SEABROOK STATION

2015 COMPREHENSIVE REPORT

APPLICATION OF NEXTERA ENERGY SEABROOK, LLC FOR APPROVAL OF UPDATED DECOMMISSIONING COST AND TRUST FUNDING SCHEDULES

Steven C. Hamrick, Esq.
NextEra Energy Seabrook, LLC
801 Pennsylvania Ave. NW Suite 220
Washington, DC 20004
Tel: 202-349-3496
Fax: 202-347-7076
E-Mail: steven.hamrick@nexteraenergy.com

Christopher T. Roach, Esq.
Roach Hewitt Ruprecht Sanchez & Bischoff, P.C.
66 Pearl Street
Portland, ME 04101
Tel: 207-747-4870
E-Mail: croach@roachhewitt.com

Attorneys for Applicant NextEra Energy Seabrook, LLC

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I. INTRODUCTION

Pursuant to RSA 162-F and the Final Report and Order from the New Hampshire Nuclear Decommissioning Financing Committee ("NDFC" or the "Committee") in Docket No. 2014-1, NextEra Energy Seabrook, LLC ("NextEra" or "NextEra Energy Seabrook"), in its capacity as Managing Agent of the Seabrook Nuclear Power Station ("Seabrook Plant" or "the Plant"), hereby submits to the Committee an application for approval of (1) the updated cost to decommission the Plant, assuming a March 15, 2030 license life; (2) the updated cost to decommission the Plant, assuming the license is extended to March 15, 2050; (3) the funding schedules to be effective January 1, 2016 for all Joint Owners of the Plant ("Joint Owners").[1] The funding schedules and investment analysis were prepared by LCG Associates, Inc. ("LCG"), the updated cost to decommission the Plant was prepared by TLG Services, Inc. ("TLG") and the cost escalation analyses were conducted by TLG and IHS Global Insight. This application contains:

- definitions of certain relevant terms (Attachment A);
- a description of the roles and responsibilities of those managing the Seabrook Nuclear Decommissioning Financing Fund ("Trust" or "Fund") and the investment guidelines (Attachment B);
- a report on the status of the Fund by LCG with Funding Runs 1 through 10 (Attachment C);
- the proposed funding schedule designed to meet the targeted Trust balances by the time the decommissioning costs become due (Attachment D, Funding Run 1);

[1] The Joint Owners and their respective ownership shares are as follows:

NextEra Energy Seabrook, LLC	88.22889%
Massachusetts Municipal Wholesale Electric Company	11.59340%
Taunton Municipal Lighting Plant	00.10034%
Hudson Light & Power Department	00.07737%
	100%

- the updated cost to decommission the Plant assuming current, and extended, operating license (Attachment E);
- escalation analysis prepared by TLG (Attachment F); and
- escalation analysis and projections by IHS Global Insight (Attachment G).

A. Overview and history since last comprehensive update in 2011

1. Overview of Trust performance

The Trust is invested generally in three different assets classes: fixed income, opportunistic and equities at earnings assumptions of 6.0%, 7.5% and 8.5%, respectively. With the targeted asset mix, the total projected portfolio return is 7.74%. Since the last comprehensive update in 2011, the equity markets have surged, averaging 21.5% annualized returns since the market trough in 2009. Because two thirds of the Trust is invested in equities, the Trust balance has followed suit. The Trust is up more than $250 million since 2009; that is, the Trust balance was $353 million at year-end 2009, but climbed to $603 million by year-end 2014, an increase of over 70% in total value in only five years time. A summary of the returns for each asset class is set out briefly below.

When filing the last comprehensive review in early 2011, the markets remained volatile following the downturn in 2008 that lasted until the first quarter of 2009. At that time, the Investment Consultant remained optimistic inasmuch as historically post-downturn market earnings had been higher than average. When LCG took over as Investment Consultant, they concurred that the equity markets would rebound following the downturn. LCG's view of the markets turned out to be accurate and, if anything, conservative. The period between the last comprehensive review in 2011 and the current review has been occasioned by market performance that has materially exceeded the assumptions used when developing the funding runs for the Seabrook Joint Owners (*e.g,*. an average of 21.5% annual returns versus the 8.5% assumption used for funding purposes). These significant market returns have led to increases in

NextEra's overfunding – now projected at $15 billion assuming a 2030 funding date and upwards of $92 billion with license extension to 2050.[2] To put these returns into perspective, the Trust plus Escrow balance assumed for year-end 2014 in the Final Report and Order in NDFC Docket No. 2009-1 was $532 million. The actual Trust plus Escrow balance as of December 31, 2014 was over $634 million, approximately $102 million greater performance than assumed in that prior docket.

In Docket No. 2012-1, the Committee reduced the equity earnings assumption from 9.5% to 8.5%. The bases for the Committee's decision are set forth in the Final Report and Order in that docket, but in summary, the Committee noted its concern that the 9.5% equity earnings assumption may be overly optimistic and the 8.5% equity assumption made the overall Trust return more in line with returns projected for the New Hampshire State Pension. *See* 2012 FRO at 26.

LCG addresses the equity earnings assumption in its report (*see* pp. 11-21) and, as noted therein, recommends that 9.5% is a more reasonable long-term equity earnings assumption for the Trust investments. As set out below in Section III.K, the Joint Owners – with the exception of MMWEC – recommend that the Committee reinstate the 9.5% earnings assumption for equities.[3] With the robust Trust balance and all but MMWEC projected to be overfunded even without license extension, the effect on the funding schedules from using the 8.5% equity earnings assumption, instead of 9.5%, is marginal. That said, it is the Managing Agent's responsibility to work with the investment consultant (LCG) to make recommendations for earnings assumptions that are best supported by the data. As reflected in the LCG Report, the

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[2] As used in this report, "overfunding" means the dollar amount that is projected to remain after all of the costs to decommission the Plant and ISFSI have been paid.

[3] MMWEC's view is that the current earnings assumption of 8.5% is appropriate and should remain in place.

data overwhelmingly supports that a 9.5% earnings assumption for equities is reasonable and that 8.5% is too conservative. As a result, the Joint Owners – with the exception of MMWEC – recommend that the Committee reinstate the 9.5% equity earnings assumption.

2. The Funding Assurance Escrow

To address overfunding, the Committee created the Escrow concept, a funding assurance mechanism that is within the Committee's sole control and is not subject to the limitations on the Trust, including the requirement that funds must remain in the Trust until decommissioning is complete no matter by how much the balance in the Trust exceeds the projected costs. In keeping with this concept, the Committee has allowed the contributions to go to the Escrow rather than the Trust. Because it is within the Committee's control, Escrow funds may be released to the Joint Owners. The Committee exercised that discretion in 2007 in releasing approximately $5 million to NextEra in response to NextEra having achieved certain funding milestones. Since that time, the Escrow balance has grown to over $30 million, all of which is available for the Committee to release at any time, to the extent the Committee so determines. The potential return of those monies to the Joint Owners – rather than requiring the funds to sit idle in an account for decades as required of funds in the Trust – is a significant benefit to the Joint Owners. The Joint Owners appreciate the Committee's development and use of the Escrow.

3. Effect of license extension

The Plant filed for license extension in 2010. The application remains pending before the Nuclear Regulatory Commission ("NRC") and, based on its most current schedule, the NRC anticipates acting on the application in 2016. If, as the Joint Owners expect, the NRC extends the Plant's license to 2050, and the Committee consequently approves a change to the Plant's funding date to coincide with the new license life, the Trust will be projected to be over-funded by $97 billion dollars. *See, e.g.*, Attachment C, Funding Run #6 (2050 funding schedule reflecting $97 billion in over-funding).[4] That over-funding grows to nearly $175 billion with the modest modifications to the cost escalation factor (reduction from 3.85% to 3.5%) and the equity earnings assumption (increase from 8.5% to 9.5%) proposed in this report. *See* Funding Run #2 (2050 funding schedule reflecting approximately $175 billion in over-funding for all Joint Owners, nearly $165 billion of which is attributable to NextEra).

B. Process for determining decommissioning cost funding

Before describing in more detail the content of the TLG decommissioning cost and cost escalation studies, as well as the supporting report from IHS Global Insight, and the LCG funding status analysis, it is important to make clear the roles that each play in this proceeding and how those roles relate to the other components of the filing.

1. TLG prepares the current-year cost to decommission the Plant

First, TLG provides the estimated cost to decommission the Plant to the standards established both by the NRC and the Committee. While assuming the Committee-approved operating life through 2030 with decommissioning to start thereafter, TLG provides the cost in dollars as of December 31, 2014 and, consistently, the estimates are based on current technology, regulatory requirements, decommissioning experience, decommissioning methodology, waste disposal costs, and labor rates. TLG does not include in its estimate any assumption that future advances in technology or decommissioning techniques will reduce the cost to decommission the

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[4] The Joint Owners note that several nuclear operators are already exploring requesting license extensions beyond the 60 years (40 plus 20-year license extension) currently authorized. While it would obviously be premature to produce a funding run that calculates the over-funding that would exist if the Plant's license were extended beyond 2050, the fact that others are seeking multiple extensions supports the Joint Owners' position that, with proper care and maintenance, the Seabrook Station can continue to operate safely for many decades to come.

Plant. Rather, the current projected cost is based on the best available current data and is expressed in year-end 2014 dollars.

Relative to the industry, the Seabrook Station is in the early stages of its operational life as it is one of the last plants licensed for operation in the United States. Seabrook's place in the order of nuclear plant construction is noteworthy both because the Plant was built using the then existing state of the art technology and because if the Plant's operational life is consistent with industry performance and long-term planning, Seabrook will be one of the very last existing plants to be decommissioned. Accordingly, those planning and carrying out the decommissioning of the Seabrook Station will have the benefit of having observed a significant number of nuclear plant decommissioning projects and learned both the best practices from the standpoint of safety, efficiency, and cost, as well as how to avoid pitfalls in the process. Although the decommissioning studies provided with this application assume no advancements in decommissioning technology and process, consistent with the rapid advances in the process for refueling and maintaining nuclear plants, the Joint Owners anticipate significant advancements in the decommissioning process by the time the Seabrook Station is actually decommissioned.

In addition, if the Seabrook Station were actually decommissioned beginning in 2030 (as opposed to 2050, as expected), NextEra would also be in the position of decommissioning the Seabrook Station contemporaneously with several other units in the NextEra/FPL nuclear fleet. In that event, NextEra would be able to take advantage of the economies attendant to decommissioning a nuclear fleet, as opposed to NextEra decommissioning a single unit. The synergistic savings from decommissioning multiple units are not insignificant: TLG expects at least a 5% reduction in program costs relative to the estimate if the Plant is actually decommissioned as part of the fleet. *See* TLG Report, Executive Summary p. xxi.

2. Determining the appropriate rate by which each of the decommissioning cost components is expected to escalate through the decommissioning period

Second, because the Committee must approve funding schedules that are designed to pay decommissioning costs that will not begin to arise until the 2030 funding date, the current decommissioning cost estimate must be escalated to convert the December 31, 2014 estimate into 2030 dollars (or 2050 dollars for the estimate that assumes license extension). This is accomplished by determining the percentage by which the decommissioning costs are expected to increase annually (the "cost escalation factor"). In Docket No. 2011-1, the Committee established 3.85% as the appropriate factor by which to escalate the decommissioning cost estimate. As is explained below in Section II.B, in addition to the comprehensive update of the cost to decommission the Plant, TLG also prepared a detailed cost escalation analysis. (*See* Attachment F.) That analysis reflects that the 3.85% cost escalation factor is substantially higher than the rate by which the decommissioning costs are actually expected to increase. More specifically, based on TLG's independent analysis, the decommissioning costs are expected to increase annually by 2.58% over the entire duration of the operating life and through the decommissioning period. In developing these calculations, TLG followed the same methodology as it has for other plants in the industry and verified the results internally through independent analyses. The analysis from IHS Global Insight demonstrates that the underpinnings of TLG's cost escalation analysis are sound and reflect the best estimate of the rate by which the decommissioning costs will escalate over time. Although a materially lower factor is thus supported, as will be explained more fully below, the Joint Owners request that the Committee approve 3.5% as the cost escalation factor. Doing so creates substantial conservatism in the decommissioning funding process. More specifically, escalating the 2014 costs at 3.5% yields a 2030 decommissioning target that is more than $1.5 billion greater than costs if escalated at the TLG/IHS Global Insight factor of 2.58%. This in effect creates a $1.5 billion buffer between the expected decommissioning cost and the target to which the Joint Owners will fund the Trust.

3. LCG calculates the funding schedules necessary to achieve the targeted Trust balances

Finally, once the total cost stream is determined by applying the cost escalation factor to the TLG estimate, LCG develops the proposed payment schedules that will achieve Trust balances sufficient to pay the decommissioning costs when due.

For the reasons set forth more fully in Section III.K, the Joint Owners propose that the Committee approve funding schedules that maintain the assumptions in the last docket (*i.e.*, 2030 funding date and spent fuel on site through 2100), but with a marginally lower cost escalation factor that is fully supported by current, best-available information about future cost escalation and a return to the 9.5% equity earnings assumption (*see* Attachment D, Funding Run #1 applying 3.5% cost escalation factor and 9.5% equity earnings assumption), subject to the December re-set.[5] As demonstrated below, both the TLG study and the LCG analysis follow methodologies previously approved by the Committee and both are based on reasonable assumptions, the application of which ensures that the projected cost to decommission the Plant is bounded.

C. Decommissioning cost estimate results

In NDFC Docket No. 2014-1, the Committee directed the Managing Agent to present cost studies assuming license termination in 2030, as well as with license extension through

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[5] As noted above, MMWEC's view is that the current earnings assumption of 8.5% is appropriate and should remain in place.

2050. TLG performed the requested analyses, calculating the various decommissioning cost estimates requested by the Committee. The table below reflects the results of those analyses:

Scenario	Shutdown	First Spent Fuel Pickup	Last Spent Fuel Pickup	Estimated Cost (millions)
1	2030	2077	2100	1,118.6
2	2050	2077	2100	1,029.9[6]

D. TLG's and IHS Global Insight's analyses of cost escalation

In this Application, the Joint Owners have included cost escalation analyses by TLG and IHS Global Insight. *See* Attachments F and G. As set forth therein, TLG calculated escalation factors assuming a 2030 license life (composite cost escalation factor of 2.58%), as well as license extension to 2050 (composite factor of 2.51%). TLG calculated these composite factors by first analyzing each category of cost and then using industry forecast data that is consistent with NRC guidance to develop the best estimate of the rate by which the decommissioning costs are expected to escalate each year from now until the end of the decommissioning period. Pursuant to NextEra's LLRW disposal agreement with EnergySolutions, the escalation of the "burial" cost component is based on an indexed escalation rate. The report from IHS Global Insight confirms that the indices TLG relied upon in developing the escalation factors for the remaining cost components (labor, equipment and materials, energy, and other) were all appropriate. The report also confirms that TLG's use of the indices was appropriate and the methodology and resulting composite factors of 2.58% and 2.51% were reasonable.

It perhaps bears noting that TLG and IHS Global Insight are both highly respected in their respective fields and have reputations for developing accurate, reliable forecasts of

[6] The costs to decommission the Plant assuming a 2050 shutdown are somewhat lower than for a 2030 shutdown because certain of the decommissioning costs for a 2030 shutdown become operating (*i.e.*, non-decommissioning) costs if the Plant operates until 2050.

decommissioning costs and cost inflation forecasting, respectively. Both performed their calculations independently and without input from the Joint Owners, other than the directive to prepare the cost escalation analyses using their professional expertise. As such, the 2.58% and 2.51% cost escalation factors reflect the best estimate of the rate by which the decommissioning costs are expected to increase annually from now through the end of the decommissioning period.

Because of the long duration remaining before the Plant and independent spent fuel storage installation ("ISFSI") are finally decommissioned, the cost escalation factor has a significant effect on the calculation of necessary funding. For example, the escalated decommissioning cost in 2030 using the current 3.85% cost escalation factor is $5.6 billion. Using the TLG/IHS Global Insight 2.58% factor reduces the total 2030 cost to $2.9 billion, a difference of over $2.5 billion. The Joint Owners recognize that this is a significant difference, but the analyses presented in NDFC Docket Nos. 2007-1, 2009-1 and 2011-1 have all consistently demonstrated that the 3.85% cost escalation factor is overstated. The Joint Owners are also cognizant of the Committee's preference to address issues such as cost escalation only once every four years, so adjusting the cost escalation factor to reflect the best available data now is all the more important.

Notwithstanding these factors, the Joint Owners recognize the significant effect of moving all the way from the current 3.85% rate to 2.58% and propose, instead, that the Committee adopt 3.5% as the cost escalation factor. While all of the data support the 2.58% and 2.51% cost escalation factors (2030 and 2050 scenarios, respectively), the Joint Owners believe the 3.5% factor appropriately balances the desire to get the funding assumptions "right" with the Committee's articulated preference for gradualism. The Joint Owners request that the Committee approve the 3.5% cost escalation factor as the appropriate rate by which to escalate the costs for both the 2030 and 2050 shutdown scenarios. As noted above, using a 3.5% cost escalation factor creates a buffer of more than $1.5 billion between the actual assumed cost ($2.9 billion) and the target cost ($4.6 billion) used for funding purposes.

E. Reimbursement for spent nuclear fuel and Greater-Than-Class-C Waste ("GTCC") costs

The costs of transfer and storage of spent nuclear fuel ("SNF") and other high level radioactive waste ("HLRW") account for approximately 30% of the total decommissioning cost estimate. The Department of Energy ("DOE") is obligated to accept delivery of SNF and HLRW from all U.S. nuclear plants, including Seabrook Station. As the Committee is aware, in 2009 the Joint Owners settled litigation with the U.S. Government that resulted from DOE's delay in accepting transfer of SNF and HLRW from the Plant. Under the DOE Settlement, costs incurred by the Joint Owners that are related to DOE's failure to accept delivery of SNF and HLRW (so-called "allowable costs") are reimbursed to the Joint Owners. Allowable costs include, but are not limited to, the costs of development and ongoing operations of the ISFSI at the Plant for so long as SNF and HLRW remain on-site pending transfer to DOE.

The allowable costs incurred during the decommissioning period are also included in the TLG decommissioning cost estimates. As a result, the allowable costs are "funded" twice: once by the Joint Owners by virtue of their contributions to, and earnings of, the Trust and once through the reimbursement mechanism provided in the DOE Settlement.

The allowable costs – *i.e.*, those costs that will be reimbursed through the DOE Settlement – are very significant and account for approximately 30% of the total decommissioning cost estimate; here $330 million in 2014 dollars. To date, the Committee has not provided any credit in the funding schedules for these significant reimbursements. This creates a considerable buffer in the current funding schedules for the Plant.

F. Discretionary release of Escrow funds to NextEra

As discussed above, the Committee developed the Escrow as an alternative funding mechanism that, while assuring adequate funding, would give the Committee the discretion to release funds to one or more Joint Owner(s) when circumstances so warranted. The Committee exercised that discretion in early 2008, releasing all but $2.5 million of NextEra's $7.5 million Escrow balance in recognition of NextEra having achieved certain funding milestones. NextEra acknowledges that the Committee has previously indicated it would consider release of funds upon license extension, but respectfully suggests that the circumstances presented warrant a release of Escrow funds while undertaking the comprehensive review in this docket.

At the time of the last release in early 2008, the Joint Owners had not submitted the license renewal application to the Nuclear Regulatory Commission ("NRC") and NextEra's Escrow balance was just under $7.5 million. Under those circumstances, the Committee released approximately $5 million, leaving $2.5 million in NextEra's Escrow as a funding assurance.

NextEra's Escrow balance has grown to $23.6 million. All of the funding runs once again show that NextEra is overfunded by billions. More specifically, keeping all assumptions the same as approved by the Committee in the last docket, NextEra is overfunded by $15.4 billion. *See* Attachment C, Funding Run #4. Adjusting the schedules solely to include: (1) the updated cost to decommission the Plant; (2) a moderate decrease in the cost escalation factor to 3.5%; and (3) returning the equity assumption to 9.5%, NextEra's overfunding grows to over $61.6 billion. *See* Attachment C, Funding Run #1. With NextEra's overfunded status, all of the funding runs reflect that no further contributions would be due from NextEra. Accordingly, even if it were otherwise necessary (which it is not), the Escrow is not necessary to assure payment of NextEra's annual contributions because none are contemplated. Seabrook is also now on the cusp of license extension, at which time NextEra's over-funding will increase to more than $164 billion dollars. *See* Attachment C, Funding Run #2 (2050 funding date, 3.5% cost escalation, 9.5% equity earnings yields NextEra overfunding of $164.8 billion).

While the above would certainly justify release of all of NextEra's Escrow, NextEra understands that there is value to the Committee in maintaining some amounts in NextEra's Escrow and respects that the decision on what, if any, amounts to release out of the Escrow is solely within the Committee's discretion. NextEra also acknowledges that the Committee has indicated that it will consider release of funds when the NRC rules on license extension. At the same time, the above reflects that it would seem unnecessary to keep $23.6 million in NextEra's Escrow, particularly when those funds could be put to much better use by NextEra. Released Escrow dollars ultimately serve to enhance the value of the complete financial package that assures NextEra's decommissioning obligations. NextEra respectfully requests that releasing all but $10 million of NextEra's Escrow would properly balance these considerations and leave in place four times the amount previously determined to be appropriate to maintain in the Escrow.

MMWEC does not agree with NextEra's requested release of funds from Escrow because, in MMWEC's view, the requested release weakens the financial assurance provided by such funds.

What follows is a summary of the Committee's order in Docket No. NDFC 2014-1, followed by the items that the Committee indicated should be provided as part of the 2014 comprehensive report.

II. NDFC DOCKET NO. 2014-1

The Committee issued its Final Report and Order in Docket No. NDFC 2014-1 on December 12, 2014. In that docket, the Committee requested the following information, which may be found in the referenced section or report:

Information requested	Responsive information
Provide a study justifying the recommended escalation figure.	See cost escalation reports from TLG and IHS Global Insight, Attachments G and F
Include a discussion of insights or lessons learned applicable to the decommissioning study and its inputs from recent and currently active nuclear power plant decommissioning projects.	See TLG Updated Decommissioning Cost Estimate, Executive Summary, pp. vii, xiv-xv; Section III, pp. 2-5.
Provide a narrative that assesses Entergy's stated reasons for deciding to close Vermont Yankee, including their potential relevance to Seabrook Station's viability.	*See* Section III.L(a), below.
Because the depth below grade to which the structures at Vermont Yankee must be removed in the course of decommissioning is controversial, explain why the assumptions used in the Seabrook commercial-industrial decommissioning estimate are appropriate.	*See* TLG Updated Decommissioning Cost Estimate, Section 3.4.7.2.
State the assumptions in the Seabrook 1 decommissioning estimate made with respect to specialized workforce availability in the Seabrook decommissioning estimate and discuss how much of an impact this variable has in determining the estimate.	See TLG Updated Decommissioning Cost Estimate, Section 3.5.2, p. 23; Section 3.7, pp. 37-39.[7]
Discuss the ISFSI status and the potential for permanent offsite storage of spent nuclear fuel.	See Sections III.B and III.F, below.
The 2015 funding schedules with both the funding date of 2030 and 2050 should include separate funding runs, one with the assumption that the Escrow is returned to the Seabrook Owners in 2016, and the other that it is transferred into the Trust in 2016.	2030: See Attachment C, Funding Run 4 and 5 2050: See Attachment C, Funding Run 6.
In the 2015 report, provide a review of the commercial-industrial standard (RSA12 F:14, II) and how it will be applied in the decommissioning of Seabrook Station.	See TLG Updated Decommissioning Cost Estimate, Executive Summary, pp. vii-viii; Section I, p.5-6; Section 2.3, pp. 7-8; Section 3.4.7.1, pp. 17-18.
Noting that Entergy agreed not to conduct	The decommissioning plan for Seabrook

[7] The existing operations staff at Seabrook Station will provide the bulk of the specialized workforce necessary to decommission the Plant. As noted in the TLG report, the vast majority of labor needed to decontaminate and dismantle the Plant is not specialized, but rather can be pulled from a general labor market. As such, NextEra does not anticipate any impact on the decommissioning estimate from this category of expense.

rubblization (i.e. demolition of material in an above-grade concrete structure that is either radiologically contaminated or that has been subsequently decontaminated into rubble that is buried on site) during the decommissioning of Vermont Yankee, discuss whether rubblization is assumed in the Seabrook decommissioning estimate.	Station does not include rubblization of material that is radiologically contaminated.
Present cost estimates for both on-site and off-site burial of rubblized material produced during decommissioning.	Because the decommissioning plan for Seabrook Station does not include rubblization of material that is radiologically contaminated, the cost estimates include only the costs for burial of contaminated material off-site at an approved facility.
Discuss the life cycle expectation for the concrete casks used in the ISFSI, the effect of proximity to the ocean and sea air, and the testing done and monitoring in place conducted to ensure there will be no degradation due to ASR.	See Section III.B, below.
Discuss lessons learned from the experiences of other facilities that may be applied to the decommissioning of Seabrook Station, including those of Vermont Yankee and Fukushima.	*See* TLG Updated Decommissioning Cost Estimate, Executive Summary, pp. vii, xiv-xv; Section III, pp. 2-5; Section III, p.26-27.

The information supporting this Comprehensive Report and proposed funding schedules follow.

III. ANNUAL REPORT

A. Seabrook Station Performance

The Plant has continued to run very well since NextEra Energy Seabrook acquired a majority interest in 2002. The capability factor, the ratio of the energy generated over a period to the reference energy, is a good indicator of plant performance. The capability factor takes into account planned and unplanned energy losses such as refueling outages or forced outages. Since the acquisition, the average of the eighteen-month unit capability factors for the period from 2003 through 2014 is 89.2% (*See* Table 3). In Spring 2014, the Plant was shut down for its planned refueling outage after operating safely at essentially 100% output for 518 continuous days, a Seabrook Station record. As of May 27, 2015, the Plant has operated continuously for 399 consecutive days after safely completing the planned April 2014 refuel outage in less than 24 days.

In the area of environmental compliance, the Plant is subject to New Hampshire Department of Environmental Services ("NHDES") and U.S. Environmental Protection Agency regulations. NHDES inspectors assess the Plant's ability to self-monitor and comply with the effluent limits and compliance schedules in the Plant's National Pollutant Discharge Elimination System Permit ("NPDES") and compliance with the Title V Air Permit. NHDES completed its last NPDES evaluation of Seabrook Station in 2014. The Plant received a rating of 4, the second highest rating, from NHDES. The last Title V inspection was conducted in 2015 and contained no findings.

In summary, the Plant continues to operate safely and reliably, NextEra makes all repairs and enhancements necessary to maintain safe and reliable performance, and there is no reason to believe the Plant will not continue to operate safely and reliably in the future.

B. Status of Independent Spent Fuel Storage Installation ("ISFSI") and Discussion of Anticipated Life Cycle of the ISFSI Casks

In 2008, NextEra Energy Seabrook completed construction of the ISFSI to allow for the dry storage of spent nuclear fuel until such time as the Department of Energy ("DOE") exercises its responsibility to accept the SNF. The ISFSI is subject to, and meets, all NRC design and safety requirements. The NRC conducts inspections of the ISFSI to verify that activities are conducted in accordance with NRC requirements.

The initial SNF loading campaign for the ISFSI was completed in 2008 with the loading of six canisters and installation of eight horizontal storage modules. The ISFSI consists of a concrete pad upon which NextEra Energy Seabrook places horizontal storage modules that house the dry storage canisters into which NextEra Energy Seabrook places the SNF once the spent fuel assemblies have cooled in the spent fuel pool for the appropriate amount of time. In 2013, NextEra loaded an additional eight canisters. As of May 2015, a total of fourteen canisters are loaded with fuel assemblies. Each canister contains thirty-two (32) spent fuel assemblies.

The Seabrook ISFSI design is sufficient to permit continued full core offload of SNF through the end of renewed licensed operations, which would be 2050 if the NRC renews the operating license for the Plant. The concrete pad is of sufficient size to accommodate decommissioning should the Plant cease operation in 2030, but may need to be expanded in the future as more information about DOE's schedule for the transfer of spent fuel from the Plant becomes available. To that end, as a contingency, an area for future expansion was included in the site selection process and identified in the project site plan to accommodate the placement of casks to fully off load the spent fuel pool should all SNF remain on site beyond the schedule announced by the DOE.

The Committee in its 2014-1 Order requested a discussion of the life cycle of the concrete casks used in the ISFSI, the effect of proximity to the ocean and sea air, and the testing done and monitoring in place conducted to ensure there will be no degradation due to ASR.

To be clear, ASR affects only a small percentage of the concrete structures of the Seabrook Station and even those areas affected are within the limits for continued safe operation of the Plant. Seabrook has put in place a monitoring program for these ASR areas as part of the Plant's request for license extension.

In contrast to the Plant, the ISFSI was constructed more than twenty years after the Plant and was constructed using different concrete. Perhaps more notably, the casks into which the spent fuel resides were not fabricated on-site, nor are there any moving parts or machinery in or affixed to the ISFSI. Rather, the ISFSI consists of a concrete pad on which the dry casks housed in concrete modules sit, passively allowing the spent fuel to cool. The ISFSI is subject to regular surveillances, which monitor temperature and confirm the condition of the module vents which provide passive air flow. Should any irregularities be identified, the appropriate actions would occur to evaluate and determine the required course of action to address the condition.

C. NextEra Energy Nuclear Operational Performance

NextEra Energy Nuclear operates seven other nuclear units through NextEra Energy's electric utility subsidiary, Florida Power & Light Company ("FPL") and its competitive energy subsidiary, NextEra Energy Resources, LLC ("NextEra Energy Resources"). FPL operates four nuclear units, two at Turkey Point Nuclear Plant and two at St. Lucie Nuclear Plant. In addition to Seabrook Station, NextEra Energy Resources operates the Duane Arnold Energy Center and two units at Point Beach through its subsidiaries. Each NextEra Energy Resources nuclear unit is operated by the individual company that holds its operating license: NextEra Energy Seabrook, LLC; NextEra Energy Duane Arnold, LLC; and NextEra Energy Point Beach, LLC.

The Unit Capability Factor is an 18-month running average for pressurized water reactors and a 24-month running average for boiling water reactors (Duane Arnold). The NextEra Energy Nuclear fleet average of the unit capability factors for the period from 2003 through 2014 was 88%. Table 3 provides the historical Unit Capability Factors for the NextEra Energy Nuclear fleet average, Seabrook, and the industry median.

Six of the eight NextEra Energy Nuclear plants are currently in the Reactor Oversight Process's Column 1, the Licensee Response Column, indicating that Performance Indicators and any inspection findings are currently "green" (of very low safety significance) (*See* Table 4). Duane Arnold and St. Lucie Unit 1 are in Column 2, the Regulatory Response Column, due to each unit having one "white" inspection finding, which is classified as having a "low to moderate safety significance." St. Lucie Unit 1 is expected to return to the Licensee Response Column at the end of the second quarter of 2015. Duane Arnold is expected to return to the Licensee Response Column following a special NRC inspection expected for this summer and after four quarters have elapsed (end of 2015).

D. Update on the Status of Nuclear License Extensions

Currently there are ninety-nine commercial nuclear power plants operating in thirty states in the United States. All were initially licensed to operate for forty (40) years with an option to extend the license for an additional twenty (20) years under appropriate conditions.[8] These operational time limitations were based on economic and antitrust considerations, not on considerations related to nuclear technology. Indeed, with the passage of time, licensed nuclear reactors such as Seabrook are upgraded to include technological advances. As such, while a reactor's systems, structures, and components age with the passage of time, its active components are maintained and upgraded in a fashion to ensure that the plant remains in a safe operating condition throughout its operating life. The development of new programs to manage the effects of aging on passive plant systems, structures, and components is the focus of the NRC's license renewal process.

Consistent with the previous comprehensive update, the domestic nuclear power industry as a whole is performing very well and the NRC is continuing to review and approve license renewal applications. All indications are that it will continue to do so for the foreseeable future. Over three quarters (76 units) of the operating plants in the U.S. have been granted license

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[8] The Joint Owners note the Department of Energy Office of Nuclear Energy Light Water Reactor Sustainability (LWRS) Program is developing the scientific basis to extend existing nuclear power plant operating life beyond the current 60-year licensing period and ensure long-term reliability, productivity, safety, and security. http://energy.gov/ne/nuclear-reactor-technologies/light-water-reactor-sustainability-lwrs-program

renewals from the NRC. Additionally, eighteen units have applied for 20-year license renewals and are currently under review, while five units have announced to NRC plans to pursue 20-year license renewals. To date, the NRC has not denied a license renewal application. (*See, e.g.*, Table 2) Consistent with this trend, all seven of NextEra Nuclear's other units have obtained license extensions from the NRC.

NextEra submitted an application to renew the operating license for Seabrook Station, on behalf of itself and the Joint Owners, to the NRC in May of 2010. The NRC is currently reviewing NextEra's application for renewal of the Seabrook operating license. As part of this review, NextEra has responded to over two hundred Requests for Additional Information from the NRC Staff, a number within the typical range for license renewal applications.

Following the 2010 submittal of the Seabrook license renewal application, NextEra identified the presence of alkali-silica reaction ("ASR") in certain concrete structures at the site. ASR is a chemical reaction of certain materials in the aggregate used to make concrete that occurs in the presence of water and causes patterned microcracking. The ASR does not affect the entire Plant but is instead limited to a relatively small percentage of the concrete at Seabrook Station. NextEra has evaluated the affected structures and determined that they meet current licensing requirements for safe operation. While not a new phenomenon in concrete structures generally, this is a newly identified aging mechanism in the domestic nuclear industry. Because the NRC's license renewal process focuses on management of aging related degradation during the period of extended operation, this new issue must be addressed by a license renewal aging management program before NRC will issue a renewed license. In May 2012, NextEra revised its application to include a program to manage aging of concrete structures affected by ASR. The NRC is reviewing this program. The NRC's review is scheduled to be complete in May 2016 and NextEra's current expectation is that the NRC will act on the Seabrook application in

2016.[9] An up-to-date version of the Seabrook license renewal review schedule can be found on the NRC's website.[10]

In 2012, a federal court overturned the NRC's Waste Confidence rule, which has had an impact on the schedule for issuing renewed licenses. The Waste Confidence rule generically evaluates the environmental impacts of spent fuel storage at all reactors so that the issue need not be addressed in the environmental review for each individual reactor licensing action. The NRC Commissioners ("Commission") stopped issuing renewed licenses until it resolved the issues identified by the D.C. Circuit Court in its Waste Confidence rule decision. However, the NRC Staff's ongoing review of license renewal applications continued normally–only the final license issuance was affected. On August 26, 2014, the Commissioners voted to approve the new final rule, renamed "Continued Storage of Spent Nuclear Fuel," and associated generic environmental impact statement. Since that time, the NRC has lifted its moratorium on issuing final license renewals and rejected a series of challenges to the new rule.

It remains the case that the NRC has never denied a nuclear plant operator's application for license renewal. Given this, and Seabrook's excellent operational track record, the Joint Owners anticipate that the NRC will act favorably on Seabrook's application for license renewal. If as the Joint Owners expect, the Seabrook license renewal to 2050 is approved by the NRC, and the Committee thereafter approves 2050 as the funding date, all of the Joint Owners will be significantly over-funded for decommissioning. MMWEC, Taunton and Hudson will be over-funded by **$4.2 billion**, $50 million, and $33 million, respectively. NextEra Energy Seabrook is

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[9] As discussed herein, the delay in the NRC acting on the Plant's request for license extension is generally attributable to two factors: (1) the need for the NRC to develop a new waste confidence rule; and (2) the need to study the ASR issue and ensure an appropriate aging management program to address that issue.
[10] http://www.nrc.gov/reactors/operating/licensing/renewal/applications/seabrook.html

projected to be over-funded by more than **$92.9 billion**. *See* Attachment C, Funding Run #6. Each owner's overfunding status grows with the proposed adjustments to cost escalation (3.5%) and equity earnings assumption (9.5%).[11] *See id*., Funding Run #2 (NextEra overfunded by $164.9 billion; MMWEC by $9.6 billion; Hudson by $54 million and Taunton by $68 million).

E. Status of Low Level Radioactive Waste ("LLRW") Disposal

The State of New Hampshire does not currently belong to a LLRW compact. Based on an agreement between NextEra Energy Seabrook and EnergySolutions, LLC, the Plant has obtained disposal capacity at the Clive, Utah facility for its Class A operational and decommissioning LLRW through decommissioning. Based on the TLG decommissioning study, just over 99% by volume of the LLRW that requires disposal will be Class A waste.[12] The Agreement incorporates pre-established firm pricing for processing and/or disposal for all Class A waste that will be generated by the Plant during operations and decommissioning, including if as expected the Plant's operating license is extended by the NRC to 2050. Class B and C LLRW is stored onsite utilizing existing facilities and third-party agreements are utilized to provide off-site processing, storage, and disposal of Class B and C LLRW.[13] NextEra anticipates that market forces within the nuclear industry will continue to make additional disposal facilities available in the future and long before the scheduled shutdown of the Plant. To that end, the Texas Compact Facility which is owned and licensed by the state of Texas, operated by Waste Control Specialists, LLC and

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[11] As noted above, MMWEC does not support the proposed adjustment to the equity earnings assumption.

[12] Class A LLRW waste is 166,590 cubic feet out of a total of 168,058 cubic feet of waste which equates to 99.1%. *See* TLG Report, Section 5, page 5, Table 5.1 (Decommissioning Waste Summary).

[13] These agreements do not currently extend to accept B and C waste during the decommissioning period. As the time for decommissioning approaches, NextEra will enter into a contract for disposal of B and C waste during the decommissioning period. Given the developing markets, NextEra does not anticipate any difficulty in obtaining such an agreement.

hosted and supported by Andrews County, Texas received its first shipment of LLRW in 2012 and continues to operate.[14]

In short, as a result of the above factors, the cost of disposal of all LLRW generated during operation is not expected to have any material effect on the cost to decommission the Plant, nor will such disposal require the drawdown of any funds set aside for decommissioning purposes.

F. Status of High Level Radioactive Waste Disposal

Federal plans to provide a high-level waste repository have stalled in recent years. The U.S. Department of Energy withdrew its license application for a high-level waste repository at Yucca Mountain, Nevada from consideration before the NRC in 2010. But in August 2013, the U.S. Court of Appeals for the District of Columbia Circuit ordered the NRC to resume its review of DOE's application. The NRC has recently completed its safety evaluation report for the Yucca Mountain project. It identified no technical obstacles to the project, but did note that DOE has yet to obtain certain necessary land rights for the project. The NRC also plans to update DOE's existing Environmental Impact Statement for the project, which DOE has declined to do. Prior to issuing a license to DOE for the project, NRC must hold an adjudicatory hearing. It does not have, and has not sought, adequate funding to complete that task.

One of the recommendations of the President's Blue Ribbon Commission on America's Nuclear Future in 2012 was to identify interim spent nuclear fuel ("SNF") storage facilities using a consent-based process. Recently this concept has borne some fruit as Waste Control Specialists, LLC ("WCS"), the Texas LLRW disposal company, notified the NRC of its intent to

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[14] This Texas facility is licensed to dispose of Class A, B and C low-level radioactive waste.

seek a license for the interim storage of used nuclear fuel at it Andrews County, Texas facility. WCS plans to file its application in 2016 and complete construction in 2020. Media reports indicate that the plan is supported by state and local governments. And just last month, Holtec International announced a memorandum of agreement signed with several southeastern New Mexico counties and towns to build a new interim underground storage facility to house used nuclear fuel. Separately, in a speech to the Bipartisan Policy Center Energy Secretary Ernest Moniz recently announced plans to develop a pilot interim storage facility that could accept spent fuel from shutdown reactors. According to the Secretary, this plan "could also enable the federal government to begin meeting its waste acceptance obligations sooner and ultimately reduce our liabilities caused by the delay in meeting our obligation."

Also in November 2013, the U.S. Court of Appeals for the District of Columbia Circuit disapproved DOE's nuclear waste fee, ruling that the government may not charge a fee for a nuclear waste program when it does not have a program that follows current law and in May 2014, at the conclusion of a statutory waiting period, DOE discontinued collection of the fee. This highlights the ongoing need and incentive for DOE to act either to resume the Yucca Mountain program or to encourage Congress to pass a new law authorizing a different program. Further, several utilities, like NextEra, have entered into settlement agreements with DOE that require reimbursements for delayed pickup of SNF. Other lawsuits against DOE remain pending. There are a significant number of nuclear plants that are scheduled for retirement well in advance of Seabrook that will require some federal SNF plan.

Further, as nuclear plants over time have been an important part of our energy supply, construction of new nuclear units continues. Vogtle Units 3 and 4 in Georgia and V.C. Summer Nuclear Station Units 2 and 3 in South Carolina continue to be constructed. As such, there is significant impetus for DOE to meet its statutory obligation to accept SNF from existing plants, as well as to provide a SNF disposal solution for these new plants that will come on-line in the future.

The Seabrook ISFSI will not be a permanent storage location for the SNF, but is instead a method to ensure that SNF is stored safely until it is transferred to DOE. While the additional costs of the ISFSI and post-shutdown transfer of SNF and other HLRW are included in the TLG decommissioning cost estimate, the federal government is contractually obligated to reimburse the Joint Owners for these costs no matter how long DOE delays in meeting its obligation to accept transfer of these wastes. While the Seabrook ISFSI provides a very safe environment in which to store and ultimately transfer SNF and “Greater than Class C” (“GTCC”) waste, the Joint Owners have no interest in keeping SNF and GTCC waste on site any longer than necessary. NextEra (and TLG) anticipate that the DOE will accept transfer of the waste much earlier than assumed in the Plant’s funding models, but will certainly review any alternatives – private or otherwise – provided that such alternative(s): (1) provide for safe and reliable storage, and (2) the costs of such transfer and storage are borne by the federal government.

G. NextEra Energy, Inc. Financial Performance

NextEra Energy, Inc. (NYSE: NEE) (”NextEra Energy”) is a leading clean energy company with consolidated revenues of approximately $17.0 billion, approximately 44,900 megawatts of generating capacity, which includes approximately 199 megawatts associated with noncontrolling interests related to NextEra Energy Partners, LP (NYSE: NEP), and approximately 13,800 employees in 27 states and Canada as of year-end 2014. Headquartered in Juno Beach, Fla., NextEra Energy's principal subsidiaries are Florida Power & Light Company, which serves approximately 4.8 million customer accounts in Florida and is one of the largest rate-regulated electric utilities in the United States, and NextEra Energy Resources, LLC, which, together with its affiliated entities, is the world's largest generator of renewable energy from the wind and sun. Through its subsidiaries, NextEra Energy generates clean, emissions-free electricity from eight commercial nuclear power units in Florida, New Hampshire, Iowa and Wisconsin. For the full year 2014, NextEra Energy reported net income attributable to NextEra Energy on a GAAP basis of $2.5 billion, or $5.60 per share, compared to $1.9 billion, or $4.47 per share, in 2013. NextEra Energy's financial strength is recognized by the Rating Agencies. NextEra Energy's credit ratings are among the highest in the industry. As of May 26, 2015, the credit ratings currently assigned by Moody's Investors Service, Inc. ("Moody's"), Standard & Poor's Ratings Services ("S&P") and Fitch Ratings ("Fitch") to NextEra Energy, FPL and Capital Holdings are as follows:

NextEra Energy:	Moody's [15]	S&P[8]	Fitch[8]
Corporate credit rating	Baa1	A-	A-
FPL:			
Corporate credit rating	A1	A-	A
First mortgage bonds	Aa2	A	AA-
Pollution control, solid waste disposal and industrial dev. revenue bonds	VMIG-1	A	A+
Commercial paper	P-1	A-2	F1
Capital Holdings:			
Corporate credit rating	Baa1	A-	A-
Debentures	Baa1	BBB+	A-
Jr. Subordinated Debentures	Baa2	BBB	BBB
Commercial paper	P-2	A-2	F1

As of May 26, 2015, all three rating agencies indicated a stable outlook. NextEra Energy remains financially very strong relative to its competitors in the industry and retains ready access to the credit markets. In addition, NextEra Energy and its subsidiaries, including FPL, had $7.85 billion ($4.85 billion for Capital Holdings and $3.0 billion for FPL) of bank

[15] A security rating is not a recommendation to buy, sell or hold securities and should be evaluated independently of any other rating. The rating is subject to revision or withdrawal at any time by the assigning rating organization.

revolving lines of credit as of March 31, 2015. FPL also has a $235 million revolving term loan facility and Capital Holdings has a $35 million bi-lateral revolving credit facility. These credit facilities, with the exception of the $35 million Capital Holdings' bi-lateral facility, are for general corporate purposes and to provide additional liquidity in the event of a loss to the Companies,' or their subsidiaries, operating facilities (including, in the case of FPL, a transmission and distribution property loss).

NextEra Energy's financial position remains strong as demonstrated in the following table of end of quarter Funded Debt to Total Capitalization (%) Ratios calculated in accordance with NDFC Docket 2002-2:

End of Quarter Ratio	12/31/2014	9/30/2014	6/30/2014	3/31/2014	12/31/2013
Funded Debt / Total Capitalization	51.1%	53.4%	54.0%	54.3%	53.0%

H. Joint Owner Financial Performance

With the Plant's excellent operational and financial performance, NextEra Energy Seabrook has not had occasion to call upon any of the amounts available under the support agreement with Capital Holdings nor does it anticipate doing so. Nevertheless, the agreement remains as part of the financial support for the Plant.

The municipal owners' (MMWEC, Taunton, and Hudson) financial performance has not changed materially since the last filing.

I. Joint Owner Trust Investment Strategy

The current investment guidelines provide for a maximum allocation to equities of 70%, applied to each Joint Owner's total asset value at the time the equity holdings are purchased.

In the Final Report and Order in Docket No. NDFC 2011-1, the Committee approved the use of a 3% bandwidth for determining each Joint Owner's assumed equity allocation for funding purposes. That bandwidth determination was modified (or clarified) in the Final Report and Order in Docket NDFC-2014-1. Specifically, if the Joint Owner's actual allocation as of the date determined by the Committee is within 3% of the Joint Owner's target, the targeted allocation would be assumed. Otherwise, the target or actual allocation, whichever is lower, would be used.[16]

As in the past, NextEra Energy Seabrook currently plans to allow its equity allocation to fluctuate with market movement from its targeted 65% equity allocation. NextEra Energy Seabrook plans to initiate asset transfers on a periodic basis to modify its equity allocation as desired or needed within the guidelines. Based on April 30, 2015 fund market values, NextEra Energy Seabrook's total equity allocation is approximately 67%. Because NextEra Energy Seabrook's actual allocation is within 3% of the targeted allocation, the targeted allocation is assumed in the attached funding runs. Additionally, based on April 30, 2015 fund market values, NextEra Energy Seabrook's opportunistic allocation is 7%. NextEra Energy Seabrook continues to increase its opportunistic allocation toward the targeted 10% as fund managers make capital calls to fund loans.

MMWEC has a targeted equity allocation of 55%. Based on April 30, 2015 fund market values, MMWEC's equity allocation is approximately 63%. Because MMWEC's actual allocation exceeds the target by more than 3%, the targeted allocation is assumed in the attached funding runs.

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[16] Docket 2014-1 Final Report and Order at 2.

Hudson has a targeted equity allocation of 30%. Based on April 30, 2015 fund market values, Hudson's equity allocation is approximately 33%. Because Hudson's actual allocation is within 3% of its targeted allocation, the target allocation is assumed in the attached funding runs.

Taunton has a targeted equity allocation of 30%. Based on April 30, 2015 fund market values, Taunton's equity allocation is approximately 31%. Because Taunton's actual allocation is within 3% of its targeted allocation, the target allocation is assumed in the attached funding runs.

J. Status of the Trust Fund and Projected Balances

As they have since the end of the 2008 recession, the diversified investments in the Trust performed above the NDFC assumptions in 2014. The equity funds in the Trust earned approximately 12.6%, materially ahead of the NDFC-approved assumption of 8.5%. The total return for the entire Trust was 8.8%, which compares favorably to the 7.69% portfolio return assumed in the funding runs approved in Docket No. 2014-1. The total Trust balance increased by $48.3 million in 2014 ending the year with a balance of $603 million. The 2014 increase was a result of investment gains less current expenses (including deferred taxes). The Escrow account was valued at $31.1 million at year-end, a $746,000 increase from the prior year as a result of Joint Owner contributions and Escrow returns. The Trust was approximately $6.1 million ahead of the $596.8 million balance projected in the funding schedule for 2014, approved by the Committee in Docket No. NDFC 2014-1. The total amount available for decommissioning as of year-end 2014 was $634.0 million.

The details of the performance of the Trust and Escrow are set forth in the attached analysis from LCG, Attachment C.

Under the current approved schedule, MMWEC's 2015 contribution to the Escrow will total $559,100.00. NextEra, Hudson, and Taunton are projected to be overfunded and, accordingly, are required to make no contributions. The funding schedules proposed in this Application for approval project a year-end 2015 Trust balance of approximately $652.1 million ($683.8 million when including the Escrow) (*See* Attachment D, Funding Run 1). The proposed funding schedules are designed to achieve the targeted funding balance by the funding date, but would be re-set and resubmitted to the Committee in December, 2015 to include the November 30, 2015 Trust balance, plus anticipated Trust earnings, minus Trust expenses, plus the funding assurance Escrow balance, plus the anticipated December contribution, plus anticipated earnings, minus projected expenses.

K. Proposed Funding Schedules: updated decommissioning cost and cost escalation factor and 9.5% equity earnings assumption

There have been no changes in the ownership structure of the Plant since the 2014 Annual Report. BNY Mellon Trust of Delaware remains trustee for the Trust and LCG remains the investment consultant, responsible for maintaining and modifying the funding model, as necessary, and recommending earnings assumptions and consulting with each Joint Owner on investment strategy. LCG is also ultimately responsible for generating funding schedules based on the following assumptions:

a) The estimated cost of decommissioning the Plant, and the related expenditure schedule, in present day dollars is determined, based on decommissioning commencing at the end of the operating life of the Plant (in this case, 2030 without license extension) and using the Committee's directive that spent nuclear fuel will be transferred by 2100 and the ISFSI decommissioned in 2101. Costs related to the dismantlement of Seabrook Unit 2 are not considered in the estimated cost.[17]

b) The proposed 3.5% decommissioning cost escalation factor is applied to the cost estimate to determine the total cost of decommissioning to the end of the decommissioning period.

c) The projected decommissioning cost and liability is allocated to the Joint Owners based upon their respective ownership share. A separate schedule of payments for each

[17] RSA 162-F does not apply to Seabrook Station Unit 2.

Joint Owner is then created. Each Joint Owner is responsible for its ownership share of the total cost.

d) Actual market values of investments within each fund within the Trust and Escrow for each Joint Owner are factored into future funding contribution calculations. The earnings assumptions are as approved in NDFC Docket No. 2014-1, with the exception of the 9.5% equity earnings assumption addressed in Section III.K. If a Joint Owner is projected to owe a contribution, the funding schedules assume that Joint Owner's Escrow balance is transferred to the Trust at year-end 2016 (*see* 2012 Final Order at 15, page 3). If instead a Joint Owner is projected to be over-funded, the funding schedules assume that Joint Owner's Escrow balance is released to the Joint Owner at year-end 2016.

e) Individual Joint Owners elect investments from the available approved investment funds. Future earnings assumptions for each fund, estimated by the Investment Consultant and submitted herein for approval by the State Treasurer, are applied to Trust and Escrow balances.

f) Estimated taxes and expenses for certain administrative activities of the Trust and Escrow are deducted from those respective balances. Such expenses include Trustee and Fund Manager fees, Investment Consultant billings, audit fees and routine administrative expenses of the Committee. Taxes are only paid out of the Qualified Trust funds.

g) The appropriate funding methodology and inflation estimates are applied. Contributions are escalated annually by the overall rate of inflation (3%) for the service life of the Plant.

Attachment D, Funding Run 1 reflects the contributions to the Trust and Escrow based on these assumptions. Using these assumptions and current balances, all of the Joint Owners are projected to be over-funded and, accordingly, would have no contribution for 2016. NextEra, MMWEC, Taunton and Hudson under these assumptions are over-funded by $61.6 billion, $1.3 billion, $16 million and $13 million, respectively, with no contribution of their Escrow funds in 2016 to the Trust. The likelihood of license extension and reimbursements from the settlement agreement with the Department of Energy ("DOE Settlement") provide significant additional assurance that the decommissioning is adequately funded.

First, total Joint Owner over-funding grows to more than $175 billion in the likely event that the NRC approves Seabrook's license extension application without any consideration of the DOE Settlement. NextEra alone would be over-funded by nearly $165 billion, again with no consideration of the DOE Settlement (*See* Attachment C, Funding Run 2).

Second, independent of license extension, as the Committee is aware, the DOE Settlement provides that DOE will reimburse the Seabrook Joint Owners for the costs associated with DOE's failure to comply with its obligations to accept transfer of spent nuclear fuel and GTCC waste. Those costs account for fully 30% of the total decommissioning cost estimate, or approximately $330 million of the approximately $1.1 billion decommissioning cost estimate, in year-end 2014 dollars. While the Committee has to-date determined that the DOE Settlement should not be considered in the funding calculation, its existence provides another level of conservatism in the funding runs approved by the Committee.

While the NDFC does not consider any of these items for purposes of establishing the funding schedules, this significant expected over-funding is relevant to the Trust's overall financial status which, as these facts reflect, is robust.

The chart below reflects the funding status using the different parameters discussed above.

Funding Run #	Funding date	Cost escalation	Equity assumption	2016 Escrow status	2016 contribution	Projected overfunding
1	2030	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC: $0 Hudson: $0 Taunton: $0	NextEra: $61.6 billion MMWEC: $1.3 billion Hudson: $13 million Taunton: $16 million
2	2050	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC: $0 Hudson: $0 Taunton: $0	NextEra: $165 billion MMWEC: $ 9.6 billion Hudson: $55 million Taunton: $69 million
3	2030	2.58%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC: $0 Hudson: $0 Taunton: $0	NextEra: $93 billion MMWEC: $ 2.3 billion Hudson: $29 million Taunton: $36 million
4	2030	3.85%	8.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC:$686,509 Hudson: $0 Taunton: $0	NextEra: $15.5 billion MMWEC: $0 Hudson: $.5 million Taunton: $1.2 million
5	2030	3.85%	8.50%	Transfer to Trust on 12/31/2016, regardless of overfunded status	NextEra: $0 MMWEC:$686,509 Hudson: $0 Taunton: $0	NextEra: $22 billion MMWEC: $0 Hudson: $.5 million Taunton: $1.2 million
6	2050	3.85%	8.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC: $0 Hudson: $0 Taunton: $0	NextEra: $93 billion MMWEC: $ 4.2 billion Hudson: $33 million Taunton: $50 million
7	2030	3.50%	8.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC:$193,499 Hudson: $0 Taunton: $0	NextEra: $26 billion MMWEC: $0 Hudson: $6 million Taunton: $8 million
8	2030	3.85%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC:$83,906 Hudson: $0 Taunton: $0	NextEra: $47 billion MMWEC: $0 Hudson: $5 million Taunton: $7 million
9[18]	2030, 2040 DOE Pickup	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC: $0 Hudson: $0 Taunton: $0	NextEra: $65 billion MMWEC: $ 1.8 billion Hudson: $16 million Taunton: $20 million
10[19]	2050, 2040 DOE Pickup	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra: $0 MMWEC: $0 Hudson: $0 Taunton: $0	NextEra: $169 billion MMWEC: $10 billion Hudson: $58 million Taunton: $73 million

[18] Scenario 1, 2030 shutdown with first spent fuel pickup by DOE in 2040
[19] Scenario 3, 2050 shutdown with first spent fuel pickup by DOE in 2040

L. Additional Information Requested by the Committee

1. Narrative that assesses Entergy's stated reasons for deciding to close Vermont Yankee, including their potential relevance to Seabrook Station's viability

In an August 27, 2013 press release, Entergy announced plans to close and decommission its Vermont Yankee Nuclear Power Station in Vernon, Vermont, in the fourth quarter of 2014. In the press release, Entergy cited the following reasons for deciding to shutdown Vermont Yankee:

> The decision to close Vermont Yankee in 2014 was based on a number of financial factors, including:
>
> - A natural gas market that has undergone a transformational shift in supply due to the impacts of shale gas, resulting in sustained low natural gas prices and wholesale energy prices.
> - A high cost structure for this single unit plant. Since 2002, the company has invested more than $400 million in the safe and reliable operation of the facility. In addition, the financial impact of cumulative regulation is especially challenging to a small plant in these market conditions.
> - Wholesale market design flaws that continue to result in artificially low energy and capacity prices in the region, and do not provide adequate compensation to merchant nuclear plants for the fuel diversity benefits they provide.

Given Vermont Yankee's proximity and general category (*i.e.*, a nuclear power plant), it makes sense that the Committee would want to understand the extent to which this collection of reasons would affect Seabrook Station's viability. As set forth in the following table and explanation that follows, however, there are fundamental differences between the two plants that make the shutdown of Vermont Yankee largely irrelevant to the ongoing viability of Seabrook Station.

Parameter	**Seabrook**[20]	**Vermont Yankee**[21]
Net Output	1,247 MWe	617 MWe
Commercial operation	1990	1972
Reactor type	Pressurized water reactor	Boiling water reactor
Reactor vendor/type	Westinghouse Four-Loop	General Electric Type 4
Containment type	Dry, Ambient Pressure	Wet, Mark I

As the table above reflects, Seabrook Station is two times larger than Vermont Yankee. Because many operating costs are fixed (or, like the labor force, largely unaffected by the plant's output), Seabrook Station has a far more competitive cost structure. These economies of sale enhance Seabrook Station's ability to offer competitive energy to the market and reduce the impact of low-priced gas (or other energy sources).[22]

Seabrook Station is also one of the newest units in the U.S and began commercial operation in 1990, eighteen years later than Vermont Yankee. Seabrook Station also has an excellent operating history, producing records for continuous days of operation and megawatts of output from re-fueling outage to re-fueling outage. The combination of an efficient per-MW cost relative to Vermont Yankee and its excellent operational record mean that Seabrook Station remains economically robust and not comparable to Vermont Yankee.

While we would expect the major per-MW cost differential to be observed in the differences in each plant's labor force discussed above, the difference in the type of plant also adds to Vermont Yankee's operating costs. Specifically, the NRC issued an Order on March 12, 2012, requiring all U.S. nuclear power plants with the Fukushima-style containment design to install a reliable, hardened vent that can remove heat and pressure before potential damage to a reactor core occurs.[23] Vermont Yankee has a Mark I containment and additional investments

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[20] http://www.nrc.gov/info-finder/reactor/seab1.html and http://www.iso-ne.com/trans/celt/report/2014/2014_celt_report_rev.pdf
[21] http://www.nrc.gov/info-finder/reactor/vy.html and http://www.iso-ne.com/trans/celt/report/2014/2014_celt_report_rev.pdf

would have been required to meet this NRC order. Seabrook Station is a pressurized water reactor; therefore, such hardened vent modifications are not required.

For all of these reasons, our view is that the factors that reportedly resulted in the shutdown of Vermont Yankee are not relevant to the ongoing viability of Seabrook Station.

2. Update of NextEra Energy Seabrook Support Agreement Amount

Pursuant to Section 9.3 of the Stipulation of the Parties entered in NDFC Docket 2002-2, the NextEra Energy Seabrook Support Agreement is updated during the four-year comprehensive review:

> The amount available for outages of less than a nine-month duration shall equal one-half of the average annual operations and maintenance expense (as defined by the elements set forth in the "Operating Expense" columns in Exhibit 5) for FPLE's share of Seabrook Station during the immediately preceding three-year period and the most recent projection for the succeeding three years as attested to by sworn application to the NDFC at the time of the hearing. The additional commitment in Paragraph IV.B.2 above for outages lasting more than nine months' duration shall equal one-half of the average annual operations and maintenance expense for NextEra Energy Seabrook's share of Seabrook Station as described in the immediately preceding sentence.

NextEra has determined that, as of the date of the filing of this four-year report, one-half of the average annual operations and maintenance expense (as defined by the elements set forth in the "Operating Expense" columns in Exhibit 5 of the Stipulation in NDFC Docket 2002-2) for NextEra Energy Seabrook's share of Seabrook Station during the immediately preceding three-year period 2012-2014, and the most recent projection for the succeeding three years 2015-2017

[22] It is noteworthy that the lower gas prices cited by Entergy have not reached fruition in the Northeast. Since Entergy's announcement in August 2013, high energy prices have existed in New England driven by tight natural gas supplies in the winters. Additionally, capacity prices have increased from $3.15/kw-mo in the forward capacity auction for 2016-2017 (FCA-7) to $7.03/kw-mo in FCA-8 for 2017-2018, and $9.55/kw-mo in FCA-9 for 2018-2019. This three-fold increase in capacity market prices has been driven by supply and demand changes, in part due to tightening of the market due to the announcement and/or actual retirement of large generating units such as Vermont Yankee (617 net MWe) and Brayton Point (~1,500 net MWe).

[23] http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard/hardened-vents.html

is $141,460,000. The additional commitment for outages lasting more than nine months' duration shall equal $141,460,000. NextEra will present the specific cost elements in a confidential exhibit along with the anticipated Stipulation of the Parties.

IV. CONCLUSION

For the reasons set forth herein, the Joint Owners respectfully request that the Committee approve the (1) updated cost to decommission the Plant beginning in 2030; (2) updated cost to decommission the Plant assuming license extension to 2050; and (3) funding schedules based on the updated, 2030 cost estimate and the proposed 3.5% cost escalation factor and 9.5% equity earnings assumptions. *See* Attachment D, Funding Run #1.

Respectfully submitted this 29th day of May, 2015.

/s/ *Steven C. Hamrick*
Steven C. Hamrick, Esq.
NextEra Energy Seabrook, LLC
801 Pennsylvania Ave. NW Suite 220
Washington, DC 20004
Tel: 202-349-3496
Fax: 202-347-7076
E-Mail: steven.hamrick@nexteraenergy.com

/s/ Christopher T. Roach
Christopher T. Roach, Esq.
Roach Hewitt Ruprecht Sanchez & Bischoff, P.C.
66 Pearl Street
Portland, ME 04101
Tel: 207-747-4870
E-Mail: croach@roachhewitt.com

Attorneys for Applicant NextEra Energy Seabrook, LLC

ATTACHMENT A

Definition of Terms

Decommissioning — As defined in RSA 162-F:14, decommissioning of a nuclear electric generating facility means, but is not limited to, any or all of the following, as may be required by any federal or state agency with jurisdiction, when any radioactive portion of the facility is permanently removed from service:

a. Safe removal of the land, facility, or site from service, including, but not limited to, decontamination, stabilization, removal, relocation, shipment, containment, demolition, dismantling, or storage, or a combination thereof, of any buildings, structures, systems, components, materials, or debris containing activation products or radioactive contamination. This includes reduction of residual radioactivity to a level that permits release, by the NRC, of the property including land and structures for unrestricted use, and termination of the license issued by the NRC. Included is the removal of nuclear fuel, removal of the reactor containment building, and the dismantling of non-contaminated components required to obtain access to contaminated components.

b. Restoration and rehabilitation of the site, including the physical and aesthetic appearance of the site, that is subject to the requirements of 6.a, above, to permit non-nuclear commercial, industrial, or other similar use, consistent with the orderly development of the region with due consideration having been given to the views of municipal and regional planning commissions and municipal governing bodies.

c. Perpetual, continual control or surveillance of land and structures that the NRC has not released for unrestricted use.

The decommissioning cost estimates for the Plant upon which the current and proposed funding schedules are based provides for the removal of structures and decontamination to the extent that the facility operator may have unrestricted use of the site with no requirement for a 10 CFR 50 NRC plant operating license, and also provides for removal of other site buildings, structures, and features with the exception of those projected to have commercial or industrial value after the completion of the decommissioning process. The estimate also assumes that there will be a need for a 10 CFR 72 NRC-licensed on site dry storage facility for spent nuclear fuel ("SNF") for several years after the release of the 10 CFR 50 NRC operating license and includes costs to operate this facility and to decommission this facility after all spent nuclear fuel has been removed from the site.

Commercial-Industrial — An approach to decommissioning for which certain of the buildings, structures, and physical features constructed for the plant that are judged to have future value are excluded from the scope of the decommissioning.

Inflation — An estimate of the overall rate of inflation in the economy looking forward to the time of decommissioning. The decommissioning funding schedules are designed such that Joint Owner contributions increase by the overall inflation rate each year.

Cost Escalation Factor — The projected annual rate of increase of the estimated cost to decommission the Plant at the end of plant life. The decommissioning escalation rate is applied to the current decommissioning estimate to calculate the actual amount of money needed in the fund when dismantling commences. Decommissioning escalation is not identical to inflation since the increase in certain components of decommissioning costs may be greater or less than the overall inflation rate.

Nominal Dollars — Nominal dollars are dollars expressed in actual terms for some point in the future. Nominal dollars increase from today's dollars by inflation.

Real Dollars — These are dollars associated with escalated funding and earnings assumptions. Real dollars exclude any impact of inflation. The purchasing power of what they are paying, therefore, remains constant over time.

Low Level Radioactive Waste (LLRW) — Radioactive waste that is not classified as high level radioactive waste, transuranic waste, SNF, or byproduct material as defined in Section 11e.(2) of the Atomic Energy Act (uranium or thorium tailings and waste). All radioactive products of decommissioning the Plant are LLRW except the SNF, which is high level radioactive waste. A small volume of low-level radioactive waste, identified in the decommissioning cost estimate as "Greater than Class C" waste (GTCC), is designated for disposal along with the SNF due to the more rigorous requirements for its isolation from the environment.

High Level Radioactive Waste (HLRW) — The spent fuel, generated during plant operations, is the only high level radioactive waste addressed within the process outlined to decommission the Plant.

ATTACHMENT B

Fund Roles, Responsibilities and Investment Guidelines

State Treasurer — RSA 162-F:20 mandates that the New Hampshire State Treasurer administer each nuclear decommissioning financing fund. Responsibilities of the State Treasurer, spelled out in RSA 162-F and the Seabrook Nuclear Decommissioning Financing Fund Master Trust Agreement (Master Trust Agreement), include providing approvals for:

- Appointment and replacement of the Trustee, the Investment Consultant, one or more Fund Managers and their respective compensation fee schedules,
- Revisions of the Investment Guidelines, and
- Decommissioning Financing Fund Payment Schedule (Funding Schedule) which determines the monthly contribution of each Joint Owner.

In accordance with the Master Trust Agreement, the State Treasurer reviews and forwards the Investment Consultant's annual report to the Committee reflecting the performance of the Decommissioning Fund for the preceding year. After reviewing the Investment Consultant's report, the State Treasurer and the Managing Agent then submit a joint annual report which includes the current inflation estimate, the estimated future earnings of the Decommissioning Trust and a statement on the adequacy of the Funding Schedule. Monthly reports from the Trustee are also reviewed and retained by the State Treasurer.

Managing Agent — NextEra Energy Seabrook, LLC, a Delaware limited liability company, pursuant to the Seabrook Project Managing Agent Operating Agreement (the Managing Agent Agreement), is the Managing Agent for the Seabrook Joint Owners. NextEra Energy Seabrook, LLC is responsible, under the terms of the Joint Ownership Agreement and the Managing Agent Agreement, for operation of the Plant and for the development and modification of plans and cost estimates for the eventual decommissioning of the Plant. NextEra Energy Seabrook, LLC, an indirect wholly-owned subsidiary of NextEra Energy Resources, LLC, which is an indirect wholly-owned subsidiary of NextEra Energy, Inc. is also responsible for certain administrative duties, which include:

- facilitating the collection of funds from the Joint Owners and the depositing of such funds into the decommissioning fund,
- providing payment calculations and schedule of payments, and
- acting as spokesman for all of the Joint Owners[1] in dealings with the State of New Hampshire with respect to the Seabrook Nuclear Decommissioning Financing Fund.

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[1] In some cases an owner or owners may elect to represent their individual interests directly.

Trustee — Two irrevocable trusts have been established for, and are independent of, each of the Seabrook Joint Owners for the purpose of holding and disbursing funds to be used in the decommissioning of the Plant. The Qualified Trust was established as a nuclear decommissioning reserve fund under Section 468A[2] of the Internal Revenue Code of 1986. The Non-Qualified Trust is not subject to the requirements of Section 468A.

Under the terms of the Seabrook Nuclear Decommissioning Financing Fund Master Trust Agreement, as amended and restated (Master Trust Agreement), Mellon Trust of Delaware, National Association, (Mellon Trust), has served as trustee for the Trust since January 1, 2006. Effective January 15, 2008, Mellon Trust merged into The Bank of New York (Delaware) and has since been renamed BNY Mellon Trust of Delaware. As no new trustee was created by the merger, under applicable fiduciary and contract law, the terms of the trust and custody agreements did not need to be amended to reflect the merger. The Trustee's responsibilities include holding, investing, reinvesting, transferring funds between the trusts, and disbursing principal and income of the trusts. Further rights and responsibilities of the Trustee are discussed in the Master Trust Agreement.

Investment Consultant — The Master Trust Agreement requires an independent investment consultant, appointed by the Managing Agent and approved by the State Treasurer. LCG Associates, Inc. was appointed to this role on effective January 1, 2012 and became responsible for the Funding Schedule beginning with the 2012-1 docket. The investment consultant cannot be the Trustee or a Fund Manager. Responsibilities of the investment consultant include:

- an annual review of the investment guidelines,
- proposed revisions to the investment guidelines, as appropriate,
- at least an annual evaluation of the Trustee's or the Fund Manager's investment performance for the State Treasurer and Managing Agent,
- annual inflation estimates and earnings projections for each Trust to the Managing Agent and State Treasurer,
- updates to the Funding Schedule, and
- independent oversight for the State Treasurer.

Fund Manager — The Master Trust Agreement provides the Managing Agent with the

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[2] NOTE: Code Section 468A relates to the tax deductibility of a contribution to a nuclear decommissioning fund. Generally, an eligible tax payer is allowed a tax deduction in the year in which a cash contribution is made to a decommissioning fund. The deduction is limited to the lesser of: i) the amount of contributions included in the taxpayer's cost of service for ratemaking purposes and actually collected from the ratepayer or; ii) an IRS ruling amount. Contributions in excess of these amounts are not deductible in that tax year. Annual earnings are taxed at 20% rather than at normal corporate tax rates, and are paid from the Qualified Trust Accounts.

