U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NUREG-1307
Revision 19

Report on Waste Burial Charges

Changes in Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities

Draft Report for Comment

Office of Nuclear Material Safety and Safeguards

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ABSTRACT

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.75, "Reporting and Recordkeeping for Decommissioning Planning," the U.S. Nuclear Regulatory Commission (NRC) requires nuclear power reactor licensees to adjust annually, in current year dollars, their estimate of the cost to decommission their plants. The annual updates are part of the process for providing reasonable assurance that adequate funds for decommissioning will be available when needed. This NUREG, which is periodically revised, describes the formula in 10 CFR 50.75(c) that is acceptable to the NRC for determining the minimum decommissioning fund requirements for nuclear power reactor licensees. This formula is based on the estimated cost of decommissioning a reference pressurized-water reactor (PWR) and a reference boiling-water reactor (BWR) in 1986, and is escalated to current year dollars using an adjustment factor provided in 10 CFR 50.75(c)(2). The primary purpose of this report is to provide the technical basis, including references, for the estimated cost of decommissioning the reference PWR and reference BWR, and to develop the escalation factor for the low-level radioactive waste (LLW) burial cost portion of the adjustment factor. Escalation factors for the other portions of the adjustment factor (i.e., labor and energy costs), are also provided in this report.

This 19th revision of NUREG-1307, "Changes in Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities," contains burial cost escalation factors updated to the year 2022 for the reference PWR and for the reference BWR. As presented in Table 2-1, "Values of B_x as a Function of LLW Burial Site and Year," multiple burial cost escalation factors are provided that reflect various LLW burial scenarios for each reactor type. These were developed because licensees may have the option to ship waste to one or more of the four currently operating LLW disposal facilities in the United States, and the cost of disposal varies among each of the four facilities. In addition, there are various limitations on LLW disposal facility access by reactors, based upon the state in which the reactor is located. The different LLW burial scenarios are described in detail in Section 1.2, "LLW Disposal Cost Scenarios."

The currently operating LLW disposal facilities are located in 1) Texas, 2) South Carolina, 3) Washington, and 4) Utah. The Texas, South Carolina, and Washington facilities are the host disposal sites for the Texas LLW Disposal Compact (Texas Compact), the Atlantic Interstate LLW Management Compact (Atlantic Compact), and the Northwest Compact on LLW Management (Northwest Compact), respectively (Appendix E provides additional information about LLW compacts), and are referred to in this report as compact-affiliated disposal facilities. The Washington LLW disposal facility also accepts LLW generated in the three member-states of the Rocky Mountain LLW Compact (Rocky Mountain Compact). The fourth site (Utah) is not associated with a specific LLW compact, and so is referred to in this report as a non-compact disposal facility. Nuclear power plant facilities located within the LLW compacts for the compact-affiliated disposal facilities can dispose of their LLW at the affiliated disposal facility or, in some cases, can dispose of a portion of their LLW at the non-compact disposal facility. Nuclear power plants not located within a LLW compact having a compact-affiliated disposal facility can dispose of their LLW at either the Texas or Utah disposal facilities. The Utah site accepts only Class A LLW while the Texas site will accept Class A, B, and C LLW (see Section 1.1 for definitions of these LLW classes). For plants that have no disposal site available within their designated LLW compact, this report assumes that the cost for disposal of Class A LLW is the same as that for the Utah disposal facility, and the cost for disposal of Class B and C LLW is the same as that for the Texas disposal facility, and includes accounting for out-of-compact fees.

In the 2021 decommissioning fund status reporting cycle, in which licensees provided decommissioning trust fund data to the NRC by March 31, 2021, as required by 10 CFR 50.75(f), 71 of the 95 operating reactors in the U.S. applied LLW burial cost escalation factors based on the Table 2-1 scenario in which non-compact affiliated generators used the Utah and Texas disposal sites. In this current revision to NUREG-1307, estimated 2022 disposal costs for this scenario are approximately 7.2 percent higher for the reference PWR and 4.2 percent lower for the reference BWR compared to 2020 disposal costs. For the reference PWR, increases in disposal costs are due to increases in disposal fees for the Clive disposal facility that are higher than the decreases in the disposal fees for the Texas disposal facility. For the reference BWR, decreases in disposal costs are due to decreases in the disposal fees for the Texas disposal facility that more than offset the increases in disposal fees for the Clive disposal facility.

In the same 2021 NRC reporting cycle, four of the 95 operating plants in the U.S. applied LLW burial cost escalation factors based on the Table 2-1 scenario in which compact affiliated generators used only the Texas disposal site. In this current revision to NUREG-1307, estimated 2022 disposal costs for Texas LLW compact affiliated generators are approximately 17 percent lower for the reference PWR and 19 percent lower for the reference BWR, compared to 2020 disposal costs. Decreases in disposal costs were due to a significant decrease in the curie inventory charge from year 2020.

Also in the 2021 NRC reporting cycle, 13 of the 95 operating plants in the U.S. applied LLW burial cost escalation factors based on the Table 2-1 scenario in which compact affiliated generators used only the South Carolina disposal site, or used a combination of both the South Carolina disposal site and the non-compact disposal facility. (The South Carolina disposal site accepts LLW from facilities located in South Carolina, New Jersey, and Connecticut, all members of the Atlantic Compact.) In this current revision to NUREG-1307, estimated 2022 disposal costs using only the South Carolina disposal site are approximately 18 percent higher for both the reference PWR and the reference BWR compared to 2020 disposal costs. The estimated disposal costs using the combination of both the South Carolina disposal site and the non-compact disposal facility are approximately 20 percent higher for both the PWR and BWR compared to 2020 disposal costs. Increases in disposal costs were due to increases in charges for weight, activity (or curie), and irradiated hardware.

Lastly, in the 2021 NRC reporting cycle, one of the 95 operating plants in the U.S. applied a LLW burial cost escalation factor based on the Table 2-1 scenario in which a compact affiliated generator used only the Washington disposal site. The estimated 2022 disposal cost using only the Washington disposal site, which accepts LLW from the 11 member-states of the Northwest and Rocky Mountain Compacts, are approximately 9.1 percent and 8.1 percent lower for the reference PWR and BWR, respectively, compared to 2020 disposal costs. Decreases in disposal costs were derived mostly from decreases in LLW volume and dose rate charges.

Licensees may use the escalation factors from this NUREG in their cost analyses, or, per regulation at 10 CFR 50.75(b)(1), they may generate and report site-specific cost estimates that result in a total cost estimate of no less than the amount estimated by using the 10 CFR 50.75(c) formula and cost escalation factors presented in this NUREG. In the 2021 NRC reporting cycle, six of the 95 operating plants in the U.S. reported cost data using site-specific cost estimates.

Revision 19 to NUREG-1307 assumes that LLW generated from day-to-day plant operations would be disposed of using the licensee's operating funds, and thus would not rely on decommissioning funds identified in the formula calculation. However, facilities located in states that are members of a LLW compact with no available LLW disposal site may be forced to provide interim storage for this waste (although most LLW could potentially be disposed of at the non-compact disposal facility located in Utah, or at the compact-affiliated disposal facility located in Texas). Accordingly, some of the LLW may ultimately need to be disposed of during decommissioning following interim storage. For those plants operating through extended license terms, this volume can become significant and the disposal cost would not be accounted for in a decommissioning trust fund based on the formula calculation.

FOREWORD

Nuclear power reactor licensees are required by 10 CFR 50.75, “Reporting and Recordkeeping for Decommissioning Planning,” to annually adjust the estimated decommissioning costs of their nuclear facilities to ensure adequate funds are available for decommissioning. The regulation (10 CFR 50.75(c)(2)) references NUREG-1307 as the appropriate source for obtaining the escalation factor for waste burial/disposition costs. This 19th revision of NUREG-1307 provides current, as of July 2022, waste burial/disposition costs using the compact-affiliated disposal facilities located in Andrews County, Texas; Barnwell, South Carolina; and Richland, Washington, and the non-compact disposal facility in Clive, Utah. In addition, this revision includes a disposal cost scenario that provides for disposal of low-level waste (LLW) using a combination of non-compact and compact-affiliated disposal facilities. Licensees can factor these numbers into the adjustment formula, as specified in 10 CFR 50.75(c)(2), to determine the minimum decommissioning fund requirement for their nuclear facilities. Although this NUREG is specifically prepared for the use of power reactor licensees, it also can be a valuable source of information for material licensees on current waste burial/disposition costs.

On July 1, 2000, the South Carolina disposal facility became the host disposal facility for the newly formed Atlantic Compact, comprised of the States of Connecticut, New Jersey, and South Carolina. Effective July 1, 2008, LLW from States that are not members of the Atlantic Compact was no longer accepted at the South Carolina disposal facility. The South Carolina Public Service Commission annually determines the costs of waste disposal at the South Carolina disposal facility and provides the site operator with an allowable operating margin.

The Richland, Washington, facility only accepts LLW from the Northwest and Rocky Mountain Compacts. The Northwest Compact is comprised of the States of Idaho, Montana, Oregon, Utah, Washington, Wyoming, Alaska, and Hawaii. The Rocky Mountain Compact is comprised of the States of Colorado, Nevada, and New Mexico. The costs of disposal for this facility are determined annually based on waste generator volume projections and a maximum annual operator revenue set by the Washington Utilities and Transportation Commission. If the total operator revenue is exceeded in a given year, a rebate may be sent to the waste generator.

The Andrews County, Texas, facility or Texas Compact Waste Facility (CWF) accepts LLW from both the Texas Compact and out-of-compact generators. The fees for LLW disposal are determined by the Texas Commission on Environmental Quality. Out-of-compact generators, however, must submit an import petition to the Texas Compact Commission for approval prior to shipping. The State of Texas also limits total non-compact waste disposed at the CWF to 30-percent of licensed capacity.

Since the South Carolina and Washington LLW disposal facilities are available only to licensees located within their respective compacts, an alternative available to licensees is to dispose of decommissioning Class A LLW at a non-compact disposal facility. Costs for this scenario are based on a price quote received from the operator of the non-compact disposal facility located in Utah. Revision 19 to NUREG-1307 provides waste burial/disposition cost escalation factors for this scenario, in addition to the standard scenario of disposing of 100-percent of decommissioning LLW at a compact-affiliated disposal facility.

In addition to currently available, traditional LLW disposal alternatives, staff continues to evaluate LLW disposal trends and evolving industry practices that may impact minimum decommissioning fund formula cost calculations provided for in 10 CFR 50.75. NRC is aware

that some LLW disposal methods, such as the disposal of very low-level waste at other-than traditional LLW sites, and other alternatives as authorized under 10 CFR 20.2002, "Method for obtaining approval of proposed disposal procedures," may be less costly than disposal at traditional LLW sites. However, these alternatives are often subject to case-by-case approvals and thus, the impact on future LLW disposal practices, costs, and cost savings, is difficult to forecast and quantify. Accordingly, the final version of NUREG-1307, Revision 19, does not consider the use of alternative disposal methods or their potential impact to minimum decommissioning fund formula calculations.

Revision 19 to NUREG-1307 assumes that LLW generated during plant operations is disposed of using operating funds. Nuclear power plants that are members of a LLW Compact that has no disposal site available for LLW may be forced to provide interim storage for this waste, although most LLW may be able to be disposed of at the non-compact disposal facility located in Utah or at the compact-affiliated disposal facility located in Texas. The LLW volume could be significant for plants with extended operating periods (e.g., beyond 40-years), and the disposal cost of this additional volume would not be accounted for in a decommissioning trust fund based on the formula calculation.

For licensees having no disposal site available within their designated LLW Compact, NUREG-1307, Revision 19, assumes that the cost for disposal of Class A LLW is the same as that for the Utah disposal facility, and the cost for disposal of Class B and C LLW is the same as that for the Texas disposal facility including accounting for out-of-compact fees. Accordingly, given these considerations, licensees may want to set aside additional funds to cover associated future decommissioning costs.

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ABBREVIATIONS AND ACRONYMS

BIO	biological
BLDG	building
BLS	U.S. Department of Labor, Bureau of Labor Statistics
BWR	boiling water reactor
B_x	LLW burial cost escalation factor
CFR	Code of Federal Regulations
CHG	charge
CONTAINM	containment
CONTAM	contaminated
CNS	Chem-Nuclear Systems, L.L.C.
DHEC	South Carolina Department of Health and Environmental Control
ECI	Employment Cost Index
EHx	excess letdown heat exchanger
E_x	energy cost escalation factor
ft^3	cubic foot
F_x	cost escalation factor for diesel and other fuels for transportation and other heavy equipment operation
gal	gallon
GTCC	greater-than-Class C LLW
ID	identification number
ISFSI	interim spent fuel storage installation
lbs	pounds
LLW	low-level radioactive waste
LLRWPAA	Low-Level Radioactive Waste Policy Amendments Act of 1985
L_x	labor cost escalation factor
MATRL or Matl	material
Misc	miscellaneous
mR/h	millirem per hour
MWt	megawatt-thermal
NA	not available
NPP	nuclear power plant
NRC	U.S. Nuclear Regulatory Commission
P	reactor power level
P_x	cost escalation factor for industrial electric power
PNNL	Pacific Northwest National Laboratory
PPI	Producer Price Index
PWR	pressurized water reactor
RAD	radioactive
RCW	Revised Code of Washington

REACT	reactor
R/hr	rem per hour
R.Hx	regenerative heat exchanger
SAC	sacrificial
TAC	Texas Administrative Code
TG	turbine-generator
TMI	Three Mile Island Unit 2 Nuclear Power Plant
U.S.	United States
VEN	vendor

1 INTRODUCTION

Nuclear power reactor licensees are required by Title 10 of the *Code of Federal Regulations* (10 CFR) 50.75, "Reporting and Recordkeeping for Decommissioning Planning," to annually adjust the estimated decommissioning costs (in current year dollars) of their nuclear facilities to ensure adequate funds are available for decommissioning. This is one step of a multi-step process for providing reasonable assurance to the NRC that adequate funds for decommissioning are planned for and accumulated beginning in licensing and through operations. This NUREG provides escalation factors for the waste burial/disposition component of the decommissioning funding formula, as required by 10 CFR 50.75(c)(2). This NUREG also provides the regional escalation factors for the labor and energy components of the decommissioning fund requirement. Together, these escalation factors are used to adjust the NRC minimum decommissioning fund requirement by means of an "adjustment factor." The term "adjustment factor," as used in this NUREG and in 10 CFR 50.75(c)(2), refers to increases and decreases in estimated decommissioning costs subsequent to issuance of the 10 CFR 50.75 regulations. The base decommissioning fund requirements in these regulations were established in 1986 dollars. The adjustment factor escalates the cost, in 1986 dollars, to costs in today's dollars. This NUREG is updated periodically to reflect changes in waste burial/disposition costs and accounts for changes in the labor and energy values.

This NUREG provides the development of a formula for estimating decommissioning costs that are acceptable to the NRC. Sources of information used in the formula are identified. Values developed for the escalation of radioactive waste burial/disposition costs, by site and by year, are also provided. Licensees may use the formula, the coefficients, and the burial/disposition cost escalation factors from this NUREG in their analyses, or they may use an adjustment rate at least equal to the approach presented herein.

The formula and its coefficients, together with guidance to other data sources needed to complete the formula calculation, (i.e., U.S. Department of Labor, Bureau of Labor Statistics), are summarized in Chapter 2. The development of the formula and its coefficients, with sample calculations, are presented in Chapter 3. Price schedules for LLW burial/disposition for the year 2022 are given in Appendix A for compact-affiliated and non-compact disposal facilities. Calculations to determine the burial/disposition escalation factors, B_x, for each site and year of evaluation are summarized in Appendix B.

1.1 Definitions

This section provides the definition of key terms utilized throughout this NUREG.

Low-level radioactive waste (LLW). LLW is a general term for a wide range of items that have become contaminated with radioactive material or have become radioactive through exposure to neutron radiation. Radioactive materials are present at nuclear power plants undergoing decommissioning as the result of plant operations prior to permanent shutdown and as the result of decommissioning activities. Examples include radioactively contaminated equipment, piping, tanks, hardware, and tools; concrete debris and soil; liquid radioactive waste (radwaste) treatment residues; and radioactively contaminated protective shoe covers and clothing; cleaning rags, mops, and filters. The radioactivity in these wastes can range from just above natural background levels to much higher levels, such as seen in components from inside the reactor vessel of a nuclear power plant. LLW from decommissioning activities is typically shipped to a disposal site specifically licensed for disposal of LLW.

LLW Classification. 10 CFR 61.55(a)(2) defines three classes of LLW acceptable for routine near-surface disposal based on its radiological and physical characteristics:

(i) Class A waste is waste that is usually segregated from other waste classes at the disposal site. The physical form and characteristics of Class A waste must meet the minimum requirements set forth in § 61.56(a). If Class A waste also meets the stability requirements set forth in § 61.56(b), it is not necessary to segregate the waste for disposal. (e.g., dry active waste, protective shoe covers and clothing)

(ii) Class B waste is waste that must meet more rigorous requirements on waste form to ensure stability after disposal. The physical form and characteristics of Class B waste must meet both the minimum and stability requirements set forth in § 61.56. (e.g., primary resin, primary filters)

(iii) Class C waste is waste that not only must meet more rigorous requirements on waste form to ensure stability but also requires additional measures at the disposal facility to protect against inadvertent intrusion. The physical form and characteristics of Class C waste must meet both the minimum and stability requirements set forth in § 61.56. (e.g., radioactive components)

LLW Compacts. The Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) makes each state responsible for disposing of the LLW generated within its boundaries and establishes a mechanism for states to enter into compacts to establish regional LLW disposal facilities. Appendix E identifies the compacts that have been formed and the states affiliated with each. Appendix E also identifies the states that are not affiliated with any compact.

Compact-affiliated Disposal Facility. A LLW disposal facility that has been established by a compact in accordance with the LLRWPAA. Four compacts, representing 16 states, have established three LLW disposal facilities: (1) Northwest Compact and Rocky Mountain Compact – U.S. Ecology disposal facility located in Richland, Washington, (2) Atlantic Compact – EnergySolutions disposal facility located in Barnwell, South Carolina, and (3) Texas Compact – Waste Control Specialists disposal facility located in Andrews County, Texas.

Non-compact Disposal Facility. A LLW disposal facility that was established outside of the framework of the LLRWPAA and is not affiliated with a compact. Only one LLW disposal facility meets this definition – the EnergySolutions disposal facility located in Clive, Utah.

1.2 LLW Disposal Cost Scenarios

NUREG-1307, Revision 19, contains disposal costs updated to the year **Error! Reference source not found.** for the reference pressurized-water reactor (PWR) and the reference boiling-water reactor (BWR). Three scenarios for estimating these costs are presented. The first scenario assumes that 100-percent of the low-level waste (LLW) generated during decommissioning is disposed of at one of the three compact-affiliated disposal facilities located in Washington, South Carolina, and Texas. Year 2022 B_x escalation factors, expressed as a ratio of **Error! Reference source not found.** disposal costs to the original 1986 disposal costs, are also provided. For historical purposes, disposal costs for the reference reactors and B_x escalation factors at the Washington and South Carolina sites for the years 2014, 2018, and 2020 are also provided. See previous revisions of NUREG-1307 for disposal costs prior to 2014.

The second scenario provides for disposing of LLW using a combination of non-compact and compact-affiliated disposal facilities. For a PWR under this scenario, 93-percent of the LLW is

assumed to be disposed of at a non-compact disposal facility (Utah) and the remaining 7-percent is assumed to be disposed of at a compact-affiliated disposal facility. For a BWR under this scenario, 95-percent of the LLW is assumed to be disposed of at a non-compact disposal facility (Utah) and the remaining 5-percent is assumed to be disposed of at a compact-affiliated disposal facility. This scenario, which is considered an acceptable alternative for licensees, allows NPP licensees to take advantage of potentially lower disposal costs for much of their LLW. B_x escalation factors for these “alternative” disposal costs are also provided.

The third scenario provides for disposing of all LLW at non-compact disposal facilities or compact-affiliated disposal facilities that accept out-of-compact waste.

NUREG–1307, Revision 19, assumes that LLW generated during plant operations is disposed of using operating funds. Plants that are members of a LLW Compact that has no disposal site available for LLW may be forced to provide interim storage for this waste (although most LLW may be able to be disposed of at the non-compact disposal facility located in Utah or at the compact-affiliated disposal facility located in Texas). Some of this waste may ultimately need to be disposed of during decommissioning. This LLW could be significant for plants with extended operating periods (e.g., beyond 40-years), and the disposal cost of this additional volume would not be accounted for in a decommissioning trust fund based on the formula calculation.

For plants that have no disposal site available within their designated LLW Compact, NUREG-1307, Revision 19, assumes that the cost for disposal of Class A LLW is the same as that for the Utah disposal facility, and that the cost for disposal of Class B and C LLW is the same as that for the Texas disposal facility, including accounting for out-of-compact fees. As new disposal scenarios become available, they will be incorporated into subsequent revisions of NUREG-1307.

2 DECOMMISSIONING COST ELEMENTS

The elements of decommissioning costs under 50.75(c)(2) are assigned to three categories: (1) those that are proportional to labor costs, L_x; (2) those that are proportional to energy costs, E_x; and (3) those that are proportional to burial costs, B_x. The adjustment of the total decommissioning cost estimate can be expressed by:

$$\text{Estimated cost (Year X)} = [1986\ \$\ \text{cost}]\ [A*L_x + B*E_x + C*B_x]$$

where A, B, and C are coefficients representing the percent or portion of the total 1986 dollar costs attributable to labor (0.65), energy (0.13), and burial (0.22), respectively, and sum to 1.0. The factors L_x, E_x, and B_x are defined by:

L_x = labor cost escalation factor, January of 1986 to the latest month of Year X for which data are available,

E_x = energy cost escalation factor, January of 1986 to the latest month of Year X for which data are available, and,

B_x = LLW burial/disposition cost escalation factor, January of 1986 to the latest month of Year X for which data are available.

For labor and energy cost escalation factors used in calculating the total decommissioning cost estimate for years subsequent to 1986, L_x and E_x are based on the U.S. Department of Labor, Bureau of Labor Statistics (BLS) national producer price indexes, national consumer price indexes, and local conditions for a given site (see Chapter 3).

B_x is evaluated by recalculating the costs of burial/disposition of the radioactive wastes from the reference PWR (Reference 1) and the reference BWR (Reference 2) based on the price schedules provided by the available disposal facilities for the year of interest. The results of these recalculations are presented in Table 2-1, by site and by year. These recalculations are performed by an NRC contractor.

Effective January 1, 1993, radioactive waste from states that are not members of the Northwest Compact (comprised of Idaho, Montana, Oregon, Utah, Washington, Wyoming, Alaska, and Hawaii) or Rocky Mountain Compact (comprised of Colorado, Nevada, and New Mexico) was no longer accepted at the Washington disposal site.

Effective July 1, 2000, the South Carolina LLW burial site applied different price schedules for waste from states within and outside the then newly created Atlantic Compact (comprised of South Carolina, Connecticut, and New Jersey). Effective July 1, 2008, radioactive waste from States that are not members of the Atlantic Compact was no longer accepted at the South Carolina disposal site.

Beginning in the Spring of 2012, a new LLW disposal facility became available for disposal of waste from States within the Texas Compact (comprised of Texas and Vermont). Disposal costs for this facility were included in NUREG-1307 Revision 16 for the first time.

Licensees not located in the Northwest, Rocky Mountain, Atlantic, or Texas Compacts should use the B_x values for "Generators Located in States Not Affiliated with a Compact having a Disposal Facility" (see footnote (c) in Table 2-1).

Effective with Revision 15 of this NUREG (ML130223A030, January 2013), B_x values were developed for two scenarios for each of the compact-affiliated disposal sites. These are "Compact-Affiliated Disposal Facility Only" and "Combination of Compact-Affiliated and Non-Compact Disposal Facilities.". The B_x values for these scenarios are provided in Table 2-1 (see footnotes (d) and (e) in Table 2-1). The decision rests with the licensees to determine the scenario that best represents their particular situation.

