plant shut down in May 2022, with some changes and updates. The NRC staff implemented a new inspection manual chapter (IMC "Light-Water Reactor Inspection Program for Restart of Reactor Facilities Following Permanent Cessation of Power Operations,"), to guide the oversight process for resumption of power operations. A Palisades restart project oversight panel was established to coordinate and direct the project.

On July 24, 2025, the NRC approved the licensing actions necessary to revert the Palisades licensing basis to that which existed during operations, including a license transfer from HDI to Palisades Energy, LLC, who will be the licensed operator of the plant. The licensee implemented the operational licensing basis on August 25, 2025, thereby returning Palisades to being regulated as an operating plant, including inspections under the Reactor Oversight Process. Restart activities are still underway at the site, with the NRC providing appropriate oversight and inspections commensurate with the applicable regulatory requirements.



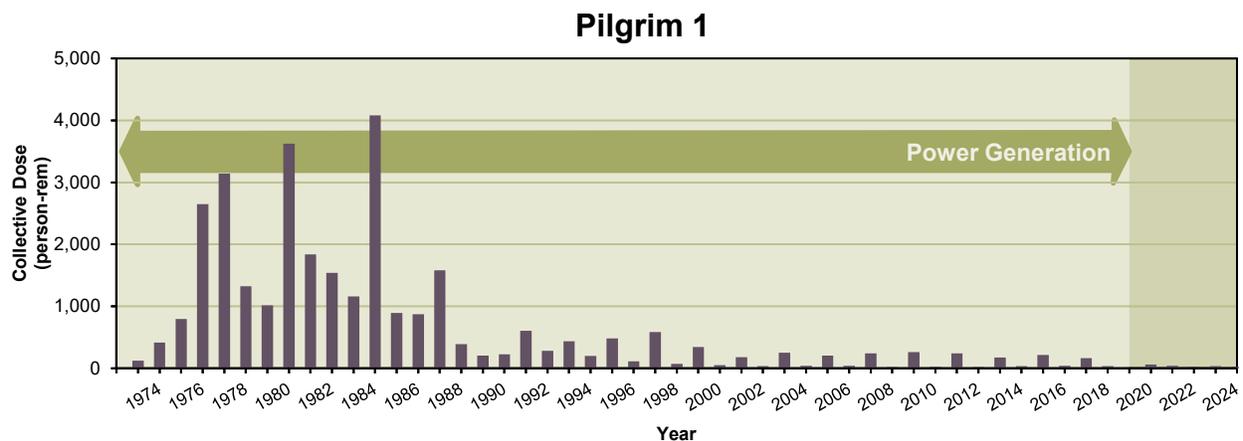
Peach Bottom 1

Peach Bottom Atomic Power Station, Unit 1, was a 200 MWt, high-temperature, gas-cooled reactor that operated from June 1967 until its final shutdown on October 31, 1974. All spent fuel has been removed from the site, and the SFP is drained and decontaminated. The reactor vessel, primary system piping, and SGs remain in place. The facility is currently in SAFSTOR. Final decommissioning is not expected until 2034, when Units 2 and 3 are scheduled to shut down.

Pilgrim 1

Pilgrim Nuclear Power Station was a 670 MWe three-cycle, boiling-water reactor with a reactor thermal output of 2,028 MWt. Entergy shut down Pilgrim permanently on May 31, 2019, after the unit had safely provided electricity to the region for more than 46 years.

In August 2019, Holtec International purchased Pilgrim in a deal that allowed the site to enter immediate decommissioning. The deal enables decommissioning and site release for alternate uses decades sooner than previously anticipated. At the end of July 2020, HDI completed Phase I of its spent fuel transfer campaign. The licensee subsequently built a new ISFSI to hold all the Pilgrim spent fuel casks; ISFSI-II is currently in operation, and all Pilgrim spent fuel and greater-than-Class-C waste are stored there as of the end of 2021.

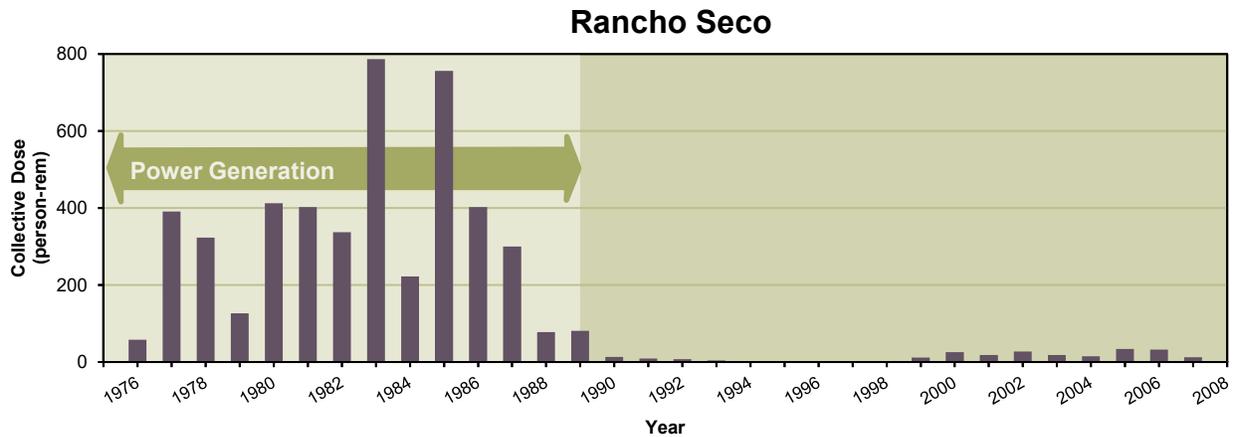


The NRC continues its oversight to ensure the reactor is being decommissioned safely and that spent fuel is safely and securely stored on site. The NRC staff will periodically inspect operations at the site, including the ISFSI, to ensure that decommissioning activities are being conducted in accordance with all applicable regulations and commitments.