Distributions from the decommissioning fund are included in gross income of the eligible taxpayer at the time of the distribution. Tax deductions are allowed for decommissioning costs in the year when economic performance occurs.

authority to appoint, subject to approval of the State Treasurer, one or more Fund Managers to manage the investment activity of a designated portion of each Trust. A Fund Manager is responsible for determining whether its investments are in compliance with the investment guidelines. Eaton Vance Management was appointed in April 2015 as the Fund Manager of the fixed income investments, effective June 1, 2015. Eaton Vance Management, a Boston-based investment management firm, is a wholly owned subsidiary of Eaton Vance Corp. State Street Global Advisors (SSgA), a Boston-based investment management division of State Street Bank & Trust Company is the Fund Manager for NextEra Energy Seabrook's domestic equity. Highbridge Principal Strategies, KKR Credit Advisors (US) LLC and Avenue Europe International Management manage direct lending/senior loan limited partnerships for NextEra Energy Seabrook's opportunistic allocation. Highbridge Principal Strategies, LLC is a subsidiary of Highbridge Capital Management, LLC, which itself is a subsidiary of JPMorgan Asset Management Holdings Inc. ("JPMAM"). JPMAM is a subsidiary of JPMorgan Chase & Co. KKR Credit Advisors (US) LLC is a wholly owned subsidiary of Kohlberg, Kravis, Roberts & Co., and Avenue Europe International Management is an affiliate of Avenue Capital Group. NextEra Energy Seabrook's international equity exposure is provided by the Dodge & Cox International Stock mutual fund. The Vanguard S&P 500 Index mutual fund provides the Municipal Joint Owners large-cap equity exposure; the Vanguard Midcap Index mutual fund provides mid- to small-cap equities for the Municipal Joint Owners; and the Dodge & Cox International Stock mutual fund is used for international equity for the Municipal Joint Owners.

INVESTMENT GUIDELINES

Investment Guidelines have been established, pursuant to the Master Trust Agreement, to control investment risk of the decommissioning funds while maximizing potential investment gains. Currently, the objectives of the current Investment Guidelines as approved by the State Treasurer are to:

- Preserve the purchasing power of principal by achieving investment earnings in excess of inflation,
- Earn a rate of return equal to or greater than the rate assumed for funding purposes,
- Employ multiple asset classes to allow for prudent diversification and the resultant lowering of return volatility, and
- Invest all assets so as to adhere to the prudent investor standard and to maintain the Fund's tax-qualified status, where appropriate.

The Guidelines are reviewed at least annually by the Investment Consultant and all revisions are approved by the Managing Agent and the State Treasurer.

ATTACHMENT C

LCG Associates Report with Funding Runs 1 through 10

Seabrook Station
Nuclear Decommissioning Financing Fund

Review of Funding Schedule and Investment Assumptions

May 2015

David R. Emerson, CFA, CAIA
Rowan Harmer
LCG Associates, Inc.
400 Galleria Parkway
Suite 1800
Atlanta, GA 30319
770-644-0100

Under the terms of the Seabrook Nuclear Decommissioning Financing Fund Master Trust Agreement, the investment consultant is responsible for developing recommendations for the assumptions for inflation and investment earnings to be used in the funding model schedules for the Seabrook Nuclear Decommissioning Trust. The funding schedules also utilize the estimates of decommissioning costs and cost escalation that have been developed by other parties and approved by the New Hampshire Nuclear Decommissioning Financing Committee ("NDFC" or "Committee"). This report presents LCG's analysis of the investment assumptions and documents changes made to the funding schedule. Assumptions regarding decommissioning costs and cost escalation rates were developed by TLG Services and Global Insight as detailed in the 2015 decommissioning cost update and are incorporated herein.

Investment Structure

The Nuclear Regulatory Commission ("NRC") requires the owner of a nuclear power plant to provide decommissioning funding assurance. One way is by accumulating in an external trust fund sufficient assets to pay for the eventual dismantlement of the plant. Seabrook's Trust Fund was first funded in 1990, shortly after the plant became operational. Since that time it has grown, through a combination of owner contributions and investment earnings, to $603.0 million as of 12/31/14. Together with the Escrow Accounts, the funds currently available for decommissioning total $634.0 million.

Because Seabrook has always had multiple owners, its investment structure is different than many other nuclear decommissioning trust funds. A major goal in developing the structure was to provide viable investment alternatives to Joint Owners with differing investment goals, risk tolerances, and tax situations. As a result, the structure is not unlike a 401(k) retirement plan where a variety of options are offered, and the Joint Owners can create their own portfolio from the various options.

At present, the Seabrook Joint Owners have seven investment funds (Funds 1A, 1B, 2, 3, 5, 6, and 7) from which to choose. Three of the funds (1B, 5, and 6) invest in equities, three of the funds (Funds 1A, 2 and 3) are invested in fixed income, and the last fund (Fund 7) invests in opportunistic strategies, which currently consists of direct lending funds. Two additional funds (1C and 4) are cash vehicles that are not utilized until just before decommissioning begins.

Three of the funds (1A, 1B, and 1C) are tax-qualified funds. Tax-qualified funds are separate taxable entities subject to a 20% federal tax rate. The remaining funds are Non-Qualified funds, where taxes flow through to the owner's corporate tax return. In the case of a corporation, this subjects earnings to federal taxes. Because of this tax treatment, the municipal owners (Hudson Light & Power Company, Massachusetts Municipal Wholesale Electric Company, and Taunton Municipal Lighting Plant) invest in only Non-Qualified funds to remain tax-exempt. In contrast, the sole corporate owner, NextEra Energy Seabrook, LLC ("NextEra"), has both Qualified and Non-Qualified investments, a result of its 2002 purchase of the interests of seven prior owners.

The current fund options are summarized in Exhibit 1.

Exhibit 1: Trust Structure

Trust	Fund	Asset Class	Allowable Investments
Qualified	1A	Fixed Income	Domestic and International Core debt obligations
	1B	Equities[1]	Domestic large, mid/small capitalization and international stocks
	1C	Cash	Liquid short-term investments, utilized only during decommissioning
Non-Qualified	2	Fixed Income	Domestic and International Core debt obligations
	3	Fixed Income	Domestic and International Core debt obligations
	4	Cash	Liquid short-term investments, utilized only during decommissioning
	5	Equities[1]	Domestic large, mid/small capitalization and international stocks
	6	Equities[1]	Domestic large, mid/small capitalization and international stocks
	7	Opportunistic	Private Capital

The Joint Owners decide annually how their contributions for the upcoming year will be invested among the available funds. With the 2002 update of the Investment Guidelines, approved by the State Treasurer, each joint owner may move up to 20% of their total Trust assets among the funds annually in order to rebalance individual investment portfolios in accordance with good financial management practices. The State Treasurer must still approve any reallocations in excess of the 20% limit.

NextEra's Qualified Trust holdings consist of domestic and international stocks and bonds, while domestic stocks (both large and mid/small), bonds, and opportunistic investments reside in the Non-Qualified Trust. All of the municipal owners now invest in Fund 6, a diversified portfolio of large and mid/small cap domestic equities and international equities and Fund 2, a fixed income account. As of 12/31/14, NextEra has committed $55 million of its Trust assets to the opportunistic asset class. Of that amount $35.6 million has been loaned and it is anticipated that the remaining approximately $19.4 million is expected to be loaned within the next 12 – 18 months.

In Docket No. NDFC 2003-1, the escrow funds were established as short-term investment vehicles to hold additional contributions as a funding assurance. The escrow funds provide a means of avoiding unnecessary over-funding of the Decommissioning Trust. At present, the prescribed investments are money market investments and all owners have chosen to invest their escrow amounts in a taxable money market fund.

In 2014, the New Hampshire State Treasurer approved changes to the Investment Guidelines that included the inclusion of more flexible guidelines for the fixed income funds. These changes, referenced in this report as "Core plus" removed the limit on BBB-rated securities and allowed for up to 10% in BB-rated securities. As of now, only NextEra has adopted these changes and is currently implementing the changes in Funds 1A and 3. Fund 2 will remain under similar restrictions to what was in place before these changes, with a few minor changes to further clarify limits. Fund 2's strategy is referenced as "Core" in this report.

[1] Currently subject to a 70% maximum allocation in each joint owner's portion of the Trust.

Current Trust and Escrow Status

The following table summarizes the year-end 2014 Trust and escrow balances and 2014 contributions based on the NDFC 2014-1 Final Report and Order:

Exhibit 2: Trust and Escrow Balances and 2014 Contributions

Fund	Investments	Year-End 2014 Balances ($ Millions)	(%)	2014 Contributions ($ Millions)
1A	Fixed Income	99.2	16.4	0.0
1B	Equities	100.7	16.7	0.0
2	Fixed Income	20.1	3.3	0.0
3	Fixed Income	43.1	7.1	0.0
5	Equities	271.0	44.9	0.0
6	Equities	33.3	5.5	0.0
7	Opportunistic	35.6	5.9	0.0
	Total Trust	603.0	100.0	0.0
	Escrow	31.1		0.75
	Total Including Escrow[2]	634.0		0.75

The Total Trust increased by $48.3 million in 2014, ending the year with a balance of $603.0 million. The increase was a result of investment gains less current expenses. The escrow account was valued at $31.1 million at year-end, a $746k increase from the prior year as a result of Joint Owner contributions and escrow returns. The Trust was approximately $6.2 million ahead of the $596.8 million balance projected in the funding schedule for 2014, approved by the Committee in Docket No. NDFC 2014-1.

Review of 2014 Market and Trust Performance

Despite bouts of volatility throughout the year, the domestic equity markets ended the year on a high note as stock indices registered strong fourth quarter and annual returns. Many major markets closed near record levels after reaching new all-time highs throughout the year. The S&P 500 Index returned +13.7% in 2014, representing the third consecutive year, and fifth out of the last six, that the return has eclipsed the +10% mark. After rebounding from a January slowed by a historically cold winter, equity markets experienced heightened volatility, but remained resilient through the latter stages of the year on the back of an accelerating U.S. economy, improving labor market, strong corporate earnings, and stock buyback activity. During the year, utilities outpaced the competition, returning +29% for the year. They were trailed by health care (+25.3%) and information technology (+20.1%). Energy was the only sector not to finish 2014 in the black, returning -7.8%. Small caps trailed large- and mid-cap stocks by a large margin for the year.

As a result of the strengthening dollar, international markets struggled to provide positive U.S.

[2] Assets may not add correctly due to rounding.

dollar returns due to a number of factors. The combination of a recovering U.S. economy and increasing economic and political risk in Eastern Europe and the Middle East sent many investors fleeing to the security of the U.S. dollar. The euro fell over 11% and the British pound fell over 6% to the dollar. In Japan, the easy-money policies of "Abenomics" continued, helping drive the yen down over 13% vs. the dollar. In addition, crises and continued violence in the Middle East and the potential for an Ebola pandemic, there was very little news to calm the international markets. In addition the continued decline in the prices of most commodities, particularly oil added to the fear of global deflation. The MSCI EAFE returned -4.9% for the year, while the MSCI Emerging Markets Index returned -2.2% for the year.

Better than expected real growth in the United States preserved the view that tightening by the U.S. Federal Reserve in mid-2015 could become a reality. As a result, short-dated Treasuries remained at elevated rates. The sharp fall in oil prices and the promise of more quantitative easing abroad, however, drove long-dated Treasury yields lower. The U.S. 10-year Treasury note yield ended the year at 2.17% — down approximately 87 bps from a year ago. The Barclays Aggregate Bond Index returned +6.0% for the year, while the Barclays U.S. Corporate High Yield Index returned +2.5% for the year.

The Seabrook Trust – which remains diversified in stocks, bonds and opportunistic investments – appreciated over the course of the year, generating a pre-tax return of +8.8%. On an after-tax basis, the Trust was up +8.6%. The Qualified equity Fund 1B returned +4.1%, led by domestic equity investments. The Qualified fixed income Fund 1A produced a +6.2% return pre-tax, but gave back an additional 0.6% for taxes. The Non-Qualified bond Funds 2 and 3 returned +6.5% and +6.0% respectively. Fund 5, NextEra Energy Seabrook's Non-Qualified domestic equity fund, returned +12.1% for the year. The municipal owners' Fund 6, which includes both domestic and international stocks, returned +12.6% for the year. While the contractual returns for the underlying loans for Fund 7 remains at 13.5% as shown in Exhibit 35, the actual return of the portfolio thus far is lower due to management fees representing a larger portion of the portfolio while capital is being drawn. As of 12/31/14, the internal rate of return (IRR) for the Opportunistic allocation was +9.8%. It is expected that the returns should continue to climb over the duration of the loans until achieving the average contractual return of 13.7%.

The year-end asset mix of the Trust was 67% equities, 27% fixed income, and 6% opportunistic. International stocks now constitute 11% of total Trust assets.

Review of Current Investment Return Assumptions

1. Executive Summary: Current Investment Return Assumptions

In the past two dockets, both the NDFC and LCG have established that a good starting point when considering the asset class return assumptions is to evaluate the return assumption for the total portfolio. LCG believes that this is a reasonable approach given the widely accepted use of the Prudent Investor standard which states that an investor should assess their portfolio based on the risk and return characteristics of the total portfolio rather than assess each investment on a stand-alone basis.

Using the current approved NDFC return assumptions and current total NDT asset allocation, the total return assumption is calculated to be 7.77%. If we normalize the asset allocation to the joint owner's combined target allocation, the total return assumption is 7.74%. For reference purposes, the total return established in last year's docket was 7.84%. These are set out in Exhibit 3.

Exhibit 3: Current NDFC FRO Portfolio Return Assumption

	Current Portfolio Weight	NDFC FRO Return Assumption	Target Portfolio Weight	NDFC FRO Return Assumption	12/31/13 Portfolio Weight	NDFC FRO Return Assumption
Equities	67%	8.5%	64.1%	8.5%	71%	8.5%
Fixed Income	27%	6.0%	26.8%	6.0%	25%	6.0%
Opportunistic	6%	7.5%	9.1%	7.5%	4%	7.5%
Total	100%	7.77%	100%	7.74%	100%	7.84%

With the total portfolio return established, we can then examine the three asset class return assumptions.

As a reminder, every year, the senior staff at LCG reviews the firm's internal projections for the next 30 years for various asset classes. To develop LCG's projections, the senior staff begins by compiling long-term nominal and real returns beginning as early as 1926 for each of the major asset classes as well as inflation by using data from Ibbotson. LCG then evaluates more recent-term data, starting in 1980, to better understand how modern capital markets have performed. We use the more recent data to determine expected future standard deviations. Once we have a solid base of prior-period market data, we begin to formulate opinions on future long-term returns. LCG's current 30-year return expectations are as follows:

Exhibit 4: LCG's 30 Year Return Projections as of 1/31/15
(Gross of fee, Pre-Tax Returns %)

Asset Class	Nominal	Real[3]
Large Cap US Equities	9.5	6.3
Small/Mid Cap Equities	10.5	7.3
All Cap US Equities	9.7	6.5
Developed International Equities	9.5	6.3
Emerging Market Equities	11.0	7.7
Non-US Equities (Developed and EM)	9.7	6.5
Blended Equities (All Cap and Non-US)	9.7	6.5
Core Fixed Income	5.5	2.4
Core Plus Fixed Income	5.7	2.6
Opportunistic	9.2	6.0
Cash	3.5	0.5
Inflation	3.0	n/a

Of course, for Seabrook Station, we are making assumptions for an 86-year time period rather than the 30-year time-horizon used for the LCG long-term return assumptions. There is just enough historical data to justify the current return assumptions for that long of a period. Furthermore, the annual reset of contributions is designed to ensure that the Joint Owners' contribution levels are set to achieve the targeted balance by the date those funds will be needed to decommission Seabrook Station. This annual reset, which reflects the prior year's market performance, is a short-term adjustment and is independent of the long-term earnings assumptions for the Trust, which are intended to be achieved over many decades.

Regarding equities, LCG believes that the NDFC approved return assumption is too low. Rather than the 8.5% approved by the Committee, all long-term data continues to demonstrate that 9.5% is a more reasonable long term return assumption for equities. While the 8.5% blended equity assumption is not unreasonable, it is in our view on the very low end of a reasonable range of returns. Put differently, the upper end of the supportable range for equities held for the expected 86-year duration is 18.3%, (i.e., materially greater than the 10.1% average return of large cap stocks since 1926), but we would not recommend that as the assumption for equities in the Trust because that would be too much on the aggressive end of the reasonable range. For similar reasons, we would not recommend 8.5% as it is overly conservative, but particularly so given the long-duration of the Trust, the ability of the Committee to analyze and then re-set contributions annually, and the fact that the equities in the Trust are well-diversified to include mid- and small-

[3] Real return = (1+nominal return/1+inflation) – 1 and represents the excess return over and above inflation.

cap and international equities, with enhanced earnings potential.

As to the latter, the prior consultant, Prime Buchholz's comments when these additional investments were added to the Trust in 2006 remain true: history suggests that the return from the small-, mid-cap and international investments will be higher than domestic equities. When initially introduced into the Trust, the earnings assumption approved for these investments was 10.25% and 10.00%, respectively, leading to an aggregate blended equity return of 9.8% (NDFC Docket No. 2006-1 at 10-11). The 2008 market meltdown led to appropriate caution, but the post-downturn earnings were very robust (averaging 21.5% since the market trough in 2009), just as post-downturn returns have been historically. The underlying fact that supported higher returns for these equities remain today as the S&P continues to trade at a discount relative to the long term historical average[4]. For these reasons, LCG recommends an earnings assumption of 9.5% for these investments, 1%, or 100 basis points higher than the current approved assumption of 8.5%.

Further, LCG believes that the return assumption of 7.5% for the opportunistic asset class remains conservative and appropriate. The portfolio has continued to perform ahead of expectations, and currently has a contractual yield of 13.5%. As we discussed during the last hearing, the opportunistic allocation has not met the 10% mark assumed in the funding schedules. This is due in large part to the fact that the equity markets have outperformed expectations. While that is very positive for the Trust balance, it means that the dollar value of 10% of the Trust is a much higher number than expected. As an example, in 2012, the first round of commitments were made at \$35 million, or 10% of NextEra’s \$370 million portion of the Trust. Today, NextEra’s portion of the trust is valued at \$550 million. NextEra has made two additional commitments over the past few years to achieve a 10% or \$55 million commitment level. While the additional dollars are committed, they have not yet been drawn by the lending managers. The good news is that the combination of better than expected contractual yields from the lending managers, and better than expected equity returns have led to a better than expected total fund balance. That is reflected in the fact that the actual portfolio return of the Trust, 8.88%, has exceeded expectations, 7.84%, by more than a full percentage point. We are confident that the opportunistic portfolio will eventually reach the full target allocation in the next 18 months, assuming a more normalized return environment.

The Committee has the discretion to determine what it feels are appropriate assumptions for the Trust and Escrow. LCG offers these comments for purposes of informing the Committee what it would recommend for assumptions on each of the investment classes as well as for the overall Trust portfolio.

While LCG would recommend a higher equity earnings assumption, for the purposes of this report, LCG will be assessing all of the long-term return assumptions that the Committee has currently approved (8.5% on all equities, 6.0% on fixed income and 7.5% (net) on opportunistic), as well as 9.5% on all equities.

[4] The S&P P/E ratio was 18.2x as of 12/31/14 vs. the 20 year average P/E ratio of 19.2x.

2. Background: Current Investment Return Assumptions for the Trust

Each year the investment assumptions are reviewed to ensure that they continue to represent reasonable expectations for the future. The review compares the assumptions to the historical returns on market indices. The indices are selected to be representative of each fund's allowed investments, as described in Seabrook's Investment Guidelines. The comparisons emphasize performance over long time periods, consistent with Seabrook's long remaining expected life.

The current approved inflation and investment return assumptions are shown in the following table:

Exhibit 5: Current Approved Assumptions for the Trust
(Pre-Tax, before fee Returns %)

Fund	Investments	Nominal	Real[5]
1A	Core Plus Bonds	6.0	2.9
1B	International Stocks	8.5	5.3
1C	Cash/Short-Term	3.5	0.5
2	Core Bonds	6.0	2.9
3	Core Plus Bonds	6.0	2.9
4	Cash/Short-Term	3.5	0.5
5	Domestic Stocks	8.5	5.3
6	Diversified Stocks	8.5	5.3
7	Opportunistic	7.5 (net of fees)	4.4(net of fees)
Inflation		3.0	

In 2014, Funds 1A and 3 changed from Core Bonds to Core Plus Bonds per the approved change to the Investment Guidelines. LCG is maintaining the same return assumption despite a higher expected return from the Core Plus strategy.

3. Total Portfolio Return Assumption

As discussed in the Executive Summary (Section 1), LCG agrees with the NDFC that the most important return assumption is that of the total portfolio. To derive this return, we of course must establish appropriate return assumptions for the various asset classes, as we have done in Sections 4 – 6. With these approved returns, we can then revisit Exhibit 3, where we have established that the total portfolio return is expected to be in a range of 7.74% to 7.84% depending on how we view the asset allocation.

As we have done for each of the asset classes, we can also assess the percentage of times in history that a portfolio with a similar asset allocation has met or exceeded this range of expected returns for the total portfolio. As seen in Exhibit 6, a portfolio with a similar asset allocation has averaged from 11.2% to 11.9% depending on the rolling time period, using index data for the longest common time period, and a static return of 7.5% for the opportunistic allocation. As

[5] Real return = (1+nominal return/1+inflation) – 1 and represents the excess return over and above inflation.

reflected in Exhibits 7 and 8 below, if we look at the same data over rolling 20-year periods, the return estimates (7.74% and 7.84%) have been met between 99% and 100% of the time (Exhibit 7 & 8). Said differently, the data reflects that historical returns with asset allocations similar to the Trust have returned at least 7.74% 100% of the time, and returned at least 7.84% in all but one observation (meaning 99% of the time the target was met). As such, LCG believes that a total return assumption of somewhere between 7.74% and 7.84% is conservative in the sense that historical data suggests meeting those targets is a virtual certainty.

Exhibit 6: Summary of Total Portfolio Rolling Returns (1/1976 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr	Current Expected Return Assumption
Max	50.69%	24.50%	17.21%	15.55%	
Average	11.86%	11.20%	11.31%	11.43%	7.74% - 7.84%
Minimum	-26.96%	-1.35%	2.46%	7.75%	

Source: Ibbotson

Exhibit 7: Percentage of observations above 7.74% (1/1976 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 7.74%	67%	74%	79%	100%
Number of Observations	153	137	117	77

Source: Ibbotson

Exhibit 8: Percentage of observations above 7.84% (1/1976 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 7.84%	67%	74%	79%	99%
Number of Observations	149	133	113	73

Source: Ibbotson

4. Equity Earnings Assumption – Blended Equities (8.5%)

A. Review of Historical Returns Demonstrates the 8.5% Earnings Assumption is Conservative for This Asset Class

The data in the following sections supports the conclusion that the 8.5% equity return assumption is low relative to historical averages, especially when viewed in the context of longer (20- and 30-year) holding periods. At the same time, the near-term results have varied greatly from the long-term assumption used in the modeling for equities. It is important to recognize that the shorter-term results are largely influenced by the results in 2008, which produced the worst equity returns in over 70 years, as well as the 21.9% annualized return that has been achieved in the S&P since the financial crisis trough in March of 2009. These swings have been greater than historical averages; however, it also shows that despite one of the largest market drops in history, longer-term trends continue to drive the market as seen by the subsequent recovery. As noted previously, the return assumption is designed to be a long-term estimate over the funding life, and variation from those estimates on a year-to-year basis is to be expected.

LCG recognizes the Committee's desire to be conservative in assigning return assumptions to the various asset classes. However, we believe that the reduction in the long-term equity return assumptions from 9.5% to 8.5% is overly conservative and unwarranted over the long-term based on long-term historical averages. We recognize that no one can predict returns from year to year and as such, believe that long-term return assumptions should be based on long-term historical averages. Given that the market has behaved as it has in any other prior time of stress, we do not believe that we should deviate from historical averages, and in fact have introduced a degree of conservatism in the assumptions given that the previous 9.5% assumption is below the historical long-term average. What follows is our analysis regarding the long-term earnings assumption.

B. Analysis of Equity Returns

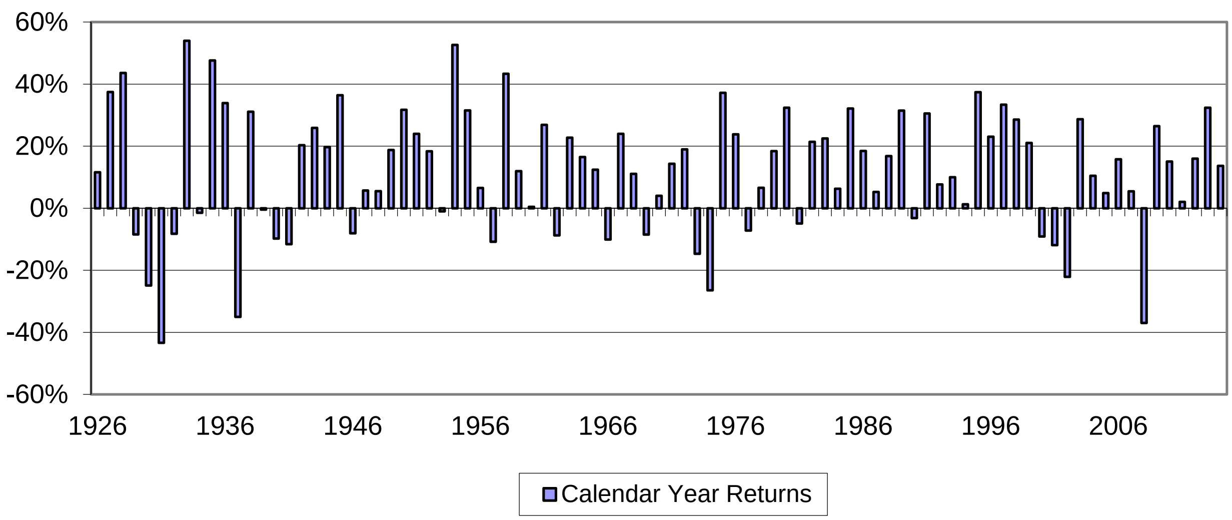
The equity markets over short periods of time are prone to volatility, which makes predicting short-term returns difficult. By contrast, short-term volatility is smoothed out when investments are held for longer periods, making returns over longer periods far more predictable. Fortunately for the Committee, the Decommissioning Trust is anticipated to be in place for many decades. Thus, while certainly capturing the attention of all investors, short-term market under- or over-performance is largely irrelevant when considering how the Trust is expected to perform over its 86 year expected duration. Over that long duration, the funding schedules assume that equities will achieve average nominal returns of 8.5%. As will be demonstrated below, based on our independent review and analysis, the 8.5% return appears to be an overly conservative assumption. Our analysis will show that 9.5% is still a reasonable long-term assumption. This conclusion was initially established by the previous consultant, but we have performed our own independent analyses and agree with their findings.

In reaching this conclusion, LCG viewed historical equity returns from several data points, including periods following significant market extremes, as well as equity returns over long durations. In each instance and with each analysis, the data suggest that the 9.5% equity earnings assumption for the equity investments is reasonable considering the duration of the Trust. While past performance is not a guarantee of future results and there is no guarantee the projections discussed herein will be achieved, together, these data and analyses support the expectation that the Trust investments will achieve this level of performance over the many decades over which the dollars are invested.

C. Large Cap U.S. Equities

Since 1926, the average calendar year return of large cap equities is 12.1%. The current approved return assumption for this asset class of 8.5% is conservative relative to the historical returns. Importantly the data used in these analyses includes 17 bear markets. As summarized on the following pages, there is high variability in the calendar year data, with a range of returns from gains of over 50% to losses of more than 40%. Through all of this volatility, including 24 negative return years, the compound rate of return is 10.1%.

Exhibit 9: Large Cap Equities Calendar Year Returns
(1/1926 – 12/2014)

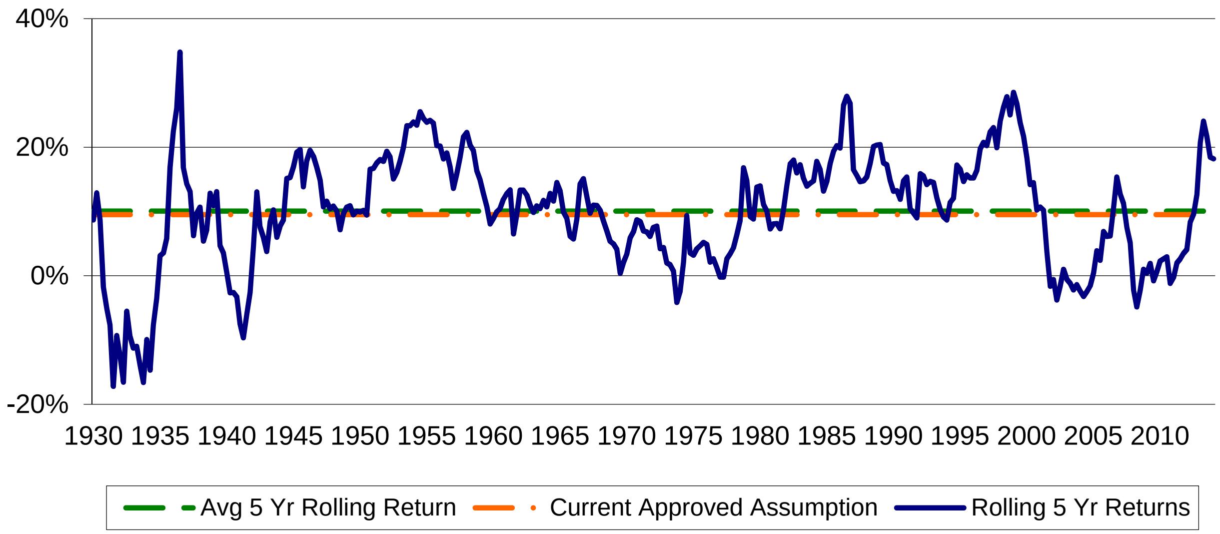


Source: Ibbotson

Looking at returns for holding periods longer than one year, such as over rolling[6] five-year periods, large cap equities have generated an average return of 10.0% with positive returns being generated in 86% of the measured periods. The exhibit below shows that historically, periods of underperformance are typically followed by periods of outperformance, and this has happened again, with the market up 21.9% per year since March 2009.

[6] Rolling returns: Returns for the defined length (one, three, five, etc. years) over monthly or quarterly time periods. As an example, Exhibit 10 shows rolling five year returns as of every quarter since the early 1930s. These returns are then plotted on a line graph to show how they move over time.

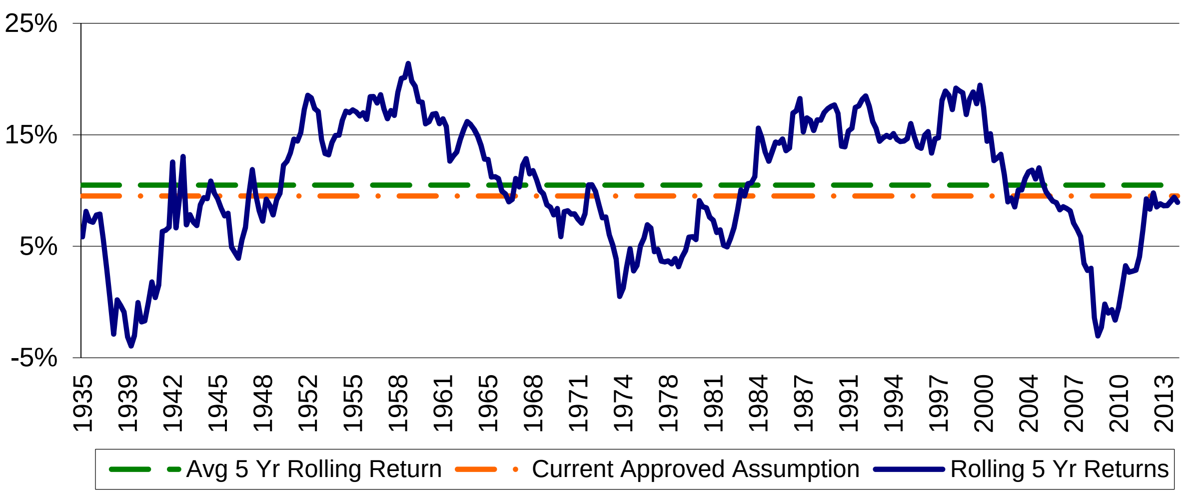
Exhibit 10: Large Cap Equities Rolling 5-Year Returns
(1/1926 – 12/2014)



Source: Ibbotson

Negative 10-year holding period returns for large cap equities are rare; in fact, they have only occurred in 6% of the observations (18 of 317), the most notably of which historically occurred in the 1930s and late 2000s. Since 1926, the average 10-Year rolling return for large cap equities is 10.5%.

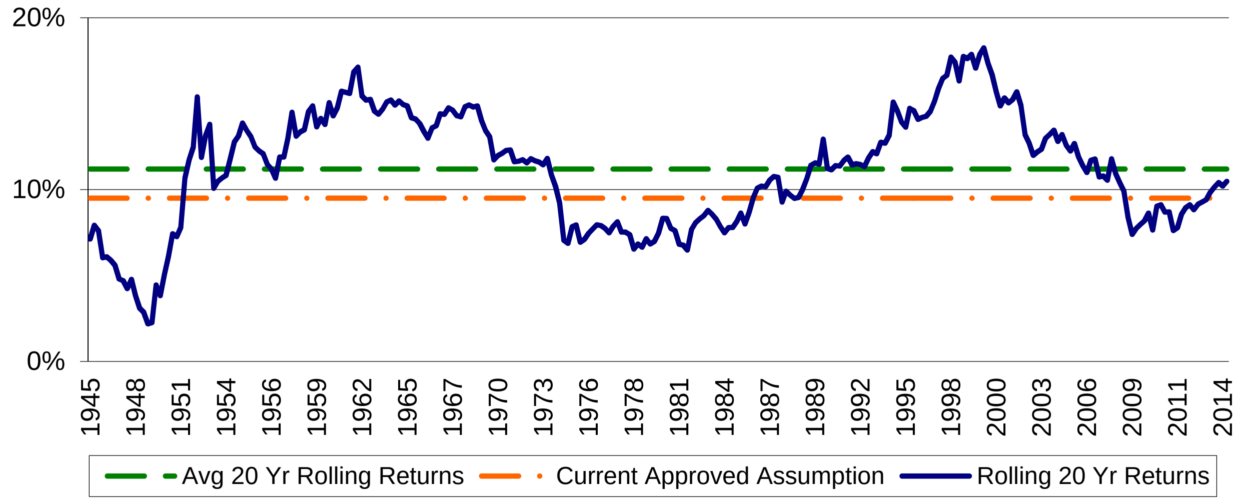
Exhibit 11: Large Cap Equities Rolling 10-Year Returns
(1/1926 – 12/2014)



Source: Ibbotson

When the return analysis is extended to 20-year holding periods, there are no negative observations. The average rolling 20-year return since 1926 is 11.2%. The worst 20-year return for large cap equities came during the 20 years preceding 1949 when the market returned 2.2%. This time period included both the Great Depression and World War II.

Exhibit 12: Large Cap Equities Rolling 20-Year Returns (1/1926 – 12/2014)



Source: Ibbotson

Exhibit 13: Summary of Large Cap Equities Rolling Returns (1/1926 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr	Current Approved Equity Return Assumptions
Max	162.88%	34.78%	21.39%	18.25%	
Average	12.68%	10.04%	10.48%	11.19%	8.50%
Minimum	-67.57%	-17.20%	-3.94%	2.19%	

Source: Ibbotson

To further assess the reasonableness of the current equity assumption, LCG analyzed the percentage of the observations where large cap equities returns exceeded the equity assumption of 8.5% for different holding periods.

Exhibit 14: Percentage of observations above 8.5%
(1/1926 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr	30 Yr
% above 8.5%	60%	62%	63%	74%	97%
Number of Observations	353	337	317	277	237

Source: Ibbotson

This data supports the likelihood (97% historically) that the large cap equities in the Trust will surpass the 8.5% equity return over the long period over which the dollars in the Trust are invested. It bears repeating that these results do not reflect only high points in the market, but in fact, take account of significant historic market volatility. Thus, even assuming similar market volatility going forward, there is a high probability that the equity investments in the Trust will surpass the 8.5% assumed rate of return over the life of the Trust.

As reflected below in Exhibit 15, the data also supports the likelihood (92% historically) that the large cap equities in the Trust will surpass the previous long-term equity return assumption of 9.5%.

Exhibit 15: Percentage of observations above 9.5%
(1/1926 – 12/2014)

`	1 Yr	5 Yr	10 Yr	20 Yr	30 Yr
% above 9.5%	58%	57%	54%	67%	92%
Number of Observations	353	337	317	277	237

Source: Ibbotson

Given that the percentages increase the longer duration observed, it is reasonable to assume that the percentage likelihood would grow materially over the much longer (86-year) duration of the Trust investments.

D. Small and Mid-Cap U.S. Equities

Small and mid-capitalization equities are components of the equity allocation. Since 1979[7], the average calendar year return for small and mid-cap stocks is 14.4%, as measured by the Russell 2500 index. As illustrated in Exhibit 13, observed longer term performance is significantly above the current approved equity return assumption of 8.5%. The Russell 2500 has an average 10 year return of 11.8% and an average 20 year return of 12.0% since its inception in 1979. The Index generated a return above the equity return assumption in 83% and 98% of those periods,

[7] Data for small- and mid-cap equities is not available prior to 1979.

respectively. With consideration to the Trust's exposure to small and mid-cap stocks, we continue to believe that the current blended equity return assumption of 8.5% is overly conservative.

Exhibit 16: Summary of Russell 2500 Index Rolling Returns (1/1979 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr	Current Approved Equity Return Assumption
Max	90.18%	27.62%	19.01%	16.87%	
Average	14.69%	12.04%	11.78%	12.00%	8.50%
Minimum	-43.81%	-5.99%	2.64%	7.78%	

Source: Bloomberg

Exhibit 17: Percentage of observations above 8.5% (1/1979 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 8.5%	65%	73%	83%	98%
Number of Observations	421	373	313	193

Source: Bloomberg

As shown below in Exhibit 18, historical data suggests that there is a 93% probability of surpassing a 9.5% return assumption for small to mid-capitalization equities.

Exhibit 18: Percentage of observations above 9.5% (1/1979 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 9.5%	63%	67%	79%	93%
Number of Observations	421	373	313	193

Source: Bloomberg

Again, given that the longest duration analyzed (20 years) is materially shorter than the 86-year duration of the Trust investments, we would expect the probability of exceeding the 9.5% target to be greater than 93%.

E. Developed International and Emerging Market Equities

International equities are also components of the equity allocation. International Equities can be separated into two groups: Developed Markets and Emerging Markets. Since 1970[8], the average calendar year return for international developed market equities is 11.8%, as measured by the MSCI EAFE Index. As illustrated in Exhibit 19, longer term performance is significantly above the current approved blended equity return assumption of 8.5%. The MSCI EAFE Index has an average 20 year return of 10.3% since its inception in 1970. Additionally, the percentage of observations whereby developed international markets met or exceeded 8.5% is 66% for the rolling 20 year periods (Exhibit 20) and met or exceeded 9.5% is 64% (Exhibit 21).

Exhibit 19: Summary of MSCI EAFE Index Rolling Returns (1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr	Current Approved Equity Return Assumption
Max	103.09%	42.02%	24.41%	15.88%	
Average	11.77%	9.74%	10.21%	10.25%	8.50%
Minimum	-50.23%	-7.34%	-1.04%	1.94%	

Source: Bloomberg

Exhibit 20: Percentage of observations above 8.5% (1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 8.5%	56%	50%	46%	66%
Number of Observations	529	481	421	301

Source: Bloomberg

[8] Data for International equities is not available prior to 1970.

Exhibit 21: Percentage of observations above 9.5%
(1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 9.5%	54%	42%	41%	64%
Number of Observations	529	481	421	301

Source: Bloomberg

Since 1970[9], the average calendar year return for emerging market stocks is 16.5%, as measured by the MSCI EM Index. The MSCI EM Index has an average 10 year return of 12.0% since 1970. As illustrated in Exhibit 22, longer term performance has significantly exceeded the current approved blended equity return assumption of 8.5%.

Exhibit 22: Summary of MSCI Emerging Markets Index Rolling Returns
(1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr	Current Approved Equity Return Assumption
Max	170.00%	40.31%	24.15%	
Average	16.52%	12.42%	12.00%	8.50%
Minimum	-56.42%	-9.54%	0.10%	

Source: Bloomberg

Exhibit 23: Percentage of observations above 8.5%
(1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr
% above 8.5%	57%	65%	73%
Number of Observations	529	481	421

Source: Bloomberg

[9] Data for Emerging Markets equities is not available prior to 1970.

Exhibit 24: Percentage of observations above 9.5%
(1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr
% above 9.5%	55%	64%	67%
Number of Observations	529	481	421

Source: Bloomberg

With consideration to the exposure of the Trust to international developed and emerging market equities, we believe that there is strong validation that the actual returns will meet or exceed the blended equity return assumption of 8.5% as well as 9.5%.

F. Blended Equity Portfolio

Given that the equity allocation is comprised of U.S. large cap, U.S. small cap, and International (developed and emerging) equities, LCG thinks that it is prudent to evaluate the long-term equity return assumptions in the context of a blended equity portfolio. Currently, the equity allocation of the Seabrook Trust is comprised of 63% large cap equities, 20% small and mid-cap equities, and 16% International equities.

To evaluate the most relevant historical data points, we substituted the Ibbotson Small Company historical data prior to 1979 (inception date) for the Russell 2500 (which was used in a previous analysis). This allowed us to analyze long-term rolling returns for a blended portfolio going back to 1926. Since the International equity market track record begins in 1970, we first evaluated a portfolio of domestic equities split similar to the Seabrook Trust today (76% large cap and 24% small cap). The average rolling 20 year return for the blended domestic equity portfolio is 12.2% since 1926. This analysis illustrates that a blended portfolio of US equities, in proportions similar to the Trust today, exceeds the current approved 8.5% return assumption 91% of the time over rolling 20 year periods. This same blended portfolio surpasses the previous return assumption of 9.5% 80% of the time, leading to the conclusion that the 9.5% return assumption is still nearly as likely to be achieved based on historical data.

Exhibit 25: Percentage of observations above 8.5%
(1/1926 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 8.5%	61%	67%	73%	91%
Number of Observations	353	337	317	277

Source: Bloomberg

Exhibit 26: Percentage of observations above 9.5%
(1/1926 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 9.5%	59%	63%	68%	80%
Number of Observations	353	337	317	277

Source: Bloomberg

LCG also evaluated a blended portfolio including International equities, whose data begins in 1970. For this analysis we blended historical returns of U.S. large cap, U.S. small cap, and International equities in the same proportions that comprise the Seabrook Trust's equity allocation. Currently, the equity allocation of the Seabrook Trust is comprised of 63% large cap equities, 20% small and mid-cap equities, and 16% international equities. This analysis illustrates that a blended portfolio of U.S. and International equities, in proportions similar to the Trust today, exceeds the 8.5% return assumption 92% of the time over rolling 20 year periods. Said differently, 8% of the historical 20 year periods were less than 8.5%. If we look at the best 8% of the data, this would result in a 16.6% return. Just as we would never recommend a 16.6% return as that is overly aggressive, we believe that the bottom 8% of the results is overly conservative. Both numbers represent almost two standard deviations from the mean. To find more middle ground, we see that 9.5% is still conservative, but only represents 1.5 standard deviations from the mean, being achieved 81% of the time.

Exhibit 27: Percentage of observations above 8.5%
(1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 8.5%	64%	65%	76%	92%
Number of Observations	177	161	141	101

Source: Bloomberg

Exhibit 28: Percentage of observations above 9.5%
(1/1970 – 12/2014)

	1 Yr	5 Yr	10 Yr	20 Yr
% above 9.5%	63%	62%	70%	81%
Number of Observations	177	161	141	101

Source: Bloomberg

G. Equity Return - Conclusion

All of this data suggests that a 9.5% return assumption is a reasonable long term assumption while still being conservative vis-à-vis historically realized returns and that the current approved return assumption of 8.5% for equities is at the very low end of a reasonable range of returns. Thus, given the long-duration of the Trust, the annual contribution re-set, and the fact that the equities in the Trust are well-diversified among large-cap, small and mid- cap U.S. equities and international equities, that provide enhanced earnings potential, we recommend a 9.5% blended equity return assumption.

5. Fixed Income Earnings Assumption - Core and Core Plus (6.0%)

A. Introduction to Core and Core Plus Bonds

As previously mentioned, the New Hampshire State Treasurer approved new Investment Guidelines in 2014 that allowed for greater flexibility in the management of the fixed income assets. The primary change to these guidelines is the delineation between Core and Core Plus. The Core guidelines are similar to the prior guidelines for all of fixed income with the exception of a few additional clarifying constraints. The Core Plus guidelines remove the limitation on BBB-rated bonds, and allow for up to 10% in BB-rated bonds or bank loans. Currently, only NextEra has adopted these guidelines for Funds 1A and 3.

B. Review of Historical Returns Demonstrates the 6.0% Earnings Assumption is Reasonable for This Asset Class

The data in the following sections indicates that the 6% fixed income return assumption is reasonable, especially when viewed over longer term holding periods. The near-term historical results have been higher than historical averages due to generally declining interest rates which provides for a favorable environment for fixed income investments. This reversed in 2013 as interest rates began to rise.

LCG recognizes the fact that interest rates are still at historically low levels and that rates may remain low or rise over the next few years. While it is easier to assess a long-term return assumption for the bond market because of the income component of the total return, doing so for the shorter-term is much more difficult. Given the possibility of higher rates in the future, we do have a historical period of rising rates to reference. That period was from 1977 to 1981 where bond markets weathered a substantial increase in rates, yet during that time the Barclays Aggregate still averaged a 3.1% return. And more importantly, over the history of the Barclays Aggregate Index, fixed income has generated an average return of 8.4%.

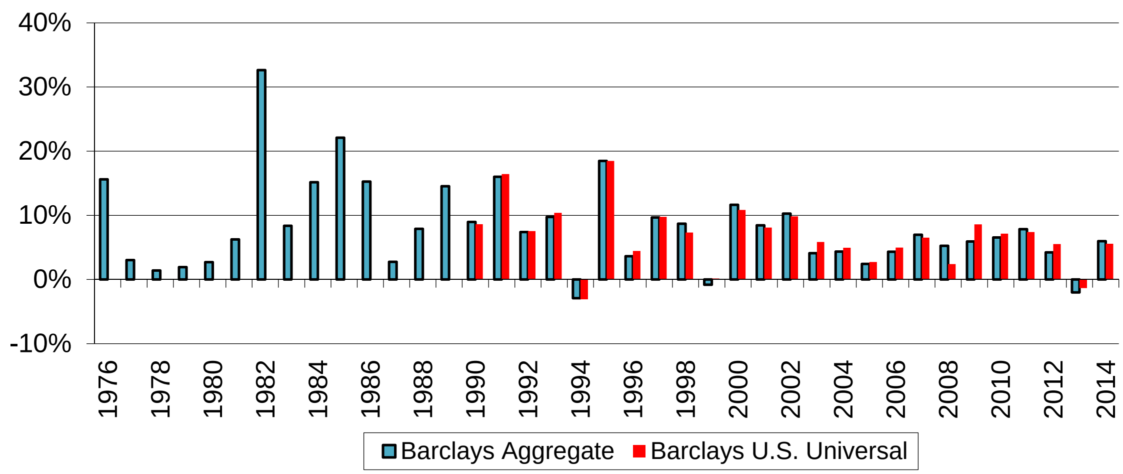
While LCG has a long-term return assumption of 5.5% for core bonds and 5.7% for core plus bonds, this assumption is for 30 years, not the 86-year time horizon for Seabrook Station. LCG's long-term return increased from 5.2% at the start of 2014 to recognize that some of the rise in interest rates has already occurred. Thus, while we believe that the next few years may see lower returns in fixed income, over a long-term horizon such as Seabrook's 86 years, based on historical precedent, we expect returns to meet or exceed the 6.0% return assumption.

C. Analysis of Barclays U.S. Universal Returns

For purposes of this analysis, we used data from the Barclays Aggregate Index ("Core") and the Barclays U.S. Universal Index ("Core Plus"). Unfortunately, the inception date of the Barclays U.S. Universal Index is January 1, 1990, so the data set is not quite as robust.

As summarized on the following pages, there is some variability in the calendar year data of the fixed income benchmarks, with a range of returns from over 35.2% to a loss of 9.2%. Despite this volatility, the compound rate of return is approximately 8.0% for both indices.

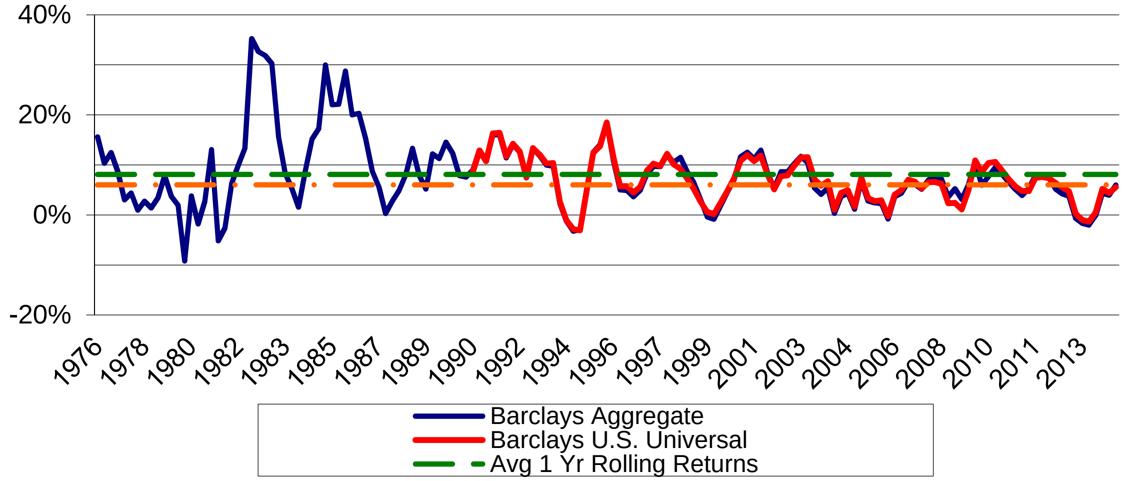
Exhibit 29: Fixed Income Calendar Year Returns
(1/1976 – 12/2014)



Source: Barclays Capital

To assess the current 6.0% assumption, we evaluated the Fixed Income Benchmarks on a rolling basis. Over the history of the index, including the rising rate environment of 1977-1981, the indices have averaged 8.1% and 8.2% (Core and Core Plus). On a rolling one-year basis, 94% of the total observations have yielded positive returns.

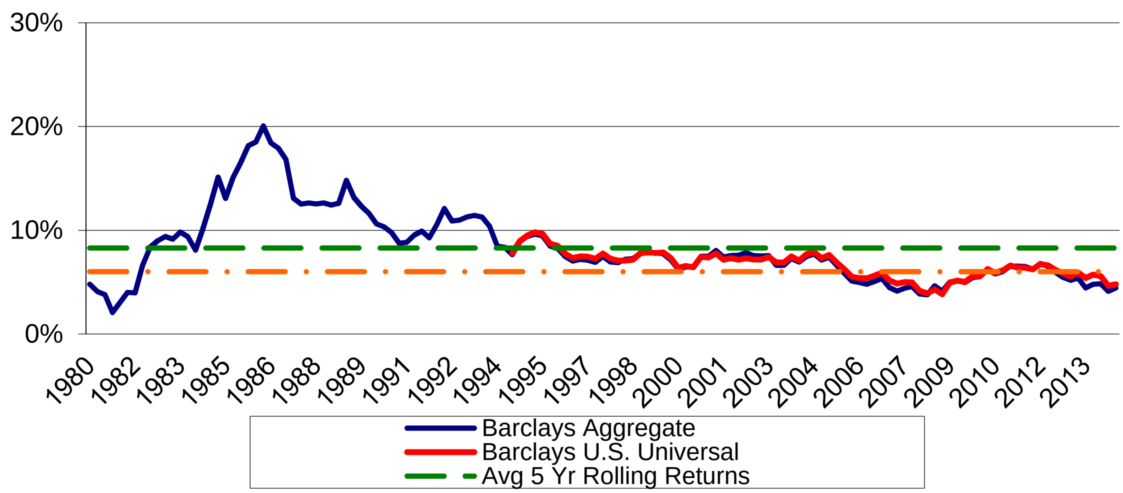
Exhibit 30: Fixed Income Rolling 1-Year Returns
(1/1976 – 12/2014)



Source: Barclays Capital

Looking at longer term holding periods, such as rolling 5-year periods, the fixed income benchmarks have generated an average return of 8.3% and 8.4% respectively. The indices have generated a positive return 100% of the time, with a maximum return of 20.1% and a minimum return of 2.1%.

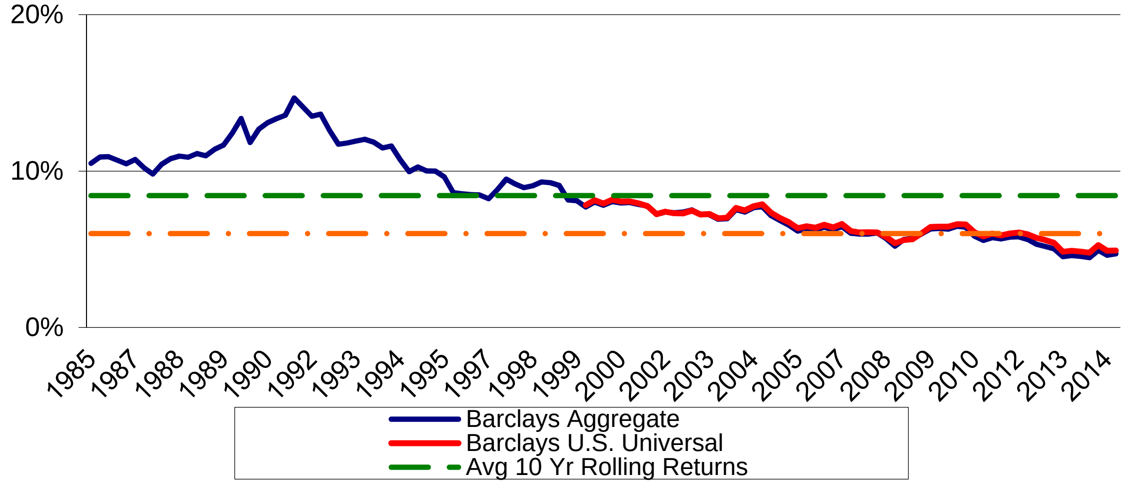
Exhibit 31: Fixed Income Rolling 5-Year Returns
(1/1976 – 12/2014)



Source: Barclays Capital

An evaluation of the fixed income benchmarks over 10–year rolling periods yields similar results. Both indices generated positive results in 100% of the observations, with an average return of 8.6% and 8.7% respectively. Over rolling 10-year windows, the fixed income benchmark had a maximum return of 14.7% and a minimum return of 4.5% and 4.8% respectively.

Exhibit 32: Fixed Income Rolling 10-Year Returns (1/1976 – 12/2014)



Source: Barclays Capital

Exhibit 33: Summary of U.S. Fixed Income Rolling Returns (1/1976 – 12/2014)

	1 Yr		5 Yr		10 Yr		Current Approved Fixed Income Return Assumption
	Core	Core Plus	Core	Core Plus	Core	Core Plus	
Max	35.21%	35.21%	20.06%	20.06%	14.68%	14.68%	
Average	8.07%	8.19%	8.29%	8.39%	8.49%	8.59%	6.00%
Minimum	-9.20%	-9.20%	2.07%	2.07%	4.46%	4.78%	

Source: Barclays Capital
Note: Core Plus is composed of the Barclays Aggregate Bond Index from inception to 12/31/1989 and the Barclays U.S. Universal Index from 1/1/1990 to present.

To further assess the reasonableness of the current long-term fixed income assumption, LCG analyzed the percentage of the time that the U.S. Fixed Income Benchmarks exceeded the fixed income assumption of 6.0% for different holding periods.

Exhibit 34: Percentage of observations above 6.0%
(1/1976 – 12/2014)

	1 Yr		5 Yr		10 Yr	
	Core	Core Plus	Core	Core Plus	Core	Core Plus
% above 6.0%	56%	58%	74%	75%	79%	84%
Number of Observations	153	153	137	137	116	116

Source: Barclays Capital
Note: Core Plus is composed of the Barclays Aggregate Bond Index from inception to 12/31/1989 and the Barclays U.S. Universal Index from 1/1/1990 to present.

This data supports the likelihood (79% and 84% historically) that the fixed income investments in the Trust will achieve the 6.0% return over the long (86-year) period over which the dollars in the Trust are invested.

6. Opportunistic Earnings Assumption

A. Review of Underlying Contractual Return Demonstrates the 7.5% Earnings Assumption is Reasonable for This Asset Class

Opportunistic strategies arise when there is a dislocation in the economy and/or the markets that present investment opportunities with the potential for outsized returns that would not be otherwise available. There are a variety of different types of opportunistic strategies, and the Joint Owners are currently allowed to invest in private debt and equity strategies. Currently, NextEra is the only Joint Owner invested in the Opportunistic asset class, and specifically private debt strategy known as direct lending.

As discussed in prior filings and hearings, there is not enough historical data to adequately extrapolate past performance into the future. However, one of the unique characteristics of direct lending is that the contractual return of the portfolio is known. As of 12/31/14, the portfolio consisting of two managers was projected to return 13.51% based on the portfolio's aggregate current contractual terms (Exhibit 35). The contractual return represents the weighted aggregate of the contractual returns of the underlying loans plus a moderate amount of leverage minus the investment management fees. Because the loan terms are contractual, we know the expected return of the portfolio.

Exhibit 35: Summary of Fund 7 Direct Lending Portfolio as of 12/31/14[10]

Spread Above Libor	7.61%
Minimum Contractual Return	8.80%
Other Fees	2.19%
Levered Total Return	17.59%
Management Fees	-1.70%
Carried Interest Fees	-2.38%
Net Return	**13.51%**

While we know the contractual return for the portfolio of loans, we still have to make an assumption of the potential loss rate for the loans. To make this assumption, we can expand the universe of examined loans to include all first lien bank debt, which according to data obtained from JP Morgan, experienced an average default rate and recovery rate from 1998 – 2014 of

[10] Definitions

LIBOR: London Interbank Offered Rate; an industry standard floating interest rate used for loans.
Spread above LIBOR: The loans pay a spread above the floating LIBOR rate. This is a premium to compensate for credit risk.
LIBOR Floor: Minimum LIBOR rate. If LIBOR is below this rate, then the LIBOR Floor will be the new LIBOR rate.
Minimum Contractual Return: Minimum return expected which is determined by the Spread above LIBOR and the contractual LIBOR Floor applicable to each loan.

Other Fees: Original Issue Discount and Call Protection Fees.
Original Issue Discount (OID): The discount from par value at the time that the loan is issued. This is a form of prepaid interest to help buy down the spread above LIBOR.

Call Protection Fees: Prepayment penalty fees paid by the borrower should the loan be paid early.
Levered Total Return: This is the sum of the Minimum Contractual Return and Other Fees with a moderate amount of leverage applied by each manager, less the average leverage cost of 2.25%.

Management Fees: Annual management fee paid by investors to the investment managers.
Carried Interest Fees: Incentive fees for the manager for exceeding the return of principal plus a hurdle rate net of management fees.
Hurdle Rate: Minimum rate of return, net of management fees that the manager must earn before collecting incentive fees.
Total Return: Expected return, net of management and incentive fees, assuming no credit losses.
Default Rate: The percentage of loans that fail to pay their contractual obligations and/or trip a loan covenant.
Recovery Rate: Once a loan has gone into default, the percentage of principal that is successfully recovered by the lender.

3.4% and 69.1% respectively. This equates to an expected loss rate of 1.05%[11]. This data has been updated since we underwrote the opportunistic investments (as you may recall, prior data reflected an assumed loss rate of 0.6%). The actual loss rate of the NextEra portfolio is 0.0% as no loans have defaulted. Using this updated expected loss rate of 1.05%, we calculate a total expected return of over 12%[12] versus the current approved assumption of 7.5%. As stated above, the expected loss rate is based on industry averages. While LCG believes that 7.5% is an overly conservative assumption for the current direct lending portfolio, we realize that the current opportunity set may not always be as robust as it is today, and as such, we believe that 7.5% is conservative and therefore we do not recommend a change at this time.

7. Escrow Earnings Assumption

The return assumption for the escrow account is 0.25% net of fees. The escrow account is invested in a money market mutual fund that is used primarily for principal protection and not necessarily for return enhancement. A good proxy for this money market fund is short-term (90-day) T-Bills. Going back to its inception in 1962, the Citigroup 90 day T-bill index generated a return above 0.25% 90% of the time, on a rolling one year basis. Given this, LCG believes that the escrow account should earn at least 0.25% over a full market cycle and accordingly, we are not recommending a change to the earning assumption.

Exhibit 36: Summary of Citigroup 90 day T-bill Index Rolling Returns (1/1962 – 12/2014)

	1 Yr	5 Yr	10 Yr	Current Approved Escrow Assumption
Max	15.30%	11.54%	9.46%	
Average	5.15%	5.43%	5.72%	0.25%
Minimum	0.00%	0.06%	1.46%	

Source: Bloomberg

11 (1-69.1%)*3.4% [(100-expected recovery rate) * expected default rate = expected loss rate]
12 13.51% - 1.05% = 12.46% [expected net return – expected loss rate = total expected return]

Exhibit 37: Percentage of observations above return assumption (1/1962 – 12/2014)

	1 Yr	5 Yr	10 Yr
% above 0.25%	90%	97%	100%
Number of Observations	625	577	517

Source: Bloomberg

8. Inflation Assumption

The current inflation assumption used in the funding model is 3.0%, which is also LCG's current 30-year inflation assumption. Available data for inflation, proxied by the CPI index, begins in 1962. While historical inflation has measured slightly above the 3.0% assumption, much of this occurred during the late 1970s and early 1980s when inflation was rampant. Looking at more recent data, as illustrated in Exhibit 39, over the last 20 years inflation has averaged below 3.0%.

Exhibit 38: Summary of Consumer Price Index Rolling Returns (1/1962 – 12/2014)

	1 Yr	5 Yr	10 Yr	Current Approved Inflation Assumption
Max	14.68%	10.11%	8.82%	
Average	4.07%	4.26%	4.44%	3.00%
Minimum	-2.10%	1.21%	2.12%	

Source: Bureau of Labor Statistics

Exhibit 39: Summary of Consumer Price Index Rolling Returns (1/1992 – 12/2014)

	1 Yr	5 Yr	10 Yr	Current Approved Inflation Assumption
Max	5.60%	4.43%	3.95%	
Average	2.44%	2.68%	2.87%	3.00%
Minimum	-2.10%	1.21%	2.12%	

Source: Bureau of Labor Statistics

In view of the above, LCG believes the 3% inflation assumption appears reasonable, and is not recommending a change.

9. Summary

LCG reiterates that the Seabrook decommissioning trust assumptions should be evaluated using the Trust's 86-year time horizon. History has shown financial markets peak and trough due to a variety of national and global events; however, throughout these ups and downs, the markets have continued to revert back to their long-term averages. And while LCG recognizes the Committee's desire to remain conservative in the return assumptions, we believe that the conservatism should be based on modest discounts to long-term historical averages.

LCG believes that the current approved long-term return assumptions for all asset classes except equities are reasonable and appropriate given the 86-year time horizon for the decommissioning project; however, LCG recommends raising the long-term blended equity return assumption back to 9.5% as it was prior to 2012 to better reflect long-term historical data. The combination of LCG's current 30-year return expectations with longer-term historical return data supports this recommendation. While history has shown that shorter-term volatility has distorted returns outside of normal ranges, the long-term data has remained fairly consistent and LCG believes that this data is a good proxy for future long-term return assumptions. The Trust is relatively insulated from short-term volatility because the funding schedules are re-set annually. Thus, unlike attempting to make an absolute prediction today about returns far into the future, the funding schedules are re-set annually to realign them with actual returns. In many respects, this factor removes (if not eliminates entirely) the guesswork for the Committee: because the funding schedules are re-set annually, the amount in the Trust immediately prior to decommissioning must (not may) be at least equal to the amount needed to decommission the Plant, no matter what returns are assumed today. This additional safety feature that is inherent in funding the Plant's decommissioning means that including additional conservatism in the equity returns is unnecessary.

For all of these reasons, LCG respectfully recommends that the Committee approve 9.5% as the return assumption for the equity investments in the Trust.