Table 2-1 Values of B_x as a Function of LLW Burial Site and Year[a]

	B_x Values for Washington Site[f]				B_x Values for South Carolina Site				B_x Values for Texas Site[b]				B_x Values for Generators Located in the Unaffiliated States and those Located in Compact-Affiliated States having no Disposal Facility[c]	
	Compact-Affiliated Disposal Facility Only[e]		Combination of Compact-Affiliated and Non-Compact Disposal Facilities[d,e]		Compact-Affiliated Disposal Facility Only[e]		Combination of Compact Affiliated and Non-Compact Disposal Facilities[d,e]		Compact-Affiliated Disposal Facility Only[e]		Combination of Compact Affiliated and Non-Compact Disposal Facilities[d,e]			
Year	PWR	BWR*	PWR	BWR	PWR	BWR*	PWR*	BWR*	PWR*	BWR	PWR	BWR	PWR*	BWR*
2022	10.013	8.571	10.526	8.865	38.742	33.934	14.067	15.550	6.650	6.014	12.229	10.497	13.711	12.296
2020	11.019	9.328	8.866	7.549	32.973	28.727	11.679	12.948	8.040	7.399	11.016	10.359	12.793	12.837
2018	10.854	9.118	8.697	7.186	32.329	28.314	11.607	12.872	8.508	8.293	11.054	10.731	12.853	13.422
2016	8.706	7.290	8.129	6.668	30.061	26.329	10.971	12.111	8.508	8.293	10.672	10.441	12.471	13.132

(a) The values shown in this table for the years 2022 and 2020 are developed in Appendix B, with all values normalized to the 1986 Washington PWR and BWR values by dividing the calculated burial costs for each site and year by the Washington site burial costs calculated for the year 1986. Refer to previous revisions of NUREG-1307 for development of values prior to 2022.

(b) Effective with NUREG-1307, Revision 16, the Compact Waste Facility (CWF) in Andrews County, Texas, is available as a full-service (i.e., Class A, B, and C) LLW disposal facility for waste generators located in States affiliated with the Texas Compact.

(c) Effective with NUREG-1307, Revision 16, the CWF in Andrews County, Texas, is also available as a full-service (i.e., Class A, B, and C) LLW disposal facility for waste generators located in States not affiliated with the Texas Compact. Out-of-compact generators, however, must submit an import petition to the Texas Compact Commission for approval prior to shipping. The State of Texas also limits total non-compact waste disposed at the CWF to 30-percent of licensed capacity and imposes additional fees on LLW disposed of from out-of-compact generators. With the availability of this full-service disposal facility to out-of-compact waste generators and the Clive, Utah disposal facility for any Class A LLW generated in the U.S., the Generic LLW Disposal Site scenario used in previous versions of NUREG-1307 is replaced with this scenario, which provides B_x values representing a composite of the disposal rates for these two disposal facilities. These B_x factors are recommended for use for plants that currently have no disposal site available within their designated LLW Compact.

(d) Effective with NUREG-1307, Revision 14, the bulk of the LLW is assumed to be dispositioned at the Clive, Utah disposal facility.

(e) Effective with NUREG–1307, Revision 15, the nomenclature for the two disposal scenarios was changed to “Compact-Affiliated Disposal Facility Only” and “Combination of Compact-Affiliated and Non-Compact Disposal Facilities” to better describe these scenarios.

(*) The seven columns highlighted with an asterisk reflect B_x LLW burial cost escalation factor data used by the 89 operating power reactor licensees that utilized the minimum decommissioning fund formula in decommissioning trust fund status reports submitted to the NRC in 2021.

3 DEVELOPMENT OF COST ESCALATION FACTORS AND COST ADJUSTMENT FACTOR

The minimum decommissioning fund requirement, or minimum formula amount, for radiological decommissioning of a nuclear power plant, was established using January 1986 dollars, and is defined in 10 CFR 50.75(c) as follows (where P is power level of the nuclear power reactor in megawatt-thermal (MWt))[1]:

For a PWR (10 CFR 50.75(c)(1)(i)) –

Greater than or equal to 3400 MWt……$105 million

Between 1200 MWt and 3400 MWt……$(75 + 0.0088P) million
(For a PWR of less than 1200 MWt, use P=1200 MWt)

For a BWR (10 CFR 50.75(c)(1)(ii)) –

Greater than or equal to 3400 MWt……$135 million

Between 1200 MWt and 3400 MWt……$(104 + 0.009P) million
(For a BWR of less than 1200 MWt, use P=1200 MWt)

The minimum formula amount represents an actual base-year (1986) cost estimate to decommission a nuclear power plant. These 1986 costs are derived from studies finalized in the late 1970s and early 1980s (References 6 and 7), and adjusted to 1986 dollars through addendums to these PWR and BWR documented studies (References 1 and 2).

Present day minimum formula amounts rely on an adjustment factor that is applied to the initial cost estimate. In this way, the adjustment factor accounts for, or escalates, the initial formula amount to a dollar figure that incorporates inflation and other cost escalation factors.

In 10 CFR 50.75(c)(2), the adjustment factor is defined to be at least equal to 0.65L + 0.13E + 0.22B, where L and E are cost escalation factors for labor and energy, respectively, and values are to be taken from regional data of U.S. Department of Labor, Bureau of Labor Statistics, and B is a cost escalation factor for waste burial and is to be taken from this report.

In summary, the adjustment factor incorporated in 10 CFR 50.75(c)(2) provides a mechanism for escalating the decommissioning fund requirement (minimum formula amount) to current year dollars to reflect inflation and other changes in economic conditions since January 1986. This section summarizes how the coefficients (i.e., 0.65, 0.13, and 0.22) in the adjustment factor were originally developed and provides updated L, E, and B cost escalation factors for use in calculating the minimum decommissioning fund requirement in current year (2022) dollars.

[1] The energy input in a heat engine is measured as MWt.

3.1 Development of the Cost Adjustment Factor

For the purpose of adjusting the 1986 minimum decommissioning formula cost estimate into today's dollars, the NRC, working with Pacific Northwest National Laboratory, determined that the total decommissioning cost could be divided into three principal components (major cost drivers) for cost escalation purposes. These components are: (1) labor, materials, and services, (2) electric power and diesel or other fuels for transportation, and (3) radioactive waste burial/disposition. The major elements contributing to each of these three components are provided in Table 3-1. The percent, or portion, of the total decommissioning cost, in January 1986 dollars, categorized as labor, materials, and services, is defined by the coefficient A. The percent, or portion, of the total decommissioning cost, in January 1986 dollars, categorized as energy and radioactive waste transportation, is defined by the coefficient B. The percent, or portion, of the total decommissioning cost, in January 1986 dollars, categorized as radioactive waste burial/disposition, is defined by the coefficient C.

Table 3-1 Evaluation of the Coefficients A, B, and C in January 1986 Dollars

	Reference PWR Values		Reference BWR Values	
Cost Category	**1986 $ (millions)**	**Coefficient**	**1986 $ (millions)**	**Coefficient**
Staff Labor	17.98[a]		35.12[b]	
Special Equipment	1.64[a]		4.03[b	
Misc. Supplies	3.12[a]		3.71[b]	
Specialty Contractor	12.9[a]		21.1[b]	
Nuclear Insurance	1.9[a]		1.9[b]	
Containers	10.9[d]		8.14[c]	
Added Staff	7.5[a]		4.4[b]	
Added Supplies	1.2[a]		0.2[b]	
Spec. Contractor	0.78[a]		0.71[b]	
Pre-engineering	7.4[a]		7.4[b]	
Post-TMI-backfits	0.9[a]		0.1[b]	
Environmental Surveillance	0.31[a]		--	
License Fees	0.14[a]		0.14[b]	
Subtotal	**66.67**	**A = 0.64**	**86.95**	**A = 0.66**
Energy	8.31[a]		8.84[b]	
Transportation	6.08[d]		7.54[c]	
Subtotal	**14.39**	**B = 0.14**	**16.38**	**B = 0.12**
Burial	22.48[d]	**C = 0.22**	29.98[c]	**C = 0.22**
Total	**103.54**		**133.31**	

Note: All costs include a 25-percent contingency factor.
(a) Based on Table 3.1, NUREG/CR-0130, Addendum 4.
(b) Based on Table 3.1, NUREG/CR-0672, Addendum 3.
(c) Based on Table 5.2, NUREG/CR-0672, Addendum 3.
(d) Based on Table 6.2, NUREG/CR-0130, Addendum 4.

Per Table 3-1, the C (LLW burial associated) coefficient, or that percentage representing the portion of decommissioning cost attributable to LLW burial charges, are the same (.22) for both PWRs and BWRs. The A (labor associated) and B (energy associated) coefficients differ only slightly between the two reactor types. Consequently, due to the close similarity in these coefficients, and uncertainty contained within the labor and energy assessments used in developing the minimum formula, the formula in 10 CFR 50.75(c)(2) was simplified. The simplified formula is a composite of the two reactor types by averaging the A and B coefficients derived from the separate PWR and BWR estimates. Hence, the 10 CFR 50.75(c)(2) formula for determining the decommissioning cost of both PWR and BWR reactor types assume the same coefficients, as follows:

$$A_{average} = 0.65 \qquad B_{average} = 0.13 \qquad C_{average} = 0.22$$

All costs categorized as labor, materials, and services are escalated from 1986 dollars to current year dollars by multiplying coefficient A (0.65) by a labor cost escalation factor L_x. All costs categorized as energy and radioactive waste transportation are escalated from 1986 dollars to current year dollars by multiplying coefficient B (0.13) by an energy cost escalation factor E_x. Values for L_x and E_x for years subsequent to 1986 are based on the national producer price indexes, national consumer price indexes, and local conditions for a given site, as described below in Sections 3.2 and 3.3, respectively. All costs categorized as radioactive waste burial/disposition are escalated from 1986 dollars to current year dollars by multiplying coefficient C (0.22) by a burial cost escalation factor B_x. The values to be used in determining B_x are derived from published cost schedules at the three compact-affiliated disposal facilities and a price quote from the non-compact disposal facility located in Utah, as described in Section 3.4.

Note that values for B_x for year 2020 and earlier, are provided in Table 2-1 for information purposes only; licensees will need only the 2022 figures for the minimum formula calculation required by March 31, 2023.

In summary, a simple equation was developed and incorporated into 10 CFR 50.75(c) to determine the minimum decommissioning fund requirement, or minimum formula amount, escalated to current year dollars. This equation is as follows:

Estimated cost (Year X) = [1986 $ Cost]*($A*L_x + B*E_x + C*B_x$) where:

Estimated cost (Year X) = estimated decommissioning costs in Year X (e.g., 2022) dollars,

[1986 $ Cost] = estimated decommissioning costs in 1986 dollars (base cost for PWR/BWR in 1986 dollars),

A = percent or portion (also referred to as coefficient) of the [1986 $ Cost] attributable to labor, materials, and services (0.65),

B = percent or portion (also referred to as coefficient) of the [1986 $ Cost] attributable to energy and radioactive waste transportation (0.13),

C = percent or portion (also referred to as coefficient) of the [1986 $ Cost] attributable to radioactive waste burial/disposition (0.22),

L_x = labor, materials, and services cost escalation, January of 1986 to latest month of Year X for which PPI data are available,

E_x = energy (electricity and fuel oil) and waste transportation cost escalation, January of 1986 to latest month of Year X for which CPI data are available,

B_x = Low-level waste (LLW) burial/disposition cost escalation, January of 1986 to the latest month of Year X for which data are available,

= $(R_x + \Sigma S_x) / (R1986 + \Sigma S1986)$, where:

R_x = radioactive waste burial/disposition costs (excluding surcharges) in Year X dollars,

ΣS_x = summation of surcharges in Year X dollars,

R1986 = radioactive waste burial costs (excluding surcharges) in 1986 dollars, and

$\Sigma S1986$ = summation of surcharges in 1986 dollars.

3.2 Labor Cost Escalation Factors

In addition to costs categorized as labor, certain materials and services are also assumed to escalate at the same rate as labor and therefore included in coefficient A. Examples of these costs include container costs, certain equipment costs, insurance costs, and costs of supplies and materials. Table 3-1 provides additional examples.

Current employment cost indexes for labor (column 3,Table 3-2, below) can be obtained from the "Employment Cost Indexes," published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS) (Reference 4). Specifically, the appropriate regional data from Table 6 of Reference 4 entitled "Employment Cost Index for total compensation, for private industry workers, by bargaining status, census region and division, and metropolitan area status" should be used. These indexes may also be obtained from BLS databases available on the Internet (see Appendix C for instructions).

In order to calculate the current labor cost escalation factor (L_x) for a particular region, it must be recognized that the BLS "re-indexed" the Employment Cost Index (ECI) in 2005, to 100. Accordingly, two (2) BLS cost index numbers are required to calculate the current L_x value: 1) the base labor cost escalation factor in 2005 (provided below in Table 3-2), and 2) the current Employment Cost Index (ECI) from the BLS. The December 2005 base labor cost escalation factors, by region, are presented in column 2 of Table 3-2, and current ECIs, for the sake of example, are presented in column 3. The base labor cost escalation factor is the value of L_x at the time the BLS most recently re-indexed the ECI (December 2005). As such, current values of L_x (column 4) are obtained from the simple proportion:

$$L_{x(current)}/ECI_{(current)} = \text{Base } L_{x(2005)}/100$$

For example, to calculate L_x with a 2005 base value for the Northeast region in first quarter 2022,

$$L_x/152.2 = 2.16/100$$

or

$$L_x = 2.16*152.2/100 = 3.29$$

Table 3-2 Regional Factors for Labor Cost Adjustment

Region	Base L_x (Dec 2005)	Qtr 1 2022 ECI (Dec 2005 = 100)	L_x (Qtr 1 2022)
Northeast	2.16	152.2	3.29
South	1.98	147.5	2.92
Midwest	2.08	147.9	3.08
West	2.06	154.3	3.18

3.3 Energy Cost Escalation Factors

The cost escalation factor for energy, E_x, is a weighted average of the following components: industrial electric power for onsite decommissioning, P_x, and diesel or other fuels for transportation and heavy equipment operation, F_x. For the reference PWR, E_x is given by:

$$E_x\ (PWR) = 0.58P_x + 0.42F_x$$

and for the reference BWR E_x is given by:

$$E_x\ (BWR) = 0.54P_x + 0.46F_x$$

These equations are derived from Table 6-3 of Reference 1 and Table 5-3 of Reference 2. The 0.58 and 0.54 coefficients for P_x are calculated as the ratio of energy cost to the total energy and fuel for transportation cost for the reference PWR and BWR, respectively. The 0.42 and 0.46 coefficients for F_x are calculated as the ratio of fuel for transportation cost to the total energy and fuel for transportation cost for the reference PWR and BWR, respectively.

The current values of P_x and F_x are calculated from the Producer Price Indexes (PPI), available in the "PPI Detailed Report," published by the U.S. Department of Labor, BLS (Reference 5). These indexes also can be obtained from BLS databases available on the Internet (see Appendix C for instructions). Because the energy cost category is the cost of the electricity and fuel needed to provide essential systems and services to the plant during decommissioning, the indexes used to calculate P_x should be taken from data for industrial electric power (PPI Commodity Code 0543). The transportation cost category is assumed to escalate with the cost of diesel fuel or light fuel oils. The indexes used to calculate F_x should therefore be taken from data for light fuel oils (PPI Commodity Code 0573). The BLS data available for these PPI commodity codes are currently available by region.

P_x and F_x are the values of current producer price indexes (PPI Codes 0543 and 0573, respectively) divided by the corresponding indexes for January 1986. All PPI values are based on a value of 100 for the year 1982 (base 1982 = 100). Thus, the values of P_x and F_x for March 2020 (latest data available) are[2]:

P_x = 264.9 (March 2022 value of code 0543) ÷
114.2 (January 1986 value of code 0543) = 2.320

F_x = 472.9 (March 2022 value of code 0573) ÷
82.0 (January 1986 value of code 0573) = 5.767

The value of E_x for the reference PWR is therefore

E_x (PWR) = [(0.58 × 2.320) + (0.42 × 5.767)] = 3.768.

This value of E_x = 3.768 should then be used in the equation to adjust the energy cost (to March 2020 dollars) for decommissioning a PWR.

For the reference BWR,

E_x (BWR) = [(0.54 × 2.320) + (0.46 × 5.767)] = 3.906.

3.4 Waste Burial Cost Escalation Factors

The waste burial cost escalation factors, B_x, for the year 2022 are provided in Table 2-1 for each of the LLW disposal sites.

To calculate the B_x for a particular LLW burial site, the cost of disposal of each of the radioactive materials identified in Table 3-3 was first estimated using the year 2022 price schedules provided in Appendix A of this report for each of the LLW disposal facilities. The cost of disposal for each of the radioactive materials was calculated based on numerous factors, including its classification (e.g., Class A, B, and C), its weight and volume, the number of packages, the number of shipments, its activity, and its surface dose rate. These factors are reported in NUREG/CR-0130 and NUREG/CR-0672 (References 6 and 7), and associated Addendums 3 and 2 (References 8 and 9), respectively. The estimated disposal cost was summed for all radioactive materials and then divided by the1986 disposal cost estimate identified in Table 3-1 to develop the year 2022 B_x factors reported in Table 2-1.

[2] The PPI values for industrial electric power and light fuel oils increased by 13.6 percent and 195 percent, respectively, from NUREG-1307, Revision 18. These increases were likely heavily influenced by higher than average inflation. This is especially the case for light fuel oils, the PPI for which is susceptible to significant swings from one year to the next. It is unclear at this time whether these increases are temporary or will be sustained into the future when most of the current operating plant will be decommissioned. Future updates of NUREG-1307 will reassess these variables. Regardless, these cost categories contribute less than 15 percent of the estimated decommissioning costs and so the PPI increases do not have a significant effect on the cost of decommission.

A comparison of the year 2022 B_x factors in Table 2-1 to the corresponding year 2020 B_x factors reported in Revision 18 of NUREG-1307, shows that 1) for the compact-affiliated disposal facility cases, the values increased for the South Carolina site and decreased for the Washington and Texas disposal facilities and 2) for the cases having a combination of compact-affiliated and non-compact disposal facilities, the values generally increased due to increases in disposal fees for the noncompact disposal facility. These changes are described in Appendix A.

Table 3-3 Radioactive Materials Included in the Estimate of LLW Burial Cost

PWR	BWR
Vessel Wall	Steam Separator
Vessel Head & Bottom	Fuel Support Pieces
Upper Core Support Assembly	Control Rods & In-core Instruments
Upper Support Column	Control Rod Guide Tubes
Upper Core Barrel	Jet Pump Assemblies
Upper Core Grid Plate	Top Fuel Guide
Guide Tubes	Core Support Plate
Lower Core Barrel	Core Shroud
Thermal Shields	Reactor Vessel Wall
Core Shroud	Sacrificial Shield
Lower Grid Plate	Reactor Water Recirculation
Lower Support Column	Other Primary Containment
Lower Core Forging	Containment Atmospheric Control
Miscellaneous Internals	High Pressure Core Spray
Biological Shield Concrete	Low Pressure Core Spray
Reactor Cavity Liner	Reactor Building Closed Cooling
Reactor Coolant Pumps	Reactor Core Isolation Cooling
Pressurizer	Residual Heat Removal
Heat Exchangers, Sump Pump, Cavity Pump	Pool Liner & Racks
Pressurizer Relief Tank	Contaminated Concrete
Safety Injection Accumulator Tanks	Other Reactor Building
Steam Generators	Turbine
Reactor Coolant Piping	Nuclear Steam Condensate
Other Containment Building	Low Pressure Feedwater Heaters
Other Buildings	Main Steam
Filter Cartridges	Moisture Separator Reheaters
Spent Resins	Reactor Feedwater Pumps
Combustible Wastes	High Pressure Feedwater Heaters
Evaporator Bottoms	Other Turbine-Generator Building
Post-TMI-2 Additions	Radwaste and Control Building
	Concentrator Bottoms
	Decontamination Solutions, Filter Sludges, & Spent Resins
	Post-TMI-2 Additions

Regarding changes to the disposal price schedules, the following summarizes the changes:

- For the Washington disposal facility, volume and dose rate charges per container decreased. The shipment disposal rates, the charges per container, and the annual site

charges increased whereas fees for environmental site surveillance did not change from year 2020.

- For the South Carolina disposal facility, all of the charges and surcharges increased except for the Atlantic Compact Commission administrative surcharge, which remained unchanged.

- For the Utah disposal facility, the disposal rates for both solid and liquid LLW increased from year 2020.

- For the Texas disposal facility, the waste volume charge category, the maximum curie charge, the weight surcharge category, dose rate surcharge category, and the irradiated hardware surcharge category did not change from year 2020. The curie inventory charge decreased significant from year 2020.

3.5 Sample Calculations of Estimated Reactor Decommissioning Costs

Four sample calculations are provided in this section to demonstrate the use of the decommissioning cost equation developed above using the appropriate cost escalation factors of L_x for labor, material, and services; E_x for energy and fuel for waste transportation; and B_x for radioactive waste burial/disposition. The coefficients A, B, and C (0.65 coefficient for labor, 0.13 coefficient for energy, and 0.22 coefficient for LLW burial) used in the examples are developed in Table 3-1. Waste generators with no LLW compact disposal site availability should use the B_x values for the generic LLW disposal site scenario (i.e., the column in Table 2-1 titled "B_x Values for Generators Located in the Unaffiliated States and those Located in Compact-Affiliated States having no Disposal Facility"). Sample decommissioning costs for other years are provided in Appendix D.

Example 1 (No Compact-Affiliated Disposal Facilities)

Scenario Description
Reactor Type: BWR
Thermal Power Rating: 3,400 MWt
Location of Plant: Midwest Compact
LLW Disposition Preference: Non-Compact Disposal Facilities
LLW Burial Location: Non-Compact Disposal Sites (Texas and Utah)

Base Cost (1986 Dollars) = $135 million [from 10 CFR 50.75(c)(1)]

L_x = 3.08 [from Table 3-2]

E_x = 3.906 [from Section 3.3]

B_x = 12.296 [from Table 2-1]

Decommissioning Cost (2022 dollars)
= ($135 million)×[(0.65)×(3.08)+(0.13)×(3.906)+(0.22)×(12.296)] = $704 million

Example 2 (Compact-Affiliated Disposal Facility Only)

Scenario Description
Reactor Type: PWR
Thermal Power Rating: 3,400 MWt
Location of Plant: Texas Compact
LLW Disposition Preference: Compact-Affiliated Disposal Facility Only
LLW Burial Location: Texas

Base Cost (1986 Dollars) = $105 million [from 10 CFR 50.75(c)(1)]

L_x = 2.92 [from Table 3-2]

E_x = 3.768 [from Section 3.3]

B_x = 6.650 [from Table 2-1]

Decommissioning Cost (2022 dollars)
= ($105 million)×[(0.65)×(2.92)+(0.13)×(3.768)+(0.22)×(6.650)] = $404 million

Example 3 (Combination of Compact-Affiliated and Non-Compact Disposal Facilities)

Scenario Description
Reactor Type: PWR
Thermal Power Rating: 3,400 MWt
Location of Plant: Atlantic Compact
LLW Disposition Preference: Combination of Compact-Affiliated and Non-Compact Disposal Facilities
LLW Burial Location: South Carolina and Utah

Base Cost (1986 Dollars) = $105 million [from 10 CFR 50.75(c)(1)]

L_x = 3.29 [from Table 3-2]

E_x = 3.768 [from Section 3.3]

B_x = 14.067 [from Table 2-1]

Decommissioning Cost (2022 dollars)
= ($105 million)×[(0.65)×(3.29)+(0.13)×(3.768)+(0.22)×(14.067)] = $601 million

Example 4 (Compact-Affiliated Disposal Facility Only)

Scenario Description
Reactor Type: BWR
Thermal Power Rating: 3,400 MWt
Location of Plant: Northwest Compact
LLW Disposition Preference: Compact-Affiliated Disposal Facility Only
LLW Burial Location: Washington

Base Cost (1986 Dollars) = $135 million [from 10 CFR 50.75(c)(1)]

L_x = 3.18 [from Table 3-2]

E_x = 3.906 [from Section 3.3]

B_x = 8.571 [from Table 2-1]

Decommissioning Cost (2022 dollars)
= ($135 million)×[(0.65)×(3.18)+(0.13)×(3.906)+(0.22)×(8.571)] = $602 million

4 REFERENCES

1. Konzek G.J. and R.I. Smith, “Technology, Safety, and Costs of Decommissioning a Reference Pressurized-Water Reactor Power Station–Technical Support for Decommissioning Matters Related to Preparation of the Final Decommissioning Rule,” (Report prepared by Pacific Northwest Laboratory, Richland, Washington), NUREG/CR-0130, Addendum 4, U.S. Nuclear Regulatory Commission, July 1988.