Rancho Seco

Rancho Seco Nuclear Generating Station was a single-unit 917 MWe pressurized-water reactor owned by the Sacramento Municipal Utility District (SMUD). Rancho Seco began commercial operation on April 17, 1975, and permanently shut down June 7, 1989, after approximately 15 years of operation. On August 29, 1989, SMUD notified the NRC of its intent to seek amendments to the Rancho Seco operating license to decommission the facility. On March 20, 1995, the NRC issued Rancho Seco's decommissioning order authorizing SMUD to decommission in accordance with the DP, submitted to the NRC on May 20, 1991. On

March 20, 1997, SMUD submitted its PSDAR, which superseded the original DP. The licensee was granted a site-specific 10 CFR Part 72 license for an onsite ISFSI on June 30, 2000. The owner completed transfer of all the spent nuclear fuel to the Rancho Seco ISFSI on August 21, 2002. SMUD submitted an LTP dated April 12, 2006, which was approved in May 2008. Rancho Seco completed decommissioning of the former reactor site in 2009, and the site was released with the exception of a 6-acre ISFSI site and a class B and C waste storage building. This waste building was decommissioned in 2017, and the 10 CFR Part 50 license was terminated on August 31, 2018. The ISFSI is still in operation..



San Onofre Unit 1

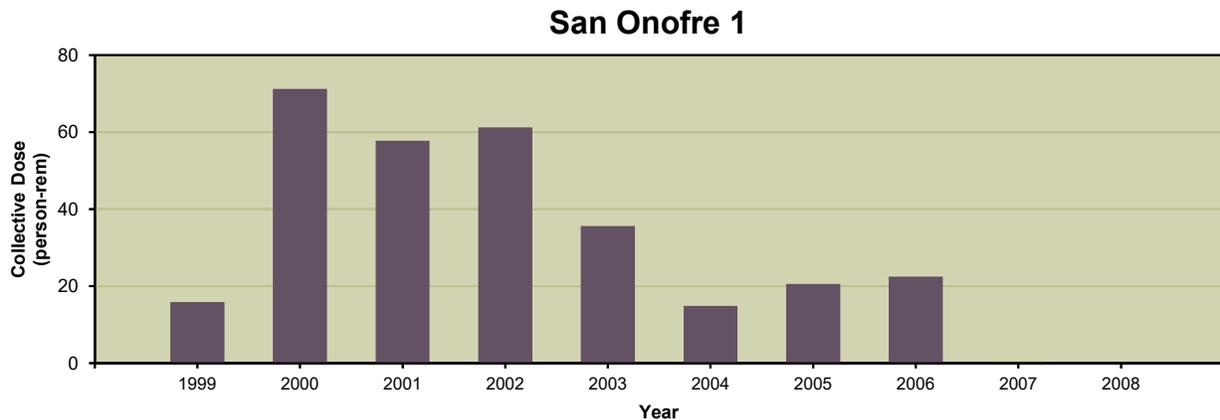
The San Onofre Nuclear Generating Station (SONGS) is approximately 100 km (60 mi) south of Los Angeles, 6.5 km (4 mi) south of San Clemente, California. It is located between I-5 and the Pacific Ocean, within the boundary of the Camp Pendleton military reserve. The site originally comprised three nuclear power plants. SONGS Unit 1 was a Westinghouse three-loop pressurized-water reactor with a reactor thermal output of 1,347 MWt.

Southern California Edison (SCE) operated SONGS Unit 1, beginning operation on January 1, 1968, and ceasing operation on November 30, 1992. Defueling was completed on March 6, 1993, and the NRC approved the permanently defueled technical specifications on December 28, 1993.

On November 3, 1994, SCE submitted a proposed DP to place SONGS Unit 1 in SAFSTOR until the shutdown of SONGS Units 2 and 3. However, on December 15, 1998, SCE submitted the PSDAR for SONGS Unit 1 to begin decontamination in 2000. SCE actively decommissioned the facility, and most of the structures and equipment have been removed and sent to a disposal facility. The expanded ISFSI, to store Unit 2 and Unit 3 spent fuel, was built on top of the area where Unit 1 was located. The licensee transferred SONGS Unit 1 spent fuel to an onsite generally licensed ISFSI. SONGS Unit 1 will not be completely decommissioned until after the ISFSI is decommissioned.

In February 2010, the NRC staff issued a license amendment to release offshore portions of the SONGS Unit 1 cooling intake and outlet pipes for unrestricted use. The fuel from Unit 1 was transferred to Phase 1 of the ISFSI. In 2015, the ISFSI was expanded onto the area

previously occupied by SONGS Unit 1 to store all Unit 2 and Unit 3 spent fuel. SCE completed transferring all the nuclear fuel to dry storage in 2020. The Unit 1 reactor pressure vessel was transported by rail and then highway to the Energy Solutions disposal facility in Clive, Utah. The shipment left San Onofre on May 24, 2020, and arrived at the disposal facility on July 14, 2020.



