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Comment On: NRC-2016-0220-0001
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General Comment

Please see attached file. My comments are primarily editorial, however, please note that the mathematical formulas on pages 13-14 are mis-stated and should be corrected.

Attachments

Bledsoe Comments on draft NUREG-1307 Rev. 16

SUNSI Review Complete
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Add= E. Tabakov (EST2)

1 INTRODUCTION

Nuclear power reactor licensees are required by section 50.75 to 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 of providing reasonable assurance to the NRC that adequate funds for decommissioning will be available when needed. This NUREG provides adjustment factors for the waste burial/disposition component of the decommissioning fund requirement, as required by 10 CFR 50.75(c)(2). This NUREG also provides the regional adjustment factors for the labor and energy components of the decommissioning fund requirement. The term "adjustment factor," as used in this NUREG and in 10 CFR 50.75(c)(2), refers to increases and decreases in decommissioning costs since the § 50.75 regulations were issued. The decommissioning fund requirements in these regulations are in 1986 dollars. This NUREG is updated periodically to reflect changes in waste burial/disposition costs.

This NUREG provides the development of a formula for estimating decommissioning cost that is acceptable to the NRC. Sources of information used in the formula are identified. Values developed for the adjustment of radioactive waste burial/disposition costs, by site and by year, are also given. Licensees may use the formula, the coefficients, and the burial/disposition adjustment 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 the appropriate sources of data needed, are summarized in Chapter 0. The development of the formula and its coefficients, with sample calculations, are presented in Chapter 0. Price schedules for burial/disposition for the year **2016** are given in 0 for compact-affiliated and non-compact disposal facilities. Calculations to determine the burial/disposition adjustment factors, B_x, for each site and year of evaluation are summarized in 0.

1.1 Definitions

This section provides the definition of certain 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 decommissioning nuclear power plants 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 in a nuclear power plant. LLW from decommissioning activities is typically shipped to a disposal site specifically licensed for disposal of LLW.

The major elements of the three categories of the decommissioning cost estimates for both the reference PWR and BWR are provided in Table 3-1. As can be seen, the C coefficients are the same for both PWR and BWR, while the A and B coefficients are only slightly different between the two reactor types. Considering the uncertainties and contingencies contained within these numbers, and considering that the values of the coefficients for the PWR and the BWR are so similar, the formula in 10 CFR 50.75(c)(2) was simplified to be 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:

$A_{ave} = 0.65$ $B_{ave} = 0.13$ $C_{ave} = 0.22$

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**
Labor	17.98[a]		35.12[b]	
Equipment	1.64[a]		4.03[b]	
Supplies	3.12[a]		3.71[b]	
Contractor	12.9[a]		21.1[b]	
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]	
Surveillance	0.31[a]		--	
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.

3.1 Labor Adjustment Factors

Current employment cost indexes for labor (column 3, Table [illegible], below) can be obtained from the "Employment Cost Indexes," published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS) (Ref. 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).

3-2

To calculate the current labor adjustment factor (L_x) for a particular region, two numbers are needed: a base labor adjustment factor, and the current Employment Cost Index (ECI). The base labor adjustment factors are shown in column 2 of Table, and the current ECIs are shown in column 3. The base labor adjustment factor is the value of L_x at the time the ECI was most recently re-indexed. (This latest re-indexing occurred in December 2005, at which time the index was reset to 100.) As such, current values of L_x (column 4) are obtained from the simple proportion:

$$L_x/ECI = Base\ L_x/100$$

For example, for the Northeast region,

$$L_x/127.3 = 2.16/100$$

or

$$L_x = 2.16*127.3/100 = 2.75$$

Table 3-2 Regional Factors for Labor Cost Adjustment

Region	Base L_x (Dec 2005)	Qtr 1 2016 ECI (Dec 2005 = 100)	L_x (Qtr 1 2016)
Northeast	2.16	127.3	2.75
South	1.98	125.1	2.48
Midwest	2.08	123.4	2.57
West	2.06	126.2	2.60