2. Konzek G.J. and R.I. Smith, “Technology, Safety and Costs of Decommissioning a Reference Boiling-Water Reactor Power Station–Technical Support for Decommissioning Matters Related to Preparation of the Final Decommissioning Rule,” (Report prepared by Pacific Northwest Laboratory, Richland, Washington), NUREG/CR-0672, Addendum 3, U.S. Nuclear Regulatory Commission, July 1988.

3. U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, “Report on Waste Burial Charges–Changes in Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities,” NUREG-1307, Revision 8, December 1998.

4. U.S. Department of Labor, Bureau of Labor Statistics, *Employment Cost Index*, data for Series IDs CIU2010000000210I, CIU2010000000220I, CIU2010000000230I, and CIU2010000000240I obtained from http://www.bls.gov/data, data retrieved on July 31, 2022.

5. U.S. Department of Labor, Bureau of Labor Statistics, *Producer Price Index - Commodities*, data for Series IDs WPU0543 and WPU0573 obtained from http://www.bls.gov/data, data retrieved on July 31, 2022.

6. Smith, R.I., G.J. Konzek, and W.E. Kennedy, Jr., “Technology, Safety, and Costs of Decommissioning a Reference Pressurized-Water Reactor Power Station,” (Report prepared by Pacific Northwest Laboratory, Richland, Washington), NUREG/CR-0130, Vol. 1 and 2, U.S. Nuclear Regulatory Commission, June 1978.

7. Oak, H.D., G.M. Holter, W.E. Kennedy, and G.J. Konzek, “Technology, Safety and Costs of Decommissioning a Reference Boiling-Water Reactor Power Station,” (Report prepared by Pacific Northwest Laboratory, Richland, Washington), NUREG/CR-0672, Vol. 1 and 2, U.S. Nuclear Regulatory Commission, June 1980.

8. Murphy, E.S., “Technology, Safety, and Costs of Decommissioning a Reference Pressurized-Water Reactor Power Station– Classification of Decommissioning Wastes,” (Report prepared by Pacific Northwest Laboratory, Richland, Washington), NUREG/CR-0130, Addendum 3, U.S. Nuclear Regulatory Commission, September 1984.

9. Murphy, E.S., “Technology, Safety and Costs of Decommissioning a Reference Boiling-Water Reactor Power Station–Classification of Decommissioning Wastes,” (Report prepared by Pacific Northwest Laboratory, Richland, Washington), NUREG/CR-0672, Addendum 2, U.S. Nuclear Regulatory Commission, September 1984.

APPENDIX A
LOW-LEVEL WASTE BURIAL/DISPOSITION PRICES FOR THE CURRENT YEAR

This appendix contains the price schedules for burial/disposition of LLW at the Texas, Washington, and South Carolina sites for the year 2022. Also provided is a price quote for the non-compact disposal facility located in Utah. These schedules are used to calculate the burial/disposition costs discussed in Appendix B.

A.1 Texas LLW Disposal Site

Beginning in the Spring of 2012, a new facility located in Texas became available for disposal of LLW from states within the Texas Compact (comprised of Texas and Vermont). The Texas facility, or Texas Compact Waste Facility (CWF), also accepts LLW from out-of-compact generators. The fees for LLW disposal are determined by the Texas Commission on Environmental Quality. Out-of-compact generators, however, must submit an import petition to the Texas Compact Commission for approval prior to shipping. The state of Texas also limits total non-compact waste disposed at the CWF to 30-percent of licensed capacity and charges additional fees for out-of-compact LLW.

The current approved rate schedule for disposal of LLW at the CWF is provided in Section 336.1310 (Subchapter N) of Title 30 of the Texas Administrative Code (TAC). This rate schedule is provided in Exhibit A-1. Effective November 8, 2018, the schedule no longer includes a separate waste volume charge for shielded Class A LLW, a Carbon-14 inventory charge, surcharges for weights less than or equal to 50,000 pounds, surcharges for dose rates less than or equal to 500 R/hour, or surcharges for shielded waste cask handling. All except one of the charges remained unchanged from 2020. The curie inventory charge was reduced about 87.5 percent from 2020. The fees in this Exhibit A-1 are the maximum disposal rates that can be charged to in-compact generators. Fees charged to out-of-compact generators must be greater than these rates. Various established Texas fees charged to out-of-compact LLW currently amounts to an additional 31.25-percent on top of the rates shown in Exhibit A-1. In addition, it is assumed that an additional 20-percent in fees/taxes is charged for out-of-compact LLW. As a result of these rate changes the cost to disposition the LLW from a PWR and a BWR decreased by 17.3 percent and 18.7 percent, respectively.

A.2 South Carolina LLW Disposal Site

Access to the South Carolina site by waste generators outside the Southeast Compact ended June 30, 1994, with site closure scheduled for December 31, 1995. However, effective July 1, 1995, the scheduled closure was canceled and access to the South Carolina facility was extended to all states except North Carolina. In June 2000, prohibition on waste from North Carolina was lifted.

Effective November 1, 1996, the operator of the South Carolina disposal site implemented a restructured waste disposal rate schedule. The restructured pricing is based on weight, dose rate, and curies with a cost incentive toward higher density packaging. All business after November 1, 1996, is through customer-specific contracts.

Effective July 1, 2008, out-of-compact waste was prohibited from disposal at the South Carolina disposal site.

Weight charges, curie surcharges, and irradiated hardware charges increased approximately 18 percent from the 2020 Atlantic Compact rates. The dose rate surcharges and Atlantic Compact Commission administrative surcharge remained constant. As a result, the cost to disposition the LLW for a BWR increased approximately 18 percent and for a PWR increased approximately 17 percent compared to 2020. The rate schedule for the South Carolina LLW disposal site, effective July 1, 2022, is presented in Exhibit A-2.

A.3 Washington LLW Disposal Site

Beginning in 1993, the Northwest Compact imposed an annual permit fee on eligible (Northwest or Rocky Mountain Compact) waste generators based on the volume of waste to be shipped to the Washington site for disposal. For 2022, the permit fees range from $424 to $42,400. Hospitals, universities, research centers, and industries pay the lower fees; NPPs pay the highest fee of $42,400. Permit fees for NPPs are included in this analysis for the years 1993 and later.

Beginning in 1994, the rate schedule for handling and disposing of heavy objects (greater than 5,000 pounds) at the Washington site was revised to recover additional crane rental costs from the waste generator. In 1996, the heavy object limit was raised to 17,500 pounds. A series of shipments of heavy objects for disposal was assumed that would minimize the crane surcharge and result in a one-time only heavy object charge.

Effective January 1, 1996, the operator of the Washington site implemented a restructured rate schedule based on waste volume, number of shipments, number of containers, and dose rate at the container surface. Each waste generator also is assessed an annual site availability charge based on cumulative volume and dose rate at the surface of all containers disposed. This restructured rate schedule was established in a settlement agreement between U.S. Ecology Washington, Inc., (the operator of the Washington disposal facility) and several large waste generators, and was accepted by the Washington Utilities and Transportation Commission. The rate design for the restructured rate schedule was for an original period of six years, and has been renewed on this schedule since 1996. The rates are updated annually to adjust for inflation and other factors. A significant element of the rate design is the imposition of a revenue requirement that limits the profit that U.S. Ecology can earn each year. Any revenue earned in excess of this requirement must be returned to the waste generators who used the disposal facility during the year. Hence, disposal rates can vary significantly from year to year depending on the projected LLW volume and its characteristics that are received at the facility each year.

Compared with the 2020 rate schedule used in Revision 18 of NUREG-1307, the 2022 schedule reflects increases in shipment rates (3.5 percent) and container rates (less than 1 percent). The 2020 rate schedule reflects a decrease in the volume rate (20.7 percent) and dose rates (about 22.5 percent). As a result of these rate changes, subject to the limitations described in the previous paragraph, the cost to disposition the LLW from both a PWR and a BWR decreased by 9.1 percent and 8.1 percent, respectively. The rate schedule for the Washington LLW disposal site, effective May 1, 2022, is presented in Exhibit A-3.

A.4 Non-compact Disposal Facility

Beginning in 2010, with Revision 14 of NUREG-1307, the EnergySolutions Clive, Utah disposal facility was explicitly included as an available, optional disposal facility for Class A LLW. This disposal facility is not associated with any of the LLW compacts and is licensed to receive Class A LLW generated from any facility in the United States. The fees for LLW disposal are

established by EnergySolutions and are not subject to review and approval by the Utah Department of Environmental Quality, which is the state of Utah regulator for the Clive disposal facility.

Disposal rates for the Clive disposal facility are obtained directly from EnergySolutions via a survey. In support of Revision 19 of NUREG-1307, a similar survey was conducted. In response to this survey, a price quote to disposition the components of the reference PWR and BWR at the Utah disposal facility was obtained. Unit costs, exclusive of taxes, were provided for several different categories of components, which are provided in Table A-1. The updated rates increased by approximately 22 percent for all categories from the 2020 rates. These rates assume no volume discounts, which can be substantial. The development of the B_x factor for the "Combination of Compact-Affiliated and Non-Compact Disposal Facilities" scenario and the "Non-Compact Disposal Facilities" scenario was based on these rates and assumed a 10 percent tax.

Table A-1 Price Quotes for Disposition of Class A LLW at the Non-Compact Disposal Facility Located in Clive, Utah

Component Class	Cost	Per Unit
Large Components	$484	ft^3
Debris	$201	ft^3
Oversize Debris	$229	ft^3
Resins/Filters	$636	ft^3
Combustibles	$794	ft^3
Evaporator Bottoms	$33	Gallon

Exhibit A-1

Texas Commission on Environmental Quality
Chapter 336 – Radioactive Substance Rules

SUBCHAPTER N: FEES FOR LOW-LEVEL RADIOACTIVE WASTE DISPOSAL

EFFECTIVE August 6, 2020

§336.1310. Rate Schedule.

Fees charged for disposal of party-state compact waste must be equal to or less than the compact waste disposal fees under this section. Additionally, fees charged for disposal of nonparty compact waste must be greater than the compact waste disposal fees under this section.

Figure: 30 TAC §336.1310[1]

Disposal Rate for the Compact Waste Disposal Facility

1. Base Disposal Charge:

1A. Waste Volume Charge	Charge per cubic foot ($/ft3)
Class A LLW	$100
Class B and C LLW	$1,000
Sources – Class A	$500

1B. Radioactivity Charge	
Curie Inventory Charge ($/mCi)	$0.05
Maximum Curie Charge (per shipment) (excluding C-14)	$220,000/shipment

[1] The Texas Administrative Code (TAC) Title 30, Part 1, Chapter 336, Subchapter N, Rule §336.1310 is available at: https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=336&rl=1310

2. Surcharges to the Base Disposal Charge:

2A. Weight Surcharge - Weight (lbs.) of Container	Surcharge ($/container)
Greater than 50,000 lbs	$20,000

2B. Dose Rate Surcharge - Surface Dose Rate (R/hour) of Container	Surcharge per cubic foot ($/ft3)
Greater than 500 R/hour	$400

2C. Irradiated Hardware Surcharge	
Surcharge for special handling per shipment	$75,000/shipment

Adopted October 17, 2018 Amended to be Effective August 6, 2020

Exhibit A-2

Pursuant to 48-46-40(A)(2), S.C.C.

Uniform Schedule of Maximum Disposal Rates
for Atlantic Compact Regional Waste

EFFECTIVE JULY 1, 2022

The Uniform Schedule of Maximum Disposal Rates for Atlantic Compact Regional Waste is a permanent ceiling on disposal rates applicable to Atlantic Compact waste that is adjusted each year in accordance with the Producer Price Index. South Carolina may charge Atlantic Compact generators less than the Uniform Maximum Schedule, but cannot charge regional generators more than this rate.

THE MINIMUM CHARGE PER SHIPMENT, EXCLUDING SURCHARGES AND SPECIFIC OTHER CHARGES, IS $1,000.00

1. WEIGHT CHARGES (not including surcharges)

A. Base weight charge

Density Range	**Weight Rate**
i) Equal to or greater than 120 lbs./ft^3	$9.801 per pound
ii) Equal to or greater than 75 lbs./ft^3 and less than 120 lbs./ft^3	$10.782 per pound
iii) Equal to or greater than 60 lbs./ft^3 and less than 75 lbs./ft^3	$13.231 per pound
iv) Equal to or greater than 45 lbs./ft^3 and less than 60 lbs./ft^3	$17.153 per pound
v) Less than 45 lbs./ft^3	$17.153 per pound multiplied by: (45 ÷ pounds per cubic foot of the package)

B. Dose multiplier on base weight charge

Container Dose Level	**Multiplier on Weight Rate, above**
0 mR/hr - 200 mR/hr	1.00
>200 mR/hr - 1 R/hr	1.08
>1R/hr - 2R/hr	1.12
>2R/hr - 3R/hr	1.17
>3R/hr - 4R/hr	1.22
>4R/hr - 5R/hr	1.27
>5R/hr - 10R/hr	1.32
>10R/hr - 25R/hr	1.37
>25R/hr - 50R/hr	1.42
>50R/hr	1.48

C. Biological Waste: Add $1.803 per pound to rate calculated above

2. SURCHARGES

A.	Millicurie surcharge	$0.734 per millicurie*

*In lieu of above, generator may opt for an alternative millicurie charge of $1.467 per millicurie applicable only to millicuries with greater than 5-year half-life. Such election must be provided in writing to the disposal site operator prior to July 1, 2022.

MAXIMUM MILLICURIE CHARGE IS $293,600 PER SHIPMENT (400,000 MCI).

B.	Irradiated hardware charges (See Note B under Miscellaneous)	$111,394 per shipment
C.	Special nuclear material surcharge	$22.273 per gram
D.	Atlantic Compact Commission administrative surcharge	$6.00 per cubic foot (*Subject to change during year)*

Exhibit A-2

NOTES

A. Surcharges for the Barnwell Extended Care Fund and the Decommissioning Trust Fund are included in the rates.

B. Irradiated hardware: As a general rule, billing as irradiated hardware pertains to shipments of exceptionally high activity that require clearing of the site and special off-loading into a slit trench. These generally include TN-RAM[2] and other horizontally offloaded cask shipments. In addition to items of irradiated hardware, shipments considered irradiated hardware, for purposes of disposal, have included certain sealed sources and materials with exceptionally high levels of radioactivity.

C. Large components (e.g., steam generators, reactor pressure vessels, coolant pumps).

Disposal fees for large components (e.g., steam generators, reactor pressure vessels, reactor coolant pumps, or items that will not fit into standard sized disposal vaults) are based on the generally applicable rates, in their entirety, except that the weight and volume used to determine density and weight related charges is calculated as follows:

1. For packages where the large component shell qualifies as the disposal vault per Department of Health and Environmental Control (DHEC) regulations, weight and volume calculations are based on all sub-components and material contained within the inside surface of the large component shell, including all internals and any stabilization media injected by the shipper, but excluding the shell itself and all incidental external attachments required for shipping and handling; and

2. For packages with a separate shipping container that qualifies as the disposal vault per DHEC regulations, weight and volume calculations are based on the large component, all sub-components, and material contained within the inside surface of the shipping container, including any stabilization media injected by the shipper (including that between the large component and the shipping container), but excluding the shipping container itself and all incidental external attachments required for shipping and handling.

D. Co-mingled shipments from brokers and processors: For containers that include waste from different generators (DHEC permittees), the weight and density of the waste from each generator will be assessed separately for purposes of the weight charge in I.A. The dose of the container as a whole will be used to assess the dose multiplier in I.B. The millicurie charge 2.A. above, applies individually to each portion of waste in the shipment from each generator. The disposal site operator will provide guidelines for application of this method.

E. Transport vehicles with additional shielding features may be subject to an additional handling fee, which will be provided upon request.

F. In certain circumstances, the disposal site operator may assess additional charges for necessary services that are not part of and are additional to disposal rates established by the State of South Carolina. These include decontamination services and special services as described in the Barnwell Site Disposal Criteria.

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[2] TN-RAM is a radioactive material cask used to transport irradiated non-fuel bearing solid materials

G. The disposal site operator has established the following policies and procedures, which are provided herein for informational purposes:

i. Terms of payment are net 30 days upon presentation of invoices. A per-month service charge of one and one-half percent (1½ percent) shall be levied on accounts not paid within thirty (30) days.

ii. Company purchase orders or a written letter of authorization and substance acceptable to Chem-Nuclear Systems, L.L.C. (CNS) shall be received before receipt of radioactive waste material at the Barnwell Site and shall refer to CNS Radioactive Material License, the Barnwell Site Disposal Criteria, and subsequent changes thereto.

iii. All shipments shall receive a CNS shipment identification number and conform to the Prior Notification Plan.

Exhibit A-3

U.S. ECOLOGY WASHINGTON, INC.
RICHLAND, WASHINGTON FACILITY
RADIOACTIVE WASTE DISPOSAL

SCHEDULE OF CHARGES
EFFECTIVE MAY 1, 2020
SCHEDULE A, 36th REVISION

Note: Rates in this Schedule A are subject to adjustment in accordance with the rate adjustment mechanism adopted in the Commission's Sixth Supplemental Order in Docket No. UR-950619 as extended by Commission Order in Docket Nos. UR-010623 and UR-010706, and TL-070848.

A. SITE AVAILABILITY CHARGE

1. Rates

Block	Block Criteria	Annual Charge per Generator in $
0	No site use at all	$360
1	Greater than zero but less than or equal to 10 ft^3 and 50 mR/h	688
2	Greater than 10 ft^3 or 50 mR/h* but less than or equal to 20 ft^3 and 100 mR/h*	1,320
3	Greater than 20 ft^3 or 100 mR/h* but less than or equal to 40 ft^3 and 200 mR/h*	2,533
4	Greater than 40 ft^3 or 200 mR/h* but less than or equal to 80 ft^3 and 400 mR/h*	4,865
5	Greater than 80 ft^3or 400 mR/h* but less than or equal to 160 ft^3 and 800 mR/h*	9,343
6	Greater than 160 ft^3 or 800 mR/h* but less than or equal to 320 ft^3 and 1,600 mR/h*	17,918
7	Greater than 320 ft^3 or 1,600 mR/h* but less than or equal to 640 ft^3 and 3,200 mR/h*	34,406
8	Greater than 640 ft^3 or 3,200 mR/h* but less than or equal to 1,280 ft^3 and 6,400 mR/h*	66,051
9	Greater than 1,280 ft^3 or 6,400 mR/h* but less than or equal to 2,560 ft^3 and 12,800 mR/h*	126,817
10	Greater than 2,560 ft^3 or 12,800 mR/h* but less than or equal to 5,120 ft^3 and 25,600 mR/h*	159,326
11	Greater than 5,120 ft^3 or 25,600 mR/h*	159,326

* For purposes of determining the site availability charge, mR/hour is calculated by summing the mR per hour at container surface of all containers received during the year.

2. Exemptions

a. As to waste which is generated for research, medical or educational purposes, educational research institutions shall be placed in a rate block for the site availability charge which is one (1) lower than what would otherwise apply through application of the block criteria shown above. *"Educational research Institution" means a state or independent, not-for-profit, post-secondary educational institution*.

b. As to waste which arises as residual or secondary waste from brokers' provision of compaction or processing services for others, if application of the block criteria shown above would place a broker in a rate block for the site availability charge which is greater than Block No. 7, such broker shall be placed in the rate block which is the greater of (i) Block No. 7, or (ii) the block which is two (2) lower than what would otherwise apply

through application of the block criteria shown above. “Brokers” are those customers holding the “broker” classification of site use permits issued by the Department of Health.

3. Payment Arrangements

a. Initial Determination

Initial determination as to the applicable rate block for each customer shall be based on projections provided by customers prior to the beginning of each calendar year. For those customers who do not intend to ship waste to the facility during the calendar year (those assigned to block No. 0) and for those customers who are initially determined to fall into block Nos. 1–2, the entire site availability charge for the year will be due and payable as of January 1. For those customers who are initially determined to fall into block Nos. 3–8, the entire site availability charge will also be due and payable as of January 1, although those customers may make special arrangements with the Company to pay the charge in equal installments at the beginning of each calendar quarter. For those generators who are initially determined to fall in block nos. 9-11, 1/12 of the site availability charge will be due and payable as of the beginning of each calendar month. These customers may pay in advance if they wish.

b. Reconciliation

The site availability charge is assessed on the basis of actual volume and dose rate of waste delivered during the calendar year. Assessment of additional amounts, or refunds of overpaid amounts, will be made as appropriate to reconcile the initial determination regarding applicable rate block with the actual volume and dose rates during the calendar year.

Exhibit A-3

SCHEDULE A (Continued)

B. DISPOSAL RATES

1. Volume: $187.50 per cubic foot

2. Shipment: $19,680 per manifested shipment

3. Container: $15,700 per container on each manifest.

4. Dose Rate:

Block No.	Dose Rate at Container Surface	Charge per Container in $
1	Less than or equal to 200 mR/h	$100
2	Greater than 200 mR/h but less than or equal to 1,000 mR/h	7,110
3	Greater than 1,000 mR/h but less than or equal to 10,000 mR/h	28,440
4	Greater than 10,000 mR/h but less than or equal to 100,000 mR/h	42,600
5	Greater than 100,000 mR/h	715,700

EXTRAORDINARY VOLUMES

Waste shipments qualifying as an “extraordinary volume” under RCW 81.108.020(3) are charged a rate equal to 51.5% of the volume disposal rate.

NUCLEAR DECOMMISSIONING WASTE

The volume disposal rate applicable to waste from the decommissioning of nuclear generating units shall be 80 percent of those set forth above; provided, however, that such waste must satisfy the quantity requirements for “extraordinary volume” under RCW 81.108.020(3)[3]

SCHEDULE B
Surcharges and Other Special Charges
Fourteenth Revision

ENGINEERED CONCRETE BARRIERS

72" x 8' barrier	$23,945.00 each
84" x 8' barrier	$28,618.00 each

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[3] Revised Code of Washington (RCW) 81.108.020(3) - "Extraordinary volume" means volumes of low-level radioactive waste delivered to a site caused by nonrecurring events, outside normal operations of a generator, that are in excess of twenty thousand cubic feet or twenty percent of the preceding year's total volume at such site, whichever is less.

http://leg.wa.gov/ or (http://app.leg.wa.gov/RCW/default.aspx?cite=81.108.020)

SURCHARGE FOR HEAVY OBJECTS

US Ecology Washington, Inc. shall collect its actual labor and equipment costs incurred, plus a margin thereon of 25 percent, in handling and disposing of objects or packages weighing more than seventeen thousand five hundred (17,500) pounds.

SCHEDULE C
Tax and Fee Rider
First Revision

The rates and charges set forth in Schedules A and B shall be increased by the amount of any fee, surcharge, or tax assessed on a volume or gross revenue basis against or collected by U.S. Ecology Washington, Inc. as listed below:

Perpetual Care and Maintenance Fees	$1.75 per cubic foot
Business & Occupation Tax	3.3 percent of rates and charges
Site Surveillance Fee	$26.00 per cubic foot
Surcharge (RCW 43.200.233)	$6.50 per cubic foot
Commission Regulatory Fee	1.0 percent of rates and charges

APPENDIX B
CALCULATION OF LOW-LEVEL WASTE BURIAL/DISPOSITION COST ESCALATION FACTORS

The calculations necessary to determine the costs for burial/disposition of radioactive wastes resulting from decommissioning the reference PWR and the reference BWR are performed using spreadsheet models. The spreadsheets evaluate the burial/disposition costs for each of the items originally budgeted in the PWR and BWR decommissioning studies and in Addendums 4 and 3 (References 1 and 2), respectively, to those reports. The costs are based on the published price schedules from the compact-affiliated disposal facilities and a price quote from the non-compact disposal facility located in Utah.