Seabrook Station: 2015 NDFC Annual Report
May 2015

Funding Runs for annual report will use beginning balances as of April 30, 2015

Run #	Funding date	Cost escalation	Equity assumption	2016 Escrow status	2016 contribution	Projected overfunding
1	2030	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - - Hudson - - Taunton - -	NextEra - $61,631,746,007 MMWEC - $1,307,555,863 Hudson - $12,511,107 Taunton - $15,986,250
2	2050	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - - Hudson - - Taunton - -	NextEra - $164,802,232,255 MMWEC - $9,637,451,131 Hudson - $54,845,486 Taunton - $68,560,581
3	2030	2.58%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - - Hudson - - Taunton - -	NextEra - $93,356,067,325 MMWEC - $2,306,247,875 Hudson - $28,656,713 Taunton - $36,366,775
4	2030	3.85%	8.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - $686,509 Hudson - - Taunton - -	NextEra - $15,466,236,637 MMWEC - - Hudson - $517,392 Taunton - $1,214,917
5	2030	3.85%	8.50%	Transfer to Trust on 12/31/2016, regardless of overfunded status	NextEra - - MMWEC - $686,509 Hudson - - Taunton - -	NextEra - $22,380,119,374 MMWEC - - Hudson - $517,392 Taunton - $1,214,917
6	2050	3.85%	8.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - - Hudson - - Taunton - -	NextEra - $92,947,650,771 MMWEC - $4,211,225,979 Hudson - $33,353,763 Taunton - $50,370,454
7	2030	3.50%	8.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - $193,499 Hudson - - Taunton - -	NextEra - $26,144,244,730 MMWEC - - Hudson - $5,872,993 Taunton - $7,894,447
8	2030	3.85%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - $83,996 Hudson - - Taunton - -	NextEra - $47,540,436,809 MMWEC - - Hudson - $5,212,337 Taunton - $6,763,261
9[1]	2030, 2040 DOE Pickup	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - - Hudson - - Taunton - -	NextEra - $65,123,910,410 MMWEC - $1,794,689,481 Hudson - $15,786,864 Taunton - $20,236,446
10[2]	2050, 2040 DOE Pickup	3.50%	9.50%	Released to Joint Owner, if an owner is not fully funded transfer to Trust on 12/31/2016	NextEra - - MMWEC - - Hudson - - Taunton - -	NextEra - $169,445,638,622 MMWEC - $10,239,752,553 Hudson - $58,399,937 Taunton - $73,136,804

[1] Assumes Scenario 1; 2030 - 2040 DOE Pickup
[2] Assumes Scenario 3; 2050 - 2040 DOE Pickup

Run	1	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,157,761,284	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	9.5%	20%
Escalation:	3.50%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	9.5%	0%
		6 Equities	9.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$594,679,816	$56,291,900	$521,625	$683,443	$652,176,784
TOTAL BALANCE	$618,308,189	$64,326,351	$528,519	$693,431	$683,856,490
		Escrow to Trust			
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$0	$0	$0	$0
2017	$0	$0	$0	$0	$0
Total Projected 2018-2029	$0	$0	$0	$0	$0
Project Balance 2020	$798,531,501	$85,698,617	$680,802	$889,679	$885,800,599
% Target Decom 2020	62%	51%	61%	61%	61%
Project Balance 2030	$1,648,332,341	$172,771,768	$1,280,977	$1,667,475	$1,824,052,562
% Target Decom 2030	88%	70%	78%	78%	86%
Project Balance 2050	$1,821,715,532	$86,180,708	$874,267	$1,148,484	$1,909,918,991
% Target Decom 2050	173%	62%	95%	96%	156%
Final Projected Assets (2101)	$61,631,746,007	$1,307,555,863	$12,511,107	$15,986,250	$62,967,799,227
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	4.6	3.4	4.4	4.4	4.4
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	2	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,065,965,245	1A Fixed Income	6%	20%
Funding Date:	3/15/2050	1B Equities	9.5%	20%
Escalation:	3.50%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	9.5%	0%
		6 Equities	9.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$594,679,816	$56,291,900	$521,625	$683,443	$652,176,784
TOTAL BALANCE	$618,308,189	$64,326,351	$528,519	$693,431	$683,856,490
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$0	$0	$0	$0
2017	$0	$0	$0	$0	$0
Total Projected 2018-2029	$0	$0	$0	$0	$0
Project Balance 2020	$798,531,501	$75,633,357	$680,802	$889,679	$875,735,339
% Target Decom 2020	62%	45%	61%	61%	72%
Project Balance 2030	$1,728,394,503	$158,632,797	$1,326,472	$1,722,162	$1,890,075,934
% Target Decom 2030	92%	65%	81%	81%	107%
Project Balance 2050	$8,103,167,788	$673,827,762	$4,879,783	$6,269,246	$8,788,144,580
% Target Decom 2050	769%	487%	528%	523%	233%
Final Projected Assets (2101)	$164,802,232,255	$9,637,451,131	$54,845,486	$68,560,581	$174,563,089,453
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	13.6	8.1	10.0	9.9	13.1
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	3	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,147,470,072	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	9.5%	20%
Escalation:	2.58%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	Yes	4 Cash	3.5%	0%
		5 Equities	9.5%	0%
		6 Equities	9.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$594,679,816	$56,291,900	$521,625	$683,443	$652,176,784
TOTAL BALANCE	$618,308,189	$64,326,351	$528,519	$693,431	$683,856,490
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$0	$0	$0	$0
2017	$0	$0	$0	$0	$0
Total Projected 2018-2029	$0	$0	$0	$0	$0
Project Balance 2020	$798,561,802	$75,637,351	$680,829	$889,713	$875,769,694
% Target Decom 2020	62%	45%	61%	61%	106%
Project Balance 2030	$1,648,852,452	$152,447,997	$1,281,468	$1,668,110	$1,804,250,026
% Target Decom 2030	88%	62%	78%	78%	149%
Project Balance 2050	$2,456,525,352	$96,121,970	$1,368,725	$1,787,282	$2,555,803,329
% Target Decom 2050	233%	69%	148%	149%	3115%
Final Projected Assets (2101)	$93,356,067,325	$2,306,247,875	$28,656,713	$36,366,775	$95,727,338,688
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	5.6	3.5	5.3	5.3	5.3
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	4	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,161,676,418	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	8.5%	20%
Escalation:	3.85%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	8.5%	0%
		6 Equities	8.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$592,155,888	$56,066,348	$520,521	$682,072	$649,424,829
TOTAL BALANCE	$615,784,261	$64,100,799	$527,414	$692,060	$681,104,534
		Escrow to Trust	Escrow to Trust	Escrow to Trust	
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$686,509	$0	$0	$686,509
2017	$0	$707,105	$0	$0	$707,105
Total Projected 2018-2029	$0	$10,336,309	$0	$0	$10,336,309
Project Balance 2020	$775,401,226	$86,993,148	$679,640	$890,081	$863,964,095
% Target Decom 2020	61%	52%	60%	61%	59%
Project Balance 2030	$1,507,587,817	$179,673,737	$1,245,220	$1,626,265	$1,690,133,039
% Target Decom 2030	81%	73%	76%	76%	79%
Project Balance 2050	$938,770,488	$65,104,954	$509,850	$693,246	$1,005,078,538
% Target Decom 2050	89%	47%	55%	58%	82%
Final Projected Assets (2101)	$15,466,236,637	$0	$517,392	$1,214,917	$15,467,968,946
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	3.8	3.3	3.9	3.5	3.7
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	5	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,161,676,418	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	8.5%	20%
Escalation:	3.85%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	8.5%	0%
		6 Equities	8.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$592,155,888	$56,066,348	$520,521	$682,072	$649,424,829
TOTAL BALANCE	$615,784,261	$64,100,799	$527,414	$692,060	$681,104,534
	Escrow to Trust	Escrow to Trust	Escrow to Trust	Escrow to Trust	
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$686,509	$0	$0	$686,509
2017	$0	$707,105	$0	$0	$707,105
Total Projected 2018-2029	$0	$10,336,309	$0	$0	$10,336,309
Project Balance 2020	$805,400,561	$86,993,148	$679,640	$890,081	$893,963,431
% Target Decom 2020	63%	52%	60%	61%	61%
Project Balance 2030	$1,571,713,553	$179,673,737	$1,245,220	$1,626,265	$1,754,258,775
% Target Decom 2030	84%	73%	76%	76%	82%
Project Balance 2050	$1,153,627,264	$65,104,954	$509,850	$693,246	$1,219,935,314
% Target Decom 2050	109%	47%	55%	58%	100%
Final Projected Assets (2101)	$22,380,119,374	$0	$517,392	$1,214,917	$22,381,851,683
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	4.0	3.3	3.9	3.9	3.9
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	6	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,069,569,958	1A Fixed Income	6%	20%
Funding Date:	3/15/2050	1B Equities	8.5%	20%
Escalation:	3.85%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	8.5%	0%
		6 Equities	8.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$592,155,888	$56,066,348	$520,521	$682,072	$649,424,829
TOTAL BALANCE	$615,784,261	$64,100,799	$527,414	$692,060	$681,104,534
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$0	$0	$0	$0
2017	$0	$0	$0	$0	$0
Total Projected 2018-2029	$0	$0	$0	$0	$0
Project Balance 2020	$775,412,758	$73,803,401	$671,271	$877,986	$850,765,416
% Target Decom 2020	61%	44%	60%	60%	70%
Project Balance 2030	$1,572,879,543	$147,021,799	$1,269,072	$1,652,378	$1,722,822,792
% Target Decom 2030	84%	60%	77%	78%	97%
Project Balance 2050	$6,429,843,686	$565,867,814	$4,409,123	$5,700,706	$7,005,821,329
% Target Decom 2050	610%	409%	477%	476%	185%
Final Projected Assets (2101)	$92,947,650,771	$4,211,225,979	$33,353,763	$50,370,454	$97,242,600,966
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	10.6	5.7	7.7	8.8	10.2
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	7	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,157,761,284	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	8.5%	20%
Escalation:	3.50%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	8.5%	0%
		6 Equities	8.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$592,155,888	$56,066,348	$520,521	$682,072	$649,424,829
TOTAL BALANCE	$615,784,261	$64,100,799	$527,414	$692,060	$681,104,534
		Escrow to Trust			
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$193,499	$0	$0	$193,499
2017	$0	$199,303	$0	$0	$199,303
Total Projected 2018-2029	$0	$2,913,376	$0	$0	$2,913,376
Project Balance 2020	$775,412,758	$84,640,923	$671,281	$877,986	$861,602,948
% Target Decom 2020	61%	50%	60%	60%	59%
Project Balance 2030	$1,507,793,779	$166,369,165	$1,230,005	$1,604,286	$1,676,997,236
% Target Decom 2030	81%	68%	75%	75%	79%
Project Balance 2050	$1,193,324,335	$53,988,334	$667,373	$890,240	$1,248,870,282
% Target Decom 2050	113%	39%	72%	74%	102%
Final Projected Assets (2101)	$26,144,244,730	$0	$5,872,993	$7,894,447	$26,158,012,170
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	4.1	3.3	4.2	4.2	4.0
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	8	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,161,676,418	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	9.5%	20%
Escalation:	3.85%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	9.5%	0%
		6 Equities	9.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$594,679,816	$56,291,900	$521,625	$683,443	$652,176,784
TOTAL BALANCE	$618,308,189	$64,326,351	$528,519	$693,431	$683,856,490
		Escrow to Trust			
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$83,996	$0	$0	$83,996
2017	$0	$86,516	$0	$0	$86,516
Total Projected 2018-2029	$0	$1,264,672	$0	$0	$1,264,672
Project Balance 2020	$798,519,859	$86,102,098	$680,792	$889,666	$886,192,414
% Target Decom 2020	62%	51%	61%	61%	61%
Project Balance 2030	$1,648,124,405	$175,092,899	$1,280,782	$1,667,221	$1,826,165,306
% Target Decom 2030	88%	71%	78%	78%	86%
Project Balance 2050	$1,550,806,188	$58,836,356	$663,453	$876,129	$1,611,182,127
% Target Decom 2050	147%	42%	72%	73%	132%
Final Projected Assets (2101)	$47,540,436,809	$0	$5,212,337	$6,763,261	$47,552,412,407
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	4.3	3.3	4.1	4.1	4.2
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	9	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$963,996,890	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	9.5%	20%
Escalation:	3.50%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	Yes	4 Cash	3.5%	0%
		5 Equities	9.5%	0%
		6 Equities	9.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$594,679,816	$56,291,900	$521,625	$683,443	$652,176,784
TOTAL BALANCE	$618,308,189	$64,326,351	$528,519	$693,431	$683,856,490
		Escrow to Trust			
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$0	$0	$0	$0
2017	$0	$0	$0	$0	$0
Total Projected 2018-2029	$0	$0	$0	$0	$0
Project Balance 2020	$798,531,501	$85,698,617	$680,802	$889,679	$885,800,599
% Target Decom 2020	62%	51%	61%	61%	61%
Project Balance 2030	$1,648,332,341	$172,771,768	$1,280,977	$1,667,475	$1,824,052,562
% Target Decom 2030	88%	70%	78%	78%	86%
Project Balance 2050	$1,798,016,788	$83,147,422	$854,803	$1,123,314	$1,883,142,326
% Target Decom 2050	171%	60%	93%	94%	154%
Final Projected Assets (2101)	$65,123,910,410	$1,794,689,481	$15,786,864	$20,236,446	$66,954,623,200
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	4.6	3.4	4.4	4.4	4.5
Target Equity Allocation (%)	65%	55%	30%	30%	

Run	10	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$900,759,324	1A Fixed Income	6%	20%
Funding Date:	3/15/2050	1B Equities	9.5%	20%
Escalation:	3.50%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	Yes	4 Cash	3.5%	0%
		5 Equities	9.5%	0%
		6 Equities	9.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$594,679,816	$56,291,900	$521,625	$683,443	$652,176,784
TOTAL BALANCE	$618,308,189	$64,326,351	$528,519	$693,431	$683,856,490
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$0	$0	$0	$0
2017	$0	$0	$0	$0	$0
Total Projected 2018-2029	$0	$0	$0	$0	$0
Project Balance 2020	$798,531,501	$75,633,357	$680,802	$889,679	$875,735,339
% Target Decom 2020	62%	45%	61%	61%	72%
Project Balance 2030	$1,728,394,503	$158,632,797	$1,326,472	$1,722,162	$1,890,075,934
% Target Decom 2030	92%	65%	81%	81%	107%
Project Balance 2050	$8,103,167,788	$673,827,762	$4,879,783	$6,269,246	$8,788,144,580
% Target Decom 2050	769%	487%	528%	523%	233%
Final Projected Assets (2101)	$169,445,638,622	$10,239,752,553	$58,399,937	$73,136,804	$179,816,927,915
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	13.9	8.3	10.2	10.1	13.4
Target Equity Allocation (%)	65%	55%	30%	30%	

ATTACHMENT D

Joint Owner Proposed Funding Schedule (Funding Run 1)

Run	1	Trust Earnings:	Pre-tax Returns	Tax Rate
12/31/2015 Cost:	$1,157,761,284	1A Fixed Income	6%	20%
Funding Date:	3/15/2030	1B Equities	9.5%	20%
Escalation:	3.50%	1C Cash	3.5%	20%
Inflation:	3%	2 Fixed Income	6%	0%
Escrow Return:	0.25%	3 Fixed Income	6%	0%
DOE	No	4 Cash	3.5%	0%
		5 Equities	9.5%	0%
		6 Equities	9.5%	0%
		7 Opportunistic	7.5% (net)	0%

	Next Era	MMWEC	Hudson	Taunton	Totals
12/31/15 Escrow Bal	$23,628,373	$8,034,451	$6,894	$9,988	$31,679,705
12/31/15 Trust Bal	$594,679,816	$56,291,900	$521,625	$683,443	$652,176,784
TOTAL BALANCE	$618,308,189	$64,326,351	$528,519	$693,431	$683,856,490
		Escrow to Trust			
Contributions (next 2 years):					
2015	$0	$559,100	$0	$0	$559,100
2016	$0	$0	$0	$0	$0
2017	$0	$0	$0	$0	$0
Total Projected 2018-2029	$0	$0	$0	$0	$0
Project Balance 2020	$798,531,501	$85,698,617	$680,802	$889,679	$885,800,599
% Target Decom 2020	62%	51%	61%	61%	61%
Project Balance 2030	$1,648,332,341	$172,771,768	$1,280,977	$1,667,475	$1,824,052,562
% Target Decom 2030	88%	70%	78%	78%	86%
Project Balance 2050	$1,821,715,532	$86,180,708	$874,267	$1,148,484	$1,909,918,991
% Target Decom 2050	173%	62%	95%	96%	156%
Final Projected Assets (2101)	$61,631,746,007	$1,307,555,863	$12,511,107	$15,986,250	$62,967,799,227
% Target Decom Complete (2101)	100%	100%	100%	100%	100%
Lowest Coverage Ratio Decom Period	4.6	3.4	4.4	4.4	4.4
Target Equity Allocation (%)	65%	55%	30%	30%	

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

Total for All Owners - Run 1

	Escrow					Trust							
Year	Beginning of Year Balance	Contributions	Earnings	Transfers or Disbursements	End of Year Balance	Beginning of Year Balance	Contributions and End of Year Escrow Transfer	Earnings	Fees and Expenses	Decommissioning Expense	Taxes	End of Year Balance	Escrow + Trust Balance (End of Year)
2016	$ 31,679,705	$ -	$ 79,199	$ 31,758,904	$ -	$ 652,176,784	$ 8,054,537	$ 55,001,392	$ 1,880,864	$ -	$ 7,346,946	$ 706,004,904	$ 706,004,904
2017	$ -	$ -	$ -	$ -	$ -	$ 706,004,904	$ -	$ 60,400,748	$ 2,412,372	$ -	$ 2,836,738	$ 761,156,542	$ 761,156,542
2018	$ -	$ -	$ -	$ -	$ -	$ 761,156,542	$ -	$ 65,661,987	$ 2,933,560	$ -	$ 2,862,937	$ 821,022,031	$ 821,022,031
2019	$ -	$ -	$ -	$ -	$ -	$ 821,022,031	$ -	$ 70,941,205	$ 3,103,661	$ -	$ 3,058,976	$ 885,800,599	$ 885,800,599
2020	$ -	$ -	$ -	$ -	$ -	$ 885,800,599	$ -	$ 76,675,686	$ 3,253,315	$ -	$ 3,276,426	$ 955,946,544	$ 955,946,544
2021	$ -	$ -	$ -	$ -	$ -	$ 955,946,544	$ -	$ 82,875,999	$ 3,496,898	$ -	$ 3,498,601	$ 1,031,827,043	$ 1,031,827,043
2022	$ -	$ -	$ -	$ -	$ -	$ 1,031,827,043	$ -	$ 89,591,868	$ 3,763,041	$ -	$ 3,727,042	$ 1,113,928,828	$ 1,113,928,828
2023	$ -	$ -	$ -	$ -	$ -	$ 1,113,928,828	$ -	$ 96,867,757	$ 4,050,922	$ -	$ 3,963,171	$ 1,202,782,492	$ 1,202,782,492
2024	$ -	$ -	$ -	$ -	$ -	$ 1,202,782,492	$ -	$ 104,751,938	$ 4,362,409	$ -	$ 4,208,317	$ 1,298,963,704	$ 1,298,963,704
2025	$ -	$ -	$ -	$ -	$ -	$ 1,298,963,704	$ -	$ 113,296,832	$ 4,699,530	$ -	$ 4,463,737	$ 1,403,097,268	$ 1,403,097,268
2026	$ -	$ -	$ -	$ -	$ -	$ 1,403,097,268	$ -	$ 114,449,057	$ 3,646,679	$ -	$ 11,006,440	$ 1,502,893,206	$ 1,502,893,206
2027	$ -	$ -	$ -	$ -	$ -	$ 1,502,893,206	$ -	$ 114,510,509	$ 3,582,746	$ -	$ 2,943,793	$ 1,610,877,175	$ 1,610,877,175
2028	$ -	$ -	$ -	$ -	$ -	$ 1,610,877,175	$ -	$ 114,698,793	$ 3,436,581	$ -	$ 2,685,270	$ 1,719,454,117	$ 1,719,454,117
2029	$ -	$ -	$ -	$ -	$ -	$ 1,719,454,117	$ -	$ 110,313,971	$ 3,822,232	$ -	$ 1,893,294	$ 1,824,052,562	$ 1,824,052,562
2030	$ -	$ -	$ -	$ -	$ -	$ 1,824,052,562	$ -	$ 99,290,825	$ 3,968,406	$ 99,300,600	$ 4,294,146	$ 1,815,780,234	$ 1,815,780,234
2031	$ -	$ -	$ -	$ -	$ -	$ 1,815,780,234	$ -	$ 91,518,580	$ 3,174,577	$ 223,882,467	$ 4,895,120	$ 1,675,346,650	$ 1,675,346,650
2032	$ -	$ -	$ -	$ -	$ -	$ 1,675,346,650	$ -	$ 84,548,400	$ 3,088,213	$ 293,133,481	$ 3,131,700	$ 1,460,541,656	$ 1,460,541,656
2033	$ -	$ -	$ -	$ -	$ -	$ 1,460,541,656	$ -	$ 75,059,015	$ 2,894,094	$ 227,135,635	$ 7	$ 1,305,570,935	$ 1,305,570,935
2034	$ -	$ -	$ -	$ -	$ -	$ 1,305,570,935	$ -	$ 67,424,263	$ 2,698,597	$ 191,898,511	$ -	$ 1,178,398,090	$ 1,178,398,090
2035	$ -	$ -	$ -	$ -	$ -	$ 1,178,398,090	$ -	$ 60,952,225	$ 2,543,415	$ 169,878,041	$ -	$ 1,066,928,859	$ 1,066,928,859
2036	$ -	$ -	$ -	$ -	$ -	$ 1,066,928,859	$ -	$ 56,700,679	$ 2,421,567	$ 103,103,438	$ -	$ 1,018,104,533	$ 1,018,104,533
2037	$ -	$ -	$ -	$ -	$ -	$ 1,018,104,533	$ -	$ 54,796,491	$ 2,385,494	$ 75,233,963	$ -	$ 995,281,568	$ 995,281,568
2038	$ -	$ -	$ -	$ -	$ -	$ 995,281,568	$ -	$ 53,816,661	$ 2,385,581	$ 65,178,687	$ -	$ 981,533,961	$ 981,533,961
2039	$ -	$ -	$ -	$ -	$ -	$ 981,533,961	$ -	$ 54,306,637	$ 2,406,778	$ 23,028,275	$ -	$ 1,010,405,544	$ 1,010,405,544
2040	$ -	$ -	$ -	$ -	$ -	$ 1,010,405,544	$ -	$ 65,491,090	$ 2,943,637	$ 12,173,294	$ -	$ 1,060,779,703	$ 1,060,779,703
2041	$ -	$ -	$ -	$ -	$ -	$ 1,060,779,703	$ -	$ 74,100,460	$ 3,155,443	$ 12,564,935	$ -	$ 1,119,159,786	$ 1,119,159,786
2042	$ -	$ -	$ -	$ -	$ -	$ 1,119,159,786	$ -	$ 83,806,880	$ 3,609,823	$ 13,004,708	$ -	$ 1,186,352,135	$ 1,186,352,135
2043	$ -	$ -	$ -	$ -	$ -	$ 1,186,352,135	$ -	$ 94,810,576	$ 4,120,799	$ 13,459,872	$ -	$ 1,263,582,040	$ 1,263,582,040
2044	$ -	$ -	$ -	$ -	$ -	$ 1,263,582,040	$ -	$ 107,348,768	$ 4,699,235	$ 13,969,135	$ -	$ 1,352,262,438	$ 1,352,262,438
2045	$ -	$ -	$ -	$ -	$ -	$ 1,352,262,438	$ -	$ 114,926,532	$ 4,892,285	$ 14,418,552	$ -	$ 1,447,878,134	$ 1,447,878,134
2046	$ -	$ -	$ -	$ -	$ -	$ 1,447,878,134	$ -	$ 123,087,832	$ 5,199,694	$ 14,923,201	$ -	$ 1,550,843,070	$ 1,550,843,070
2047	$ -	$ -	$ -	$ -	$ -	$ 1,550,843,070	$ -	$ 131,877,908	$ 5,529,159	$ 15,445,513	$ -	$ 1,661,746,307	$ 1,661,746,307
2048	$ -	$ -	$ -	$ -	$ -	$ 1,661,746,307	$ -	$ 141,345,233	$ 5,882,374	$ 16,029,904	$ -	$ 1,781,179,263	$ 1,781,179,263
2049	$ -	$ -	$ -	$ -	$ -	$ 1,781,179,263	$ -	$ 151,546,448	$ 6,261,100	$ 16,545,620	$ -	$ 1,909,918,991	$ 1,909,918,991
2050	$ -	$ -	$ -	$ -	$ -	$ 1,909,918,991	$ -	$ 162,542,113	$ 6,667,531	$ 17,124,717	$ -	$ 2,048,668,857	$ 2,048,668,857
2051	$ -	$ -	$ -	$ -	$ -	$ 2,048,668,857	$ -	$ 174,394,493	$ 7,103,723	$ 17,724,082	$ -	$ 2,198,235,545	$ 2,198,235,545
2052	$ -	$ -	$ -	$ -	$ -	$ 2,198,235,545	$ -	$ 187,170,421	$ 7,571,991	$ 18,394,683	$ -	$ 2,359,439,293	$ 2,359,439,293
2053	$ -	$ -	$ -	$ -	$ -	$ 2,359,439,293	$ -	$ 200,947,033	$ 8,074,754	$ 18,986,479	$ -	$ 2,533,325,092	$ 2,533,325,092
2054	$ -	$ -	$ -	$ -	$ -	$ 2,533,325,092	$ -	$ 215,806,968	$ 8,614,965	$ 19,651,006	$ -	$ 2,720,866,089	$ 2,720,866,089
2055	$ -	$ -	$ -	$ -	$ -	$ 2,720,866,089	$ -	$ 231,835,912	$ 9,195,450	$ 20,338,791	$ -	$ 2,923,167,760	$ 2,923,167,760
2056	$ -	$ -	$ -	$ -	$ -	$ 2,923,167,760	$ -	$ 249,125,973	$ 9,819,373	$ 21,108,322	$ -	$ 3,141,366,038	$ 3,141,366,038
2057	$ -	$ -	$ -	$ -	$ -	$ 3,141,366,038	$ -	$ 267,782,361	$ 10,490,064	$ 21,787,422	$ -	$ 3,376,870,913	$ 3,376,870,913
2058	$ -	$ -	$ -	$ -	$ -	$ 3,376,870,913	$ -	$ 287,917,985	$ 11,211,503	$ 22,549,981	$ -	$ 3,631,027,414	$ 3,631,027,414
2059	$ -	$ -	$ -	$ -	$ -	$ 3,631,027,414	$ -	$ 309,650,750	$ 11,987,580	$ 23,339,231	$ -	$ 3,905,351,354	$ 3,905,351,354
2060	$ -	$ -	$ -	$ -	$ -	$ 3,905,351,354	$ -	$ 333,107,554	$ 12,822,625	$ 24,222,285	$ -	$ 4,201,413,998	$ 4,201,413,998
2061	$ -	$ -	$ -	$ -	$ -	$ 4,201,413,998	$ -	$ 358,432,087	$ 13,721,214	$ 25,001,568	$ -	$ 4,521,123,303	$ 4,521,123,303
2062	$ -	$ -	$ -	$ -	$ -	$ 4,521,123,303	$ -	$ 385,778,778	$ 14,688,735	$ 25,876,622	$ -	$ 4,866,336,724	$ 4,866,336,724
2063	$ -	$ -	$ -	$ -	$ -	$ 4,866,336,724	$ -	$ 415,309,854	$ 15,730,539	$ 26,782,304	$ -	$ 5,239,133,734	$ 5,239,133,734
2064	$ -	$ -	$ -	$ -	$ -	$ 5,239,133,734	$ -	$ 447,200,090	$ 16,852,557	$ 27,795,629	$ -	$ 5,641,685,638	$ 5,641,685,638
2065	$ -	$ -	$ -	$ -	$ -	$ 5,641,685,638	$ -	$ 481,645,952	$ 18,061,079	$ 28,689,874	$ -	$ 6,076,580,637	$ 6,076,580,637
2066	$ -	$ -	$ -	$ -	$ -	$ 6,076,580,637	$ -	$ 518,858,848	$ 19,363,415	$ 29,694,019	$ -	$ 6,546,382,051	$ 6,546,382,051
2067	$ -	$ -	$ -	$ -	$ -	$ 6,546,382,051	$ -	$ 559,061,967	$ 20,766,927	$ 30,733,310	$ -	$ 7,053,943,780	$ 7,053,943,780
2068	$ -	$ -	$ -	$ -	$ -	$ 7,053,943,780	$ -	$ 602,495,972	$ 22,279,743	$ 31,896,124	$ -	$ 7,602,263,886	$ 7,602,263,886
2069	$ -	$ -	$ -	$ -	$ -	$ 7,602,263,886	$ -	$ 649,429,741	$ 23,910,510	$ 32,922,290	$ -	$ 8,194,860,826	$ 8,194,860,826

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

Total for All Owners - Run 1

	Escrow					Trust							
2070	$ -	$ -	$ -	$ -	$ -	$ 8,194,860,826	$ -	$ 700,152,901	$ 25,669,171	$ 34,074,570	$ -	$ 8,835,269,986	$ 8,835,269,986
2071	$ -	$ -	$ -	$ -	$ -	$ 8,835,269,986	$ -	$ 754,972,496	$ 27,565,850	$ 35,267,180	$ -	$ 9,527,409,452	$ 9,527,409,452
2072	$ -	$ -	$ -	$ -	$ -	$ 9,527,409,452	$ -	$ 814,219,850	$ 29,611,691	$ 36,601,536	$ -	$ 10,275,416,075	$ 10,275,416,075
2073	$ -	$ -	$ -	$ -	$ -	$ 10,275,416,075	$ -	$ 878,263,234	$ 31,818,590	$ 37,779,085	$ -	$ 11,084,081,634	$ 11,084,081,634
2074	$ -	$ -	$ -	$ -	$ -	$ 11,084,081,634	$ -	$ 947,499,687	$ 34,200,085	$ 39,101,353	$ -	$ 11,958,279,883	$ 11,958,279,883
2075	$ -	$ -	$ -	$ -	$ -	$ 11,958,279,883	$ -	$ 1,022,351,596	$ 36,770,104	$ 40,469,900	$ -	$ 12,903,391,475	$ 12,903,391,475
2076	$ -	$ -	$ -	$ -	$ -	$ 12,903,391,475	$ -	$ 1,103,275,021	$ 39,543,938	$ 42,001,104	$ -	$ 13,925,121,454	$ 13,925,121,454
2077	$ -	$ -	$ -	$ -	$ -	$ 13,925,121,454	$ -	$ 1,190,526,214	$ 42,536,365	$ 48,837,308	$ -	$ 15,024,273,995	$ 15,024,273,995
2078	$ -	$ -	$ -	$ -	$ -	$ 15,024,273,995	$ -	$ 1,284,650,476	$ 45,753,472	$ 50,546,614	$ -	$ 16,212,624,385	$ 16,212,624,385
2079	$ -	$ -	$ -	$ -	$ -	$ 16,212,624,385	$ -	$ 1,386,419,072	$ 49,226,520	$ 52,315,745	$ -	$ 17,497,501,191	$ 17,497,501,191
2080	$ -	$ -	$ -	$ -	$ -	$ 17,497,501,191	$ -	$ 1,496,453,586	$ 52,976,353	$ 54,295,143	$ -	$ 18,886,683,281	$ 18,886,683,281
2081	$ -	$ -	$ -	$ -	$ -	$ 18,886,683,281	$ -	$ 1,615,441,213	$ 57,025,249	$ 56,041,934	$ -	$ 20,389,057,311	$ 20,389,057,311
2082	$ -	$ -	$ -	$ -	$ -	$ 20,389,057,311	$ -	$ 1,744,123,507	$ 61,398,313	$ 58,003,402	$ -	$ 22,013,779,103	$ 22,013,779,103
2083	$ -	$ -	$ -	$ -	$ -	$ 22,013,779,103	$ -	$ 1,883,292,290	$ 66,121,642	$ 60,033,521	$ -	$ 23,770,916,230	$ 23,770,916,230
2084	$ -	$ -	$ -	$ -	$ -	$ 23,770,916,230	$ -	$ 2,033,803,043	$ 71,223,808	$ 62,304,926	$ -	$ 25,671,190,539	$ 25,671,190,539
2085	$ -	$ -	$ -	$ -	$ -	$ 25,671,190,539	$ -	$ 2,196,598,323	$ 76,735,456	$ 64,309,408	$ -	$ 27,726,743,997	$ 27,726,743,997
2086	$ -	$ -	$ -	$ -	$ -	$ 27,726,743,997	$ -	$ 2,372,695,841	$ 82,690,893	$ 66,560,238	$ -	$ 29,950,188,708	$ 29,950,188,708
2087	$ -	$ -	$ -	$ -	$ -	$ 29,950,188,708	$ -	$ 2,563,184,825	$ 89,126,025	$ 68,889,846	$ -	$ 32,355,357,662	$ 32,355,357,662
2088	$ -	$ -	$ -	$ -	$ -	$ 32,355,357,662	$ -	$ 2,769,242,529	$ 96,080,088	$ 71,496,336	$ -	$ 34,957,023,768	$ 34,957,023,768
2089	$ -	$ -	$ -	$ -	$ -	$ 34,957,023,768	$ -	$ 2,992,162,355	$ 103,595,236	$ 73,796,525	$ -	$ 37,771,794,362	$ 37,771,794,362
2090	$ -	$ -	$ -	$ -	$ -	$ 37,771,794,362	$ -	$ 2,857,959,921	$ 97,774,662	$ 76,379,404	$ -	$ 40,455,600,216	$ 40,455,600,216
2091	$ -	$ -	$ -	$ -	$ -	$ 40,455,600,216	$ -	$ 3,061,634,839	$ 97,908,004	$ 79,052,683	$ -	$ 43,340,274,369	$ 43,340,274,369
2092	$ -	$ -	$ -	$ -	$ -	$ 43,340,274,369	$ -	$ 2,840,507,423	$ 88,843,189	$ 82,043,690	$ -	$ 46,009,894,913	$ 46,009,894,913
2093	$ -	$ -	$ -	$ -	$ -	$ 46,009,894,913	$ -	$ 2,549,527,051	$ 69,439,191	$ 84,683,210	$ -	$ 48,405,299,563	$ 48,405,299,563
2094	$ -	$ -	$ -	$ -	$ -	$ 48,405,299,563	$ -	$ 2,192,010,152	$ 46,782,964	$ 87,647,122	$ -	$ 50,462,879,629	$ 50,462,879,629
2095	$ -	$ -	$ -	$ -	$ -	$ 50,462,879,629	$ -	$ 1,774,070,780	$ 21,273,486	$ 90,714,772	$ -	$ 52,124,962,151	$ 52,124,962,151
2096	$ -	$ -	$ -	$ -	$ -	$ 52,124,962,151	$ -	$ 1,822,406,690	$ 12,096,477	$ 94,147,021	$ -	$ 53,841,125,343	$ 53,841,125,343
2097	$ -	$ -	$ -	$ -	$ -	$ 53,841,125,343	$ -	$ 1,882,419,075	$ 12,212,305	$ 97,175,931	$ -	$ 55,614,156,182	$ 55,614,156,182
2098	$ -	$ -	$ -	$ -	$ -	$ 55,614,156,182	$ -	$ 1,944,404,590	$ 12,628,451	$ 100,577,089	$ -	$ 57,445,355,231	$ 57,445,355,231
2099	$ -	$ -	$ -	$ -	$ -	$ 57,445,355,231	$ -	$ 2,008,423,527	$ 13,058,768	$ 104,097,287	$ -	$ 59,336,622,703	$ 59,336,622,703
2100	$ -	$ -	$ -	$ -	$ -	$ 59,336,622,703	$ -	$ 2,069,031,019	$ 13,490,233	$ 401,541,430	$ -	$ 60,990,622,059	$ 60,990,622,059
2101	$ -	$ -	$ -	$ -	$ -	$ 60,990,622,059	$ -	$ 2,131,806,969	$ 13,932,201	$ 140,697,601	$ -	$ 62,967,799,227	$ 62,967,799,227
Total:		$ -	$ 79,199	$ 31,758,904			$ 8,054,537	$ 68,978,818,190	$ 2,010,748,137	$ 4,590,409,486	$ 70,092,661		

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

NextEra - Run 1

	Escrow					Trust							
Year	Beginning of Year Balance	Contributions	Earnings	Transfers or Disbursements	End of Year Balance	Beginning of Year Balance	Contributions and End of Year Escrow Transfer	Earnings	Fees and Expenses	Decommissioning Expense	Taxes	End of Year Balance	Escrow + Trust Balance (End of Year)
2016	$ 23,628,373	$ -	$ 59,071	$ 23,687,444	$ -	$ 594,679,816	$ -	$ 50,460,637	$ 1,715,600	$ -	$ 7,346,946	$ 636,077,907	$ 636,077,907
2017	$ -	$ -	$ -	$ -	$ -	$ 636,077,907	$ -	$ 54,875,451	$ 2,244,520	$ -	$ 2,836,738	$ 685,872,099	$ 685,872,099
2018	$ -	$ -	$ -	$ -	$ -	$ 685,872,099	$ -	$ 59,713,204	$ 2,754,801	$ -	$ 2,862,937	$ 739,967,565	$ 739,967,565
2019	$ -	$ -	$ -	$ -	$ -	$ 739,967,565	$ -	$ 64,536,302	$ 2,913,390	$ -	$ 3,058,976	$ 798,531,501	$ 798,531,501
2020	$ -	$ -	$ -	$ -	$ -	$ 798,531,501	$ -	$ 69,779,507	$ 3,050,724	$ -	$ 3,276,426	$ 861,983,858	$ 861,983,858
2021	$ -	$ -	$ -	$ -	$ -	$ 861,983,858	$ -	$ 75,450,672	$ 3,281,118	$ -	$ 3,498,601	$ 930,654,811	$ 930,654,811
2022	$ -	$ -	$ -	$ -	$ -	$ 930,654,811	$ -	$ 81,596,593	$ 3,533,137	$ -	$ 3,727,042	$ 1,004,991,225	$ 1,004,991,225
2023	$ -	$ -	$ -	$ -	$ -	$ 1,004,991,225	$ -	$ 88,258,583	$ 3,805,892	$ -	$ 3,963,171	$ 1,085,480,744	$ 1,085,480,744
2024	$ -	$ -	$ -	$ -	$ -	$ 1,085,480,744	$ -	$ 95,481,515	$ 4,101,176	$ -	$ 4,208,317	$ 1,172,652,766	$ 1,172,652,766
2025	$ -	$ -	$ -	$ -	$ -	$ 1,172,652,766	$ -	$ 103,314,151	$ 4,420,936	$ -	$ 4,463,737	$ 1,267,082,244	$ 1,267,082,244
2026	$ -	$ -	$ -	$ -	$ -	$ 1,267,082,244	$ -	$ 104,299,918	$ 3,357,020	$ -	$ 11,006,440	$ 1,357,018,702	$ 1,357,018,702
2027	$ -	$ -	$ -	$ -	$ -	$ 1,357,018,702	$ -	$ 104,267,873	$ 3,296,824	$ -	$ 2,943,793	$ 1,455,045,958	$ 1,455,045,958
2028	$ -	$ -	$ -	$ -	$ -	$ 1,455,045,958	$ -	$ 104,443,132	$ 3,157,307	$ -	$ 2,685,270	$ 1,553,646,514	$ 1,553,646,514
2029	$ -	$ -	$ -	$ -	$ -	$ 1,553,646,514	$ -	$ 100,131,805	$ 3,552,684	$ -	$ 1,893,294	$ 1,648,332,341	$ 1,648,332,341
2030	$ -	$ -	$ -	$ -	$ -	$ 1,648,332,341	$ -	$ 89,775,451	$ 3,708,124	$ 87,611,817	$ 4,294,146	$ 1,642,493,705	$ 1,642,493,705
2031	$ -	$ -	$ -	$ -	$ -	$ 1,642,493,705	$ -	$ 82,578,714	$ 2,932,831	$ 197,529,016	$ 4,895,120	$ 1,519,715,451	$ 1,519,715,451
2032	$ -	$ -	$ -	$ -	$ -	$ 1,519,715,451	$ -	$ 76,844,932	$ 2,857,853	$ 258,628,417	$ 3,131,700	$ 1,331,942,414	$ 1,331,942,414
2033	$ -	$ -	$ -	$ -	$ -	$ 1,331,942,414	$ -	$ 68,641,076	$ 2,686,228	$ 200,399,250	$ 7	$ 1,197,498,006	$ 1,197,498,006
2034	$ -	$ -	$ -	$ -	$ -	$ 1,197,498,006	$ -	$ 62,035,041	$ 2,506,759	$ 169,309,926	$ -	$ 1,087,716,361	$ 1,087,716,361
2035	$ -	$ -	$ -	$ -	$ -	$ 1,087,716,361	$ -	$ 56,462,291	$ 2,364,404	$ 149,881,510	$ -	$ 991,932,738	$ 991,932,738
2036	$ -	$ -	$ -	$ -	$ -	$ 991,932,738	$ -	$ 52,856,201	$ 2,254,663	$ 90,967,019	$ -	$ 951,567,258	$ 951,567,258
2037	$ -	$ -	$ -	$ -	$ -	$ 951,567,258	$ -	$ 51,328,910	$ 2,223,349	$ 66,378,090	$ -	$ 934,294,728	$ 934,294,728
2038	$ -	$ -	$ -	$ -	$ -	$ 934,294,728	$ -	$ 50,625,516	$ 2,225,083	$ 57,506,432	$ -	$ 925,188,729	$ 925,188,729
2039	$ -	$ -	$ -	$ -	$ -	$ 925,188,729	$ -	$ 51,227,552	$ 2,247,645	$ 20,317,592	$ -	$ 953,851,045	$ 953,851,045
2040	$ -	$ -	$ -	$ -	$ -	$ 953,851,045	$ -	$ 62,069,533	$ 2,766,429	$ 10,740,362	$ -	$ 1,002,413,787	$ 1,002,413,787
2041	$ -	$ -	$ -	$ -	$ -	$ 1,002,413,787	$ -	$ 70,316,244	$ 2,963,509	$ 11,085,903	$ -	$ 1,058,680,620	$ 1,058,680,620
2042	$ -	$ -	$ -	$ -	$ -	$ 1,058,680,620	$ -	$ 79,623,363	$ 3,401,520	$ 11,473,909	$ -	$ 1,123,428,553	$ 1,123,428,553
2043	$ -	$ -	$ -	$ -	$ -	$ 1,123,428,553	$ -	$ 90,184,803	$ 3,894,725	$ 11,875,496	$ -	$ 1,197,843,136	$ 1,197,843,136
2044	$ -	$ -	$ -	$ -	$ -	$ 1,197,843,136	$ -	$ 102,230,031	$ 4,453,745	$ 12,324,813	$ -	$ 1,283,294,609	$ 1,283,294,609
2045	$ -	$ -	$ -	$ -	$ -	$ 1,283,294,609	$ -	$ 109,554,644	$ 4,642,852	$ 12,721,328	$ -	$ 1,375,485,073	$ 1,375,485,073
2046	$ -	$ -	$ -	$ -	$ -	$ 1,375,485,073	$ -	$ 117,448,038	$ 4,939,836	$ 13,166,575	$ -	$ 1,474,826,699	$ 1,474,826,699
2047	$ -	$ -	$ -	$ -	$ -	$ 1,474,826,699	$ -	$ 125,954,653	$ 5,258,379	$ 13,627,405	$ -	$ 1,581,895,568	$ 1,581,895,568
2048	$ -	$ -	$ -	$ -	$ -	$ 1,581,895,568	$ -	$ 135,122,155	$ 5,600,147	$ 14,143,006	$ -	$ 1,697,274,570	$ 1,697,274,570
2049	$ -	$ -	$ -	$ -	$ -	$ 1,697,274,570	$ -	$ 145,005,866	$ 5,966,887	$ 14,598,017	$ -	$ 1,821,715,532	$ 1,821,715,532
2050	$ -	$ -	$ -	$ -	$ -	$ 1,821,715,532	$ -	$ 155,665,006	$ 6,360,739	$ 15,108,947	$ -	$ 1,955,910,852	$ 1,955,910,852
2051	$ -	$ -	$ -	$ -	$ -	$ 1,955,910,852	$ -	$ 167,160,759	$ 6,783,733	$ 15,637,760	$ -	$ 2,100,650,117	$ 2,100,650,117
2052	$ -	$ -	$ -	$ -	$ -	$ 2,100,650,117	$ -	$ 179,558,862	$ 7,238,149	$ 16,229,425	$ -	$ 2,256,741,405	$ 2,256,741,405
2053	$ -	$ -	$ -	$ -	$ -	$ 2,256,741,405	$ -	$ 192,934,744	$ 7,726,387	$ 16,751,560	$ -	$ 2,425,198,203	$ 2,425,198,203
2054	$ -	$ -	$ -	$ -	$ -	$ 2,425,198,203	$ -	$ 207,369,308	$ 8,251,329	$ 17,337,865	$ -	$ 2,606,978,317	$ 2,606,978,317
2055	$ -	$ -	$ -	$ -	$ -	$ 2,606,978,317	$ -	$ 222,946,781	$ 8,815,774	$ 17,944,690	$ -	$ 2,803,164,634	$ 2,803,164,634
2056	$ -	$ -	$ -	$ -	$ -	$ 2,803,164,634	$ -	$ 239,757,778	$ 9,422,838	$ 18,623,638	$ -	$ 3,014,875,936	$ 3,014,875,936
2057	$ -	$ -	$ -	$ -	$ -	$ 3,014,875,936	$ -	$ 257,905,299	$ 10,075,820	$ 19,222,800	$ -	$ 3,243,482,615	$ 3,243,482,615
2058	$ -	$ -	$ -	$ -	$ -	$ 3,243,482,615	$ -	$ 277,499,985	$ 10,778,618	$ 19,895,598	$ -	$ 3,490,308,384	$ 3,490,308,384
2059	$ -	$ -	$ -	$ -	$ -	$ 3,490,308,384	$ -	$ 298,657,777	$ 11,535,083	$ 20,591,944	$ -	$ 3,756,839,134	$ 3,756,839,134
2060	$ -	$ -	$ -	$ -	$ -	$ 3,756,839,134	$ -	$ 321,503,541	$ 12,349,480	$ 21,371,053	$ -	$ 4,044,622,141	$ 4,044,622,141
2061	$ -	$ -	$ -	$ -	$ -	$ 4,044,622,141	$ -	$ 346,178,091	$ 13,226,348	$ 22,058,606	$ -	$ 4,355,515,279	$ 4,355,515,279
2062	$ -	$ -	$ -	$ -	$ -	$ 4,355,515,279	$ -	$ 372,832,888	$ 14,170,970	$ 22,830,657	$ -	$ 4,691,346,540	$ 4,691,346,540
2063	$ -	$ -	$ -	$ -	$ -	$ 4,691,346,540	$ -	$ 401,627,507	$ 15,188,642	$ 23,629,730	$ -	$ 5,054,155,675	$ 5,054,155,675
2064	$ -	$ -	$ -	$ -	$ -	$ 5,054,155,675	$ -	$ 432,733,967	$ 16,285,215	$ 24,523,775	$ -	$ 5,446,080,651	$ 5,446,080,651
2065	$ -	$ -	$ -	$ -	$ -	$ 5,446,080,651	$ -	$ 466,344,974	$ 17,466,924	$ 25,312,757	$ -	$ 5,869,645,944	$ 5,869,645,944

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

NextEra - Run 1

	Escrow					Trust							
Year	Beginning of Year Balance	Contributions	Earnings	Transfers or Disbursements	End of Year Balance	Beginning of Year Balance	Contributions and End of Year Escrow Transfer	Earnings	Fees and Expenses	Decommissioning Expense	Taxes	End of Year Balance	Escrow + Trust Balance (End of Year)
2066	$ -	$ -	$ -	$ -	$ -	$ 5,869,645,944	$ -	$ 502,668,035	$ 18,740,951	$ 26,198,704	$ -	$ 6,327,374,325	$ 6,327,374,325
2067	$ -	$ -	$ -	$ -	$ -	$ 6,327,374,325	$ -	$ 541,922,765	$ 20,114,581	$ 27,115,658	$ -	$ 6,822,066,850	$ 6,822,066,850
2068	$ -	$ -	$ -	$ -	$ -	$ 6,822,066,850	$ -	$ 584,346,087	$ 21,595,838	$ 28,141,596	$ -	$ 7,356,675,504	$ 7,356,675,504
2069	$ -	$ -	$ -	$ -	$ -	$ 7,356,675,504	$ -	$ 630,201,949	$ 23,193,295	$ 29,046,971	$ -	$ 7,934,637,188	$ 7,934,637,188
2070	$ -	$ -	$ -	$ -	$ -	$ 7,934,637,188	$ -	$ 679,774,833	$ 24,916,730	$ 30,063,615	$ -	$ 8,559,431,675	$ 8,559,431,675
2071	$ -	$ -	$ -	$ -	$ -	$ 8,559,431,675	$ -	$ 733,366,964	$ 26,776,168	$ 31,115,842	$ -	$ 9,234,906,630	$ 9,234,906,630
2072	$ -	$ -	$ -	$ -	$ -	$ 9,234,906,630	$ -	$ 791,304,602	$ 28,782,617	$ 32,293,129	$ -	$ 9,965,135,487	$ 9,965,135,487
2073	$ -	$ -	$ -	$ -	$ -	$ 9,965,135,487	$ -	$ 853,949,526	$ 30,947,866	$ 33,332,067	$ -	$ 10,754,805,079	$ 10,754,805,079
2074	$ -	$ -	$ -	$ -	$ -	$ 10,754,805,079	$ -	$ 921,691,972	$ 33,285,249	$ 34,498,690	$ -	$ 11,608,713,112	$ 11,608,713,112
2075	$ -	$ -	$ -	$ -	$ -	$ 11,608,713,112	$ -	$ 994,947,830	$ 35,808,559	$ 35,706,144	$ -	$ 12,532,146,240	$ 12,532,146,240
2076	$ -	$ -	$ -	$ -	$ -	$ 12,532,146,240	$ -	$ 1,074,166,307	$ 38,532,905	$ 37,057,108	$ -	$ 13,530,722,534	$ 13,530,722,534
2077	$ -	$ -	$ -	$ -	$ -	$ 13,530,722,534	$ -	$ 1,159,622,295	$ 41,472,656	$ 43,088,615	$ -	$ 14,605,783,557	$ 14,605,783,557
2078	$ -	$ -	$ -	$ -	$ -	$ 14,605,783,557	$ -	$ 1,251,851,833	$ 44,635,286	$ 44,596,716	$ -	$ 15,768,403,387	$ 15,768,403,387
2079	$ -	$ -	$ -	$ -	$ -	$ 15,768,403,387	$ -	$ 1,351,596,473	$ 48,050,623	$ 46,157,601	$ -	$ 17,025,791,637	$ 17,025,791,637
2080	$ -	$ -	$ -	$ -	$ -	$ 17,025,791,637	$ -	$ 1,459,469,147	$ 51,739,279	$ 47,904,003	$ -	$ 18,385,617,502	$ 18,385,617,502
2081	$ -	$ -	$ -	$ -	$ -	$ 18,385,617,502	$ -	$ 1,576,146,181	$ 55,723,355	$ 49,445,176	$ -	$ 19,856,595,152	$ 19,856,595,152
2082	$ -	$ -	$ -	$ -	$ -	$ 19,856,595,152	$ -	$ 1,702,357,712	$ 60,027,625	$ 51,175,757	$ -	$ 21,447,749,482	$ 21,447,749,482
2083	$ -	$ -	$ -	$ -	$ -	$ 21,447,749,482	$ -	$ 1,838,884,489	$ 64,677,956	$ 52,966,909	$ -	$ 23,168,989,106	$ 23,168,989,106
2084	$ -	$ -	$ -	$ -	$ -	$ 23,168,989,106	$ -	$ 1,986,570,281	$ 69,702,624	$ 54,970,945	$ -	$ 25,030,885,819	$ 25,030,885,819
2085	$ -	$ -	$ -	$ -	$ -	$ 25,030,885,819	$ -	$ 2,146,343,265	$ 75,132,027	$ 56,739,477	$ -	$ 27,045,357,580	$ 27,045,357,580
2086	$ -	$ -	$ -	$ -	$ -	$ 27,045,357,580	$ -	$ 2,319,205,986	$ 81,000,052	$ 58,725,359	$ -	$ 29,224,838,155	$ 29,224,838,155
2087	$ -	$ -	$ -	$ -	$ -	$ 29,224,838,155	$ -	$ 2,506,232,744	$ 87,342,291	$ 60,780,746	$ -	$ 31,582,947,861	$ 31,582,947,861
2088	$ -	$ -	$ -	$ -	$ -	$ 31,582,947,861	$ -	$ 2,708,584,960	$ 94,197,593	$ 63,080,423	$ -	$ 34,134,254,805	$ 34,134,254,805
2089	$ -	$ -	$ -	$ -	$ -	$ 34,134,254,805	$ -	$ 2,927,536,952	$ 101,607,771	$ 65,109,855	$ -	$ 36,895,074,131	$ 36,895,074,131
2090	$ -	$ -	$ -	$ -	$ -	$ 36,895,074,131	$ -	$ 2,789,084,160	$ 95,675,479	$ 67,388,700	$ -	$ 39,521,094,111	$ 39,521,094,111
2091	$ -	$ -	$ -	$ -	$ -	$ 39,521,094,111	$ -	$ 2,988,206,069	$ 95,689,930	$ 69,747,304	$ -	$ 42,343,862,946	$ 42,343,862,946
2092	$ -	$ -	$ -	$ -	$ -	$ 42,343,862,946	$ -	$ 2,770,947,272	$ 86,594,069	$ 72,386,237	$ -	$ 44,955,829,912	$ 44,955,829,912
2093	$ -	$ -	$ -	$ -	$ -	$ 44,955,829,912	$ -	$ 2,485,160,383	$ 67,397,061	$ 74,715,056	$ -	$ 47,298,878,179	$ 47,298,878,179
2094	$ -	$ -	$ -	$ -	$ -	$ 47,298,878,179	$ -	$ 2,134,128,568	$ 44,991,247	$ 77,330,083	$ -	$ 49,310,685,417	$ 49,310,685,417
2095	$ -	$ -	$ -	$ -	$ -	$ 49,310,685,417	$ -	$ 1,723,881,098	$ 19,772,273	$ 80,036,636	$ -	$ 50,934,757,606	$ 50,934,757,606
2096	$ -	$ -	$ -	$ -	$ -	$ 50,934,757,606	$ -	$ 1,780,983,436	$ 10,920,705	$ 83,064,872	$ -	$ 52,621,755,465	$ 52,621,755,465
2097	$ -	$ -	$ -	$ -	$ -	$ 52,621,755,465	$ -	$ 1,839,972,235	$ 11,293,245	$ 85,737,245	$ -	$ 54,364,697,210	$ 54,364,697,210
2098	$ -	$ -	$ -	$ -	$ -	$ 54,364,697,210	$ -	$ 1,900,912,703	$ 11,678,499	$ 88,738,049	$ -	$ 56,165,193,365	$ 56,165,193,365
2099	$ -	$ -	$ -	$ -	$ -	$ 56,165,193,365	$ -	$ 1,963,865,393	$ 12,076,887	$ 91,843,881	$ -	$ 58,025,137,991	$ 58,025,137,991
2100	$ -	$ -	$ -	$ -	$ -	$ 58,025,137,991	$ -	$ 2,024,033,972	$ 12,476,941	$ 354,275,547	$ -	$ 59,682,419,474	$ 59,682,419,474
2101	$ -	$ -	$ -	$ -	$ -	$ 59,682,419,474	$ -	$ 2,086,349,404	$ 12,886,939	$ 124,135,931	$ -	$ 61,631,746,007	$ 61,631,746,007
Total:		$ -	$ 59,071	$ 23,687,444			$ -	$ 67,107,439,501	$ 1,950,213,315	$ 4,050,067,334	$ 70,092,661		

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

MMWEC - Run 1

	Escrow					Trust						
Year	Beginning of Year Balance	Contributions	Earnings	Transfers or Disbursements	End of Year Balance	Beginning of Year Balance	Contributions and End of Year Escrow Transfer	Earnings	Fees and Expenses	Decommissioning Expense	End of Year Balance	Escrow + Trust Balance (End of Year)
2016	$ 8,034,451	$ -	$ 20,086	$ 8,054,537	$ -	$ 56,291,900	$ 8,054,537	$ 4,455,516	$ 162,453	$ -	$ 68,639,500	$ 68,639,500
2017	$ -	$ -	$ -	$ -	$ -	$ 68,639,500	$ -	$ 5,434,225	$ 164,909	$ -	$ 73,908,816	$ 73,908,816
2018	$ -	$ -	$ -	$ -	$ -	$ 73,908,816	$ -	$ 5,851,475	$ 175,640	$ -	$ 79,584,650	$ 79,584,650
2019	$ -	$ -	$ -	$ -	$ -	$ 79,584,650	$ -	$ 6,300,931	$ 186,964	$ -	$ 85,698,617	$ 85,698,617
2020	$ -	$ -	$ -	$ -	$ -	$ 85,698,617	$ -	$ 6,785,084	$ 199,085	$ -	$ 92,284,616	$ 92,284,616
2021	$ -	$ -	$ -	$ -	$ -	$ 92,284,616	$ -	$ 7,306,621	$ 212,063	$ -	$ 99,379,173	$ 99,379,173
2022	$ -	$ -	$ -	$ -	$ -	$ 99,379,173	$ -	$ 7,868,433	$ 225,961	$ -	$ 107,021,645	$ 107,021,645
2023	$ -	$ -	$ -	$ -	$ -	$ 107,021,645	$ -	$ 8,473,637	$ 240,848	$ -	$ 115,254,434	$ 115,254,434
2024	$ -	$ -	$ -	$ -	$ -	$ 115,254,434	$ -	$ 9,125,593	$ 256,797	$ -	$ 124,123,230	$ 124,123,230
2025	$ -	$ -	$ -	$ -	$ -	$ 124,123,230	$ -	$ 9,827,917	$ 273,886	$ -	$ 133,677,261	$ 133,677,261
2026	$ -	$ -	$ -	$ -	$ -	$ 133,677,261	$ -	$ 9,992,771	$ 284,801	$ -	$ 143,385,232	$ 143,385,232
2027	$ -	$ -	$ -	$ -	$ -	$ 143,385,232	$ -	$ 10,084,956	$ 281,171	$ -	$ 153,189,016	$ 153,189,016
2028	$ -	$ -	$ -	$ -	$ -	$ 153,189,016	$ -	$ 10,097,659	$ 274,670	$ -	$ 163,012,006	$ 163,012,006
2029	$ -	$ -	$ -	$ -	$ -	$ 163,012,006	$ -	$ 10,024,900	$ 265,138	$ -	$ 172,771,768	$ 172,771,768
2030	$ -	$ -	$ -	$ -	$ -	$ 172,771,768	$ -	$ 9,364,933	$ 256,089	$ 11,512,316	$ 170,368,297	$ 170,368,297
2031	$ -	$ -	$ -	$ -	$ -	$ 170,368,297	$ -	$ 8,797,242	$ 237,826	$ 25,955,590	$ 152,972,123	$ 152,972,123
2032	$ -	$ -	$ -	$ -	$ -	$ 152,972,123	$ -	$ 7,577,979	$ 226,612	$ 33,984,137	$ 126,339,352	$ 126,339,352
2033	$ -	$ -	$ -	$ -	$ -	$ 126,339,352	$ -	$ 6,310,192	$ 204,447	$ 26,332,743	$ 106,112,355	$ 106,112,355
2034	$ -	$ -	$ -	$ -	$ -	$ 106,112,355	$ -	$ 5,295,495	$ 188,651	$ 22,247,562	$ 88,971,637	$ 88,971,637
2035	$ -	$ -	$ -	$ -	$ -	$ 88,971,637	$ -	$ 4,408,313	$ 176,007	$ 19,694,641	$ 73,509,302	$ 73,509,302
2036	$ -	$ -	$ -	$ -	$ -	$ 73,509,302	$ -	$ 3,771,287	$ 164,067	$ 11,953,194	$ 65,163,328	$ 65,163,328
2037	$ -	$ -	$ -	$ -	$ -	$ 65,163,328	$ -	$ 3,398,948	$ 159,366	$ 8,722,174	$ 59,680,736	$ 59,680,736
2038	$ -	$ -	$ -	$ -	$ -	$ 59,680,736	$ -	$ 3,125,586	$ 157,728	$ 7,556,426	$ 55,092,169	$ 55,092,169
2039	$ -	$ -	$ -	$ -	$ -	$ 55,092,169	$ -	$ 3,014,213	$ 156,367	$ 2,669,760	$ 55,280,254	$ 55,280,254
2040	$ -	$ -	$ -	$ -	$ -	$ 55,280,254	$ -	$ 3,350,558	$ 174,054	$ 1,411,299	$ 57,045,459	$ 57,045,459
2041	$ -	$ -	$ -	$ -	$ -	$ 57,045,459	$ -	$ 3,706,004	$ 188,459	$ 1,456,703	$ 59,106,301	$ 59,106,301
2042	$ -	$ -	$ -	$ -	$ -	$ 59,106,301	$ -	$ 4,097,377	$ 204,480	$ 1,507,688	$ 61,491,511	$ 61,491,511
2043	$ -	$ -	$ -	$ -	$ -	$ 61,491,511	$ -	$ 4,530,882	$ 221,873	$ 1,560,457	$ 64,240,064	$ 64,240,064
2044	$ -	$ -	$ -	$ -	$ -	$ 64,240,064	$ -	$ 5,013,702	$ 240,871	$ 1,619,498	$ 67,393,398	$ 67,393,398
2045	$ -	$ -	$ -	$ -	$ -	$ 67,393,398	$ -	$ 5,261,528	$ 244,753	$ 1,671,600	$ 70,738,572	$ 70,738,572
2046	$ -	$ -	$ -	$ -	$ -	$ 70,738,572	$ -	$ 5,523,806	$ 254,972	$ 1,730,106	$ 74,277,299	$ 74,277,299
2047	$ -	$ -	$ -	$ -	$ -	$ 74,277,299	$ -	$ 5,801,320	$ 265,677	$ 1,790,660	$ 78,022,282	$ 78,022,282
2048	$ -	$ -	$ -	$ -	$ -	$ 78,022,282	$ -	$ 6,094,859	$ 276,897	$ 1,858,411	$ 81,981,833	$ 81,981,833
2049	$ -	$ -	$ -	$ -	$ -	$ 81,981,833	$ -	$ 6,405,721	$ 288,646	$ 1,918,200	$ 86,180,708	$ 86,180,708
2050	$ -	$ -	$ -	$ -	$ -	$ 86,180,708	$ -	$ 6,735,220	$ 300,976	$ 1,985,337	$ 90,629,616	$ 90,629,616
2051	$ -	$ -	$ -	$ -	$ -	$ 90,629,615	$ -	$ 7,084,415	$ 313,911	$ 2,054,824	$ 95,345,296	$ 95,345,296
2052	$ -	$ -	$ -	$ -	$ -	$ 95,345,296	$ -	$ 7,454,382	$ 327,487	$ 2,132,569	$ 100,339,622	$ 100,339,622
2053	$ -	$ -	$ -	$ -	$ -	$ 100,339,622	$ -	$ 7,846,795	$ 341,723	$ 2,201,179	$ 105,643,515	$ 105,643,515
2054	$ -	$ -	$ -	$ -	$ -	$ 105,643,515	$ -	$ 8,263,362	$ 356,686	$ 2,278,220	$ 111,271,970	$ 111,271,970
2055	$ -	$ -	$ -	$ -	$ -	$ 111,271,970	$ -	$ 8,705,511	$ 372,406	$ 2,357,957	$ 117,247,118	$ 117,247,118
2056	$ -	$ -	$ -	$ -	$ -	$ 117,247,118	$ -	$ 9,174,710	$ 388,930	$ 2,447,172	$ 123,585,727	$ 123,585,727
2057	$ -	$ -	$ -	$ -	$ -	$ 123,585,727	$ -	$ 9,673,128	$ 406,284	$ 2,525,903	$ 130,326,667	$ 130,326,667
2058	$ -	$ -	$ -	$ -	$ -	$ 130,326,667	$ -	$ 10,202,993	$ 424,552	$ 2,614,310	$ 137,490,799	$ 137,490,799
2059	$ -	$ -	$ -	$ -	$ -	$ 137,490,799	$ -	$ 10,766,235	$ 443,773	$ 2,705,810	$ 145,107,451	$ 145,107,451
2060	$ -	$ -	$ -	$ -	$ -	$ 145,107,451	$ -	$ 11,364,847	$ 464,007	$ 2,808,186	$ 153,200,104	$ 153,200,104
2061	$ -	$ -	$ -	$ -	$ -	$ 153,200,104	$ -	$ 12,001,655	$ 485,295	$ 2,898,532	$ 161,817,933	$ 161,817,933

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

MMWEC - Run 1

	Escrow					Trust						
2062	$ -	$ -	$ -	$ -	$ -	$ 161,817,933	$ -	$ 12,679,578	$ 507,736	$ 2,999,980	$ 170,989,795	$ 170,989,795
2063	$ -	$ -	$ -	$ -	$ -	$ 170,989,795	$ -	$ 13,401,219	$ 531,385	$ 3,104,980	$ 180,754,649	$ 180,754,649
2064	$ -	$ -	$ -	$ -	$ -	$ 180,754,649	$ -	$ 14,169,287	$ 556,322	$ 3,222,458	$ 191,145,156	$ 191,145,156
2065	$ -	$ -	$ -	$ -	$ -	$ 191,145,156	$ -	$ 14,987,478	$ 582,599	$ 3,326,132	$ 202,223,903	$ 202,223,903
2066	$ -	$ -	$ -	$ -	$ -	$ 202,223,903	$ -	$ 15,859,627	$ 610,344	$ 3,442,546	$ 214,030,639	$ 214,030,639
2067	$ -	$ -	$ -	$ -	$ -	$ 214,030,639	$ -	$ 16,789,248	$ 639,631	$ 3,563,036	$ 226,617,220	$ 226,617,220
2068	$ -	$ -	$ -	$ -	$ -	$ 226,617,220	$ -	$ 17,780,015	$ 670,560	$ 3,697,845	$ 240,028,829	$ 240,028,829
2069	$ -	$ -	$ -	$ -	$ -	$ 240,028,829	$ -	$ 18,836,779	$ 703,209	$ 3,816,813	$ 254,345,587	$ 254,345,587
2070	$ -	$ -	$ -	$ -	$ -	$ 254,345,587	$ -	$ 19,964,601	$ 737,734	$ 3,950,401	$ 269,622,052	$ 269,622,052
2071	$ -	$ -	$ -	$ -	$ -	$ 269,622,052	$ -	$ 21,168,219	$ 774,236	$ 4,088,665	$ 285,927,370	$ 285,927,370
2072	$ -	$ -	$ -	$ -	$ -	$ 285,927,370	$ -	$ 22,452,613	$ 812,849	$ 4,243,362	$ 303,323,772	$ 303,323,772
2073	$ -	$ -	$ -	$ -	$ -	$ 303,323,772	$ -	$ 23,824,174	$ 853,675	$ 4,379,880	$ 321,914,390	$ 321,914,390
2074	$ -	$ -	$ -	$ -	$ -	$ 321,914,390	$ -	$ 25,289,592	$ 896,916	$ 4,533,176	$ 341,773,890	$ 341,773,890
2075	$ -	$ -	$ -	$ -	$ -	$ 341,773,890	$ -	$ 26,855,263	$ 942,707	$ 4,691,837	$ 362,994,610	$ 362,994,610
2076	$ -	$ -	$ -	$ -	$ -	$ 362,994,610	$ -	$ 28,527,930	$ 991,222	$ 4,869,356	$ 385,661,962	$ 385,661,962
2077	$ -	$ -	$ -	$ -	$ -	$ 385,661,962	$ -	$ 30,289,188	$ 1,042,867	$ 5,661,904	$ 409,246,379	$ 409,246,379
2078	$ -	$ -	$ -	$ -	$ -	$ 409,246,379	$ -	$ 32,148,151	$ 1,096,274	$ 5,860,071	$ 434,438,185	$ 434,438,185
2079	$ -	$ -	$ -	$ -	$ -	$ 434,438,185	$ -	$ 34,134,108	$ 1,152,855	$ 6,065,174	$ 461,354,264	$ 461,354,264
2080	$ -	$ -	$ -	$ -	$ -	$ 461,354,264	$ -	$ 36,255,580	$ 1,212,836	$ 6,294,653	$ 490,102,355	$ 490,102,355
2081	$ -	$ -	$ -	$ -	$ -	$ 490,102,355	$ -	$ 38,523,266	$ 1,276,393	$ 6,497,166	$ 520,852,061	$ 520,852,061
2082	$ -	$ -	$ -	$ -	$ -	$ 520,852,061	$ -	$ 40,948,408	$ 1,343,850	$ 6,724,566	$ 553,732,053	$ 553,732,053
2083	$ -	$ -	$ -	$ -	$ -	$ 553,732,053	$ -	$ 43,541,912	$ 1,415,434	$ 6,959,926	$ 588,898,606	$ 588,898,606
2084	$ -	$ -	$ -	$ -	$ -	$ 588,898,606	$ -	$ 46,315,309	$ 1,491,434	$ 7,223,259	$ 626,499,221	$ 626,499,221
2085	$ -	$ -	$ -	$ -	$ -	$ 626,499,221	$ -	$ 49,282,768	$ 1,572,095	$ 7,455,647	$ 666,754,247	$ 666,754,247
2086	$ -	$ -	$ -	$ -	$ -	$ 666,754,247	$ -	$ 52,459,227	$ 1,657,830	$ 7,716,595	$ 709,839,050	$ 709,839,050
2087	$ -	$ -	$ -	$ -	$ -	$ 709,839,050	$ -	$ 55,859,396	$ 1,748,946	$ 7,986,675	$ 755,962,824	$ 755,962,824
2088	$ -	$ -	$ -	$ -	$ -	$ 755,962,824	$ -	$ 59,498,871	$ 1,845,826	$ 8,288,856	$ 805,327,013	$ 805,327,013
2089	$ -	$ -	$ -	$ -	$ -	$ 805,327,013	$ -	$ 63,396,462	$ 1,948,803	$ 8,555,526	$ 858,219,145	$ 858,219,145
2090	$ -	$ -	$ -	$ -	$ -	$ 858,219,145	$ -	$ 67,572,056	$ 2,058,410	$ 8,854,970	$ 914,877,821	$ 914,877,821
2091	$ -	$ -	$ -	$ -	$ -	$ 914,877,821	$ -	$ 72,045,491	$ 2,175,063	$ 9,164,894	$ 975,583,354	$ 975,583,354
2092	$ -	$ -	$ -	$ -	$ -	$ 975,583,354	$ -	$ 68,245,939	$ 2,205,995	$ 9,511,653	$ 1,032,111,645	$ 1,032,111,645
2093	$ -	$ -	$ -	$ -	$ -	$ 1,032,111,645	$ -	$ 63,136,386	$ 2,003,734	$ 9,817,663	$ 1,083,426,634	$ 1,083,426,634
2094	$ -	$ -	$ -	$ -	$ -	$ 1,083,426,634	$ -	$ 56,755,293	$ 1,758,822	$ 10,161,282	$ 1,128,261,823	$ 1,128,261,823
2095	$ -	$ -	$ -	$ -	$ -	$ 1,128,261,823	$ -	$ 49,186,471	$ 1,474,593	$ 10,516,926	$ 1,165,456,774	$ 1,165,456,774
2096	$ -	$ -	$ -	$ -	$ -	$ 1,165,456,774	$ -	$ 40,560,665	$ 1,156,115	$ 10,914,841	$ 1,193,946,484	$ 1,193,946,484
2097	$ -	$ -	$ -	$ -	$ -	$ 1,193,946,484	$ -	$ 41,560,520	$ 904,475	$ 11,265,994	$ 1,223,336,535	$ 1,223,336,535
2098	$ -	$ -	$ -	$ -	$ -	$ 1,223,336,535	$ -	$ 42,581,221	$ 934,875	$ 11,660,304	$ 1,253,322,576	$ 1,253,322,576
2099	$ -	$ -	$ -	$ -	$ -	$ 1,253,322,576	$ -	$ 43,622,505	$ 966,296	$ 12,068,415	$ 1,283,910,371	$ 1,283,910,371
2100	$ -	$ -	$ -	$ -	$ -	$ 1,283,910,371	$ -	$ 44,045,617	$ 997,206	$ 46,552,304	$ 1,280,406,478	$ 1,280,406,478
2101	$ -	$ -	$ -	$ -	$ -	$ 1,280,406,478	$ -	$ 44,489,687	$ 1,028,666	$ 16,311,636	$ 1,307,555,863	$ 1,307,555,863
Total:		$ -	$ 20,086	$ 8,054,537			$ 8,054,537	$ 1,834,793,039	$ 59,399,079	$ 532,184,534		