3.2 Energy Adjustment Factors

The adjustment factor for energy, E_x, is a weighted average of two components: industrial electric power, P_x, and light fuel oil, 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 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 (Ref. 5). These indexes also can be obtained from BLS databases available on the Internet (see 0 for instructions). The indexes used to calculate P_x should be taken from data for industrial electric power (PPI Commodity Code 0543), and the indexes used to calculate F_x should be taken from data for light fuel oils (PPI Commodity Code 0573). No regional BLS data for these PPI commodity codes are currently available.

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 2016 (latest data available) are:

P_x = 203.5 (March 2016 value of code 0543) ÷

114.2 (January 1986 value of code 0543) = 1.782

F_x = 119.3 (March 2016 value of code 0573) ÷

82.0 (January 1986 value of code 0573) = 1.455

The value of E_x for the reference PWR, therefore, is:

E_x (PWR) = [(0.58 x 1.782) + (0.42 x 1.455)] = 1.645.

This value of E_x = 1.645 should then be used in the equation to adjust the energy cost (to March 2016 dollars) for decommissioning a PWR.

For the reference BWR,

E_x (BWR) = [(0.54 x 1.782) + (0.46 x 1.455)] = 1.632.

3.3 Waste Burial Adjustment Factors

The waste burial adjustment factors, B_x, for the year 2016 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 2016 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 (Refs 6, 7), and associated Addendums 3 and 2 (Refs 8, 9), respectively. The estimated disposal cost was summed for all radioactive materials and then divided by the 1986 disposal cost estimate identified in Table 3-1 to develop the year 2016 B_x factors reported in Table 2-1.

A comparison of the year 2016 B_x factors in Table 2-1 to the corresponding year 2012 B_x factors reported in Revision 15 of NUREG-1307, shows that the values increased for the Washington site and decreased for the South Carolina site. These changes were influenced by two significant factors: (1) changes in the disposal price schedules provided by the operators of the disposal facilities (see Appendix A) and (2) changes made to the contractor's cost model to correct errors identified during a model re-validation effort.

contractor's cost models vs. contractors' cost model

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

- For the Washington disposal facility, the volume and shipment disposal rates and the dose rate charge per container increased while the annual site charges, charges per container, and site surveillance fee decreased.

also see next page

- 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.

- No changes are reported for the Texas disposal facility because this is the first revision of NUREG-1307 to include disposal of LLW from decommissioning at this facility.

Accounting for these changes alone would have resulted in an across-the-board increase in the B_x factors compared to the year 2012 B_x factors. However, these increases, in some cases, have been offset by decreases resulting from changes made to the contractor's cost models to correct errors identified during a model re-validation effort. In this effort, assumptions made in the cost models were re-validated against the technical basis documents NUREG/CR-0130 and NUREG/CR-0672 and associated addendums (Refs. 1, 2, 6, 7, 8, 9). The following summarizes the changes made to the cost model assumptions as a result of this re-validation effort:

see comment on prev. page

- The number of packages of combustible LLW for PWRs was adjusted upward to be consistent with Section G.4.2.3 of NUREG/CR-0130 (Ref 6). The waste classification of this combustible waste was also revised to be consistent with Table 6.7 of NUREG/CR-0130, Addendum 3 (Ref. 8).

- The activity of PWR evaporator bottoms[1] was adjusted downward to be consistent with Table 5.7 of NUREG/CR-0130, Addendum 3 (Ref. 8). The classification of these evaporator bottoms was also revised to be consistent with Table 6.7 of Addendum 3. Similarly, the activity of BWR concentrator bottoms was adjusted downward to be consistent with Table 5.9 of NUREG/CR-0672, Addendum 2 (Ref. 9). The classification of these concentrator bottoms was also revised to be consistent with Table 6.8 of Addendum 2.