The B_x values reported in this document reflect the updated rate schedules and price quote. All the calculations are based on the same inventory of radioactive wastes as was postulated in the 1986 and 1978–1980 analyses. Starting in 1988, the inventories also included post-Three Mile Island (TMI)-2 contributions from the reference PWR and the reference BWR (References 1 and 2).

B.1 Generators Located in States Not Affiliated with a Compact having a Disposal Facility

Both the Utah and Texas disposal facilities are available for the disposal of all LLW regardless of whether a generator has a compact-affiliated disposal facility available for disposal of their LLW or not. The Utah facility can only dispose of Class A LLW, while the Texas facility is a full-service disposal facility and so can dispose of Class A, B, and C LLW (subject to the constraints described in Section A.3). For the year 2022, B_x = 14.040 and 12.310 for a PWR and BWR, respectively, for disposal of most Class A LLW at the Utah non-compact site and for the remainder of LLW at the Texas LLW disposal site. The B_x values include the additional fees imposed for the disposal of non-compact LLW at the Texas disposal facility. The B_x values are summarized in Table 2-1. These B_x values should be used by generators located in States not affiliated with a compact having a disposal facility.

Waste burial costs for the year 2022 were developed using both the rate schedules for the Texas disposal facility provided in Exhibit A-1, and the associated additional fees for out-of-compact waste, and the price quote for the non-compact disposal facility provided in Table A-2. The spreadsheet calculations for the current year, which are too voluminous to present here, are summarized in Table B-1 and Table B-2 for PWR and BWR plants, respectively. For comparison purposes, Table B-3 and Table B-4 provide summaries of waste burial/disposition costs for 2020, respectively, for both PWR and BWR plants. These estimates were originally reported in Revision 18 of NUREG-1307.

B.2 Texas LLW Disposal Site

For the year 2022, B_x = 6.943 and 6.023 for a PWR and BWR, respectively, at the Texas disposal facility. These B_x values reflect the adjustment in waste burial costs at the Texas LLW disposal site normalized to the 1986 Washington LLW disposal site burial costs.

Waste burial costs for the year 2022 were developed using the rate schedules provided in Exhibit A-1. The spreadsheet calculations for the current year, which are too voluminous to present here, are summarized in Table B-5 and Table B-6 for PWR and BWR plants,

respectively. For comparison purposes, Table B-7 and Table B-8 provide summaries of the waste burial costs at the Texas LLW disposal site for 2020, respectively, for both PWR plants and BWR plants. These estimates originally were reported in Revision 18 of NUREG-1307.

B.3 South Carolina LLW Disposal Site

For the year 2022, B_x = 38.742 and 33.934 for a PWR and BWR, respectively, at the South Carolina disposal facility. These B_x values reflect the adjustment in waste burial costs at the South Carolina LLW disposal site normalized to the 1986 Washington LLW disposal site burial costs. B_x values for several previous revisions of NUREG-1307 are summarized in Table 2-1.

Waste burial costs for the year 2022 were developed using the rate schedules provided in Exhibit A-2. The spreadsheet calculations for the current year, which are too voluminous to present here, are summarized in Table B-9 and Table B-10 for PWR and BWR plants, respectively. For comparison purposes, Table B-11 and Table B-12 provide summaries of the waste burial costs at the South Carolina LLW disposal site for 2020, respectively, for both PWR plants and BWR plants. These estimates originally were reported in Revision 18 of NUREG-1307.

B.4 Washington LLW Disposal Site

The LLW disposal site located in Washington was used to develop the original decommissioning cost estimates for the reference PWR and BWR. These estimates are the basis for the minimum decommissioning fund requirement specified in 10 CFR 50.75(c), which is in 1986 dollars. Thus, B_x = 1.0/1.0 (for PWR/BWR) for 1986.

For the year 2022, B_x = 10.013 and 8.571 for a PWR and BWR, respectively, at the Washington disposal facility. These B_x values reflect the adjustment in waste burial costs at the Washington LLW disposal site since 1986. B_x values for several previous revisions of NUREG-1307 are summarized in Table 2-1.

Waste burial costs for the year 2022 were developed using the rate schedule provided in Exhibit A-1. The spreadsheet calculations for the current year, which are too voluminous to present here, are summarized in Table B-13 and Table B-14 for PWR and BWR plants, respectively. For comparison purposes, Table B-15 and B-16 provide summaries of the waste burial costs at the Washington LLW disposal site for 2020, respectively, for both PWR plants and BWR plants. These estimates originally were reported in Revision 18 of NUREG-1307.

B.5 Combination of Non-Compact and Compact-Affiliated Disposal Facilities

For the year 2022, B_x = 10.526 and 8.865 for a PWR and BWR, respectively, for disposal of most Class A LLW at the Utah non-compact disposal site, and for the remainder of LLW at the Washington LLW disposal site. B_x = 14.067 and 15.550 for a PWR and BWR, respectively, for disposal of most Class A LLW at the Utah non-compact disposal site, and for the remainder of LLW at the South Carolina disposal site. B_x = 12.438 and 10.505 for a PWR and BWR, respectively, for disposal of most Class A LLW at the Utah non-compact site, and for the remainder of LLW at the Texas LLW disposal site. B_x values are summarized in Table 2-1.

Waste burial costs for the year 2022 were developed using both the rate schedules for the compact-affiliated disposal facilities provided in Exhibits A-1, A-2, and A-3 and for the price quote for the non-compact disposal facility provided in Table A-2. The spreadsheet calculations

for the current year, which are too voluminous to present here, are summarized in Table B-17 through Table B-22 for the Texas, South Carolina, and Washington LLW disposal sites, respectively, for both PWR and BWR plants. For comparison purposes, Table B-23 through Table B-28 provide summaries of the Texas, South Carolina, and Washington waste burial/disposition costs for 2020, respectively, for both PWR and BWR plants. These estimates were originally reported in Revision 18 of NUREG-1307.

B.6 Other

As other low-level radioactive waste burial sites come into service in the interstate compacts, values for B_x will be calculated using the price schedules for each of those sites and will be incorporated into subsequent issues of this NUREG. Those materials whose activity concentrations exceed the limits for Class C LLW are identified by footnote as greater-than-Class C (GTCC) material. Because the analyses in this NUREG postulate placing this material in a LLW disposal facility, the disposal costs for this material may be significantly overestimated compared with high-density packaging and geologic repository disposal. It may also be feasible to store GTCC waste in independent spent fuel storage installations (ISFSIs) or other interim storage facilities, as permitted by 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.”

Table B-1 PWR Disposition Costs for Generators Located in States Not Affiliated with a Compact having a Disposal Facility (2022 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
VESSEL WALL	0	0	0	0	0	0	957,220	957,220
VESSEL HEAD & BOTTOM	0	0	0	0	0	0	2,129,600	2,129,600
UPPER CORE SUPPORT ASSM	0	0	0	0	0	0	100,760	100,760
UPPER SUPPORT COLUMN	0	0	0	0	0	0	100,760	100,760
UPPER CORE BARREL	200,000	150,000	0	0	50,000	0	0	400,000
UPPER CORE GRID PLATE	500,000	375,000	0	0	1,100,000	0	0	1,975,000
GUIDE TUBES	0	0	0	0	0	0	151,140	151,140
LOWER CORE BARREL[a]	3,200,000	2,400,000	0	0	7,040,000	0	0	12,640,000
THERMAL SHIELDS[a]	600,000	450,000	0	0	1,320,000	0	0	2,370,000
CORE SHROUD[a]	400,000	300,000	0	0	13,420,000	0	0	14,120,000
LOWER GRID PLATE[a]	500,000	375,000	0	0	2,200,000	0	0	3,075,000
LOWER SUPPORT COLUMN	100,000	75,000	0	0	220,000	0	0	395,000
LOWER CORE FORGING	1,100,000	825,000	0	0	125,000	0	0	2,050,000
MISC INTERNALS	800,000	600,000	0	0	100,000	0	0	1,500,000
BIO SHIELD CONCRETE	0	0	0	0	0	0	6,287,424	6,287,424
REACTOR CAVITY LINER	0	0	0	0	0	0	128,973	128,973
REACTOR COOLANT PUMPS	0	0	0	0	0	0	2,236,080	2,236,080
PRESSURIZER	0	0	0	0	0	0	1,916,640	1,916,640
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	0	0	100,760	100,760
PRESSURIZER RELIEF TANK	0	0	0	0	0	0	302,280	302,280
SAFETY INJECTION ACCUM TANKS	0	0	0	0	0	0	1,007,600	1,007,600
STEAM GENERATORS	0	0	0	0	0	0	11,373,129	11,373,129
REACTOR COOLANT PIPING	0	0	0	0	0	0	831,270	831,270
REMAINING CONTAM. MATLS	0	0	0	0	0	0	13,251,955	13,251,955
CONTAMINATED MATRL OTHR BLD	0	0	0	0	0	0	120,184,261	120,184,261
FILTER CARTRIDGES	315,000	0	0	0	250,000	0	0	565,000
SPENT RESINS	2,000,000	0	0	0	2,100,000	0	0	4,100,000
COMBUSTIBLE WASTES - CLASS A	0	0	0	0	0	0	6,091,965	6,091,965
COMBUSTIBLE WASTES - CLASS B	3,150,000	0	0	0	26,250	0	0	3,176,250
EVAPORATOR BOTTOMS	0	0	0	0	0	0	2,552,667	2,552,667
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	3,918,577	3,918,577
SUBTOTAL PWR COSTS	**12,865,000**	**5,550,000**	**0**	**0**	**27,951,250**	**0**	**173,623,060**	**219,989,310**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)								26,660,594
TOTAL PWR COSTS								**246,649,904**

[a] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-2 BWR Disposition Costs for Generators Located in States Not Affiliated with a Compact having a Disposal Facility (2022 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
STEAM SEPARATOR	353,146	1,050,000	0	0	480,150	0	0	1,883,296
FUEL SUPPORT & PIECES	176,573	525,000	0	0	35,009	0	0	736,582
CONTROL RODS/INCORES	529,719	600,000	0	0	1,762,100	211,888	0	3,103,707
CONTROL RODS GUIDES	0	0	0	0	0	0	35,583	35,583
JET PUMPS	494,404	1,500,000	0	0	1,000,644	197,762	0	3,192,810
TOP FUEL GUIDES	847,550	5,400,000	0	0	1,509,440	339,020	0	8,096,011
CORE SUPPORT PLATE	0	0	0	0	0	0	97,853	97,853
CORE SHROUD[a]	1,659,786	10,500,000	0	0	30,933,950	663,914	0	43,757,651
REACTOR VESSEL WALL	0	0	0	0	0	0	71,166	71,166
SAC SHIELD Neutron-Activated Matl	0	0	0	0	0	0	800,617	800,617
REACT. WATER REC	0	0	0	0	0	0	782,826	782,826
SAC SHIELD Contaminated Matl	0	0	0	0	0	0	2,757,682	2,757,682
OTHER PRIMARY CONTAINMENT	0	0	0	0	0	0	31,455,364	31,455,364
CONTAINM. ATMOSPHERIC	0	0	0	0	0	0	426,996	426,996
HIGH PRESSURE CORE SPRAY	0	0	0	0	0	0	151,228	151,228
LOW PRESSURE CORE SPRAY	0	0	0	0	0	0	88,957	88,957
REACTOR BLDG CLOSED COOLING	0	0	0	0	0	0	284,664	284,664
REACTOR CORE ISO COOLING	0	0	0	0	0	0	115,645	115,645
RESIDUAL HEAT REMOVAL	0	0	0	0	0	0	551,536	551,536
POOL LINER & RACKS	0	0	0	0	0	0	3,389,280	3,389,280
CONTAMINATED CONCRETE	0	0	0	0	0	0	3,860,755	3,860,755
OTHER REACTOR BUILDING	0	0	0	0	0	0	12,623,066	12,623,066
TURBINE	0	0	0	0	0	0	26,434,899	26,434,899
NUCLEAR STEAM CONDENSATE	0	0	0	0	0	0	3,229,156	3,229,156
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	6,556,166	6,556,166
MAIN STEAM	0	0	0	0	0	0	631,598	631,598
MOISTURE SEPARATOR REHEATERS	0	0	0	0	0	0	6,360,460	6,360,460
REACTOR FEEDWATER PUMPS	0	0	0	0	0	0	3,647,490	3,647,490
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	1,076,385	1,076,385
OTHER TG BLDG	0	0	0	0	0	0	43,206,647	43,206,647
RAD WASTE BLDG	0	0	0	0	0	0	21,394,273	21,394,273
REACTOR BLDG - CLASS A	0	0	0	0	0	0	1,840,085	1,840,085
REACTOR BLDG - CLASS B	3,285,317	0	0	0	27,688	0	0	3,313,005
TG BLDG - CLASS A	0	0	0	0	0	0	1,242,291	1,242,291
TG BLDG - CLASS B	2,217,404	0	0	0	18,688	0	0	2,236,091
RAD WASTE & CONTROL - CLASS A	0	0	0	0	0	0	1,072,293	1,072,293
RAD WASTE & CONTROL - CLASS B	1,913,345	0	0	0	16,125	0	0	1,929,470
CONCENTRATOR BOTTOMS - CLASS A	0	0	0	0	0	0	630,705	630,705
CONCENTRATOR BOTTOMS - CLASS B	5,226,561	0	0	0	1,560,000	0	0	6,786,561
OTHER	0	0	0	0	0	0	1,547,860	1,547,860
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	320,247	320,247
SUBTOTAL BWR COSTS	**16,703,806**	**19,575,000**	**0**	**0**	**37,343,793**	**1,412,584**	**176,683,774**	**251,718,957**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)								43,145,230
TOTAL BWR COSTS								**294,864,187**

[a] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-3 PWR Disposition Costs for Generators Located in States Not Affiliated with a Compact having a Disposal Facility (2020 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
VESSEL WALL	0	0	0	0	0	0	785,840	785,840
VESSEL HEAD & BOTTOM	0	0	0	0	0	0	1,751,200	1,751,200
UPPER CORE SUPPORT ASSM	0	0	0	0	0	0	82,720	82,720
UPPER SUPPORT COLUMN	0	0	0	0	0	0	82,720	82,720
UPPER CORE BARREL	200,000	150,000	0	0	400,000	80,000	0	830,000
UPPER CORE GRID PLATE	500,000	375,000	0	0	1,100,000	200,000	0	2,175,000
GUIDE TUBES	0	0	0	0	0	0	124,080	124,080
LOWER CORE BARREL[a]	3,200,000	2,400,000	0	0	7,040,000	1,280,000	0	13,920,000
THERMAL SHIELDS[a]	600,000	450,000	0	0	1,320,000	240,000	0	2,610,000
CORE SHROUD[a]	400,000	300,000	0	0	13,420,000	160,000	0	14,280,000
LOWER GRID PLATE[a]	500,000	375,000	0	0	2,200,000	200,000	0	3,275,000
LOWER SUPPORT COLUMN	100,000	75,000	0	0	220,000	40,000	0	435,000
LOWER CORE FORGING	1,100,000	825,000	0	0	1,000,000	440,000	0	3,365,000
MISC INTERNALS	800,000	600,000	0	0	800,000	320,000	0	2,520,000
BIO SHIELD CONCRETE	0	0	0	0	0	0	5,161,728	5,161,728
REACTOR CAVITY LINER	0	0	0	0	0	0	105,882	105,882
REACTOR COOLANT PUMPS	0	0	0	0	0	0	1,838,760	1,838,760
PRESSURIZER	0	0	0	0	0	0	1,576,080	1,576,080
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	0	0	82,720	82,720
PRESSURIZER RELIEF TANK	0	0	0	0	0	0	248,160	248,160
SAFETY INJECTION ACCUM TANKS	0	0	0	0	0	0	827,200	827,200
STEAM GENERATORS	0	0	0	0	0	0	9,352,284	9,352,284
REACTOR COOLANT PIPING	0	0	0	0	0	0	682,440	682,440
REMAINING CONTAM. MATLS	0	0	0	0	0	0	10,879,334	10,879,334
CONTAMINATED MATRL OTHR BLD	0	0	0	0	0	0	98,666,555	98,666,555
FILTER CARTRIDGES	315,000	0	0	0	1,320,000	0	0	1,635,000
SPENT RESINS	2,000,000	0	0	0	4,400,000	800,000	0	7,200,000
COMBUSTIBLE WASTES - CLASS A	0	0	0	0	0	0	5,010,143	5,010,143
COMBUSTIBLE WASTES - CLASS B	3,150,000	0	0	0	210,000	0	0	3,360,000
EVAPORATOR BOTTOMS	0	0	0	0	0	0	2,088,546	2,088,546
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	3,216,998	3,216,998
SUBTOTAL PWR COSTS	**12,865,000**	**5,550,000**	**0**	**0**	**33,430,000**	**3,760,000**	**142,563,388**	**198,168,388**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)								31,972,875
TOTAL PWR COSTS								**230,141,263**

[a] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-4 BWR Disposition Costs for Generators Located in States Not Affiliated with a Compact having a Disposal Facility (2020 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
STEAM SEPARATOR	353,146	1,050,000	0	0	3,081,200	141,258	0	4,625,604
FUEL SUPPORT & PIECES	176,573	525,000	0	0	280,074	70,629	0	1,052,276
CONTROL RODS/INCORES	529,719	600,000	0	0	1,776,800	211,888	0	3,118,407
CONTROL RODS GUIDES	0	0	0	0	0	0	29,212	29,212
JET PUMPS	494,404	1,500,000	0	0	4,405,152	197,762	0	6,597,318
TOP FUEL GUIDES	847,550	5,400,000	0	0	12,075,520	339,020	0	18,662,091
CORE SUPPORT PLATE	0	0	0	0	0	0	80,334	80,334
CORE SHROUD[a]	1,659,786	10,500,000	0	0	31,871,600	663,914	0	44,695,301
REACTOR VESSEL WALL	0	0	0	0	0	0	58,424	58,424
SAC SHIELD Neutron-Activated Matl	0	0	0	0	0	0	657,275	657,275
REACT. WATER REC	0	0	0	0	0	0	642,669	642,669
SAC SHIELD Contaminated Matl	0	0	0	0	0	0	2,263,948	2,263,948
OTHER PRIMARY CONTAINMENT	0	0	0	0	0	0	25,823,618	25,823,618
CONTAINM. ATMOSPHERIC	0	0	0	0	0	0	350,547	350,547
HIGH PRESSURE CORE SPRAY	0	0	0	0	0	0	124,152	124,152
LOW PRESSURE CORE SPRAY	0	0	0	0	0	0	73,031	73,031
REACTOR BLDG CLOSED COOLING	0	0	0	0	0	0	233,698	233,698
REACTOR CORE ISO COOLING	0	0	0	0	0	0	94,940	94,940
RESIDUAL HEAT REMOVAL	0	0	0	0	0	0	452,790	452,790
POOL LINER & RACKS	0	0	0	0	0	0	2,782,466	2,782,466
CONTAMINATED CONCRETE	0	0	0	0	0	0	3,169,528	3,169,528
OTHER REACTOR BUILDING	0	0	0	0	0	0	10,363,041	10,363,041
TURBINE	0	0	0	0	0	0	21,737,789	21,737,789
NUCLEAR STEAM CONDENSATE	0	0	0	0	0	0	2,651,011	2,651,011
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	5,382,355	5,382,355
MAIN STEAM	0	0	0	0	0	0	518,517	518,517
MOISTURE SEPARATOR REHEATERS	0	0	0	0	0	0	5,221,687	5,221,687
REACTOR FEEDWATER PUMPS	0	0	0	0	0	0	2,999,382	2,999,382
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	883,670	883,670
OTHER TG BLDG	0	0	0	0	0	0	35,470,959	35,470,959
RAD WASTE BLDG	0	0	0	0	0	0	17,563,858	17,563,858
REACTOR BLDG - CLASS A	0	0	0	0	0	0	1,510,638	1,510,638
REACTOR BLDG - CLASS B	3,285,317	0	0	0	221,500	0	0	3,506,817
TG BLDG - CLASS A	0	0	0	0	0	0	1,019,872	1,019,872
TG BLDG - CLASS B	2,217,404	0	0	0	149,500	0	0	2,366,904
RAD WASTE & CONTROL - CLASS A	0	0	0	0	0	0	880,311	880,311
RAD WASTE & CONTROL - CLASS B	1,913,345	0	0	0	129,000	0	0	2,042,345
CONCENTRATOR BOTTOMS - CLASS A	0	0	0	0	0	0	516,031	516,031
CONCENTRATOR BOTTOMS - CLASS B	5,226,561	0	0	0	11,440,000	0	0	16,666,561
OTHER	0	0	0	0	0	0	1,270,732	1,270,732
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	262,910	262,910
SUBTOTAL BWR COSTS	**16,703,806**	**19,575,000**	**0**	**0**	**65,430,346**	**1,624,472**	**145,089,394**	**248,423,017**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)								59,416,833
TOTAL BWR COSTS								**307,839,851**