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

Hudson - Run 1

	Escrow					Trust						
Year	Beginning of Year Balance	Contributions	Earnings	Transfers or Disbursements	End of Year Balance	Beginning of Year Balance	Contributions and End of Year Escrow Transfer	Earnings	Fees and Expenses	Decommissioning Expense	End of Year Balance	Escrow + Trust Balance (End of Year)
2016	$ 6,894	$ -	$ 17	$ 6,911	$ -	$ 521,625	$ -	$ 37,103	$ 1,216	$ -	$ 557,512	$ 557,512
2017	$ -	$ -	$ -	$ -	$ -	$ 557,512	$ -	$ 39,657	$ 1,276	$ -	$ 595,893	$ 595,893
2018	$ -	$ -	$ -	$ -	$ -	$ 595,893	$ -	$ 42,388	$ 1,353	$ -	$ 636,929	$ 636,929
2019	$ -	$ -	$ -	$ -	$ -	$ 636,929	$ -	$ 45,308	$ 1,434	$ -	$ 680,802	$ 680,802
2020	$ -	$ -	$ -	$ -	$ -	$ 680,802	$ -	$ 48,429	$ 1,521	$ -	$ 727,710	$ 727,710
2021	$ -	$ -	$ -	$ -	$ -	$ 727,710	$ -	$ 51,766	$ 1,613	$ -	$ 777,863	$ 777,863
2022	$ -	$ -	$ -	$ -	$ -	$ 777,863	$ -	$ 55,334	$ 1,711	$ -	$ 831,487	$ 831,487
2023	$ -	$ -	$ -	$ -	$ -	$ 831,486	$ -	$ 59,149	$ 1,816	$ -	$ 888,820	$ 888,820
2024	$ -	$ -	$ -	$ -	$ -	$ 888,820	$ -	$ 63,228	$ 1,927	$ -	$ 950,122	$ 950,122
2025	$ -	$ -	$ -	$ -	$ -	$ 950,122	$ -	$ 67,590	$ 2,045	$ -	$ 1,015,666	$ 1,015,666
2026	$ -	$ -	$ -	$ -	$ -	$ 1,015,666	$ -	$ 67,935	$ 2,115	$ -	$ 1,081,486	$ 1,081,486
2027	$ -	$ -	$ -	$ -	$ -	$ 1,081,486	$ -	$ 68,505	$ 2,065	$ -	$ 1,147,926	$ 1,147,926
2028	$ -	$ -	$ -	$ -	$ -	$ 1,147,926	$ -	$ 68,645	$ 2,002	$ -	$ 1,214,569	$ 1,214,569
2029	$ -	$ -	$ -	$ -	$ -	$ 1,214,569	$ -	$ 68,325	$ 1,917	$ -	$ 1,280,977	$ 1,280,977
2030	$ -	$ -	$ -	$ -	$ -	$ 1,280,977	$ -	$ 65,356	$ 1,823	$ 76,829	$ 1,267,681	$ 1,267,681
2031	$ -	$ -	$ -	$ -	$ -	$ 1,267,681	$ -	$ 61,945	$ 1,704	$ 173,218	$ 1,154,705	$ 1,154,705
2032	$ -	$ -	$ -	$ -	$ -	$ 1,154,705	$ -	$ 54,478	$ 1,629	$ 226,797	$ 980,756	$ 980,756
2033	$ -	$ -	$ -	$ -	$ -	$ 980,756	$ -	$ 46,744	$ 1,486	$ 175,735	$ 850,279	$ 850,279
2034	$ -	$ -	$ -	$ -	$ -	$ 850,279	$ -	$ 40,632	$ 1,385	$ 148,472	$ 741,055	$ 741,055
2035	$ -	$ -	$ -	$ -	$ -	$ 741,055	$ -	$ 35,353	$ 1,305	$ 131,435	$ 643,668	$ 643,668
2036	$ -	$ -	$ -	$ -	$ -	$ 643,668	$ -	$ 31,673	$ 1,232	$ 79,771	$ 594,338	$ 594,338
2037	$ -	$ -	$ -	$ -	$ -	$ 594,338	$ -	$ 29,679	$ 1,207	$ 58,209	$ 564,601	$ 564,601
2038	$ -	$ -	$ -	$ -	$ -	$ 564,601	$ -	$ 28,330	$ 1,202	$ 50,429	$ 541,300	$ 541,300
2039	$ -	$ -	$ -	$ -	$ -	$ 541,300	$ -	$ 28,019	$ 1,200	$ 17,817	$ 550,302	$ 550,302
2040	$ -	$ -	$ -	$ -	$ -	$ 550,302	$ -	$ 30,659	$ 1,368	$ 9,418	$ 570,175	$ 570,175
2041	$ -	$ -	$ -	$ -	$ -	$ 570,175	$ -	$ 33,769	$ 1,507	$ 9,721	$ 592,716	$ 592,716
2042	$ -	$ -	$ -	$ -	$ -	$ 592,716	$ -	$ 37,187	$ 1,657	$ 10,062	$ 618,183	$ 618,183
2043	$ -	$ -	$ -	$ -	$ -	$ 618,183	$ -	$ 40,958	$ 1,821	$ 10,414	$ 646,907	$ 646,907
2044	$ -	$ -	$ -	$ -	$ -	$ 646,907	$ -	$ 45,584	$ 2,003	$ 10,808	$ 679,681	$ 679,681
2045	$ -	$ -	$ -	$ -	$ -	$ 679,681	$ -	$ 47,906	$ 2,027	$ 11,156	$ 714,404	$ 714,404
2046	$ -	$ -	$ -	$ -	$ -	$ 714,404	$ -	$ 50,361	$ 2,117	$ 11,546	$ 751,102	$ 751,102
2047	$ -	$ -	$ -	$ -	$ -	$ 751,102	$ -	$ 52,956	$ 2,211	$ 11,950	$ 789,897	$ 789,897
2048	$ -	$ -	$ -	$ -	$ -	$ 789,897	$ -	$ 55,698	$ 2,309	$ 12,402	$ 830,883	$ 830,883
2049	$ -	$ -	$ -	$ -	$ -	$ 830,883	$ -	$ 58,598	$ 2,413	$ 12,801	$ 874,267	$ 874,267
2050	$ -	$ -	$ -	$ -	$ -	$ 874,267	$ -	$ 61,667	$ 2,521	$ 13,249	$ 920,163	$ 920,163
2051	$ -	$ -	$ -	$ -	$ -	$ 920,163	$ -	$ 64,913	$ 2,635	$ 13,713	$ 968,728	$ 968,728
2052	$ -	$ -	$ -	$ -	$ -	$ 968,728	$ -	$ 68,348	$ 2,755	$ 14,232	$ 1,020,088	$ 1,020,088
2053	$ -	$ -	$ -	$ -	$ -	$ 1,020,088	$ -	$ 71,984	$ 2,881	$ 14,690	$ 1,074,501	$ 1,074,501
2054	$ -	$ -	$ -	$ -	$ -	$ 1,074,501	$ -	$ 75,834	$ 3,014	$ 15,204	$ 1,132,117	$ 1,132,117
2055	$ -	$ -	$ -	$ -	$ -	$ 1,132,117	$ -	$ 79,912	$ 3,153	$ 15,736	$ 1,193,140	$ 1,193,140
2056	$ -	$ -	$ -	$ -	$ -	$ 1,193,140	$ -	$ 84,230	$ 3,299	$ 16,332	$ 1,257,740	$ 1,257,740
2057	$ -	$ -	$ -	$ -	$ -	$ 1,257,740	$ -	$ 88,805	$ 3,454	$ 16,857	$ 1,326,234	$ 1,326,234
2058	$ -	$ -	$ -	$ -	$ -	$ 1,326,234	$ -	$ 93,655	$ 3,616	$ 17,447	$ 1,398,826	$ 1,398,826
2059	$ -	$ -	$ -	$ -	$ -	$ 1,398,826	$ -	$ 98,795	$ 3,787	$ 18,058	$ 1,475,777	$ 1,475,777
2060	$ -	$ -	$ -	$ -	$ -	$ 1,475,777	$ -	$ 104,243	$ 3,966	$ 18,741	$ 1,557,313	$ 1,557,313
2061	$ -	$ -	$ -	$ -	$ -	$ 1,557,313	$ -	$ 110,020	$ 4,156	$ 19,344	$ 1,643,833	$ 1,643,833

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

Hudson - Run 1

	Escrow					Trust						
2062	$ -	$ -	$ -	$ -	$ -	$ 1,643,833	$ -	$ 116,148	$ 4,355	$ 20,021	$ 1,735,605	$ 1,735,605
2063	$ -	$ -	$ -	$ -	$ -	$ 1,735,605	$ -	$ 122,650	$ 4,566	$ 20,721	$ 1,832,967	$ 1,832,967
2064	$ -	$ -	$ -	$ -	$ -	$ 1,832,967	$ -	$ 129,546	$ 4,787	$ 21,505	$ 1,936,220	$ 1,936,220
2065	$ -	$ -	$ -	$ -	$ -	$ 1,936,220	$ -	$ 136,864	$ 5,021	$ 22,197	$ 2,045,866	$ 2,045,866
2066	$ -	$ -	$ -	$ -	$ -	$ 2,045,866	$ -	$ 144,634	$ 5,267	$ 22,974	$ 2,162,259	$ 2,162,259
2067	$ -	$ -	$ -	$ -	$ -	$ 2,162,259	$ -	$ 152,883	$ 5,527	$ 23,778	$ 2,285,836	$ 2,285,836
2068	$ -	$ -	$ -	$ -	$ -	$ 2,285,836	$ -	$ 161,640	$ 5,802	$ 24,678	$ 2,416,996	$ 2,416,996
2069	$ -	$ -	$ -	$ -	$ -	$ 2,416,996	$ -	$ 170,940	$ 6,091	$ 25,472	$ 2,556,373	$ 2,556,373
2070	$ -	$ -	$ -	$ -	$ -	$ 2,556,373	$ -	$ 180,821	$ 6,397	$ 26,364	$ 2,704,433	$ 2,704,433
2071	$ -	$ -	$ -	$ -	$ -	$ 2,704,433	$ -	$ 191,318	$ 6,720	$ 27,286	$ 2,861,745	$ 2,861,745
2072	$ -	$ -	$ -	$ -	$ -	$ 2,861,745	$ -	$ 202,470	$ 7,061	$ 28,319	$ 3,028,836	$ 3,028,836
2073	$ -	$ -	$ -	$ -	$ -	$ 3,028,836	$ -	$ 214,322	$ 7,421	$ 29,230	$ 3,206,506	$ 3,206,506
2074	$ -	$ -	$ -	$ -	$ -	$ 3,206,506	$ -	$ 226,922	$ 7,802	$ 30,253	$ 3,395,374	$ 3,395,374
2075	$ -	$ -	$ -	$ -	$ -	$ 3,395,374	$ -	$ 240,318	$ 8,205	$ 31,312	$ 3,596,175	$ 3,596,175
2076	$ -	$ -	$ -	$ -	$ -	$ 3,596,175	$ -	$ 254,558	$ 8,631	$ 32,496	$ 3,809,606	$ 3,809,606
2077	$ -	$ -	$ -	$ -	$ -	$ 3,809,606	$ -	$ 269,540	$ 9,082	$ 37,785	$ 4,032,280	$ 4,032,280
2078	$ -	$ -	$ -	$ -	$ -	$ 4,032,280	$ -	$ 285,331	$ 9,551	$ 39,108	$ 4,268,952	$ 4,268,952
2079	$ -	$ -	$ -	$ -	$ -	$ 4,268,952	$ -	$ 302,116	$ 10,047	$ 40,477	$ 4,520,545	$ 4,520,545
2080	$ -	$ -	$ -	$ -	$ -	$ 4,520,545	$ -	$ 319,957	$ 10,571	$ 42,008	$ 4,787,922	$ 4,787,922
2081	$ -	$ -	$ -	$ -	$ -	$ 4,787,922	$ -	$ 338,927	$ 11,125	$ 43,360	$ 5,072,364	$ 5,072,364
2082	$ -	$ -	$ -	$ -	$ -	$ 5,072,364	$ -	$ 359,105	$ 11,712	$ 44,877	$ 5,374,879	$ 5,374,879
2083	$ -	$ -	$ -	$ -	$ -	$ 5,374,879	$ -	$ 380,567	$ 12,333	$ 46,448	$ 5,696,664	$ 5,696,664
2084	$ -	$ -	$ -	$ -	$ -	$ 5,696,664	$ -	$ 403,392	$ 12,991	$ 48,205	$ 6,038,861	$ 6,038,861
2085	$ -	$ -	$ -	$ -	$ -	$ 6,038,861	$ -	$ 427,678	$ 13,687	$ 49,756	$ 6,403,096	$ 6,403,096
2086	$ -	$ -	$ -	$ -	$ -	$ 6,403,096	$ -	$ 453,525	$ 14,424	$ 51,498	$ 6,790,698	$ 6,790,698
2087	$ -	$ -	$ -	$ -	$ -	$ 6,790,698	$ -	$ 481,032	$ 15,206	$ 53,300	$ 7,203,225	$ 7,203,225
2088	$ -	$ -	$ -	$ -	$ -	$ 7,203,225	$ -	$ 510,304	$ 16,033	$ 55,317	$ 7,642,179	$ 7,642,179
2089	$ -	$ -	$ -	$ -	$ -	$ 7,642,179	$ -	$ 541,465	$ 16,910	$ 57,096	$ 8,109,637	$ 8,109,637
2090	$ -	$ -	$ -	$ -	$ -	$ 8,109,637	$ -	$ 574,647	$ 17,840	$ 59,095	$ 8,607,349	$ 8,607,349
2091	$ -	$ -	$ -	$ -	$ -	$ 8,607,349	$ -	$ 609,978	$ 18,826	$ 61,163	$ 9,137,338	$ 9,137,338
2092	$ -	$ -	$ -	$ -	$ -	$ 9,137,338	$ -	$ 576,564	$ 18,916	$ 63,477	$ 9,631,508	$ 9,631,508
2093	$ -	$ -	$ -	$ -	$ -	$ 9,631,508	$ -	$ 539,773	$ 16,810	$ 65,519	$ 10,088,951	$ 10,088,951
2094	$ -	$ -	$ -	$ -	$ -	$ 10,088,951	$ -	$ 494,175	$ 14,396	$ 67,813	$ 10,500,919	$ 10,500,919
2095	$ -	$ -	$ -	$ -	$ -	$ 10,500,919	$ -	$ 440,196	$ 11,642	$ 70,186	$ 10,859,287	$ 10,859,287
2096	$ -	$ -	$ -	$ -	$ -	$ 10,859,287	$ -	$ 378,514	$ 8,586	$ 72,841	$ 11,156,374	$ 11,156,374
2097	$ -	$ -	$ -	$ -	$ -	$ 11,156,374	$ -	$ 388,950	$ 6,359	$ 75,185	$ 11,463,780	$ 11,463,780
2098	$ -	$ -	$ -	$ -	$ -	$ 11,463,780	$ -	$ 399,656	$ 6,573	$ 77,817	$ 11,779,046	$ 11,779,046
2099	$ -	$ -	$ -	$ -	$ -	$ 11,779,046	$ -	$ 410,635	$ 6,795	$ 80,540	$ 12,102,346	$ 12,102,346
2100	$ -	$ -	$ -	$ -	$ -	$ 12,102,346	$ -	$ 417,630	$ 7,013	$ 310,673	$ 12,202,290	$ 12,202,290
2101	$ -	$ -	$ -	$ -	$ -	$ 12,202,290	$ -	$ 424,910	$ 7,235	$ 108,858	$ 12,511,107	$ 12,511,107
Total:		$ -	$ 17	$ 6,911			$ -	$ 16,036,254	$ 495,172	$ 3,551,600		

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

Taunton - Run 1

	Escrow					Trust						
Year	Beginning of Year Balance	Contributions	Earnings	Transfers or Disbursements	End of Year Balance	Beginning of Year Balance	Contributions and End of Year Escrow Transfer	Earnings	Fees and Expenses	Decommissioning Expense	End of Year Balance	Escrow + Trust Balance (End of Year)
2016	$ 9,988	$ -	$ 25	$ 10,013	$ -	$ 683,443	$ -	$ 48,136	$ 1,594	$ -	$ 729,985	$ 729,985
2017	$ -	$ -	$ -	$ -	$ -	$ 729,985	$ -	$ 51,416	$ 1,667	$ -	$ 779,733	$ 779,733
2018	$ -	$ -	$ -	$ -	$ -	$ 779,733	$ -	$ 54,920	$ 1,767	$ -	$ 832,887	$ 832,887
2019	$ -	$ -	$ -	$ -	$ -	$ 832,887	$ -	$ 58,664	$ 1,872	$ -	$ 889,679	$ 889,679
2020	$ -	$ -	$ -	$ -	$ -	$ 889,679	$ -	$ 62,665	$ 1,984	$ -	$ 950,360	$ 950,360
2021	$ -	$ -	$ -	$ -	$ -	$ 950,360	$ -	$ 66,940	$ 2,104	$ -	$ 1,015,196	$ 1,015,196
2022	$ -	$ -	$ -	$ -	$ -	$ 1,015,196	$ -	$ 71,507	$ 2,231	$ -	$ 1,084,472	$ 1,084,472
2023	$ -	$ -	$ -	$ -	$ -	$ 1,084,472	$ -	$ 76,388	$ 2,366	$ -	$ 1,158,494	$ 1,158,494
2024	$ -	$ -	$ -	$ -	$ -	$ 1,158,494	$ -	$ 81,602	$ 2,510	$ -	$ 1,237,586	$ 1,237,586
2025	$ -	$ -	$ -	$ -	$ -	$ 1,237,586	$ -	$ 87,174	$ 2,663	$ -	$ 1,322,097	$ 1,322,097
2026	$ -	$ -	$ -	$ -	$ -	$ 1,322,097	$ -	$ 88,432	$ 2,743	$ -	$ 1,407,786	$ 1,407,786
2027	$ -	$ -	$ -	$ -	$ -	$ 1,407,786	$ -	$ 89,174	$ 2,686	$ -	$ 1,494,274	$ 1,494,274
2028	$ -	$ -	$ -	$ -	$ -	$ 1,494,274	$ -	$ 89,356	$ 2,603	$ -	$ 1,581,028	$ 1,581,028
2029	$ -	$ -	$ -	$ -	$ -	$ 1,581,028	$ -	$ 88,940	$ 2,493	$ -	$ 1,667,475	$ 1,667,475
2030	$ -	$ -	$ -	$ -	$ -	$ 1,667,475	$ -	$ 85,085	$ 2,370	$ 99,638	$ 1,650,551	$ 1,650,551
2031	$ -	$ -	$ -	$ -	$ -	$ 1,650,551	$ -	$ 80,679	$ 2,216	$ 224,644	$ 1,504,371	$ 1,504,371
2032	$ -	$ -	$ -	$ -	$ -	$ 1,504,371	$ -	$ 71,013	$ 2,119	$ 294,130	$ 1,279,135	$ 1,279,135
2033	$ -	$ -	$ -	$ -	$ -	$ 1,279,135	$ -	$ 61,002	$ 1,933	$ 227,908	$ 1,110,295	$ 1,110,295
2034	$ -	$ -	$ -	$ -	$ -	$ 1,110,295	$ -	$ 53,095	$ 1,803	$ 192,551	$ 969,037	$ 969,037
2035	$ -	$ -	$ -	$ -	$ -	$ 969,037	$ -	$ 46,269	$ 1,700	$ 170,456	$ 843,150	$ 843,150
2036	$ -	$ -	$ -	$ -	$ -	$ 843,150	$ -	$ 41,518	$ 1,605	$ 103,454	$ 779,609	$ 779,609
2037	$ -	$ -	$ -	$ -	$ -	$ 779,609	$ -	$ 38,955	$ 1,573	$ 75,490	$ 741,502	$ 741,502
2038	$ -	$ -	$ -	$ -	$ -	$ 741,502	$ -	$ 37,229	$ 1,567	$ 65,400	$ 711,764	$ 711,764
2039	$ -	$ -	$ -	$ -	$ -	$ 711,764	$ -	$ 36,852	$ 1,566	$ 23,107	$ 723,944	$ 723,944
2040	$ -	$ -	$ -	$ -	$ -	$ 723,944	$ -	$ 40,339	$ 1,786	$ 12,215	$ 750,282	$ 750,282
2041	$ -	$ -	$ -	$ -	$ -	$ 750,282	$ -	$ 44,443	$ 1,968	$ 12,608	$ 780,149	$ 780,149
2042	$ -	$ -	$ -	$ -	$ -	$ 780,149	$ -	$ 48,954	$ 2,166	$ 13,049	$ 813,888	$ 813,888
2043	$ -	$ -	$ -	$ -	$ -	$ 813,888	$ -	$ 53,933	$ 2,381	$ 13,506	$ 851,934	$ 851,934
2044	$ -	$ -	$ -	$ -	$ -	$ 851,934	$ -	$ 59,450	$ 2,616	$ 14,017	$ 894,751	$ 894,751
2045	$ -	$ -	$ -	$ -	$ -	$ 894,751	$ -	$ 62,454	$ 2,653	$ 14,468	$ 940,085	$ 940,085
2046	$ -	$ -	$ -	$ -	$ -	$ 940,085	$ -	$ 65,628	$ 2,769	$ 14,974	$ 987,969	$ 987,969
2047	$ -	$ -	$ -	$ -	$ -	$ 987,970	$ -	$ 68,980	$ 2,891	$ 15,498	$ 1,038,560	$ 1,038,560
2048	$ -	$ -	$ -	$ -	$ -	$ 1,038,560	$ -	$ 72,521	$ 3,020	$ 16,084	$ 1,091,977	$ 1,091,977
2049	$ -	$ -	$ -	$ -	$ -	$ 1,091,977	$ -	$ 76,263	$ 3,154	$ 16,602	$ 1,148,484	$ 1,148,484
2050	$ -	$ -	$ -	$ -	$ -	$ 1,148,484	$ -	$ 80,221	$ 3,295	$ 17,183	$ 1,208,227	$ 1,208,227
2051	$ -	$ -	$ -	$ -	$ -	$ 1,208,227	$ -	$ 84,406	$ 3,444	$ 17,784	$ 1,271,404	$ 1,271,404
2052	$ -	$ -	$ -	$ -	$ -	$ 1,271,404	$ -	$ 88,830	$ 3,600	$ 18,457	$ 1,338,177	$ 1,338,177
2053	$ -	$ -	$ -	$ -	$ -	$ 1,338,177	$ -	$ 93,510	$ 3,763	$ 19,051	$ 1,408,873	$ 1,408,873
2054	$ -	$ -	$ -	$ -	$ -	$ 1,408,873	$ -	$ 98,464	$ 3,935	$ 19,718	$ 1,483,684	$ 1,483,684
2055	$ -	$ -	$ -	$ -	$ -	$ 1,483,684	$ -	$ 103,707	$ 4,116	$ 20,408	$ 1,562,867	$ 1,562,867
2056	$ -	$ -	$ -	$ -	$ -	$ 1,562,867	$ -	$ 109,255	$ 4,306	$ 21,180	$ 1,646,635	$ 1,646,635
2057	$ -	$ -	$ -	$ -	$ -	$ 1,646,635	$ -	$ 115,129	$ 4,506	$ 21,862	$ 1,735,397	$ 1,735,397
2058	$ -	$ -	$ -	$ -	$ -	$ 1,735,397	$ -	$ 121,352	$ 4,717	$ 22,627	$ 1,829,405	$ 1,829,405
2059	$ -	$ -	$ -	$ -	$ -	$ 1,829,405	$ -	$ 127,943	$ 4,938	$ 23,419	$ 1,928,992	$ 1,928,992
2060	$ -	$ -	$ -	$ -	$ -	$ 1,928,992	$ -	$ 134,924	$ 5,171	$ 24,305	$ 2,034,440	$ 2,034,440
2061	$ -	$ -	$ -	$ -	$ -	$ 2,034,440	$ -	$ 142,321	$ 5,416	$ 25,087	$ 2,146,259	$ 2,146,259

Seabrook Station Funding Run
Decommissioning Cost Projection
As of 4/30/2015

Taunton - Run 1

	Escrow					Trust						
2062	$ -	$ -	$ -	$ -	$ -	$ 2,146,259	$ -	$ 150,164	$ 5,674	$ 25,965	$ 2,264,784	$ 2,264,784
2063	$ -	$ -	$ -	$ -	$ -	$ 2,264,784	$ -	$ 158,478	$ 5,946	$ 26,873	$ 2,390,442	$ 2,390,442
2064	$ -	$ -	$ -	$ -	$ -	$ 2,390,442	$ -	$ 167,290	$ 6,233	$ 27,890	$ 2,523,610	$ 2,523,610
2065	$ -	$ -	$ -	$ -	$ -	$ 2,523,610	$ -	$ 176,636	$ 6,535	$ 28,787	$ 2,664,924	$ 2,664,924
2066	$ -	$ -	$ -	$ -	$ -	$ 2,664,924	$ -	$ 186,552	$ 6,853	$ 29,795	$ 2,814,828	$ 2,814,828
2067	$ -	$ -	$ -	$ -	$ -	$ 2,814,828	$ -	$ 197,071	$ 7,189	$ 30,838	$ 2,973,873	$ 2,973,873
2068	$ -	$ -	$ -	$ -	$ -	$ 2,973,873	$ -	$ 208,230	$ 7,543	$ 32,005	$ 3,142,556	$ 3,142,556
2069	$ -	$ -	$ -	$ -	$ -	$ 3,142,556	$ -	$ 220,073	$ 7,916	$ 33,034	$ 3,321,679	$ 3,321,679
2070	$ -	$ -	$ -	$ -	$ -	$ 3,321,679	$ -	$ 232,646	$ 8,310	$ 34,190	$ 3,511,825	$ 3,511,825
2071	$ -	$ -	$ -	$ -	$ -	$ 3,511,825	$ -	$ 245,994	$ 8,725	$ 35,387	$ 3,713,706	$ 3,713,706
2072	$ -	$ -	$ -	$ -	$ -	$ 3,713,707	$ -	$ 260,164	$ 9,164	$ 36,726	$ 3,927,980	$ 3,927,980
2073	$ -	$ -	$ -	$ -	$ -	$ 3,927,980	$ -	$ 275,213	$ 9,628	$ 37,908	$ 4,155,658	$ 4,155,658
2074	$ -	$ -	$ -	$ -	$ -	$ 4,155,658	$ -	$ 291,200	$ 10,117	$ 39,234	$ 4,397,507	$ 4,397,507
2075	$ -	$ -	$ -	$ -	$ -	$ 4,397,507	$ -	$ 308,184	$ 10,634	$ 40,608	$ 4,654,450	$ 4,654,450
2076	$ -	$ -	$ -	$ -	$ -	$ 4,654,450	$ -	$ 326,226	$ 11,181	$ 42,144	$ 4,927,351	$ 4,927,351
2077	$ -	$ -	$ -	$ -	$ -	$ 4,927,351	$ -	$ 345,191	$ 11,760	$ 49,003	$ 5,211,779	$ 5,211,779
2078	$ -	$ -	$ -	$ -	$ -	$ 5,211,779	$ -	$ 365,162	$ 12,361	$ 50,719	$ 5,513,861	$ 5,513,861
2079	$ -	$ -	$ -	$ -	$ -	$ 5,513,861	$ -	$ 386,374	$ 12,996	$ 52,494	$ 5,834,746	$ 5,834,746
2080	$ -	$ -	$ -	$ -	$ -	$ 5,834,746	$ -	$ 408,903	$ 13,667	$ 54,480	$ 6,175,502	$ 6,175,502
2081	$ -	$ -	$ -	$ -	$ -	$ 6,175,502	$ -	$ 432,840	$ 14,376	$ 56,233	$ 6,537,733	$ 6,537,733
2082	$ -	$ -	$ -	$ -	$ -	$ 6,537,733	$ -	$ 458,282	$ 15,126	$ 58,201	$ 6,922,689	$ 6,922,689
2083	$ -	$ -	$ -	$ -	$ -	$ 6,922,689	$ -	$ 485,323	$ 15,920	$ 60,238	$ 7,331,854	$ 7,331,854
2084	$ -	$ -	$ -	$ -	$ -	$ 7,331,854	$ -	$ 514,060	$ 16,759	$ 62,517	$ 7,766,638	$ 7,766,638
2085	$ -	$ -	$ -	$ -	$ -	$ 7,766,638	$ -	$ 544,612	$ 17,647	$ 64,528	$ 8,229,075	$ 8,229,075
2086	$ -	$ -	$ -	$ -	$ -	$ 8,229,075	$ -	$ 577,102	$ 18,587	$ 66,787	$ 8,720,804	$ 8,720,804
2087	$ -	$ -	$ -	$ -	$ -	$ 8,720,804	$ -	$ 611,654	$ 19,582	$ 69,124	$ 9,243,752	$ 9,243,752
2088	$ -	$ -	$ -	$ -	$ -	$ 9,243,752	$ -	$ 648,394	$ 20,635	$ 71,739	$ 9,799,771	$ 9,799,771
2089	$ -	$ -	$ -	$ -	$ -	$ 9,799,771	$ -	$ 687,475	$ 21,751	$ 74,047	$ 10,391,448	$ 10,391,448
2090	$ -	$ -	$ -	$ -	$ -	$ 10,391,448	$ -	$ 729,058	$ 22,932	$ 76,639	$ 11,020,935	$ 11,020,935
2091	$ -	$ -	$ -	$ -	$ -	$ 11,020,935	$ -	$ 773,302	$ 24,184	$ 79,322	$ 11,690,731	$ 11,690,731
2092	$ -	$ -	$ -	$ -	$ -	$ 11,690,731	$ -	$ 737,647	$ 24,209	$ 82,323	$ 12,321,847	$ 12,321,847
2093	$ -	$ -	$ -	$ -	$ -	$ 12,321,847	$ -	$ 690,509	$ 21,586	$ 84,971	$ 12,905,799	$ 12,905,799
2094	$ -	$ -	$ -	$ -	$ -	$ 12,905,799	$ -	$ 632,116	$ 18,499	$ 87,945	$ 13,431,471	$ 13,431,471
2095	$ -	$ -	$ -	$ -	$ -	$ 13,431,471	$ -	$ 563,014	$ 14,978	$ 91,023	$ 13,888,484	$ 13,888,484
2096	$ -	$ -	$ -	$ -	$ -	$ 13,888,484	$ -	$ 484,075	$ 11,071	$ 94,467	$ 14,267,020	$ 14,267,020
2097	$ -	$ -	$ -	$ -	$ -	$ 14,267,020	$ -	$ 497,371	$ 8,227	$ 97,506	$ 14,658,658	$ 14,658,658
2098	$ -	$ -	$ -	$ -	$ -	$ 14,658,658	$ -	$ 511,009	$ 8,504	$ 100,919	$ 15,060,244	$ 15,060,244
2099	$ -	$ -	$ -	$ -	$ -	$ 15,060,244	$ -	$ 524,993	$ 8,790	$ 104,451	$ 15,471,996	$ 15,471,996
2100	$ -	$ -	$ -	$ -	$ -	$ 15,471,996	$ -	$ 533,800	$ 9,072	$ 402,907	$ 15,593,817	$ 15,593,817
2101	$ -	$ -	$ -	$ -	$ -	$ 15,593,817	$ -	$ 542,969	$ 9,360	$ 141,176	$ 15,986,250	$ 15,986,250
Total:		$ -	$ 25	$ 10,013			$ -	$ 20,549,396	$ 640,572	$ 4,606,018		

ATTACHMENT E

Updated Cost to Decommission Seabrook Station by TLG

Document N35-1705-001, Rev. 0

DECOMMISSIONING COST ANALYSIS

for the

SEABROOK STATION

prepared for

NextEra Energy Seabrook, LLC

prepared by

TLG Services, Inc.
Bridgewater, Connecticut

May 2015

APPROVALS

Project Manager	William A. Cloutier, Jr.	13 May 2015 Date
Project Engineer	Mark S. Houghton	05/13/2015 Date
Technical Manager	Francis W. Seymore	5/13/15 Date

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No.	Date	Item Revised	Reason for Revision
0	05-13-2015		Original Issue

EXECUTIVE SUMMARY

I. TLG Background and Experience

Having developed and prepared the decommissioning estimates for more than 90% of the commercial nuclear plants in the United States and Canada, and many throughout the world (e.g., in Sweden, Italy, Japan and South Africa), TLG has unsurpassed knowledge and experience in estimating the cost to decommission nuclear power plants. TLG's estimates are used as the basis for regulatory submittals to the Nuclear Regulatory Commission and for financial planning in managing and executing actual decommissioning projects (e.g., at Maine Yankee, Trojan, Big Rock Point and Rancho Seco). The success of each of these projects is a testament to the initial planning, including the cost estimate.

TLG regularly and continuously updates its cost estimation models both from lessons learned in the industry (for example, from the recent closure of Vermont Yankee) and as regulations change. The result is a cost estimate that is both accurate and conservative (in the sense that the decommissioning cost is bounded). This increases the likelihood that the dollars set aside will be sufficient to cover all of the costs associated with decommissioning the applicable nuclear unit. TLG brought that same knowledge and experience to bear in the present estimate of the costs to decommission Seabrook Station, using models and data that are tested and relied upon for accurate estimates at nuclear plants throughout the United States and abroad. In addition to its broad experience, TLG has prepared each of the decommissioning cost estimates for Seabrook Station since the plant became operational in 1990. As a result, TLG is intimately familiar with the plant, its operations and its components all of which translates into the most accurate estimate of the costs to decommission the plant.

II. The Seabrook Station Year-End 2014 Decommissioning Cost Study

This report presents updated estimates of the costs to promptly decommission the Seabrook Station following a scheduled cessation of plant operations in accordance with the New Hampshire Nuclear Decommissioning Financing Committee's ("NDFC") December 30, 2009 Final Report and Order in Docket NDFC 2009-1 ("2009 Order") and December 12, 2014 Final Report and Order in Docket NDFC 2014-1 ("2014 Order"). The analysis relies upon site-specific, technical information originally developed for an evaluation in 1997-98 and updated in 2003 to incorporate new plant configuration and restoration criteria authorized by New Hampshire statute, see, e.g., RSA 162-F, II(b) (approving site restoration to a "non-nuclear commercial, industrial, or other similar use" rather than to "original condition"), a more complete description of which is set forth in the NDFC's

November 5, 2001 Final Report and Order in Docket NDFC 2001-1. The NDFC is authorized to establish the projected cost of decommissioning based on the commercial/industrial standard (RSA 162-F:15 (establishing Committee) & 14 (defining commercial/industrial standard)). The methodology used in preparing this study is in conformity with all Nuclear Regulatory Commission ("NRC" or "Commission") standards, is substantially the same as that previously approved by the NDFC and is consistent with restoring the site to the commercial/ industrial standard, both as we understand the standard set forth in New Hampshire statute and the industry at large. In this way, when all decommissioning activities have been completed, including termination of the license for the ISFSI, the site would be appropriate for development of non-nuclear commercial, industrial or similar use. The updated estimates are designed to provide the NDFC and managing agent NextEra Energy Seabrook, LLC ("NextEra Energy") with sufficient information to assess the decommissioning costs and, from that, the plant owners' financial obligations as they pertain to the eventual decommissioning of the nuclear station. This analysis evaluates four decommissioning scenarios that reflect differences in the length of the operating life presumed for the nuclear unit, as well as expectations on when the spent fuel will be transferred from the site, either through acceptance by and transfer to the Department of Energy ("DOE") or to another governmental or private storage facility.

The primary goal of the decommissioning is the prompt removal and disposal of contaminated systems and structures. The analysis recognizes that spent fuel may be stored at the site beyond the initial decommissioning time period in an on-site independent spent fuel storage installation ("ISFSI") authorized under the general license for the Seabrook facility. Consequently, the estimates include those costs to manage and subsequently decommission the ISFSI.

The analysis is based on numerous fundamental assumptions, including NRC and NDFC regulatory requirements, low-level radioactive waste disposal practices, high-level radioactive waste management options, site restoration requirements, and project contingencies. The estimates incorporate a minimum cooling period of five and one-half years for the spent fuel that resides in the storage pool when operations cease. Any residual fuel remaining in the pool after the minimum cooling period is relocated to the ISFSI to await transfer to a DOE facility. The analysis also includes the dismantling of non-essential structures and restoration of the site to a commercial-industrial standard.

When estimating the costs to decommission a nuclear plant, spent fuel transfer assumptions typically are based on the DOE's most-recent schedule for completion of the Yucca Mountain repository. The DOE submitted its license application to the NRC on June 3, 2008, seeking authorization to construct a geologic repository at Yucca Mountain, Nevada. The NRC's review of DOE's license application to construct a geologic repository at Yucca Mountain was suspended in 2011 when the Administration significantly reduced the budget for completing that work. However, the United States Court of Appeals for the District of Columbia Circuit issued a writ of mandamus (in August 2013) ordering NRC to comply with federal law and resume its review of DOE's Yucca Mountain repository license application to the extent allowed by previously appropriated funding for the review. That review is now complete with the publication of the five-volume safety evaluation report. A supplement to DOE's environmental impact statement and an adjudicatory hearing on the contentions filed by interested parties must be completed before a licensing decision can be made.

When the current administration cut the budget for the repository program, it promised to "conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle … and make recommendations for a new plan." Towards this goal, the administration appointed a Blue Ribbon Commission on America's Nuclear Future (Blue Ribbon Commission) to make recommendations for a new plan for nuclear waste disposal. The Blue Ribbon Commission's charter includes a requirement that it consider "[o]ptions for safe storage of used nuclear fuel while final disposition pathways are selected and deployed."[1]

On January 26, 2012, the Blue Ribbon Commission issued its "Report to the Secretary of Energy" containing a number of recommendations on nuclear waste disposal. Two of the recommendations that may impact decommissioning planning are:

- "[T]he United States [should] establish a program that leads to the timely development of one or more consolidated storage facilities"
- "[T]he United States should undertake an integrated nuclear waste management program that leads to the timely development of one or more permanent deep geological facilities for the safe disposal of spent fuel and high-level nuclear waste."[2]

In January 2013, the DOE issued the "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," in response to the recommendations made by the Blue Ribbon Commission and as "a framework for

1 Charter of the Blue Ribbon Commission on America's Nuclear Future, "Objectives and Scope of Activities," http://www.brc.gov/index.php?q=page/charter

2 Ibid., p.27

moving toward a sustainable program to deploy an integrated system capable of transporting, storing, and disposing of used nuclear fuel..."[3]

"With the appropriate authorizations from Congress, the Administration currently plans to implement a program over the next 10 years that:

- Sites, designs and licenses, constructs and begins operations of a pilot interim storage facility by 2021 with an initial focus on accepting used nuclear fuel from shut-down reactor sites;
- Advances toward the siting and licensing of a larger interim storage facility to be available by 2025 that will have sufficient capacity to provide flexibility in the waste management system and allows for acceptance of enough used nuclear fuel to reduce expected government liabilities; and
- Makes demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository by 2048."

A federal appeals court has ruled that DOE's obligation to take possession of spent nuclear fuel is unconditional and cannot be excused either by the absence of a repository or by a claim of unavoidable delay. The owners of Seabrook Station filed a lawsuit in 2004 claiming damages for DOE's failure to perform as originally prescribed in the standard disposal contract.

On March 31, 2009, the owners executed a Settlement Agreement with the DOE and the Department of Justice ("DOJ"). In the Agreement, the owners settled the lawsuit in exchange for payments. The payments are intended to cover those costs incurred for managing and storing the spent fuel that would not have been incurred but for DOE's delay in performance. Though reimbursable to the joint owners of Seabrook Station, these same costs – that is, the costs of managing and storing the spent fuel – are also included in the gross decommissioning cost estimates. Including these reimbursable costs in the decommissioning cost estimate is appropriate because they are actual decommissioning costs. Because the owners are guaranteed reimbursement for the payments, however, including those costs in the funding calculation provides significant additional assurance that the owners' decommissioning funding obligations will be met.

The NDFC in the 2009 Order set forth certain assumptions that must be included in this comprehensive update as well, including the assumptions that spent fuel and greater than Class C waste would remain on site until finally removed in 2100, with

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3 "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," U.S. DOE, January 11, 2013

completion of decommissioning of the ISFSI by 2101 (Scenario 2 for a 2030 shutdown and Scenario 4 for a 2050 shutdown). Based on the current political environment, TLG understands the NDFC's interest in continuing to evaluate potential, worst-case scenarios involving long-term storage of the spent fuel at the Seabrook site. The assumption that the fuel will remain on-site until it is finally removed in 2100, however, is not consistent with our expectations of the likely timing for transfer of the fuel. Put another way, the assumption that the federal government will delay development of a repository for spent fuel from the nation's nuclear facilities (and/or another alternative repository will not emerge) to the extent that spent fuel will remain on site and dormant at Seabrook for an additional 30 to 40 years is highly conservative.

NextEra Energy submitted an application to the NRC on June 1, 2010 for approval of renewal of Seabrook's operating license. This would extend the operating license from midnight, March 15, 2030, to midnight, March 15, 2050. While license renewal has long been the topic of discussion for Seabrook, the pending application before the NRC demonstrates that license renewal is that much closer to becoming a reality. In order to provide the Committee with the relative cost impacts of a license renewal, estimates are presented for both a 2030 and 2050 shutdown date.

The cost to decommission the Seabrook Station, expressed in December 31, 2014 dollars, for the Scenario 1 and Scenario 2 (formally referred to as the NDFC Scenario) is estimated to be $931.4 million and $1.119 billion, respectively. As shown in the tables at the end of this section, the majority of the cost is for the physical decontamination and dismantling of the nuclear unit. Another significant contributor is associated with the management, interim storage, and eventual transfer of the spent fuel, the costs associated with the bulk of which will be reimbursed to the joint owners by the DOE under the Agreement. The remaining cost is for the demolition of the designated structures and commercial/ industrial restoration of the site.

The previous comprehensive estimates for decommissioning the Seabrook Station were estimated to be $802.2 million and $985.2 million, for the Scenario 1 and Scenario 2, respectively, expressed in December 31, 2010 dollars.[4] Comparison of the cost components in the 2010 and 2014 estimates is provided in the tables at the end of this section.

Escalated at the 3.85% rate approved by the NDFC in Docket No. 2011-1, the $802.2 million was estimated to grow to $933.1 million by year-end 2014. This compares favorably to the $931.4 million Scenario 1 estimate. Put differently, the

4 "Decommissioning Cost Analysis for the Seabrook Station," Document No. N35-1636-001, Rev. 0, dated May 2011.

decommissioning cost calculated in Scenario 1 is essentially unchanged from the 2010 study, when both are expressed in 2014 dollars as escalated at the NDFC approved rate of 3.85%.

A significant portion of the increase (estimated at 25%) in the cost of Scenario 1 resulted from one-time cost adjustments and/or specific changes to the cost model, as identified in Table 5. The changes, with the exception of those associated with the dry fuel storage system (which were due, in part, to additional operating experience), were introduced as a result of industry experience from decommissioned reactors and planning experience from recently shutdown reactors. As shown in Table 6, without these changes, the effective annual escalation rate would be closer to 2.863%. This would indicate that, excluding process changes and one-time adjustments from lessons-learned from recent decommissioning projects, the cost components associated with decommissioning the Seabrook Station are escalating at a rate materially lower than the 3.85% rate currently assumed by the NDFC.

<u>Alternatives and Regulations</u>

The NRC provided initial decommissioning requirements in its rule adopted on June 27, 1988.[5] In this rule, the NRC set forth financial criteria for decommissioning licensed nuclear power facilities. The regulations addressed planning needs, timing, funding methods, and environmental review requirements for decommissioning. The rule also defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR, and ENTOMB.

<u>DECON</u> is defined as "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations."[6]

<u>SAFSTOR</u> is defined as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use."[7] Decommissioning is to be completed within 60 years.

5 U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72 "General Requirements for Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018 et seq.), June 27, 1988.

6 <u>Ibid</u>. Page FR24022, Column 3.

7 <u>Ibid</u>.

ENTOMB is defined as "the alternative in which radioactive contaminants are encased in a structurally long-lived material, such as concrete; the entombed structure is appropriately maintained and continued surveillance is carried out until the radioactive material decays to a level permitting unrestricted release of the property."[8] As with the SAFSTOR alternative, decommissioning is currently required to be completed within 60 years, although longer time periods will be considered when necessary to protect public health and safety.

The 60-year restriction has limited the practicality of the ENTOMB alternative at commercial reactors that generate significant amounts of long-lived radioactive material. In 1997, the Commission directed its staff to re-evaluate this alternative and identify the technical requirements and regulatory actions that would be necessary for entombment to become a viable option. The resulting evaluation provided several recommendations, however, rulemaking has been deferred pending the completion of additional research studies (e.g., on engineered barriers).

In 1996, the NRC published revisions to the general requirements for decommissioning nuclear power plants to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process.[9] The amendments allow for greater public participation and better define the transition process from operations to decommissioning. Regulatory Guide 1.184, issued in July 2000, further described the methods and procedures acceptable to the NRC staff for implementing the requirements of the 1996 revised rule relating to the initial activities and major phases of the decommissioning process. The costs and schedules presented in this analysis follow the general guidance and processes described in the amended regulations. The format and content of the estimates is also consistent with the recommendations of Regulatory Guide 1.202, issued in February 2005.[10]

Methodology

The methodology used to develop the estimates described within this document follows the basic approach originally presented in the cost estimating guidelines[11] developed by the Atomic Industrial Forum (now Nuclear Energy Institute). This

8 Ibid. Page FR24023, Column 2.

9 U.S. U.S. Code of Federal Regulations, Title 10, Parts 2, 50, and 51, "Decommissioning of Nuclear Power Reactors," Nuclear Regulatory Commission, Federal Register Volume 61, (p 39278 et seq.), July 29, 1996.

10 "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors," Regulatory Guide 1.202, Nuclear Regulatory Commission, February 2005

11 T.S. LaGuardia et al., "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986.

reference describes a unit factor method for determining decommissioning activity costs. The unit factors used in this analysis incorporate site-specific costs and the latest available information on worker productivity in decommissioning.

An activity duration critical path is used to determine the total decommissioning program schedule. This is required for calculating the carrying costs, which include program management, administration, field engineering, equipment rental, quality assurance, and security. This systematic approach for assembling decommissioning estimates ensures a high degree of confidence in the reliability of the resulting costs.

The estimates also reflect lessons learned from previously completed decommissioning projects, including TLG's involvement in the Shippingport Station decommissioning, completed in 1989, and the decommissioning of the Cintichem reactor, hot cells and associated facilities, completed in 1997. In addition, the planning and engineering for the Rancho Seco, Trojan, Yankee Rowe, Big Rock Point, Maine Yankee, Humboldt Bay-3, Oyster Creek, Connecticut Yankee, Crystal River, San Onofre and Vermont Yankee nuclear units have provided additional insight into the process, the regulatory aspects, and the technical challenges of decommissioning commercial nuclear units.

TLG made changes to the cost model based on industry experience from the review of previously active decommissioning projects, (e.g., Maine Yankee, Connecticut Yankee and Yankee Rowe) and as a result of the planning for recently shutdown nuclear units (e.g., Vermont Yankee, Kewaunee and Crystal River). We provide the details of the modeling changes in Section 3.2 and 3.5.4, but below is a high-level list:

<u>Changes as a Result of Lessons-Learned at Decommissioned Reactors</u>

- Additional Heavy Equipment
- Disposition of Outage and Maintenance Equipment (from Operations)
- Remedial Action Survey Teams
- Lower Waste Packaging Density
- Power Block Perimeter Excavation
- Higher Activated Containment Concrete Volume

<u>Changes as a Result of Lessons-Learned from Planning for Shutdown Reactors</u>

- Larger Security Organization
- Higher NRC Involvement
- Continued NEI Program Involvement
- Higher Energy Consumption

- Abbreviated Emergency Planning Requirements
- Higher Capital and Loading Costs for the Dry Fuel Storage System

Decommissioning Scenarios

Four scenarios were evaluated for a prompt decommissioning alternative with combinations of shutdown dates and expectations of the DOE's performance in transferring spent fuel from the site to a federal repository. The scenarios and associated assumptions as to plant shutdown and DOE performance are shown below.

	Scenario	Shutdown	First Spent Fuel Assembly Pickup	Last Spent Fuel Assembly Pickup
1	Current Operating License	2030	2040	2063
2	Scenario 1 with NDFC DOE Pickup Assumptions	2030	2077	2100
3	License Renewal	2050	2040	2077
4	Scenario 3 with NDFC DOE Pickup Assumptions	2050	2077	2100

Contingency

Consistent with standard cost estimating practice, contingencies are applied to the decontamination and dismantling costs developed as "specific provision for unforeseeable elements of cost within the defined project scope, particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur."[12] The cost elements in the estimates are based on ideal conditions; therefore, the types of unforeseeable events that are almost certain to occur in decommissioning, based on industry experience, are addressed through a percentage contingency applied on a line-item basis. This contingency factor is a nearly universal element in all large-scale construction and demolition projects.

The use and role of contingency within decommissioning estimates is necessary to provide assurance that sufficient funding will be available to accomplish the intended tasks. Contingency is expected to be refined as decommissioning draws

12 Project and Cost Engineers' Handbook, Second Edition, American Association of Cost Engineers, Marcel Dekker, Inc., New York, New York, p. 239.

nearer. While there will always be a need to account for unforeseeable elements of cost, detailed engineering and planning can lessen the severity of the impact of these events on the cost of the project. As we gain more experience with actual plant decommissionings in the future, it is reasonable to expect that costs, whether higher or lower, will become more fixed and the necessary contingency levels likely will be reduced.

Escalation

It should be noted that contingency, as used in this analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the station. As we understand it, the NDFC determines the annual percentage by which the decommissioning cost estimate is escalated and approves of funding schedules for the owners of Seabrook Station that incorporate the approved escalation factor. Independent of its cost estimates, TLG has performed an analysis to determine the rate by which each of the decommissioning cost components are expected to increase over time, through the operating life of Seabrook Station and its ultimate decommissioning.[13] Because Scenario 2 and Scenario 4 (NDFC Scenarios) contemplate different times over which the decommissioning process will be completed, TLG prepared separate escalation analyses for these two cost scenarios. The details of TLG's analysis are set forth in the report itself, but reflect that the costs in Scenario 2 and Scenario 4 are expected to increase annually by 2.58% and 2.51%, respectively.

For comparison purposes, Scenario 2 and Scenario 4 were expected to increase annually by 2.68% and 2.41%, respectively, in 2010.

Low-Level Radioactive Waste Disposal

The contaminated and activated material generated in the decontamination and dismantling of a commercial nuclear reactor is classified as low-level (radioactive) waste, although not all of the material is suitable for "shallow-land" disposal. With the passage of the "Low-Level Radioactive Waste Disposal Act" in 1980,[14] and its Amendments of 1985,[15] the states became ultimately responsible for the disposition of radioactive waste generated within their own borders. With the exception of Texas, no new compact facilities have been successfully sited, licensed, and constructed.

13 "Escalation Analysis for the Seabrook Station," Document No. N35-1705-002, Rev. 0, dated May 2015.

14 "Low-Level Radioactive Waste Policy Act of 1980," Public Law 96-573, 1980.

15 "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, 1986.

There are two commercial disposal facilities available to NextEra Energy for the more highly contaminated material generated from decommissioning (there are other facilities that can accept very low level quantities of contamination). Based on an agreement between NextEra Energy and Energy*Solutions*, LLC, Seabrook Station has obtained disposal capacity at Energy*Solutions*' Clive, Utah facility for its Class A[16] operational and decommissioning low-level radioactive waste. This agreement is effective through the full duration of the decommissioning period. The agreement incorporates pre-established firm pricing for processing and/or disposal for the majority of the waste that will be generated by the Seabrook Station during operations and decommissioning with an indexed escalation rate. The decommissioning cost estimates incorporate the disposal rates provided for in the agreement with Energy*Solutions*.

It should be noted that the vast majority of the low-level radioactive waste (indeed, more than 98% by volume) is Class A waste, the disposal of which is covered through NextEra Energy's agreement with Energy*Solutions*.

Energy*Solutions* does not have a license to dispose of the more highly radioactive waste (Classes B and C), for example, generated in the dismantling of the reactor vessel. However, the Texas Compact disposal facility is now operational and able to accommodate Class B and C waste. Operated by Waste Control Specialists (WCS), the disposal facility is also able to accept limited quantities of non-Compact waste.

The dismantling of the components residing closest to the reactor core generates radioactive waste that may be considered unsuitable for shallow-land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the federal government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. However, to date, the federal government has not identified a cost for disposing of greater than Class C waste (or GTCC) or a schedule for acceptance. For purposes of this estimate, the GTCC radioactive waste has been assumed to be packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel (modified for the different waste form). The GTCC material is stored with the spent fuel at the ISFSI and shipped at the conclusion of the spent fuel transfer process.

A significant portion of the waste material generated during decommissioning may only be potentially contaminated by radioactive materials. This waste can be

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16 U.S. Code of Federal Regulations, Title 10, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste"

analyzed on site or shipped off site to licensed facilities for further analysis, for processing and/or for conditioning/recovery. Reduction in the volume of low-level radioactive waste requiring disposal in a licensed low-level radioactive waste disposal facility can be accomplished through a variety of methods, including analyses and surveys or decontamination to eliminate the portion of waste that does not require disposal as radioactive waste, compaction, incineration, metal melt, etc.

High-Level Radioactive Waste Management

For purposes of this analysis, the owners of Seabrook Station are assuming that the DOE will initiate fuel transfers from the Seabrook site no earlier than 2040 (Scenarios 1 and 3). By contrast, the NDFC assumption of final transfer in 2100 translates into a delay until 2077 before the first fuel is moved off-site (Scenarios 2 and 4).

The DOE's generator allocation/receipt schedules are based upon the oldest fuel receiving the highest priority. Assuming a maximum rate of transfer (3,000 metric tons of uranium (MTU)/year), the fuel will be completely removed from the site by 2063 (Scenario 1). The latest completion date, evaluated to bound the liability, would be 2100 (Scenario 2 for a 2030 shutdown and Scenario 4 for a 2050 shutdown).

The NRC requires that licensees establish a program to manage and provide funding for the caretaking of all irradiated fuel at the reactor site until title of the fuel is transferred to the DOE.[17] Interim storage of the fuel, until the DOE has completed the transfer, will be in the ISFSI located on the Seabrook Station site. This will allow decommissioning to proceed and be completed in the shortest time possible.

The ISFSI, which will be operated under the Station's general license, is operational and, hence, the initial construction costs of the facility (which have already been incurred) are operational, as opposed to decommissioning, costs. The facility is designed to accommodate 78 dry storage modules, which is sufficient to store all of the spent fuel that will be generated by Seabrook through its current operating license (March 15, 2030). NextEra Energy included in its design of the ISFSI the ability to expand the capacity of the ISFSI to accommodate the additional inventory of spent fuel if the plant's license is extended to 2050. Once the pool is emptied, the fuel storage building can be decontaminated and dismantled.

17 "Domestic Licensing of Production and Utilization Facilities," U.S. Code of Federal Regulations, Title 10, Part 50.54 (bb).

Site Restoration

The efficient removal of the contaminated materials at the site may result in damage to many of the site structures. Blasting, coring, drilling, and the other decontamination activities will substantially damage power block structures, potentially weakening the footings and structural supports. Prompt demolition once the license is terminated is clearly the most appropriate option. This assumption is also consistent with the NH/NDFC prompt decommissioning and dismantlement and commercial/industrial standards. It is unreasonable to anticipate that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized is also more efficient and less costly than if the process were deferred. Experience at shutdown generating stations has shown that plant facilities quickly degrade without maintenance, adding additional expense and creating potential hazards to the public and the demolition work force. Consequently, this study assumes that non-essential site structures within the restricted access area are removed to a nominal depth of three feet below the local grade level wherever possible. The site is then graded and stabilized.

Site structures, facilities, and associated system components deemed to have ongoing value to future site development are excluded from the scope of the decommissioning estimate, along with any Unit 2 facilities, in accordance with the State of New Hampshire's revised definition of decommissioning.[18]

Summary

The costs to decommission Seabrook Station are evaluated for multiple scenarios. Regardless of the timing of the decommissioning activities, the estimates assume the prompt decommissioning and dismantling of the bulk of the plant beginning immediately after shutdown, even in those scenarios that assume a delay in DOE accepting transfer of the spent fuel. In all cases, the estimates fully account for all of the costs required to remove the contaminated and activated plant components and structural materials, such that the facility operator may then have unrestricted use of the site with no further requirement for an operating license. In the interim, the spent fuel remains in storage at the site until such time that the transfer to a DOE facility is complete. Once emptied, the storage facilities are also decommissioned.

The alternatives evaluated in this analysis are described in Section 2. The assumptions are presented in Section 3, along with schedules of annual

[18] "Decommissioning of Nuclear Electric Generating Facilities," RSA-F:14, as revised by House Bill 740, 2001.

expenditures. The major cost contributors are identified in Section 6, with detailed activity costs, waste volumes, and associated manpower requirements delineated in Appendix C. The major cost components are also identified in the cost summaries provided at the end of this section.

The cost elements in the estimates for the DECON alternative are assigned to one of three subcategories: NRC License Termination, Spent Fuel Management, and Site Restoration. The subcategory "NRC License Termination" is used to accumulate costs that are consistent with "decommissioning" as defined by the NRC in its financial assurance regulations (i.e., 10 CFR §50.75). In situations where the long-term management of spent fuel is not an issue, the cost reported for this subcategory is generally sufficient to terminate the unit's operating license.

The "Spent Fuel Management" subcategory contains costs associated with the expansion of the ISFSI (Scenario 4), the containerization and transfer of spent fuel to the ISFSI that is not transferred directly to the DOE over the first five and one-half years of pool operations, and the management of the ISFSI until such time that the transfer of all fuel from this facility to an off-site location (e.g., geologic repository) is complete. It does not include any spent fuel management expenses incurred prior to the cessation of plant operations.

"Site Restoration" is used to capture costs associated with the dismantling and demolition of buildings and facilities demonstrated to be free from contamination. This includes structures never exposed to radioactive materials, as well as those facilities that have been decontaminated to appropriate levels. Structures are removed to a depth of three feet and backfilled to conform to local grade.

It should be noted that the costs assigned to these subcategories are allocations. Delegation of cost elements is for the purposes of comparison (e.g., with NRC financial guidelines) or to permit specific financial treatment (e.g., ARO determinations). In reality, there can be considerable interaction between the activities in the three subcategories. For example, an owner may decide to remove non-contaminated structures early in the project to improve access to highly contaminated facilities or plant components. In these instances, the non-contaminated removal costs could be reassigned from Site Restoration to an NRC License Termination support activity. However, in general, the allocations represent a reasonable accounting of those costs that can be expected to be incurred for the specific subcomponents of the total estimated program cost, if executed as described.

The Seabrook unit is part of a large fleet of nuclear generating units. Assuming that the decommissioning of Seabrook Station will benefit from the decontamination and dismantling of its predecessors, certain economies and synergies may be available to reduce cost. In particular, lessons-learned can yield savings in activities such as engineering and planning, licensing and program management (in addition to fuel management and waste disposition). The magnitude of the savings will depend upon the degree of coordination, similarities in the environment (e.g., regulatory) under with the decommissioning is conducted and the consistency in approach to site-specific issues, however, we would expect cost savings of approximately 5% in program management from the synergies of decommissioning a fleet of nuclear units. Notwithstanding our expectation of synergistic and experience related savings, we have not reduced the decommissioning estimate to reflect those expected savings.

Another area of potential savings is in the long-term management of the spent fuel (once decommissioning has been completed). At times when fuel is not being actively transferred to the DOE, caretaking activities are generally minimal. As part of a larger fleet with similar caretaking requirements, a consolidated, centralized service organization (e.g., providing radiological, environmental and licensing support) could be a more economical alternative than a full complement of personnel at each site. This approach is particularly effective if fuel is expected to reside at each site for an extended period of time; less so for abbreviated storage and/or staggered periods.

The estimates likewise have not been reduced for the significant impact of the agreement between the joint owners and the DOE for cost recovery.

TABLE 1
COST SUMMARY
2030 SHUTDOWN DECOMMISSIONING SCENARIOS
(thousands of $2014)

Scenarios	1	2
Cessation of Operations (year)	2030	2030
Decommissioning Alternative	DECON	DECON
Spent Fuel Pick Up (year)	2040	2077
Spent Fuel Off Site (year)	2063	2100
Decontamination	14,534	14,534
Removal	107,010	107,010
Packaging	25,916	25,916
Transportation	20,487	20,487
Waste Disposal	79,831	79,831
Off-site Waste Processing	29,792	29,792
Program Management	297,400	338,926
Security	124,334	216,180
Spent Fuel Pool Isolation	12,434	12,434
ISFSI Related	115,164	136,259
Insurance and Regulatory Fees	38,192	68,384
Energy	18,944	18,944
Characterization Surveys	32,210	32,210
Property Taxes	0	0
Miscellaneous Equipment	7,033	7,033
Other Fees	2,939	5,492
Site O&M	5,176	5,176
Total	931,398	1,118,610

Scenarios	1	2
License Termination	647,542	647,542
Spent Fuel Management	232,292	419,504
Site Restoration	51,564	51,564
Total	931,398	1,118,610

Note: Columns may not add due to rounding

TABLE 2
COST SUMMARY
2050 SHUTDOWN DECOMMISSIONING SCENARIOS
(thousands of $2014)

Scenarios	3	4
Cessation of Operations (year)	2050	2050
Decommissioning Alternative	DECON	DECON
Spent Fuel Pick Up (year)	2040	2077
Spent Fuel Off Site (year)	2077	2100
Decontamination	14,534	14,534
Removal	107,010	107,291
Packaging	25,916	25,916
Transportation	20,487	20,487
Waste Disposal	79,831	79,831
Off-site Waste Processing	29,792	29,792
Program Management	290,668	316,479
Security	109,443	166,532
Spent Fuel Pool Isolation	12,434	12,434
ISFSI Related	78,064	137,080
Insurance and Regulatory Fees	33,297	52,063
Energy	18,944	18,944
Characterization Surveys	32,210	32,210
Property Taxes	0	0
Miscellaneous Equipment	7,033	7,033
Other Fees	2,525	4,112
Site O&M	5,176	5,176
Total	867,366	1,029,918

Scenarios	3	4
License Termination	647,542	647,891
Spent Fuel Management	168,259	330,005
Site Restoration	51,564	52,022
Total	867,366	1,029,918

Note: Columns may not add due to rounding

TABLE 3
COST COMPARISON
2010 SCENARIO 1 vs. 2014 SCENARIO 1
(thousands of $)

Scenarios	1	1	
Year's Dollars	2010	2014	
			Change[1]
Decontamination	13,789	14,534	745
Removal	88,579	107,010	18,431
Packaging	16,606	25,916	9,310
Transportation	15,219	20,487	5,268
Waste Disposal	57,760	79,831	22,071
Off-site Waste Processing	43,963	29,792	-14,171
Program Management	265,096	297,400	32,304
Security	109,826	124,334	14,508
Spent Fuel Pool Isolation	11,477	12,434	957
ISFSI Related	102,516	115,164	12,648
Insurance and Regulatory Fees	32,861	38,192	5,331
Energy	12,707	18,944	6,237
Characterization and Surveys	22,514	32,210	9,696
Property Taxes	0	0	0
Miscellaneous Equipment	6,706	7,033	327
Other Fees	0	2,939	2,939
Site O&M	2,588	5,176	2,588
Total	802,208	931,398	129,190

Scenarios	2010	2014	Delta
License Termination	542,880	647,542	104,662
Spent Fuel Management	220,244	232,292	12,048
Site Restoration	39,084	51,564	12,480
Total	802,208	931,398	129,190

[1] See Table 5 for cost elements added or significantly changed from the 2010 cost analysis

Note: Columns may not add due to rounding

TABLE 4
COST COMPARISON
2010 SCENARIO 2 vs. 2014 SCENARIO 2
(thousands of $)

Scenarios	2	2	
Year's Dollars	2010	2014	
			Change
Decontamination	13,789	14,534	745
Removal	88,579	107,010	18,431
Packaging	16,606	25,916	9,310
Transportation	15,219	20,487	5,268
Waste Disposal	57,760	79,831	22,071
Off-site Waste Processing	43,963	29,792	-14,171
Program Management	310,073	338,926	37,853
Security	207,980	216,180	8,200
Spent Fuel Pool Isolation	11,477	12,434	957
ISFSI Related	125,302	136,259	10,957
Insurance and Regulatory Fees	58,965	68,384	9,419
Energy	12,707	18,944	6,237
Characterization and Surveys	22,514	32,210	9,696
Property Taxes	0	0	0
Miscellaneous Equipment	6,706	7,033	327
Other Fees	0	5,492	5,492
Site O&M	2,588	5,176	2,588
Total	985,230	1,118,610	133,380

Scenarios	2010	2014	Change
License Termination	542,880	647,542	104,662
Spent Fuel Management	403,266	419,504	16,238
Site Restoration	39,084	51,564	12,480
Total	985,230	1,118,610	133,380

Note: Columns may not add due to rounding

TABLE 5
ONE-TIME COST ADDERS AND/OR ADJUSTMENTS
(thousands of $)

Cost Analysis (Year Prepared)	2010	2010	2014		
Year's Dollars	2010	2014[1]	2014		
				Change	Notes
Dry Fuel Storage Systems and Transfer Costs	56,944	62,848	83,680	20,832	[2],[3]
Security Staff	109,826	121,214	124,334	3,120	[3]
Remedial Action Survey Teams		-	7,244	7,244	[4]
Energy (Electricity and Fuel Oil)	12,707	14,024	18,944	4,920	[2],[3]
Containment Activated Concrete Allowance	5,013	5,533	10,285	4,752	[4]
Heavy Equipment	13,775	15,203	18,501	3,298	[4]
Power Block Perimeter Excavation		-	3,631	3,631	[4]
NEI Program Fees		-	2,939	2,939	[3]
NRC Charges (Hours and Licensing Fees)	5,745	6,340	7,849	1,509	[3]
Outage and Maintenance Equipment (from Operations)		-	675	675	
Emergency Planning Fees	27,746	30,623	10,187	(20,436)	[3]
Waste Packaging Density Decrease				828	[4]
Total Cost Delta				33,311	

[1] 2010 costs escalated at an annual rate of 2.497% based upon 2010 escalation analysis for Scenario 1
[2] Updated cost basis from operating experience
[3] Planning experience from shutdown reactors
[4] Industry experience from decommissioned reactors

TABLE 6
COST ESCALATION
SCENARIO 1
(thousands of $)

A	2014 Total Decommissioning Cost ($2014)	$931,398
B	Total Cost Adjustments from Table 5 ($2014)	$33,311
A-B	2014 Total Decommissioning Cost without Adjustments	$898,087
C	2010 Total Decommissioning Cost ($2010)	$802,208
(A-B)/C	Total Increase (%)	11.95%
	Effective Annual Rate (%)	2.86%
	Projected Escalation Rate (%) in 2010 for Scenario 1	2.50%

1. INTRODUCTION

This report presents estimates of the costs to promptly decommission the Seabrook Station following a scheduled cessation of plant operations at the end of the plant's licensed operating life. The analysis is designed to provide Seabrook Station with sufficient information to assess the plant owners' financial obligations, as they pertain to the eventual decommissioning of the nuclear station. It is not a detailed engineering document, but a financial analysis prepared in advance of the detailed engineering that will be required to carry out the decommissioning. While this study reflects the best estimate of the cost to decommission Seabrook Station at the end of its operating life, TLG takes a conservative approach to developing these costs to ensure that the estimate is bounded and the dollars calculated will cover all of the ultimate costs to decommission the plant. The estimates provide further conservatism in that they make no adjustment for the "fleet approach" that NextEra Energy will have available that or the decommissioning lessons that will be learned prior to Seabrook's decommissioning, both of which likely will result in cost savings. The estimates also assume significant delays in DOE accepting transfer of the spent fuel while at the same time do not take into account that DOE will reimburse the joint owners for the costs associated with that assumed delay. All of this means that, while this study reflects TLG's best estimate of the decommissioning costs, it is highly likely that the actual net costs to decommission the plant - which include the spent fuel costs that will be reimbursed under the DOE Settlement - will be significantly lower than these estimates.

1.1 OBJECTIVES OF STUDY

The objective of the analysis is to prepare comprehensive estimates of the costs, detailed schedules of the associated activities, and projections of the low-level radioactive waste generated in decommissioning Seabrook Station.

Under the terms of its current operating license, Seabrook Station will cease operations in 2030. NextEra Energy Seabrook (NextEra Energy) submitted an application to the NRC on June 1, 2010 for approval of renewal of Seabrook's operating license. Under the NRC's current published schedule, a decision on the license renewal is expected in 2016. This would extend the operating license from midnight, March 15, 2030, to midnight, March 15, 2050. As such, this analysis evaluates a suite of decommissioning scenarios as described in Sections 2 and 3.

1.2 SITE DESCRIPTION

The Seabrook Station is located on the western shore of Hampton Harbor in Rockingham County, in the town of Seabrook, New Hampshire. It is approximately 11 miles south of Portsmouth, New Hampshire, and two miles west of the Atlantic Ocean. Site structures, facilities, and associated system components deemed to have ongoing value to future site development are excluded from the scope of the decommissioning estimate, along with any Unit 2 facilities, in accordance with the State of New Hampshire's revised definition of decommissioning.[1]*

The nuclear steam supply system (NSSS) consists of a pressurized water reactor and a four-loop reactor coolant system, supplied by Westinghouse. The owners have received approval to increase the original power rating (in two separate applications) to the current 1,240 megawatts (electric). The reactor coolant system is comprised of the reactor vessel and four heat transfer loops, each containing a vertical U-tube type steam generator and a single stage centrifugal reactor coolant pump. In addition, the system includes an electrically heated pressurizer, a pressurizer relief tank, and interconnected piping. The system is housed within a "containment structure," a seismic Category I reinforced-concrete dry structure that is designed to function at atmospheric pressure. It consists of an upright cylinder topped with a hemispherical dome, supported on a reinforced concrete foundation mat that is keyed into the bedrock. A welded steel liner plate, anchored to the inside face of the containment, serves as a leak-tight membrane. A four-foot thick concrete mat forms the floor of the containment. Located outside the containment building, and having a similar geometry, is the containment enclosure building. This structure provides leak protection for the containment and protection from certain external loads.

Heat produced in the reactor is converted to electrical energy by the steam and power conversion system. A turbine-generator system converts the thermal energy of steam produced in the steam generators into mechanical shaft power and then into electrical energy. The plant's turbine-generator consists of a tandem compound, six flow, single reheat unit. The high-pressure turbine element includes one double-flow, high-pressure turbine. The low-pressure turbine elements include three double-flow, low-pressure turbines and four external moisture separator/reheaters driving a direct-coupled generator at 1800 rpm. The turbine is operated in a closed feedwater cycle, which condenses the steam; the heated feedwater is returned to the steam generators. Heat rejected in the main condensers is removed by the circulating water system. In

* Annotated references for citations in Sections 1-6 are provided in Section 7.

the circulating water system, cooling of the main condenser system is via water taken from the Atlantic Ocean through one of the two 19-foot diameter tunnels and is pumped through the three condenser shells in the turbine building. The heated water is then returned by way of diffusers to the ocean through the other tunnel.

The Atlantic Ocean serves as the normal ultimate heat sink. However, in the unlikely event that the normal supply of cooling water from the Atlantic Ocean is unavailable, heat can be discharged to the atmosphere through the use of a mechanical draft evaporative cooling tower.

1.3 REGULATORY GUIDANCE

The Nuclear Regulatory Commission (NRC or Commission) provided initial decommissioning requirements in its rule "General Requirements for Decommissioning Nuclear Facilities," issued in June 1988.[2] This rule set forth financial criteria for decommissioning licensed nuclear power facilities. The regulation addressed decommissioning planning needs, timing, funding methods, and environmental review requirements. The intent of the rule was to ensure that decommissioning would be accomplished in a safe and timely manner and that adequate funds would be available for this purpose. Subsequent to the rule, the NRC issued Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors,"[3] which provided additional guidance to the licensees of nuclear facilities on the financial methods acceptable to the NRC staff for complying with the requirements of the rule. The regulatory guide addressed the funding requirements and provided guidance on the content and form of the financial assurance mechanisms indicated in the rule.

The rule defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR, and ENTOMB. The DECON alternative assumes that any contaminated or activated portion of the plant's systems, structures and facilities are removed or decontaminated to levels that permit the site to be released for unrestricted use shortly after the cessation of plant operations, while the SAFSTOR and ENTOMB alternatives defer the process. The DECON alternative is also consistent with the requirements of New Hampshire law. See, e.g., RSA 162-F:14, II(a).

The rule also placed limits on the time allowed to complete the decommissioning process. For SAFSTOR, the process is restricted in overall duration to 60 years, unless it can be shown that a longer duration is necessary to protect public health and safety. The guidelines for ENTOMB are similar, providing the NRC with both sufficient leverage and flexibility to ensure that these deferred options are only used in situations where it is reasonable and consistent with the definition of decommissioning. At the conclusion of a dormancy period, the site would still require significant remediation to meet the unrestricted release limits for license termination.

The ENTOMB alternative has not been viewed as a viable option for power reactors due to the significant time required to isolate the long-lived radionuclides for decay to permissible levels. With the rulemaking permitting the controlled release of a site,[4] the NRC has re-evaluated this alternative. The resulting feasibility study, based upon an assessment by Pacific Northwest National Laboratory, concluded that the method did have conditional merit for some, if not most reactors. The staff also found that additional rulemaking would be needed before this option could be treated as a generic alternative. The NRC had considered rulemaking to alter the 60-year time for completing decommissioning and to clarify the use of engineered barriers for reactor entombments.[5] However, the NRC's staff has recommended that rulemaking be deferred, based upon several factors (e.g., no licensee has committed to pursuing the entombment option, the unresolved issues associated with the disposition of greater-than-Class C material (GTCC), and the NRC's current priorities), at least until after the additional research studies are complete. The Commission concurred with the staff's recommendation.