- In addition to the LLW classification changes identified in the above two bullets, the classification of several other radioactive material types identified in Table 3-3 for both PWR and BWR were revised to be consistent with the classifications in NUREG/CR-0130, Addendum 3, and NUREG/CR-0672, Addendum 2, respectively.

1 Evaporator or concentrator bottoms are the residual liquids (containing high concentrations of solids) that are generated during decommissioning by the liquid radwaste cleanup system. This system utilizes an evaporator to minimize the volume of radioactive liquid waste generated from decontamination operations and that requires solidification and disposal as LLW.

States and for those Located in Compact-Affiliated States having no Disposal Facility," in Table 2-1). Sample decommissioning costs for other years are provided in 0.

Example 1 (Compact-Affiliated Disposal Facility Only)

Scenario Description
Reactor Type: BWR
Thermal Power Rating: 3,400 megawatt thermal (MWth) subscript
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 = 2.60 [from Table]

E_x = 1.632 [from Section 3.2]

B_x = 7.290 [from Table 2-1]

insert space

Decommissioning Cost (2016 dollars)
= ($135 million)*[(0.65)*(2.60)+(0.13)*(1.632)+(0.22)*(7.290)] = $473 million

Example 2 (Compact-Affiliated Disposal Facility Only)

Scenario Description
Reactor Type: PWR
Thermal Power Rating: 3,400 MWth subscript
Location of Plant: Atlantic Compact
LLW Disposition Preference: Compact-Affiliated Disposal Facility Only
LLW Burial Location: South Carolina (Atlantic Compact)

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

L_x = 2.75 [from Table]

E_x = 1.645 [from Section 3.2]

B_x = 30.061 [from Table 2-1]

insert space

Decommissioning Cost (2016 dollars)
= ($105 million)*[(0.65)*(2.75)+(0.13)*(1.645)+(0.22)*(30.061)] = $905 million

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

Scenario Description
Reactor Type: PWR
Thermal Power Rating: 3,400 MW(th) ~ subscript
Location of Plant: Atlantic Compact
LLW Disposition Preference: Combination of Compact-Affiliated and Non-Compact Disposal Facilities
LLW Burial Location: South Carolina (Atlantic Compact)

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

L_x = 2.75 [from Table]

E_x = 1.645 [from Section 3.2]

B_x = 10.971 [from Table 2-1]

Decommissioning Cost (2016 dollars)
= ($105 million)*[(0.65)*(2.75)+(0.13)*(1.645)+(0.22)*(10.971)]
= $464 million[2]

Example 4 (Non-Compact Disposal Facilities)

Scenario Description
Reactor Type: BWR
Thermal Power Rating: 3,400 MW(th) ~ subscript
Location of Plant: Midwest Compact
LLW Disposition Preference: Non-Compact Disposal Facilities
LLW Burial Location: Non-Compact Disposal Sites

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

L_x = 2.57 [from Table]

E_x = 1.632 [from Section 3.2]

B_x = 13.132 [from Table 2-1]

Decommissioning Cost (2016 dollars)
= ($135 million)*[(0.65)*(2.57)+(0.13)*(1.632)+(0.22)*(13.132)]
= $644 million

[2] Examples 2 and 3 are provided to illustrate the significant difference in cost if 1) disposal of all LLW from decommissioning is disposed of at the Atlantic Compact disposal facility located in South Carolina (Example 2, B_x = 30.061) and 2) if disposal of Class A LLW is disposed of at the disposal facility located in Utah and the Class B/C LLW is disposed of at the Atlantic Compact disposal facility (Example 3, B_x = 10.971). LLW generators located in the Atlantic Compact are not required to dispose of their LLW at the Atlantic Compact disposal facility, hence, it is assumed that these generators will dispose of their Class A LLW at the lower cost Utah disposal facility (Example 3). However, disposal of all LLW generated within the Atlantic Compact can be disposed of at the Atlantic Compact disposal facility, hence, this option is also assumed to be an available option to generators within the Atlantic Compact.