[a] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-5 PWR Burial Costs at the Texas Site (2022 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	DISPOSAL COST
VESSEL WALL	380,000	2,850,000	0	0	958,500	0	4,188,500
VESSEL HEAD & BOTTOM	400,000	3,000,000	0	0	1,000	0	3,401,000
UPPER CORE SUPPORT ASSM	40,000	300,000	0	0	500	0	340,500
UPPER SUPPORT COLUMN	40,000	300,000	0	0	5,000	0	345,000
UPPER CORE BARREL	200,000	150,000	0	0	50,000	0	400,000
UPPER CORE GRID PLATE	500,000	375,000	0	0	1,100,000	0	1,975,000
GUIDE TUBES	60,000	450,000	0	0	5,000	0	515,000
LOWER CORE BARREL[(a)]	3,200,000	2,400,000	0	0	7,040,000	0	12,640,000
THERMAL SHIELDS[(a)]	600,000	450,000	0	0	1,320,000	0	2,370,000
CORE SHROUD[(a)]	400,000	300,000	0	0	13,420,000	0	14,120,000
LOWER GRID PLATE[(a)]	500,000	375,000	0	0	2,200,000	0	3,075,000
LOWER SUPPORT COLUMN	100,000	75,000	0	0	220,000	0	395,000
LOWER CORE FORGING	1,100,000	825,000	0	0	125,000	0	2,050,000
MISC INTERNALS	800,000	600,000	0	0	100,000	0	1,500,000
BIO SHIELD CONCRETE	2,496,000	0	0	0	100,000	0	2,596,000
REACTOR CAVITY LINER	51,200	0	0	0	500	0	51,700
REACTOR COOLANT PUMPS	420,000	0	0	240,000	3,883	0	663,883
PRESSURIZER	360,000	0	0	0	254	0	360,254
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	40,000	0	0	0	590	0	40,590
PRESSURIZER RELIEF TANK	120,000	0	0	0	202	0	120,202
SAFETY INJECTION ACCUM TANKS	400,000	0	0	0	4,072	0	404,072
STEAM GENERATORS	2,136,200	0	0	640,000	220,000	0	2,996,200
REACTOR COOLANT PIPING	330,000	0	0	0	14,900	0	344,900
REMAINING CONTAM. MATLS	5,260,800	0	0	0	11,190	0	5,271,990
CONTAMINATED MATRL OTHR BLD	47,711,100	0	0	0	9,213	0	47,720,313
FILTER CARTRIDGES	315,000	0	0	0	250,000	0	565,000
SPENT RESINS	2,000,000	0	0	0	2,100,000	0	4,100,000
COMBUSTIBLE WASTES - CLASS A	697,500	0	0	0	11,625	0	709,125
COMBUSTIBLE WASTES - CLASS B	3,150,000	0	0	0	26,250	0	3,176,250
EVAPORATOR BOTTOMS	940,000	0	0	0	690,250	0	1,630,250
POST-TMI-2 ADDITIONS	1,555,608	0	0	0	0	0	1,555,608
SUBTOTAL PWR COSTS	**76,303,408**	**12,450,000**	**0**	**880,000**	**29,987,927**	**0**	**119,621,335**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)							0
TOTAL PWR COSTS							**119,621,335**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-6 BWR Burial Costs at the Texas Site (2022 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	DISPOSAL COST
STEAM SEPARATOR	353,146	1,050,000	0	0	480,150	0	1,883,296
FUEL SUPPORT & PIECES	176,573	525,000	0	0	35,009	0	736,582
CONTROL RODS/INCORES	529,719	600,000	0	0	1,762,100	211,888	3,103,707
CONTROL RODS GUIDES	14,126	450,000	0	0	5,001	0	469,127
JET PUMPS	494,404	1,500,000	0	0	1,000,644	197,762	3,192,810
TOP FUEL GUIDES	847,550	5,400,000	0	0	1,509,440	339,020	8,096,011
CORE SUPPORT PLATE	38,846	1,200,000	0	0	32,506	0	1,271,352
CORE SHROUD[(a)]	1,659,786	10,500,000	0	0	30,933,950	663,914	43,757,651
REACTOR VESSEL WALL	28,252	1,500,000	0	0	108,001	0	1,636,252
SAC SHIELD Neutron-Activated Matl	317,831	0	0	0	8,500	0	326,332
REACT. WATER REC	310,768	0	0	0	2,198	0	312,966
SAC SHIELD Contaminated Matl	1,094,753	0	0	0	7,741	0	1,102,494
OTHER PRIMARY CONTAINMENT	12,487,243	0	0	0	88,302	0	12,575,545
CONTAINM. ATMOSPHERIC	169,510	0	0	0	1,199	0	170,709
HIGH PRESSURE CORE SPRAY	60,035	0	0	0	425	0	60,459
LOW PRESSURE CORE SPRAY	35,315	0	0	0	250	0	35,564
REACTOR BLDG CLOSED COOLING	113,007	0	0	0	799	0	113,806
REACTOR CORE ISO COOLING	45,909	0	0	0	325	0	46,234
RESIDUAL HEAT REMOVAL	218,951	0	0	0	1,548	0	220,499
POOL LINER & RACKS	1,345,486	0	0	0	9,514	0	1,355,001
CONTAMINATED CONCRETE	1,532,654	0	0	0	10,838	0	1,543,492
OTHER REACTOR BUILDING	5,011,142	0	0	0	35,436	0	5,046,578
TURBINE	4,965,233	0	0	0	35,111	0	5,000,344
NUCLEAR STEAM CONDENSATE	1,281,920	0	0	0	9,065	0	1,290,985
LOW PRESSURE FEEDWATER HEATERS	2,602,686	0	0	0	18,405	0	2,621,091
MAIN STEAM	250,734	0	0	0	1,773	0	252,507
MOISTURE SEPARATOR REHEATERS	2,524,994	0	0	0	17,855	0	2,542,849
REACTOR FEEDWATER PUMPS	685,103	0	0	0	4,845	0	689,948
HIGH PRESSURE FEEDWATER HEATERS	427,307	0	0	0	3,022	0	430,328
OTHER TG BLDG	17,152,301	0	0	0	121,291	0	17,273,592
RAD WASTE BLDG	8,493,161	0	0	0	60,059	0	8,553,220
REACTOR BLDG - CLASS A	730,483	0	0	0	12,313	0	742,795
REACTOR BLDG - CLASS B	3,285,317	0	0	0	27,688	0	3,313,005
TG BLDG - CLASS A	493,168	0	0	0	8,313	0	501,481
TG BLDG - CLASS B	2,217,404	0	0	0	18,688	0	2,236,091
RAD WASTE & CONTROL - CLASS A	425,682	0	0	0	7,175	0	432,857
RAD WASTE & CONTROL - CLASS B	1,913,345	0	0	0	16,125	0	1,929,470
CONCENTRATOR BOTTOMS - CLASS A	1,737,478	0	0	0	72,600	0	1,810,078
CONCENTRATOR BOTTOMS - CLASS B	5,226,561	0	0	0	1,560,000	0	6,786,561
OTHER	614,474	0	0	0	16,450	0	630,924
POST-TMI-2 ADDITIONS	127,133	0	0	0	0	0	127,133
SUBTOTAL BWR COSTS	**82,039,489**	**22,725,000**	**0**	**0**	**38,044,651**	**1,412,584**	**144,221,724**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)							0
TOTAL BWR COSTS							**144,221,724**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-7 PWR Burial Costs at the Texas Site (2020 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	DISPOSAL COST
VESSEL WALL	380,000	2,850,000	0	0	7,668,000	1,520,000	12,418,000
VESSEL HEAD & BOTTOM	400,000	3,000,000	0	0	8,000	0	3,408,000
UPPER CORE SUPPORT ASSM	40,000	300,000	0	0	4,000	0	344,000
UPPER SUPPORT COLUMN	40,000	300,000	0	0	40,000	0	380,000
UPPER CORE BARREL	200,000	150,000	0	0	400,000	80,000	830,000
UPPER CORE GRID PLATE	500,000	375,000	0	0	1,100,000	200,000	2,175,000
GUIDE TUBES	60,000	450,000	0	0	40,000	0	550,000
LOWER CORE BARREL[(a)]	3,200,000	2,400,000	0	0	7,040,000	1,280,000	13,920,000
THERMAL SHIELDS[(a)]	600,000	450,000	0	0	1,320,000	240,000	2,610,000
CORE SHROUD[(a)]	400,000	300,000	0	0	13,420,000	160,000	14,280,000
LOWER GRID PLATE[(a)]	500,000	375,000	0	0	2,200,000	200,000	3,275,000
LOWER SUPPORT COLUMN	100,000	75,000	0	0	220,000	40,000	435,000
LOWER CORE FORGING	1,100,000	825,000	0	0	1,000,000	440,000	3,365,000
MISC INTERNALS	800,000	600,000	0	0	800,000	320,000	2,520,000
BIO SHIELD CONCRETE	2,496,000	0	0	0	800,000	0	3,296,000
REACTOR CAVITY LINER	51,200	0	0	0	4,000	0	55,200
REACTOR COOLANT PUMPS	420,000	0	0	240,000	31,064	0	691,064
PRESSURIZER	360,000	0	0	0	2,028	0	362,028
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	40,000	0	0	0	4,716	0	44,716
PRESSURIZER RELIEF TANK	120,000	0	0	0	1,616	0	121,616
SAFETY INJECTION ACCUM TANKS	400,000	0	0	0	32,576	0	432,576
STEAM GENERATORS	2,136,200	0	0	640,000	1,760,000	0	4,536,200
REACTOR COOLANT PIPING	330,000	0	0	0	119,200	0	449,200
REMAINING CONTAM. MATLS	5,260,800	0	0	0	89,516	0	5,350,316
CONTAMINATED MATRL OTHR BLD	47,711,100	0	0	0	73,700	0	47,784,800
FILTER CARTRIDGES	315,000	0	0	0	1,320,000	0	1,635,000
SPENT RESINS	2,000,000	0	0	0	4,400,000	800,000	7,200,000
COMBUSTIBLE WASTES - CLASS A	697,500	0	0	0	93,000	0	790,500
COMBUSTIBLE WASTES - CLASS B	3,150,000	0	0	0	210,000	0	3,360,000
EVAPORATOR BOTTOMS	940,000	0	0	0	5,522,000	0	6,462,000
POST-TMI-2 ADDITIONS	1,555,608	0	0	0	0	0	1,555,608
SUBTOTAL PWR COSTS	**76,303,408**	**12,450,000**	**0**	**880,000**	**49,723,416**	**5,280,000**	**144,636,824**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)							0
TOTAL PWR COSTS							**144,636,824**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-8 BWR Burial Costs at the Texas Site (2020 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	DISPOSAL COST
STEAM SEPARATOR	353,146	1,050,000	0	0	3,081,200	4,625,604	4,625,604
FUEL SUPPORT & PIECES	176,573	525,000	0	0	280,074	1,052,276	1,052,276
CONTROL RODS/INCORES	529,719	600,000	0	0	1,776,800	3,118,407	3,118,407
CONTROL RODS GUIDES	14,126	450,000	0	0	40,012	504,138	504,138
JET PUMPS	494,404	1,500,000	0	0	4,405,152	6,597,318	6,597,318
TOP FUEL GUIDES	847,550	5,400,000	0	0	12,075,520	18,662,091	18,662,091
CORE SUPPORT PLATE	38,846	1,200,000	0	0	260,044	1,498,890	1,498,890
CORE SHROUD[(a)]	1,659,786	10,500,000	0	0	31,871,600	44,695,301	44,695,301
REACTOR VESSEL WALL	28,252	1,500,000	0	0	864,006	2,392,257	2,392,257
SAC SHIELD Neutron-Activated Matl	317,831	0	0	0	68,003	385,834	385,834
REACT. WATER REC	310,768	0	0	0	17,581	328,349	328,349
SAC SHIELD Contaminated Matl	1,094,753	0	0	0	61,932	1,156,684	1,156,684
OTHER PRIMARY CONTAINMENT	12,487,243	0	0	0	706,420	13,193,662	13,193,662
CONTAINM. ATMOSPHERIC	169,510	0	0	0	9,589	179,099	179,099
HIGH PRESSURE CORE SPRAY	60,035	0	0	0	3,396	63,431	63,431
LOW PRESSURE CORE SPRAY	35,315	0	0	0	1,998	37,312	37,312
REACTOR BLDG CLOSED COOLING	113,007	0	0	0	6,393	119,400	119,400
REACTOR CORE ISO COOLING	45,909	0	0	0	2,597	48,506	48,506
RESIDUAL HEAT REMOVAL	218,951	0	0	0	12,386	231,337	231,337
POOL LINER & RACKS	1,345,486	0	0	0	76,116	1,421,602	1,421,602
CONTAMINATED CONCRETE	1,532,654	0	0	0	86,704	1,619,358	1,619,358
OTHER REACTOR BUILDING	5,011,142	0	0	0	283,487	5,294,629	5,294,629
TURBINE	4,965,233	0	0	0	280,890	5,246,122	5,246,122
NUCLEAR STEAM CONDENSATE	1,281,920	0	0	0	72,520	1,354,440	1,354,440
LOW PRESSURE FEEDWATER HEATERS	2,602,686	0	0	0	147,237	2,749,923	2,749,923
MAIN STEAM	250,734	0	0	0	14,184	264,918	264,918
MOISTURE SEPARATOR REHEATERS	2,524,994	0	0	0	142,842	2,667,836	2,667,836
REACTOR FEEDWATER PUMPS	685,103	0	0	0	38,757	723,860	723,860
HIGH PRESSURE FEEDWATER HEATERS	427,307	0	0	0	24,173	451,480	451,480
OTHER TG BLDG	17,152,301	0	0	0	970,328	18,122,629	18,122,629
RAD WASTE BLDG	8,493,161	0	0	0	480,469	8,973,631	8,973,631
REACTOR BLDG - CLASS A	730,483	0	0	0	98,500	828,983	828,983
REACTOR BLDG - CLASS B	3,285,317	0	0	0	221,500	3,506,817	3,506,817
TG BLDG - CLASS A	493,168	0	0	0	66,500	559,668	559,668
TG BLDG - CLASS B	2,217,404	0	0	0	149,500	2,366,904	2,366,904
RAD WASTE & CONTROL - CLASS A	425,682	0	0	0	57,400	483,082	483,082
RAD WASTE & CONTROL - CLASS B	1,913,345	0	0	0	129,000	2,042,345	2,042,345
CONCENTRATOR BOTTOMS - CLASS A	1,737,478	0	0	0	580,800	2,318,278	2,318,278
CONCENTRATOR BOTTOMS - CLASS B	5,226,561	0	0	0	11,440,000	16,666,561	16,666,561
OTHER	614,474	0	0	0	131,600	746,074	746,074
POST-TMI-2 ADDITIONS	127,133	0	0	0	0	127,133	127,133
SUBTOTAL BWR COSTS	**82,039,489**	**22,725,000**	**0**	**0**	**71,037,210**	**177,426,170**	**177,426,170**
OUT-OF-COMPACT TAXES & FEES (% OF CHARGES)							0
TOTAL BWR COSTS							**177,426,170**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-9 PWR Burial Costs at the South Carolina Site (2022 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	DISPOSAL COST
VESSEL WALL	5,829,635	4,232,972	11,156,800	0	2,798,225	24,017,632
VESSEL HEAD & BOTTOM	3,713,942	4,455,760	14,680	0	0	8,184,382
UPPER CORE SUPPORT ASSM	350,622	445,576	7,340	0	112,199	915,736
UPPER SUPPORT COLUMN	324,160	445,576	73,400	0	103,731	946,867
UPPER CORE BARREL	154,377	222,788	587,200	0	74,101	1,038,466
UPPER CORE GRID PLATE	385,943	556,970	1,468,000	0	185,252	2,596,165
GUIDE TUBES	571,195	668,364	73,400	0	154,223	1,467,182
LOWER CORE BARREL[(a)]	2,470,032	3,564,608	9,395,200	0	1,185,615	16,615,455
THERMAL SHIELDS[(a)]	463,131	668,364	1,761,600	0	222,303	3,115,398
CORE SHROUD[(a)]	358,560	445,576	17,909,600	0	172,109	18,885,845
LOWER GRID PLATE[(a)]	385,943	556,970	2,936,000	0	185,252	4,064,165
LOWER SUPPORT COLUMN	97,909	111,394	293,600	0	46,997	549,900
LOWER CORE FORGING	1,063,772	1,225,334	1,835,000	0	510,611	4,634,717
MISC INTERNALS	862,560	891,152	1,468,000	0	414,029	3,635,741
BIO SHIELD CONCRETE	21,024,900	0	1,468,000	0	0	22,492,900
REACTOR CAVITY LINER	423,392	0	7,340	0	0	430,732
REACTOR COOLANT PUMPS	7,370,352	0	57,002	0	0	7,427,354
PRESSURIZER	3,344,835	0	3,721	0	0	3,348,556
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	308,754	0	8,654	0	0	317,408
PRESSURIZER RELIEF TANK	926,262	0	2,965	0	0	929,227
SAFETY INJECTION ACCUM TANKS	3,299,292	0	59,777	0	0	3,359,069
STEAM GENERATORS	26,972,352	0	3,229,600	0	0	30,201,952
REACTOR COOLANT PIPING	2,937,282	0	218,732	0	0	3,156,014
REMAINING CONTAM. MATLS	51,925,060	0	164,262	0	0	52,089,321
CONTAMINATED MATRL OTHR BLD	399,461,223	0	135,240	0	0	399,596,462
FILTER CARTRIDGES	529,254	668,364	1,761,600	0	63,510	3,022,728
SPENT RESINS	1,940,760	2,227,880	5,872,000	0	931,565	10,972,205
COMBUSTIBLE WASTES – CLASS A	5,383,898	0	170,655	0	0	5,554,553
COMBUSTIBLE WASTES – CLASS B	2,911,140	6,683,640	385,350	0	232,891	10,213,021
EVAPORATOR BOTTOMS	9,121,572	10,471,036	10,132,870	0	1,245,968	30,971,446
POST-TMI-2 ADDITIONS	18,295,818	0	0	0	0	18,295,818
SUBTOTAL PWR COSTS	**573,207,925**	**38,542,324**	**72,657,588**	**0**	**8,638,581**	**693,046,418**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE						3,883,494
TOTAL PWR COSTS (NSIDE COMPACT)						**696,929,912**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-10 BWR Burial Costs at the South Carolina Site (2022 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	DISPOSAL COST
STEAM SEPARATOR	359,251	3,119,032	4,110,400	0	172,440	7,761,123
FUEL SUPPORT & PIECES	158,098	1,559,516	513,800	0	75,887	2,307,301
CONTROL RODS/INCORES	470,888	891,152	2,348,800	0	226,026	3,936,867
CONTROL RODS GUIDES	132,356	1,336,728	73,400	0	48,972	1,591,455
JET PUMPS	381,623	4,455,760	5,872,000	0	183,179	10,892,563
TOP FUEL GUIDES	654,211	8,020,368	21,139,200	0	314,021	30,127,801
CORE SUPPORT PLATE	439,749	3,453,214	477,100	0	162,707	4,532,771
CORE SHROUD[(a)]	1,281,164	15,595,160	41,104,000	0	614,959	58,595,283
REACTOR VESSEL WALL	278,855	2,450,668	1,585,440	0	103,176	4,418,140
SAC SHIELD Neutron-Activated Matl	5,877,242	0	124,780	0	0	6,002,022
REACT. WATER REC	2,542,985	0	32,260	0	0	2,575,245
SAC SHIELD Contaminated Matl	15,220,327	0	113,644	0	0	15,333,972
OTHER PRIMARY CONTAINMENT	106,754,263	0	1,296,280	0	0	108,050,543
CONTAINM. ATMOSPHERIC	1,308,423	0	17,597	0	0	1,326,019
HIGH PRESSURE CORE SPRAY	661,764	0	6,232	0	0	667,996
LOW PRESSURE CORE SPRAY	293,444	0	3,666	0	0	297,110
REACTOR BLDG CLOSED COOLING	1,028,592	0	11,731	0	0	1,040,323
REACTOR CORE ISO COOLING	354,365	0	4,766	0	0	359,130
RESIDUAL HEAT REMOVAL	1,955,102	0	22,729	0	0	1,977,831
POOL LINER & RACKS	13,110,770	0	139,673	0	0	13,250,442
CONTAMINATED CONCRETE	14,459,253	0	159,102	0	0	14,618,355
OTHER REACTOR BUILDING	38,680,251	0	520,198	0	0	39,200,450
TURBINE	48,502,232	0	515,433	0	0	49,017,664
NUCLEAR STEAM CONDENSATE	9,894,948	0	133,074	0	0	10,028,022
LOW PRESSURE FEEDWATER HEATERS	21,526,989	0	270,181	0	0	21,797,170
MAIN STEAM	1,935,376	0	26,028	0	0	1,961,404
MOISTURE SEPARATOR REHEATERS	19,490,049	0	262,115	0	0	19,752,165
REACTOR FEEDWATER PUMPS	5,288,209	0	71,119	0	0	5,359,329
HIGH PRESSURE FEEDWATER HEATERS	3,493,275	0	44,358	0	0	3,537,633
OTHER TG BLDG	132,396,040	0	1,780,552	0	0	134,176,592
RAD WASTE BLDG	65,557,438	0	881,661	0	0	66,439,099
REACTOR BLDG – CLASS A	5,638,485	0	180,748	0	0	5,819,232
REACTOR BLDG – CLASS B	14,112,295	7,129,216	406,453	0	1,128,984	22,776,947
TG BLDG – CLASS A	3,806,693	0	122,028	0	0	3,928,720
TG BLDG – CLASS B	9,261,193	4,678,548	274,333	0	740,895	14,954,969
RAD WASTE & CONTROL – CLASS A	3,285,777	0	105,329	0	0	3,391,106
RAD WASTE & CONTROL – CLASS B	8,379,175	4,232,972	236,715	0	670,334	13,519,196
CONCENTRATOR BOTTOMS – CLASS A	28,820,740	19,271,162	1,065,768	0	5,077,781	54,235,451
CONCENTRATOR BOTTOMS – CLASS B	8,662,881	5,792,488	15,267,200	0	1,526,270	31,248,839
OTHER	10,162,226	6,795,034	241,486	0	253,223	17,451,969
POST-TMI-2 ADDITIONS	1,495,231	0	0	0	0	1,495,231
SUBTOTAL BWR COSTS	**608,112,229**	**88,781,018**	**101,561,378**	**0**	**11,298,855**	**809,753,480**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE						4,020,364
TOTAL BWR COSTS (INSIDE COMPACT)						**813,773,844**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-11 PWR Burial Costs at the South Carolina Site (2020 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	DISPOSAL COST
VESSEL WALL	4,935,650	3,528,110	9,439,200	0	2,369,112	20,272,073
VESSEL HEAD & BOTTOM	3,144,401	3,713,800	12,420	0	0	6,870,621
UPPER CORE SUPPORT ASSM	296,853	371,380	6,210	0	94,993	769,436
UPPER SUPPORT COLUMN	274,449	371,380	62,100	0	87,824	795,753
UPPER CORE BARREL	130,707	185,690	496,800	0	62,739	875,936
UPPER CORE GRID PLATE	326,768	464,225	1,242,000	0	156,848	2,189,841
GUIDE TUBES	483,616	557,070	62,100	0	130,576	1,233,362
LOWER CORE BARREL[(a)]	2,091,312	2,971,040	7,948,800	0	1,003,830	14,014,982
THERMAL SHIELDS[(a)]	392,121	557,070	1,490,400	0	188,218	2,627,809
CORE SHROUD[(a)]	303,574	371,380	15,152,400	0	145,716	15,973,070
LOWER GRID PLATE[(a)]	326,768	464,225	2,484,000	0	156,848	3,431,841
LOWER SUPPORT COLUMN	82,895	92,845	248,400	0	39,790	463,929
LOWER CORE FORGING	900,641	1,021,295	1,552,500	0	432,308	3,906,743
MISC INTERNALS	793,024	742,760	1,242,000	0	380,652	3,158,436
BIO SHIELD CONCRETE	19,329,960	0	1,242,000	0	0	20,571,960
REACTOR CAVITY LINER	358,464	0	6,210	0	0	364,674
REACTOR COOLANT PUMPS	6,240,096	0	48,227	0	0	6,288,323
PRESSURIZER	2,831,985	0	3,148	0	0	2,835,133
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	261,414	0	7,322	0	0	268,736
PRESSURIZER RELIEF TANK	784,242	0	2,509	0	0	786,751
SAFETY INJECTION ACCUM TANKS	3,033,317	0	50,574	0	0	3,083,891
STEAM GENERATORS	22,836,096	0	2,732,400	0	0	25,568,496
REACTOR COOLANT PIPING	2,486,844	0	185,058	0	0	2,671,902
REMAINING CONTAM. MATLS	43,962,249	0	138,974	0	0	44,101,223
CONTAMINATED MATRL OTHR BLD	338,203,055	0	114,419	0	0	338,317,474
FILTER CARTRIDGES	448,092	557,070	1,490,400	0	53,771	2,549,333
SPENT RESINS	1,784,304	1,856,900	4,968,000	0	856,466	9,465,670
COMBUSTIBLE WASTES – CLASS A	4,558,407	0	144,383	0	0	4,702,789
COMBUSTIBLE WASTES – CLASS B	2,676,456	5,570,700	326,025	0	214,116	8,787,297
EVAPORATOR BOTTOMS	8,386,229	8,727,430	8,572,905	0	1,145,523	26,832,087
POST-TMI-2 ADDITIONS	15,490,124	0	0	0	0	15,490,124
SUBTOTAL PWR COSTS	**488,154,111**	**32,124,370**	**61,471,883**	**0**	**7,519,330**	**589,269,694**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE						3,883,494
TOTAL PWR COSTS (NSIDE COMPACT)						**593,153,189**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-12 BWR Burial Costs at the South Carolina Site (2020 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	DISPOSAL COST
STEAM SEPARATOR	304,168	2,599,660	3,477,600	0	146,001	6,527,429
FUEL SUPPORT & PIECES	133,853	1,299,830	434,700	0	64,250	1,932,633
CONTROL RODS/INCORES	432,927	742,760	1,987,200	0	207,805	3,370,693
CONTROL RODS GUIDES	112,062	1,114,140	62,100	0	41,463	1,329,765
JET PUMPS	323,111	3,713,800	4,968,000	0	155,093	9,160,004
TOP FUEL GUIDES	553,904	6,684,840	17,884,800	0	265,874	25,389,418
CORE SUPPORT PLATE	404,299	2,878,195	403,650	0	149,591	3,835,734
CORE SHROUD[(a)]	1,084,728	12,998,300	34,776,000	0	520,670	49,379,698
REACTOR VESSEL WALL	236,092	2,042,590	1,341,360	0	87,354	3,707,396
SAC SHIELD Neutron-Activated Matl	4,975,957	0	105,570	0	0	5,081,527
REACT. WATER REC	2,153,013	0	27,294	0	0	2,180,307
SAC SHIELD Contaminated Matl	12,886,264	0	96,149	0	0	12,982,413
OTHER PRIMARY CONTAINMENT	90,386,064	0	1,096,717	0	0	91,482,781
CONTAINM. ATMOSPHERIC	1,107,808	0	14,888	0	0	1,122,695
HIGH PRESSURE CORE SPRAY	608,415	0	5,273	0	0	613,688
LOW PRESSURE CORE SPRAY	248,444	0	3,102	0	0	251,545
REACTOR BLDG CLOSED COOLING	870,882	0	9,925	0	0	880,807
REACTOR CORE ISO COOLING	300,031	0	4,032	0	0	304,063
RESIDUAL HEAT REMOVAL	1,797,490	0	19,230	0	0	1,816,720
POOL LINER & RACKS	11,100,548	0	118,170	0	0	11,218,718
CONTAMINATED CONCRETE	12,241,898	0	134,608	0	0	12,376,506
OTHER REACTOR BUILDING	32,749,565	0	440,113	0	0	33,189,678
TURBINE	41,064,319	0	436,081	0	0	41,500,400
NUCLEAR STEAM CONDENSATE	8,377,796	0	112,587	0	0	8,490,383
LOW PRESSURE FEEDWATER HEATERS	18,225,783	0	228,586	0	0	18,454,369
MAIN STEAM	1,638,632	0	22,021	0	0	1,660,653
MOISTURE SEPARATOR REHEATERS	16,501,719	0	221,763	0	0	16,723,481
REACTOR FEEDWATER PUMPS	4,477,389	0	60,171	0	0	4,537,560
HIGH PRESSURE FEEDWATER HEATERS	3,211,661	0	37,529	0	0	3,249,190
OTHER TG BLDG	112,096,292	0	1,506,434	0	0	113,602,726
RAD WASTE BLDG	55,505,782	0	745,929	0	0	56,251,710
REACTOR BLDG – CLASS A	4,773,959	0	152,921	0	0	4,926,880
REACTOR BLDG – CLASS B	11,948,150	5,942,080	343,879	0	955,852	19,189,961
TG BLDG – CLASS A	3,223,028	0	103,241	0	0	3,326,269
TG BLDG – CLASS B	7,840,974	3,899,490	232,099	0	627,278	12,599,840
RAD WASTE & CONTROL – CLASS A	2,781,982	0	89,114	0	0	2,871,096
RAD WASTE & CONTROL – CLASS B	7,094,214	3,528,110	200,273	0	567,537	11,390,134
CONCENTRATOR BOTTOMS – CLASS A	24,401,031	16,062,185	901,692	0	4,299,095	45,664,003
CONCENTRATOR BOTTOMS – CLASS B	7,334,414	4,827,940	12,916,800	0	1,292,213	26,371,367
OTHER	8,603,832	5,663,545	204,309	0	214,391	14,686,076
POST-TMI-2 ADDITIONS	1,265,935	0	0	0	0	1,265,935
SUBTOTAL BWR COSTS	**515,378,415**	**73,997,465**	**85,925,907**	**0**	**9,594,466**	**684,896,253**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE						4,020,364
TOTAL BWR COSTS (INSIDE COMPACT)						**688,916,617**