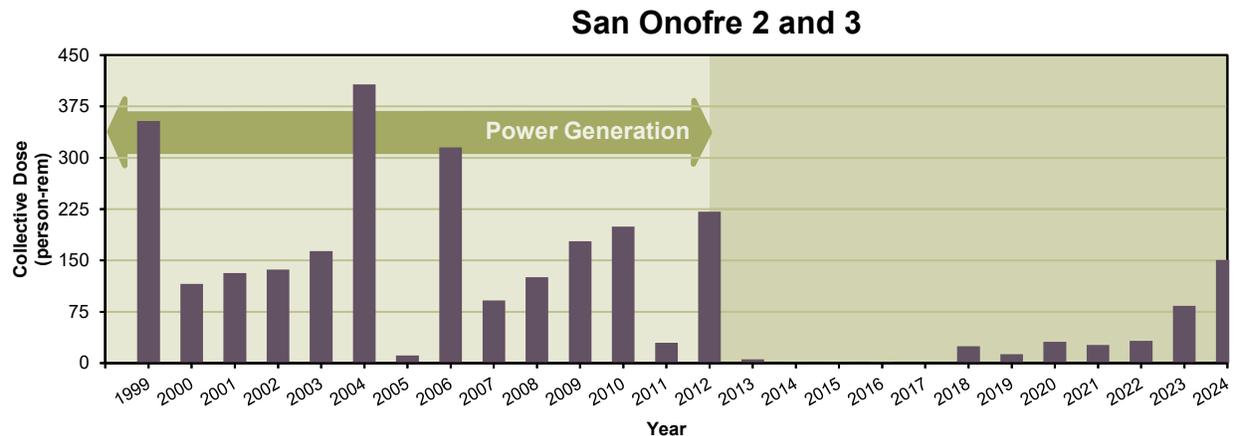
San Onofre Units 2 and 3

SONGS Units 2 and 3 operated by SCE, are Combustion Engineering 1,127 MWe pressurized-water reactors, which were granted Facility Operating Licenses NPF-10 on February 16, 1982, and NPF-15 on November 15, 1982, respectively. SONGS Units 2 and 3 began commercial operation on August 8, 1983, and April 1, 1984, respectively. In June 2013, pursuant to 10 CFR 50.82(a)(1)(i), the licensee certified to the NRC that as of June 7, 2013, operations had ceased at SONGS Units 2 and 3. The licensee subsequently certified, pursuant to 10 CFR 50.82(a)(1)(ii), that all fuel had been removed from the reactor vessels of both units and committed to maintaining the units in a permanently defueled status. Therefore, pursuant to 10 CFR 50.82(a)(2), SCE's 10 CFR Part 50 licenses no longer authorized operation of SONGS or emplacement or retention of fuel into the reactor vessels. The licensee is still authorized to possess and store irradiated nuclear fuel. Irradiated fuel is currently being stored on site in dry casks at an ISFSI.

The PSDAR for SONGS Units 2 and 3 was submitted on September 23, 2014, and the associated public meeting took place on October 27, 2014, in Carlsbad, California. The NRC confirmed its review of the PSDAR and addressed public comments in a letter dated August 20, 2015. On May 7, 2020, SCE updated the PSDAR and irradiated fuel management plan for SONGS Units 2 and 3 in accordance with 10 CFR 50.82(a)(7). In its letter, SCE indicated that, since the initial submittal of these plans in 2014, it had selected vendors to implement the decommissioning of SONGS Units 2 and 3, expanded the SONGS ISFSI installation, and made other decommissioning process decisions. As a result, SCE updated the PSDAR and irradiated fuel management plan for SONGS Units 2 and 3. On September 24, 2020, the NRC found the revised PSDAR acceptable. The licensee plans on submitting an LTP in 2025.

On July 17, 2015, the NRC approved the permanently defueled technical specifications for SONGS Units 2 and 3. It is estimated that all decommissioning activities for SONGS

Units 2 and 3, except for the ISFSI, will be completed in 2028. The licensee will retain its 10 CFR Part 50 license for SONGS Units 2 and 3 until the fuel is removed from the ISFSI, the ISFSI is decommissioned, and the ISFSI license termination is approved. The licensee projects that all decommissioning activities will be completed by 2051, approximately 2 years after the anticipated removal of the last spent fuel from the SONGS ISFSI.



Savannah, Nuclear Ship

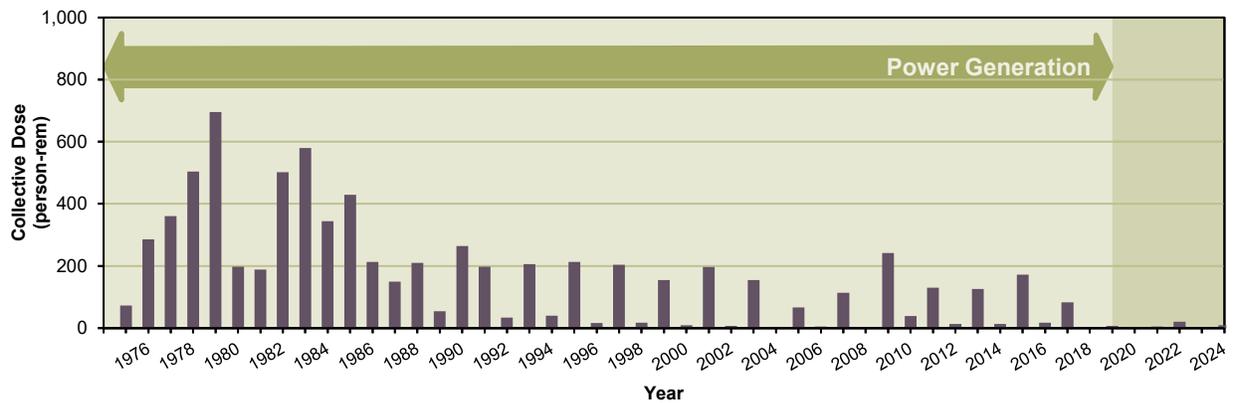
The Nuclear Ship (NS) Savannah was removed from service in 1970, and the fuel was taken from the ship in October 1971. The NS Savannah is a registered National Historic Landmark and the world’s first nuclear-powered merchant ship. The ship is berthed in Baltimore, Maryland. Major dismantlement and decommissioning began in fall 2022 with the removal of the ship’s reactor pressure vessel. The U.S. Department of Transportation’s Maritime Administration submitted the LTP on October 23, 2023 and anticipates requesting license termination by December 2025.