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 Washington and South Carolina sites for the year 2016. Also provided is a price quote for the non-compact disposal facility located in Clive, Utah. These schedules are used to calculate the burial/disposition costs discussed in 0.

A.1 Washington LLW Disposal Site

Beginning in 1993, the Northwest Compact imposed on eligible (Northwest or Rocky Mountain Compact) waste generators an annual permit fee based on the volume of waste to be shipped to the Washington site for disposal. For 2016, 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. The site availability charge appears near the bottom of Tables B-1 through B-12.

The 2008 rate schedule reflects increases in volume (14 percent), shipment (22 percent), and container (17 percent) charges compared to 2006. In addition, dose rate charges per container increased by a factor of 2.8. As a result of these changes, the cost to disposition a PWR increased moderately to 21 percent. However, the cost to disposition a BWR, with its larger volume of high dose rate material, almost doubled.

In 2010, two algorithm changes were implemented to project more accurately charges for waste generated from the decommissioning of an NPP. The first was a discount to the volume disposal rate of 20 percent for LLW generated from the decommissioning of NPPs. The second was to cap the container dose rate charge. According to the settlement agreement between U.S. Ecology Washington, Inc., the operator of the Washington disposal facility, and the State of Washington, only 14.2 percent of the Washington site's revenue requirement (which changes annually) may be recouped from container dose rate charges.

Compared with the 2012 rate schedule used in Revision 15 of NUREG-1307, the 2016 schedule reflects decreases in volume (1 percent) and shipment (2 percent) charges and an increase in container (3 percent) charges. In addition, dose rate charges per container decreased by a factor of 3.9 and site surveillance fee per cubic foot increased by a factor of 2.9. As a result of these rate changes, the cost to disposition the LLW from a PWR increased by 8.4 percent and

A.3 Texas LLW Disposal Site

Beginning in the Spring of 2012, a new disposal facility located in Andrews County, Texas became available for disposal of LLW from States within the Texas Compact (comprised of Texas and Vermont). The Andrews County, 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 (TCEQ). 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-3. The fees in this exhibit 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-3. In addition, it is assumed that an additional 20-percent in fees/taxes is charged for out-of-compact LLW.

A.4 Alternative LLW Disposal Options

In the 1990s rapidly increasing fees for disposal of low-level radioactive waste spawned the creation of a niche market for firms specializing in the management and disposal of LLW. Increasingly, NPP licensees began to outsource LLW management functions to waste vendors for a negotiated fee (usually $/pound of LLW processed) and disposing of Class A LLW at the non-compact disposal facility in Clive, Utah. Waste vendors could manage waste from generation to disposal (including packaging, transportation, and volume reduction) or any subset of these functions that the licensee desired.

The vendor determined the most efficient disposition process for each waste stream. These take into consideration sorting into clean and contaminated streams, recycling where possible, volume reduction through the many techniques currently commercially available, and disposal of the residual LLW at the most cost-effective disposal site; including the non-compact disposal facility located in Clive, Utah. The vendor's profit was the difference between the price negotiated with the licensee and the total cost for waste minimization, recycling, volume reduction, packaging, transportation, and disposal. The more effective the vendor was at minimization, recycling, volume reduction, and obtaining volume discounts for packaging, transportation, and disposal, the greater its profit.

The decommissioning analyses reported in NUREG/CR-0130 and NUREG/CR-0672 did not consider the possible use of waste vendors or non-compact Class A, LLW disposal facilities, given that these market niches essentially did not exist at the time. Beginning with Revision 8, NUREG-1307 included an alternative that provided for contracting with waste vendors to manage the disposition the bulk of LLW generated during decommissioning. This new alternative did not modify or alter in any way the bases for the decommissioning fund requirement specified in 10 CFR 50.75, "Reporting and Recordkeeping for Decommissioning Planning." It merely provided an alternative burial cost adjustment factor (B_x) that reflected the option of disposing of LLW using a combination of waste vendors, non-compact disposal facilities, and compact-affiliated disposal facilities.