Table B-13 PWR Burial Costs at the Washington Site (2022 dollars)

REFERENCE PWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	DISPOSAL COST
VESSEL WALL	396,863	416,547	332,306	781,880	1,927,596
VESSEL HEAD & BOTTOM	417,750	438,470	349,796	1,932	1,207,948
UPPER CORE SUPPORT ASSM	41,775	43,847	34,980	54,946	175,548
UPPER SUPPORT COLUMN	41,775	43,847	34,980	54,946	175,548
UPPER CORE BARREL	20,888	21,924	17,490	41,152	101,452
UPPER CORE GRID PLATE	52,219	54,809	43,725	102,879	253,631
GUIDE TUBES	62,663	65,771	52,469	82,419	263,322
LOWER CORE BARREL[(a)]	334,200	350,776	279,837	658,426	1,623,239
THERMAL SHIELDS[(a)]	62,663	65,771	52,469	123,455	304,357
CORE SHROUD[(a)]	41,775	43,847	34,980	82,303	202,905
LOWER GRID PLATE[(a)]	52,219	54,809	43,725	102,879	253,631
LOWER SUPPORT COLUMN	10,444	10,962	8,745	20,576	50,726
LOWER CORE FORGING	114,881	120,579	96,194	226,334	557,988
MISC INTERNALS	83,550	87,694	69,959	164,606	405,810
BIO SHIELD CONCRETE	2,606,760	537,126	1,705,256	9,419	4,858,560
REACTOR CAVITY LINER	53,472	10,962	34,980	193	99,607
REACTOR COOLANT PUMPS	438,638	131,541	69,959	386	640,524
PRESSURIZER	375,975	87,694	69,959	386	534,015
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	41,775	10,962	26,235	145	79,116
PRESSURIZER RELIEF TANK	125,325	21,924	17,490	97	164,835
SAFETY INJECTION ACCUM TANKS	417,750	87,694	69,959	386	575,790
STEAM GENERATORS	2,230,994	350,776	279,837	1,546	2,863,153
REACTOR COOLANT PIPING	344,644	76,732	61,214	338	482,928
REMAINING CONTAM. MATLS	5,494,248	1,107,138	3,594,154	19,851	10,215,391
CONTAMINATED MATRL OTHR BLD	49,828,280	8,725,561	32,434,834	179,145	91,167,820
FILTER CARTRIDGES	32,898	65,771	367,286	576,934	1,042,888
SPENT RESINS	208,875	219,235	174,898	411,516	1,014,524
COMBUSTIBLE WASTES – CLASS A	728,452	328,853	8,132,757	44,919	9,234,980
COMBUSTIBLE WASTES – CLASS B	328,978	328,853	3,672,858	948,041	5,278,730
EVAPORATOR BOTTOMS	981,713	1,030,405	822,021	948,041	3,782,180
POST-TMI-2 ADDITIONS	1,624,638	109,618	1,058,133	5,844	2,798,233
HEAVY OBJECT SURCHARGE					229,873
SITE AVAILABILITY CHARGES					796,630
OPERATING MARGIN					7,944,852
SUBTOTAL PWR COSTS	**67,597,076**	**15,050,496**	**54,043,482**	**5,645,920**	**151,308,329**
TAXES & FEES (% OF CHARGES)					6,506,258
TAXES & FEES ($/UNIT VOL.)					22,099,781
ANNUAL PERMIT FEES (3 YRS)					212,000
TOTAL PWR COSTS					**180,126,369**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-14 BWR Burial Costs at the Washington Site (2022 dollars)

REFERENCE BWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	DISPOSAL COST
STEAM SEPARATOR	36,882	153,465	244,857	911,914	1,383,245
FUEL SUPPORT & PIECES	18,441	76,732	122,429	371,234	505,663
CONTROL RODS/INCORES	55,323	87,694	69,959	911,914	1,161,017
CONTROL RODS GUIDES	14,753	65,771	104,939	318,200	432,372
JET PUMPS	51,634	219,235	349,796	911,914	1,568,707
TOP FUEL GUIDES	88,516	789,247	629,633	911,914	2,455,437
CORE SUPPORT PLATE	40,570	175,388	271,092	822,018	1,124,900
CORE SHROUD[a]	173,344	1,534,646	1,224,286	911,914	3,880,317
REACTOR VESSEL WALL	29,505	219,235	192,388	583,367	893,796
SAC SHIELD NEUTRON-ACTIVATED MATL	331,935	153,465	122,429	872	608,505
REACT. WATER REC	324,559	54,809	52,469	374	432,127
SAC SHIELD CONTAMINATED MATERIAL	1,143,332	416,547	332,306	2,368	1,894,021
OTHER PRIMARY CONTAINMENT	13,041,364	1,863,499	8,482,553	60,438	23,434,267
CONTAINM. ATMOSPHERIC	177,032	10,962	17,490	125	205,580
HIGH PRESSURE CORE SPRAY	62,699	21,924	17,490	125	102,209
LOW PRESSURE CORE SPRAY	36,882	10,962	8,745	62	56,637
REACTOR BLDG CLOSED COOLING	118,021	21,924	52,469	374	192,704
REACTOR CORE ISO COOLING	47,946	10,962	26,235	187	85,288
RESIDUAL HEAT REMOVAL	228,666	54,809	61,214	436	345,028
POOL LINER & RACKS	1,405,192	197,312	323,561	2,305	1,927,852
CONTAMINATED CONCRETE	1,600,665	306,929	944,449	6,729	2,857,260
OTHER REACTOR BUILDING	5,233,511	504,241	3,410,511	24,300	9,167,100
TURBINE	5,185,565	898,864	2,431,082	17,321	8,528,939
NUCLEAR STEAM CONDENSATE	1,338,805	142,503	384,776	2,742	1,868,209
LOW PRESSURE FEEDWATER HEATERS	2,718,180	460,394	384,776	2,742	3,565,475
MAIN STEAM	261,860	21,924	26,235	187	310,163
MOISTURE SEPARATOR REHEATERS	2,637,041	285,006	227,367	1,620	3,150,669
REACTOR FEEDWATER PUMPS	715,505	65,771	174,898	1,246	957,139
HIGH PRESSURE FEEDWATER HEATERS	446,268	87,694	69,959	498	604,308
OTHER TG BLDG	17,913,435	2,608,899	11,228,452	80,002	31,812,802
RAD WASTE BLDG	8,870,045	789,247	5,614,226	40,001	15,304,526
REACTOR BLDG – CLASS A	762,898	65,771	8,613,727	61,372	9,489,970
REACTOR BLDG – CLASS B	343,110	350,776	3,873,991	911,914	5,515,918
TG BLDG – CLASS A	515,053	43,847	5,815,359	41,434	6,406,378
TG BLDG – CLASS B	231,580	230,197	2,614,725	911,914	4,024,543
RAD WASTE & CONTROL – CLASS A	444,572	43,847	5,019,573	35,764	5,535,716
RAD WASTE & CONTROL – CLASS B	199,825	208,273	2,256,184	911,914	3,550,288
CONCENTRATOR BOTTOMS – CLASS A	1,814,579	1,896,384	1,512,868	766,403	5,817,936
CONCENTRATOR BOTTOMS – CLASS B	545,849	570,012	454,735	911,914	2,518,636
OTHER	641,741	668,667	533,439	3,801	1,846,794
POST-TMI-2 ADDITIONS	132,774	10,962	122,429	872	266,841
HEAVY OBJECT SURCHARGE					332,821
SITE AVAILABILITY CHARGES					796,630
OPERATING MARGIN					7,944,852
SUBTOTAL BWR COSTS	**69,979,457**	**16,398,793**	**68,420,098**	**10,990,933**	**174,863,584**
TAXES & FEES (% OF CHARGES)					7,519,134
TAXES & FEES ($/UNIT VOL.)					22,949,577
ANNUAL PERMIT FEES (3 YRS)					212,000
TOTAL BWR COSTS					**205,544,294**

[a] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-15 PWR Burial Costs at the Washington Site (2020 dollars)

REFERENCE PWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	DISPOSAL COST
VESSEL WALL	500,576	402,577	329,978	911,914	2,145,045
VESSEL HEAD & BOTTOM	526,922	423,766	347,345	2,492	1,300,525
UPPER CORE SUPPORT ASSM	52,692	42,377	34,735	70,846	200,650
UPPER SUPPORT COLUMN	52,692	42,377	34,735	70,846	200,650
UPPER CORE BARREL	26,346	21,188	17,367	53,033	117,935
UPPER CORE GRID PLATE	65,865	52,971	43,418	132,584	294,838
GUIDE TUBES	79,038	63,565	52,102	106,270	300,975
LOWER CORE BARREL[(a)]	421,538	339,012	277,876	848,534	1,886,961
THERMAL SHIELDS[(a)]	79,038	63,565	52,102	159,100	353,805
CORE SHROUD[(a)]	52,692	42,377	34,735	106,067	235,870
LOWER GRID PLATE[(a)]	65,865	52,971	43,418	132,584	294,838
LOWER SUPPORT COLUMN	13,173	10,594	8,684	26,517	58,968
LOWER CORE FORGING	144,904	116,536	95,520	291,684	648,643
MISC INTERNALS	105,384	84,753	69,469	212,134	471,740
BIO SHIELD CONCRETE	3,287,993	519,113	1,693,308	12,150	5,512,564
REACTOR CAVITY LINER	67,446	10,594	34,735	249	113,024
REACTOR COOLANT PUMPS	553,268	127,130	69,469	498	750,365
PRESSURIZER	474,230	84,753	69,469	498	628,950
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	52,692	10,594	26,051	187	89,524
PRESSURIZER RELIEF TANK	158,077	21,188	17,367	125	196,757
SAFETY INJECTION ACCUM TANKS	526,922	84,753	69,469	498	681,643
STEAM GENERATORS	2,814,027	339,012	277,876	1,994	3,432,909
REACTOR COOLANT PIPING	434,711	74,159	60,785	436	570,091
REMAINING CONTAM. MATLS	6,930,078	1,070,008	3,568,972	25,608	11,594,666
CONTAMINATED MATRL OTHR BLD	62,850,071	8,432,935	32,207,584	231,097	103,721,686
FILTER CARTRIDGES	41,495	63,565	364,712	743,888	1,213,660
SPENT RESINS	263,461	211,883	173,673	530,334	1,179,350
COMBUSTIBLE WASTES – CLASS A	918,820	317,824	8,075,776	57,946	9,370,366
COMBUSTIBLE WASTES – CLASS B	414,951	317,824	3,647,125	911,914	5,291,814
EVAPORATOR BOTTOMS	1,238,267	995,849	816,261	911,914	3,962,291
POST-TMI-2 ADDITIONS	2,049,210	105,941	1,050,719	7,539	3,213,410
HEAVY OBJECT SURCHARGE					216,677
SITE AVAILABILITY CHARGES					755,595
OPERATING MARGIN					7,642,093
SUBTOTAL PWR COSTS	**85,262,445**	**14,545,754**	**53,664,833**	**6,561,479**	**168,648,877**
TAXES & FEES (% OF CHARGES)					7,251,902
TAXES & FEES ($/UNIT VOL.)					22,099,781
ANNUAL PERMIT FEES (3 YRS)					212,000
TOTAL PWR COSTS					**198,212,559**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-16 BWR Burial Costs at the Washington Site (2020 dollars)

REFERENCE BWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	DISPOSAL COST
STEAM SEPARATOR	46,520	148,318	243,142	911,914	1,349,893
FUEL SUPPORT & PIECES	23,260	74,159	121,571	371,234	590,224
CONTROL RODS/INCORES	69,780	84,753	69,469	911,914	1,135,916
CONTROL RODS GUIDES	18,608	63,565	104,204	318,200	504,577
JET PUMPS	65,128	211,883	347,345	911,914	1,536,270
TOP FUEL GUIDES	111,648	762,778	625,221	911,914	2,411,561
CORE SUPPORT PLATE	51,172	169,506	269,193	822,018	1,311,889
CORE SHROUD[(a)]	218,644	1,483,180	1,215,708	911,914	3,829,446
REACTOR VESSEL WALL	37,216	211,883	191,040	583,367	1,023,506
SAC SHIELD NEUTRON-ACTIVATED MATL	418,681	148,318	121,571	872	689,442
REACT. WATER REC	409,377	52,971	52,102	374	514,823
SAC SHIELD CONTAMINATED MATERIAL	1,442,123	402,577	329,978	2,368	2,177,046
OTHER PRIMARY CONTAINMENT	16,449,507	1,801,004	8,423,121	60,438	26,734,070
CONTAINM. ATMOSPHERIC	223,296	10,594	17,367	125	251,382
HIGH PRESSURE CORE SPRAY	79,084	21,188	17,367	125	117,764
LOW PRESSURE CORE SPRAY	46,520	10,594	8,684	62	65,860
REACTOR BLDG CLOSED COOLING	148,864	21,188	52,102	374	222,528
REACTOR CORE ISO COOLING	60,476	10,594	26,051	187	97,308
RESIDUAL HEAT REMOVAL	288,425	52,971	60,785	436	402,617
POOL LINER & RACKS	1,772,416	190,695	321,294	2,305	2,286,710
CONTAMINATED CONCRETE	2,018,972	296,636	937,832	6,729	3,260,169
OTHER REACTOR BUILDING	6,601,202	487,330	3,386,616	24,300	10,499,448
TURBINE	6,540,726	868,719	2,414,049	17,321	9,840,816
NUCLEAR STEAM CONDENSATE	1,688,680	137,724	382,080	2,742	2,211,225
LOW PRESSURE FEEDWATER HEATERS	3,428,531	444,954	382,080	2,742	4,258,306
MAIN STEAM	330,293	21,188	26,051	187	377,719
MOISTURE SEPARATOR REHEATERS	3,326,187	275,448	225,774	1,620	3,829,029
REACTOR FEEDWATER PUMPS	902,490	63,565	173,673	1,246	1,140,974
HIGH PRESSURE FEEDWATER HEATERS	562,893	84,753	69,469	498	717,614
OTHER TG BLDG	22,594,812	2,521,405	11,149,781	80,002	36,346,001
RAD WASTE BLDG	11,188,084	762,778	5,574,890	40,001	17,565,753
REACTOR BLDG – CLASS A	962,268	63,565	8,553,376	61,372	9,640,581
REACTOR BLDG – CLASS B	432,776	339,012	3,846,848	911,914	5,530,551
TG BLDG – CLASS A	649,653	42,377	5,774,614	41,434	6,508,078
TG BLDG – CLASS B	292,100	222,477	2,596,405	911,914	4,022,896
RAD WASTE & CONTROL – CLASS A	560,753	42,377	4,984,404	35,764	5,623,298
RAD WASTE & CONTROL – CLASS B	252,046	201,289	2,240,377	911,914	3,605,625
CONCENTRATOR BOTTOMS – CLASS A	2,288,789	1,832,786	1,502,268	766,403	6,390,246
CONCENTRATOR BOTTOMS – CLASS B	688,497	550,895	451,549	911,914	2,602,855
OTHER	809,450	646,243	529,701	3,801	1,989,194
POST-TMI-2 ADDITIONS	167,472	10,594	121,571	872	300,510
HEAVY OBJECT SURCHARGE					313,716
SITE AVAILABILITY CHARGES					755,595
OPERATING MARGIN					7,642,093
SUBTOTAL BWR COSTS	**88,267,422**	**15,848,833**	**67,940,721**	**11,456,742**	**192,225,123**
TAXES & FEES (% OF CHARGES)					8,265,680
TAXES & FEES ($/UNIT VOL.)					22,949,577
ANNUAL PERMIT FEES (3 YRS)					212,000
TOTAL BWR COSTS					**223,652,380**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-17 PWR LLW Disposition Costs Using a Combination of Non-Compact Facility and the Texas Disposal Facility (2022 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
VESSEL WALL	0	0	0	0	0	0	957,220	957,220
VESSEL HEAD & BOTTOM	0	0	0	0	0	0	2,129,600	2,129,600
UPPER CORE SUPPORT ASSM	0	0	0	0	0	0	100,760	100,760
UPPER SUPPORT COLUMN	0	0	0	0	0	0	100,760	100,760
UPPER CORE BARREL	200,000	150,000	0	0	50,000	0	0	400,000
UPPER CORE GRID PLATE	500,000	375,000	0	0	1,100,000	0	0	1,975,000
GUIDE TUBES	0	0	0	0	0	0	151,140	151,140
LOWER CORE BARREL[(a)]	3,200,000	2,400,000	0	0	7,040,000	0	0	12,640,000
THERMAL SHIELDS[(a)]	600,000	450,000	0	0	1,320,000	0	0	2,370,000
CORE SHROUD[(a)]	400,000	300,000	0	0	13,420,000	0	0	14,120,000
LOWER GRID PLATE[(a)]	500,000	375,000	0	0	2,200,000	0	0	3,075,000
LOWER SUPPORT COLUMN	100,000	75,000	0	0	220,000	0	0	395,000
LOWER CORE FORGING	1,100,000	825,000	0	0	125,000	0	0	2,050,000
MISC INTERNALS	800,000	600,000	0	0	100,000	0	0	1,500,000
BIO SHIELD CONCRETE	0	0	0	0	0	0	6,287,424	6,287,424
REACTOR CAVITY LINER	0	0	0	0	0	0	128,973	128,973
REACTOR COOLANT PUMPS	0	0	0	0	0	0	2,236,080	2,236,080
PRESSURIZER	0	0	0	0	0	0	1,916,640	1,916,640
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	0	0	100,760	100,760
PRESSURIZER RELIEF TANK	0	0	0	0	0	0	302,280	302,280
SAFETY INJECTION ACCUM TANKS	0	0	0	0	0	0	1,007,600	1,007,600
STEAM GENERATORS	0	0	0	0	0	0	11,373,129	11,373,129
REACTOR COOLANT PIPING	0	0	0	0	0	0	831,270	831,270
REMAINING CONTAM. MATLS	0	0	0	0	0	0	13,251,955	13,251,955
CONTAMINATED MATRL OTHR BLD	0	0	0	0	0	0	120,184,261	120,184,261
FILTER CARTRIDGES	315,000	0	0	0	250,000	0	0	565,000
SPENT RESINS	2,000,000	0	0	0	2,100,000	0	0	4,100,000
COMBUSTIBLE WASTES – CLASS A	0	0	0	0	0	0	6,091,965	6,091,965
COMBUSTIBLE WASTES – CLASS B	3,150,000	0	0	0	26,250	0	0	3,176,250
EVAPORATOR BOTTOMS	0	0	0	0	0	0	2,552,667	2,552,667
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	3,918,577	3,918,577
TOTAL PWR COSTS	**12,865,000**	**5,550,000**	**0**	**0**	**27,951,250**	**0**	**173,623,060**	**219,989,310**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-18 BWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the Texas Disposal Facility (2022 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
STEAM SEPARATOR	353,146	1,050,000	0	0	480,150	0	0	1,883,296
FUEL SUPPORT & PIECES	176,573	525,000	0	0	35,009	0	0	736,582
CONTROL RODS/INCORES	529,719	600,000	0	0	1,762,100	211,888	0	3,103,707
CONTROL RODS GUIDES	0	0	0	0	0	0	35,583	35,583
JET PUMPS	494,404	1,500,000	0	0	1,000,644	197,762	0	3,192,810
TOP FUEL GUIDES	847,550	5,400,000	0	0	1,509,440	339,020	0	8,096,011
CORE SUPPORT PLATE	0	0	0	0	0	0	97,853	97,853
CORE SHROUD[(a)]	1,659,786	10,500,000	0	0	30,933,950	663,914	0	43,757,651
REACTOR VESSEL WALL	0	0	0	0	0	0	71,166	71,166
SAC SHIELD Neutron-Activated Matl	0	0	0	0	0	0	800,617	800,617
REACT. WATER REC	0	0	0	0	0	0	782,826	782,826
SAC SHIELD Contaminated Matl	0	0	0	0	0	0	2,757,682	2,757,682
OTHER PRIMARY CONTAINMENT	0	0	0	0	0	0	31,455,364	31,455,364
CONTAINM. ATMOSPHERIC	0	0	0	0	0	0	426,996	426,996
HIGH PRESSURE CORE SPRAY	0	0	0	0	0	0	151,228	151,228
LOW PRESSURE CORE SPRAY	0	0	0	0	0	0	88,957	88,957
REACTOR BLDG CLOSED COOLING	0	0	0	0	0	0	284,664	284,664
REACTOR CORE ISO COOLING	0	0	0	0	0	0	115,645	115,645
RESIDUAL HEAT REMOVAL	0	0	0	0	0	0	551,536	551,536
POOL LINER & RACKS	0	0	0	0	0	0	3,389,280	3,389,280
CONTAMINATED CONCRETE	0	0	0	0	0	0	3,860,755	3,860,755
OTHER REACTOR BUILDING	0	0	0	0	0	0	12,623,066	12,623,066
TURBINE	0	0	0	0	0	0	26,434,899	26,434,899
NUCLEAR STEAM CONDENSATE	0	0	0	0	0	0	3,229,156	3,229,156
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	6,556,166	6,556,166
MAIN STEAM	0	0	0	0	0	0	631,598	631,598
MOISTURE SEPARATOR REHEATERS	0	0	0	0	0	0	6,360,460	6,360,460
REACTOR FEEDWATER PUMPS	0	0	0	0	0	0	3,647,490	3,647,490
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	1,076,385	1,076,385
OTHER TG BLDG	0	0	0	0	0	0	43,206,647	43,206,647
RAD WASTE BLDG	0	0	0	0	0	0	21,394,273	21,394,273
REACTOR BLDG – CLASS A	0	0	0	0	0	0	1,840,085	1,840,085
REACTOR BLDG – CLASS B	3,285,317	0	0	0	27,688	0	0	3,313,005
TG BLDG – CLASS A	0	0	0	0	0	0	1,242,291	1,242,291
TG BLDG – CLASS B	2,217,404	0	0	0	18,688	0	0	2,236,091
RAD WASTE & CONTROL – CLASS A	0	0	0	0	0	0	1,072,293	1,072,293
RAD WASTE & CONTROL – CLASS B	1,913,345	0	0	0	16,125	0	0	1,929,470
CONCENTRATOR BOTTOMS – CLASS A	0	0	0	0	0	0	630,705	630,705
CONCENTRATOR BOTTOMS – CLASS B	5,226,561	0	0	0	1,560,000	0	0	6,786,561
OTHER	0	0	0	0	0	0	1,547,860	1,547,860
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	320,247	320,247
TOTAL BWR COSTS	**16,703,806**	**19,575,000**	**0**	**0**	**37,343,793**	**1,412,584**	**176,683,774**	**251,718,957**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-19 PWR LLW Disposition Costs Using a Combination of Non-Compact Facility and the South Carolina Disposal Facility (2022 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
VESSEL WALL	0	0	0	0	0	957,220	957,220
VESSEL HEAD & BOTTOM	0	0	0	0	0	2,129,600	2,129,600
UPPER CORE SUPPORT ASSM	0	0	0	0	0	100,760	100,760
UPPER SUPPORT COLUMN	0	0	0	0	0	100,760	100,760
UPPER CORE BARREL	154,377	222,788	587,200	0	74,101	0	1,038,466
UPPER CORE GRID PLATE	385,943	556,970	1,468,000	0	185,252	0	2,596,165
GUIDE TUBES	0	0	0	0	0	151,140	151,140
LOWER CORE BARREL[(a)]	2,470,032	3,564,608	9,395,200	0	1,185,615	0	16,615,455
THERMAL SHIELDS[(a)]	463,131	668,364	1,761,600	0	222,303	0	3,115,398
CORE SHROUD[(a)]	358,560	445,576	17,909,600	0	172,109	0	18,885,845
LOWER GRID PLATE[(a)]	385,943	556,970	2,936,000	0	185,252	0	4,064,165
LOWER SUPPORT COLUMN	97,909	111,394	293,600	0	46,997	0	549,900
LOWER CORE FORGING	1,063,772	1,225,334	1,835,000	0	510,611	0	4,634,717
MISC INTERNALS	862,560	891,152	1,468,000	0	414,029	0	3,635,741
BIO SHIELD CONCRETE	0	0	0	0	0	6,287,424	6,287,424
REACTOR CAVITY LINER	0	0	0	0	0	128,973	128,973
REACTOR COOLANT PUMPS	0	0	0	0	0	2,236,080	2,236,080
PRESSURIZER	0	0	0	0	0	1,916,640	1,916,640
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	0	100,760	100,760
PRESSURIZER RELIEF TANK	0	0	0	0	0	302,280	302,280
SAFETY INJECTION ACCUM TANKS	0	0	0	0	0	1,007,600	1,007,600
STEAM GENERATORS	0	0	0	0	0	11,373,129	11,373,129
REACTOR COOLANT PIPING	0	0	0	0	0	831,270	831,270
REMAINING CONTAM. MATLS	0	0	0	0	0	13,251,955	13,251,955
CONTAMINATED MATRL OTHR BLD	0	0	0	0	0	120,184,261	120,184,261
FILTER CARTRIDGES	529,254	668,364	1,761,600	0	63,510	0	3,022,728
SPENT RESINS	1,940,760	2,227,880	5,872,000	0	931,565	0	10,972,205
COMBUSTIBLE WASTES – CLASS A	0	0	0	0	0	6,091,965	6,091,965
COMBUSTIBLE WASTES – CLASS B	2,911,140	6,683,640	385,350	0	232,891	0	10,213,021
EVAPORATOR BOTTOMS	0	0	0	0	0	2,552,667	2,552,667
POST-TMI-2 ADDITIONS	0	0	0	0	0	3,918,577	3,918,577
SUBTOTAL PWR COSTS	**11,623,381**	**17,823,040**	**45,673,150**	**0**	**4,224,235**	**173,623,060**	**252,966,867**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE							77,190
OTAL PWR COSTS (INSIDE COMPACT)							**253,044,057**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-20 BWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the South Carolina Disposal Facility (2022 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
STEAM SEPARATOR	359,251	3,119,032	4,110,400	0	172,440	0	7,761,123
FUEL SUPPORT & PIECES	158,098	1,559,516	513,800	0	75,887	0	2,307,301
CONTROL RODS/INCORES	470,888	891,152	2,348,800	0	226,026	0	3,936,867
CONTROL RODS GUIDES	0	0	0	0	0	35,583	35,583
JET PUMPS	381,623	4,455,760	5,872,000	0	183,179	0	10,892,563
TOP FUEL GUIDES	654,211	8,020,368	21,139,200	0	314,021	0	30,127,801
CORE SUPPORT PLATE	0	0	0	0	0	97,853	97,853
CORE SHROUD[(a)]	1,281,164	15,595,160	41,104,000	0	614,959	0	58,595,283
REACTOR VESSEL WALL	0	0	0	0	0	71,166	71,166
SAC SHIELD Neutron-Activated Matl	0	0	0	0	0	800,617	800,617
REACT. WATER REC	0	0	0	0	0	782,826	782,826
SAC SHIELD Contaminated Matl	0	0	0	0	0	2,757,682	2,757,682
OTHER PRIMARY CONTAINMENT	0	0	0	0	0	31,455,364	31,455,364
CONTAINM. ATMOSPHERIC	0	0	0	0	0	426,996	426,996
HIGH PRESSURE CORE SPRAY	0	0	0	0	0	151,228	151,228
LOW PRESSURE CORE SPRAY	0	0	0	0	0	88,957	88,957
REACTOR BLDG CLOSED COOLING	0	0	0	0	0	284,664	284,664
REACTOR CORE ISO COOLING	0	0	0	0	0	115,645	115,645
RESIDUAL HEAT REMOVAL	0	0	0	0	0	551,536	551,536
POOL LINER & RACKS	0	0	0	0	0	3,389,280	3,389,280
CONTAMINATED CONCRETE	0	0	0	0	0	3,860,755	3,860,755
OTHER REACTOR BUILDING	0	0	0	0	0	12,623,066	12,623,066
TURBINE	0	0	0	0	0	26,434,899	26,434,899
NUCLEAR STEAM CONDENSATE	0	0	0	0	0	3,229,156	3,229,156
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	0	6,556,166	6,556,166
MAIN STEAM	0	0	0	0	0	631,598	631,598
MOISTURE SEPARATOR REHEATERS	0	0	0	0	0	6,360,460	6,360,460
REACTOR FEEDWATER PUMPS	0	0	0	0	0	3,647,490	3,647,490
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	0	1,076,385	1,076,385
OTHER TG BLDG	0	0	0	0	0	43,206,647	43,206,647
RAD WASTE BLDG	0	0	0	0	0	21,394,273	21,394,273
REACTOR BLDG – CLASS A	0	0	0	0	0	1,840,085	1,840,085
REACTOR BLDG – CLASS B	14,112,295	7,129,216	406,453	0	1,128,984	0	22,776,947
TG BLDG – CLASS A	0	0	0	0	0	1,242,291	1,242,291
TG BLDG – CLASS B	9,261,193	4,678,548	274,333	0	740,895	0	14,954,969
RAD WASTE & CONTROL – CLASS A	0	0	0	0	0	1,072,293	1,072,293
RAD WASTE & CONTROL – CLASS B	8,379,175	4,232,972	236,715	0	670,334	0	13,519,196
CONCENTRATOR BOTTOMS – CLASS A	0	0	0	0	0	630,705	630,705
CONCENTRATOR BOTTOMS – CLASS B	8,662,881	5,792,488	15,267,200	0	1,526,270	0	31,248,839
OTHER	0	0	0	0	0	1,547,860	1,547,860
POST-TMI-2 ADDITIONS	0	0	0	0	0	320,247	320,247
SUBTOTAL BWR COSTS	**43,720,780**	**55,474,212**	**91,272,900**	**0**	**5,652,996**	**176,683,774**	**372,804,662**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE							100,223
TOTAL BWR COSTS (INSIDE COMPACT)							**372,904,885**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-21 PWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the Washington Disposal Facility (2022 dollars)