Three Mile Island Unit 1

Three Mile Island Generating Station (TMI), Unit 1, was a ~819 MWe net three-loop pressurized-water reactor with a reactor thermal output of 2,568 MWt. TMI Unit 1 was sold to AmerGen (later Exelon) in 1999 and was permanently shut down on September 20, 2019, with Exelon certifying all fuel removed from the reactor on September 26, 2019, leaving a 45-year legacy of safe, reliable, carbon-free electricity generation and service to the community. By letter dated April 5, 2019, Exelon submitted a PSDAR to the NRC. The PSDAR discussed the use of SAFSTOR, thereby reflecting plans to complete decommissioning within a 60-year period after the permanent cessation of operations. By January 2022, the spent fuel had been removed from the reactor and was transferred to the ISFSI by August 2022.

In early 2022, by indirect transfer, the owner’s name changed to Constellation Energy Generation, LLC. By letter dated September 20, 2024, Constellation announced to the NRC its intention to restore TMI Unit 1, to commercial service. The NRC will continue to provide licensing oversight and inspections until the plant is completely decommissioned including inspections of the ISFSI until the spent fuel is permanently removed from the site and the license is terminated in 2079.

Three Mile Island 1



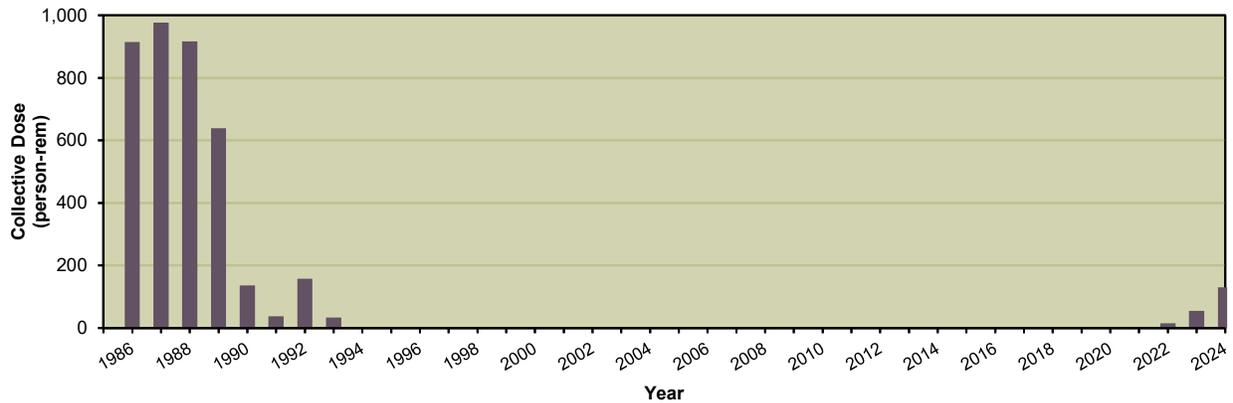
Three Mile Island Unit 2

TMI Unit 2 produced power commercially from December 30, 1978, to March 28, 1979. On March 28, 1979, the unit experienced an accident that resulted in severe damage to the reactor core. TMI Unit 2 has been in a nonoperating status since that time. The licensee conducted a substantial program to defuel the reactor vessel and decontaminate the facility. The plant defueling was completed in April 1990. All spent fuel has been removed except for some debris in the reactor coolant system. The removed fuel is currently in storage at Idaho National Laboratory, and the DOE has taken title and possession of the fuel.

TMI Unit 2 has been defueled and decontaminated to the extent that the plant is in a safe, inherently stable condition suitable for long-term management. This long-term management condition is termed “post-defueling monitored storage,” which was approved in 1993. The license for TMI Unit 2 was transferred to EnergySolutions (TMI-2 Solutions) on December 18, 2020. After taking the necessary engineering actions and upon receipt of NRC approval of the LAR to change the license from possession-only monitoring status and modification of the technical specifications, thereby allowing major decommissioning activities to proceed, TMI-2 Solutions intends to substantially complete decommissioning of TMI Unit 2 and release the site by 2037, except for a potential area set aside for storage of debris material on the ISFSI. The plant shares equipment with TMI Unit 1. These licensees share one TMI Station ISFSI. Also, there is one site emergency preparedness program and one site program under 10 CFR Part 37, “Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material.” The licensees plan to decommission TMI Unit 2 independently of TMI Unit 1 but may coordinate some decommissioning activities. EnergySolutions indicates that an LTP for TMI Unit 2 will be developed and submitted to the NRC approximately 2 years before the anticipated license termination date.

In February 2023, TMI-2 Solutions submitted an LAR requesting that the NRC review major decommissioning activities that would diminish the historic integrity of buildings previously deemed eligible for the National Register of Historic Places (NRHP) by the Pennsylvania State Historic Preservation Office. To fulfill its obligations under the National Environmental Policy Act, the NRC is evaluating the impact of Phase 2 activities, including demolition of structures, because the impacts on historic and cultural resources and NRHP-eligible structures have not been reviewed previously.