In 1996, the NRC published revisions to the general requirements for decommissioning nuclear power plants.[6] When the decommissioning regulations were adopted in 1988, it was assumed that the majority of licensees would decommission at the end of the facility's operating licensed life. Since that time, several licensees permanently and prematurely ceased operations. Exemptions from certain operating requirements were required once the reactor was defueled to facilitate the decommissioning. Each case was handled individually, without clearly defined generic requirements. The NRC amended the decommissioning regulations in 1996 to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process. The amendments allow for greater public participation and better define the transition process from operations to decommissioning.

Under the revised regulations, licensees will submit written certification to the NRC within 30 days after the decision to cease operations. Certification will also be required once the fuel is permanently removed from the reactor vessel. Submittal of these notices entitle the licensee to a fee reduction and eliminate the obligation to follow certain requirements needed only during operation of the reactor. Before or within two years following cessation of operations, the licensee must submit a Post-Shutdown Decommissioning Activities Report (PSDAR) to the NRC. The PSDAR describes the planned decommissioning activities, the associated sequence and schedule, and an estimate of expected costs. Prior to completing decommissioning, the licensee is required to submit an application to the NRC to terminate the license, which includes a license termination plan (LTP).

While Seabrook Station was under construction in 1981 the New Hampshire Legislature enacted RSA 162-F which, among other things, called for the creation of a fund into which the Seabrook Station owners would make payments for the purpose of decommissioning the station at the end of its expected operating life, as well as creation of the NDFC. RSA-162 grants to the NDFC the authority to establish the projected cost of decommissioning and the schedule of payments necessary for the Seabrook Station owners to meet those projected costs by the funding date, *See* RSA 162-F:15, I; RSA 162-F:14, II.

When RSA 162-F was initially enacted, the Seabrook Station site was to be returned to its original pre-construction condition following the end of its operating life. NDFC Final Report and Order, Docket No. NDFC 2001-1 (Nov. 5, 2001) ("2001 Order") at 11. In 2001, however, the statute was amended, requiring instead that the site be returned to a "non-nuclear commercial, industrial, or other similar use" condition after Seabrook Station ceases operation. RSA 162-F:14, II(b). The amendment also made clear that the NDFC is charged with determining what decommissioning activities are required for the Station, the projected cost of those activities using the commercial/industrial "C/I" decommissioning standard, and for controlling withdrawals from the decommissioning trust fund to ensure that the funds are spent for legitimate decommissioning activities. RSA 162-F:15, I; 162-F:14, II & 162-F:23; see also 2001 Order at 7-8.

In its 2001 Order, the NDFC adopted more specific guidance on the parameters of the C/I standard for determining the projected cost of decommissioning. See 2001 Order at 14, 42 and Attachment 1. The NDFC also addressed Seabrook Station's expected operating life in the order.

The NDFC in prior orders determined that the assumed plant shutdown date should correspond to the date on which the NRC license is terminated. In December, 2005, the NRC granted NextEra Seabrook's application for recapture of the zero- and low-power testing periods for the plant, thereby extending the plant's operating license 3.4 years, to March 2030. NextEra Energy's application for license renewal would extend the operating license from midnight, March 15, 2030, to midnight, March 15, 2050. Given that the

NRC will act on Seabrook Station's license renewal application prior to the next comprehensive update, estimates are presented for both a 2030 and 2050 shutdown date. As we understand it, NextEra will request that the NDFC approve the 2050-shutdown estimate, conditioned upon the NRC extending the plant's operating license to 2050.

1.3.1 High-Level Radioactive Waste Management

Congress passed the Nuclear Waste Policy Act[7] (NWPA) in 1982, assigning the responsibility for disposal of the spent nuclear fuel created by the commercial nuclear generating plants to the U.S. Department of Energy (DOE). Two permanent disposal facilities were envisioned, as well as an interim storage facility. In order to pay for such facilities, the legislation created a Nuclear Waste Fund through which money is collected from the sale of electricity generated by nuclear power plants. NWPA, along with the individual disposal contracts that nuclear utilities were required to sign, specified that the DOE was to begin accepting spent fuel by January 31, 1998.

Since the original legislation, the DOE has announced several delays in the program schedule. By January 1998, the DOE had failed to initiate the disposal of spent nuclear fuel and high level waste, as required by the NWPA and the utility contracts. Delays continue, and as a result, generators have initiated legal action against the DOE in an attempt to resolve the impasse.[8]

When estimating the costs to decommission a nuclear plant, spent fuel transfer assumptions typically are based on the DOE's most-recent schedule for completion of the Yucca Mountain repository. The DOE submitted its license application to the NRC on June 3, 2008, seeking authorization to construct a geologic repository at Yucca Mountain, Nevada. The NRC's review of DOE's license application to construct a geologic repository at Yucca Mountain was suspended in 2011 when the Administration significantly reduced the budget for completing that work. However, the US Court of Appeals for the District of Columbia Circuit issued a writ of mandamus (in August 2013) ordering NRC to comply with federal law and resume its review of DOE's Yucca Mountain repository license application to the extent allowed by previously appropriated funding for the review. That review is now complete with the publication of the five-volume safety evaluation report. A supplement to DOE's environmental impact statement and an adjudicatory hearing on the contentions filed by interested parties must be completed before a licensing decision can be made.

While the current administration cut the budget for the repository program, it promised to "conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle … and make recommendations for a new plan." Towards this goal, the administration appointed a Blue Ribbon Commission on America's Nuclear Future (Blue Ribbon Commission) to make recommendations for a new plan for nuclear waste disposal. The Blue Ribbon Commission's charter includes a requirement that it consider "[o]ptions for safe storage of used nuclear fuel while final disposition pathways are selected and deployed."[9]

On January 26, 2012, the Blue Ribbon Commission issued its "Report to the Secretary of Energy" containing a number of recommendations on nuclear waste disposal. Two of the recommendations that may impact decommissioning planning are:

- "[T]he United States [should] establish a program that leads to the timely development of one or more consolidated storage facilities"
- "[T]he United States should undertake an integrated nuclear waste management program that leads to the timely development of one or more permanent deep geological facilities for the safe disposal of spent fuel and high-level nuclear waste."[10]

In January 2013, the DOE issued the "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," in response to the recommendations made by the Blue Ribbon Commission and as "a framework for moving toward a sustainable program to deploy an integrated system capable of transporting, storing, and disposing of used nuclear fuel..."[11]

"With the appropriate authorizations from Congress, the Administration currently plans to implement a program over the next 10 years that:

- Sites, designs and licenses, constructs and begins operations of a pilot interim storage facility by 2021 with an initial focus on accepting used nuclear fuel from shut-down reactor sites;
- Advances toward the siting and licensing of a larger interim storage facility to be available by 2025 that will have sufficient capacity to provide flexibility in the waste management system

and allows for acceptance of enough used nuclear fuel to reduce expected government liabilities; and

- Makes demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository by 2048."

A federal appeals court has ruled that DOE's obligation to take possession of spent nuclear fuel is unconditional and cannot be excused either by the absence of a repository or by a claim of unavoidable delay. The owners of Seabrook Station filed a lawsuit in 2004 claiming damages for DOE's failure to perform as originally prescribed in the standard disposal contract.

On March 31, 2009, the owners executed a Settlement Agreement with the DOE and the Department of Justice ("DOJ"). In the Agreement, the owners settled the lawsuit in exchange for payments. The payments are intended to cover those costs incurred for managing and storing the spent fuel that would not have been incurred but for DOE's delay in performance. Though reimbursable to the joint owners of Seabrook Station, these same costs – that is, the costs of managing and storing the spent fuel – are also included in the gross decommissioning cost estimates.

While the DOE is responsible for the costs incurred until it fulfills its obligation, certain assumptions are needed to assess the financial impact on the identified decommissioning cost scenarios. For purposes of this analysis, the owners of Seabrook Station are assuming that 2030 is the earliest that the DOE can be expected to initiate commercial transfer operations (Scenarios 1 and 3), with the first fuel removed from the Seabrook site in 2040.

The DOE's generator allocation/receipt schedules are based upon the oldest fuel receiving the highest priority. Assuming a maximum rate of transfer (3,000 metric tons of uranium (MTU)/year), the earliest date for completion of fuel removal from the site is 2063 (Scenario 1). The latest completion date, evaluated to bound the liability, would be 2100 (Scenario 2 for a 2030 shutdown and Scenario 4 for a 2050 shutdown).

The NRC requires that licensees establish a program to manage and provide funding for the caretaking of all irradiated fuel at the reactor site until title of the fuel is transferred to the DOE.[12] Interim storage of the fuel, until the DOE has completed the transfer, will be in an independent facility located on the Seabrook Station site. This will allow decommissioning to proceed and be completed in the shortest time possible.

The ISFSI, which will be operated under the Station's general license, is already operational and, hence, the initial construction costs of the facility were operational, as opposed to decommissioning, costs. The ISFSI was designed to accommodate all of the spent fuel generated by the plant during its operating life and has expansion capacity sufficient to accommodate all of the fuel even if the license is renewed to 2050. As such, in only one scenario (Scenario 4) will the facility need to be expanded to accommodate the inventory of spent fuel residing in the plant's storage pool at the conclusion of the five and one-half year cooling period. Once the pool is emptied, the fuel storage building can be decontaminated and dismantled.

1.3.2 Low-Level Radioactive Waste Acts

The contaminated and activated material generated in the decontamination and dismantling of a commercial nuclear reactor is classified as low-level (radioactive) waste, although not all of the material is suitable for "shallow-land" disposal. With the passage of the "Low-Level Radioactive Waste Disposal Act" in 1980,[13] and its Amendments of 1985,"[14] the states became ultimately responsible for the disposition of radioactive waste generated within their own borders. With the exception of Texas, no new compact facilities have been successfully sited, licensed, and constructed.

There are two commercial disposal facilities available to NextEra Energy for the more highly contaminated material generated from decommissioning (there are other facilities that can accept very low level quantities of contamination). Based on an agreement between NextEra Energy and Energy*Solutions*, LLC, Seabrook Station has obtained disposal capacity at Energy*Solutions*' Clive, Utah facility for its Class A[15] operational and decommissioning low-level radioactive waste. This agreement is effective through the full duration of the decommissioning period. The agreement incorporates pre-established firm pricing for processing and/or disposal for the majority of the waste that will be generated by the Seabrook Station during operations and decommissioning with an indexed escalation rate. The decommissioning cost estimates incorporate the disposal rates provided for in the agreement with Energy*Solutions*.

Energy*Solutions* does not have a license to dispose of the more highly radioactive waste (Classes B and C), for example, generated in the dismantling of the reactor vessel. However, the Texas Compact disposal facility is now operational and able to accommodate Class B and C waste. Operated by Waste Control Specialists (WCS), the disposal facility is also able to accept limited quantities of non-Compact waste.

It should be noted that the vast majority of the low-level radioactive waste (indeed, more than 98% by volume) is Class A waste, the disposal of which is covered through NextEra Energy's agreement with Energy*Solutions*.

The dismantling of the components residing closest to the reactor core generates radioactive waste that may be considered unsuitable for shallow-land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the federal government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. However, to date, the federal government has not identified a cost for disposing of greater than Class C waste (or GTCC) or a schedule for acceptance. For purposes of this estimate, the GTCC radioactive waste has been assumed to be packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel (modified for the different waste form). The GTCC material is stored with the spent fuel at the ISFSI and shipped at the conclusion of the spent fuel transfer process.

A significant portion of the waste material generated during decommissioning may only be potentially contaminated by radioactive materials. This waste can be analyzed on site or shipped off site to licensed facilities for further analysis, for processing and/or for conditioning/recovery. Reduction in the volume of low-level radioactive waste requiring disposal in a licensed low-level radioactive waste disposal facility can be accomplished through a variety of methods, including analyses and surveys or decontamination to eliminate the portion of waste that does not require disposal as radioactive waste, compaction, incineration, metal melt, etc.

1.3.3 Radiological Criteria for License Termination

In 1997, the NRC published Subpart E, "Radiological Criteria for License Termination,"[16] amending 10 CFR §20. This subpart provides radiological criteria for releasing a facility for unrestricted use. The regulation states that the site can be released for unrestricted use if radioactivity levels are such that the average member of a critical group would not receive a Total Effective Dose Equivalent (TEDE) in excess of 25 millirem per year, and provided that residual radioactivity has been reduced to levels that are As Low As Reasonably Achievable (ALARA). The decommissioning estimates for Seabrook Station assume that the site will be remediated to a residual level consistent with the NRC-prescribed level and the State of New Hampshire's revised definition of decommissioning.

It should be noted that the NRC and the Environmental Protection Agency (EPA) differ on the amount of residual radioactivity considered acceptable in site remediation. The EPA has two limits that apply to radioactive materials. An EPA limit of 15 millirem per year is derived from criteria established by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund).[17] An additional and separate limit of 4 millirem per year, as defined in 40 CFR §141.16, is applied to drinking water.[18]

On October 9, 2002, the NRC signed an agreement with the EPA on the radiological decommissioning and decontamination of NRC-licensed sites. The Memorandum of Understanding (MOU)[19] provides that EPA will defer exercise of authority under CERCLA for the majority of facilities decommissioned under NRC authority. The MOU also includes provisions for NRC and EPA consultation for certain sites when, at the time of license termination, (1) groundwater contamination exceeds EPA-permitted levels; (2) NRC contemplates restricted release of the site; and/or (3) residual radioactive soil concentrations exceed levels defined in the MOU.

The MOU does not impose any new requirements on NRC licensees and should reduce the involvement of the EPA with NRC licensees who are decommissioning. Most sites are expected to meet the NRC criteria for unrestricted use, and the NRC believes that only a few sites will have groundwater or soil contamination in excess of the levels specified in the MOU that trigger consultation with the EPA. However, if there are other hazardous materials on the site, the EPA may be involved in the cleanup. As such, the possibility of dual regulation remains for certain licensees. The present study does not include any costs for this occurrence.

2. DECOMMISSIONING ALTERNATIVES

Detailed cost estimates were developed to promptly decommission Seabrook Station, (i.e., the DECON decommissioning alternative). The DECON alternative, as defined by the NRC, is "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations." Application of this standard is mandated by New Hampshire law, as interpreted by the NDFC.

Four scenarios were identified for evaluation. As shown below, the four scenarios evaluate a combination of shutdown dates (scheduled and anticipated), and expectations of the DOE's performance in transferring spent fuel from the site to a federal repository

	Scenario	Shutdown	First Spent Fuel Assembly Pickup	Last Spent Fuel Assembly Pickup
1	Current Operating License	2030	2040	2063
2	Scenario 1 with NDFC DOE Pickup Assumptions	2030	2077	2100
3	License Renewal	2050	2040	2077
4	Scenario 3 with NDFC DOE Pickup Assumptions	2050	2077	2100

The following sections describe the basic activities associated with the DECON alternative. Although detailed procedures for each activity identified are not provided, and the actual sequence of work may vary, the activity descriptions provide a basis not only for estimating but also for the expected scope of work (i.e., engineering and planning at the time of decommissioning).

The conceptual approach that the NRC has described in its regulations divides decommissioning into three phases. The initial phase commences with the effective date of permanent cessation of operations and involves the transition of both plant and licensee from reactor operations (i.e., power production) to facility de-activation and closure. During the first phase, notification is provided to the NRC certifying the permanent cessation of operations and the removal of fuel from the reactor vessel. The licensee is then prohibited from reactor operation.

The second phase encompasses activities during the storage period or during major decommissioning activities, or a combination of the two. The third phase pertains to the activities involved in license termination. The decommissioning estimates developed for the Seabrook Station are also divided into phases or periods; however, demarcation of the phases is based upon major milestones within the project or significant changes in the projected expenditures.

TLG reviewed the Settlement Agreement between NextEra Energy Seabrook, LLC and the State of New Hampshire, effective October 19, 2010 related to the Seabrook Station License Renewal Application submitted to the NRC on June 1, 2010. The terms agreed to between the parties do not have an impact on the Seabrook Station decommissioning cost.

2.1 PERIOD 1 - PREPARATIONS

In anticipation of the cessation of plant operations, detailed preparations are undertaken to provide a smooth transition from plant operations to site decommissioning. Through implementation of a staffing transition plan, the organization required to manage the intended decommissioning activities is assembled from available plant staff and outside resources. Preparations include the planning for permanent defueling of the reactor, revision of technical specifications applicable to the operating conditions and requirements, a characterization of the facility and major components, and the development of the PSDAR.

2.1.1 Engineering and Planning

The PSDAR, required before or within two years following cessation of operations, provides a description of the licensee's planned decommissioning activities, a timetable, and the associated financial requirements of the intended decommissioning program. Upon receipt of the PSDAR, the NRC will make the document available to the public for comment in a local hearing to be held in the vicinity of the reactor site. Ninety days following submittal and NRC receipt of the PSDAR, the licensee may begin to perform major decommissioning activities under a modified 10 CFR §50.59 procedure (i.e., without specific NRC approval). Major activities are defined as any activity that results in permanent removal of major radioactive components, permanently modifies the structure of the containment, or results in dismantling components (for shipment) containing GTCC, as defined by 10 CFR

§61. Major components are further defined as comprising the reactor vessel and internals, steam generators, large bore reactor coolant system piping, and other large components that are radioactive. The NRC includes the following additional criteria for use of the §50.59 process in decommissioning. The proposed activity must not:

- foreclose release of the site for possible unrestricted use,
- significantly increase decommissioning costs,
- cause any significant environmental impact, or
- violate the terms of the licensee's existing license.

Existing operational technical specifications are reviewed and modified to reflect plant conditions and the safety concerns associated with permanent cessation of operations. The environmental impact associated with the planned decommissioning activities is also considered. Typically, a licensee is not allowed to proceed if the consequences of a particular decommissioning activity are greater than that bounded by previously evaluated environmental assessments or impact statements. In this instance, the licensee must submit a license amendment for the specific activity and update the environmental report.

The decommissioning program outlined in the PSDAR is designed to accomplish the required tasks within the ALARA guidelines (as defined in 10 CFR §20) for protection of personnel from exposure to radiation hazards. It also addresses the continued protection of the health and safety of the public and the environment during the dismantling activity. Consequently, with the development of the PSDAR, activity specifications, cost-benefit and safety analyses, work packages, and procedures are assembled to support the proposed decontamination and dismantling activities.

2.1.2 Site Preparations

Following final plant shutdown, and in preparation for actual decommissioning activities, the following activities are initiated:

- Characterization of the site and surrounding environs. This includes radiation surveys and sampling of the work areas, major components (including the reactor vessel and its internals), internal piping, and biological shield.

- Isolation of the spent fuel storage pool and fuel handling systems, such that decommissioning operations can commence on the balance of the plant. Decommissioning operations are scheduled around the fuel handling area to optimize the overall project schedule. The fuel will be transferred from the pool once it decays to the point that it meets the heat load criteria of the storage/ transport containers. Consequently, it is assumed that the fuel pool will remain operational for approximately five and one-half years following the cessation of plant operations after which the last of the cooled fuel will be transferred to the ISFSI, to the DOE or an alternative private storage facility, as may be applicable at that time.
- Specification of transport and disposal requirements for activated materials and/or hazardous materials, including shielding and waste stabilization.
- Development of procedures for occupational exposure control, control and release of liquid and gaseous effluent, processing of radwaste (including dry-active waste, resins, filter media, metallic and non-metallic components generated in decommissioning), site security and emergency programs, and industrial safety.

2.2 PERIOD 2 - DECOMMISSIONING OPERATIONS

This period includes the physical decommissioning activities associated with the removal and disposal of contaminated and activated components and structures, including the successful termination of the 10 CFR §50 operating license. Significant decommissioning activities in this phase include:

- Construction of temporary facilities and/or modification of existing facilities to support dismantling activities. This may include a centralized processing area to facilitate equipment removal and component preparations for off-site disposal.
- Reconfiguration and modification of site structures and facilities as needed to support decommissioning operations. This may include the upgrading of roads (on- and off-site) to facilitate hauling and transport. Modifications may be required to the containment structure to facilitate access of large/heavy equipment. Modifications may also be required to the refueling area of the building to support the segmentation of the reactor vessel internals and component extraction.

- Design and fabrication of temporary and permanent shielding to support removal and transportation activities, construction of contamination control envelopes, and the procurement of specialty tooling.
- Procurement (lease or purchase) of shipping canisters, cask liners, and industrial packages.
- Decontamination of components and piping systems as required to control (minimize) worker exposure.
- Removal of piping and components no longer essential to support decommissioning operations.
- Removal of control rod drive housings and the head service structure from reactor vessel head. Segmentation of the vessel closure head.
- Removal and segmentation of the upper internals assemblies. Segmentation will maximize the loading of the shielded transport casks (i.e., by weight and activity). The operations are conducted under water using remotely operated tooling and contamination controls.
- Disassembly and segmentation of the remaining reactor internals, including the core former and lower core support assembly. Some material is expected to exceed Class C disposal requirements. That material will be packaged in a modified fuel canister for geologic disposal.
- Segmentation of the reactor vessel. A shielded platform is installed for segmentation as cutting operations are performed in air using remotely operated equipment within a contamination control envelope. The water level is maintained just below the cut to minimize the working area dose rates. Segments are transferred in-air to containers that are stored under water, for example, in an isolated area of the refueling canal.
- Removal of the activated portions of the concrete biological shield and accessible contaminated concrete surfaces. If dictated by the steam generator and pressurizer removal scenarios, those portions of the associated cubicles necessary for access and component extraction are removed.
- Removal of the steam generators and pressurizer for controlled disposal. The steam domes are removed for off-site processing. The lower shell is sealed and the nozzles and other openings welded closed. These components can serve as their own burial containers provided that all penetrations are properly sealed and the internal contaminants are stabilized. Steel shielding is added, as necessary, to those external areas of the steam generators to meet transportation limits and regulations.
- Transfer of the spent fuel from the storage pool to the DOE and ISFSI pad and, in the Scenario 4, expansion of the ISFSI.

At least two years prior to the anticipated date of license termination, a LTP is required. Submitted as a supplement to the FSAR, or equivalent, the plan must include: a site characterization, description of the remaining dismantling activities, plans for site remediation, in conformity with New Hampshire's commercial/industrial standard, procedures for the final radiation survey, designation of the end use of the site, an updated cost estimate to complete the decommissioning, and any associated environmental concerns. The NRC will notice the receipt of the plan, make the plan available for public comment, and schedule a local hearing. LTP approval will be subject to any conditions and limitations as deemed appropriate by the Commission. The licensee may then commence with the final remediation of site facilities and services, including:

- Removal of remaining plant systems and associated components as they become nonessential to the decommissioning program or worker health and safety (e.g., waste collection and treatment systems, electrical power and ventilation systems).
- Removal of the steel liners from refueling canal, disposing of the activated and contaminated sections as radioactive waste. Removal of any remaining activated/ contaminated concrete.
- Surveys of the decontaminated areas of the containment structure.
- Remediation and removal of the contaminated equipment and material from the auxiliary and fuel buildings and any other contaminated facility. Radiation and contamination controls are utilized until residual levels indicate that the structures and equipment can be released for unrestricted access and conventional demolition. This activity may necessitate the dismantling and disposition of most of the systems and components (both clean and contaminated) located within these buildings. This activity facilitates surface decontamination and subsequent verification surveys required prior to obtaining release for demolition.
- Removal of the remaining components, equipment, and plant services in support of the area release survey(s).
- Routing of material removed in the decontamination and dismantling to a central processing area. Material certified to be free of contamination is released for unrestricted disposition (e.g., as scrap, recycle, or general disposal). Contaminated material is characterized and segregated for additional off-site processing (disassembly, chemical cleaning, volume reduction, and waste treatment), and/or packaged for controlled disposal at a low-level radioactive waste disposal facility.

Incorporated into the LTP is the Final Survey Plan. This plan identifies the radiological surveys to be performed once the decontamination activities are completed and is developed using the guidance provided in the "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)."[20] This document incorporates the statistical approaches to survey design and data interpretation used by the EPA. It also identifies commercially available instrumentation and procedures for conducting radiological surveys. Use of this guidance ensures that the surveys are conducted in a manner that provides a high degree of confidence that applicable NRC criteria are satisfied. Once the survey is complete, the results are provided to the NRC in a format that can be verified. The NRC then reviews and evaluates the information, performs an independent confirmation of radiological site conditions, and makes a determination on the requested change to the operating license (that would release the property, exclusive of the ISFSI, for unrestricted use).

The NRC will amend the operating license to remove the footprint of the power plant if it determines that site remediation has been performed in accordance with the LTP, and that the terminal radiation survey and associated documentation demonstrate that the land upon which the power plant is suitable for release.

2.3 PERIOD 3 - SITE RESTORATION

Following completion of decommissioning operations, site restoration activities toward the commercial/industrial standard may begin. Efficient removal of the contaminated materials and verification that residual radionuclide concentrations are below the NRC limits may result in substantial damage to many of the structures. Although performed in a controlled, safe manner, blasting, coring, drilling, scarification (surface removal), and the other decontamination activities will substantially degrade power block structures including the reactor and auxiliary buildings. Verifying that subsurface radionuclide concentrations meet NRC site release requirements may require removal of grade slabs and lower floors, potentially weakening footings and structural supports. This removal activity will be necessary for those facilities and plant areas where historical records, when available, indicate the potential for radionuclides having been present in the soil, where system failures have been recorded, or where it is required to confirm that subsurface process and drain lines were not breached over the operating life of the station.

Prompt dismantling of site structures is clearly the most appropriate option. It is unreasonable to anticipate that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized on site is more efficient than if the process were deferred. Site facilities quickly degrade without maintenance, adding additional expense and creating potential hazards to the public as well as to future workers. Abandonment creates a breeding ground for vermin infestation as well as other biological hazards.

This cost study presumes that non-essential structures and site facilities are dismantled as a continuation of the decommissioning activity. Foundations and exterior walls are removed to a nominal depth of three feet below grade (see Section 3.4.7.2 for additional information). The three-foot depth allows for the placement of gravel for drainage, as well as topsoil, so that vegetation can be established for erosion control. Site areas affected by the dismantling activities are restored and the plant area graded as required to prevent ponding and inhibit the refloating of subsurface materials.

Concrete rubble produced by demolition activities is processed to remove rebar and miscellaneous embedments. The processed material is then used on site to backfill voids (see Section 3.4.7.3 for additional information). Excess materials are trucked to an off-site area for disposal as construction debris. Only non-contaminated concrete and materials are rubblized and used for backfill. All waste in excess of applicable legal limits will be removed from the site and will not under any circumstances be rubblized and remain on site.

2.4 ISFSI OPERATIONS AND DECOMMISSIONING

The ISFSI will continue to operate under a general license (10 CFR §50) following the amendment of the operating license to release the adjacent property. Assuming the DOE starts accepting fuel in 2030, transfer of spent fuel from Seabrook Station is anticipated to begin in 2040, at the earliest (Scenarios 1 and 3). Any delay in the transfer process, for example, due to a delay in the scheduled opening of the geologic repository, a slower acceptance rate, or a combination of a delayed start date and lower transfer rate, can result in a longer on-site residence time for the fuel discharge from the reactor, as well as additional caretaking expenses. Pursuant to the NDFC's directive in the 2009 Order, fuel transfer from Seabrook Station may be on site until 2100 (Scenario 2 for a 2030 shutdown and Scenario 4 for a 2050 shutdown). Particularly given the large numbers of nuclear units that are scheduled for decommissioning in advance of the Seabrook Station, and the new units that operators are seeking to build as well as extension of current licenses beyond 60 years of operation that would require spent fuel storage, this assumption is highly conservative.

At the conclusion of the spent fuel transfer process, the ISFSI will be decommissioned. The Commission will terminate the 10 CFR §50 license if it determines that the remediation of the ISFSI has been performed in accordance with an ISFSI license termination plan and that the final radiation survey and associated documentation demonstrate that the facility is suitable for release. Once the requirements are satisfied, the NRC can terminate the license for the ISFSI.

The ISFSI was designed using a NUHOMS® HD system (multi-purpose canister and a horizontal concrete storage module). The NRC approved this system for use as a device for storing spent fuel, effective January 10, 2007. For purposes of this cost analysis, it is assumed that once the inner canisters containing the spent fuel assemblies have been removed, any required decontamination performed, and the license for the facility terminated, the modules can be dismantled using conventional techniques for the demolition of reinforced concrete.

3. COST ESTIMATES

The analysis prepared for decommissioning Seabrook Station considers the unique features of the site, including the nuclear steam supply system, power generation systems, support services, site buildings, and ancillary facilities. The basis of the estimates, including the sources of information relied upon, the estimating methodology employed, site-specific considerations, and other pertinent assumptions, is described in this section.

3.1 BASIS OF ESTIMATES

The current estimates are developed using the basic design information originally generated for the decommissioning analysis prepared in 1997-98 and updated in 2003, 2006 and 2010.[21] The site-specific considerations and assumptions used in the previous estimate were revisited. Modifications were incorporated where new information was available or experience from ongoing decommissioning programs provided viable alternatives or improved processes.

3.2 METHODOLOGY

The methodology used to develop the estimates follows the basic approach originally presented in the AIF/NESP-036 study report, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates,"[22] and the DOE "Decommissioning Handbook."[23] These documents present a unit cost factor method for estimating decommissioning activity costs that simplifies the calculations. Unit factors for concrete removal ($/cubic yard), steel removal ($/ton), and cutting costs ($/inch) were developed using local labor rates. The activity-dependent costs were then estimated with the item quantities (cubic yards and tons), developed from plant drawings and inventory documents. Removal rates and material costs for the conventional disposition of components and structures relied upon information available in the industry publication, "Building Construction Cost Data," published by R.S. Means.[24]

The unit factor method provides a demonstrable basis for establishing reliable cost estimates. The detail provided in the unit factors, including activity duration, labor costs (by craft), and equipment and consumable costs, ensures that essential elements have not been omitted. Appendix A presents the detailed development of a typical unit factor. Appendix B provides the values contained within one set of factors developed for this analysis.

The estimates also reflect lessons learned from previously completed decommissioning projects, including TLG's involvement in the Shippingport Station decommissioning, completed in 1989, and the decommissioning of the Cintichem reactor, hot cells and associated facilities, completed in 1997. In addition, the planning and engineering for the Rancho Seco, Trojan, Yankee Rowe, Big Rock Point, Maine Yankee, Humboldt Bay-3, Oyster Creek, Connecticut Yankee, Crystal River, San Onofre and Vermont Yankee nuclear units have provided additional insight into the process, the regulatory aspects, and the technical challenges of decommissioning commercial nuclear units.

Industry experience resulted in two types of changes to the decommissioning cost model: changes from the review of previously active decommissioning projects, for example, Maine Yankee, Connecticut Yankee and Yankee Rowe, and changes as a result of the planning for recently shutdown nuclear units, for example, Vermont Yankee, Kewaunee and Crystal River.

<u>Changes as a Result of Lessons-Learned at Decommissioned Reactors</u>

- Heavy Equipment

  Additional heavy equipment (for example, truck monitors, heavy duty forklifts, truck scale, vacuum truck, frac tanks) has been added to the cost model based upon experience at project sites such as Connecticut Yankee.

- Outage and Maintenance Equipment (from Operations)

  An allowance for the disposition of contaminated equipment in storage at the site (kept for use during plant outages and maintenance activities) has been added to the cost model.

- Remedial Action Survey Teams

  Additional personnel have been added to the cost model to support interim radiological surveys, in-situ waste characterization, remediation assessments and decontamination effectiveness.

- Waste Packaging Density

  The density of the packaged waste was decreased in the model, based upon industry experience. The decrease resulted in additional packages being required for the disposal of the contaminated plant inventory.

- Power Block Perimeter Excavation

  Excavation of the power block perimeter has been added for the removal of buried piping, conduit, and other near-surface plant services. Non-contaminated soil from the excavation is stockpiled on site for future use.

- Activated Containment Concrete

  The quantity of heavily reinforced concrete in and around the reactor biological shield (assumed to be activated to levels requiring controlled disposal) was increased in the current model.

<u>Changes as a Result of Lessons-Learned from the Planning for Shutdown Reactors</u>

- Security

  Security costs (in particular, associated with the size and composition of the security organization and its progression over time) in the Vermont Yankee decommissioning estimate were based upon an evaluation prepared by the site's security subject matter experts.

  Security staffing assumptions for the Vermont Yankee decommissioning estimate were reflected, with some modification (since Vermont Yankee was being placed into safe-storage and not decommissioned until all fuel was removed from the site), into the Seabrook estimates. This resulted in an increased security force and higher cost.

- NRC Fees

  The NRC costs in the Vermont Yankee decommissioning estimate (exclusive of the annual, fixed license fees) were based, in part, on Dominion's experience with the NRC in the review of decommissioning related submittals for the Kewaunee plant, including waivers, and technical specification changes. NRC hours were increased in the Seabrook estimates.

- NEI Program Fees

  Costs were included for the continuation of Nuclear Energy Institute (NEI) initiatives and programs (for example, the Personnel Access Data System or PADS) based upon projected Vermont Yankee estimates. Costs were continued as long as spent fuel is on site.

- Energy

  Additional costs were included for the continued use of the plant's auxiliary boilers (for heating) for the first eighteen months and for diesel oil (for the emergency diesels and other power equipment), while the spent fuel was in the storage pool.

- Emergency Planning Fees

  Emergency Planning fees paid to federal and state jurisdictions were ended after the risk of a zircaloy fire was eliminated (assumed to be 1-1/2 years after shutdown based upon a Kewaunee evaluation). Local fees were continued until the fuel was shipped off-site.

- Spent Fuel Storage Requirements

  Vermont Yankee placed a majority of the spent fuel assemblies in their storage pool into dry storage containers with a higher heat load capacity as opposed to the standard containers previously used for dry storage. As an allowance, the estimates for Seabrook Station assumed the use of a dry storage canister (32PTH Type E) with a higher heat load for the final core discharge (193 assemblies in 7 canisters).

<u>Work Difficulty Factors</u>

TLG has historically applied work difficulty adjustment factors (WDFs) to account for the inefficiencies in working in a power plant environment. WDFs are assigned to each unique set of unit factors, commensurate with the working conditions. The ranges used for the WDFs are as follows:

- Access Factor — 10% to 20%
- Respiratory Protection Factor — 10% to 50%
- Radiation/ALARA Factor — 10% to 37%
- Protective Clothing Factor — 10% to 30%
- Work Break Factor — 8.33%

The factors and their associated range of values were developed in conjunction with the AIF/NESP-036 study. The application of the factors is discussed in more detail in that publication.

Scheduling Program Durations

The unit factors, adjusted by the WDFs as described above, are applied against the inventory of materials to be removed in the radiological controlled areas. The resulting labor-hours, or crew-hours, are used in the development of the decommissioning program schedule, using resource loading and event sequencing considerations. The scheduling of conventional removal and dismantling activities are based upon productivity information available from the "Building Construction Cost Data" publication.

The dismantling of the fuel handling building systems and decontamination of the spent fuel pool is also dependent upon the timetable for the transfer of the spent fuel assemblies from the pool to the ISFSI.

The schedule is also used to assign carrying costs, which include program management, administration, field engineering, equipment rental, and support services such as quality control and security.

3.3 FINANCIAL COMPONENTS OF THE COST MODEL

TLG's proprietary decommissioning cost model, DECCER, produces a number of distinct cost elements. These direct expenditures, however, do not comprise the total cost to accomplish the project goal (i.e., license termination and site restoration).

3.3.1 Contingency

Inherent in any cost estimate that does not rely on historical data is the inability to specify the precise source of costs imposed by factors such as tool breakage, accidents, illnesses, weather delays, and labor stoppages. In the DECCER cost model, contingency fulfills this role. Contingency is added to each line item to account for costs that are difficult or impossible to develop analytically. Such costs are historically inevitable over the duration of a job of this magnitude; therefore, this cost analysis includes funds to cover these types of expenses.

The activity- and period-dependent costs are combined to develop the total decommissioning cost. A contingency is then applied on a line-item basis, using one or more of the contingency types listed in the AIF/NESP-036 study. "Contingencies" are defined in the American Association of Cost Engineers "Project and Cost Engineers' Handbook"[25] as "specific provision for unforeseeable elements of cost within the defined project scope; particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur." The cost elements in this estimate are based upon ideal conditions and maximum efficiency; therefore, consistent with industry practice, a contingency factor has been applied to ensure that the study does not reflect a "best case scenario", but rather takes into account both foreseeable and unforeseeable, but expected, additional costs. In the AIF/NESP-036 study, the types of unforeseeable events that are likely to occur in decommissioning are discussed and guidelines are provided for percentage contingency in each category. It should be noted that contingency, as used in this analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the station. [TLG has addressed the escalation of the decommissioning costs in a separate report.]

The use and role of contingency within decommissioning estimates provides assurance that sufficient funding is available to accomplish the intended tasks. An estimate without contingency, or from which contingency has been removed, can disrupt the orderly progression of events and jeopardize a successful conclusion to the decommissioning process.

For example, the most technologically challenging task in decommissioning a commercial nuclear station will be the disposition of the reactor vessel and internal components, which have become highly radioactive after a lifetime of exposure to radiation produced in the core. The disposition of these highly radioactive components forms the basis for the critical path (schedule) for decommissioning operations. Cost and schedule are interdependent, and any deviation in schedule has a significant impact on cost for performing a specific activity.

Disposition of the reactor vessel internals involves the underwater cutting of complex components that are highly radioactive. Costs are based upon optimum segmentation, handling, and packaging scenarios. The schedule is primarily dependent upon the turnaround time for the heavily shielded shipping casks, including preparation, loading, and decontamination of the containers for transport. The number of casks required is a function of the pieces generated in the segmentation activity, a value calculated on optimum performance of the tooling employed in cutting the various subassemblies. The expected optimization, however, may not be achieved, resulting in delays and additional program costs. For this reason, contingency must be included to mitigate the consequences of the expected inefficiencies inherent in this complex activity, along with related concerns associated with the operation of highly specialized tooling, field conditions, and water clarity.

Contingency funds are an integral part of the total cost to complete the decommissioning process. Exclusion of this component puts at risk a successful completion of the intended tasks and, potentially, subsequent related activities. For this study, TLG examined the major activity-related problems (decontamination, segmentation, equipment handling, packaging, transport, and waste disposal) that necessitate a contingency. Individual activity contingencies ranged from 10% to 75%, depending on the degree of difficulty judged to be appropriate from TLG's actual decommissioning experience. The contingency values used in this study are consistent with those developed in the AIF/NESP-036 study and are as follows:

Decontamination	50%
Contaminated Component Removal	25%
Contaminated Component Packaging	10%
Contaminated Component Transport	15%
Low-Level Radioactive Waste Processing	15%
Low-Level Radioactive Waste Disposal	25%
Reactor Segmentation	75%
NSSS Component Removal	25%
Reactor Waste Packaging	25%
Reactor Waste Transport	25%
Reactor Vessel Component Disposal	50%
GTCC Disposal	15%
Non-Radioactive Component Removal	15%
Heavy Equipment and Tooling	15%
Supplies	25%
Engineering	15%
Energy	15%
Characterization and Termination Surveys	30%
Construction	15%
Taxes and Fees	10%

Insurance	10%
Staffing	15%
ISFSI Decommissioning	25%

The contingency values are applied to the appropriate components of the estimates on a line item basis. A composite value is then reported at the end of each detailed estimate as provided in Appendices C and D.

3.3.2 Financial Risk

In addition to the routine uncertainties addressed by contingency, another cost element that is sometimes necessary to consider when bounding decommissioning costs relates to uncertainty, or risk. Examples can include changes in work scope, pricing, job performance, and other variations that could conceivably, but not necessarily, occur. Consideration is sometimes necessary to generate a level of confidence in the estimate, within a range of probabilities. TLG considers these types of costs under the broad term "financial risk." Included within the category of financial risk are:

- Delays in approval of the decommissioning plan due to intervention, legal challenges, and national and local hearings.
- Changes in the project work scope from the baseline estimate, involving the discovery of unexpected levels of contaminants, contamination in places not previously expected, contaminated soil previously undiscovered (either radioactive or hazardous material contamination), variations in plant inventory or configuration not indicated by the as-built drawings.
- Regulatory changes (e.g., affecting worker health and safety, site release criteria, waste transportation, and disposal).
- Policy decisions altering national commitments (e.g., in the ability to accommodate certain waste forms for disposition).
- Pricing changes for basic inputs, such as labor, energy, and materials.

There are also components of the cost estimates that are conservative and produce overall estimates that may exceed the actual cost to decommission Seabrook Station. For example, the estimates make no adjustments for:

- Future advances in decommissioning technology or processes which, while presently unknown, are likely to occur;
- Best practices that Seabrook Station will take advantage of as one of the last of 100 operating nuclear plants to decommission;
- The decommissioning economies resulting from NextEra decommissioning a fleet of nuclear units, as distinct from decommissioning a single nuclear unit; and
- The conservatism of the assumed delay in transfer of spent fuel incorporated into the NDFC Scenarios 2 and 4.

Although cost estimates do not add any additional costs to the estimates for financial risk, the areas of uncertainty or risk are revisited periodically and addressed through repeated revisions or updates of the base estimate.

3.4 SITE-SPECIFIC CONSIDERATIONS

There are a number of site-specific considerations that affect the method for dismantling and removal of equipment from the site and the degree of restoration required. The cost impact of the considerations identified below is included in this cost study.

3.4.1 Spent Fuel Management

The cost to dispose of the spent fuel generated from plant operations is not reflected within the estimates to decommission the Seabrook Station. Ultimate disposition of the spent fuel is within the province of the DOE's Waste Management System, as defined by the NWPA. As such, the disposal cost is financed by a 1 mill/kWhr surcharge paid into the DOE's waste fund during operations. (On November 19, 2013, the U.S. Court of Appeals for the D.C. Circuit ordered the Secretary of the Department of Energy to suspend collecting annual fees for nuclear waste disposal from nuclear power plant operators until the DOE has conducted a legally adequate fee assessment.)

The NRC does, however, requires licensees to establish a program to manage and provide funding for the management of all irradiated fuel at the reactor until title of the fuel is transferred to the Secretary of Energy. This funding requirement is fulfilled through inclusion of certain high-level waste cost elements within the estimate, as described below.

The total inventory of assemblies that will require handling during decommissioning is based upon several assumptions. The pickup of commercial fuel is assumed to begin in the year 2030 (Scenarios 1 and 3) and will proceed on an oldest fuel first basis, with the first fuel from Seabrook transferred to DOE in 2040. The maximum rate at which the fuel is removed from the commercial sites is based upon an annual capacity at the geologic repository of 3,000 metric tons. Any delay in the startup of the repository or decrease in the rate of acceptance will correspondingly prolong the transfer process and result in the fuel remaining at the site longer.

The ISFSI will continue to operate throughout decommissioning, and beyond the termination of the operating license, until such time that the transfer of spent fuel to the DOE can be completed. Assuming that the DOE commences repository operation in 2030, fuel is projected to be removed from the site by the year 2063 (Scenario 1). The NDFC Scenario (Scenario 2) assumes that fuel is removed from the site by the year 2100.

While such costs will be reimbursed to the joint owners under their agreement with DOE, operation and maintenance costs for the ISFSI are included within the estimates and address the cost for staffing the facility, as well as security, insurance, and licensing fees. The estimates include the costs to purchase, load, and transfer the fuel storage canisters. Costs are also provided for the final disposition of the facility once the transfer is complete.

Spent Fuel Management Model

In the current cost analysis, four scenarios were identified for evaluation (described in Section 2). The four scenarios evaluate a prompt decommissioning alternative with a combination of shutdown dates and expectations of the DOE's performance in transferring spent fuel from the site to a federal repository.

The ability to complete the decommissioning is highly dependent upon when the DOE is assumed to remove spent fuel from the site. DOE's repository program assumes that spent fuel will be accepted for disposal from the nation's commercial nuclear plants in the order (the "queue") in which it was removed from service ("oldest fuel first").[26] The site residence schedule for the spent fuel is based upon the DOE's most recently published annual acceptance rates of 400 MTU in year 1, 600 MTU in year 2, 1200 MTU in year 3, 2000 MTU in year 4, and 3000 MTU/year for years 5 and beyond.[27]

Canister Design

A NUHOMS-HD-3PTM transportable multi-purpose dry shielded storage canister (DSC), with a 32-fuel assembly capacity, is assumed for future cask acquisitions. For fuel transferred directly from the pool to the DOE, the DOE was assumed to provide the DSC at no additional cost to the owner.

A NUHOMS 32PTH Type E, with a higher heat load, is used for the final core discharge (193 assemblies in 7 canisters).

Canister Loading and Transfer

The estimates include the cost for the labor and equipment to load and transfer the spent fuel canisters to the ISFSI from the wet storage pool. For estimating purposes, an allowance is used for the cost to transfer the fuel from the ISFSI into the DOE transport cask.

Operations and Maintenance

The estimates also include the cost of operating and maintaining the spent fuel pool and the ISFSI, respectively. Pool operations are expected to continue approximately five and one-half years after the cessation of operations. It is assumed that the five and one-half years provides the necessary cooling period for the final core to meet the dry cask storage vendor's system. ISFSI operating costs are based upon the previously stated assumptions on fuel transfer expectations.

ISFSI Decommissioning

In accordance with 10 CFR §72.30, licensees must have a proposed decommissioning plan for the ISFSI site and facilities that includes a cost estimate for the plan. The plan should contain sufficient information on the proposed practices and procedures for the decontamination of the ISFSI and for the disposal of residual radioactive materials after all spent fuel, high-level radioactive waste, and reactor-related GTCC waste have been removed.

A horizontal storage module with a multi-purpose (storage and transport) dry shielded storage canister is used as a basis for the cost analyses. The horizontal storage modules are assumed to have some level of neutron-induced activation, as a result of the long-term storage of the fuel, i.e., to levels exceeding free-release limits. As an allowance, 7 modules are assumed to require remediation, equivalent to the number of horizontal storage modules required to accommodate the final core off load. The cost of the disposition of this material, as well as the demolition of the ISFSI facility, is included in the estimates.

In accordance with the specific requirements of 10 CFR §72.30 for the ISFSI work scope, the cost estimate for decommissioning the ISFSI reflects: 1) the cost of an independent contractor performing the decommissioning activities; 2) an adequate contingency factor; and 3) the cost of meeting the criteria for unrestricted use. The cost summary for decommissioning the ISFSI is presented in Appendix E.

GTCC

The dismantling of the reactor internals generates radioactive waste considered unsuitable for shallow land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste (GTCC)). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the Federal Government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste.

It is not anticipated that the DOE would accept this waste prior to completing the transfer of spent fuel. Therefore, until such time the DOE is ready to accept GTCC waste, it is reasonable to assume that this material would remain in storage with the spent fuel in the ISFSI at the Seabrook Station site.

3.4.2 Reactor Vessel and Internal Components

The reactor pressure vessel and internal components are segmented for disposal in shielded, reusable transportation casks. Segmentation is performed in the refueling canal, where a turntable and remote cutter are installed. The vessel is segmented in place, using a mast-mounted cutter supported off the lower head and directed from a shielded work platform installed overhead in the reactor cavity. Transportation cask specifications and transportation regulations dictate the segmentation and packaging methodology.

Intact disposal of the reactor vessel and internal components can provide savings in cost and worker exposure by eliminating the complex segmentation requirements, isolation of the GTCC material, and transport/storage of the resulting waste packages. Portland General Electric (PGE) was able to dispose of the Trojan reactor as an intact package. However, its location on the Columbia River simplified the transportation analysis since:

- the reactor package could be secured to the transport vehicle for the entire journey, i.e., the package was not lifted during transport,
- there were no man-made or natural terrain features between the plant site and the disposal location that could produce a large drop, and
- transport speeds were very low, limited by the overland transport vehicle and the river barge.

As a member of the Northwest Compact, PGE had a site available for disposal of the package - the US Ecology facility in Washington State. The characteristics of this arid site proved favorable in demonstrating compliance with land disposal regulations.

It is not known whether intact disposal (of the vessel shell or the complete vessel and internals) will be available when the Seabrook Station unit ceases operation. Future viability of this option will depend upon the ultimate location of the disposal site (transport feasibility), as well as the disposal site licensee's ability to accept highly radioactive packages and effectively isolate them from the environment. Consequently, the study assumes the reactor vessel will require segmentation, as a bounding condition.

3.4.3 Primary System Components

The reactor and reactor coolant system components are assumed to be decontaminated using chemical agents prior to the start of cutting operations. Decontamination can be expected to have a significant ALARA impact, since the removal work is done within the first few years of shutdown. A decontamination factor (average reduction) of 10 is assumed for the process. Disposal of the decontamination solution effluent is included within the estimates as a "process liquid waste" charge.

The following discussion deals with the removal and disposition of the steam generators, but the techniques involved are also applicable to other large components, such as heat exchangers, component coolers, and the pressurizer. The steam generators' size and weight, as well as their location within the reactor building, will ultimately determine the removal strategy.

A trolley crane will be set up for the removal of the generators. It can also be used to move portions of the steam generator cubicle walls and floor slabs from the reactor building to a location where they can be decontaminated and transported to the material handling area. Interferences within the work area, such as grating, piping and other components, will be removed to create sufficient laydown space for processing these large components.

The generators will be rigged for removal, disconnected from the surrounding piping and supports, and maneuvered into the open area where they will be lowered onto a dolly. Once each steam generator has been placed in the horizontal position, the steam domes and internal moisture separator equipment will be removed for off-site processing. The lower shell will be sealed and the nozzles and other openings will be welded closed. Shielding will be added if required for transport. When this stage has been completed, each generator will be moved out of containment and lowered onto a multi-wheeled transporter to be staged at an on-site storage area and await transport to the disposal facility. The pressurizer will be removed using the same technique.

Reactor coolant piping is cut from the reactor vessel once the water level in the vessel (used for personnel shielding during dismantling and cutting operations in and around the vessel) is dropped below the nozzle zone. The piping is boxed and transported by shielded van. The reactor coolant pumps and motors are lifted out intact, packaged, and transported for disposal.

3.4.4 Main Turbine and Condenser

The main turbine will be dismantled using conventional maintenance procedures. The turbine rotors and shafts will be removed to a laydown area. The lower turbine casings will be removed from their anchors by controlled demolition. The main condensers will also be disassembled and moved to a laydown area. Material is then prepared for transportation to an off-site recycling facility where it will be surveyed and designated for either decontamination or volume reduction, conventional disposal, or controlled disposal. Components will be packaged and readied for transport in accordance with the intended disposition.

3.4.5 Transportation Methods

It is expected that most of the contaminated piping, components, and structural material, other than the highly activated reactor vessel and internal components, will qualify as LSA-I, II or III or Surface Contaminated Object, SCO-I or II, as described in Title 49 of the Code of Federal Regulations.[28] The contaminated material will be packaged in Industrial Packages (IP-1, IP-2, or IP-3, as defined in 49 CFR 173.411) for transport unless demonstrated to qualify as their own shipping containers. The reactor vessel and internal components are expected to be transported in accordance with 10 CFR Part 71, as Type B. It is conceivable that the reactor, due to its limited specific activity, could qualify as LSA II or III. However, the high radiation levels on the outer surface would require that additional shielding be incorporated within the packaging so as to attenuate the dose to levels acceptable for transport.

Any fuel cladding failure that occurred during the lifetime of the plant is assumed to have released fission products at sufficiently low levels that the buildup of long-lived isotopes (e.g., ^{137}Cs, ^{90}Sr, or transuranics) has not reached levels exceeding those that permit the major reactor components to be shipped under current transportation regulations and disposal requirements.

Transport of the highly activated metal, produced in the segmentation of the reactor vessel and internal components, is by shielded truck cask. Cask shipments may exceed 95,000 pounds, including vessel segment(s), supplementary shielding, cask tie-downs, and tractor-trailer. The maximum level of activity per shipment assumed permissible is based upon the license limits of the available shielded transport casks. The segmentation scheme for the vessel and internal segments is designed to meet these limits.

The transport of large intact components (e.g., large heat exchangers and other oversized components), will be by a combination of truck, rail, and/or multi-wheeled transporter.

Transportation costs for Class A radioactive material requiring controlled disposal are based upon the mileage to the Energy*Solutions* facility in Clive, Utah. Transportation costs for the higher activity Class B and C radioactive material are based upon the mileage to the WCS facility in Andrews County, Texas. The transportation cost for the GTCC material is assumed to be contained within the disposal cost. Transportation costs for off-site waste processing are based upon the mileage to Oak Ridge, Tennessee. Truck transport costs were developed from published tariffs from Tri-State Motor Transit.[29]

3.4.6 Low-Level Radioactive Waste Disposal

To the greatest extent practical, metallic material generated in the decontamination and dismantling processes is processed to reduce the total cost of controlled disposal. Material meeting the regulatory and/or site release criterion, is released as scrap, requiring no further cost consideration. Conditioning (preparing the material to meet the waste acceptance criteria at the disposal site) and recovery of the waste stream is performed at an off-site facility.

The mass of radioactive waste generated during the various decommissioning activities is reported by line-item in Appendices C and D and summarized in Section 5. The Section 5 waste summaries are consistent with 10 CFR §61 classifications. Commercially available steel containers are used for the disposal of piping, small components, and concrete. Larger components can serve as their own containers, with proper closure of all openings, access ways, and penetrations. The waste volumes are calculated on the exterior package dimensions for containerized material or a dimensional calculation for components serving as their own waste containers.

The more highly activated reactor components are transported in reusable, shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, with surcharges added for the special handling requirements and the radiological characteristics of the payload. Packaging efficiencies are lower for the highly activated materials (greater than Type A quantity waste), where high concentrations of gamma-emitting radionuclides limit the capacity of the shipping canisters.

The cost to dispose of the lowest level waste and the majority of the material generated from the decontamination and dismantling activities is based upon the current cost for disposal at

Energy*Solutions* facility in Clive, Utah. Disposal costs for the higher activity waste (Class B and C) were based upon NextEra Energy's current agreement with WCS for the Andrews County facility.

The State of New Hampshire has imposed a fee of $15 per cubic foot, to be paid by the waste generator, on each cubic foot of radioactive waste shipped from the state. For purposes of this estimate, this fee is applied to the volume of waste designated for direct disposal.

The estimates also include the disposition of 348 cubic feet of resin generated during plant operations and in storage at the time of decommissioning. During plant operation, the two plant resin tanks cannot be emptied below 174 cubic feet each without rendering the installed resin transfer system inoperable.

3.4.7 Site Conditions Following Decommissioning

The NRC will terminate (or amend) the site license if it determines that site remediation has been performed in accordance with the license termination plan, and that the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release. The NRC's involvement in the decommissioning process will end at this point. Building codes and environmental regulations will dictate the next step in the decommissioning process, as well as the owners of Seabrook Station future plans for the site.

3.4.7.1 Commercial/Industrial Standard

In 2001, the New Hampshire General Court amended the decommissioning statute to recognize that some buildings and assets at Seabrook Station will have commercial or industrial value after the Seabrook Station is taken out of service and, accordingly, any such buildings no longer must be removed during decommissioning. See: RSA 162-F:14, II, and NDFC Docket 2001-1 Final Report and Order.

With restoration based upon a commercial-industrial standard, dismantling is limited to the Unit 1 containment, fuel storage, main steam and feedwater pipe chase, emergency feedwater pumphouse, residual heat removal/safety injection equipment vault, primary auxiliary, refueling waste storage tank area, waste processing buildings, and other minor structures. The disposition of specific site structures is identified in Table 3.1. The table indicates which site structures are to be either dismantled at the end of the decommissioning process, or retained for future use on the site.

Site structures, facilities and associated system components, deemed to have ongoing value to future site development, have been excluded from the scope of the decommissioning estimate, along with any Unit 2 facilities. However, the estimate does not include any additional cost to protect these facilities during the decommissioning process, nor any impact that the preservation of these facilities may have on the dismantling of adjacent, non-essential structures. The remaining structures are abandoned or made available for alternative use, including the existing electrical switchyard, intake and discharge structures, circulating water tunnels, and site access roads, in accordance with the State of New Hampshire revised definition of decommissioning.

3.4.7.2 Foundation Removal

In the planning for site restoration, it has been a common practice to assume that the non-contaminated structures would be removed to a nominal depth of three feet below the local grade.

The establishment of de facto "restoration" criteria for decommissioning can be traced back to early industry-funded planning documents, for example, the 1976 report titled "An Engineering Evaluation of Nuclear Power Reactor Decommissioning Alternatives," published by the Atomic Industrial Forum (AIF/NESP-009). As found in this document, "Complete dismantling would entail removing all structures to a level about three feet below grade." The criterion was also referred to in the 1986 AIF publication "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates" (AIF/NESP-036).

The three foot criterion has been used as a basis for estimating site restoration costs in almost all of the cost estimates prepared for commercial nuclear reactors. For example, a decommissioning cost study for the Vermont Yankee plant, issued in March 1989, included the estimating assumption that "All above grade structures are removed to 3 feet below grade level." The assumption has remained unchanged in subsequent studies for Vermont Yankee, culminating with the most recent study provided to the NRC with the closure of the plant in December 2014.

The estimates for Seabrook Station, prepared by TLG Services and starting in March 1986, have all used the three foot restoration criterion as an estimating basis. In addition to being consistent with industry standards, it is noteworthy that the subsurface structures that will be left behind following decommissioning occupy a small area of the overall site. Moreover, removal to the three-foot criteria may well provide additional benefits to the subsequent owner(s) because the Unit 1 subsurface structures left behind in decommissioning could have a continuing use, for example, as foundations for equipment brought on site for repowering.

A demolition criterion is often included in NRC submittals on license termination, specifically relating to the end state of the site. For example:

- The license termination plan (Rev. 1) for the Yankee Nuclear Power Station (Yankee Rowe), dated November 19, 2004, includes within the description of the remaining site activities: "YAEC, with the assistance of a demolition contractor, is demolishing most site structures to grade."

- Attachment 1 to the Update of the License Termination Plan (Rev. 4) for the Haddam Neck Plant (Connecticut Yankee), submitted to the NRC in November 2006, states that the owner "plans to demolish most structures generally to 4 feet below grade …"

- The license termination plan (Rev. 5) for the Maine Yankee Atomic Power Plant (Maine Yankee), dated February 27, 2009, includes within the description of the remaining site activities: "demolition of structures to three feet below grade."

3.4.7.3 <u>Concrete Rubblization</u>

Rubblization has been defined (for example, in Vermont) as the "demolition of an above-grade decontaminated concrete structure into rubble that is buried on site." The estimates for Seabrook Station incorporate such an assumption, i.e., the on-site processing of non-contaminated concrete to remove reinforcing steel and for size reduction for possible reuse as clean fill after portions of the site have been released for unrestricted use.

Plant owners such as the Yankee Atomic Electric Company (YAEC) and Connecticut Yankee have described such a reuse of materials in their License Termination Plans (LTP) for the Yankee Nuclear Power Station and Hadam Neck Plant, respectively:

Yankee Nuclear Power Station (Yankee Rowe)

- "In the current phase of decommissioning, YAEC, with the assistance of a demolition contractor, is demolishing most site structures to grade. Structural demolition debris may be surveyed using site procedures that invoke the "no detectable radioactivity" criterion (consistent with the guidance in NRC Circular IEC 81-07, "Control of Radioactively Contaminated Material") or may be subjected to a final status survey using the DCGLs, discussed in Section 6 of this LTP. Materials meeting this criterion may remain onsite and may be used as backfill, subject to regulations on the use of such materials by the Commonwealth of Massachusetts, or removed offsite for disposal." (Section 1.4.3 of the LTP)

- Building demolition debris that has been determined to contain "no detectable radioactivity" or has passed a final status survey may be used as backfill on site." (Section 3.2.2 of the LTP)

On September 9, 2005 the Solid Waste section of the Massachusetts Department of Environmental Protection issued a Final Beneficial Use Determination permit to leave subsurface structures (foundations and buried utilities) in place, along with concrete and asphalt rubble from demolition of site structures, and SCFA soils, at the former industrial facility area of the Yankee Nuclear Power Station.

Hadam Neck Plant (Connecticut Yankee)

- "Exposed faces of buildings and foundations will be surveyed and decontaminated until the surface meets or is below the release criteria. The subsurface foundations (i.e., those more than three feet below ground level) will be decontaminated, as necessary to meet the release criteria, and left in place. Once the surfaces have been confirmed to meet the criteria for release, the results of the final status survey will be documented and provided to the NRC for its inspection. Following completion of the final status survey and in the absence of any NRC inspection action finding the report deficient, buildings may be demolished and the concrete debris used on site as backfill." (Section 3.4.1.9 of the LTP)

- "Concrete from contaminated structures will be remediated to a level meeting the radiological criteria for unrestricted release of the site, as discussed in Section 6 [of the LTP]. After completion of final status surveys and absent any findings during NRC inspections, concrete building debris from decontaminated structures may be used as backfill and placed into the remaining subsurface building foundations." (Section 4.3.1 of the LTP)

- "As part of HINP decommissioning, the debris from the demolition of each decontaminated concrete structure may be placed in the basements of these structures. These concrete debris may contain reinforcing steel. When the building is demolished, it will be reduced to an elevation down to 3 feet below grade and the area regraded after backfill is complete." (Section 6.5.2 of the LTP)

<u>Vermont Yankee</u>

In December 2013, the owner and operator of the Vermont Yankee Nuclear Power Station, Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy VY) announced a settlement agreement with the State of Vermont. The settlement agreement included some additional clarity on the party's expectation as to the restoration of the site, including that:

- the owner "shall not employ rubblization at the VY Station site (i.e., demolition of an above-grade decontaminated concrete structure into rubble that is buried on site)

On December 19, 2014, Entergy Nuclear Operations, Inc. submitted the Post-Shutdown Decommissioning Activities Report (PSDAR) and the Site-Specific Decommissioning Cost Estimate (DCE) for the Vermont Yankee Nuclear Power Station (NRC ADAMS accession number ML14357A110). The DCE included an additional $1.23 million for the disposal of the concrete rubble produced in the demolition of the plant structures at a local sand and gravel pit.

<u>Seabrook Station</u>

The estimates to decommission the Seabrook Station assume the "rubblization" of non-contaminated concrete. It is estimated that an additional $3.73 million will be required for the disposal of the non-contaminated concrete rubble produced in the demolition of the power block structures at a local sand and gravel pit and the placement of clean fill in underground voids.

3.4.7.4 Other Considerations

Perimeter Excavation

A significant amount of the below grade piping is located around the perimeter of the power block. The estimate includes a cost to excavate this area so as to expose the piping, duct bank, conduit, and any near-surface grounding grid. The overburden is surveyed and stockpiled on site for future use in backfilling the below grade voids.

Contaminated Soil

The estimates do not assume the remediation of any significant volume of contaminated soil.

3.5 ASSUMPTIONS

The following are the major assumptions made in the development of the estimates for decommissioning the site.

3.5.1 Estimating Basis

Decommissioning costs are reported in the year of projected expenditure; however, the values are provided in December 31, 2014 dollars. Costs are not inflated, escalated, or discounted over the periods of performance. TLG performed a cost escalation analysis for the Scenario 1 and Scenario 2 (NDFC Scenario), determining that the current estimated costs are expected to increase annually by 2.48% and 2.58%, respectively.

The estimates rely upon the physical plant inventory that was the basis for the 2010 analysis.

The study follows the principles of ALARA through the use of work duration adjustment factors. These factors address the impact of activities such as radiological protection instruction, mock-up training, and the use of respiratory protection and protective clothing. The factors lengthen a task's duration, increasing costs and lengthening the overall schedule. ALARA planning is considered in the costs for engineering and planning, and in the development of activity specifications and detailed procedures. Changes to worker exposure limits may impact the decommissioning cost and project schedule.

3.5.2 Labor Costs

The owners of Seabrook Station will hire a Decommissioning Operations Contractor (DOC) to manage the decommissioning. The owner will provide site security, radiological health and safety, quality assurance and overall site administration during the decommissioning and demolition phases. Contract personnel will provide engineering services, (e.g., for preparing the activity specifications, work procedures, activation, and structural analyses), under the direction of the owners.

Personnel costs are based upon average salary information provided by Seabrook Station for the site. Overhead costs are included for site and corporate support, reduced commensurate with the staffing levels envisioned for the project.

Severance and retention costs are not included in the estimates. Reduction in the operating organization is assumed to be handled through normal staffing processes (e.g., reassignment and outplacement).

The craft labor required to decontaminate and dismantle the nuclear unit is acquired through standard site contracting practices. The current cost of site labor is used as an estimating basis.

Security, while reduced from operating levels, is maintained throughout the decommissioning for access control, material control, and to safeguard the spent fuel (in accordance with the requirements of 10 CFR Part 37, Part 72, and Part 73).

3.5.3 Design Conditions

Activation levels in the vessel and internal components are modeled using NUREG/CR-3474.[30] Estimates are derived from the curie/gram values contained therein and adjusted for the different mass of the Seabrook Station components, projected operating life(s), and different periods of decay. Additional short-lived isotopes were derived from NUREG/CR-0130[31] and NUREG/CR-0672,[32] and benchmarked to the long-lived values from NUREG/CR-3474.

The control elements are disposed of along with the spent fuel (i.e., there is no additional cost provided for their disposal). Disposition of any control elements stored in the pool from operations is considered an operating expense and therefore not accounted for in the decommissioning estimates.

Activation of the reactor building structures is confined to the area around the biological shield.

3.5.4 General

Transition Activities

Existing warehouses will be cleared of non-essential material and remain for use by the owners of Seabrook Station and its subcontractors. The plant's operating staff will perform the following activities at no additional cost or credit to the project during the transition period:

- Drain and collect fuel oils, lubricating oils, and transformer oils for recycle and/or sale.
- Drain and collect acids, caustics, and other chemical stores for recycle and/or sale.
- Process operating waste inventories (i.e., this estimate does not address the disposition of any legacy wastes (other than the resins discussed earlier)); the disposal of operating wastes during this initial period is not considered a decommissioning expense.

Scrap and Salvage

The existing plant equipment is considered obsolete and suitable for scrap as deadweight quantities only. The owners of Seabrook Station will make economically reasonable efforts to salvage equipment following final plant shutdown. However, dismantling techniques assumed by TLG for equipment in this estimate are not consistent with removal techniques required for salvage (resale) of equipment. Experience has indicated that some buyers wanted equipment stripped down to very specific requirements before they would consider purchase. This required expensive rework after the equipment had been removed from its installed location. Since placing a salvage value on this machinery and equipment would be speculative, and the value would be small in comparison to the overall decommissioning expenses, this estimate does not attempt to quantify the value that the owners of Seabrook Station may realize based upon those efforts.

It is assumed, for purposes of this analysis, that any value received from the sale of scrap generated in the dismantling process would be more than offset by the on-site processing costs. The dismantling techniques assumed in the decommissioning estimates do not include the additional cost for size reduction and preparation to meet "furnace ready" conditions. With a volatile market, the potential profit margin in scrap recovery is highly speculative, regardless of the ability to free release this material. This assumption is an implicit recognition of scrap value in the disposal of clean metallic waste at no additional cost to the project.

Furniture, tools, mobile equipment such as forklifts, trucks, bulldozers, and other property will be removed at no cost or credit to the decommissioning project. Disposition may include relocation to other facilities. Spare parts will also be made available for alternative use.

Energy

For estimating purposes, the plant is assumed to be de-energized, with the exception of those facilities associated with spent fuel storage (temporary power is run throughout the plant, as needed). Replacement power costs are used to calculate the cost of energy consumed during decommissioning for tooling, lighting, ventilation, and essential services.

Emergency Planning

FEMA and state fees associated with emergency planning are assumed to continue for approximately 18 months following the cessation of operations. At this time, the fees are discontinued. The timing is based upon the anticipated condition of the spent fuel (i.e., the hottest spent fuel assemblies are assumed to be cool enough that no substantial Zircaloy oxidation and off-site event would occur with the loss of spent fuel pool water). Local fees continue until all fuel has been moved from the site.

Insurance

Costs for continuing coverage (nuclear liability and property insurance) following cessation of plant operations and during decommissioning are included and based upon current operating premiums. Reductions in premiums, throughout the decommissioning process, are based upon the guidance provided in SECY-00-0145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning."[33] The NRC's financial protection requirements are based on various reactor (and spent fuel) configurations.

Taxes

Property taxes are not included within the decommissioning estimates and are assumed to be borne by future site enterprises.

Fukushima

On March 11, 2011, a 9.0-magnitude earthquake struck Japan and was followed by a 45-foot tsunami, resulting in extensive damage to the nuclear power reactors at the Fukushima Dai-ichi facility. The NRC has taken significant action to enhance the safety of reactors in the United States based on the lessons learned from this accident. Licensees, in response to NRC Orders or Requests for Information, have developed mitigation strategies for the prolonged loss of electrical power, revisited seismic and flooding evaluations, reviewed emergency preparedness and communication capabilities and taken other actions, for example, to ensure reliable information on spent fuel storage pool water level.

The actions undertaken by NextEra Energy Seabrook, in response to the NRC, did not result in physical changes to the plant that would impact the cost of decommissioning. New equipment is either mobile (for example, a diesel oil refueling trailer) or staged at an off-site location (for example, at a Regional Response Center). No plant modifications were deemed necessary for spent fuel cooling safety or for containment safety. In addition, no enhancements were identified to improve or increase flood protection or mitigation at the site.

There were a few plant modifications identified in NextEra's Energy Seabrook Overall Integrated Plan. Included were the installation of low leakage seals on the four reactor coolant pumps and the possible hardening of the Supplemental Emergency Power System Generators. However, these activities would add little or no cost to the removal and disposal of the equipment.

Based upon the plant-specific actions taken by NextEra in response to the events at Fukushima, no changes were made to the cost estimating model for the decommissioning of Seabrook Station.

Site Modifications

The perimeter fence and in-plant security barriers will be moved, as appropriate, to conform to the Site Security Plan in force during the various stages of the project.

3.6 COST ESTIMATE SUMMARY

The disposition of site structures is identified in Table 3.1. Summaries of the decommissioning costs and annual expenditures are provided in Tables 3.2 through 3.5. The schedules are based upon the costs reported in Appendix C (2030 shutdown) and Appendix D (2050 shutdown).

As discussed in Section 3.4.1, it is not anticipated that the DOE would accept the GTCC waste prior to completing the transfer of spent fuel. Therefore, the cost of GTCC disposal is shown in the final year of ISFSI operation. While designated for disposal at the geologic repository along with the spent fuel, GTCC waste is still classified as low-level radioactive waste and, as such, included as a “License Termination” expense.