REFERENCE PWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	WASTE VENDOR CHARGE	DISPOSAL COST
VESSEL WALL	0	0	0	0	957,220	957,220
VESSEL HEAD & BOTTOM	0	0	0	0	2,129,600	2,129,600
UPPER CORE SUPPORT ASSM	0	0	0	0	100,760	100,760
UPPER SUPPORT COLUMN	0	0	0	0	100,760	100,760
UPPER CORE BARREL	20,888	21,924	17,490	41,152	0	101,452
UPPER CORE GRID PLATE	52,219	54,809	43,725	102,879	0	253,631
GUIDE TUBES	0	0	0	0	151,140	151,140
LOWER CORE BARREL[(a)]	334,200	350,776	279,837	658,426	0	1,623,239
THERMAL SHIELDS[(a)]	62,663	65,771	52,469	123,455	0	304,357
CORE SHROUD[(a)]	41,775	43,847	34,980	82,303	0	202,905
LOWER GRID PLATE[(a)]	52,219	54,809	43,725	102,879	0	253,631
LOWER SUPPORT COLUMN	10,444	10,962	8,745	20,576	0	50,726
LOWER CORE FORGING	114,881	120,579	96,194	226,334	0	557,988
MISC INTERNALS	83,550	87,694	69,959	164,606	0	405,810
BIO SHIELD CONCRETE	0	0	0	0	6,287,424	6,287,424
REACTOR CAVITY LINER	0	0	0	0	128,973	128,973
REACTOR COOLANT PUMPS	0	0	0	0	2,236,080	2,236,080
PRESSURIZER	0	0	0	0	1,916,640	1,916,640
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	100,760	100,760
PRESSURIZER RELIEF TANK	0	0	0	0	302,280	302,280
SAFETY INJECTION ACCUM TANKS	0	0	0	0	1,007,600	1,007,600
STEAM GENERATORS	0	0	0	0	11,373,129	11,373,129
REACTOR COOLANT PIPING	0	0	0	0	831,270	831,270
REMAINING CONTAM. MATLS	0	0	0	0	13,251,955	13,251,955
CONTAMINATED MATRL OTHR BLD	0	0	0	0	120,184,261	120,184,261
FILTER CARTRIDGES	32,898	65,771	367,286	576,934	0	1,042,888
SPENT RESINS	208,875	219,235	174,898	411,516	0	1,014,524
COMBUSTIBLE WASTES – CLASS A	0	0	0	0	6,091,965	6,091,965
COMBUSTIBLE WASTES – CLASS B	328,978	328,853	3,672,858	948,041	0	5,278,730
EVAPORATOR BOTTOMS	0	0	0	0	2,552,667	2,552,667
POST-TMI-2 ADDITIONS	0	0	0	0	3,918,577	3,918,577
HEAVY OBJECT SURCHARGE						0
SITE AVAILABILITY CHARGES						796,180
OPERATING MARGIN						2,639,392
SUBTOTAL PWR COSTS	**1,343,588**	**1,425,029**	**4,862,164**	**3,459,100**	**173,623,060**	**188,148,514**
TAXES & FEES (% OF CHARGES)						624,595
TAXES & FEES ($/UNIT VOL.)						372,126
ANNUAL PERMIT FEES (3 YRS)						212,000
TOTAL PWR COSTS						**189,357,235**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-22 BWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the Washington Disposal Facility (2022 dollars)

REFERENCE BWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	VENDOR CHARGE	DISPOSAL COST
STEAM SEPARATOR	36,882	153,465	244,857	948,041	0	1,383,245
FUEL SUPPORT & PIECES	18,441	76,732	122,429	288,061	0	505,663
CONTROL RODS/INCORES	55,323	87,694	69,959	948,041	0	1,161,017
CONTROL RODS GUIDES	0	0	0	0	35,583	35,583
JET PUMPS	51,634	219,235	349,796	948,041	0	1,568,707
TOP FUEL GUIDES	88,516	789,247	629,633	948,041	0	2,455,437
CORE SUPPORT PLATE	0	0	0	0	97,853	97,853
CORE SHROUD[a]	173,344	1,534,646	1,224,286	948,041	0	3,880,317
REACTOR VESSEL WALL	0	0	0	0	71,166	71,166
SAC SHIELD Neutron-Activated Matl	0	0	0	0	800,617	800,617
REACT. WATER REC	0	0	0	0	782,826	782,826
SAC SHIELD Contaminated Matl	0	0	0	0	2,757,682	2,757,682
OTHER PRIMARY CONTAINMENT	0	0	0	0	31,455,364	31,455,364
CONTAINM. ATMOSPHERIC	0	0	0	0	426,996	426,996
HIGH PRESSURE CORE SPRAY	0	0	0	0	151,228	151,228
LOW PRESSURE CORE SPRAY	0	0	0	0	88,957	88,957
REACTOR BLDG CLOSED COOLING	0	0	0	0	284,664	284,664
REACTOR CORE ISO COOLING	0	0	0	0	115,645	115,645
RESIDUAL HEAT REMOVAL	0	0	0	0	551,536	551,536
POOL LINER & RACKS	0	0	0	0	3,389,280	3,389,280
CONTAMINATED CONCRETE	0	0	0	0	3,860,755	3,860,755
OTHER REACTOR BUILDING	0	0	0	0	12,623,066	12,623,066
TURBINE	0	0	0	0	26,434,899	26,434,899
NUCLEAR STEAM CONDENSATE	0	0	0	0	3,229,156	3,229,156
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	6,556,166	6,556,166
MAIN STEAM	0	0	0	0	631,598	631,598
MOISTURE SEPARATOR REHEATERS	0	0	0	0	6,360,460	6,360,460
REACTOR FEEDWATER PUMPS	0	0	0	0	3,647,490	3,647,490
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	1,076,385	1,076,385
OTHER TG BLDG	0	0	0	0	43,206,647	43,206,647
RAD WASTE BLDG	0	0	0	0	21,394,273	21,394,273
REACTOR BLDG – CLASS A	0	0	0	0	1,840,085	1,840,085
REACTOR BLDG – CLASS B	343,110	350,776	3,873,991	948,041	0	5,515,918
TG BLDG – CLASS A	0	0	0	0	1,242,291	1,242,291
TG BLDG – CLASS B	231,580	230,197	2,614,725	948,041	0	4,024,543
RAD WASTE & CONTROL – CLASS A	0	0	0	0	1,072,293	1,072,293
RAD WASTE & CONTROL – CLASS B	199,825	208,273	2,256,184	886,006	0	3,550,288
CONCENTRATOR BOTTOMS – CLASS A	0	0	0	0	630,705	630,705
CONCENTRATOR BOTTOMS – CLASS B	545,849	570,012	454,735	948,041	0	2,518,636
OTHER	0	0	0	0	1,547,860	1,547,860
POST-TMI-2 ADDITIONS	0	0	0	0	320,247	320,247
HEAVY OBJECT SURCHARGE						0
SITE AVAILABILITY CHARGES						796,180
OPERATING MARGIN						6,322,178
SUBTOTAL BWR COSTS	**1,744,504**	**4,220,278**	**11,840,595**	**8,758,396**	**176,683,774**	**210,365,903**
TAXES & FEES (% OF CHARGES)						1,448,332
TAXES & FEES ($/UNIT VOL.)						572,105
ANNUAL PERMIT FEES (3 YRS)						212,000
TOTAL BWR COSTS						**212,598,340**

[a] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-23 PWR LLW Disposition Costs Using a Combination of Non-Compact Facility and the Texas Disposal Facility (2020 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
VESSEL WALL	0	0	0	0	0	0	785,840	785,840
VESSEL HEAD & BOTTOM	0	0	0	0	0	0	1,751,200	1,751,200
UPPER CORE SUPPORT ASSM	0	0	0	0	0	0	82,720	82,720
UPPER SUPPORT COLUMN	0	0	0	0	0	0	82,720	82,720
UPPER CORE BARREL	200,000	150,000	0	0	400,000	80,000	0	830,000
UPPER CORE GRID PLATE	500,000	375,000	0	0	1,100,000	200,000	0	2,175,000
GUIDE TUBES	0	0	0	0	0	0	124,080	124,080
LOWER CORE BARREL[(a)]	3,200,000	2,400,000	0	0	7,040,000	1,280,000	0	13,920,000
THERMAL SHIELDS[(a)]	600,000	450,000	0	0	1,320,000	240,000	0	2,610,000
CORE SHROUD[(a)]	400,000	300,000	0	0	13,420,000	160,000	0	14,280,000
LOWER GRID PLATE[(a)]	500,000	375,000	0	0	2,200,000	200,000	0	3,275,000
LOWER SUPPORT COLUMN	100,000	75,000	0	0	220,000	40,000	0	435,000
LOWER CORE FORGING	1,100,000	825,000	0	0	1,000,000	440,000	0	3,365,000
MISC INTERNALS	800,000	600,000	0	0	800,000	320,000	0	2,520,000
BIO SHIELD CONCRETE	0	0	0	0	0	0	5,161,728	5,161,728
REACTOR CAVITY LINER	0	0	0	0	0	0	105,882	105,882
REACTOR COOLANT PUMPS	0	0	0	0	0	0	1,838,760	1,838,760
PRESSURIZER	0	0	0	0	0	0	1,576,080	1,576,080
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	0	0	82,720	82,720
PRESSURIZER RELIEF TANK	0	0	0	0	0	0	248,160	248,160
SAFETY INJECTION ACCUM TANKS	0	0	0	0	0	0	827,200	827,200
STEAM GENERATORS	0	0	0	0	0	0	9,352,284	9,352,284
REACTOR COOLANT PIPING	0	0	0	0	0	0	682,440	682,440
REMAINING CONTAM. MATLS	0	0	0	0	0	0	10,879,334	10,879,334
CONTAMINATED MATRL OTHR BLD	0	0	0	0	0	0	98,666,555	98,666,555
FILTER CARTRIDGES	315,000	0	0	0	1,320,000	0	0	1,635,000
SPENT RESINS	2,000,000	0	0	0	4,400,000	800,000	0	7,200,000
COMBUSTIBLE WASTES – CLASS A	0	0	0	0	0	0	5,010,143	5,010,143
COMBUSTIBLE WASTES – CLASS B	3,150,000	0	0	0	210,000	0	0	3,360,000
EVAPORATOR BOTTOMS	0	0	0	0	0	0	2,088,546	2,088,546
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	3,216,998	3,216,998
TOTAL PWR COSTS	**12,865,000**	**5,550,000**	**0**	**0**	**33,430,000**	**3,760,000**	**142,563,388**	**198,168,388**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-24 BWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the Texas Disposal Facility (2020 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	IRRADIATED HARDWARE HANDLE SURCHARGE	CASK HANDLE SURCHARGE	WEIGHT SURCHARGE	CURIE CHARGE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
STEAM SEPARATOR	353,146	1,050,000	0	0	3,081,200	141,258	0	4,625,604
FUEL SUPPORT & PIECES	176,573	525,000	0	0	280,074	70,629	0	1,052,276
CONTROL RODS/INCORES	529,719	600,000	0	0	1,776,800	211,888	0	3,118,407
CONTROL RODS GUIDES	0	0	0	0	0	0	29,212	29,212
JET PUMPS	494,404	1,500,000	0	0	4,405,152	197,762	0	6,597,318
TOP FUEL GUIDES	847,550	5,400,000	0	0	12,075,520	339,020	0	18,662,091
CORE SUPPORT PLATE	0	0	0	0	0	0	80,334	80,334
CORE SHROUD[(a)]	1,659,786	10,500,000	0	0	31,871,600	663,914	0	44,695,301
REACTOR VESSEL WALL	0	0	0	0	0	0	58,424	58,424
SAC SHIELD Neutron-Activated Matl	0	0	0	0	0	0	657,275	657,275
REACT. WATER REC	0	0	0	0	0	0	642,669	642,669
SAC SHIELD Contaminated Matl	0	0	0	0	0	0	2,263,948	2,263,948
OTHER PRIMARY CONTAINMENT	0	0	0	0	0	0	25,823,618	25,823,618
CONTAINM. ATMOSPHERIC	0	0	0	0	0	0	350,547	350,547
HIGH PRESSURE CORE SPRAY	0	0	0	0	0	0	124,152	124,152
LOW PRESSURE CORE SPRAY	0	0	0	0	0	0	73,031	73,031
REACTOR BLDG CLOSED COOLING	0	0	0	0	0	0	233,698	233,698
REACTOR CORE ISO COOLING	0	0	0	0	0	0	94,940	94,940
RESIDUAL HEAT REMOVAL	0	0	0	0	0	0	452,790	452,790
POOL LINER & RACKS	0	0	0	0	0	0	2,782,466	2,782,466
CONTAMINATED CONCRETE	0	0	0	0	0	0	3,169,528	3,169,528
OTHER REACTOR BUILDING	0	0	0	0	0	0	10,363,041	10,363,041
TURBINE	0	0	0	0	0	0	21,737,789	21,737,789
NUCLEAR STEAM CONDENSATE	0	0	0	0	0	0	2,651,011	2,651,011
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	5,382,355	5,382,355
MAIN STEAM	0	0	0	0	0	0	518,517	518,517
MOISTURE SEPARATOR REHEATERS	0	0	0	0	0	0	5,221,687	5,221,687
REACTOR FEEDWATER PUMPS	0	0	0	0	0	0	2,999,382	2,999,382
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	0	0	883,670	883,670
OTHER TG BLDG	0	0	0	0	0	0	35,470,959	35,470,959
RAD WASTE BLDG	0	0	0	0	0	0	17,563,858	17,563,858
REACTOR BLDG – CLASS A	0	0	0	0	0	0	1,510,638	1,510,638
REACTOR BLDG – CLASS B	3,285,317	0	0	0	221,500	0	0	3,506,817
TG BLDG – CLASS A	0	0	0	0	0	0	1,019,872	1,019,872
TG BLDG – CLASS B	2,217,404	0	0	0	149,500	0	0	2,366,904
RAD WASTE & CONTROL – CLASS A	0	0	0	0	0	0	880,311	880,311
RAD WASTE & CONTROL – CLASS B	1,913,345	0	0	0	129,000	0	0	2,042,345
CONCENTRATOR BOTTOMS – CLASS A	0	0	0	0	0	0	516,031	516,031
CONCENTRATOR BOTTOMS – CLASS B	5,226,561	0	0	0	11,440,000	0	0	16,666,561
OTHER	0	0	0	0	0	0	1,270,732	1,270,732
POST-TMI-2 ADDITIONS	0	0	0	0	0	0	262,910	262,910
TOTAL BWR COSTS	**16,703,806**	**19,575,000**	**0**	**0**	**65,430,346**	**1,624,472**	**145,089,394**	**248,423,017**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-25 PWR LLW Disposition Costs Using a Combination of Non-Compact Facility and the South Carolina Disposal Facility (2020 dollars)