Three Mile Island 2

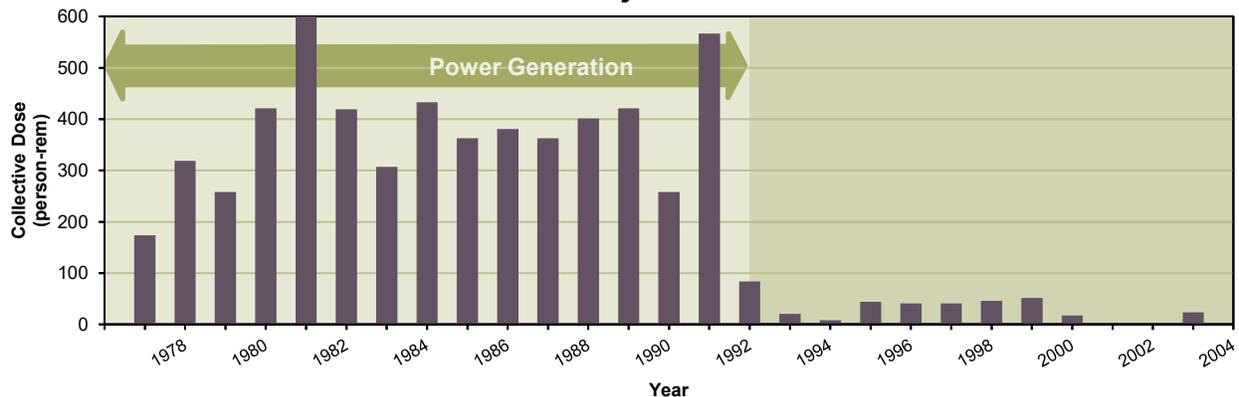


Trojan

The Trojan Nuclear Plant was a 1,130 MWe pressurized-water reactor located on the Columbia River near Portland, Oregon. Portland General Electric (PGE) was the owner and operator of the site with the reactor beginning commercial operations May 20, 1976, and shutting down in November 1992. On January 27, 1993, after approximately 17 years of operation, PGE notified the NRC that the site was permanently ceasing operations. The initial DP was submitted on January 26, 1995, and approved by the NRC on April 15, 1996. As a result of the revision of the NRC's decommissioning and license termination rule, the DP was considered the PSDAR, and Trojan was required to submit an LTP. The NRC approved the LTP on February 12, 2001.

The reactor vessels and internals were removed intact and shipped by barge up the Columbia River to the DOE Hanford site. The licensee was granted a site-specific 10 CFR Part 72 license for an onsite ISFSI in March 1999, which is still in operation. The licensee began spent fuel transfer to the ISFSI in December 2002 and finished fuel transfer in August 2003. In December 2004, Trojan completed decommissioning activities. The NRC terminated Trojan's 10 CFR Part 50 operating license on May 23, 2005.

Trojan

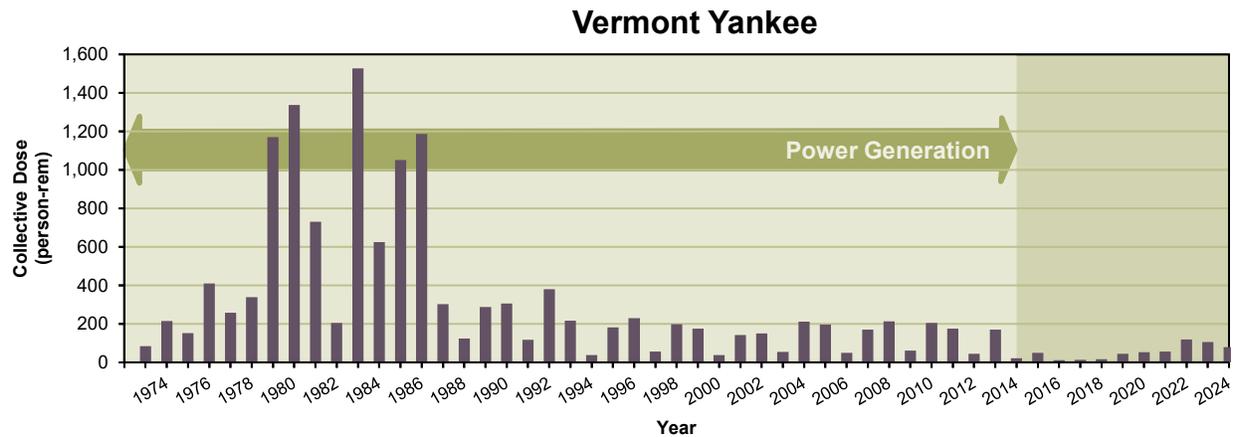


Vermont Yankee

Vermont Yankee Nuclear Power Station was a 1,912 MWt boiling-water reactor that began operation in 1972. The reactor was permanently shut down on December 29, 2014, and the fuel was removed from the reactor on January 12, 2015.

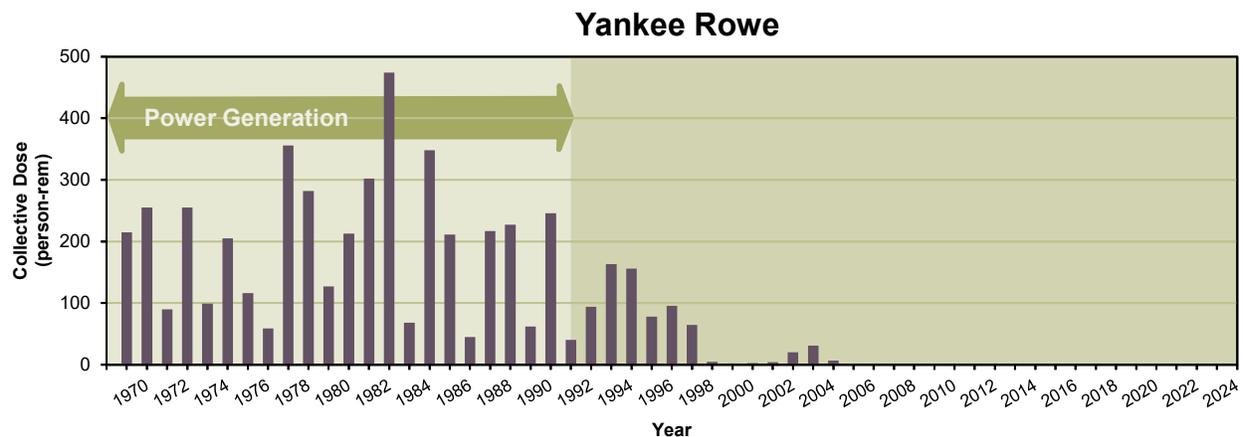
Entergy, which owns the facility, submitted the Vermont Yankee PSDAR to the NRC on December 19, 2014. In the report, Entergy stated its intention to keep the plant in SAFSTOR until it is ready to fully decommission the facility in 2073. Entergy completed the movement of the spent nuclear fuel to dry cask storage in August 2018.