TABLE 3.1
DISPOSITION OF SITE STRUCTURES

Remediated/Dismantled	Retained for Future Use
Containment	345KV Switching Station
Administration[1]	Calibration
Containment Enclosure Ventilation	Carpentry Shop
Emergency Feedwater Pump Building	Chlorination
Equipment Vault	Control
Fuel Storage	Cooling Tower
Main Steam and Feedwater Pipe Chase	Diesel Generator
Miscellaneous Structures [2]	Equipment Maintenance
Primary Auxiliary	Fabrication Facility
Rad Material Storage	Fire Department
Steam Generator Blowdown Recovery	Fire Pumphouse
Waste Processing	Firing Range
	General Office
	Guard House
	Guardhouse & Brass Alley
	High Rise Building
	Intake and Discharge
	ISFSI Pad
	Mechanical Maintenance Storage
	Miscellaneous Support Structures
	New Maintenance Storage
	Non-Essential Switchgear
	Operational Support
	SF-6 Test Facility
	Science & Nature Center
	Service/Circulating Water Pumphouse
	Service Water Access Vault
	Siren Maintenance
	Support Warehouse
	Switching Station/Transformer Yard
	Training Simulator
	Turbine
	U2 Equipment/Valve Storage

[1] Remediation of affected areas only, including condensate polisher area

[2] RCA tunnels run under/through Radwaste Tank Farm, Control Building, Non-Essential Switchgear Room, Main Steam and Feedwater pipe chase, up to the Administration, Emergency Feedwater Pump House, Turbine and around the Equipment Vault

TABLE 3.2
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 1, DECON 2030, SPENT FUEL 2040
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2030	45,107	1,472	2,673	43	9,047	58,342
2031	66,935	18,475	4,624	12,448	24,605	127,088
2032	68,151	35,806	2,915	39,365	14,535	160,772
2033	61,488	26,170	2,526	19,699	10,479	120,362
2034	57,905	20,894	2,315	8,880	8,256	98,251
2035	50,849	16,070	2,006	7,564	7,546	84,035
2036	37,948	3,525	982	2,543	4,280	49,278
2037	26,890	5,367	388	13	2,084	34,742
2038	19,827	6,924	296	0	2,034	29,081
2039	6,892	1,404	60	0	1,572	9,927
2040	3,772	480	0	0	1,460	5,712
2041	3,762	478	0	0	1,456	5,696
2042	3,762	478	0	0	1,456	5,696
2043	3,762	478	0	0	1,456	5,696
2044	3,772	480	0	0	1,460	5,712
2045	3,762	478	0	0	1,456	5,696
2046	3,762	478	0	0	1,456	5,696
2047	3,762	478	0	0	1,456	5,696
2048	3,772	480	0	0	1,460	5,712
2049	3,762	478	0	0	1,456	5,696
2050	3,762	478	0	0	1,456	5,696
2051	3,762	478	0	0	1,456	5,696
2052	3,772	480	0	0	1,460	5,712
2053	3,762	478	0	0	1,456	5,696
2054	3,762	478	0	0	1,456	5,696
2055	3,762	478	0	0	1,456	5,696
2056	3,772	480	0	0	1,460	5,712
2057	3,762	478	0	0	1,456	5,696
2058	3,762	478	0	0	1,456	5,696
2059	3,762	478	0	0	1,456	5,696
2060	3,772	480	0	0	1,460	5,712

TABLE 3.2 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 1, DECON 2030, SPENT FUEL 2040
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2061	3,762	478	0	0	1,456	5,696
2062	3,762	478	0	0	1,456	5,696
2063	3,762	1,635	0	0	15,832	21,229
2064	1,214	625	159	1,497	3,691	7,187
Total	533,549	149,379	18,944	92,054	137,472	931,398

Note: Columns may not add due to rounding

TABLE 3.3
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 2, DECON 2030, SPENT FUEL 2077
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2030	45,107	1,472	2,673	43	9,047	58,342
2031	66,935	18,475	4,624	12,448	24,605	127,088
2032	68,151	35,806	2,915	39,365	14,535	160,772
2033	61,488	26,170	2,526	19,699	10,479	120,362
2034	57,905	20,894	2,315	8,880	8,256	98,251
2035	50,849	16,070	2,006	7,564	7,546	84,035
2036	37,948	3,525	982	2,543	4,280	49,278
2037	26,890	5,367	388	13	2,084	34,742
2038	19,827	6,924	296	0	2,034	29,081
2039	6,892	1,404	60	0	1,572	9,927
2040	3,612	0	0	0	1,458	5,070
2041	3,602	0	0	0	1,454	5,056
2042	3,602	0	0	0	1,454	5,056
2043	3,602	0	0	0	1,454	5,056
2044	3,612	0	0	0	1,458	5,070
2045	3,602	0	0	0	1,454	5,056
2046	3,602	0	0	0	1,454	5,056
2047	3,602	0	0	0	1,454	5,056
2048	3,612	0	0	0	1,458	5,070
2049	3,602	0	0	0	1,454	5,056
2050	3,602	0	0	0	1,454	5,056
2051	3,602	0	0	0	1,454	5,056
2052	3,612	0	0	0	1,458	5,070
2053	3,602	0	0	0	1,454	5,056
2054	3,602	0	0	0	1,454	5,056
2055	3,602	0	0	0	1,454	5,056
2056	3,612	0	0	0	1,458	5,070
2057	3,602	0	0	0	1,454	5,056
2058	3,602	0	0	0	1,454	5,056
2059	3,602	0	0	0	1,454	5,056
2060	3,612	0	0	0	1,458	5,070

TABLE 3.3 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 2, DECON 2030, SPENT FUEL 2077
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2061	3,602	0	0	0	1,454	5,056
2062	3,602	0	0	0	1,454	5,056
2063	3,602	0	0	0	1,454	5,056
2064	3,612	0	0	0	1,458	5,070
2065	3,602	0	0	0	1,454	5,056
2066	3,602	0	0	0	1,454	5,056
2067	3,602	0	0	0	1,454	5,056
2068	3,612	0	0	0	1,458	5,070
2069	3,602	0	0	0	1,454	5,056
2070	3,602	0	0	0	1,454	5,056
2071	3,602	0	0	0	1,454	5,056
2072	3,612	0	0	0	1,458	5,070
2073	3,602	0	0	0	1,454	5,056
2074	3,602	0	0	0	1,454	5,056
2075	3,602	0	0	0	1,454	5,056
2076	3,612	0	0	0	1,458	5,070
2077	3,762	478	0	0	1,456	5,696
2078	3,762	478	0	0	1,456	5,696
2079	3,762	478	0	0	1,456	5,696
2080	3,772	480	0	0	1,460	5,712
2081	3,762	478	0	0	1,456	5,696
2082	3,762	478	0	0	1,456	5,696
2083	3,762	478	0	0	1,456	5,696
2084	3,772	480	0	0	1,460	5,712
2085	3,762	478	0	0	1,456	5,696
2086	3,762	478	0	0	1,456	5,696
2087	3,762	478	0	0	1,456	5,696
2088	3,772	480	0	0	1,460	5,712
2089	3,762	478	0	0	1,456	5,696
2090	3,762	478	0	0	1,456	5,696

TABLE 3.3 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 2, DECON 2030, SPENT FUEL 2077
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2091	3,762	478	0	0	1,456	5,696
2092	3,772	480	0	0	1,460	5,712
2093	3,762	478	0	0	1,456	5,696
2094	3,762	478	0	0	1,456	5,696
2095	3,762	478	0	0	1,456	5,696
2096	3,772	480	0	0	1,460	5,712
2097	3,762	478	0	0	1,456	5,696
2098	3,762	478	0	0	1,456	5,696
2099	3,762	478	0	0	1,456	5,696
2100	3,762	1,635	0	0	15,832	21,229
2101	1,214	625	159	1,497	3,691	7,187
Total	666,922	149,379	18,944	92,054	191,312	1,118,610

Note: Columns may not add due to rounding

TABLE 3.4
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 3, DECON 2050, SPENT FUEL 2040
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2050	45,413	2,391	2,673	43	9,047	59,567
2051	66,134	16,071	4,624	12,448	24,605	123,883
2052	64,630	25,245	2,915	39,365	14,535	146,690
2053	59,459	20,084	2,526	19,699	10,479	112,247
2054	56,697	17,267	2,315	8,880	8,256	93,415
2055	50,032	13,619	2,006	7,564	7,546	80,768
2056	38,077	3,911	982	2,543	4,280	49,793
2057	27,049	5,845	388	13	2,084	35,380
2058	19,986	7,403	296	0	2,034	29,719
2059	7,051	1,883	60	0	1,572	10,566
2060	3,772	481	0	0	1,458	5,711
2061	3,762	479	0	0	1,454	5,696
2063	3,762	479	0	0	1,454	5,696
2063	3,762	479	0	0	1,454	5,696
2064	3,772	481	0	0	1,458	5,711
2065	3,762	479	0	0	1,454	5,696
2066	3,762	479	0	0	1,454	5,696
2067	3,762	479	0	0	1,454	5,696
2068	3,772	481	0	0	1,458	5,711
2069	3,762	479	0	0	1,454	5,696
2070	3,762	479	0	0	1,454	5,696
2071	3,762	479	0	0	1,454	5,696
2072	3,772	481	0	0	1,458	5,711
2073	3,762	479	0	0	1,454	5,696
2074	3,762	479	0	0	1,454	5,696
2075	3,762	479	0	0	1,454	5,696
2076	3,772	481	0	0	1,458	5,711
2077	3,756	1,617	0	0	15,870	21,243
2078	1,214	625	159	1,497	3,691	7,187
Total	503,506	124,119	18,944	92,054	128,743	867,366

TABLE 3.5
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 4, DECON 2050, SPENT FUEL 2077
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2050	45,303	2,060	2,673	43	9,047	59,126
2051	66,212	16,304	4,624	12,448	24,605	124,193
2052	65,532	27,949	2,915	39,365	14,535	150,296
2053	61,984	27,656	2,526	19,699	10,479	122,344
2054	60,120	27,536	2,315	8,880	8,256	107,108
2055	52,402	20,729	2,006	7,564	7,546	90,247
2056	37,948	3,525	982	2,543	4,280	49,278
2057	26,890	5,367	388	13	2,084	34,742
2058	19,827	6,924	296	0	2,034	29,081
2059	6,892	1,404	60	0	1,572	9,927
2060	3,612	0	0	0	1,458	5,070
2061	3,602	0	0	0	1,454	5,056
2063	3,602	0	0	0	1,454	5,056
2063	3,602	0	0	0	1,454	5,056
2064	3,612	0	0	0	1,458	5,070
2065	3,602	0	0	0	1,454	5,056
2066	3,602	0	0	0	1,454	5,056
2067	3,602	0	0	0	1,454	5,056
2068	3,612	0	0	0	1,458	5,070
2069	3,602	0	0	0	1,454	5,056
2070	3,602	0	0	0	1,454	5,056
2071	3,602	0	0	0	1,454	5,056
2072	3,612	0	0	0	1,458	5,070
2073	3,602	0	0	0	1,454	5,056
2074	3,602	0	0	0	1,454	5,056
2075	3,602	0	0	0	1,454	5,056
2076	3,612	0	0	0	1,458	5,070
2077	3,837	704	0	0	1,456	5,997
2078	3,837	704	0	0	1,456	5,997
2079	3,837	704	0	0	1,456	5,997
2080	3,848	706	0	0	1,460	6,014

TABLE 3.5 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SCENARIO 4, DECON 2030, SPENT FUEL 2077
(thousands, 2014 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2081	3,837	704	0	0	1,456	5,997
2082	3,837	704	0	0	1,456	5,997
2083	3,837	704	0	0	1,456	5,997
2084	3,848	706	0	0	1,460	6,014
2085	3,837	704	0	0	1,456	5,997
2086	3,837	704	0	0	1,456	5,997
2087	3,837	704	0	0	1,456	5,997
2088	3,848	706	0	0	1,460	6,014
2089	3,837	704	0	0	1,456	5,997
2090	3,837	704	0	0	1,456	5,997
2091	3,837	704	0	0	1,456	5,997
2092	3,848	706	0	0	1,460	6,014
2093	3,837	704	0	0	1,456	5,997
2094	3,837	704	0	0	1,456	5,997
2095	3,837	704	0	0	1,456	5,997
2096	3,848	706	0	0	1,460	6,014
2097	3,837	704	0	0	1,456	5,997
2098	3,837	704	0	0	1,456	5,997
2099	3,837	704	0	0	1,456	5,997
2100	3,837	1,861	0	0	15,832	21,530
2101	1,357	765	159	1,497	4,217	7,995
Total	597,895	158,291	18,944	92,054	162,735	1,029,918

Note: Columns may not add due to rounding

3.7 LABOR RESOURCES

Decommissioning is labor intensive with the various labor constituents comprising almost 57% of the total decommissioning cost. Owner, decommissioning operations contractor and security personnel combine for more than three quarters of the labor cost.

Labor Category	Dollars (thousands)	Percentage of Total
Plant Staff	$184,376	34.6
Plant Security	$124,334	23.3
Decommissioning Operations Contractor	$98,021	18.4
Craft Labor (Decon, Remove & Packaging)	$64,942	12.2
Radiological Support and Surveys	$20,468	3.8
Engineering Support	$19,685	3.7
Spent Fuel Storage Contractor	$20,920	3.9
Reactor Vessel Segmentation Contractor	$804	0.2
Total Labor	$533,550	100.0

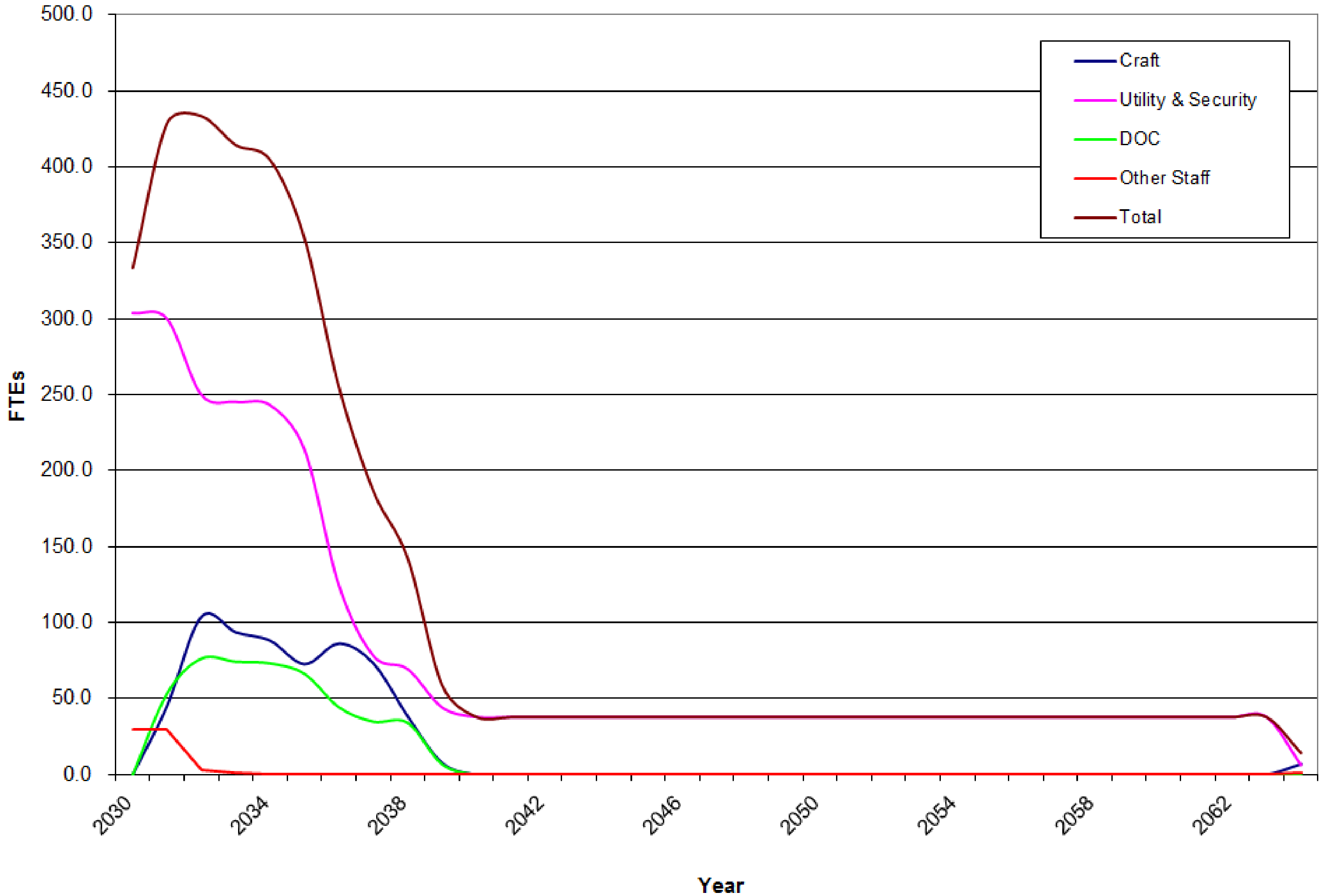
Owner and security personnel are subsets of the current operating organization. Decommissioning operations contractor personnel are provided by a number of architect-engineering firms, environmental remediation companies, demolition contractors and other organizations involved in supporting the nuclear industry as well as a multitude of other industries, for example, in the construction and energy trades. These service providers would also be able to offer additional engineering support and, in some instances, radiological services and oversight of specialty contactors.

The dry fuel storage vendors have teamed with other companies to offer turnkey loading services in the event that the plant owner decides to contract the off-loading of the spent fuel pool (instead of using in-house personnel). Either way, dry fuel storage campaigns have become routine with established procedures and knowledgeable personnel familiar with the site and dry fuel storage system requirements.

Craft labor is used to support the physical dismantling of the plant, remediation of the site and the packaging of waste for off-site disposal. Craft labor represents approximately 12% of the total labor cost and only 7% of the total decommissioning cost. Craft labor for decommissioning would be drawn from the same resource pool as a relied upon for a typical plant outage, with two significant differences. The skill sets needed to support decommissioning are less for a facility being dismantled than for a facility being placed back into service. The decommissioning schedule is also much longer than for a typical outage, requiring fewer resources.

As shown in the personnel graph (Figure 3.1), decommissioning operations contractor and craft labor peaks just below 200 individuals during decommissioning compared to 900 to 1,000 during a typical outage.

FIGURE 3.1
DECOMMISSIONING PERSONNEL LEVELS



4. SCHEDULE ESTIMATE

The schedule for the decommissioning scenario considered in this study follows the sequence presented in the AIF/NESP-036 study, with minor changes to reflect recent experience and site-specific constraints. In addition, the scheduling has been revised to reflect the spent fuel management plan described in Section 3.4.1.

A schedule or sequence of activities is presented in Figure 4.1 for Scenario 1. The scheduling sequence assumes that fuel is removed from the spent fuel pool approximately five and one-half years after operations cease. The key activities listed in the schedule do not reflect a one-to-one correspondence with those activities in the cost table, but reflect dividing some activities for clarity and combining others for convenience. The schedule was prepared using the "Microsoft Project Professional 2010" computer software.[34]

4.1 SCHEDULE ESTIMATE ASSUMPTIONS

The schedule reflects the results of a precedence network developed for the site decommissioning activities, i.e., a PERT (Program Evaluation and Review Technique) Software Package. The work activity durations used in the precedence network reflect the actual man-hour estimates from the cost tables, adjusted by stretching certain activities over their slack range and shifting the start and end dates of others. The following assumptions were made in the development of the decommissioning schedule:

- The fuel handling building is isolated until such time that all spent fuel has been discharged from the spent fuel pool to the DOE or to the ISFSI. Decontamination and dismantling of the storage pool is initiated once the transfer of spent fuel to the ISFSI is complete.
- All work (except vessel and internals removal) is performed during an 8-hour workday, 5 days per week, with no overtime.
- Reactor and internals removal activities are performed by using separate crews for different activities working on different shifts, with a corresponding backshift charge for the second shift.
- Multiple crews work parallel activities to the maximum extent possible, consistent with optimum efficiency, adequate access for cutting, removal and laydown space, and with the stringent safety measures necessary during demolition of heavy components and structures.

- For plant systems removal, the systems with the longest removal durations in areas on the critical path are considered to determine the duration of the activity.

4.2 PROJECT SCHEDULE

The period-dependent costs presented in the detailed cost tables are based upon the durations developed in the schedule for decommissioning Seabrook Station. Durations are established between several milestones in each project period; these durations are used to establish a critical path for the entire project. In turn, the critical path duration for each period is used as the basis for determining the period-dependent costs. A second critical path is also shown for the spent fuel cooling period, which determines the release of the fuel storage building for final decontamination.

Scenario timelines are provided as Figure 4.2. Milestone dates are based on either a 2030 or 2050 shutdown. In all cases, the fuel pool is emptied approximately five and one-half years after shutdown, with ISFSI operations continuing at the site until the DOE can complete the transfer of assemblies to its geologic repository.

FIGURE 4.1
ACTIVITY SCHEDULE
SCENARIO 1

Task Name
Seabrook Station Decon Project Schedule
Shutdown plant
Period 1a - Shutdown through transition
Fuel storage pool operations
Reconfigure plant
Prepare activity specifications
Perform site characterization
PSDAR submitted
Written certificate of permanent removal of fuel submitted
Site specific decommissioning cost estimate submitted
DOC staff mobilized
Certificate of permanent cessation of operations submitted
Period 1b - Decommissioning preparations
Fuel storage pool operations
Reconfigure plant (continued)
Prepare detailed work procedures
Decon NSSS
Isolate spent fuel pool
Period 2a - Large component removal
Fuel storage pool operations
Preparation for reactor vessel removal
Non-essential systems
Main turbine/generator
Main condenser
Reactor vessel & internals
Remaining large NSSS components disposition
License termination plan submitted
Period 2b - Decontamination (wet fuel)
Fuel storage pool operations
Remove systems not supporting wet fuel storage
Decon buildings not supporting wet fuel storage
License termination plan approved
Fuel storage pool available for decommissioning
Period 2c - Decontamination following wet fuel storage
Remove remaining systems
Decon wet fuel storage area
Period 2e - Plant license termination
Final Site Survey
NRC review & approval
Part 50 license terminated
Period 3b - Site restoration
Building demolitions, backfill and landscaping

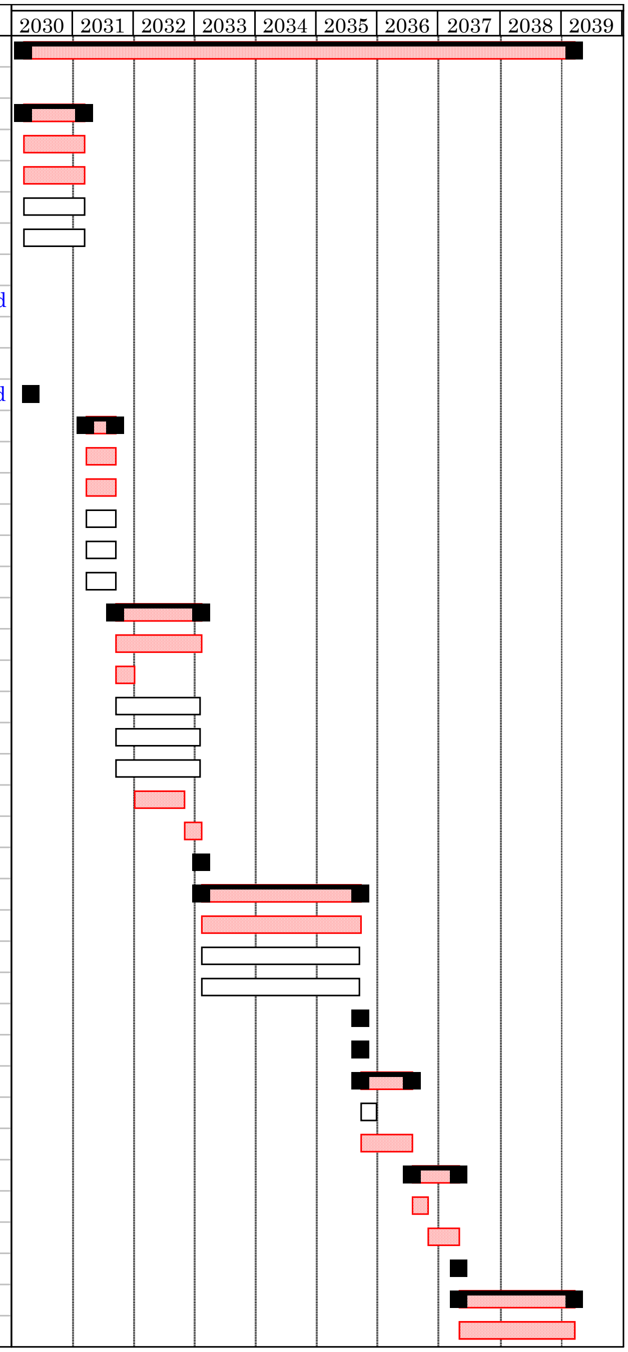


FIGURE 4.2
DECOMMISSIONING TIMELINES
2030 SHUTDOWN
(not to scale)

SCENARIO 1 — Spent Fuel Start: 2040 — Spent Fuel Off-site: 2063
Shutdown 2030

DECON	Transistion/Prep		Decommissioning				Site Rest.	ISFSI Ops		ISFSI D&D		
Spent Fuel	SFP & ISFSI Ops				ISFSI Ops							
Sub-Periods	1a	1b	2a	2b	2d	2f	3b	3c	3d	3e	3f	End
Start Date	15-Mar-30	15-Mar-31	15-Sep-31	11-May-33	14-Sep-35	25-Jul-36	25-Apr-37	16-Mar-39	1-Jan-40	1-Jan-64	3-May-64	5-Jul-64
Duration-Yrs	1	0.5	1.7	2.3	0.9	0.8	1.9	0.8	24	0.3	0.2	
Elapsed Time		1.5	3.2	5.5	6.4	7.2	9.1	9.9	33.9	34.2	34.4	

SCENARIO 2 — Spent Fuel Start: 2077 — Spent Fuel Off-site: 2100
Shutdown 2030

DECON	Transistion/Prep		Decommissioning				Site Rest.	ISFSI Ops		ISFSI D&D		
Spent Fuel	SFP & ISFSI Ops				ISFSI Ops							
Sub-Periods	1a	1b	2a	2b	2d	2f	3b	3c	3d	3e	3f	End
Start Date	15-Mar-30	15-Mar-31	15-Sep-31	11-May-33	14-Sep-35	25-Jul-36	25-Apr-37	16-Mar-39	1-Jan-77	1-Jan-01	4-May-01	6-Jul-01
Duration-Yrs	1	0.5	1.7	2.3	0.9	0.8	1.9	37.8	24	0.3	0.2	
Elapsed Time		1.5	3.2	5.5	6.4	7.2	9.1	46.9	70.9	71.2	71.4	

FIGURE 4.3
DECOMMISSIONING TIMELINES
2050 SHUTDOWN
(not to scale)

SCENARIO 3 Case 3 Spent Fuel Start: 2040 Spent Fuel Off-site: 2077
Shutdown 2050

DECON	Transition/Prep		Decommissioning				Site Rest.	ISFSI Ops		ISFSI D&D		
Spent Fuel	SFP & ISFSI Ops				ISFSI Ops							
Sub-Periods	1a	1b	2a	2b	2d	2f	3b	3c	3d	3e	3f	End
Start Date	15-Mar-50	15-Mar-51	15-Sep-51	11-May-53	14-Sep-55	25-Jul-56	25-Apr-57	16-Mar-59	18-Dec-77	1-Jan-78	4-May-78	6-Jul-78
Duration-Yrs	1	0.5	1.7	2.3	0.9	0.8	1.9	18.8	0	0.3	0.2	
Elapsed Time		1.5	3.2	5.5	6.4	7.2	9.1	27.9	27.9	28.2	28.4	

SCENARIO 4 Spent Fuel Start: 2077 Spent Fuel Off-site: 2100
Shutdown 2050

DECON	Transition/Prep		Decommissioning				Site Rest.	ISFSI Ops		ISFSI D&D		
Spent Fuel	SFP & ISFSI Ops				ISFSI Ops							
Sub-Periods	1a	1b	2a	2b	2d	2f	3b	3c	3d	3e	3f	End
Start Date	15-Mar-50	15-Mar-51	15-Sep-51	11-May-53	14-Sep-55	25-Jul-56	25-Apr-57	16-Mar-59	1-Jan-77	1-Jan-01	4-May-01	6-Jul-01
Duration-Yrs	1	0.5	1.7	2.3	0.9	0.8	1.9	17.8	24	0.3	0.2	
Elapsed Time		1.5	3.2	5.5	6.4	7.2	9.1	26.9	50.9	51.2	51.4	

5. RADIOACTIVE WASTES

The objectives of the decommissioning process are the removal of all radioactive material from the site that would restrict its future use and the termination of the NRC license(s). This currently requires the remediation of all radioactive material at the site in excess of applicable legal limits. Under the Atomic Energy Act,[35] the NRC is responsible for protecting the public from sources of ionizing radiation. Title 10 of the Code of Federal Regulations delineates the production, utilization, and disposal of radioactive materials and processes. In particular, §71 defines radioactive material as it pertains to transportation and §61 specifies its disposition.

Most of the materials being transported for controlled burial are categorized as Low Specific Activity (LSA) or Surface Contaminated Object (SCO) materials containing Type A quantities, as defined in 49 CFR §173-178. Shipping containers are required to be Industrial Packages (IP-1, IP-2 or IP-3, as defined in subpart 173.411). For this study, commercially available steel containers are presumed to be used for the disposal of piping, small components, and concrete. Larger components can serve as their own containers, with proper closure of all openings, access ways, and penetrations.

The destinations for the various waste streams from decommissioning are identified in Figures 5.1 and 5.2. The volumes are shown on a line-item basis in Appendices C and D and summarized in Table 5.1. The volumes are calculated based on the exterior dimensions for containerized material and on the displaced volume of components serving as their own waste containers.

The reactor vessel and internals are categorized as large quantity shipments and, accordingly, will be shipped in reusable, shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, as well as the special handling requirements of the payload. Packaging efficiencies are lower for the highly activated materials (greater than Type A quantity waste), where high concentrations of gamma-emitting radionuclides limit the capacity of the shipping canisters.

No process system containing/handling radioactive substances at shutdown is presumed to meet material release criteria by decay alone (i.e., systems radioactive at shutdown will remain radioactive over the time period during which the decommissioning is accomplished, due to the presence of long-lived radionuclides). While the dose rates decrease with time, longer-lived radionuclides such as ^{137}Cs will control the disposition requirements.

The waste material generated in the decontamination and dismantling is primarily generated during Period 2. Material that is considered potentially contaminated when removed from the radiological controlled area is sent to processing facilities in Tennessee for conditioning and disposal. Heavily contaminated components and activated materials are routed for controlled disposal. The disposal volumes reported in the tables reflect the savings resulting from reprocessing and recycling.

For purposes of constructing the estimates, the current cost for disposal at Energy*Solutions* facility in Clive, Utah was used for a majority of the radioactive waste produced from the decommissioning activities. Separate rates were used for containerized waste and large components. Demolition debris including miscellaneous steel, scaffolding, and concrete was disposed of at a bulk rate. The decommissioning waste stream also included resins and dry active waste.

Since Energy*Solutions* is not currently able to receive the more highly radioactive components generated in the decontamination and dismantling of the reactor, disposal costs for the Class B and C material were based upon NextEra Energy's current agreement with WCS for the Andrews County disposal facility.

The cost of waste processing/conditioning of potentially contaminated material and/or material designated for recovery appears as an "Off-Site Processing" cost for the systems and plant structures identified in Appendices C and D.

FIGURE 5.1
RADIOACTIVE WASTE DISPOSITION

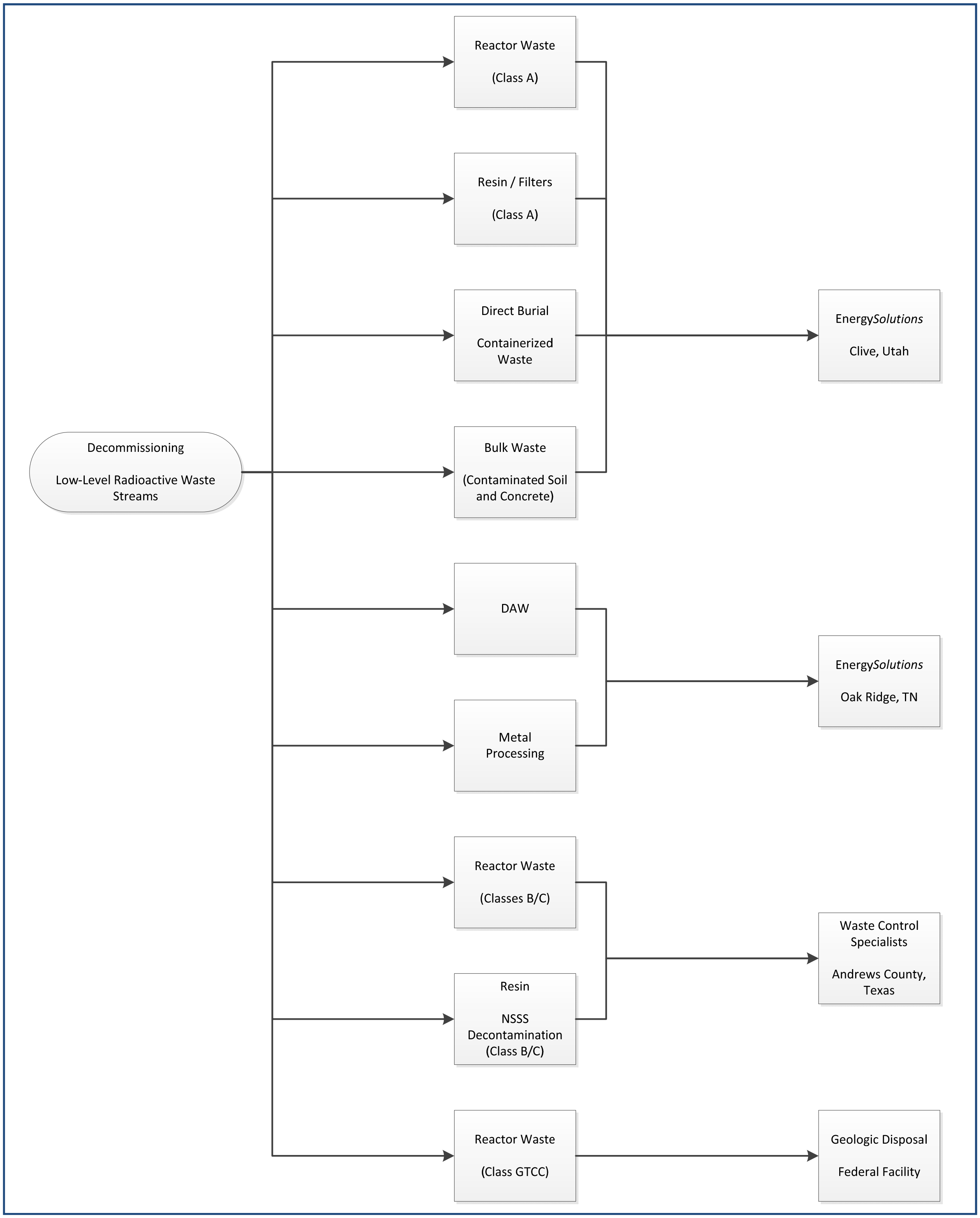


FIGURE 5.2
DECOMMISSIONING WASTE DESTINATIONS
RADIOLOGICAL

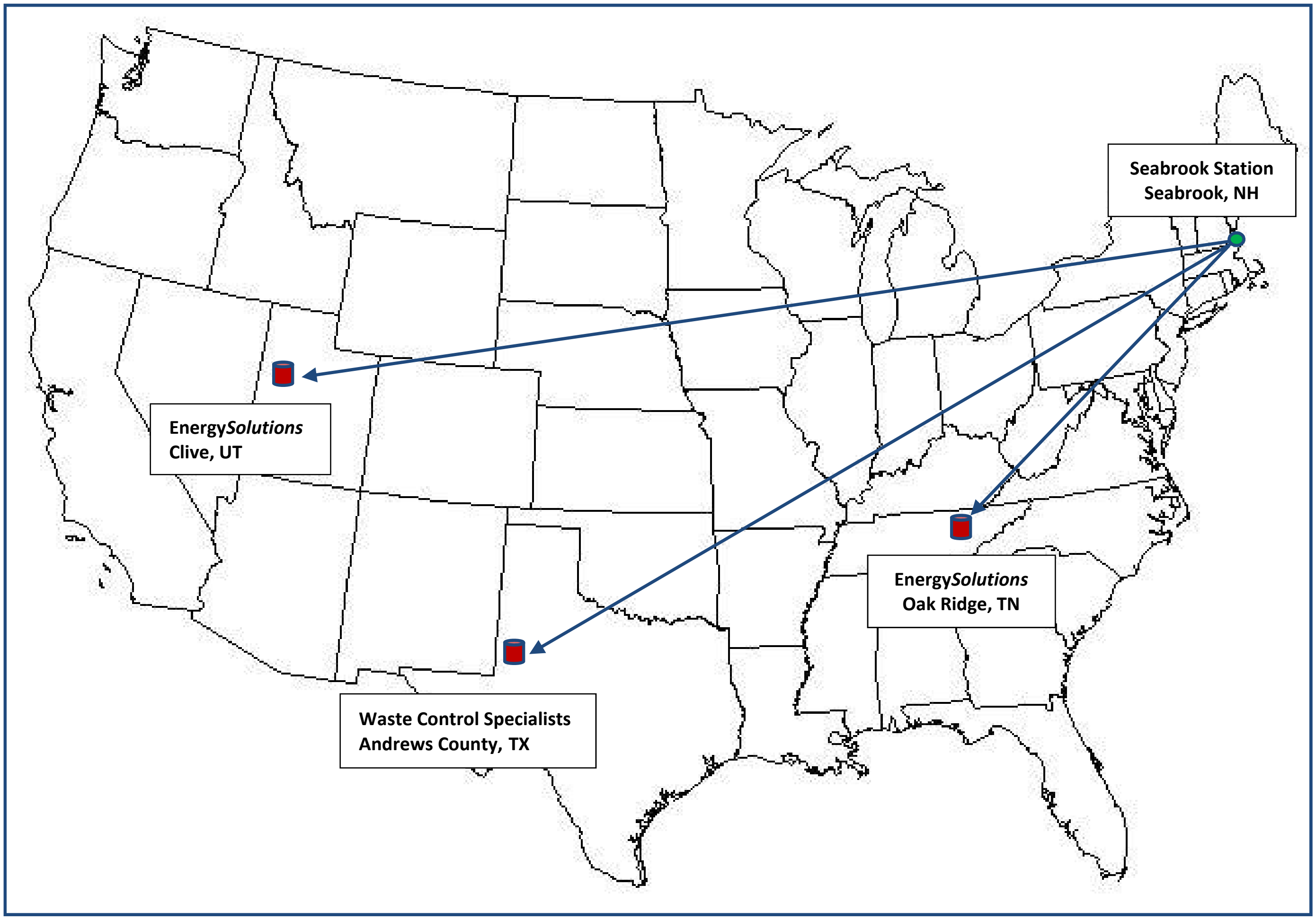


TABLE 5.1
DECOMMISSIONING WASTE SUMMARY
(cubic feet)

Waste	Cost Basis	Class [1]	Volume (cubic feet)	Mass (pounds)
Low-Level Radioactive Waste (near-surface disposal)	Energy*Solutions*	A	166,590	13,041,585
	WCS	B	1,075	121,371
	WCS	C	393	48,672
Greater than Class C (geologic repository)	Spent Fuel Equivalent	GTCC	2,217	436,202
Processed/Conditioned (off-site recycling center)	Recycling Vendors	A	382,025	15,019,520
Total [2]			552,298	28,667,350

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55

[2] Columns may not add due to rounding

6. RESULTS

The analysis to estimate the costs to decommission Seabrook Station relied upon the site-specific, technical information developed for a previous analysis prepared in 1997-98 and updated in 2003 to incorporate new plant configuration and restoration criteria adopted by the NDFC interpreting the 2001 amendments to RSA 162-F. While not an engineering study, the estimates provide Seabrook Station with sufficient information to assess the plant owner's financial obligations as they pertain to the eventual decommissioning of the nuclear station.

The scenarios include both the currently scheduled shutdown of the nuclear unit in 2030 as well as an anticipated shutdown in 2050 (license renewal). The decommissioning costs include the use of a pre-existing ISFSI at the site.

The costs reflect the site-specific features of the Seabrook Station, the local cost of labor, DOE's rate of acceptance for the spent fuel generated over the operating life of the plant, and disposal of the low-level waste generated during decommissioning.

The major contributors to the cost of decommissioning Seabrook Station are summarized at the end of this section. Staffing represents the largest single contributor to the overall cost. The magnitude of the expense is a function of both the size of the organization, needed to manage the decommissioning, as well as the program duration.

It is assumed, for purposes of this analysis, that Seabrook Station will hire a DOC to provide contract management of the decommissioning labor force and subcontractors. Utility oversight will continue, in a reduced capacity, during site restoration and beyond to ensure proper management of the spent fuel.

Once the operating license has been terminated, a significantly reduced staff provides the oversight of conventional demolition and site restoration. With decommissioning completed, only those individuals required to oversee and support the ongoing transfer of spent fuel to a DOE facility and ultimately, the decommissioning of the storage facility are included.

The availability of an ISFSI at the site was presumed as a pre-condition to the completion of decommissioning. With the storage of spent fuel in the current wet storage pool, dismantling activities are restricted with limited application of destructive processes. Completion of the relocation of the spent fuel to dry storage releases the fuel storage building for decommissioning. Dry storage of the fuel under a general license as authorized by 10CFR50, which provides additional flexibility in the event DOE is not able to meet it current commitments for completing the transfer of assemblies to an off-site facility and minimizes the associated caretaking expenses incurred by Seabrook Station.

The disposal of low-level radioactive waste is a significant contributor to the total program cost. The majority of the waste generated from decontamination and dismantling operations was disposed of at the Energy*Solutions* facility in Clive, Utah (with the higher activity waste sent for disposal at the Andrews County, Texas, facility operated by WCS).

A large percentage of the waste material generated during decommissioning is designated for processing/recovery at an off-site facility. The facility is assumed to be located in Tennessee. Treatment of the waste significantly reduces the volume of material ultimately designated for controlled disposal.

Removal costs are primarily driven by the cost of labor (as well as the plant inventory). The costs identified in this analysis reflect composite labor costs for the Seabrook Station, as supplied by the owner. Materials and consumables associated with the removal activities are included using representative costs for the region. Productivity adjustments are based upon the working conditions assumed for the particular plant area or major component.

Contracted security services are identified as separate line item expenditures in the estimates. While the guard force is reduced from operating levels, there remains a need to control personnel and material throughout the decommissioning program, while the plant's operating license remains in effect. Security is also required as long as spent fuel resides at the site. While cross-training, a reduced protected area and revised technical specifications have effectively reduced the size of the security force at other decommissioning sites, a significant number of personnel are still required to process the work force identified in this analysis and ensure public health and safety through the monitoring of material entering and leaving the site.

Non-radiological demolition is a natural extension of the decommissioning process. The methods employed in decontamination and dismantling are generally destructive and indiscriminate in inflicting collateral damage. With a work force mobilized to support decommissioning operations, non-radiological demolition can be an integrated activity and a logical expansion of the work being performed in the process of terminating the operating license. Prompt demolition reduces future liabilities due to the deterioration of the facilities (and therefore the working conditions) with time.

Site structures, facilities, and associated system components deemed to have ongoing value to future site development are excluded from the scope of the decommissioning estimate, along with any Unit 2 facilities, in accordance with the

State of New Hampshire's revised definition of decommissioning. However, the estimates do not include any additional cost to protect these facilities during the decommissioning process, nor any impact that the preservation of these facilities may have on the dismantling of adjacent, non-essential structures.

License termination survey costs are associated with the labor intensive and complex activity of verifying that contamination has been removed from the site to the levels specified by the regulating authorities. This process involves a systematic survey of all remaining plant surface areas and surrounding environs, sampling, isotopic analysis and documentation of the findings. The status of any plant components and materials not removed in the decommissioning process need to be confirmed and add to the expense of surveying the facilities alone.

The remaining costs include allocations for waste packaging, transportation, energy consumption, mandated fees, contingencies, and required insurance premiums and other costs related to maintaining a viable organization. "Operating" costs, while generally reduced over the duration of the program, do need to be maintained either at a basic functional or regulatory level.

This study provides estimates for decommissioning the site under current requirements, based on present-day costs and available technology. It is therefore appropriate that this cost analysis be reviewed periodically and revised as needed.

Comparison with the 2010 Cost Estimate

The cost to decommission the Seabrook Station, expressed in December 31, 2014 dollars, for the Scenario 1 and Scenario 2 (formally referred to as the NDFC Scenario) is estimated to be $931.398 million and $1.119 billion, respectively. As shown in the tables at the end of this section, the majority of the cost is for the physical decontamination and dismantling of the nuclear unit. Another significant contributor is associated with the management, interim storage, and eventual transfer of the spent fuel. The remaining cost is for the demolition of the designated structures and commercial/ industrial restoration of the site.

The previous comprehensive estimates for decommissioning the Seabrook Station were estimated to be $802.2 million and $985.2 million, for Scenario 1 and Scenario 2, respectively, expressed in December 31, 2010 dollars.

Escalated at the 3.85% rate approved by the NDFC in Docket No. 2011-1, the $802.2 million was estimated to grow to $933.1 million by year-end 2014. This compares favorably to the $931.4 million Scenario 1 estimate. Put differently, the decommissioning cost calculated in Scenario 1 is essentially unchanged from than the 2010 study, when both are expressed in 2014 dollars as escalated at the NDFC approved rate of 3.85%.

A significant portion of the increase (estimated at 25%) in the cost of Scenario 1 resulted from one-time cost adjustments and/or specific changes to the cost model, as identified in Table 5. The changes, with the exception of those associated with the dry fuel storage system (which were due, in part, to additional operating experience), were introduced as a result of industry experience from decommissioned reactors and planning experience from recently shutdown reactors. As shown in Table 6, without these changes, the effective annual escalation rate would be closer to 2.863.% This would indicate that, excluding process changes and one-time adjustments from lessons-learned from recent decommissioning projects, the cost components associated with decommissioning the Seabrook Station are escalating at a rate materially lower than the 3.85% rate currently assumed by the NDFC.

Additional detail on the one-time adjustments and additions to the 2014 cost model is provided in Section 3.2 and in Table 5 of the executive summary.

TABLE 6.1
COST SUMMARY
2030 SHUTDOWN DECOMMISSIONING SCENARIOS
(thousands of $2014)

Scenarios	1	2
Cessation of Operations (year)	2030	2030
Decommissioning Alternative	DECON	DECON
Spent Fuel Pick Up (year)	2040	2077
Spent Fuel Off Site (year)	2063	2100
Decontamination	14,534	14,534
Removal	107,010	107,010
Packaging	25,916	25,916
Transportation	20,487	20,487
Waste Disposal	79,831	79,831
Off-site Waste Processing	29,792	29,792
Program Management	297,400	338,926
Security	124,334	216,180
Spent Fuel Pool Isolation	12,434	12,434
ISFSI Related	115,164	136,259
Insurance and Regulatory Fees	38,192	68,384
Energy	18,944	18,944
Characterization Surveys	32,210	32,210
Property Taxes	0	0
Miscellaneous Equipment	7,033	7,033
Other Fees	2,939	5,492
Site O&M	5,176	5,176
Total	931,398	1,118,610

Scenarios	1	2
License Termination	647,542	647,542
Spent Fuel Management	232,292	419,504
Site Restoration	51,564	51,564
Total	931,398	1,118,610

Note: Columns may not add due to rounding

TABLE 6.2
COST SUMMARY
2050 SHUTDOWN DECOMMISSIONING SCENARIOS
(thousands of $2014)

Scenarios	3	4
Cessation of Operations (year)	2050	2050
Decommissioning Alternative	DECON	DECON
Spent Fuel Pick Up (year)	2040	2077
Spent Fuel Off Site (year)	2077	2100
Decontamination	14,534	14,534
Removal	107,010	107,291
Packaging	25,916	25,916
Transportation	20,487	20,487
Waste Disposal	79,831	79,831
Off-site Waste Processing	29,792	29,792
Program Management	290,668	316,479
Security	109,443	166,532
Spent Fuel Pool Isolation	12,434	12,434
ISFSI Related	78,064	137,080
Insurance and Regulatory Fees	33,297	52,063
Energy	18,944	18,944
Characterization Surveys	32,210	32,210
Property Taxes	0	0
Miscellaneous Equipment	7,033	7,033
Other Fees	2,525	4,112
Site O&M	5,176	5,176
Total	867,366	1,029,918

Scenarios	3	4
License Termination	647,542	647,891
Spent Fuel Management	168,259	330,005
Site Restoration	51,564	52,022
Total	867,366	1,029,918

Note: Columns may not add due to rounding

TABLE 6.3
COST COMPARISON
2010 SCENARIO 1 vs. 2014 SCENARIO 1
(thousands of $)

Scenario	1	1	
Year's Dollars	2010	2014	
			Change[1]
Decontamination	13,789	14,534	745
Removal	88,579	107,010	18,431
Packaging	16,606	25,916	9,310
Transportation	15,219	20,487	5,268
Waste Disposal	57,760	79,831	22,071
Off-site Waste Processing	43,963	29,792	-14,171
Program Management	265,096	297,400	32,304
Security	109,826	124,334	14,508
Spent Fuel Pool Isolation	11,477	12,434	957
ISFSI Related	102,516	115,164	12,648
Insurance and Regulatory Fees	32,861	38,192	5,331
Energy	12,707	18,944	6,237
Characterization and Surveys	22,514	32,210	9,696
Property Taxes	0	0	0
Miscellaneous Equipment	6,706	7,033	327
Other Fees	0	2,939	2,939
Site O&M	2,588	5,176	2,588
Total	802,208	931,398	129,190

Scenarios	2010	2014	Delta
License Termination	542,880	647,542	104,662
Spent Fuel Management	220,244	232,292	12,048
Site Restoration	39,084	51,564	12,480
Total	802,208	931,398	129,190

[1] See Table 5 for cost elements added or significantly changed from the 2010 cost analysis

Note: Columns may not add due to rounding

TABLE 6.4
COST COMPARISON
2010 SCENARIO 2 vs. 2014 SCENARIO 2
(thousands of $)

Scenario	2	2	
Year's Dollars	2010	2014	
			Change
Decontamination	13,789	14,534	745
Removal	88,579	107,010	18,431
Packaging	16,606	25,916	9,310
Transportation	15,219	20,487	5,268
Waste Disposal	57,760	79,831	22,071
Off-site Waste Processing	43,963	29,792	-14,171
Program Management	310,073	338,926	37,853
Security	207,980	216,180	8,200
Spent Fuel Pool Isolation	11,477	12,434	957
ISFSI Related	125,302	136,259	10,957
Insurance and Regulatory Fees	58,965	68,384	9,419
Energy	12,707	18,944	6,237
Characterization and Surveys	22,514	32,210	9,696
Property Taxes	0	0	0
Miscellaneous Equipment	6,706	7,033	327
Other Fees	0	5,492	5,492
Site O&M	2,588	5,176	2,588
Total	985,230	1,118,610	133,380

Scenarios	2010	2014	Change
License Termination	542,880	647,542	104,662
Spent Fuel Management	403,266	419,504	16,238
Site Restoration	39,084	51,564	12,480
Total	985,230	1,118,610	133,380

Note: Columns may not add due to rounding

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26. "Civilian Radioactive Waste Management System Total System Description," Revision 02 (TDR-CRW-SE-000002), DOE/RW-0500, September 2001

27. "Acceptance Priority Ranking & Annual Capacity Report," DOE/RW-0567, July 2004

28. U.S. Department of Transportation, Section 49 of the Code of Federal Regulations, "Transportation," Parts 173 through 178, 2010

29. Tri-State Motor Transit Company, published tariffs

30. J.C. Evans et al., "Long-Lived Activation Products in Reactor Materials" NUREG/CR-3474, Pacific Northwest Laboratory for the Nuclear Regulatory Commission, August 1984

31. R.I. Smith, G.J. Konzek, W.E. Kennedy, Jr., "Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station," NUREG/CR-0130 and addenda, Pacific Northwest Laboratory for the Nuclear Regulatory Commission, June 1978

32. H.D. Oak, et al., "Technology, Safety and Costs of Decommissioning a Reference Boiling Water Reactor Power Station," NUREG/CR-0672 and addenda, Pacific Northwest Laboratory for the Nuclear Regulatory Commission, June 1980

33. SECY-00-0145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning," June 2000

7. REFERENCES
(continued)

34. "Microsoft Project Professional 2010," Microsoft Corporation, Redmond, WA

35. “Atomic Energy Act of 1954,” (68 Stat. 919)

APPENDIX A

UNIT COST FACTOR DEVELOPMENT

APPENDIX A
UNIT COST FACTOR DEVELOPMENT

Example: Unit Factor for Removal of Contaminated Heat Exchanger < 3,000 lbs.

1. SCOPE

Heat exchangers weighing < 3,000 lbs. will be removed in one piece using a crane or small hoist. They will be disconnected from the inlet and outlet piping. The heat exchanger will be sent to the waste processing area.

2. CALCULATIONS

Act ID	Activity Description	Activity Duration	Critical Duration
a	Remove insulation	60	(b)
b	Mount pipe cutters	60	60
c	Install contamination controls	20	(b)
d	Disconnect inlet and outlet lines	60	60
e	Cap openings	20	(d)
f	Rig for removal	30	30
g	Unbolt from mounts	30	30
h	Remove contamination controls	15	15
i	Remove, wrap in plastic, send to the waste processing area	60	60
	Totals (Activity/Critical)	355	255

Duration adjustment(s):	
+ Respiratory protection adjustment (50% of critical duration)	128
+ Radiation/ALARA adjustment (37.08% of critical duration)	95
Adjusted work duration	478
+ Protective clothing adjustment (30% of adjusted duration)	143
Productive work duration	621
+ Work break adjustment (8.33 % of productive duration)	52
Total work duration (minutes)	673

*** Total duration = 11.217 hr ***

APPENDIX A
(continued)

3. LABOR REQUIRED

Crew	Number	Duration (hr)	Rate ($/hr)	Cost
Laborers	3.00	11.217	38.56	1,297.58
Craftsmen	2.00	11.217	54.48	1,222.20
Foreman	1.00	11.217	61.32	687.83
General Foreman	0.25	11.217	62.64	175.66
Fire Watch	0.05	11.217	38.56	21.63
Health Physics Technician	1.00	11.217	55.13	618.39
Total labor cost				$4,023.29

4. EQUIPMENT & CONSUMABLES COSTS

Equipment Costs	none
Consumables/Materials Costs	
-Universal Sorbent 50 @ $0.54 sq ft {1}	$27.00
-Tarpaulins (oil resistant/fire retardant) 50 @ $0.24/sq ft {2}	$12.00
-Gas torch consumables 1 @ $16.95/hr x 1 hr {3}	$16.95
Subtotal cost of equipment and materials	$55.95
Overhead & profit on equipment and materials @ 10.00 %	$5.60
Total costs, equipment & material	$61.55

TOTAL COST:

Removal of contaminated heat exchanger <3000 pounds:	$4,084.84
Total labor cost:	$4,023.29
Total equipment/material costs:	$61.55
Total craft labor man-hours required per unit:	81.88

5. NOTES AND REFERENCES

- Work difficulty factors were developed in conjunction with the Atomic Industrial Forum (AIF) (now Nuclear Energy Institute) program to standardize nuclear decommissioning cost estimates and are delineated in Volume 1, Chapter 5 of the "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986.

- References for equipment & consumables costs:

  1. www.mcmaster.com online catalog, McMaster Carr Spill Control (7193T88)
  2. R.S. Means (2014) Division 01 56, Section 13.60-0600, page 23
  3. R.S. Means (2014) Division 01 54 33, Section 40-6360, page 698

- Material and consumable costs were adjusted using the regional indices for Portsmouth, New Hampshire.

APPENDIX B

UNIT COST FACTOR LISTING
(DECON: Power Block Structures Only)

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of clean instrument and sampling tubing, $/linear foot	0.44
Removal of clean pipe 0.25 to 2 inches diameter, $/linear foot	4.65
Removal of clean pipe >2 to 4 inches diameter, $/linear foot	6.76
Removal of clean pipe >4 to 8 inches diameter, $/linear foot	13.32
Removal of clean pipe >8 to 14 inches diameter, $/linear foot	25.42
Removal of clean pipe >14 to 20 inches diameter, $/linear foot	33.11
Removal of clean pipe >20 to 36 inches diameter, $/linear foot	48.70
Removal of clean pipe >36 inches diameter, $/linear foot	57.83
Removal of clean valve >2 to 4 inches	89.41
Removal of clean valve >4 to 8 inches	133.20
Removal of clean valve >8 to 14 inches	254.25
Removal of clean valve >14 to 20 inches	331.05
Removal of clean valve >20 to 36 inches	486.96
Removal of clean valve >36 inches	578.33
Removal of clean pipe hanger for small bore piping	30.53
Removal of clean pipe hanger for large bore piping	105.96
Removal of clean pump, <300 pound	225.73
Removal of clean pump, 300-1000 pound	627.83
Removal of clean pump, 1000-10,000 pound	2,470.76
Removal of clean pump, >10,000 pound	4,782.07
Removal of clean pump motor, 300-1000 pound	262.08
Removal of clean pump motor, 1000-10,000 pound	1,026.11
Removal of clean pump motor, >10,000 pound	2,308.75
Removal of clean heat exchanger <3000 pound	1,333.91
Removal of clean heat exchanger >3000 pound	3,362.91
Removal of clean feedwater heater/deaerator	9,429.33
Removal of clean moisture separator/reheater	19,319.23
Removal of clean tank, <300 gallons	290.25
Removal of clean tank, 300-3000 gallon	913.15
Removal of clean tank, >3000 gallons, $/square foot surface area	7.72

APPENDIX B

UNIT COST FACTOR LISTING

(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of clean electrical equipment, <300 pound	121.95
Removal of clean electrical equipment, 300-1000 pound	426.68
Removal of clean electrical equipment, 1000-10,000 pound	853.37
Removal of clean electrical equipment, >10,000 pound	2,051.88
Removal of clean electrical transformer < 30 tons	1,425.00
Removal of clean electrical transformer > 30 tons	4,103.74
Removal of clean standby diesel generator, <100 kW	1,455.51
Removal of clean standby diesel generator, 100 kW to 1 MW	3,248.79
Removal of clean standby diesel generator, >1 MW	6,725.66
Removal of clean electrical cable tray, $/linear foot	11.49
Removal of clean electrical conduit, $/linear foot	5.02
Removal of clean mechanical equipment, <300 pound	121.95
Removal of clean mechanical equipment, 300-1000 pound	426.68
Removal of clean mechanical equipment, 1000-10,000 pound	853.37
Removal of clean mechanical equipment, >10,000 pound	2,051.88
Removal of clean HVAC equipment, <300 pound	147.46
Removal of clean HVAC equipment, 300-1000 pound	512.70
Removal of clean HVAC equipment, 1000-10,000 pound	1,021.80
Removal of clean HVAC equipment, >10,000 pound	2,051.88
Removal of clean HVAC ductwork, $/pound	0.47
Removal of contaminated instrument and sampling tubing, $/linear foot	1.47
Removal of contaminated pipe 0.25 to 2 inches diameter, $/linear foot	19.46
Removal of contaminated pipe >2 to 4 inches diameter, $/linear foot	33.88
Removal of contaminated pipe >4 to 8 inches diameter, $/linear foot	54.66
Removal of contaminated pipe >8 to 14 inches diameter, $/linear foot	106.17
Removal of contaminated pipe >14 to 20 inches diameter, $/linear foot	127.74
Removal of contaminated pipe >20 to 36 inches diameter, $/linear foot	177.05
Removal of contaminated pipe >36 inches diameter, $/linear foot	209.36
Removal of contaminated valve >2 to 4 inches	423.59
Removal of contaminated valve >4 to 8 inches	503.57

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of contaminated valve >8 to 14 inches	1,018.80
Removal of contaminated valve >14 to 20 inches	1,296.39
Removal of contaminated valve >20 to 36 inches	1,727.58
Removal of contaminated valve >36 inches	2,050.67
Removal of contaminated pipe hanger for small bore piping	136.96
Removal of contaminated pipe hanger for large bore piping	432.18
Removal of contaminated pump, <300 pound	898.62
Removal of contaminated pump, 300-1000 pound	2,074.42
Removal of contaminated pump, 1000-10,000 pound	6,684.62
Removal of contaminated pump, >10,000 pound	16,284.98
Removal of contaminated pump motor, 300-1000 pound	878.18
Removal of contaminated pump motor, 1000-10,000 pound	2,717.06
Removal of contaminated pump motor, >10,000 pound	6,100.14
Removal of contaminated heat exchanger <3000 pound	4,084.84
Removal of contaminated heat exchanger >3000 pound	11,833.71
Removal of contaminated tank, <300 gallons	1,492.09
Removal of contaminated tank, >300 gallons, $/square foot	29.18
Removal of contaminated electrical equipment, <300 pound	697.34
Removal of contaminated electrical equipment, 300-1000 pound	1,685.87
Removal of contaminated electrical equipment, 1000-10,000 pound	3,246.15
Removal of contaminated electrical equipment, >10,000 pound	6,389.85
Removal of contaminated electrical cable tray, $/linear foot	33.74
Removal of contaminated electrical conduit, $/linear foot	15.86
Removal of contaminated mechanical equipment, <300 pound	776.19
Removal of contaminated mechanical equipment, 300-1000 pound	1,863.19
Removal of contaminated mechanical equipment, 1000-10,000 pound	3,581.78
Removal of contaminated mechanical equipment, >10,000 pound	6,389.85
Removal of contaminated HVAC equipment, <300 pound	776.19
Removal of contaminated HVAC equipment, 300-1000 pound	1,863.19
Removal of contaminated HVAC equipment, 1000-10,000 pound	3,581.78

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Removal of contaminated HVAC equipment, >10,000 pound	6,389.85
Removal of contaminated HVAC ductwork, $/pound	2.04
Removal/plasma arc cut of contaminated thin metal components, $/linear in.	3.68
Additional decontamination of surface by washing, $/square foot	7.59
Additional decontamination of surfaces by hydrolasing, $/square foot	34.11
Decontamination rig hook up and flush, $/ 250 foot length	6,572.59
Chemical flush of components/systems, $/gallon	16.27
Removal of clean standard reinforced concrete, $/cubic yard	131.57
Removal of grade slab concrete, $/cubic yard	173.23
Removal of clean concrete floors, $/cubic yard	346.59
Removal of sections of clean concrete floors, $/cubic yard	1,023.88
Removal of clean heavily rein concrete w/#9 rebar, $/cubic yard	223.94
Removal of contaminated heavily rein concrete w/#9 rebar, $/cubic yard	2,034.92
Removal of clean heavily rein concrete w/#18 rebar, $/cubic yard	283.19
Removal of contaminated heavily rein concrete w/#18 rebar, $/cubic yard	2,693.29
Removal heavily rein concrete w/#18 rebar & steel embedments, $/cubic yard	425.66
Removal of below-grade suspended floors, $/cubic yard	346.59
Removal of clean monolithic concrete structures, $/cubic yard	858.04
Removal of contaminated monolithic concrete structures, $/cubic yard	2,029.55
Removal of clean foundation concrete, $/cubic yard	675.06
Removal of contaminated foundation concrete, $/cubic yard	1,891.09
Explosive demolition of bulk concrete, $/cubic yard	29.67
Removal of clean hollow masonry block wall, $/cubic yard	89.76
Removal of contaminated hollow masonry block wall, $/cubic yard	314.67
Removal of clean solid masonry block wall, $/cubic yard	89.76
Removal of contaminated solid masonry block wall, $/cubic yard	314.67
Backfill of below-grade voids, $/cubic yard	28.69
Removal of subterranean tunnels/voids, $/linear foot	105.51
Placement of concrete for below-grade voids, $/cubic yard	109.00
Excavation of clean material, $/cubic yard	2.93

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Excavation of contaminated material, $/cubic yard	39.78
Removal of clean concrete rubble (tipping fee included), $/cubic yard	22.32
Removal of contaminated concrete rubble, $/cubic yard	25.36
Removal of building by volume, $/cubic foot	0.29
Removal of clean building metal siding, $/square foot	1.18
Removal of contaminated building metal siding, $/square foot	4.22
Removal of standard asphalt roofing, $/square foot	2.08
Removal of transite panels, $/square foot	1.97
Scarifying contaminated concrete surfaces (drill & spall), $/square foot	11.88
Scabbling contaminated concrete floors, $/square foot	7.29
Scabbling contaminated concrete walls, $/square foot	19.37
Scabbling contaminated ceilings, $/square foot	66.60
Scabbling structural steel, $/square foot	5.95
Removal of clean overhead crane/monorail < 10 ton capacity	604.53
Removal of contaminated overhead crane/monorail < 10 ton capacity	1,760.33
Removal of clean overhead crane/monorail >10-50 ton capacity	1,450.88
Removal of contaminated overhead crane/monorail >10-50 ton capacity	4,224.05
Removal of polar crane > 50 ton capacity	6,128.86
Removal of gantry crane > 50 ton capacity	25,648.35
Removal of structural steel, $/pound	0.19
Removal of clean steel floor grating, $/square foot	4.51
Removal of contaminated steel floor grating, $/square foot	13.29
Removal of clean free standing steel liner, $/square foot	11.57
Removal of contaminated free standing steel liner, $/square foot	34.13
Removal of clean concrete-anchored steel liner, $/square foot	5.79
Removal of contaminated concrete-anchored steel liner, $/square foot	39.80
Placement of scaffolding in clean areas, $/square foot	13.35
Placement of scaffolding in contaminated areas, $/square foot	23.17
Landscaping with topsoil, $/acre	21,118.78
Cost of CPC B-88 LSA box & preparation for use	1,748.54

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit($)
Cost of CPC B-25 LSA box & preparation for use	1,599.39
Cost of CPC B-12V 12 gauge LSA box & preparation for use	1,303.61
Cost of CPC B-144 LSA box & preparation for use	8,919.95
Cost of LSA drum & preparation for use	174.98
Cost of cask liner for CNSI 8 120A cask (resins)	10,457.49
Cost of cask liner for CNSI 8 120A cask (filters)	7,526.65
Decontamination of surfaces with vacuuming, $/square foot	0.74

APPENDIX C

2030 SHUTDOWN

DETAILED COST TABLES

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	227	34	262	262	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	853	128	981	981	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	353	53	405	405	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	569	85	654	654	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	466	70	536	536	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	560	84	644	579	-	64	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	474	71	545	491	-	55	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	808	121	929	929	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	739	111	850	850	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Biological shield	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Steam generators	-	-	-	-	-	-	355	53	408	408	-	-	-	-	-	-	-	-	-	3,120
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	182	27	209	105	-	105	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.10	Main Condensers	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.11	Plant structures & buildings	-	-	-	-	-	-	355	53	408	204	-	204	-	-	-	-	-	-	-	3,120
1a.1.17.12	Waste management	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.13	Facility & site closeout	-	-	-	-	-	-	102	15	118	59	-	59	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	4,302	645	4,948	4,357	-	591	-	-	-	-	-	-	-	37,827
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	273	41	314	314	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	3,000	450	3,450	3,450	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	159	24	183	183	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,300	345	2,645	2,645	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	140	21	161	161	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	13,689	2,053	15,742	15,151	-	591	-	-	-	-	-	-	-	73,753
Period 1a Collateral Costs																					
1a.3.1	NEI Program Fees	-	-	-	-	-	-	175	26	201	201	-	-	-	-	-	-	-	-	-	-
1a.3.2	N.H. Disposal Tax	-	-	-	-	-	-	9	2	11	11	-	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	184	29	213	213	-	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	2,361	236	2,597	2,597	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	446	-	-	-	-	-	112	558	558	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	575	-	-	-	-	-	86	661	661	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	5	-	43	-	13	71	71	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	2,905	436	3,341	3,341	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	1,769	177	1,946	1,946	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,504	450	4,954	-	4,954	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M Cost	-	-	-	-	-	-	500	75	575	575	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	791	119	910	-	910	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	95	14	110	-	110	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	10,019	1,503	11,522	11,522	-	-	-	-	-	-	-	-	-	294,086
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	25,851	3,878	29,728	29,728	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	1,022	11	5	-	43	48,794	7,098	56,972	50,998	5,974	-	-	610	-	-	-	12,190	20	717,486