REFERENCE PWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
VESSEL WALL	0	0	0	0	0	785,840	785,840
VESSEL HEAD & BOTTOM	0	0	0	0	0	1,751,200	1,751,200
UPPER CORE SUPPORT ASSM	0	0	0	0	0	82,720	82,720
UPPER SUPPORT COLUMN	0	0	0	0	0	82,720	82,720
UPPER CORE BARREL	130,707	185,690	496,800	0	62,739	0	875,936
UPPER CORE GRID PLATE	326,768	464,225	1,242,000	0	156,848	0	2,189,841
GUIDE TUBES	0	0	0	0	0	124,080	124,080
LOWER CORE BARREL[(a)]	2,091,312	2,971,040	7,948,800	0	1,003,830	0	14,014,982
THERMAL SHIELDS[(a)]	392,121	557,070	1,490,400	0	188,218	0	2,627,809
CORE SHROUD[(a)]	303,574	371,380	15,152,400	0	145,716	0	15,973,070
LOWER GRID PLATE[(a)]	326,768	464,225	2,484,000	0	156,848	0	3,431,841
LOWER SUPPORT COLUMN	82,895	92,845	248,400	0	39,790	0	463,929
LOWER CORE FORGING	900,641	1,021,295	1,552,500	0	432,308	0	3,906,743
MISC INTERNALS	793,024	742,760	1,242,000	0	380,652	0	3,158,436
BIO SHIELD CONCRETE	0	0	0	0	0	5,161,728	5,161,728
REACTOR CAVITY LINER	0	0	0	0	0	105,882	105,882
REACTOR COOLANT PUMPS	0	0	0	0	0	1,838,760	1,838,760
PRESSURIZER	0	0	0	0	0	1,576,080	1,576,080
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	0	82,720	82,720
PRESSURIZER RELIEF TANK	0	0	0	0	0	248,160	248,160
SAFETY INJECTION ACCUM TANKS	0	0	0	0	0	827,200	827,200
STEAM GENERATORS	0	0	0	0	0	9,352,284	9,352,284
REACTOR COOLANT PIPING	0	0	0	0	0	682,440	682,440
REMAINING CONTAM. MATLS	0	0	0	0	0	10,879,334	10,879,334
CONTAMINATED MATRL OTHR BLD	0	0	0	0	0	98,666,555	98,666,555
FILTER CARTRIDGES	448,092	557,070	1,490,400	0	53,771	0	2,549,333
SPENT RESINS	1,784,304	1,856,900	4,968,000	0	856,466	0	9,465,670
COMBUSTIBLE WASTES – CLASS A	0	0	0	0	0	5,010,143	5,010,143
COMBUSTIBLE WASTES – CLASS B	2,676,456	5,570,700	326,025	0	214,116	0	8,787,297
EVAPORATOR BOTTOMS	0	0	0	0	0	2,088,546	2,088,546
POST-TMI-2 ADDITIONS	0	0	0	0	0	3,216,998	3,216,998
SUBTOTAL PWR COSTS	**10,256,661**	**14,855,200**	**38,641,725**	**0**	**3,691,302**	**142,563,388**	**210,008,276**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE							77,190
TOTAL PWR COSTS (INSIDE COMPACT)							**210,085,466**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-26 BWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the South Carolina Disposal Facility (2020 dollars)

REFERENCE BWR COMPONENT	BASE DISPOSAL CHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	DOSE RATE SURCHARGE	VENDOR CHARGES	DISPOSAL COST
STEAM SEPARATOR	304,168	2,599,660	3,477,600	0	146,001	0	6,527,429
FUEL SUPPORT & PIECES	133,853	1,299,830	434,700	0	64,250	0	1,932,633
CONTROL RODS/INCORES	432,927	742,760	1,987,200	0	207,805	0	3,370,693
CONTROL RODS GUIDES	0	0	0	0	0	29,212	29,212
JET PUMPS	323,111	3,713,800	4,968,000	0	155,093	0	9,160,004
TOP FUEL GUIDES	553,904	6,684,840	17,884,800	0	265,874	0	25,389,418
CORE SUPPORT PLATE	0	0	0	0	0	80,334	80,334
CORE SHROUD[(a)]	1,084,728	12,998,300	34,776,000	0	520,670	0	49,379,698
REACTOR VESSEL WALL	0	0	0	0	0	58,424	58,424
SAC SHIELD Neutron-Activated Matl	0	0	0	0	0	657,275	657,275
REACT. WATER REC	0	0	0	0	0	642,669	642,669
SAC SHIELD Contaminated Matl	0	0	0	0	0	2,263,948	2,263,948
OTHER PRIMARY CONTAINMENT	0	0	0	0	0	25,823,618	25,823,618
CONTAINM. ATMOSPHERIC	0	0	0	0	0	350,547	350,547
HIGH PRESSURE CORE SPRAY	0	0	0	0	0	124,152	124,152
LOW PRESSURE CORE SPRAY	0	0	0	0	0	73,031	73,031
REACTOR BLDG CLOSED COOLING	0	0	0	0	0	233,698	233,698
REACTOR CORE ISO COOLING	0	0	0	0	0	94,940	94,940
RESIDUAL HEAT REMOVAL	0	0	0	0	0	452,790	452,790
POOL LINER & RACKS	0	0	0	0	0	2,782,466	2,782,466
CONTAMINATED CONCRETE	0	0	0	0	0	3,169,528	3,169,528
OTHER REACTOR BUILDING	0	0	0	0	0	10,363,041	10,363,041
TURBINE	0	0	0	0	0	21,737,789	21,737,789
NUCLEAR STEAM CONDENSATE	0	0	0	0	0	2,651,011	2,651,011
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	0	5,382,355	5,382,355
MAIN STEAM	0	0	0	0	0	518,517	518,517
MOISTURE SEPARATOR REHEATERS	0	0	0	0	0	5,221,687	5,221,687
REACTOR FEEDWATER PUMPS	0	0	0	0	0	2,999,382	2,999,382
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	0	883,670	883,670
OTHER TG BLDG	0	0	0	0	0	35,470,959	35,470,959
RAD WASTE BLDG	0	0	0	0	0	17,563,858	17,563,858
REACTOR BLDG – CLASS A	0	0	0	0	0	1,510,638	1,510,638
REACTOR BLDG – CLASS B	11,948,150	5,942,080	343,879	0	955,852	0	19,189,961
TG BLDG – CLASS A	0	0	0	0	0	1,019,872	1,019,872
TG BLDG – CLASS B	7,840,974	3,899,490	232,099	0	627,278	0	12,599,840
RAD WASTE & CONTROL – CLASS A	0	0	0	0	0	880,311	880,311
RAD WASTE & CONTROL – CLASS B	7,094,214	3,528,110	200,273	0	567,537	0	11,390,134
CONCENTRATOR BOTTOMS – CLASS A	0	0	0	0	0	516,031	516,031
CONCENTRATOR BOTTOMS – CLASS B	7,334,414	4,827,940	12,916,800	0	1,292,213	0	26,371,367
OTHER	0	0	0	0	0	1,270,732	1,270,732
POST-TMI-2 ADDITIONS	0	0	0	0	0	262,910	262,910
SUBTOTAL BWR COSTS	**37,050,444**	**46,236,810**	**77,221,350**	**0**	**4,802,573**	**145,089,394**	**310,400,570**
ATLANTIC COMPACT COMMISSION ADMINISTRATIVE SURCHARGE							100,223
TOTAL BWR COSTS (INSIDE COMPACT)							**310,500,793**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-27 PWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the Washington Disposal Facility (2020 dollars)

REFERENCE PWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	WASTE VENDOR CHARGE	DISPOSAL COST
VESSEL WALL	0	0	0	0	785,840	785,840
VESSEL HEAD & BOTTOM	0	0	0	0	1,751,200	1,751,200
UPPER CORE SUPPORT ASSM	0	0	0	0	82,720	82,720
UPPER SUPPORT COLUMN	0	0	0	0	82,720	82,720
UPPER CORE BARREL	26,346	21,188	17,367	53,033	0	117,935
UPPER CORE GRID PLATE	65,865	52,971	43,418	132,584	0	294,838
GUIDE TUBES	0	0	0	0	124,080	124,080
LOWER CORE BARREL[(a)]	421,538	339,012	277,876	848,534	0	1,886,961
THERMAL SHIELDS[(a)]	79,038	63,565	52,102	159,100	0	353,805
CORE SHROUD[(a)]	52,692	42,377	34,735	106,067	0	235,870
LOWER GRID PLATE[(a)]	65,865	52,971	43,418	132,584	0	294,838
LOWER SUPPORT COLUMN	13,173	10,594	8,684	26,517	0	58,968
LOWER CORE FORGING	144,904	116,536	95,520	291,684	0	648,643
MISC INTERNALS	105,384	84,753	69,469	212,134	0	471,740
BIO SHIELD CONCRETE	0	0	0	0	5,161,728	5,161,728
REACTOR CAVITY LINER	0	0	0	0	105,882	105,882
REACTOR COOLANT PUMPS	0	0	0	0	1,838,760	1,838,760
PRESSURIZER	0	0	0	0	1,576,080	1,576,080
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	82,720	82,720
PRESSURIZER RELIEF TANK	0	0	0	0	248,160	248,160
SAFETY INJECTION ACCUM TANKS	0	0	0	0	827,200	827,200
STEAM GENERATORS	0	0	0	0	9,352,284	9,352,284
REACTOR COOLANT PIPING	0	0	0	0	682,440	682,440
REMAINING CONTAM. MATLS	0	0	0	0	10,879,334	10,879,334
CONTAMINATED MATRL OTHR BLD	0	0	0	0	98,666,555	98,666,555
FILTER CARTRIDGES	41,495	63,565	364,712	743,888	0	1,213,660
SPENT RESINS	263,461	211,883	173,673	530,334	0	1,179,350
COMBUSTIBLE WASTES – CLASS A	0	0	0	0	5,010,143	5,010,143
COMBUSTIBLE WASTES – CLASS B	414,951	317,824	3,647,125	911,914	0	5,291,814
EVAPORATOR BOTTOMS	0	0	0	0	2,088,546	2,088,546
POST-TMI-2 ADDITIONS	0	0	0	0	3,216,998	3,216,998
HEAVY OBJECT SURCHARGE						0
SITE AVAILABILITY CHARGES						755,595
OPERATING MARGIN						2,867,524
SUBTOTAL PWR COSTS	**1,694,713**	**1,377,238**	**4,828,098**	**4,148,371**	**142,563,388**	**158,234,928**
TAXES & FEES (% OF CHARGES)						673,876
TAXES & FEES ($/UNIT VOL.)						372,126
ANNUAL PERMIT FEES (3 YRS)						212,000
TOTAL PWR COSTS						**159,492,930**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

Table B-28 BWR LLW Disposition Costs Using a Combination of Non-Compact Disposal Facility and the Washington Disposal Facility (2020 dollars)

REFERENCE BWR COMPONENT	VOLUME CHARGE	SHIPMENT CHARGE	CONTAINER CHARGE	CONTAINER DOSE RATE CHARGE	VENDOR CHARGE	DISPOSAL COST
STEAM SEPARATOR	46,520	148,318	243,142	911,914	0	1,349,893
FUEL SUPPORT & PIECES	23,260	74,159	121,571	371,234	0	590,224
CONTROL RODS/INCORES	69,780	84,753	69,469	911,914	0	1,135,916
CONTROL RODS GUIDES	0	0	0	0	29,212	29,212
JET PUMPS	65,128	211,883	347,345	911,914	0	1,536,270
TOP FUEL GUIDES	111,648	762,778	625,221	911,914	0	2,411,561
CORE SUPPORT PLATE	0	0	0	0	80,334	80,334
CORE SHROUD[(a)]	218,644	1,483,180	1,215,708	911,914	0	3,829,446
REACTOR VESSEL WALL	0	0	0	0	58,424	58,424
SAC SHIELD Neutron-Activated Matl	0	0	0	0	657,275	657,275
REACT. WATER REC	0	0	0	0	642,669	642,669
SAC SHIELD Contaminated Matl	0	0	0	0	2,263,948	2,263,948
OTHER PRIMARY CONTAINMENT	0	0	0	0	25,823,618	25,823,618
CONTAINM. ATMOSPHERIC	0	0	0	0	350,547	350,547
HIGH PRESSURE CORE SPRAY	0	0	0	0	124,152	124,152
LOW PRESSURE CORE SPRAY	0	0	0	0	73,031	73,031
REACTOR BLDG CLOSED COOLING	0	0	0	0	233,698	233,698
REACTOR CORE ISO COOLING	0	0	0	0	94,940	94,940
RESIDUAL HEAT REMOVAL	0	0	0	0	452,790	452,790
POOL LINER & RACKS	0	0	0	0	2,782,466	2,782,466
CONTAMINATED CONCRETE	0	0	0	0	3,169,528	3,169,528
OTHER REACTOR BUILDING	0	0	0	0	10,363,041	10,363,041
TURBINE	0	0	0	0	21,737,789	21,737,789
NUCLEAR STEAM CONDENSATE	0	0	0	0	2,651,011	2,651,011
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	5,382,355	5,382,355
MAIN STEAM	0	0	0	0	518,517	518,517
MOISTURE SEPARATOR REHEATERS	0	0	0	0	5,221,687	5,221,687
REACTOR FEEDWATER PUMPS	0	0	0	0	2,999,382	2,999,382
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	883,670	883,670
OTHER TG BLDG	0	0	0	0	35,470,959	35,470,959
RAD WASTE BLDG	0	0	0	0	17,563,858	17,563,858
REACTOR BLDG – CLASS A	0	0	0	0	1,510,638	1,510,638
REACTOR BLDG – CLASS B	432,776	339,012	3,846,848	911,914	0	5,530,551
TG BLDG – CLASS A	0	0	0	0	1,019,872	1,019,872
TG BLDG – CLASS B	292,100	222,477	2,596,405	911,914	0	4,022,896
RAD WASTE & CONTROL – CLASS A	0	0	0	0	880,311	880,311
RAD WASTE & CONTROL – CLASS B	252,046	201,289	2,240,377	911,914	0	3,605,625
CONCENTRATOR BOTTOMS – CLASS A	0	0	0	0	516,031	516,031
CONCENTRATOR BOTTOMS – CLASS B	688,497	550,895	451,549	911,914	0	2,602,855
OTHER	0	0	0	0	1,270,732	1,270,732
POST-TMI-2 ADDITIONS	0	0	0	0	262,910	262,910
HEAVY OBJECT SURCHARGE						0
SITE AVAILABILITY CHARGES						755,595
OPERATING MARGIN						6,334,426
SUBTOTAL BWR COSTS	**2,200,401**	**4,078,744**	**11,757,635**	**8,578,457**	**145,089,394**	**178,794,651**
TAXES & FEES (% OF CHARGES)						1,449,326
TAXES & FEES ($/UNIT VOL.)						572,105
ANNUAL PERMIT FEES (3 YRS)						212,000
TOTAL BWR COSTS						**181,028,083**

[(a)] GTCC Material: Assumes a low-density, distributed packaging scheme and final disposal as LLW. High-density packaging, ISFSI storage, and geologic repository disposal could reduce disposal costs.

APPENDIX C
BUREAU OF LABOR STATISTICS ON THE INTERNET

For use in the adjustment formula in Chapter 3, the labor indexes for the first quarter of **Error! Reference source not found.** and the producer price indexes for March 2020 were obtained from the Bureau of Labor Statistics (BLS) data on the Internet.

These dates were chosen to agree, to the extent possible, with the effective dates of the waste burial rate schedules. Instructions for accessing and obtaining the specific indexes used in this report follow below.

Bureau of Labor Statistics Internet Data Page

To obtain reports of producer price indexes and labor indexes, proceed as follows:

1. Enter the URL: **http://www.bls.gov/data/**

2. Click on the item labeled *Series Report*.

3. In the box labeled *Enter series id(s) below*, type in the following six series identifications (IDs), one ID per line:

Series ID	Producer Price Indexes
wpu0543	(Industrial electric power–used in calculation of P_x, per Section 3.3)
wpu0573	(Light fuel oils–used in calculation of F_x per Section 3.3)

Labor Indexes (Used in the calculation of L_x, per Section 3.1)

CIU2010000000210I	(Total compensation, private industry, Northeast region)
CIU2010000000220I	(Total compensation, private industry, South region)
CIU2010000000230I	(Total compensation, private industry, Midwest region)
CIU2010000000240I	(Total compensation, private industry, West region)

4. Click the button labeled *Next*.

5. In the box labeled *Select view of the data*, use *Table Format* and *Original Data value*.

6. In the box labeled *Select the time frame for your data*, specify the years you want and time period.

7. Click on the button labeled *Retrieve Data* and the six tables of data you requested will be displayed.

APPENDIX D
REPRESENTATIVE EXAMPLES OF DECOMMISSIONING COSTS FOR 2010 THROUGH 2022

In Section 0 of this revision and the five previous revisions of NUREG-1307, decommissioning costs for four typical situations were developed. Results of these calculations are summarized below.

Example 1 (No Compact-Affiliated Disposal Facilities)

Reactor Type: BWR
Thermal Power Rating: 3400 MWt
Location of Plant: Midwest Compact
LLW Burial Location: 2010 to 2012 – Unknown (Generic LLW Disposal Site);
Beginning 2016 – Non-Compact Disposal Facilities

	2010	2012	2016	2018	2020	2022
L_x	2.29	2.39	2.57	2.70	2.86	3.08
E_x	2.181	2.795	1.632	2.340	2.029	3.906
B_x	12.540	14.160	13.132	13.422	12.837	12.296
Decommissioning Cost (Millions)	$612	$679	$644	$677	$668	$704

Example 2 (Compact-Affiliated Disposal Facility Only)

Reactor Type: Pressurized-Water Reactor (PWR)
Thermal Power Rating: 3400 MWt
Location of Plant: Texas Compact
LLW Burial Location: Texas (Texas Compact); 2018 is the first use of the Texas compact as an example calculation for Compact-Affiliated Disposal Facility Only

	2010	2012	2016	2018	2020	2022
L_x	NA	NA	NA	2.58	2.71	2.92
E_x	NA	NA	NA	2.320	2.030	3.768
B_x	NA	NA	NA	8.508	8.040	6.650
Decommissioning Cost (Millions)	NA	NA	NA	$404	$398	$404

Example 3 (Combination of Compact-Affiliated and Non-Compact Disposal Facilities)

Reactor Type: PWR
Thermal Power Rating: 3400 MWt
Location of Plant: Atlantic Compact
LLW Burial Location: South Carolina (Atlantic Compact) and Non-Compact Disposal Site

	2010	2012	2016	2018	2020	2022
L_x	2.41	2.52	2.75	2.89	3.06	3.29
E_x	2.139	2.704	1.645	2.320	2.030	3.768
B_x	12.280	13.885	10.971	11.607	11.679	14.067
Decommissioning Cost (Millions)	$477	$530	$464	$497	$506	$601

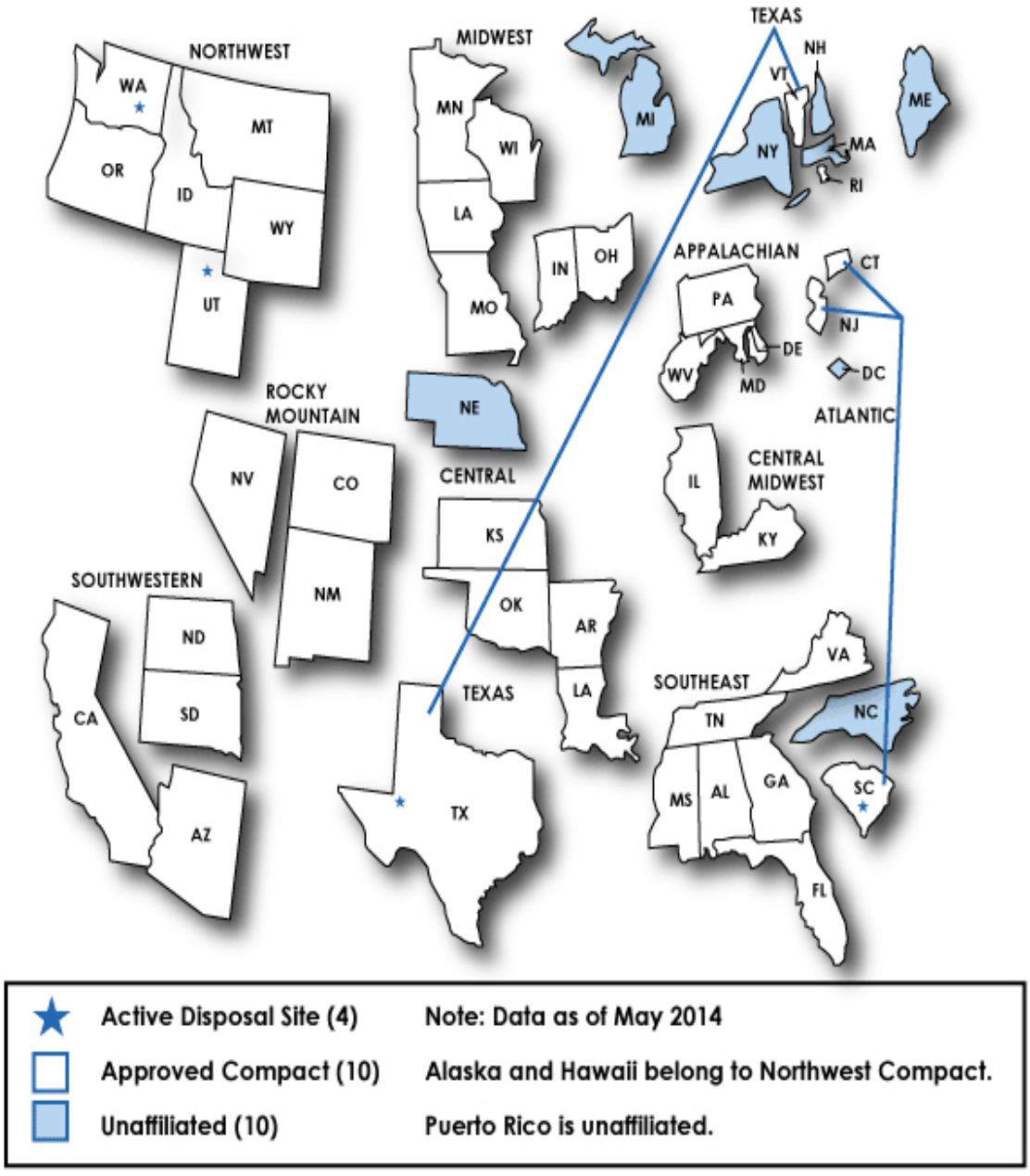
Example 4 (Compact-Affiliated Disposal Facility Only)

Reactor Type: Boiling-Water Reactor (BWR)
Thermal Power Rating: 3400 MWt
Location of Plant: Northwest Compact
LLW Burial Location: Washington

	2010	2012	2016	2018	2020	2022
L_x	2.29	2.38	2.60	2.77	2.94	3.18
E_x	2.181	2.795	1.632	2.340	2.029	3.906
B_x	7.423	6.704	7.290	9.118	9.326	8.571
Decommissioning Cost (Millions)	$460	$457	$473	$555	$571	$602

APPENDIX E
LOW-LEVEL WASTE COMPACTS

The figure and table below identify the composition of all LLW compacts as of May 2014



(source: NRC, http://www.nrc.gov/waste/llw-disposal/licensing/compacts.html).

Compact	Affiliated States			
Northwest	Alaska	Idaho	Oregon	Washington[a]
	Hawaii	Montana	Utah	Wyoming
Southwestern	Arizona	California[b]	North Dakota	South Dakota
Rocky Mountain	Colorado	New Mexico	Nevada	
Midwest	Indiana	Minnesota	Ohio[b]	Wisconsin
	Iowa	Missouri		
Central	Arkansas	Kansas	Louisiana	Oklahoma
Texas	Texas[a]	Vermont		
Central Midwest	Illinois[b]	Kentucky		
Appalachian	Delaware	Maryland	Pennsylvania[b]	West Virginia
Atlantic	Connecticut	New Jersey	South Carolina[a]	
Southeast	Alabama	Georgia	Tennessee	Virginia
	Florida	Mississippi		
Unaffiliated States	District of Columbia	Michigan	New York	Rhode Island
	Massachusetts	Nebraska	Puerto Rico	North Carolina
	Maine	New Hampshire		

(a) Current Host State for operating LLW disposal sites (3 States)
(b) Selected Host State for future LLW disposal sites (4 States)

APPENDIX F
COMMENT RESOLUTION MATRIX

Please see file in ADAMS Accession Number ML_____.

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NRCMD 3.7

U.S. NUCLEAR REGULATORY COMMISSION

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Emil Tabakov

11. ABSTRACT (200 words or less)

NUREG-1307, Revision 19, "Report on Waste Burial Charges: Changes in Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities", explains the formula acceptable to the NRC for determining the minimum decommissioning fund requirements for nuclear power reactors, as required by the NRC's regulations. Specifically, this report provides adjustment factors, and updates to these values, for the labor, energy, and waste burial components of the minimum formula

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)

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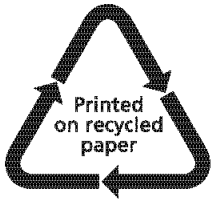

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