On February 9, 2017, Entergy and NorthStar Group Services, Inc. submitted a request to transfer the Vermont Yankee license from Entergy to NorthStar. On October 12, 2018, the NRC issued a first-of-a-kind order approving the permanent transfer of the Vermont Yankee operating license and associated spent fuel in onsite storage from Entergy to NorthStar for the purpose of decommissioning the reactor. With the completion of the transfer to NorthStar on January 11, 2019, the new estimated date for license termination is 2030.



Yankee Rowe

Yankee Rowe Nuclear Power Station, operated by Yankee Atomic Electric Company (YAEC), was a 167 MWe (net capacity) pressurized-water reactor on the shores of the Deerfield River in Rowe, Massachusetts. It began commercial operations on July 1, 1961, and shut down on October 1, 1991. YAEC informed the NRC by letter dated February 27, 1992, that Yankee Rowe was permanently shut down and that decommissioning would commence. YAEC submitted a DP on December 20, 1993, which the NRC approved on February 14, 1995. The SGs were shipped to the Barnwell low-level radioactive waste disposal facility in South Carolina in November 1993 with the reactor vessel shipped to Barnwell in April 1997.

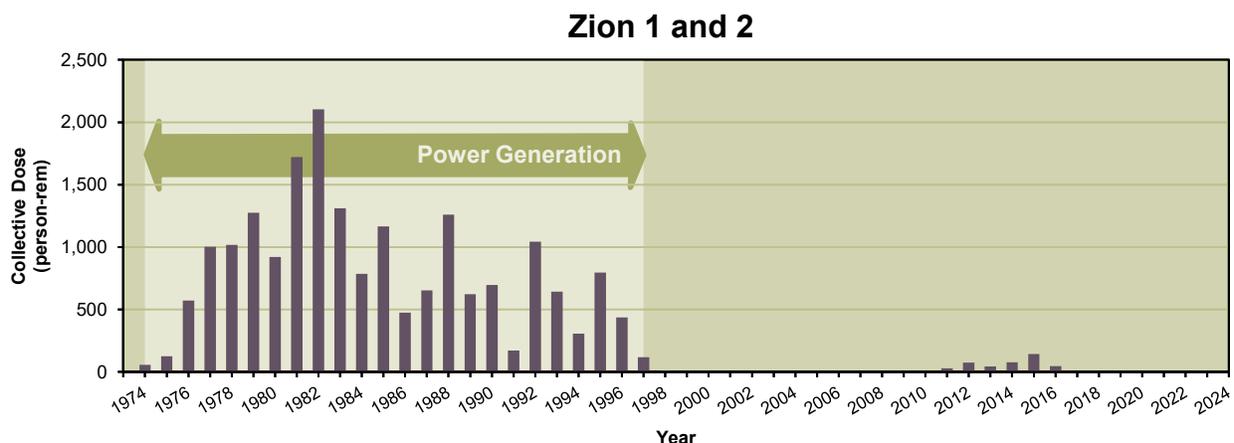


The owner completed construction of an onsite ISFSI, and all the fuel from the SFP was transferred between June 2002 and June 2003. YAEC submitted the proposed LTP for Yankee Rowe on November 24, 2003, with NRC approval in July 2005. Yankee Rowe completed decommissioning in 2007. The license for the site was reduced to 2 acres surrounding the ISFSI, which is still in operation.

Zion Units 1 and 2

Zion Nuclear Power Station (ZNPS) received a construction permit in December 1968 to begin building two nuclear power reactors. Unit 1 produced power commercially from December 31, 1973, to February 21, 1997, and Unit 2 produced power commercially from September 17, 1974, to September 19, 1996. On April 27, 1997, all fuel from Unit 1 was removed, and on February 25, 1998, all fuel from Unit 2 was removed, and placed in the SFP. On January 14, 1998, the Unicom Corporation and Commonwealth Edison Company (ComEd), the joint owners of the facility, authorized the permanent cessation of operations at ZNPS for economic reasons. ComEd certified, in a letter dated February 13, 1998, to the NRC that operations had ceased at ZNPS. On March 9, 1998, ComEd informed the NRC that all fuel had been removed from the ZNPS reactor vessels and committed to maintain them permanently defueled.

The NRC acknowledged the certification of permanent cessation of power operation and permanent removal of fuel from the reactor vessels in a letter dated May 4, 1998, and ZNPS was placed in SAFSTOR. The owner submitted the PSDAR, site-specific cost estimate, and fuel management plan on February 14, 2000, which noted that the SAFSTOR approach was the intended decommissioning method to be used for ZNPS. In 2010, the NRC staff finalized the transfer of the possession license for ZNPS Units 1 and 2 from Exelon Generating Company, LLC, to Zion Solutions, LLC, and the site entered active decommissioning. At ZNPS Units 1 and 2, all planned decommissioning activities have been completed. The NRC staff held a public meeting in April 2015 regarding the LTP for ZNPS Units 1 and 2, which was submitted in December 2014 and approved in September 2018. All the above-grade plant structures have been removed and on November 8, 2023, the NRC found that the site met the unrestricted release criteria for the remaining survey units outside the boundary of the onsite ISFSI. On November 16, 2023, the NRC issued the confirming amendments that identify Constellation Energy Generation as the licensee. The licensed area now consists of the ISFSI, the ISFSI support building, and the ISFSI warehouse, and it encompasses approximately 5 acres.



APPENDIX F

GLOSSARY

2024

References 1, 14, 18, and 26 are the source of most of the definitions in this appendix.