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1a.0	TOTAL PERIOD 1a COST	-	1,022	11	5	-	43	62,667	9,180	72,927	66,362	5,974	591	-	610	-	-	-	12,190	20	791,238
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	538	81	619	557	-	62	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	284	43	327	327	-	-	-	-	-	-	-	-	-	2,500
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	154	23	177	44	-	132	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD cooling assembly	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	CRD housings & ICI tubes	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Incore instrumentation	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	413	62	475	475	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	136	20	157	78	-	78	-	-	-	-	-	-	-	1,200
1b.1.1.10	Missile shields	-	-	-	-	-	-	51	8	59	59	-	-	-	-	-	-	-	-	-	450
1b.1.1.11	Biological shield	-	-	-	-	-	-	136	20	157	157	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.12	Steam generators	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1b.1.1.13	Reinforced concrete	-	-	-	-	-	-	114	17	131	65	-	65	-	-	-	-	-	-	-	1,000
1b.1.1.14	Main Turbine	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.15	Main Condensers	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.16	Auxiliary building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1.17	Reactor building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	3,781	567	4,348	3,530	-	818	-	-	-	-	-	-	-	33,243
1b.1.2	Decon primary loop	172	-	-	-	-	-	-	86	257	257	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	172	-	-	-	-	-	3,781	653	4,606	3,788	-	818	-	-	-	-	-	-	1,067	33,243
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,813	1,622	12,434	12,434	-	-	-	-	-	-	-	-	-	-
1b.2.2	Site Characterization	-	-	-	-	-	-	4,912	1,474	6,386	6,386	-	-	-	-	-	-	-	-	27,690	10,132
1b.2.3	Misc Waste	-	-	11	18	-	44	-	15	87	87	-	-	-	353	-	-	-	22,760	122	-
1b.2	Subtotal Period 1b Additional Costs	-	-	11	18	-	44	15,725	3,110	18,908	18,908	-	-	-	353	-	-	-	22,760	27,812	10,132
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	803	-	-	-	-	-	-	120	923	923	-	-	-	-	-	-	-	-	-	-
1b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
1b.3.3	Process decommissioning water waste	42	-	23	117	-	109	-	68	358	358	-	-	-	265	-	-	-	15,875	52	-
1b.3.4	Process decommissioning chemical flush waste	0	-	9	61	-	479	-	130	680	680	-	-	-	-	112	-	-	11,955	21	-
1b.3.5	Small tool allowance	-	2	-	-	-	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.3.6	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
1b.3.7	Decon rig	1,500	-	-	-	-	-	-	225	1,725	1,725	-	-	-	-	-	-	-	-	-	-
1b.3.8	NEI Program Fees	-	-	-	-	-	-	74	11	85	85	-	-	-	-	-	-	-	-	-	-
1b.3.9	N.H. Disposal Tax	-	-	-	-	-	-	16	4	20	20	-	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,345	1,102	32	178	-	588	1,536	941	6,721	6,721	-	-	-	265	112	-	-	27,831	73	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	25	-	-	-	-	-	-	6	31	31	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	1,190	119	1,309	1,309	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	253	-	-	-	-	-	63	316	316	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	290	-	-	-	-	-	43	333	333	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	3	-	25	-	7	42	42	-	-	-	360	-	-	-	7,197	12	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	2,692	404	3,096	3,096	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	615	61	676	676	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	2,270	227	2,498	-	2,498	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M Cost	-	-	-	-	-	-	252	38	290	290	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	399	60	459	-	459	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	48	7	55	-	55	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	3,847	577	4,424	4,424	-	-	-	-	-	-	-	-	-	112,503
1b.4.14	DOC Staff Cost	-	-	-	-	-	-	5,430	815	6,245	6,245	-	-	-	-	-	-	-	-	-	64,137
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	13,091	1,964	15,055	15,055	-	-	-	-	-	-	-	-	-	214,491
1b.4	Subtotal Period 1b Period-Dependent Costs	25	543	6	3	-	25	29,835	4,392	34,828	31,817	3,011	-	-	360	-	-	-	7,197	12	391,131
1b.0	TOTAL PERIOD 1b COST	2,541	1,644	50	198	-	657	50,876	9,095	65,062	61,233	3,011	818	-	977	112	-	-	57,788	28,963	434,506

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1 TOTALS		2,541	2,666	61	203	-	700	113,543	18,275	137,989	127,595	8,985	1,409	-	1,586	112	-	-	69,978	28,982	1,225,745
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Reactor Coolant Piping	125	108	16	45	-	204	-	149	647	647	-	-	-	932	-	-	-	106,498	4,404	-
2a.1.1.2	Pressurizer Relief Tank	31	26	6	17	-	70	-	43	192	192	-	-	-	330	-	-	-	36,618	1,074	-
2a.1.1.3	Reactor Coolant Pumps & Motors	130	95	121	218	-	1,591	-	531	2,686	2,686	-	-	-	4,900	-	-	-	815,840	4,873	100
2a.1.1.4	Pressurizer	52	54	602	158	-	1,229	-	431	2,527	2,527	-	-	-	3,785	-	-	-	291,623	2,602	1,875
2a.1.1.5	Steam Generators	372	5,770	3,962	4,652	2,118	7,662	-	4,955	29,491	29,491	-	-	39,678	23,600	-	-	-	3,509,084	23,233	5,750
2a.1.1.6	CRDMs/ICIs/Service Structure Removal	157	282	207	109	-	294	-	259	1,308	1,308	-	-	-	3,965	-	-	-	152,894	8,248	-
2a.1.1.7	Reactor Vessel Internals	136	3,710	10,308	2,361	-	17,817	349	14,979	49,659	49,659	-	-	-	1,878	963	393	-	340,946	31,550	1,394
2a.1.1.8	Reactor Vessel	114	6,748	2,544	1,889	-	3,257	349	7,907	22,808	22,808	-	-	-	9,391	-	-	-	961,036	31,550	1,394
2a.1.1	Totals	1,117	16,793	17,765	9,449	2,118	32,124	699	29,254	109,319	109,319	-	-	39,678	48,781	963	393	-	6,214,540	107,534	10,513
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	539	298	231	891	610	-	485	3,055	3,055	-	-	11,512	4,808	-	-	-	835,876	10,564	-
2a.1.3	Main Condensers	-	1,163	143	111	428	293	-	459	2,597	2,597	-	-	5,525	2,307	-	-	-	401,118	23,200	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Containment	-	922	-	-	-	-	-	138	1,060	1,060	-	-	-	-	-	-	-	-	10,792	-
2a.1.4.2	Containment Enclosure Ventilation	-	18	-	-	-	-	-	3	21	21	-	-	-	-	-	-	-	-	228	-
2a.1.4.3	Primary Auxiliary Building	-	170	-	-	-	-	-	25	195	195	-	-	-	-	-	-	-	-	2,090	-
2a.1.4.4	Waste Processing	-	223	-	-	-	-	-	33	257	257	-	-	-	-	-	-	-	-	2,874	-
2a.1.4.5	Fuel Storage	-	99	-	-	-	-	-	15	113	113	-	-	-	-	-	-	-	-	1,107	-
2a.1.4	Totals	-	1,431	-	-	-	-	-	215	1,646	1,646	-	-	-	-	-	-	-	-	17,090	-
Disposal of Plant Systems																					
2a.1.5.1	Aux Steam - Insulated - RCA	-	290	6	31	311	-	-	124	762	762	-	-	4,447	-	-	-	-	180,604	5,210	-
2a.1.5.2	Aux Steam - RCA	-	61	1	5	51	-	-	24	142	142	-	-	737	-	-	-	-	29,928	1,157	-
2a.1.5.3	Aux Steam Cond - Insulated	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	411	-
2a.1.5.4	Aux Steam Cond - Insulated - RCA	-	57	1	4	43	-	-	22	127	127	-	-	622	-	-	-	-	25,273	997	-
2a.1.5.5	Aux Steam Cond - RCA	-	5	0	0	1	-	-	1	8	8	-	-	18	-	-	-	-	720	93	-
2a.1.5.6	Aux Steam Heating - Insulated - RCA	-	42	0	2	22	-	-	14	81	81	-	-	311	-	-	-	-	12,616	719	-
2a.1.5.7	Condensate	-	757	40	217	2,160	-	-	550	3,725	3,725	-	-	30,927	-	-	-	-	1,255,954	15,162	-
2a.1.5.8	Condensate - Insulated	-	611	19	103	1,026	-	-	324	2,084	2,084	-	-	14,693	-	-	-	-	596,672	12,157	-
2a.1.5.9	Condensate Polisher	-	262	7	39	387	-	-	130	826	826	-	-	5,547	-	-	-	-	225,286	5,158	-
2a.1.5.10	Condenser Air Evacuation	-	313	6	33	329	-	-	133	814	814	-	-	4,714	-	-	-	-	191,432	5,857	-
2a.1.5.11	Condenser Air Evacuation - Insulated	-	26	0	2	21	-	-	10	59	59	-	-	299	-	-	-	-	12,152	486	-
2a.1.5.12	Condenser Air Evacuation - RCA	-	2	0	0	2	-	-	1	5	5	-	-	30	-	-	-	-	1,220	30	-
2a.1.5.13	Extraction Steam - Insulated	-	388	11	62	612	-	-	199	1,272	1,272	-	-	8,764	-	-	-	-	355,920	7,818	-
2a.1.5.14	Feedwater	-	118	1	4	40	-	-	36	200	200	-	-	574	-	-	-	-	23,303	2,407	-
2a.1.5.15	Feedwater - Insulated	-	623	22	120	1,198	-	-	356	2,318	2,318	-	-	17,144	-	-	-	-	696,236	12,345	-
2a.1.5.16	Feedwater - Insulated - RCA	-	125	5	28	276	-	-	77	511	511	-	-	3,950	-	-	-	-	160,431	2,385	-
2a.1.5.17	Feedwater - RCA	-	36	0	2	16	-	-	12	66	66	-	-	235	-	-	-	-	9,533	702	-
2a.1.5.18	Feedwater- Yard	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	7	-
2a.1.5.19	Feedwater- Yard - Insulated	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	270	-
2a.1.5.20	Heat Tracing	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	70	-
2a.1.5.21	Heat Tracing - RCA	-	25	1	5	48	-	-	14	93	93	-	-	688	-	-	-	-	27,938	498	-
2a.1.5.22	Main Steam	-	404	11	62	614	-	-	203	1,294	1,294	-	-	8,786	-	-	-	-	356,793	8,170	-
2a.1.5.23	Main Steam - Insulated	-	445	14	75	744	-	-	235	1,513	1,513	-	-	10,649	-	-	-	-	432,475	8,832	-
2a.1.5.24	Main Steam - Insulated - RCA	-	135	6	33	331	-	-	89	595	595	-	-	4,739	-	-	-	-	192,450	2,608	-
2a.1.5.25	Main Steam - RCA	-	106	5	25	245	-	-	68	448	448	-	-	3,510	-	-	-	-	142,542	2,094	-
2a.1.5.26	Main Steam Drain - Insulated	-	132	1	6	56	-	-	42	238	238	-	-	806	-	-	-	-	32,732	2,382	-
2a.1.5.27	Main Steam Drain - Insulated - RCA	-	33	0	2	19	-	-	12	66	66	-	-	269	-	-	-	-	10,942	555	-
2a.1.5.28	Moist Sep & Rhtr Drains	-	58	0	2	20	-	-	18	98	98	-	-	285	-	-	-	-	11,591	1,179	-
2a.1.5.29	Moist Sep & Rhtr Drains - Insulated	-	590	36	195	1,937	-	-	471	3,228	3,228	-	-	27,725	-	-	-	-	1,125,941	11,785	-
2a.1.5.30	Residual Heat Removal	2	26	0	1	4	2	-	8	42	42	-	-	55	14	-	-	-	3,139	512	-
2a.1.5.31	Residual Heat Removal-Insulated	160	156	23	40	51	149	-	172	749	749	-	-	724	1,169	-	-	-	106,746	4,242	-
2a.1.5.32	Steam Generator Blowdown	-	296	27	61	216	169	-	161	930	930	-	-	3,086	1,332	-	-	-	213,341	5,866	-
2a.1.5.33	Steam Generator Blowdown - Insulated	-	290	20	34	81	111	-	120	657	657	-	-	1,165	876	-	-	-	105,362	5,503	-
2a.1.5.34	Turbine Steam Seal - Insulated	-	142	3	17	165	-	-	63	389	389	-	-	2,357	-	-	-	-	95,728	2,782	-
2a.1.5	Totals	161	6,591	269	1,209	11,026	431	-	3,695	23,383	23,341	-	41	157,857	3,391	-	-	-	6,635,001	130,448	-

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2a.1.6	Scaffolding in support of decommissioning	-	812	16	9	63	9	-	218	1,127	1,127	-	-	820	72	-	-	-	41,686	17,969	-
2a.1	Subtotal Period 2a Activity Costs	1,278	27,330	18,492	11,009	14,527	33,467	699	34,326	141,127	141,086	-	41	215,393	59,360	963	393	-	14,128,220	306,805	10,513
Period 2a Additional Costs																					
2a.2.1	Remedial Action Surveys	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
2a.2	Subtotal Period 2a Additional Costs	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
Period 2a Collateral Costs																					
2a.3.1	Process decommissioning water waste	89	-	50	251	-	234	-	146	769	769	-	-	-	570	-	-	-	34,190	111	-
2a.3.2	Process decommissioning chemical flush waste	1	-	29	189	-	254	-	95	568	568	-	-	-	348	-	-	-	37,076	65	-
2a.3.3	Small tool allowance	-	247	-	-	-	-	-	37	284	256	-	28	-	-	-	-	-	-	-	-
2a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	22,042	3,306	25,348	-	25,348	-	-	-	-	-	-	-	-	-
2a.3.5	NEI Program Fees	-	-	-	-	-	-	241	36	277	277	-	-	-	-	-	-	-	-	-	-
2a.3.6	N.H. Disposal Tax	-	-	-	-	-	-	1,017	254	1,271	1,271	-	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	89	247	79	440	-	488	23,300	3,875	28,519	3,142	25,348	28	-	918	-	-	-	71,265	176	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	81	-	-	-	-	-	-	20	101	101	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	1,227	123	1,349	1,349	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	2,168	-	-	-	-	-	542	2,710	2,710	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	3,096	-	-	-	-	-	464	3,561	3,561	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	110	47	-	436	-	127	720	720	-	-	-	6,173	-	-	-	123,452	201	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	4,183	627	4,810	4,810	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	2,000	200	2,200	2,200	-	-	-	-	-	-	-	-	-	-
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	127	13	140	-	140	-	-	-	-	-	-	-	-	-
2a.4.10	Site O&M Cost	-	-	-	-	-	-	827	124	951	951	-	-	-	-	-	-	-	-	-	-
2a.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,309	196	1,505	-	1,505	-	-	-	-	-	-	-	-	-
2a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	158	24	182	-	182	-	-	-	-	-	-	-	-	-
2a.4.13	Security Staff Cost	-	-	-	-	-	-	12,627	1,894	14,521	14,521	-	-	-	-	-	-	-	-	-	369,303
2a.4.14	DOC Staff Cost	-	-	-	-	-	-	21,954	3,293	25,247	25,247	-	-	-	-	-	-	-	-	-	262,309
2a.4.15	Utility Staff Cost	-	-	-	-	-	-	30,617	4,593	35,210	35,210	-	-	-	-	-	-	-	-	-	488,377
2a.4	Subtotal Period 2a Period-Dependent Costs	81	5,264	110	47	-	436	75,029	12,240	93,207	91,380	1,827	-	-	6,173	-	-	-	123,452	201	1,119,989
2a.0	TOTAL PERIOD 2a COST	1,449	32,841	18,680	11,497	14,527	34,391	100,923	51,010	265,318	238,073	27,175	70	215,393	66,450	963	393	-	14,322,940	341,580	1,130,502
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Disposal of Plant Systems																					
2b.1.1.1	Boron Recovery	26	52	3	5	8	19	-	33	146	146	-	-	114	149	-	-	-	14,480	1,293	-
2b.1.1.2	Boron Recovery - Insulated	901	845	75	151	501	434	-	876	3,784	3,784	-	-	7,179	3,471	-	-	-	517,584	30,494	-
2b.1.1.3	Chem & Volume Control	58	148	7	12	17	42	-	81	365	365	-	-	245	332	-	-	-	31,938	3,690	-
2b.1.1.4	Chem & Volume Control - Insulated	-	723	111	187	346	653	-	435	2,456	2,456	-	-	4,953	5,154	-	-	-	541,408	14,052	-
2b.1.1.5	Cntnmnt Encl Air Handling	-	152	3	14	117	8	-	60	354	354	-	-	1,676	66	-	-	-	72,382	2,982	-
2b.1.1.6	Cntnmnt Encl Air Handling - Insulated	-	18	2	2	2	8	-	7	38	38	-	-	28	61	-	-	-	5,196	318	-
2b.1.1.7	Cntnmnt On-line Purge	-	79	3	9	51	16	-	33	192	192	-	-	734	129	-	-	-	38,327	1,447	-
2b.1.1.8	Combust Gas Control - Insulated - RCA	-	29	1	3	29	-	-	12	74	74	-	-	410	-	-	-	-	16,656	510	-
2b.1.1.9	Combust Gas Control - RCA	-	5	0	1	8	-	-	3	17	17	-	-	121	-	-	-	-	4,897	101	-
2b.1.1.10	Containment Air Handling	-	480	12	46	381	34	-	194	1,148	1,148	-	-	5,455	268	-	-	-	239,230	9,033	-
2b.1.1.11	Containment Air Purge	-	158	7	23	170	26	-	75	458	458	-	-	2,427	202	-	-	-	111,933	3,010	-
2b.1.1.12	Containmnt Bldg Spray	-	114	-	-	-	-	-	17	131	-	-	131	-	-	-	-	-	-	2,309	-
2b.1.1.13	Containmnt Bldg Spray - Insulated	-	65	-	-	-	-	-	10	75	-	-	75	-	-	-	-	-	-	1,405	-
2b.1.1.14	Containmnt Bldg Spray - Insulated - RCA	-	24	1	3	34	-	-	12	74	74	-	-	483	-	-	-	-	19,609	451	-
2b.1.1.15	Containmnt Bldg Spray - RCA	-	7	0	0	2	-	-	2	11	11	-	-	31	-	-	-	-	1,257	128	-
2b.1.1.16	Contaminated Waste	54	45	4	7	2	28	-	47	187	187	-	-	35	223	-	-	-	16,145	1,715	-
2b.1.1.17	Demineralized Water	-	119	1	5	51	-	-	38	214	214	-	-	735	-	-	-	-	29,855	2,181	-
2b.1.1.18	Demineralized Water - Insulated	-	175	2	10	97	-	-	60	343	343	-	-	1,388	-	-	-	-	56,380	3,237	-
2b.1.1.19	Demineralized Water - Insulated - RCA	-	55	1	4	42	-	-	21	123	123	-	-	602	-	-	-	-	24,436	960	-
2b.1.1.20	Demineralized Water - RCA	-	32	0	2	17	-	-	11	61	61	-	-	239	-	-	-	-	9,722	532	-
2b.1.1.21	Diesel Generator - Insulated - RCA	-	3	0	1	5	-	-	2	10	10	-	-	72	-	-	-	-	2,914	58	-
2b.1.1.22	Drains - Floor	-	196	13	22	22	86	-	78	418	418	-	-	315	677	-	-	-	57,610	3,727	-
2b.1.1.23	Drains - Floor - Insulated	-	198	15	27	16	109	-	85	450	450	-	-	233	855	-	-	-	66,018	3,789	-
2b.1.1.24	Elec Distribution/Emer - Clean	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	930	-

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
2b.1.1.25	Elec Distribution/Emer - Contaminated	-	72	1	3	30	2	-	23	131	131	-	-	423	16	-	-	-	18,220	1,372	-
2b.1.1.26	Elec Distribution/Emer - RCA	-	444	5	28	280	-	-	158	915	915	-	-	4,009	-	-	-	-	162,811	8,216	-
2b.1.1.27	Elec Tunnel Air Handling	-	9	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	195	-
2b.1.1.28	Electrical Distrib - Clean	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	506	-
2b.1.1.29	Electrical Distrib - Contaminated	-	115	1	6	54	4	-	39	219	219	-	-	776	29	-	-	-	33,463	2,203	-
2b.1.1.30	Electrical Distrib - RCA	-	705	10	51	508	-	-	261	1,535	1,535	-	-	7,266	-	-	-	-	295,072	13,100	-
2b.1.1.31	Emerg FW Pumphouse Air Handling	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	265	-
2b.1.1.32	Fire Protection	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	451	-
2b.1.1.33	Fire Protection - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	37	-
2b.1.1.34	Fire Protection - Insulated - RCA	-	29	0	2	23	-	-	11	66	66	-	-	326	-	-	-	-	13,228	538	-
2b.1.1.35	Fire Protection - RCA	-	234	5	26	255	-	-	101	621	621	-	-	3,648	-	-	-	-	148,135	4,240	-
2b.1.1.36	Hot Water	-	37	-	-	-	-	-	6	43	-	-	43	-	-	-	-	-	-	786	-
2b.1.1.37	Hot Water - Insulated	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	240	-
2b.1.1.38	Hot Water - Insulated - RCA	-	29	0	2	17	-	-	10	58	58	-	-	245	-	-	-	-	9,965	483	-
2b.1.1.39	Hot Water - RCA	-	28	0	2	18	-	-	10	59	59	-	-	263	-	-	-	-	10,675	470	-
2b.1.1.40	Hydrogen Gas - RCA	-	11	0	1	6	-	-	4	23	23	-	-	93	-	-	-	-	3,770	185	-
2b.1.1.41	Incore Instrumentation	-	39	5	11	29	36	-	25	146	146	-	-	414	283	-	-	-	35,537	790	-
2b.1.1.42	Instrument Air	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.43	Instrument Air - RCA	-	254	3	14	136	-	-	86	491	491	-	-	1,941	-	-	-	-	78,817	4,512	-
2b.1.1.44	Leak Detection - RCA	-	9	0	1	5	-	-	3	17	17	-	-	74	-	-	-	-	3,014	144	-
2b.1.1.45	Mechanical Seal Supply - RCA	-	25	0	2	16	-	-	9	52	52	-	-	232	-	-	-	-	9,441	436	-
2b.1.1.46	Miscellaneous Equipment	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	8	-
2b.1.1.47	Miscellaneous Equipment - RCA	-	60	2	9	85	-	-	29	184	184	-	-	1,213	-	-	-	-	49,265	1,204	-
2b.1.1.48	Nitrogen Gas	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	53	-
2b.1.1.49	Nitrogen Gas - Insulated - RCA	-	31	0	2	18	-	-	11	61	61	-	-	252	-	-	-	-	10,225	503	-
2b.1.1.50	Nitrogen Gas - RCA	-	23	0	1	13	-	-	8	45	45	-	-	182	-	-	-	-	7,411	364	-
2b.1.1.51	Nuclear Inst	-	12	0	1	4	3	-	5	25	25	-	-	60	21	-	-	-	3,842	250	-
2b.1.1.52	Oil Colltn For RC Pumps - RCA	-	87	3	14	140	-	-	45	289	289	-	-	1,998	-	-	-	-	81,142	1,717	-
2b.1.1.53	PAB Air Handling	-	340	8	34	294	21	-	140	838	838	-	-	4,207	165	-	-	-	181,748	6,481	-
2b.1.1.54	PAB Air Handling - Insulated	-	53	4	9	26	25	-	25	143	143	-	-	372	200	-	-	-	28,365	1,008	-
2b.1.1.55	Potable Water	-	76	-	-	-	-	-	11	88	-	-	88	-	-	-	-	-	-	1,688	-
2b.1.1.56	Potable Water - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	38	-
2b.1.1.57	Prim Comp Clng Water - Insulated - RCA	-	740	23	117	1,167	-	-	380	2,427	2,427	-	-	16,712	-	-	-	-	678,673	13,808	-
2b.1.1.58	Prim Comp Clng Water - RCA	-	541	23	122	1,214	-	-	338	2,239	2,239	-	-	17,387	-	-	-	-	706,102	10,472	-
2b.1.1.59	RCA Check Point Air Handling	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	82	-
2b.1.1.60	Radiation Monitoring - RCA	-	67	3	16	161	-	-	44	291	291	-	-	2,299	-	-	-	-	93,383	1,329	-
2b.1.1.61	Reactor Coolant	-	146	10	17	24	65	-	60	321	321	-	-	338	508	-	-	-	47,320	2,935	-
2b.1.1.62	Reactor Coolant - Insulated	71	57	6	8	0	33	-	60	235	235	-	-	2	256	-	-	-	17,041	2,393	-
2b.1.1.63	Reactor Make-up Water	-	186	8	24	150	36	-	82	486	486	-	-	2,152	288	-	-	-	106,254	3,627	-
2b.1.1.64	Reactor Make-up Water - Insulated	-	29	3	3	3	13	-	12	64	64	-	-	46	101	-	-	-	8,601	527	-
2b.1.1.65	Release Recovery	-	40	2	6	35	10	-	19	110	110	-	-	495	77	-	-	-	25,141	770	-
2b.1.1.66	Release Recovery - Insulated	-	6	0	1	1	2	-	2	12	12	-	-	9	18	-	-	-	1,554	102	-
2b.1.1.67	Resin Sluicing	89	107	8	16	45	49	-	94	408	408	-	-	638	389	-	-	-	51,344	3,588	-
2b.1.1.68	Rod Control & Position	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.69	Roof Drains - Insulated - RCA	-	22	0	2	17	-	-	8	49	49	-	-	245	-	-	-	-	9,931	390	-
2b.1.1.70	Roof Drains - RCA	-	17	0	1	11	-	-	6	35	35	-	-	157	-	-	-	-	6,370	294	-
2b.1.1.71	Safety Injection	-	200	20	62	414	87	-	145	929	929	-	-	5,930	687	-	-	-	286,096	3,995	-
2b.1.1.72	Safety Injection - Insulated	-	134	11	17	47	55	-	58	322	322	-	-	672	431	-	-	-	55,906	2,508	-
2b.1.1.73	Sampling - Insulated	-	201	6	9	27	27	-	63	334	334	-	-	387	213	-	-	-	29,839	4,133	-
2b.1.1.74	Service Air	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	59	-
2b.1.1.75	Service Air - RCA	-	117	1	7	73	-	-	42	241	241	-	-	1,049	-	-	-	-	42,614	1,991	-
2b.1.1.76	Service Water - Insulated - RCA	-	140	9	46	454	-	-	111	760	760	-	-	6,502	-	-	-	-	264,033	2,799	-
2b.1.1.77	Service Water - RCA	-	143	6	33	324	-	-	90	595	595	-	-	4,636	-	-	-	-	188,275	2,716	-
2b.1.1.78	Sta Info & Alarm Comp	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	62	-
2b.1.1.79	Vents - Insulated - RCA	-	13	0	1	8	-	-	5	27	27	-	-	109	-	-	-	-	4,434	218	-
2b.1.1.80	Vents - RCA	-	97	2	10	99	-	-	41	249	249	-	-	1,417	-	-	-	-	57,545	1,780	-
2b.1.1.81	WP - Liquid Drains	-	464	37	60	64	233	-	197	1,054	1,054	-	-	911	1,835	-	-	-	158,163	8,696	-
2b.1.1.82	Waste Gas - Insulated	-	108	13	22	43	74	-	57	317	317	-	-	614	586	-	-	-	63,715	2,030	-
2b.1.1.83	Waste Processing Air Handling	-	569	11	47	404	28	-	218	1,277	1,277	-	-	5,778	222	-	-	-	249,327	10,558	-
2b.1.1.84	Waste Processing Liquid	3	19	1	1	3	5	-	8	40	40	-	-	38	36	-	-	-	3,906	372	-
2b.1.1.85	Waste Processing Liquid - Insulated	362	330	33	62	167	197	-	350	1,500	1,500	-	-	2,389	1,562	-	-	-	199,370	11,394	-
2b.1.1.86	Waste Processing Liquid - Yard	-	26	2	4	1	17	-	12	64	64	-	-	21	137	-	-	-	9,886	484	-
2b.1.1.87	Waste Processing Solid - Insul - RCA	-	341	9	48	472	-	-	164	1,033	1,033	-	-	6,759	-	-	-	-	274,481	6,307	-
2b.1.1.88	Waste Processing Solid - RCA	-	3	0	0	2	-	-	1	7	7	-	-	35	-	-	-	-	1,421	52	-
2b.1.1	Totals	1,564	11,441	561	1,513	9,304	2,484	-	5,898	32,764	32,266	-	498	133,196	19,646	-	-	-	6,702,845	241,374	-

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2b.1.2	Scaffolding in support of decommissioning	-	1,015	20	11	79	11	-	272	1,409	1,409	-	-	1,025	90	-	-	-	52,107	22,461	-
	Decontamination of Site Buildings																				
2b.1.3.1	Containment	1,240	1,787	554	1,157	280	3,143	-	2,124	10,285	10,285	-	-	4,016	31,894	-	-	-	2,567,388	54,300	-
2b.1.3.2	Administration Building-Limited Areas	115	38	10	24	-	34	-	80	300	300	-	-	-	554	-	-	-	48,750	2,875	-
2b.1.3.3	Containment Enclosure Ventilation	28	11	3	7	0	9	-	20	78	78	-	-	5	154	-	-	-	13,736	727	-
2b.1.3.4	Main Steam & Feedwater Pipe Chase	69	3	0	1	1	1	-	36	110	110	-	-	19	14	-	-	-	1,928	1,417	-
2b.1.3.5	Miscellaneous Structures	8	3	1	2	-	3	-	6	22	22	-	-	-	46	-	-	-	4,014	206	-
2b.1.3.6	Non-Essential Switchgear Room	3	1	0	1	-	1	-	2	8	8	-	-	-	17	-	-	-	1,482	76	-
2b.1.3.7	Primary Auxiliary Building	286	154	30	76	47	100	-	228	921	921	-	-	672	1,654	-	-	-	171,902	8,216	-
2b.1.3.8	RCA Storage Facility	41	0	0	0	-	0	-	21	63	63	-	-	-	4	-	-	-	342	823	-
2b.1.3.9	Waste Processing	423	215	43	108	66	143	-	331	1,330	1,330	-	-	943	2,362	-	-	-	245,080	11,908	-
2b.1.3	Totals	2,214	2,212	642	1,376	395	3,433	-	2,848	13,118	13,118	-	-	5,655	36,698	-	-	-	3,054,622	80,549	-
2b.1	Subtotal Period 2b Activity Costs	3,777	14,668	1,222	2,899	9,778	5,928	-	9,018	47,291	46,793	-	498	139,875	56,435	-	-	-	9,809,575	344,385	-
	Period 2b Additional Costs																				
2b.2.1	Remedial Action Surveys	-	-	-	-	-	-	2,687	806	3,493	3,493	-	-	-	-	-	-	-	-	48,748	-
2b.2.2	Excavation of Underground Services	-	2,289	-	-	-	-	868	474	3,631	-	-	3,631	-	-	-	-	-	-	18,000	-
2b.2	Subtotal Period 2b Additional Costs	-	2,289	-	-	-	-	3,555	1,280	7,124	3,493	-	3,631	-	-	-	-	-	-	66,748	-
	Period 2b Collateral Costs																				
2b.3.1	Process decommissioning water waste	191	-	110	556	-	518	-	319	1,695	1,695	-	-	-	1,261	-	-	-	75,671	246	-
2b.3.2	Process decommissioning chemical flush waste	3	-	89	578	-	776	-	291	1,736	1,736	-	-	-	1,063	-	-	-	113,254	199	-
2b.3.3	Small tool allowance	-	248	-	-	-	-	-	37	285	285	-	-	-	-	-	-	-	-	-	-
2b.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	37,402	5,610	43,012	-	43,012	-	-	-	-	-	-	-	-	-
2b.3.5	NEI Program Fees	-	-	-	-	-	-	342	51	394	394	-	-	-	-	-	-	-	-	-	-
2b.3.6	N.H. Disposal Tax	-	-	-	-	-	-	975	244	1,219	1,219	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	193	248	199	1,134	-	1,294	38,719	6,553	48,341	5,329	43,012	-	-	2,324	-	-	-	188,925	445	-
	Period 2b Period-Dependent Costs																				
2b.4.1	Decon supplies	946	-	-	-	-	-	-	236	1,182	1,182	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,739	174	1,912	1,912	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	2,759	-	-	-	-	-	690	3,449	3,449	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	4,540	-	-	-	-	-	681	5,221	5,221	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	111	48	-	443	-	129	731	731	-	-	-	6,268	-	-	-	125,364	204	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	4,722	708	5,430	5,430	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,977	198	2,174	2,174	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	180	18	198	-	198	-	-	-	-	-	-	-	-	-
2b.4.10	Site O&M Cost	-	-	-	-	-	-	1,172	176	1,348	1,348	-	-	-	-	-	-	-	-	-	-
2b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,855	278	2,133	-	2,133	-	-	-	-	-	-	-	-	-
2b.4.12	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	470	71	541	541	-	-	-	-	-	-	-	-	-	-
2b.4.13	ISFSI Operating Costs	-	-	-	-	-	-	224	34	258	-	258	-	-	-	-	-	-	-	-	-
2b.4.14	Security Staff Cost	-	-	-	-	-	-	17,895	2,684	20,579	20,579	-	-	-	-	-	-	-	-	-	523,383
2b.4.15	DOC Staff Cost	-	-	-	-	-	-	30,058	4,509	34,566	34,566	-	-	-	-	-	-	-	-	-	357,074
2b.4.16	Utility Staff Cost	-	-	-	-	-	-	41,686	6,253	47,939	47,939	-	-	-	-	-	-	-	-	-	662,789
2b.4	Subtotal Period 2b Period-Dependent Costs	946	7,299	111	48	-	443	101,977	16,838	127,662	125,073	2,589	-	-	6,268	-	-	-	125,364	204	1,543,246
2b.0	TOTAL PERIOD 2b COST	4,917	24,504	1,532	4,082	9,778	7,665	144,252	33,689	230,418	180,689	45,601	4,128	139,875	65,027	-	-	-	10,123,860	411,782	1,543,246
	PERIOD 2d - Decontamination Following Wet Fuel Storage																				
	Period 2d Direct Decommissioning Activities																				
2d.1.1	Remove spent fuel racks	394	39	120	96	-	415	-	337	1,401	1,401	-	-	-	3,269	-	-	-	216,101	900	-
	Disposal of Plant Systems																				
2d.1.2.1	FSB Air Handling	-	164	5	21	181	13	-	75	458	458	-	-	2,584	101	-	-	-	111,602	2,983	-
2d.1.2.2	Fuel Handling	-	181	13	34	172	74	-	96	570	570	-	-	2,457	583	-	-	-	138,296	3,626	-
2d.1.2.3	Spent Fuel Pool Cooling	-	258	32	58	96	210	-	143	798	798	-	-	1,371	1,654	-	-	-	165,083	5,007	-
2d.1.2	Totals	-	603	50	114	448	297	-	314	1,826	1,826	-	-	6,412	2,338	-	-	-	414,981	11,617	-
	Decontamination of Site Buildings																				
2d.1.3.1	Fuel Storage	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-
2d.1.3	Totals	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2d.1.4	Scaffolding in support of decommissioning	-	203	4	2	16	2	-	54	282	282	-	-	205	18	-	-	-	10,421	4,492	-
2d.1	Subtotal Period 2d Activity Costs	1,055	1,577	185	244	633	737	-	1,256	5,687	5,687	-	-	9,047	6,012	-	-	-	773,714	43,397	-
Period 2d Additional Costs																					
2d.2.1	Final Site Survey Program Management	-	-	-	-	-	-	1,233	370	1,603	1,603	-	-	-	-	-	-	-	-	-	12,480
2d.2.2	Remedial Action Surveys	-	-	-	-	-	-	989	297	1,286	1,286	-	-	-	-	-	-	-	-	17,939	-
2d.2.3	Fuel Pool Concrete Decon	284	-	38	428	-	541	8	346	1,646	1,646	-	-	-	8,890	-	-	-	782,276	1,071	-
2d.2.4	Operational Tools & Equipment	-	-	15	69	504	-	-	87	675	675	-	-	11,710	-	-	-	-	292,750	32	-
2d.2	Subtotal Period 2d Additional Costs	284	-	53	497	504	541	2,230	1,100	5,209	5,209	-	-	11,710	8,890	-	-	-	1,075,026	19,042	12,480
Period 2d Collateral Costs																					
2d.3.1	Process decommissioning water waste	56	-	33	166	-	154	-	95	504	504	-	-	-	376	-	-	-	22,535	73	-
2d.3.3	Small tool allowance	-	39	-	-	-	-	-	6	45	45	-	-	-	-	-	-	-	-	-	-
2d.3.4	Decommissioning Equipment Disposition	-	-	117	73	464	67	-	109	830	830	-	-	6,000	529	-	-	-	304,968	88	-
2d.3.5	NEI Program Fees	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
2d.3.6	N.H. Disposal Tax	-	-	-	-	-	-	262	65	327	327	-	-	-	-	-	-	-	-	-	-
2d.3	Subtotal Period 2d Collateral Costs	56	39	150	238	464	222	339	287	1,795	1,795	-	-	6,000	905	-	-	-	327,503	161	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	122	-	-	-	-	-	-	30	152	152	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	640	64	704	704	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	609	-	-	-	-	-	152	761	761	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	1,671	-	-	-	-	-	251	1,921	1,921	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	29	13	-	116	-	34	191	191	-	-	-	1,638	-	-	-	32,763	53	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	961	144	1,105	1,105	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	415	41	456	456	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	66	7	73	-	73	-	-	-	-	-	-	-	-	-
2d.4.10	Site O&M Cost	-	-	-	-	-	-	431	65	496	496	-	-	-	-	-	-	-	-	-	-
2d.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	346	52	398	398	-	-	-	-	-	-	-	-	-	-
2d.4.12	ISFSI Operating Costs	-	-	-	-	-	-	82	12	95	-	95	-	-	-	-	-	-	-	-	-
2d.4.13	Security Staff Cost	-	-	-	-	-	-	2,441	366	2,807	2,807	-	-	-	-	-	-	-	-	-	75,600
2d.4.14	DOC Staff Cost	-	-	-	-	-	-	7,718	1,158	8,875	8,875	-	-	-	-	-	-	-	-	-	90,000
2d.4.15	Utility Staff Cost	-	-	-	-	-	-	11,291	1,694	12,985	12,985	-	-	-	-	-	-	-	-	-	171,900
2d.4	Subtotal Period 2d Period-Dependent Costs	122	2,280	29	13	-	116	24,391	4,070	31,019	30,851	168	-	-	1,638	-	-	-	32,763	53	337,500
2d.0	TOTAL PERIOD 2d COST	1,516	3,896	417	992	1,601	1,615	26,960	6,713	43,710	43,542	168	-	26,757	17,444	-	-	-	2,209,007	62,653	349,980
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
2f.1.2	Terminate license									a											
2f.1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f.2.1	Final Site Survey	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
2f.2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
Period 2f Collateral Costs																					
2f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
2f.3.2	NEI Program Fees	-	-	-	-	-	-	45	7	52	52	-	-	-	-	-	-	-	-	-	-
2f.3.3	N.H. Disposal Tax	-	-	-	-	-	-	5	1	7	7	-	-	-	-	-	-	-	-	-	-
2f.3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	1,496	225	1,721	1,721	-	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f.4.1	Insurance	-	-	-	-	-	-	556	56	612	612	-	-	-	-	-	-	-	-	-	-
2f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f.4.3	Health physics supplies	-	839	-	-	-	-	-	210	1,049	1,049	-	-	-	-	-	-	-	-	-	-
2f.4.4	Disposal of DAW generated	-	-	6	3	-	25	-	7	41	41	-	-	-	354	-	-	-	7,071	12	-
2f.4.5	Plant energy budget	-	-	-	-	-	-	386	58	444	444	-	-	-	-	-	-	-	-	-	-
2f.4.6	NRC Fees	-	-	-	-	-	-	361	36	397	397	-	-	-	-	-	-	-	-	-	-
2f.4.7	Emergency Planning Fees	-	-	-	-	-	-	58	6	64	-	64	-	-	-	-	-	-	-	-	-
2f.4.8	Site O&M Cost	-	-	-	-	-	-	375	56	431	431	-	-	-	-	-	-	-	-	-	-
2f.4.9	ISFSI Operating Costs	-	-	-	-	-	-	72	11	82	-	82	-	-	-	-	-	-	-	-	-

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2f Period-Dependent Costs (continued)																					
2f.4.10	Security Staff Cost	-	-	-	-	-	-	2,123	318	2,442	2,442	-	-	-	-	-	-	-	-	-	65,760
2f.4.11	DOC Staff Cost	-	-	-	-	-	-	4,998	750	5,748	5,748	-	-	-	-	-	-	-	-	-	57,149
2f.4.12	Utility Staff Cost	-	-	-	-	-	-	5,589	838	6,428	6,428	-	-	-	-	-	-	-	-	-	80,634
2f.4	Subtotal Period 2f Period-Dependent Costs	-	839	6	3	-	25	14,519	2,346	17,737	17,591	146	-	-	354	-	-	-	7,071	12	203,543
2f.0	TOTAL PERIOD 2f COST	-	839	6	3	-	25	28,306	6,258	35,437	35,292	146	-	-	354	-	-	-	7,071	223,949	209,783
PERIOD 2 TOTALS		7,882	62,080	20,635	16,573	25,906	43,696	300,441	97,670	574,884	497,596	73,090	4,198	382,025	149,275	963	393	-	26,662,880	1,039,965	3,233,510
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Containment	-	5,322	-	-	-	-	-	798	6,120	-	-	6,120	-	-	-	-	-	-	62,786	-
3b.1.1.2	Administration Building-Limited Areas	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	131	-
3b.1.1.3	Containment Enclosure Ventilation	-	162	-	-	-	-	-	24	187	-	-	187	-	-	-	-	-	-	2,048	-
3b.1.1.4	Emergency Feedwater Pump Building	-	278	-	-	-	-	-	42	319	-	-	319	-	-	-	-	-	-	3,194	-
3b.1.1.5	Equipment Vault	-	142	-	-	-	-	-	21	163	-	-	163	-	-	-	-	-	-	1,769	-
3b.1.1.6	Main Steam & Feedwater Pipe Chase	-	614	-	-	-	-	-	92	706	-	-	706	-	-	-	-	-	-	7,668	-
3b.1.1.7	Miscellaneous Structures	-	17	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	251	-
3b.1.1.8	Primary Auxiliary Building	-	1,527	-	-	-	-	-	229	1,757	-	-	1,757	-	-	-	-	-	-	18,811	-
3b.1.1.9	Security Improvements	-	630	-	-	-	-	-	95	725	-	-	725	-	-	-	-	-	-	6,420	-
3b.1.1.10	Steam Generator Blowdown Recovery	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	435	-
3b.1.1.11	Waste Processing	-	2,010	-	-	-	-	-	301	2,311	-	-	2,311	-	-	-	-	-	-	25,863	-
3b.1.1.12	Fuel Storage	-	887	-	-	-	-	-	133	1,020	-	-	1,020	-	-	-	-	-	-	9,965	-
3b.1.1	Totals	-	11,627	-	-	-	-	-	1,744	13,371	-	-	13,371	-	-	-	-	-	-	139,341	-
Site Closeout Activities																					
3b.1.2	Remove Rubble	-	404	-	-	-	-	-	61	465	-	-	465	-	-	-	-	-	-	2,479	-
3b.1.3	Grade & landscape site	-	367	-	-	-	-	-	55	423	-	-	423	-	-	-	-	-	-	915	-
3b.1.4	Final report to NRC	-	-	-	-	-	-	177	27	204	204	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	12,398	-	-	-	-	177	1,886	14,462	204	-	14,258	-	-	-	-	-	-	142,736	1,560
Period 3b Additional Costs																					
3b.2.1	Concrete Crushing	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
3b.2	Subtotal Period 3b Additional Costs	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	107	-	-	-	-	-	16	123	-	-	123	-	-	-	-	-	-	-	-
3b.3.2	NEI Program Fees	-	-	-	-	-	-	113	17	130	-	-	130	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	107	-	-	-	-	113	33	254	-	-	254	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	1,401	140	1,542	-	1,542	-	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	5,765	-	-	-	-	-	865	6,630	-	-	6,630	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	486	73	559	-	-	559	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	645	64	709	-	709	-	-	-	-	-	-	-	-	-
3b.4.6	Emergency Planning Fees	-	-	-	-	-	-	145	15	160	-	160	-	-	-	-	-	-	-	-	-
3b.4.7	Site O&M Cost	-	-	-	-	-	-	945	142	1,086	1,086	-	-	-	-	-	-	-	-	-	-
3b.4.8	ISFSI Operating Costs	-	-	-	-	-	-	180	27	208	-	208	-	-	-	-	-	-	-	-	-
3b.4.9	Security Staff Cost	-	-	-	-	-	-	5,347	802	6,149	0	4,673	1,476	-	-	-	-	-	-	-	165,600
3b.4.10	DOC Staff Cost	-	-	-	-	-	-	12,187	1,828	14,015	-	-	14,015	-	-	-	-	-	-	-	134,057
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	7,588	1,138	8,726	0	2,094	6,632	-	-	-	-	-	-	-	107,443
3b.4	Subtotal Period 3b Period-Dependent Costs	-	5,765	-	-	-	-	28,924	5,094	39,783	1,086	9,386	29,311	-	-	-	-	-	-	-	407,100
3b.0	TOTAL PERIOD 3b COST	-	18,675	-	-	-	-	29,224	7,075	54,975	1,290	9,386	44,299	-	-	-	-	-	-	144,985	408,660
PERIOD 3c - Fuel Storage Operations																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c.3.1	NEI Program Fees	-	-	-	-	-	-	48	7	55	-	55	-	-	-	-	-	-	-	-	-

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	48	7	55	-	55	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	591	59	650	-	650	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	272	27	299	-	299	-	-	-	-	-	-	-	-	-
3c.4.5	Emergency Planning Fees	-	-	-	-	-	-	61	6	67	-	67	-	-	-	-	-	-	-	-	-
3c.4.6	ISFSI Operating Costs	-	-	-	-	-	-	76	11	88	-	88	-	-	-	-	-	-	-	-	-
3c.4.7	Security Staff Cost	-	-	-	-	-	-	1,720	258	1,978	-	1,978	-	-	-	-	-	-	-	-	51,549
3c.4.8	Utility Staff Cost	-	-	-	-	-	-	778	117	894	-	894	-	-	-	-	-	-	-	-	11,224
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	3,498	478	3,976	-	3,976	-	-	-	-	-	-	-	-	62,773
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	3,546	486	4,031	-	4,031	-	-	-	-	-	-	-	-	62,773
PERIOD 3d - Fuel Storage Operations/Shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1.1	Totals	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
Period 3d Collateral Costs																					
3d.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	13,322	1,998	15,321	-	15,321	-	-	-	-	-	-	-	-	-
3d.3.2	NEI Program Fees	-	-	-	-	-	-	1,440	216	1,656	-	1,656	-	-	-	-	-	-	-	-	-
3d.3.3	N.H. Disposal Tax	-	-	-	-	-	-	33	8	42	-	42	-	-	-	-	-	-	-	-	-
3d.3	Subtotal Period 3d Collateral Costs	-	-	-	-	-	-	14,796	2,223	17,018	-	17,018	-	-	-	-	-	-	-	-	-
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	17,804	1,780	19,584	-	19,584	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8,194	819	9,014	-	9,014	-	-	-	-	-	-	-	-	-
3d.4.5	Emergency Planning Fees	-	-	-	-	-	-	1,848	185	2,033	-	2,033	-	-	-	-	-	-	-	-	-
3d.4.6	ISFSI Operating Costs	-	-	-	-	-	-	2,293	344	2,637	-	2,637	-	-	-	-	-	-	-	-	-
3d.4.7	Security Staff Cost	-	-	-	-	-	-	51,806	7,771	59,577	-	59,577	-	-	-	-	-	-	-	-	1,552,834
3d.4.8	Utility Staff Cost	-	-	-	-	-	-	23,423	3,513	26,936	-	26,936	-	-	-	-	-	-	-	-	338,117
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	105,368	14,413	119,781	-	119,781	-	-	-	-	-	-	-	-	1,890,951
3d.0	TOTAL PERIOD 3d COST	-	-	925	-	-	12,501	120,164	18,742	152,332	15,533	136,799	-	-	-	-	-	2,217	436,202	-	1,890,951
PERIOD 3e - ISFSI Decontamination																					
Period 3e Direct Decommissioning Activities																					
Period 3e Additional Costs																					
3e.2.1	License Termination ISFSI	-	23	53	608	-	1,198	1,699	895	4,475	4,475	-	-	-	15,728	-	-	-	1,498,289	8,869	1,872
3e.2	Subtotal Period 3e Additional Costs	-	23	53	608	-	1,198	1,699	895	4,475	4,475	-	-	-	15,728	-	-	-	1,498,289	8,869	1,872
Period 3e Collateral Costs																					
3e.3.1	N.H. Disposal Tax	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	67	17	84	84	-	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3e.4.3	Plant energy budget	-	-	-	-	-	-	87	22	108	108	-	-	-	-	-	-	-	-	-	-
3e.4.4	Security Staff Cost	-	-	-	-	-	-	183	46	228	228	-	-	-	-	-	-	-	-	-	5,096
3e.4.5	Utility Staff Cost	-	-	-	-	-	-	271	68	338	338	-	-	-	-	-	-	-	-	-	3,866
3e.4	Subtotal Period 3e Period-Dependent Costs	-	-	-	-	-	-	607	152	759	759	-	-	-	-	-	-	-	-	-	8,961
3e.0	TOTAL PERIOD 3e COST	-	23	53	608	-	1,198	2,542	1,106	5,529	5,529	-	-	-	15,728	-	-	-	1,498,289	8,869	10,833

Table C-1
Seabrook Station
Scenario 1: 2030 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Direct Decommissioning Activities																					
Period 3f Additional Costs																					
3f.2.1	Site Restoration ISFSI	-	657	-	-	-	-	373	155	1,185	-	-	1,185	-	-	-	-	-	-	4,923	160
3f.2	Subtotal Period 3f Additional Costs	-	657	-	-	-	-	373	155	1,185	-	-	1,185	-	-	-	-	-	-	4,923	160
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.3	Heavy equipment rental	-	150	-	-	-	-	-	23	173	-	-	173	-	-	-	-	-	-	-	-
3f.4.4	Plant energy budget	-	-	-	-	-	-	44	7	51	-	-	51	-	-	-	-	-	-	-	-
3f.4.5	Security Staff Cost	-	-	-	-	-	-	94	14	108	-	-	108	-	-	-	-	-	-	-	2,610
3f.4.6	Utility Staff Cost	-	-	-	-	-	-	118	18	136	-	-	136	-	-	-	-	-	-	-	1,620
3f.4	Subtotal Period 3f Period-Dependent Costs	-	150	-	-	-	-	256	61	467	-	-	467	-	-	-	-	-	-	-	4,230
3f.0	TOTAL PERIOD 3f COST	-	812	-	-	-	-	630	216	1,658	-	-	1,658	-	-	-	-	-	-	4,923	4,390
PERIOD 3 TOTALS		-	19,511	978	608	-	13,699	156,105	27,625	218,525	22,352	150,216	45,957	-	15,728	-	-	2,217	1,934,492	158,777	2,377,608
TOTAL COST TO DECOMMISSION		**10,423**	**84,257**	**21,674**	**17,384**	**25,906**	**58,096**	**570,089**	**143,570**	**931,398**	**647,542**	**232,292**	**51,564**	**382,025**	**166,590**	**1,075**	**393**	**2,217**	**28,667,350**	**1,227,724**	**6,836,862**

TOTAL COST TO DECOMMISSION WITH 18.22% CONTINGENCY:	**$931,398**	**thousands of 2014 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 69.52% OR:	**$647,542**	**thousands of 2014 dollars**
SPENT FUEL MANAGEMENT COST IS 24.94% OR:	**$232,292**	**thousands of 2014 dollars**
NON-NUCLEAR DEMOLITION COST IS 5.54% OR:	**$51,564**	**thousands of 2014 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)	**168,057**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED	**2,217**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**41,694**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,227,724**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	227	34	262	262	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	853	128	981	981	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	353	53	405	405	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	569	85	654	654	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	466	70	536	536	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	560	84	644	579	-	64	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	474	71	545	491	-	55	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	808	121	929	929	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	739	111	850	850	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Biological shield	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Steam generators	-	-	-	-	-	-	355	53	408	408	-	-	-	-	-	-	-	-	-	3,120
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	182	27	209	105	-	105	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.10	Main Condensers	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.11	Plant structures & buildings	-	-	-	-	-	-	355	53	408	204	-	204	-	-	-	-	-	-	-	3,120
1a.1.17.12	Waste management	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.13	Facility & site closeout	-	-	-	-	-	-	102	15	118	59	-	59	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	4,302	645	4,948	4,357	-	591	-	-	-	-	-	-	-	37,827
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	273	41	314	314	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	3,000	450	3,450	3,450	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	159	24	183	183	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,300	345	2,645	2,645	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	140	21	161	161	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	13,689	2,053	15,742	15,151	-	591	-	-	-	-	-	-	-	73,753
Period 1a Collateral Costs																					
1a.3.1	NEI Program Fees	-	-	-	-	-	-	175	26	201	201	-	-	-	-	-	-	-	-	-	-
1a.3.2	N.H. Disposal Tax	-	-	-	-	-	-	9	2	11	11	-	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	184	29	213	213	-	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	2,361	236	2,597	2,597	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	446	-	-	-	-	-	112	558	558	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	575	-	-	-	-	-	86	661	661	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	5	-	43	-	13	71	71	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	2,905	436	3,341	3,341	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	1,769	177	1,946	1,946	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,504	450	4,954	-	4,954	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M Cost	-	-	-	-	-	-	500	75	575	575	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	791	119	910	-	910	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	95	14	110	-	110	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	10,019	1,503	11,522	11,522	-	-	-	-	-	-	-	-	-	294,086
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	25,851	3,878	29,728	29,728	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	1,022	11	5	-	43	48,794	7,098	56,972	50,998	5,974	-	-	610	-	-	-	12,190	20	717,486
1a.0	TOTAL PERIOD 1a COST	-	1,022	11	5	-	43	62,667	9,180	72,927	66,362	5,974	591	-	610	-	-	-	12,190	20	791,238

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	538	81	619	557	-	62	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	284	43	327	327	-	-	-	-	-	-	-	-	-	2,500
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	154	23	177	44	-	132	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD cooling assembly	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	CRD housings & ICI tubes	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Incore instrumentation	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	413	62	475	475	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	136	20	157	78	-	78	-	-	-	-	-	-	-	1,200
1b.1.1.10	Missile shields	-	-	-	-	-	-	51	8	59	59	-	-	-	-	-	-	-	-	-	450
1b.1.1.11	Biological shield	-	-	-	-	-	-	136	20	157	157	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.12	Steam generators	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1b.1.1.13	Reinforced concrete	-	-	-	-	-	-	114	17	131	65	-	65	-	-	-	-	-	-	-	1,000
1b.1.1.14	Main Turbine	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.15	Main Condensers	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.16	Auxiliary building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1.17	Reactor building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	3,781	567	4,348	3,530	-	818	-	-	-	-	-	-	-	33,243
1b.1.2	Decon primary loop	172	-	-	-	-	-	-	86	257	257	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	172	-	-	-	-	-	3,781	653	4,606	3,788	-	818	-	-	-	-	-	-	1,067	33,243
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,813	1,622	12,434	12,434	-	-	-	-	-	-	-	-	-	-
1b.2.2	Site Characterization	-	-	-	-	-	-	4,912	1,474	6,386	6,386	-	-	-	-	-	-	-	-	27,690	10,132
1b.2.3	Misc Waste	-	-	11	18	-	44	-	15	87	87	-	-	-	353	-	-	-	22,760	122	-
1b.2	Subtotal Period 1b Additional Costs	-	-	11	18	-	44	15,725	3,110	18,908	18,908	-	-	-	353	-	-	-	22,760	27,812	10,132
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	803	-	-	-	-	-	-	120	923	923	-	-	-	-	-	-	-	-	-	-
1b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
1b.3.3	Process decommissioning water waste	42	-	23	117	-	109	-	68	358	358	-	-	-	265	-	-	-	15,875	52	-
1b.3.4	Process decommissioning chemical flush waste	0	-	9	61	-	479	-	130	680	680	-	-	-	-	112	-	-	11,955	21	-
1b.3.5	Small tool allowance	-	2	-	-	-	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.3.6	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
1b.3.7	Decon rig	1,500	-	-	-	-	-	-	225	1,725	1,725	-	-	-	-	-	-	-	-	-	-
1b.3.8	NEI Program Fees	-	-	-	-	-	-	74	11	85	85	-	-	-	-	-	-	-	-	-	-
1b.3.9	N.H. Disposal Tax	-	-	-	-	-	-	16	4	20	20	-	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,345	1,102	32	178	-	588	1,536	941	6,721	6,721	-	-	-	265	112	-	-	27,831	73	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	25	-	-	-	-	-	-	6	31	31	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	1,190	119	1,309	1,309	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	253	-	-	-	-	-	63	316	316	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	290	-	-	-	-	-	43	333	333	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	3	-	25	-	7	42	42	-	-	-	360	-	-	-	7,197	12	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	2,692	404	3,096	3,096	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	615	61	676	676	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	2,270	227	2,498	-	2,498	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M Cost	-	-	-	-	-	-	252	38	290	290	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	399	60	459	-	459	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	48	7	55	-	55	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	3,847	577	4,424	4,424	-	-	-	-	-	-	-	-	-	112,503
1b.4.14	DOC Staff Cost	-	-	-	-	-	-	5,430	815	6,245	6,245	-	-	-	-	-	-	-	-	-	64,137
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	13,091	1,964	15,055	15,055	-	-	-	-	-	-	-	-	-	214,491
1b.4	Subtotal Period 1b Period-Dependent Costs	25	543	6	3	-	25	29,835	4,392	34,828	31,817	3,011	-	-	360	-	-	-	7,197	12	391,131
1b.0	TOTAL PERIOD 1b COST	2,541	1,644	50	198	-	657	50,876	9,095	65,062	61,233	3,011	818	-	977	112	-	-	57,788	28,963	434,506
PERIOD 1 TOTALS		2,541	2,666	61	203	-	700	113,543	18,275	137,989	127,595	8,985	1,409	-	1,586	112	-	-	69,978	28,982	1,225,745

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Reactor Coolant Piping	125	108	16	45	-	204	-	149	647	647	-	-	-	932	-	-	-	106,498	4,404	-
2a.1.1.2	Pressurizer Relief Tank	31	26	6	17	-	70	-	43	192	192	-	-	-	330	-	-	-	36,618	1,074	-
2a.1.1.3	Reactor Coolant Pumps & Motors	130	95	121	218	-	1,591	-	531	2,686	2,686	-	-	-	4,900	-	-	-	815,840	4,873	100
2a.1.1.4	Pressurizer	52	54	602	158	-	1,229	-	431	2,527	2,527	-	-	-	3,785	-	-	-	291,623	2,602	1,875
2a.1.1.5	Steam Generators	372	5,770	3,962	4,652	2,118	7,662	-	4,955	29,491	29,491	-	-	39,678	23,600	-	-	-	3,509,084	23,233	5,750
2a.1.1.6	CRDMs/ICIs/Service Structure Removal	157	282	207	109	-	294	-	259	1,308	1,308	-	-	-	3,965	-	-	-	152,894	8,248	-
2a.1.1.7	Reactor Vessel Internals	136	3,710	10,308	2,361	-	17,817	349	14,979	49,659	49,659	-	-	-	1,878	963	393	-	340,946	31,550	1,394
2a.1.1.8	Reactor Vessel	114	6,748	2,544	1,889	-	3,257	349	7,907	22,808	22,808	-	-	-	9,391	-	-	-	961,036	31,550	1,394
2a.1.1	Totals	1,117	16,793	17,765	9,449	2,118	32,124	699	29,254	109,319	109,319	-	-	39,678	48,781	963	393	-	6,214,540	107,534	10,513
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	539	298	231	891	610	-	485	3,055	3,055	-	-	11,512	4,808	-	-	-	835,876	10,564	-
2a.1.3	Main Condensers	-	1,163	143	111	428	293	-	459	2,597	2,597	-	-	5,525	2,307	-	-	-	401,118	23,200	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Containment	-	922	-	-	-	-	-	138	1,060	1,060	-	-	-	-	-	-	-	-	10,792	-
2a.1.4.2	Containment Enclosure Ventilation	-	18	-	-	-	-	-	3	21	21	-	-	-	-	-	-	-	-	228	-
2a.1.4.3	Primary Auxiliary Building	-	170	-	-	-	-	-	25	195	195	-	-	-	-	-	-	-	-	2,090	-
2a.1.4.4	Waste Processing	-	223	-	-	-	-	-	33	257	257	-	-	-	-	-	-	-	-	2,874	-
2a.1.4.5	Fuel Storage	-	99	-	-	-	-	-	15	113	113	-	-	-	-	-	-	-	-	1,107	-
2a.1.4	Totals	-	1,431	-	-	-	-	-	215	1,646	1,646	-	-	-	-	-	-	-	-	17,090	-
Disposal of Plant Systems																					
2a.1.5.1	Aux Steam - Insulated - RCA	-	290	6	31	311	-	-	124	762	762	-	-	4,447	-	-	-	-	180,604	5,210	-
2a.1.5.2	Aux Steam - RCA	-	61	1	5	51	-	-	24	142	142	-	-	737	-	-	-	-	29,928	1,157	-
2a.1.5.3	Aux Steam Cond - Insulated	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	411	-
2a.1.5.4	Aux Steam Cond - Insulated - RCA	-	57	1	4	43	-	-	22	127	127	-	-	622	-	-	-	-	25,273	997	-
2a.1.5.5	Aux Steam Cond - RCA	-	5	0	0	1	-	-	1	8	8	-	-	18	-	-	-	-	720	93	-
2a.1.5.6	Aux Steam Heating - Insulated - RCA	-	42	0	2	22	-	-	14	81	81	-	-	311	-	-	-	-	12,616	719	-
2a.1.5.7	Condensate	-	757	40	217	2,160	-	-	550	3,725	3,725	-	-	30,927	-	-	-	-	1,255,954	15,162	-
2a.1.5.8	Condensate - Insulated	-	611	19	103	1,026	-	-	324	2,084	2,084	-	-	14,693	-	-	-	-	596,672	12,157	-
2a.1.5.9	Condensate Polisher	-	262	7	39	387	-	-	130	826	826	-	-	5,547	-	-	-	-	225,286	5,158	-
2a.1.5.10	Condenser Air Evacuation	-	313	6	33	329	-	-	133	814	814	-	-	4,714	-	-	-	-	191,432	5,857	-
2a.1.5.11	Condenser Air Evacuation - Insulated	-	26	0	2	21	-	-	10	59	59	-	-	299	-	-	-	-	12,152	486	-
2a.1.5.12	Condenser Air Evacuation - RCA	-	2	0	0	2	-	-	1	5	5	-	-	30	-	-	-	-	1,220	30	-
2a.1.5.13	Extraction Steam - Insulated	-	388	11	62	612	-	-	199	1,272	1,272	-	-	8,764	-	-	-	-	355,920	7,818	-
2a.1.5.14	Feedwater	-	118	1	4	40	-	-	36	200	200	-	-	574	-	-	-	-	23,303	2,407	-
2a.1.5.15	Feedwater - Insulated	-	623	22	120	1,198	-	-	356	2,318	2,318	-	-	17,144	-	-	-	-	696,236	12,345	-
2a.1.5.16	Feedwater - Insulated - RCA	-	125	5	28	276	-	-	77	511	511	-	-	3,950	-	-	-	-	160,431	2,385	-
2a.1.5.17	Feedwater - RCA	-	36	0	2	16	-	-	12	66	66	-	-	235	-	-	-	-	9,533	702	-
2a.1.5.18	Feedwater- Yard	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	7	-
2a.1.5.19	Feedwater- Yard - Insulated	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	270	-
2a.1.5.20	Heat Tracing	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	70	-
2a.1.5.21	Heat Tracing - RCA	-	25	1	5	48	-	-	14	93	93	-	-	688	-	-	-	-	27,938	498	-
2a.1.5.22	Main Steam	-	404	11	62	614	-	-	203	1,294	1,294	-	-	8,786	-	-	-	-	356,793	8,170	-
2a.1.5.23	Main Steam - Insulated	-	445	14	75	744	-	-	235	1,513	1,513	-	-	10,649	-	-	-	-	432,475	8,832	-
2a.1.5.24	Main Steam - Insulated - RCA	-	135	6	33	331	-	-	89	595	595	-	-	4,739	-	-	-	-	192,450	2,608	-
2a.1.5.25	Main Steam - RCA	-	106	5	25	245	-	-	68	448	448	-	-	3,510	-	-	-	-	142,542	2,094	-
2a.1.5.26	Main Steam Drain - Insulated	-	132	1	6	56	-	-	42	238	238	-	-	806	-	-	-	-	32,732	2,382	-
2a.1.5.27	Main Steam Drain - Insulated - RCA	-	33	0	2	19	-	-	12	66	66	-	-	269	-	-	-	-	10,942	555	-
2a.1.5.28	Moist Sep & Rhtr Drains	-	58	0	2	20	-	-	18	98	98	-	-	285	-	-	-	-	11,591	1,179	-
2a.1.5.29	Moist Sep & Rhtr Drains - Insulated	-	590	36	195	1,937	-	-	471	3,228	3,228	-	-	27,725	-	-	-	-	1,125,941	11,785	-
2a.1.5.30	Residual Heat Removal	2	26	0	1	4	2	-	8	42	42	-	-	55	14	-	-	-	3,139	512	-
2a.1.5.31	Residual Heat Removal-Insulated	160	156	23	40	51	149	-	172	749	749	-	-	724	1,169	-	-	-	106,746	4,242	-
2a.1.5.32	Steam Generator Blowdown	-	296	27	61	216	169	-	161	930	930	-	-	3,086	1,332	-	-	-	213,341	5,866	-
2a.1.5.33	Steam Generator Blowdown - Insulated	-	290	20	34	81	111	-	120	657	657	-	-	1,165	876	-	-	-	105,362	5,503	-
2a.1.5.34	Turbine Steam Seal - Insulated	-	142	3	17	165	-	-	63	389	389	-	-	2,357	-	-	-	-	95,728	2,782	-
2a.1.5	Totals	161	6,591	269	1,209	11,026	431	-	3,695	23,383	23,341	-	41	157,857	3,391	-	-	-	6,635,001	130,448	-
2a.1.6	Scaffolding in support of decommissioning	-	812	16	9	63	9	-	218	1,127	1,127	-	-	820	72	-	-	-	41,686	17,969	-
2a.1	Subtotal Period 2a Activity Costs	1,278	27,330	18,492	11,009	14,527	33,467	699	34,326	141,127	141,086	-	41	215,393	59,360	963	393	-	14,128,220	306,805	10,513

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 2a Additional Costs																					
2a.2.1	Remedial Action Surveys	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
2a.2	Subtotal Period 2a Additional Costs	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
Period 2a Collateral Costs																					
2a.3.1	Process decommissioning water waste	89	-	50	251	-	234	-	146	769	769	-	-	-	570	-	-	-	34,190	111	-
2a.3.2	Process decommissioning chemical flush waste	1	-	29	189	-	254	-	95	568	568	-	-	-	348	-	-	-	37,076	65	-
2a.3.3	Small tool allowance	-	247	-	-	-	-	-	37	284	256	-	28	-	-	-	-	-	-	-	-
2a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	22,042	3,306	25,348	-	25,348	-	-	-	-	-	-	-	-	-
2a.3.5	NEI Program Fees	-	-	-	-	-	-	241	36	277	277	-	-	-	-	-	-	-	-	-	-
2a.3.6	N.H. Disposal Tax	-	-	-	-	-	-	1,017	254	1,271	1,271	-	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	89	247	79	440	-	488	23,300	3,875	28,519	3,142	25,348	28	-	918	-	-	-	71,265	176	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	81	-	-	-	-	-	-	20	101	101	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	1,227	123	1,349	1,349	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	2,168	-	-	-	-	-	542	2,710	2,710	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	3,096	-	-	-	-	-	464	3,561	3,561	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	110	47	-	436	-	127	720	720	-	-	-	6,173	-	-	-	123,452	201	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	4,183	627	4,810	4,810	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	2,000	200	2,200	2,200	-	-	-	-	-	-	-	-	-	-
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	127	13	140	-	140	-	-	-	-	-	-	-	-	-
2a.4.10	Site O&M Cost	-	-	-	-	-	-	827	124	951	951	-	-	-	-	-	-	-	-	-	-
2a.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,309	196	1,505	-	1,505	-	-	-	-	-	-	-	-	-
2a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	158	24	182	-	182	-	-	-	-	-	-	-	-	-
2a.4.13	Security Staff Cost	-	-	-	-	-	-	12,627	1,894	14,521	14,521	-	-	-	-	-	-	-	-	-	369,303
2a.4.14	DOC Staff Cost	-	-	-	-	-	-	21,954	3,293	25,247	25,247	-	-	-	-	-	-	-	-	-	262,309
2a.4.15	Utility Staff Cost	-	-	-	-	-	-	30,617	4,593	35,210	35,210	-	-	-	-	-	-	-	-	-	488,377
2a.4	Subtotal Period 2a Period-Dependent Costs	81	5,264	110	47	-	436	75,029	12,240	93,207	91,380	1,827	-	-	6,173	-	-	-	123,452	201	1,119,989
2a.0	TOTAL PERIOD 2a COST	1,449	32,841	18,680	11,497	14,527	34,391	100,923	51,010	265,318	238,073	27,175	70	215,393	66,450	963	393	-	14,322,940	341,580	1,130,502
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Disposal of Plant Systems																					
2b.1.1.1	Boron Recovery	26	52	3	5	8	19	-	33	146	146	-	-	114	149	-	-	-	14,480	1,293	-
2b.1.1.2	Boron Recovery - Insulated	901	845	75	151	501	434	-	876	3,784	3,784	-	-	7,179	3,471	-	-	-	517,584	30,494	-
2b.1.1.3	Chem & Volume Control	58	148	7	12	17	42	-	81	365	365	-	-	245	332	-	-	-	31,938	3,690	-
2b.1.1.4	Chem & Volume Control - Insulated	-	723	111	187	346	653	-	435	2,456	2,456	-	-	4,953	5,154	-	-	-	541,408	14,052	-
2b.1.1.5	Cntnmnt Encl Air Handling	-	152	3	14	117	8	-	60	354	354	-	-	1,676	66	-	-	-	72,382	2,982	-
2b.1.1.6	Cntnmnt Encl Air Handling - Insulated	-	18	2	2	2	8	-	7	38	38	-	-	28	61	-	-	-	5,196	318	-
2b.1.1.7	Cntnmnt On-line Purge	-	79	3	9	51	16	-	33	192	192	-	-	734	129	-	-	-	38,327	1,447	-
2b.1.1.8	Combust Gas Control - Insulated - RCA	-	29	1	3	29	-	-	12	74	74	-	-	410	-	-	-	-	16,656	510	-
2b.1.1.9	Combust Gas Control - RCA	-	5	0	1	8	-	-	3	17	17	-	-	121	-	-	-	-	4,897	101	-
2b.1.1.10	Containment Air Handling	-	480	12	46	381	34	-	194	1,148	1,148	-	-	5,455	268	-	-	-	239,230	9,033	-
2b.1.1.11	Containment Air Purge	-	158	7	23	170	26	-	75	458	458	-	-	2,427	202	-	-	-	111,933	3,010	-
2b.1.1.12	Containmnt Bldg Spray	-	114	-	-	-	-	-	17	131	-	-	131	-	-	-	-	-	-	2,309	-
2b.1.1.13	Containmnt Bldg Spray - Insulated	-	65	-	-	-	-	-	10	75	-	-	75	-	-	-	-	-	-	1,405	-
2b.1.1.14	Containmnt Bldg Spray - Insulated - RCA	-	24	1	3	34	-	-	12	74	74	-	-	483	-	-	-	-	19,609	451	-
2b.1.1.15	Containmnt Bldg Spray - RCA	-	7	0	0	2	-	-	2	11	11	-	-	31	-	-	-	-	1,257	128	-
2b.1.1.16	Contaminated Waste	54	45	4	7	2	28	-	47	187	187	-	-	35	223	-	-	-	16,145	1,715	-
2b.1.1.17	Demineralized Water	-	119	1	5	51	-	-	38	214	214	-	-	735	-	-	-	-	29,855	2,181	-
2b.1.1.18	Demineralized Water - Insulated	-	175	2	10	97	-	-	60	343	343	-	-	1,388	-	-	-	-	56,380	3,237	-
2b.1.1.19	Demineralized Water - Insulated - RCA	-	55	1	4	42	-	-	21	123	123	-	-	602	-	-	-	-	24,436	960	-
2b.1.1.20	Demineralized Water - RCA	-	32	0	2	17	-	-	11	61	61	-	-	239	-	-	-	-	9,722	532	-
2b.1.1.21	Diesel Generator - Insulated - RCA	-	3	0	1	5	-	-	2	10	10	-	-	72	-	-	-	-	2,914	58	-
2b.1.1.22	Drains - Floor	-	196	13	22	22	86	-	78	418	418	-	-	315	677	-	-	-	57,610	3,727	-
2b.1.1.23	Drains - Floor - Insulated	-	198	15	27	16	109	-	85	450	450	-	-	233	855	-	-	-	66,018	3,789	-
2b.1.1.24	Elec Distribution/Emer - Clean	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	930	-
2b.1.1.25	Elec Distribution/Emer - Contaminated	-	72	1	3	30	2	-	23	131	131	-	-	423	16	-	-	-	18,220	1,372	-
2b.1.1.26	Elec Distribution/Emer - RCA	-	444	5	28	280	-	-	158	915	915	-	-	4,009	-	-	-	-	162,811	8,216	-
2b.1.1.27	Elec Tunnel Air Handling	-	9	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	195	-
2b.1.1.28	Electrical Distrib - Clean	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	506	-
2b.1.1.29	Electrical Distrib - Contaminated	-	115	1	6	54	4	-	39	219	219	-	-	776	29	-	-	-	33,463	2,203	-