In support of the analysis performed for NUREG-1307, Revision 8 (Ref. 3), several waste vendors were surveyed to develop a representative cost for waste vendor services. Each vendor was asked to provide a generic price quote for processing two waste streams: activated and contaminated concrete and contaminated metal. Vendors were asked to provide these quotes as a price per pound of waste, or as a range of prices per pound, based on the waste concrete and metal inventories in NUREG/CR-0130 and NUREG/CR-0672. The price quotes were to encompass complete disposition of these waste streams (from generation to disposal) and to be developed assuming the vendor had a contract with a licensee engaged in a large decommissioning project.

Based on the results of the survey, NUREG-1307, Revision 8, introduced an alternative burial cost adjustment factor (B_x) that assumed the use of waste vendor services and disposal of Class A LLW at the non-compact disposal facility located in Clive, Utah as an alternative to disposal of all decommissioning LLW at a compact-affiliated disposal facility. The option was introduced to provide potential savings from the use of waste vendors. For a PWR under this option, 98-percent of the waste was assumed to be dispositioned by waste vendors and the remaining 2-percent was assumed to be disposed of at a compact-affiliated disposal facility. For a BWR under this option, 96-percent of the waste was assumed to be dispositioned by waste vendors and the remaining 4-percent was assumed to be disposed of at a compact-affiliated disposal facility. These proportions were determined from a component-by-component analysis of the reference BWR and PWR. The portions of waste assumed to be dispositioned by waste vendors were priced at the rates obtained from the vendor surveys, and the portions of waste assumed to be disposed of at compact-affiliated disposal facilities were priced at rates obtained for those facilities.

In support of Revision 16 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 **Error! Reference source not found.**. The updated rates represent an average increase of 8.3 percent, with the exception of evaporator bottoms which increased by approximately 78.5 percent, compared to the 2012 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" option and the "Non-Compact Disposal Facilities" option was based on these rates and an assumed 10 percent tax.

Exhibit A-1

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

SCHEDULE OF CHARGES
EFFECTIVE MAY 1, 2016
SCHEDULE A, 16th REVISION

Note: Rates in this Schedule A are subject to adjustment in accordance with the rate adjustment mechanism adopted in the Washington Utilities and Transportation 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
0	No site use at all	$282
1	Greater than zero but less than or equal to 10 ft^3 and 50 mR/h	539
2	Greater than 10 ft^3 or 50 mR/h* but less than or equal to 20 ft^3 and 100 mR/h*	1,035
3	Greater than 20 ft^3 or 100 mR/h* but less than or equal to 40 ft^3 and 200 mR/h*	1,986
4	Greater than 40 ft^3 or 200 mR/h* but less than or equal to 80 ft^3 and 400 mR/h*	3,813
5	Greater than 80 ft^3or 400 mR/h* but less than or equal to 160 ft^3 and 800 mR/h*	7,323
6	Greater than 160 ft^3 or 800 mR/h* but less than or equal to 320 ft^3 and 1,600 mR/h*	14,045
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*	26,968
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*	51,771
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*	99,399
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*	140,839
11	Greater than 5,120 ft^3 or 25,600 mR/h*	140,839

* 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 by educational research institutions for research, medical or educational purposes, such 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

The spreadsheet calculations for the current year, which are too voluminous to present here, are summarized in Table B-53 and Table B-54 for PWR and BWR plants, respectively.

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."

APPENDIX C

BUREAU OF LABOR STATISTICS ON THE INTERNET

For use in the adjustment formula in Chapter 0, the labor indexes for the first quarter of 2016 and the producer price indexes for March 2016 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 3.2)
wpu0573	(Light fuel oils–used in calculation of F_x per Section 3.2)

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