GLOSSARY 2024

Agreement State: a U.S. State that has signed an agreement with the U.S. Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State. [Ref. 26]

As low as is reasonably achievable (ALARA): making every reasonable effort to maintain exposures to radiation as far below the dose limits in Title 10 of the Code of Federal Regulations (10 CFR) Part 20, "Standards for Protection Against Radiation," as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to public health and safety, and other societal and socioeconomic considerations, and in relation to the use of nuclear energy and licensed materials in the public interest. [Ref. 1]

Average measurable dose: the dose obtained by dividing the collective dose by the number of individuals who received a measurable dose. This is the average most commonly used in this and other reports when examining trends and comparing doses received by workers, because it excludes those individuals receiving a less-than-measurable dose.

Boiling-water reactor (BWR): a reactor in which water is boiled using heat released from fission. The steam released by boiling then drives turbines and generators to produce electrical power. BWRs operate similarly to electrical plants using fossil fuel, except that the BWRs are heated by nuclear fission in the reactor core. [Ref. 26]

Breeder: a reactor that produces more nuclear fuel than it consumes. A fertile material, such as uranium-238, when bombarded by neutrons, is transformed into a fissile material, such as plutonium-239, which can be used as fuel. Fermi Unit 1 is an example of a fast breeder reactor. [Ref. 26]

Byproduct material: as defined by NRC regulations, includes any radioactive material (except enriched uranium or plutonium) produced by a nuclear reactor. It also includes the tailings or wastes produced by the extraction or concentration of uranium or thorium or the fabrication of fuel for nuclear reactors. Additionally, it is any material that has been made radioactive through the use of a particle accelerator or any discrete source of radium-226 used for a commercial, medical, or research activity. [Ref. 1]

Ceased operations: the date of plant shutdown notification to the NRC.

Ceased power generation: the date the plant stopped generating electricity.

Class (or lung class or inhalation class): a classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies to a range of clearance half-times: for Class D (Days) of less than 10 days, for Class W (Weeks) from 10 to 100 days, and for Class Y (Years) of greater than 100 days. [Ref. 1]

Collective dose: the sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation. [Ref. 1]

Committed dose equivalent (HT,50): the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake (CDE [HT,50]). The NRC uses the abbreviation CDE for this term. [Ref. 1]

Committed effective dose equivalent (HE,50): the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues (CEDE [HE,50] = $\Sigma W_T H_T$). The NRC uses the abbreviation CEDE for this term. [Ref. 1]

Criticality: the normal operating condition of a reactor, in which nuclear fuel sustains a fission chain reaction. A reactor achieves criticality (and is said to be critical) when each fission event releases a sufficient number of neutrons to sustain an ongoing series of reactions. [Ref. 26]

DECON (immediate dismantlement): a phase of reactor decommissioning in which structures, systems, and components that contain radioactive contamination are removed from a site and safely disposed of at a commercially operated low-level waste disposal facility or decontaminated to a level that permits the site to be released for unrestricted use. [Ref. 26]

Deep-dose equivalent (H_d): applies to external whole-body exposure, and is the dose equivalent at a tissue depth of 1 centimeter (1,000 milligrams (mg)/square centimeter (cm²)). The NRC uses the abbreviation DDE for this term. [Ref. 1]

Effective dose equivalent (H_E): the sum of the products of the dose equivalent to the organ or tissue (H_T) and the weighting factors (W_T) applicable to each of the body organs or tissues that are irradiated (EDE [H_E] = $\Sigma W_T H_T$). The NRC uses the abbreviation EDE for this term. [Ref. 1]

ENTOMB: a method of decommissioning, in which radioactive contaminants are encased in a structurally long-lived material, such as concrete. The entombed structure is maintained and surveillance is continued until the entombed radioactive waste decays to a level permitting termination of the license and unrestricted release of the property. [Ref. 26]

Exposure: being exposed to ionizing radiation or to radioactive material. [Ref. 1]

Independent spent fuel storage installation (ISFSI): a complex designed and constructed for the interim storage of spent nuclear fuel, solid reactor-related greater-than-Class-C (GTCC) waste, and other radioactive materials associated with spent fuel and reactor-related GTCC waste storage. An ISFSI that is located on the site of another facility licensed under 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste," or a facility licensed under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," that shares common utilities and services with that facility or is physically connected with that other facility may still be considered independent. [Ref. 14]

Lens dose equivalent (LDE): applies to the external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg/cm²). [Ref. 1]

License: a license issued under the regulations in 10 CFR Parts 30 through 36, 39, 40, 50, 60, 61, 63, 70, or 72. [Ref. 1]

Licensed material: source material, special nuclear material, or byproduct material received, possessed, used, transferred, or disposed of under a general or specific license issued by the NRC or Agreement States and not otherwise exempt from regulation. [Ref. 1]

Licensee: a company, organization, institution, or other entity to which the NRC or an Agreement State has granted a general license or specific license to construct or operate a nuclear facility, or to receive, possess, use, transfer, or dispose of source material, byproduct material, or special nuclear material. [Ref. 26]

Light-water reactor (LWR): a term used to describe reactors using ordinary water as a moderated coolant, including BWRs and pressurized-water reactors (PWRs), the most common types used in the United States. [Ref. 26]

Measurable dose: a dose greater than zero rem (not including doses reported as “not detectable”).

Megawatt-hour: a unit of energy equivalent to 1,000 kilowatts of electricity used continuously for 1 hour. [Ref. 26]

Mode of Intake: the manner of intake into the body: inhalation (H), absorption through the skin (B), oral ingestion (G), and injection (J).

Monitoring (radiation monitoring, radiation protection monitoring): the measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses. [Ref. 1]

Monitoring year: interval during which the radiation exposure monitoring was performed.

Nonreactor licensees: NRC licensees that are not commercial nuclear power reactors. These licensees include industrial radiographers, fuel processors, fabricators, and reprocessors; manufacturers and distributors of byproduct material; ISFSIs; facilities for land disposal of low level waste; and geologic repositories for high-level waste.

Number of individuals with measurable dose: the count of unique individuals who received a measurable dose during the monitoring year. In some instances in this report, the number of individuals with a measurable dose may include individuals who are counted more than once, since they may be monitored at more than one licensee during the year. (See section 5 on the effect of transient individuals.) If tables have been adjusted for transient workers, this is noted in the appropriate footnotes to the tables.

Occupational dose: the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include doses received from background radiation; from any medical administration the individual has received; from exposure to individuals administered radioactive material and released under 10 CFR 35.75, "Release of individuals containing unsealed byproduct material or implants containing byproduct material"; from voluntary participation in medical research programs; or as a member of the public. [Ref. 1]

Pressurized-water reactor (PWR): common nuclear power reactor design in which very pure water is heated to a very high temperature by fission, kept under high pressure (to prevent it from boiling), and converted to steam by a steam generator (rather than by boiling, as in a BWR). The resulting steam is used to drive turbines, which activate generators to produce electrical power. The majority of reactors producing electric power in the United States are PWRs. [Ref. 26]

Radionuclide: a radioisotope that is an unstable isotope of an element that decays or disintegrates spontaneously, thereby emitting radiation. [Ref. 26]

Rem: the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rem is equal to the absorbed dose in rads multiplied by the quality factor (1 rem = 0.01 sievert). [Ref. 1]

SAFSTOR (often considered "delayed DECON"): long-term storage condition for a permanently shutdown nuclear power plant. During SAFSTOR, radioactive contamination decreases substantially, making subsequent decontamination and demolition easier and reducing the amount of low-level waste requiring disposal. [Ref. 26]

Shallow-dose equivalent for both maximum extremity (SDE-ME) and whole body (SDE-WB): the external exposure of the skin of the whole body or the skin of an extremity taken as the dose equivalent at a tissue depth of 0.007 centimeter (7 mg/cm^2). [Ref. 1]

Sievert: in the International System of Units, the unit of any of the quantities expressed as dose equivalent. The dose equivalent in sieverts is equal to the absorbed dose in grays multiplied by the quality factor (1 Sv = 100 rem). [Ref. 1]

Special nuclear material: plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the NRC, pursuant to the provisions of section 51 of the Atomic Energy Act of 1954, as amended, determines to be special nuclear material, or any material artificially enriched by any of the foregoing, but does not include source material. [Ref. 1]

Statistical comparisons: for statistical comparisons of averages, a two-sided one-sample t test with a 0.05 significance level (i.e., 95 percent confidence) used to determine whether the difference between the two averages is significant. For values that are not averages, such as total collective dose, a 5-year average from the previous 5 years (not including the current year under consideration) is calculated with a 95 percent confidence interval based on the normal distribution.

If the value for the current year falls within the 5-year 95 percent confidence interval, then it is not significantly different, whereas, if the value falls outside (i.e., below the lower limit or above the upper limit), there is an indication of a statistically significant change.

Two-sided one-sample t test formula:

$$t = \frac{\bar{X} - \mu}{\frac{S}{\sqrt{n}}}$$

where:

t = calculated t-statistic

\bar{X} = sample mean

μ = population mean

S = sample standard deviation

n = sample number

Example:

We wish to determine whether the average measurable dose for a type of nuclear reactor differs from the previous 5 years. The 5-year mean for the average measurable dose is 0.080. The population mean is the current year's average measurable dose, 0.060. The sample standard deviation is 0.01, and the sample number is 5. Using the formula above, the two-tailed probability value (as obtained from a Student's t-distribution table) given a t-value of 4.472 is 0.006, which is statistically significant at a 0.05 significance level.

$$t = \frac{0.080 - 0.060}{\frac{0.01}{2.236}} = 4.472$$

Total effective dose equivalent (TEDE): the sum of the effective dose equivalent (EDE) (for external exposures) and the committed effective dose equivalent (CEDE) (for internal exposures) (TEDE = EDE + CEDE). [Ref. 1]

Total organ dose equivalent (TODE): the sum of the deep dose equivalent (DDE) and the committed dose equivalent (CDE) to the organ receiving the highest dose as described in 10 CFR 20.2106(a)(6).

Transient individual: one who is monitored at more than one licensed site during the calendar year.

Unit availability factor: the unit available hours (the total clock hours in the reporting period during which the unit operated online or was capable of such operation) times 100 divided by the hours in the period. [Ref. 18]

Weighting factor (WT): multipliers of the equivalent dose to an organ or tissue used for radiation protection purposes to account for different sensitivities of different organs and tissues to the induction of the stochastic effects of radiation. [Ref. 1]

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(See instructions on the reverse)

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11. ABSTRACT (200 words or less)

This report summarizes the occupational exposure data that are maintained in the U.S. Nuclear Regulatory Commission (NRC) Radiation Exposure Information and Reporting System (REIRS) database. The bulk of the information contained in this report was compiled from the 2024 annual reports submitted by five of the seven categories of NRC licensees subject to the reporting requirements of Title 10 of the *Code of Federal Regulations* 20.2206, "Reports of individual monitoring." (Because there are no geologic repositories for high-level waste currently licensed and no NRC-licensed low-level waste disposal facilities currently in operation, this report considers only five categories.) The annual reports submitted by these licensees consist of radiation exposure records for each monitored individual. These records are analyzed for trends and presented in this report in terms of collective dose and the distribution of dose across the monitored individuals. Annual reports for 2024 were received from a total of 166 NRC licensees. Collectively, the reports submitted by these licensees indicate that 133,240 individuals were monitored, 59,338 of whom received a measurable dose.

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