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
2b.1.1.30	Electrical Distrib - RCA	-	705	10	51	508	-	-	261	1,535	1,535	-	-	7,266	-	-	-	-	295,072	13,100	-
2b.1.1.31	Emerg FW Pumphouse Air Handling	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	265	-
2b.1.1.32	Fire Protection	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	451	-
2b.1.1.33	Fire Protection - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	37	-
2b.1.1.34	Fire Protection - Insulated - RCA	-	29	0	2	23	-	-	11	66	66	-	-	326	-	-	-	-	13,228	538	-
2b.1.1.35	Fire Protection - RCA	-	234	5	26	255	-	-	101	621	621	-	-	3,648	-	-	-	-	148,135	4,240	-
2b.1.1.36	Hot Water	-	37	-	-	-	-	-	6	43	-	-	43	-	-	-	-	-	-	786	-
2b.1.1.37	Hot Water - Insulated	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	240	-
2b.1.1.38	Hot Water - Insulated - RCA	-	29	0	2	17	-	-	10	58	58	-	-	245	-	-	-	-	9,965	483	-
2b.1.1.39	Hot Water - RCA	-	28	0	2	18	-	-	10	59	59	-	-	263	-	-	-	-	10,675	470	-
2b.1.1.40	Hydrogen Gas - RCA	-	11	0	1	6	-	-	4	23	23	-	-	93	-	-	-	-	3,770	185	-
2b.1.1.41	Incore Instrumentation	-	39	5	11	29	36	-	25	146	146	-	-	414	283	-	-	-	35,537	790	-
2b.1.1.42	Instrument Air	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.43	Instrument Air - RCA	-	254	3	14	136	-	-	86	491	491	-	-	1,941	-	-	-	-	78,817	4,512	-
2b.1.1.44	Leak Detection - RCA	-	9	0	1	5	-	-	3	17	17	-	-	74	-	-	-	-	3,014	144	-
2b.1.1.45	Mechanical Seal Supply - RCA	-	25	0	2	16	-	-	9	52	52	-	-	232	-	-	-	-	9,441	436	-
2b.1.1.46	Miscellaneous Equipment	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	8	-
2b.1.1.47	Miscellaneous Equipment - RCA	-	60	2	9	85	-	-	29	184	184	-	-	1,213	-	-	-	-	49,265	1,204	-
2b.1.1.48	Nitrogen Gas	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	53	-
2b.1.1.49	Nitrogen Gas - Insulated - RCA	-	31	0	2	18	-	-	11	61	61	-	-	252	-	-	-	-	10,225	503	-
2b.1.1.50	Nitrogen Gas - RCA	-	23	0	1	13	-	-	8	45	45	-	-	182	-	-	-	-	7,411	364	-
2b.1.1.51	Nuclear Inst	-	12	0	1	4	3	-	5	25	25	-	-	60	21	-	-	-	3,842	250	-
2b.1.1.52	Oil Colltn For RC Pumps - RCA	-	87	3	14	140	-	-	45	289	289	-	-	1,998	-	-	-	-	81,142	1,717	-
2b.1.1.53	PAB Air Handling	-	340	8	34	294	21	-	140	838	838	-	-	4,207	165	-	-	-	181,748	6,481	-
2b.1.1.54	PAB Air Handling - Insulated	-	53	4	9	26	25	-	25	143	143	-	-	372	200	-	-	-	28,365	1,008	-
2b.1.1.55	Potable Water	-	76	-	-	-	-	-	11	88	-	-	88	-	-	-	-	-	-	1,688	-
2b.1.1.56	Potable Water - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	38	-
2b.1.1.57	Prim Comp Clng Water - Insulated - RCA	-	740	23	117	1,167	-	-	380	2,427	2,427	-	-	16,712	-	-	-	-	678,673	13,808	-
2b.1.1.58	Prim Comp Clng Water - RCA	-	541	23	122	1,214	-	-	338	2,239	2,239	-	-	17,387	-	-	-	-	706,102	10,472	-
2b.1.1.59	RCA Check Point Air Handling	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	82	-
2b.1.1.60	Radiation Monitoring - RCA	-	67	3	16	161	-	-	44	291	291	-	-	2,299	-	-	-	-	93,383	1,329	-
2b.1.1.61	Reactor Coolant	-	146	10	17	24	65	-	60	321	321	-	-	338	508	-	-	-	47,320	2,935	-
2b.1.1.62	Reactor Coolant - Insulated	71	57	6	8	0	33	-	60	235	235	-	-	2	256	-	-	-	17,041	2,393	-
2b.1.1.63	Reactor Make-up Water	-	186	8	24	150	36	-	82	486	486	-	-	2,152	288	-	-	-	106,254	3,627	-
2b.1.1.64	Reactor Make-up Water - Insulated	-	29	3	3	3	13	-	12	64	64	-	-	46	101	-	-	-	8,601	527	-
2b.1.1.65	Release Recovery	-	40	2	6	35	10	-	19	110	110	-	-	495	77	-	-	-	25,141	770	-
2b.1.1.66	Release Recovery - Insulated	-	6	0	1	1	2	-	2	12	12	-	-	9	18	-	-	-	1,554	102	-
2b.1.1.67	Resin Sluicing	89	107	8	16	45	49	-	94	408	408	-	-	638	389	-	-	-	51,344	3,588	-
2b.1.1.68	Rod Control & Position	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.69	Roof Drains - Insulated - RCA	-	22	0	2	17	-	-	8	49	49	-	-	245	-	-	-	-	9,931	390	-
2b.1.1.70	Roof Drains - RCA	-	17	0	1	11	-	-	6	35	35	-	-	157	-	-	-	-	6,370	294	-
2b.1.1.71	Safety Injection	-	200	20	62	414	87	-	145	929	929	-	-	5,930	687	-	-	-	286,096	3,995	-
2b.1.1.72	Safety Injection - Insulated	-	134	11	17	47	55	-	58	322	322	-	-	672	431	-	-	-	55,906	2,508	-
2b.1.1.73	Sampling - Insulated	-	201	6	9	27	27	-	63	334	334	-	-	387	213	-	-	-	29,839	4,133	-
2b.1.1.74	Service Air	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	59	-
2b.1.1.75	Service Air - RCA	-	117	1	7	73	-	-	42	241	241	-	-	1,049	-	-	-	-	42,614	1,991	-
2b.1.1.76	Service Water - Insulated - RCA	-	140	9	46	454	-	-	111	760	760	-	-	6,502	-	-	-	-	264,033	2,799	-
2b.1.1.77	Service Water - RCA	-	143	6	33	324	-	-	90	595	595	-	-	4,636	-	-	-	-	188,275	2,716	-
2b.1.1.78	Sta Info & Alarm Comp	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	62	-
2b.1.1.79	Vents - Insulated - RCA	-	13	0	1	8	-	-	5	27	27	-	-	109	-	-	-	-	4,434	218	-
2b.1.1.80	Vents - RCA	-	97	2	10	99	-	-	41	249	249	-	-	1,417	-	-	-	-	57,545	1,780	-
2b.1.1.81	WP - Liquid Drains	-	464	37	60	64	233	-	197	1,054	1,054	-	-	911	1,835	-	-	-	158,163	8,696	-
2b.1.1.82	Waste Gas - Insulated	-	108	13	22	43	74	-	57	317	317	-	-	614	586	-	-	-	63,715	2,030	-
2b.1.1.83	Waste Processing Air Handling	-	569	11	47	404	28	-	218	1,277	1,277	-	-	5,778	222	-	-	-	249,327	10,558	-
2b.1.1.84	Waste Processing Liquid	3	19	1	1	3	5	-	8	40	40	-	-	38	36	-	-	-	3,906	372	-
2b.1.1.85	Waste Processing Liquid - Insulated	362	330	33	62	167	197	-	350	1,500	1,500	-	-	2,389	1,562	-	-	-	199,370	11,394	-
2b.1.1.86	Waste Processing Liquid - Yard	-	26	2	4	1	17	-	12	64	64	-	-	21	137	-	-	-	9,886	484	-
2b.1.1.87	Waste Processing Solid - Insul - RCA	-	341	9	48	472	-	-	164	1,033	1,033	-	-	6,759	-	-	-	-	274,481	6,307	-
2b.1.1.88	Waste Processing Solid - RCA	-	3	0	0	2	-	-	1	7	7	-	-	35	-	-	-	-	1,421	52	-
2b.1.1	Totals	1,564	11,441	561	1,513	9,304	2,484	-	5,898	32,764	32,266	-	498	133,196	19,646	-	-	-	6,702,845	241,374	-
2b.1.2	Scaffolding in support of decommissioning	-	1,015	20	11	79	11	-	272	1,409	1,409	-	-	1,025	90	-	-	-	52,107	22,461	-
Decontamination of Site Buildings																					
2b.1.3.1	Containment	1,240	1,787	554	1,157	280	3,143	-	2,124	10,285	10,285	-	-	4,016	31,894	-	-	-	2,567,388	54,300	-
2b.1.3.2	Administration Building-Limited Areas	115	38	10	24	-	34	-	80	300	300	-	-	-	554	-	-	-	48,750	2,875	-

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Decontamination of Site Buildings (continued)																					
2b.1.3.3	Containment Enclosure Ventilation	28	11	3	7	0	9	-	20	78	78	-	-	5	154	-	-	-	13,736	727	-
2b.1.3.4	Main Steam & Feedwater Pipe Chase	69	3	0	1	1	1	-	36	110	110	-	-	19	14	-	-	-	1,928	1,417	-
2b.1.3.5	Miscellaneous Structures	8	3	1	2	-	3	-	6	22	22	-	-	-	46	-	-	-	4,014	206	-
2b.1.3.6	Non-Essential Switchgear Room	3	1	0	1	-	1	-	2	8	8	-	-	-	17	-	-	-	1,482	76	-
2b.1.3.7	Primary Auxiliary Building	286	154	30	76	47	100	-	228	921	921	-	-	672	1,654	-	-	-	171,902	8,216	-
2b.1.3.8	RCA Storage Facility	41	0	0	0	-	0	-	21	63	63	-	-	-	4	-	-	-	342	823	-
2b.1.3.9	Waste Processing	423	215	43	108	66	143	-	331	1,330	1,330	-	-	943	2,362	-	-	-	245,080	11,908	-
2b.1.3	Totals	2,214	2,212	642	1,376	395	3,433	-	2,848	13,118	13,118	-	-	5,655	36,698	-	-	-	3,054,622	80,549	-
2b.1	Subtotal Period 2b Activity Costs	3,777	14,668	1,222	2,899	9,778	5,928	-	9,018	47,291	46,793	-	498	139,875	56,435	-	-	-	9,809,575	344,385	-
Period 2b Additional Costs																					
2b.2.1	Remedial Action Surveys	-	-	-	-	-	-	2,687	806	3,493	3,493	-	-	-	-	-	-	-	-	48,748	-
2b.2.2	Excavation of Underground Services	-	2,289	-	-	-	-	868	474	3,631	-	-	3,631	-	-	-	-	-	-	18,000	-
2b.2	Subtotal Period 2b Additional Costs	-	2,289	-	-	-	-	3,555	1,280	7,124	3,493	-	3,631	-	-	-	-	-	-	66,748	-
Period 2b Collateral Costs																					
2b.3.1	Process decommissioning water waste	191	-	110	556	-	518	-	319	1,695	1,695	-	-	-	1,261	-	-	-	75,671	246	-
2b.3.2	Process decommissioning chemical flush waste	3	-	89	578	-	776	-	291	1,736	1,736	-	-	-	1,063	-	-	-	113,254	199	-
2b.3.3	Small tool allowance	-	248	-	-	-	-	-	37	285	285	-	-	-	-	-	-	-	-	-	-
2b.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	37,402	5,610	43,012	-	43,012	-	-	-	-	-	-	-	-	-
2b.3.5	NEI Program Fees	-	-	-	-	-	-	342	51	394	394	-	-	-	-	-	-	-	-	-	-
2b.3.6	N.H. Disposal Tax	-	-	-	-	-	-	975	244	1,219	1,219	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	193	248	199	1,134	-	1,294	38,719	6,553	48,341	5,329	43,012	-	-	2,324	-	-	-	188,925	445	-
Period 2b Period-Dependent Costs																					
2b.4.1	Decon supplies	946	-	-	-	-	-	-	236	1,182	1,182	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,739	174	1,912	1,912	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	2,759	-	-	-	-	-	690	3,449	3,449	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	4,540	-	-	-	-	-	681	5,221	5,221	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	111	48	-	443	-	129	731	731	-	-	-	6,268	-	-	-	125,364	204	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	4,722	708	5,430	5,430	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,977	198	2,174	2,174	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	180	18	198	-	198	-	-	-	-	-	-	-	-	-
2b.4.10	Site O&M Cost	-	-	-	-	-	-	1,172	176	1,348	1,348	-	-	-	-	-	-	-	-	-	-
2b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,855	278	2,133	-	2,133	-	-	-	-	-	-	-	-	-
2b.4.12	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	470	71	541	541	-	-	-	-	-	-	-	-	-	-
2b.4.13	ISFSI Operating Costs	-	-	-	-	-	-	224	34	258	-	258	-	-	-	-	-	-	-	-	-
2b.4.14	Security Staff Cost	-	-	-	-	-	-	17,895	2,684	20,579	20,579	-	-	-	-	-	-	-	-	-	523,383
2b.4.15	DOC Staff Cost	-	-	-	-	-	-	30,058	4,509	34,566	34,566	-	-	-	-	-	-	-	-	-	357,074
2b.4.16	Utility Staff Cost	-	-	-	-	-	-	41,686	6,253	47,939	47,939	-	-	-	-	-	-	-	-	-	662,789
2b.4	Subtotal Period 2b Period-Dependent Costs	946	7,299	111	48	-	443	101,977	16,838	127,662	125,073	2,589	-	-	6,268	-	-	-	125,364	204	1,543,246
2b.0	TOTAL PERIOD 2b COST	4,917	24,504	1,532	4,082	9,778	7,665	144,252	33,689	230,418	180,689	45,601	4,128	139,875	65,027	-	-	-	10,123,860	411,782	1,543,246
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d.1.1	Remove spent fuel racks	394	39	120	96	-	415	-	337	1,401	1,401	-	-	-	3,269	-	-	-	216,101	900	-
Disposal of Plant Systems																					
2d.1.2.1	FSB Air Handling	-	164	5	21	181	13	-	75	458	458	-	-	2,584	101	-	-	-	111,602	2,983	-
2d.1.2.2	Fuel Handling	-	181	13	34	172	74	-	96	570	570	-	-	2,457	583	-	-	-	138,296	3,626	-
2d.1.2.3	Spent Fuel Pool Cooling	-	258	32	58	96	210	-	143	798	798	-	-	1,371	1,654	-	-	-	165,083	5,007	-
2d.1.2	Totals	-	603	50	114	448	297	-	314	1,826	1,826	-	-	6,412	2,338	-	-	-	414,981	11,617	-
Decontamination of Site Buildings																					
2d.1.3.1	Fuel Storage	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-
2d.1.3	Totals	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-
2d.1.4	Scaffolding in support of decommissioning	-	203	4	2	16	2	-	54	282	282	-	-	205	18	-	-	-	10,421	4,492	-
2d.1	Subtotal Period 2d Activity Costs	1,055	1,577	185	244	633	737	-	1,256	5,687	5,687	-	-	9,047	6,012	-	-	-	773,714	43,397	-

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2d Additional Costs																					
2d.2.1	Final Site Survey Program Management	-	-	-	-	-	-	1,233	370	1,603	1,603	-	-	-	-	-	-	-	-	-	12,480
2d.2.2	Remedial Action Surveys	-	-	-	-	-	-	989	297	1,286	1,286	-	-	-	-	-	-	-	-	17,939	-
2d.2.3	Fuel Pool Concrete Decon	284	-	38	428	-	541	8	346	1,646	1,646	-	-	-	8,890	-	-	-	782,276	1,071	-
2d.2.4	Operational Tools & Equipment	-	-	15	69	504	-	-	87	675	675	-	-	11,710	-	-	-	-	292,750	32	-
2d.2	Subtotal Period 2d Additional Costs	284	-	53	497	504	541	2,230	1,100	5,209	5,209	-	-	11,710	8,890	-	-	-	1,075,026	19,042	12,480
Period 2d Collateral Costs																					
2d.3.1	Process decommissioning water waste	56	-	33	166	-	154	-	95	504	504	-	-	-	376	-	-	-	22,535	73	-
2d.3.3	Small tool allowance	-	39	-	-	-	-	-	6	45	45	-	-	-	-	-	-	-	-	-	-
2d.3.4	Decommissioning Equipment Disposition	-	-	117	73	464	67	-	109	830	830	-	-	6,000	529	-	-	-	304,968	88	-
2d.3.5	NEI Program Fees	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
2d.3.6	N.H. Disposal Tax	-	-	-	-	-	-	262	65	327	327	-	-	-	-	-	-	-	-	-	-
2d.3	Subtotal Period 2d Collateral Costs	56	39	150	238	464	222	339	287	1,795	1,795	-	-	6,000	905	-	-	-	327,503	161	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	122	-	-	-	-	-	-	30	152	152	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	640	64	704	704	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	609	-	-	-	-	-	152	761	761	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	1,671	-	-	-	-	-	251	1,921	1,921	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	29	13	-	116	-	34	191	191	-	-	-	1,638	-	-	-	32,763	53	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	961	144	1,105	1,105	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	415	41	456	456	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	66	7	73	-	73	-	-	-	-	-	-	-	-	-
2d.4.10	Site O&M Cost	-	-	-	-	-	-	431	65	496	496	-	-	-	-	-	-	-	-	-	-
2d.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	346	52	398	398	-	-	-	-	-	-	-	-	-	-
2d.4.12	ISFSI Operating Costs	-	-	-	-	-	-	82	12	95	-	95	-	-	-	-	-	-	-	-	-
2d.4.13	Security Staff Cost	-	-	-	-	-	-	2,441	366	2,807	2,807	-	-	-	-	-	-	-	-	-	75,600
2d.4.14	DOC Staff Cost	-	-	-	-	-	-	7,718	1,158	8,875	8,875	-	-	-	-	-	-	-	-	-	90,000
2d.4.15	Utility Staff Cost	-	-	-	-	-	-	11,291	1,694	12,985	12,985	-	-	-	-	-	-	-	-	-	171,900
2d.4	Subtotal Period 2d Period-Dependent Costs	122	2,280	29	13	-	116	24,391	4,070	31,019	30,851	168	-	-	1,638	-	-	-	32,763	53	337,500
2d.0	TOTAL PERIOD 2d COST	1,516	3,896	417	992	1,601	1,615	26,960	6,713	43,710	43,542	168	-	26,757	17,444	-	-	-	2,209,007	62,653	349,980
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
2f.1.2	Terminate license									a											
2f.1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f.2.1	Final Site Survey	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
2f.2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
Period 2f Collateral Costs																					
2f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
2f.3.2	NEI Program Fees	-	-	-	-	-	-	45	7	52	52	-	-	-	-	-	-	-	-	-	-
2f.3.3	N.H. Disposal Tax	-	-	-	-	-	-	5	1	7	7	-	-	-	-	-	-	-	-	-	-
2f.3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	1,496	225	1,721	1,721	-	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f.4.1	Insurance	-	-	-	-	-	-	556	56	612	612	-	-	-	-	-	-	-	-	-	-
2f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f.4.3	Health physics supplies	-	839	-	-	-	-	-	210	1,049	1,049	-	-	-	-	-	-	-	-	-	-
2f.4.4	Disposal of DAW generated	-	-	6	3	-	25	-	7	41	41	-	-	-	354	-	-	-	7,071	12	-
2f.4.5	Plant energy budget	-	-	-	-	-	-	386	58	444	444	-	-	-	-	-	-	-	-	-	-
2f.4.6	NRC Fees	-	-	-	-	-	-	361	36	397	397	-	-	-	-	-	-	-	-	-	-
2f.4.7	Emergency Planning Fees	-	-	-	-	-	-	58	6	64	-	64	-	-	-	-	-	-	-	-	-
2f.4.8	Site O&M Cost	-	-	-	-	-	-	375	56	431	431	-	-	-	-	-	-	-	-	-	-
2f.4.9	ISFSI Operating Costs	-	-	-	-	-	-	72	11	82	-	82	-	-	-	-	-	-	-	-	-
2f.4.10	Security Staff Cost	-	-	-	-	-	-	2,123	318	2,442	2,442	-	-	-	-	-	-	-	-	-	65,760
2f.4.11	DOC Staff Cost	-	-	-	-	-	-	4,998	750	5,748	5,748	-	-	-	-	-	-	-	-	-	57,149
2f.4.12	Utility Staff Cost	-	-	-	-	-	-	5,589	838	6,428	6,428	-	-	-	-	-	-	-	-	-	80,634
2f.4	Subtotal Period 2f Period-Dependent Costs	-	839	6	3	-	25	14,519	2,346	17,737	17,591	146	-	-	354	-	-	-	7,071	12	203,543

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2f.0	TOTAL PERIOD 2f COST	-	839	6	3	-	25	28,306	6,258	35,437	35,292	146	-	-	354	-	-	-	7,071	223,949	209,783
PERIOD 2 TOTALS		7,882	62,080	20,635	16,573	25,906	43,696	300,441	97,670	574,884	497,596	73,090	4,198	382,025	149,275	963	393	-	26,662,880	1,039,965	3,233,510
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Containment	-	5,322	-	-	-	-	-	798	6,120	-	-	6,120	-	-	-	-	-	-	62,786	-
3b.1.1.2	Administration Building-Limited Areas	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	131	-
3b.1.1.3	Containment Enclosure Ventilation	-	162	-	-	-	-	-	24	187	-	-	187	-	-	-	-	-	-	2,048	-
3b.1.1.4	Emergency Feedwater Pump Building	-	278	-	-	-	-	-	42	319	-	-	319	-	-	-	-	-	-	3,194	-
3b.1.1.5	Equipment Vault	-	142	-	-	-	-	-	21	163	-	-	163	-	-	-	-	-	-	1,769	-
3b.1.1.6	Main Steam & Feedwater Pipe Chase	-	614	-	-	-	-	-	92	706	-	-	706	-	-	-	-	-	-	7,668	-
3b.1.1.7	Miscellaneous Structures	-	17	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	251	-
3b.1.1.8	Primary Auxiliary Building	-	1,527	-	-	-	-	-	229	1,757	-	-	1,757	-	-	-	-	-	-	18,811	-
3b.1.1.9	Security Improvements	-	630	-	-	-	-	-	95	725	-	-	725	-	-	-	-	-	-	6,420	-
3b.1.1.10	Steam Generator Blowdown Recovery	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	435	-
3b.1.1.11	Waste Processing	-	2,010	-	-	-	-	-	301	2,311	-	-	2,311	-	-	-	-	-	-	25,863	-
3b.1.1.12	Fuel Storage	-	887	-	-	-	-	-	133	1,020	-	-	1,020	-	-	-	-	-	-	9,965	-
3b.1.1	Totals	-	11,627	-	-	-	-	-	1,744	13,371	-	-	13,371	-	-	-	-	-	-	139,341	-
Site Closeout Activities																					
3b.1.2	Remove Rubble	-	404	-	-	-	-	-	61	465	-	-	465	-	-	-	-	-	-	2,479	-
3b.1.3	Grade & landscape site	-	367	-	-	-	-	-	55	423	-	-	423	-	-	-	-	-	-	915	-
3b.1.4	Final report to NRC	-	-	-	-	-	-	177	27	204	204	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	12,398	-	-	-	-	177	1,886	14,462	204	-	14,258	-	-	-	-	-	-	142,736	1,560
Period 3b Additional Costs																					
3b.2.1	Concrete Crushing	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
3b.2	Subtotal Period 3b Additional Costs	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	107	-	-	-	-	-	16	123	-	-	123	-	-	-	-	-	-	-	-
3b.3.2	NEI Program Fees	-	-	-	-	-	-	113	17	130	-	-	130	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	107	-	-	-	-	113	33	254	-	-	254	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	1,401	140	1,542	-	1,542	-	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	5,765	-	-	-	-	-	865	6,630	-	-	6,630	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	486	73	559	-	-	559	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	645	64	709	-	709	-	-	-	-	-	-	-	-	-
3b.4.6	Emergency Planning Fees	-	-	-	-	-	-	145	15	160	-	160	-	-	-	-	-	-	-	-	-
3b.4.7	Site O&M Cost	-	-	-	-	-	-	945	142	1,086	1,086	-	-	-	-	-	-	-	-	-	-
3b.4.8	ISFSI Operating Costs	-	-	-	-	-	-	180	27	208	-	208	-	-	-	-	-	-	-	-	-
3b.4.9	Security Staff Cost	-	-	-	-	-	-	5,347	802	6,149	0	4,673	1,476	-	-	-	-	-	-	-	165,600
3b.4.10	DOC Staff Cost	-	-	-	-	-	-	12,187	1,828	14,015	-	-	14,015	-	-	-	-	-	-	-	134,057
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	7,588	1,138	8,726	0	2,094	6,632	-	-	-	-	-	-	-	107,443
3b.4	Subtotal Period 3b Period-Dependent Costs	-	5,765	-	-	-	-	28,924	5,094	39,783	1,086	9,386	29,311	-	-	-	-	-	-	-	407,100
3b.0	TOTAL PERIOD 3b COST	-	18,675	-	-	-	-	29,224	7,075	54,975	1,290	9,386	44,299	-	-	-	-	-	-	144,985	408,660
PERIOD 3c - Fuel Storage Operations																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c.3.1	NEI Program Fees	-	-	-	-	-	-	2,268	340	2,608	-	2,608	-	-	-	-	-	-	-	-	-
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	2,268	340	2,608	-	2,608	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	28,040	2,804	30,844	-	30,844	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	12,906	1,291	14,196	-	14,196	-	-	-	-	-	-	-	-	-
3c.4.5	Emergency Planning Fees	-	-	-	-	-	-	2,910	291	3,201	-	3,201	-	-	-	-	-	-	-	-	-

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3c Period-Dependent Costs (continued)																					
3c.4.6	ISFSI Operating Costs	-	-	-	-	-	-	3,612	542	4,153	-	4,153	-	-	-	-	-	-	-	-	-
3c.4.7	Security Staff Cost	-	-	-	-	-	-	81,592	12,239	93,831	-	93,831	-	-	-	-	-	-	-	-	2,445,634
3c.4.8	Utility Staff Cost	-	-	-	-	-	-	36,890	5,533	42,423	-	42,423	-	-	-	-	-	-	-	-	532,517
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	165,949	22,700	188,649	-	188,649	-	-	-	-	-	-	-	-	2,978,152
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	168,217	23,040	191,257	-	191,257	-	-	-	-	-	-	-	-	2,978,152
PERIOD 3d - Fuel Storage Operations/Shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1.1	Totals	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
Period 3d Collateral Costs																					
3d.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	13,322	1,998	15,321	-	15,321	-	-	-	-	-	-	-	-	-
3d.3.2	NEI Program Fees	-	-	-	-	-	-	1,440	216	1,656	-	1,656	-	-	-	-	-	-	-	-	-
3d.3.3	N.H. Disposal Tax	-	-	-	-	-	-	33	8	42	-	42	-	-	-	-	-	-	-	-	-
3d.3	Subtotal Period 3d Collateral Costs	-	-	-	-	-	-	14,796	2,223	17,018	-	17,018	-	-	-	-	-	-	-	-	-
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	17,802	1,780	19,582	-	19,582	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8,193	819	9,013	-	9,013	-	-	-	-	-	-	-	-	-
3d.4.5	Emergency Planning Fees	-	-	-	-	-	-	1,848	185	2,033	-	2,033	-	-	-	-	-	-	-	-	-
3d.4.6	ISFSI Operating Costs	-	-	-	-	-	-	2,293	344	2,637	-	2,637	-	-	-	-	-	-	-	-	-
3d.4.7	Security Staff Cost	-	-	-	-	-	-	51,800	7,770	59,570	-	59,570	-	-	-	-	-	-	-	-	1,552,657
3d.4.8	Utility Staff Cost	-	-	-	-	-	-	23,420	3,513	26,933	-	26,933	-	-	-	-	-	-	-	-	338,079
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	105,356	14,411	119,767	-	119,767	-	-	-	-	-	-	-	-	1,890,736
3d.0	TOTAL PERIOD 3d COST	-	-	925	-	-	12,501	120,152	18,740	152,319	15,533	136,786	-	-	-	-	-	2,217	436,202	-	1,890,736
PERIOD 3e - ISFSI Decontamination																					
Period 3e Direct Decommissioning Activities																					
Period 3e Additional Costs																					
3e.2.1	License Termination ISFSI	-	23	53	608	-	1,198	1,699	895	4,475	4,475	-	-	-	15,728	-	-	-	1,498,289	8,869	1,872
3e.2	Subtotal Period 3e Additional Costs	-	23	53	608	-	1,198	1,699	895	4,475	4,475	-	-	-	15,728	-	-	-	1,498,289	8,869	1,872
Period 3e Collateral Costs																					
3e.3.1	N.H. Disposal Tax	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	67	17	84	84	-	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3e.4.3	Plant energy budget	-	-	-	-	-	-	87	22	108	108	-	-	-	-	-	-	-	-	-	-
3e.4.4	Security Staff Cost	-	-	-	-	-	-	183	46	228	228	-	-	-	-	-	-	-	-	-	5,096
3e.4.5	Utility Staff Cost	-	-	-	-	-	-	271	68	338	338	-	-	-	-	-	-	-	-	-	3,866
3e.4	Subtotal Period 3e Period-Dependent Costs	-	-	-	-	-	-	607	152	759	759	-	-	-	-	-	-	-	-	-	8,961
3e.0	TOTAL PERIOD 3e COST	-	23	53	608	-	1,198	2,542	1,106	5,529	5,529	-	-	-	15,728	-	-	-	1,498,289	8,869	10,833
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Direct Decommissioning Activities																					
Period 3f Additional Costs																					
3f.2.1	Site Restoration ISFSI	-	657	-	-	-	-	373	155	1,185	-	-	1,185	-	-	-	-	-	-	4,923	160
3f.2	Subtotal Period 3f Additional Costs	-	657	-	-	-	-	373	155	1,185	-	-	1,185	-	-	-	-	-	-	4,923	160

Table C-2
Seabrook Station
Scenario 2: 2030 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.3	Heavy equipment rental	-	150	-	-	-	-	-	23	173	-	-	173	-	-	-	-	-	-	-	-
3f.4.4	Plant energy budget	-	-	-	-	-	-	44	7	51	-	-	51	-	-	-	-	-	-	-	-
3f.4.5	Security Staff Cost	-	-	-	-	-	-	94	14	108	-	-	108	-	-	-	-	-	-	-	2,610
3f.4.6	Utility Staff Cost	-	-	-	-	-	-	118	18	136	-	-	136	-	-	-	-	-	-	-	1,620
3f.4	Subtotal Period 3f Period-Dependent Costs	-	150	-	-	-	-	256	61	467	-	-	467	-	-	-	-	-	-	-	4,230
3f.0	TOTAL PERIOD 3f COST	-	812	-	-	-	-	630	216	1,658	-	-	1,658	-	-	-	-	-	-	4,923	4,390
PERIOD 3 TOTALS		-	19,511	978	608	-	13,699	320,765	50,178	405,737	22,352	337,428	45,957	-	15,728	-	-	2,217	1,934,492	158,777	5,292,770
TOTAL COST TO DECOMMISSION		**10,423**	**84,257**	**21,674**	**17,384**	**25,906**	**58,096**	**734,749**	**166,122**	**1,118,610**	**647,542**	**419,504**	**51,564**	**382,025**	**166,590**	**1,075**	**393**	**2,217**	**28,667,350**	**1,227,724**	**9,752,025**

TOTAL COST TO DECOMMISSION WITH 17.44% CONTINGENCY:	**$1,118,610**	**thousands of 2014 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 57.89% OR:	**$647,542**	**thousands of 2014 dollars**
SPENT FUEL MANAGEMENT COST IS 37.5% OR:	**$419,504**	**thousands of 2014 dollars**
NON-NUCLEAR DEMOLITION COST IS 4.61% OR:	**$51,564**	**thousands of 2014 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	**168,057**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	**2,217**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**41,694**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,227,724**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX D

2050 SHUTDOWN

DETAILED COST TABLES

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	227	34	262	262	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	853	128	981	981	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	353	53	405	405	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	569	85	654	654	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	466	70	536	536	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	560	84	644	579	-	64	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	474	71	545	491	-	55	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	808	121	929	929	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	739	111	850	850	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Biological shield	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Steam generators	-	-	-	-	-	-	355	53	408	408	-	-	-	-	-	-	-	-	-	3,120
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	182	27	209	105	-	105	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.10	Main Condensers	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.11	Plant structures & buildings	-	-	-	-	-	-	355	53	408	204	-	204	-	-	-	-	-	-	-	3,120
1a.1.17.12	Waste management	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.13	Facility & site closeout	-	-	-	-	-	-	102	15	118	59	-	59	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	4,302	645	4,948	4,357	-	591	-	-	-	-	-	-	-	37,827
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	273	41	314	314	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	3,000	450	3,450	3,450	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	159	24	183	183	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,300	345	2,645	2,645	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	140	21	161	161	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	13,689	2,053	15,742	15,151	-	591	-	-	-	-	-	-	-	73,753
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	1,332	200	1,532	-	1,532	-	-	-	-	-	-	-	-	-
1a.3.2	NEI Program Fees	-	-	-	-	-	-	175	26	201	201	-	-	-	-	-	-	-	-	-	-
1a.3.3	N.H. Disposal Tax	-	-	-	-	-	-	9	2	11	11	-	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	1,517	228	1,745	213	1,532	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	2,361	236	2,597	2,597	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	446	-	-	-	-	-	112	558	558	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	575	-	-	-	-	-	86	661	661	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	5	-	43	-	13	71	71	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	2,905	436	3,341	3,341	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	1,769	177	1,946	1,946	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,504	450	4,954	-	4,954	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M Cost	-	-	-	-	-	-	500	75	575	575	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	791	119	910	-	910	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	95	14	110	-	110	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	10,019	1,503	11,522	11,522	-	-	-	-	-	-	-	-	-	294,086
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	25,851	3,878	29,728	29,728	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	1,022	11	5	-	43	48,794	7,098	56,972	50,998	5,974	-	-	610	-	-	-	12,190	20	717,486

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1a.0	TOTAL PERIOD 1a COST	-	1,022	11	5	-	43	63,999	9,380	74,459	66,362	7,506	591	-	610	-	-	-	12,190	20	791,238
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	538	81	619	557	-	62	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	284	43	327	327	-	-	-	-	-	-	-	-	-	2,500
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	154	23	177	44	-	132	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD cooling assembly	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	CRD housings & ICI tubes	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Incore instrumentation	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	413	62	475	475	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	136	20	157	78	-	78	-	-	-	-	-	-	-	1,200
1b.1.1.10	Missile shields	-	-	-	-	-	-	51	8	59	59	-	-	-	-	-	-	-	-	-	450
1b.1.1.11	Biological shield	-	-	-	-	-	-	136	20	157	157	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.12	Steam generators	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1b.1.1.13	Reinforced concrete	-	-	-	-	-	-	114	17	131	65	-	65	-	-	-	-	-	-	-	1,000
1b.1.1.14	Main Turbine	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.15	Main Condensers	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.16	Auxiliary building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1.17	Reactor building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	3,781	567	4,348	3,530	-	818	-	-	-	-	-	-	-	33,243
1b.1.2	Decon primary loop	172	-	-	-	-	-	-	86	257	257	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	172	-	-	-	-	-	3,781	653	4,606	3,788	-	818	-	-	-	-	-	-	1,067	33,243
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,813	1,622	12,434	12,434	-	-	-	-	-	-	-	-	-	-
1b.2.2	Site Characterization	-	-	-	-	-	-	4,912	1,474	6,386	6,386	-	-	-	-	-	-	-	-	27,690	10,132
1b.2.3	Misc Waste	-	-	11	18	-	44	-	15	87	87	-	-	-	353	-	-	-	22,760	122	-
1b.2	Subtotal Period 1b Additional Costs	-	-	11	18	-	44	15,725	3,110	18,908	18,908	-	-	-	353	-	-	-	22,760	27,812	10,132
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	803	-	-	-	-	-	-	120	923	923	-	-	-	-	-	-	-	-	-	-
1b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
1b.3.3	Process decommissioning water waste	42	-	23	117	-	109	-	68	358	358	-	-	-	265	-	-	-	15,875	52	-
1b.3.4	Process decommissioning chemical flush waste	0	-	9	61	-	479	-	130	680	680	-	-	-	-	112	-	-	11,955	21	-
1b.3.5	Small tool allowance	-	2	-	-	-	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.3.6	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
1b.3.7	Decon rig	1,500	-	-	-	-	-	-	225	1,725	1,725	-	-	-	-	-	-	-	-	-	-
1b.3.8	Spent Fuel Capital and Transfer	-	-	-	-	-	-	560	84	644	-	644	-	-	-	-	-	-	-	-	-
1b.3.9	NEI Program Fees	-	-	-	-	-	-	74	11	85	85	-	-	-	-	-	-	-	-	-	-
1b.3.10	N.H. Disposal Tax	-	-	-	-	-	-	16	4	20	20	-	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,345	1,102	32	178	-	588	2,095	1,025	7,364	6,721	644	-	-	265	112	-	-	27,831	73	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	25	-	-	-	-	-	-	6	31	31	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	1,190	119	1,309	1,309	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	253	-	-	-	-	-	63	316	316	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	290	-	-	-	-	-	43	333	333	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	3	-	25	-	7	42	42	-	-	-	360	-	-	-	7,197	12	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	2,692	404	3,096	3,096	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	615	61	676	676	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	2,270	227	2,498	-	2,498	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M Cost	-	-	-	-	-	-	252	38	290	290	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	399	60	459	-	459	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	48	7	55	-	55	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	3,847	577	4,424	4,424	-	-	-	-	-	-	-	-	-	112,503
1b.4.14	DOC Staff Cost	-	-	-	-	-	-	5,430	815	6,245	6,245	-	-	-	-	-	-	-	-	-	64,137
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	13,091	1,964	15,055	15,055	-	-	-	-	-	-	-	-	-	214,491
1b.4	Subtotal Period 1b Period-Dependent Costs	25	543	6	3	-	25	29,835	4,392	34,828	31,817	3,011	-	-	360	-	-	-	7,197	12	391,131

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1b.0	TOTAL PERIOD 1b COST	2,541	1,644	50	198	-	657	51,436	9,179	65,706	61,233	3,655	818	-	977	112	-	-	57,788	28,963	434,506
PERIOD 1 TOTALS		2,541	2,666	61	203	-	700	115,435	18,559	140,165	127,595	11,161	1,409	-	1,586	112	-	-	69,978	28,982	1,225,745
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Reactor Coolant Piping	125	108	16	45	-	204	-	149	647	647	-	-	-	932	-	-	-	106,498	4,404	-
2a.1.1.2	Pressurizer Relief Tank	31	26	6	17	-	70	-	43	192	192	-	-	-	330	-	-	-	36,618	1,074	-
2a.1.1.3	Reactor Coolant Pumps & Motors	130	95	121	218	-	1,591	-	531	2,686	2,686	-	-	-	4,900	-	-	-	815,840	4,873	100
2a.1.1.4	Pressurizer	52	54	602	158	-	1,229	-	431	2,527	2,527	-	-	-	3,785	-	-	-	291,623	2,602	1,875
2a.1.1.5	Steam Generators	372	5,770	3,962	4,652	2,118	7,662	-	4,955	29,491	29,491	-	-	39,678	23,600	-	-	-	3,509,084	23,233	5,750
2a.1.1.6	CRDMs/ICIs/Service Structure Removal	157	282	207	109	-	294	-	259	1,308	1,308	-	-	-	3,965	-	-	-	152,894	8,248	-
2a.1.1.7	Reactor Vessel Internals	136	3,710	10,308	2,361	-	17,817	349	14,979	49,659	49,659	-	-	-	1,878	963	393	-	340,946	31,550	1,394
2a.1.1.8	Reactor Vessel	114	6,748	2,544	1,889	-	3,257	349	7,907	22,808	22,808	-	-	-	9,391	-	-	-	961,036	31,550	1,394
2a.1.1	Totals	1,117	16,793	17,765	9,449	2,118	32,124	699	29,254	109,319	109,319	-	-	39,678	48,781	963	393	-	6,214,540	107,534	10,513
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	539	298	231	891	610	-	485	3,055	3,055	-	-	11,512	4,808	-	-	-	835,876	10,564	-
2a.1.3	Main Condensers	-	1,163	143	111	428	293	-	459	2,597	2,597	-	-	5,525	2,307	-	-	-	401,118	23,200	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Containment	-	922	-	-	-	-	-	138	1,060	1,060	-	-	-	-	-	-	-	-	10,792	-
2a.1.4.2	Containment Enclosure Ventilation	-	18	-	-	-	-	-	3	21	21	-	-	-	-	-	-	-	-	228	-
2a.1.4.3	Primary Auxiliary Building	-	170	-	-	-	-	-	25	195	195	-	-	-	-	-	-	-	-	2,090	-
2a.1.4.4	Waste Processing	-	223	-	-	-	-	-	33	257	257	-	-	-	-	-	-	-	-	2,874	-
2a.1.4.5	Fuel Storage	-	99	-	-	-	-	-	15	113	113	-	-	-	-	-	-	-	-	1,107	-
2a.1.4	Totals	-	1,431	-	-	-	-	-	215	1,646	1,646	-	-	-	-	-	-	-	-	17,090	-
Disposal of Plant Systems																					
2a.1.5.1	Aux Steam - Insulated - RCA	-	290	6	31	311	-	-	124	762	762	-	-	4,447	-	-	-	-	180,604	5,210	-
2a.1.5.2	Aux Steam - RCA	-	61	1	5	51	-	-	24	142	142	-	-	737	-	-	-	-	29,928	1,157	-
2a.1.5.3	Aux Steam Cond - Insulated	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	411	-
2a.1.5.4	Aux Steam Cond - Insulated - RCA	-	57	1	4	43	-	-	22	127	127	-	-	622	-	-	-	-	25,273	997	-
2a.1.5.5	Aux Steam Cond - RCA	-	5	0	0	1	-	-	1	8	8	-	-	18	-	-	-	-	720	93	-
2a.1.5.6	Aux Steam Heating - Insulated - RCA	-	42	0	2	22	-	-	14	81	81	-	-	311	-	-	-	-	12,616	719	-
2a.1.5.7	Condensate	-	757	40	217	2,160	-	-	550	3,725	3,725	-	-	30,927	-	-	-	-	1,255,954	15,162	-
2a.1.5.8	Condensate - Insulated	-	611	19	103	1,026	-	-	324	2,084	2,084	-	-	14,693	-	-	-	-	596,672	12,157	-
2a.1.5.9	Condensate Polisher	-	262	7	39	387	-	-	130	826	826	-	-	5,547	-	-	-	-	225,286	5,158	-
2a.1.5.10	Condenser Air Evacuation	-	313	6	33	329	-	-	133	814	814	-	-	4,714	-	-	-	-	191,432	5,857	-
2a.1.5.11	Condenser Air Evacuation - Insulated	-	26	0	2	21	-	-	10	59	59	-	-	299	-	-	-	-	12,152	486	-
2a.1.5.12	Condenser Air Evacuation - RCA	-	2	0	0	2	-	-	1	5	5	-	-	30	-	-	-	-	1,220	30	-
2a.1.5.13	Extraction Steam - Insulated	-	388	11	62	612	-	-	199	1,272	1,272	-	-	8,764	-	-	-	-	355,920	7,818	-
2a.1.5.14	Feedwater	-	118	1	4	40	-	-	36	200	200	-	-	574	-	-	-	-	23,303	2,407	-
2a.1.5.15	Feedwater - Insulated	-	623	22	120	1,198	-	-	356	2,318	2,318	-	-	17,144	-	-	-	-	696,236	12,345	-
2a.1.5.16	Feedwater - Insulated - RCA	-	125	5	28	276	-	-	77	511	511	-	-	3,950	-	-	-	-	160,431	2,385	-
2a.1.5.17	Feedwater - RCA	-	36	0	2	16	-	-	12	66	66	-	-	235	-	-	-	-	9,533	702	-
2a.1.5.18	Feedwater- Yard	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	7	-
2a.1.5.19	Feedwater- Yard - Insulated	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	270	-
2a.1.5.20	Heat Tracing	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	70	-
2a.1.5.21	Heat Tracing - RCA	-	25	1	5	48	-	-	14	93	93	-	-	688	-	-	-	-	27,938	498	-
2a.1.5.22	Main Steam	-	404	11	62	614	-	-	203	1,294	1,294	-	-	8,786	-	-	-	-	356,793	8,170	-
2a.1.5.23	Main Steam - Insulated	-	445	14	75	744	-	-	235	1,513	1,513	-	-	10,649	-	-	-	-	432,475	8,832	-
2a.1.5.24	Main Steam - Insulated - RCA	-	135	6	33	331	-	-	89	595	595	-	-	4,739	-	-	-	-	192,450	2,608	-
2a.1.5.25	Main Steam - RCA	-	106	5	25	245	-	-	68	448	448	-	-	3,510	-	-	-	-	142,542	2,094	-
2a.1.5.26	Main Steam Drain - Insulated	-	132	1	6	56	-	-	42	238	238	-	-	806	-	-	-	-	32,732	2,382	-
2a.1.5.27	Main Steam Drain - Insulated - RCA	-	33	0	2	19	-	-	12	66	66	-	-	269	-	-	-	-	10,942	555	-
2a.1.5.28	Moist Sep & Rhtr Drains	-	58	0	2	20	-	-	18	98	98	-	-	285	-	-	-	-	11,591	1,179	-
2a.1.5.29	Moist Sep & Rhtr Drains - Insulated	-	590	36	195	1,937	-	-	471	3,228	3,228	-	-	27,725	-	-	-	-	1,125,941	11,785	-
2a.1.5.30	Residual Heat Removal	2	26	0	1	4	2	-	8	42	42	-	-	55	14	-	-	-	3,139	512	-
2a.1.5.31	Residual Heat Removal-Insulated	160	156	23	40	51	149	-	172	749	749	-	-	724	1,169	-	-	-	106,746	4,242	-
2a.1.5.32	Steam Generator Blowdown	-	296	27	61	216	169	-	161	930	930	-	-	3,086	1,332	-	-	-	213,341	5,866	-
2a.1.5.33	Steam Generator Blowdown - Insulated	-	290	20	34	81	111	-	120	657	657	-	-	1,165	876	-	-	-	105,362	5,503	-
2a.1.5.34	Turbine Steam Seal - Insulated	-	142	3	17	165	-	-	63	389	389	-	-	2,357	-	-	-	-	95,728	2,782	-

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2a.1.5	Totals	161	6,591	269	1,209	11,026	431	-	3,695	23,383	23,341	-	41	157,857	3,391	-	-	-	6,635,001	130,448	-
2a.1.6	Scaffolding in support of decommissioning	-	812	16	9	63	9	-	218	1,127	1,127	-	-	820	72	-	-	-	41,686	17,969	-
2a.1	Subtotal Period 2a Activity Costs	1,278	27,330	18,492	11,009	14,527	33,467	699	34,326	141,127	141,086	-	41	215,393	59,360	963	393	-	14,128,220	306,805	10,513
Period 2a Additional Costs																					
2a.2.1	Remedial Action Surveys	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
2a.2	Subtotal Period 2a Additional Costs	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
Period 2a Collateral Costs																					
2a.3.1	Process decommissioning water waste	89	-	50	251	-	234	-	146	769	769	-	-	-	570	-	-	-	34,190	111	-
2a.3.2	Process decommissioning chemical flush waste	1	-	29	189	-	254	-	95	568	568	-	-	-	348	-	-	-	37,076	65	-
2a.3.3	Small tool allowance	-	247	-	-	-	-	-	37	284	256	-	28	-	-	-	-	-	-	-	-
2a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	1,834	275	2,109	-	2,109	-	-	-	-	-	-	-	-	-
2a.3.5	NEI Program Fees	-	-	-	-	-	-	241	36	277	277	-	-	-	-	-	-	-	-	-	-
2a.3.6	N.H. Disposal Tax	-	-	-	-	-	-	1,017	254	1,271	1,271	-	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	89	247	79	440	-	488	3,092	843	5,280	3,142	2,109	28	-	918	-	-	-	71,265	176	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	81	-	-	-	-	-	-	20	101	101	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	1,227	123	1,349	1,349	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	2,168	-	-	-	-	-	542	2,710	2,710	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	3,096	-	-	-	-	-	464	3,561	3,561	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	110	47	-	436	-	127	720	720	-	-	-	6,173	-	-	-	123,452	201	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	4,183	627	4,810	4,810	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	2,000	200	2,200	2,200	-	-	-	-	-	-	-	-	-	-
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	127	13	140	-	140	-	-	-	-	-	-	-	-	-
2a.4.10	Site O&M Cost	-	-	-	-	-	-	827	124	951	951	-	-	-	-	-	-	-	-	-	-
2a.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,309	196	1,505	-	1,505	-	-	-	-	-	-	-	-	-
2a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	158	24	182	-	182	-	-	-	-	-	-	-	-	-
2a.4.13	Security Staff Cost	-	-	-	-	-	-	12,627	1,894	14,521	14,521	-	-	-	-	-	-	-	-	-	369,303
2a.4.14	DOC Staff Cost	-	-	-	-	-	-	21,954	3,293	25,247	25,247	-	-	-	-	-	-	-	-	-	262,309
2a.4.15	Utility Staff Cost	-	-	-	-	-	-	30,617	4,593	35,210	35,210	-	-	-	-	-	-	-	-	-	488,377
2a.4	Subtotal Period 2a Period-Dependent Costs	81	5,264	110	47	-	436	75,029	12,240	93,207	91,380	1,827	-	-	6,173	-	-	-	123,452	201	1,119,989
2a.0	TOTAL PERIOD 2a COST	1,449	32,841	18,680	11,497	14,527	34,391	80,716	47,979	242,079	238,073	3,936	70	215,393	66,450	963	393	-	14,322,940	341,580	1,130,502
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Disposal of Plant Systems																					
2b.1.1.1	Boron Recovery	26	52	3	5	8	19	-	33	146	146	-	-	114	149	-	-	-	14,480	1,293	-
2b.1.1.2	Boron Recovery - Insulated	901	845	75	151	501	434	-	876	3,784	3,784	-	-	7,179	3,471	-	-	-	517,584	30,494	-
2b.1.1.3	Chem & Volume Control	58	148	7	12	17	42	-	81	365	365	-	-	245	332	-	-	-	31,938	3,690	-
2b.1.1.4	Chem & Volume Control - Insulated	-	723	111	187	346	653	-	435	2,456	2,456	-	-	4,953	5,154	-	-	-	541,408	14,052	-
2b.1.1.5	Cntnmnt Encl Air Handling	-	152	3	14	117	8	-	60	354	354	-	-	1,676	66	-	-	-	72,382	2,982	-
2b.1.1.6	Cntnmnt Encl Air Handling - Insulated	-	18	2	2	2	8	-	7	38	38	-	-	28	61	-	-	-	5,196	318	-
2b.1.1.7	Cntnmnt On-line Purge	-	79	3	9	51	16	-	33	192	192	-	-	734	129	-	-	-	38,327	1,447	-
2b.1.1.8	Combust Gas Control - Insulated - RCA	-	29	1	3	29	-	-	12	74	74	-	-	410	-	-	-	-	16,656	510	-
2b.1.1.9	Combust Gas Control - RCA	-	5	0	1	8	-	-	3	17	17	-	-	121	-	-	-	-	4,897	101	-
2b.1.1.10	Containment Air Handling	-	480	12	46	381	34	-	194	1,148	1,148	-	-	5,455	268	-	-	-	239,230	9,033	-
2b.1.1.11	Containment Air Purge	-	158	7	23	170	26	-	75	458	458	-	-	2,427	202	-	-	-	111,933	3,010	-
2b.1.1.12	Containmnt Bldg Spray	-	114	-	-	-	-	-	17	131	-	-	131	-	-	-	-	-	-	2,309	-
2b.1.1.13	Containmnt Bldg Spray - Insulated	-	65	-	-	-	-	-	10	75	-	-	75	-	-	-	-	-	-	1,405	-
2b.1.1.14	Containmnt Bldg Spray - Insulated - RCA	-	24	1	3	34	-	-	12	74	74	-	-	483	-	-	-	-	19,609	451	-
2b.1.1.15	Containmnt Bldg Spray - RCA	-	7	0	0	2	-	-	2	11	11	-	-	31	-	-	-	-	1,257	128	-
2b.1.1.16	Contaminated Waste	54	45	4	7	2	28	-	47	187	187	-	-	35	223	-	-	-	16,145	1,715	-
2b.1.1.17	Demineralized Water	-	119	1	5	51	-	-	38	214	214	-	-	735	-	-	-	-	29,855	2,181	-
2b.1.1.18	Demineralized Water - Insulated	-	175	2	10	97	-	-	60	343	343	-	-	1,388	-	-	-	-	56,380	3,237	-
2b.1.1.19	Demineralized Water - Insulated - RCA	-	55	1	4	42	-	-	21	123	123	-	-	602	-	-	-	-	24,436	960	-
2b.1.1.20	Demineralized Water - RCA	-	32	0	2	17	-	-	11	61	61	-	-	239	-	-	-	-	9,722	532	-
2b.1.1.21	Diesel Generator - Insulated - RCA	-	3	0	1	5	-	-	2	10	10	-	-	72	-	-	-	-	2,914	58	-
2b.1.1.22	Drains - Floor	-	196	13	22	22	86	-	78	418	418	-	-	315	677	-	-	-	57,610	3,727	-

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
2b.1.1.23	Drains - Floor - Insulated	-	198	15	27	16	109	-	85	450	450	-	-	233	855	-	-	-	66,018	3,789	-
2b.1.1.24	Elec Distribution/Emer - Clean	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	930	-
2b.1.1.25	Elec Distribution/Emer - Contaminated	-	72	1	3	30	2	-	23	131	131	-	-	423	16	-	-	-	18,220	1,372	-
2b.1.1.26	Elec Distribution/Emer - RCA	-	444	5	28	280	-	-	158	915	915	-	-	4,009	-	-	-	-	162,811	8,216	-
2b.1.1.27	Elec Tunnel Air Handling	-	9	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	195	-
2b.1.1.28	Electrical Distrib - Clean	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	506	-
2b.1.1.29	Electrical Distrib - Contaminated	-	115	1	6	54	4	-	39	219	219	-	-	776	29	-	-	-	33,463	2,203	-
2b.1.1.30	Electrical Distrib - RCA	-	705	10	51	508	-	-	261	1,535	1,535	-	-	7,266	-	-	-	-	295,072	13,100	-
2b.1.1.31	Emerg FW Pumphouse Air Handling	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	265	-
2b.1.1.32	Fire Protection	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	451	-
2b.1.1.33	Fire Protection - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	37	-
2b.1.1.34	Fire Protection - Insulated - RCA	-	29	0	2	23	-	-	11	66	66	-	-	326	-	-	-	-	13,228	538	-
2b.1.1.35	Fire Protection - RCA	-	234	5	26	255	-	-	101	621	621	-	-	3,648	-	-	-	-	148,135	4,240	-
2b.1.1.36	Hot Water	-	37	-	-	-	-	-	6	43	-	-	43	-	-	-	-	-	-	786	-
2b.1.1.37	Hot Water - Insulated	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	240	-
2b.1.1.38	Hot Water - Insulated - RCA	-	29	0	2	17	-	-	10	58	58	-	-	245	-	-	-	-	9,965	483	-
2b.1.1.39	Hot Water - RCA	-	28	0	2	18	-	-	10	59	59	-	-	263	-	-	-	-	10,675	470	-
2b.1.1.40	Hydrogen Gas - RCA	-	11	0	1	6	-	-	4	23	23	-	-	93	-	-	-	-	3,770	185	-
2b.1.1.41	Incore Instrumentation	-	39	5	11	29	36	-	25	146	146	-	-	414	283	-	-	-	35,537	790	-
2b.1.1.42	Instrument Air	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.43	Instrument Air - RCA	-	254	3	14	136	-	-	86	491	491	-	-	1,941	-	-	-	-	78,817	4,512	-
2b.1.1.44	Leak Detection - RCA	-	9	0	1	5	-	-	3	17	17	-	-	74	-	-	-	-	3,014	144	-
2b.1.1.45	Mechanical Seal Supply - RCA	-	25	0	2	16	-	-	9	52	52	-	-	232	-	-	-	-	9,441	436	-
2b.1.1.46	Miscellaneous Equipment	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	8	-
2b.1.1.47	Miscellaneous Equipment - RCA	-	60	2	9	85	-	-	29	184	184	-	-	1,213	-	-	-	-	49,265	1,204	-
2b.1.1.48	Nitrogen Gas	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	53	-
2b.1.1.49	Nitrogen Gas - Insulated - RCA	-	31	0	2	18	-	-	11	61	61	-	-	252	-	-	-	-	10,225	503	-
2b.1.1.50	Nitrogen Gas - RCA	-	23	0	1	13	-	-	8	45	45	-	-	182	-	-	-	-	7,411	364	-
2b.1.1.51	Nuclear Inst	-	12	0	1	4	3	-	5	25	25	-	-	60	21	-	-	-	3,842	250	-
2b.1.1.52	Oil Colltn For RC Pumps - RCA	-	87	3	14	140	-	-	45	289	289	-	-	1,998	-	-	-	-	81,142	1,717	-
2b.1.1.53	PAB Air Handling	-	340	8	34	294	21	-	140	838	838	-	-	4,207	165	-	-	-	181,748	6,481	-
2b.1.1.54	PAB Air Handling - Insulated	-	53	4	9	26	25	-	25	143	143	-	-	372	200	-	-	-	28,365	1,008	-
2b.1.1.55	Potable Water	-	76	-	-	-	-	-	11	88	-	-	88	-	-	-	-	-	-	1,688	-
2b.1.1.56	Potable Water - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	38	-
2b.1.1.57	Prim Comp Clng Water - Insulated - RCA	-	740	23	117	1,167	-	-	380	2,427	2,427	-	-	16,712	-	-	-	-	678,673	13,808	-
2b.1.1.58	Prim Comp Clng Water - RCA	-	541	23	122	1,214	-	-	338	2,239	2,239	-	-	17,387	-	-	-	-	706,102	10,472	-
2b.1.1.59	RCA Check Point Air Handling	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	82	-
2b.1.1.60	Radiation Monitoring - RCA	-	67	3	16	161	-	-	44	291	291	-	-	2,299	-	-	-	-	93,383	1,329	-
2b.1.1.61	Reactor Coolant	-	146	10	17	24	65	-	60	321	321	-	-	338	508	-	-	-	47,320	2,935	-
2b.1.1.62	Reactor Coolant - Insulated	71	57	6	8	0	33	-	60	235	235	-	-	2	256	-	-	-	17,041	2,393	-
2b.1.1.63	Reactor Make-up Water	-	186	8	24	150	36	-	82	486	486	-	-	2,152	288	-	-	-	106,254	3,627	-
2b.1.1.64	Reactor Make-up Water - Insulated	-	29	3	3	3	13	-	12	64	64	-	-	46	101	-	-	-	8,601	527	-
2b.1.1.65	Release Recovery	-	40	2	6	35	10	-	19	110	110	-	-	495	77	-	-	-	25,141	770	-
2b.1.1.66	Release Recovery - Insulated	-	6	0	1	1	2	-	2	12	12	-	-	9	18	-	-	-	1,554	102	-
2b.1.1.67	Resin Sluicing	89	107	8	16	45	49	-	94	408	408	-	-	638	389	-	-	-	51,344	3,588	-
2b.1.1.68	Rod Control & Position	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.69	Roof Drains - Insulated - RCA	-	22	0	2	17	-	-	8	49	49	-	-	245	-	-	-	-	9,931	390	-
2b.1.1.70	Roof Drains - RCA	-	17	0	1	11	-	-	6	35	35	-	-	157	-	-	-	-	6,370	294	-
2b.1.1.71	Safety Injection	-	200	20	62	414	87	-	145	929	929	-	-	5,930	687	-	-	-	286,096	3,995	-
2b.1.1.72	Safety Injection - Insulated	-	134	11	17	47	55	-	58	322	322	-	-	672	431	-	-	-	55,906	2,508	-
2b.1.1.73	Sampling - Insulated	-	201	6	9	27	27	-	63	334	334	-	-	387	213	-	-	-	29,839	4,133	-
2b.1.1.74	Service Air	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	59	-
2b.1.1.75	Service Air - RCA	-	117	1	7	73	-	-	42	241	241	-	-	1,049	-	-	-	-	42,614	1,991	-
2b.1.1.76	Service Water - Insulated - RCA	-	140	9	46	454	-	-	111	760	760	-	-	6,502	-	-	-	-	264,033	2,799	-
2b.1.1.77	Service Water - RCA	-	143	6	33	324	-	-	90	595	595	-	-	4,636	-	-	-	-	188,275	2,716	-
2b.1.1.78	Sta Info & Alarm Comp	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	62	-
2b.1.1.79	Vents - Insulated - RCA	-	13	0	1	8	-	-	5	27	27	-	-	109	-	-	-	-	4,434	218	-
2b.1.1.80	Vents - RCA	-	97	2	10	99	-	-	41	249	249	-	-	1,417	-	-	-	-	57,545	1,780	-
2b.1.1.81	WP - Liquid Drains	-	464	37	60	64	233	-	197	1,054	1,054	-	-	911	1,835	-	-	-	158,163	8,696	-
2b.1.1.82	Waste Gas - Insulated	-	108	13	22	43	74	-	57	317	317	-	-	614	586	-	-	-	63,715	2,030	-
2b.1.1.83	Waste Processing Air Handling	-	569	11	47	404	28	-	218	1,277	1,277	-	-	5,778	222	-	-	-	249,327	10,558	-
2b.1.1.84	Waste Processing Liquid	3	19	1	1	3	5	-	8	40	40	-	-	38	36	-	-	-	3,906	372	-
2b.1.1.85	Waste Processing Liquid - Insulated	362	330	33	62	167	197	-	350	1,500	1,500	-	-	2,389	1,562	-	-	-	199,370	11,394	-
2b.1.1.86	Waste Processing Liquid - Yard	-	26	2	4	1	17	-	12	64	64	-	-	21	137	-	-	-	9,886	484	-
2b.1.1.87	Waste Processing Solid - Insul - RCA	-	341	9	48	472	-	-	164	1,033	1,033	-	-	6,759	-	-	-	-	274,481	6,307	-

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
	Disposal of Plant Systems (continued)																				
2b.1.1.88	Waste Processing Solid - RCA	-	3	0	0	2	-	-	1	7	7	-	-	35	-	-	-	-	1,421	52	-
2b.1.1	Totals	1,564	11,441	561	1,513	9,304	2,484	-	5,898	32,764	32,266	-	498	133,196	19,646	-	-	-	6,702,845	241,374	-
2b.1.2	Scaffolding in support of decommissioning	-	1,015	20	11	79	11	-	272	1,409	1,409	-	-	1,025	90	-	-	-	52,107	22,461	-
	Decontamination of Site Buildings																				
2b.1.3.1	Containment	1,240	1,787	554	1,157	280	3,143	-	2,124	10,285	10,285	-	-	4,016	31,894	-	-	-	2,567,388	54,300	-
2b.1.3.2	Administration Building-Limited Areas	115	38	10	24	-	34	-	80	300	300	-	-	-	554	-	-	-	48,750	2,875	-
2b.1.3.3	Containment Enclosure Ventilation	28	11	3	7	0	9	-	20	78	78	-	-	5	154	-	-	-	13,736	727	-
2b.1.3.4	Main Steam & Feedwater Pipe Chase	69	3	0	1	1	1	-	36	110	110	-	-	19	14	-	-	-	1,928	1,417	-
2b.1.3.5	Miscellaneous Structures	8	3	1	2	-	3	-	6	22	22	-	-	-	46	-	-	-	4,014	206	-
2b.1.3.6	Non-Essential Switchgear Room	3	1	0	1	-	1	-	2	8	8	-	-	-	17	-	-	-	1,482	76	-
2b.1.3.7	Primary Auxiliary Building	286	154	30	76	47	100	-	228	921	921	-	-	672	1,654	-	-	-	171,902	8,216	-
2b.1.3.8	RCA Storage Facility	41	0	0	0	-	0	-	21	63	63	-	-	-	4	-	-	-	342	823	-
2b.1.3.9	Waste Processing	423	215	43	108	66	143	-	331	1,330	1,330	-	-	943	2,362	-	-	-	245,080	11,908	-
2b.1.3	Totals	2,214	2,212	642	1,376	395	3,433	-	2,848	13,118	13,118	-	-	5,655	36,698	-	-	-	3,054,622	80,549	-
2b.1	Subtotal Period 2b Activity Costs	3,777	14,668	1,222	2,899	9,778	5,928	-	9,018	47,291	46,793	-	498	139,875	56,435	-	-	-	9,809,575	344,385	-
	Period 2b Additional Costs																				
2b.2.1	Remedial Action Surveys	-	-	-	-	-	-	2,687	806	3,493	3,493	-	-	-	-	-	-	-	-	48,748	-
2b.2.2	Excavation of Underground Services	-	2,289	-	-	-	-	868	474	3,631	-	-	3,631	-	-	-	-	-	-	18,000	-
2b.2	Subtotal Period 2b Additional Costs	-	2,289	-	-	-	-	3,555	1,280	7,124	3,493	-	3,631	-	-	-	-	-	-	66,748	-
	Period 2b Collateral Costs																				
2b.3.1	Process decommissioning water waste	191	-	110	556	-	518	-	319	1,695	1,695	-	-	-	1,261	-	-	-	75,671	246	-
2b.3.2	Process decommissioning chemical flush waste	3	-	89	578	-	776	-	291	1,736	1,736	-	-	-	1,063	-	-	-	113,254	199	-
2b.3.3	Small tool allowance	-	248	-	-	-	-	-	37	285	285	-	-	-	-	-	-	-	-	-	-
2b.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	27,541	4,131	31,672	-	31,672	-	-	-	-	-	-	-	-	-
2b.3.5	NEI Program Fees	-	-	-	-	-	-	342	51	394	394	-	-	-	-	-	-	-	-	-	-
2b.3.6	N.H. Disposal Tax	-	-	-	-	-	-	975	244	1,219	1,219	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	193	248	199	1,134	-	1,294	28,858	5,074	37,001	5,329	31,672	-	-	2,324	-	-	-	188,925	445	-
	Period 2b Period-Dependent Costs																				
2b.4.1	Decon supplies	946	-	-	-	-	-	-	236	1,182	1,182	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,739	174	1,912	1,912	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	2,759	-	-	-	-	-	690	3,449	3,449	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	4,540	-	-	-	-	-	681	5,221	5,221	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	111	48	-	443	-	129	731	731	-	-	-	6,268	-	-	-	125,364	204	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	4,722	708	5,430	5,430	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,977	198	2,174	2,174	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	180	18	198	-	198	-	-	-	-	-	-	-	-	-
2b.4.10	Site O&M Cost	-	-	-	-	-	-	1,172	176	1,348	1,348	-	-	-	-	-	-	-	-	-	-
2b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,855	278	2,133	-	2,133	-	-	-	-	-	-	-	-	-
2b.4.12	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	470	71	541	541	-	-	-	-	-	-	-	-	-	-
2b.4.13	ISFSI Operating Costs	-	-	-	-	-	-	224	34	258	-	258	-	-	-	-	-	-	-	-	-
2b.4.14	Security Staff Cost	-	-	-	-	-	-	17,895	2,684	20,579	20,579	-	-	-	-	-	-	-	-	-	523,383
2b.4.15	DOC Staff Cost	-	-	-	-	-	-	30,058	4,509	34,566	34,566	-	-	-	-	-	-	-	-	-	357,074
2b.4.16	Utility Staff Cost	-	-	-	-	-	-	41,686	6,253	47,939	47,939	-	-	-	-	-	-	-	-	-	662,789
2b.4	Subtotal Period 2b Period-Dependent Costs	946	7,299	111	48	-	443	101,977	16,838	127,662	125,073	2,589	-	-	6,268	-	-	-	125,364	204	1,543,246
2b.0	TOTAL PERIOD 2b COST	4,917	24,504	1,532	4,082	9,778	7,665	134,391	32,210	219,078	180,689	34,261	4,128	139,875	65,027	-	-	-	10,123,860	411,782	1,543,246
	PERIOD 2d - Decontamination Following Wet Fuel Storage																				
	Period 2d Direct Decommissioning Activities																				
2d.1.1	Remove spent fuel racks	394	39	120	96	-	415	-	337	1,401	1,401	-	-	-	3,269	-	-	-	216,101	900	-
	Disposal of Plant Systems																				
2d.1.2.1	FSB Air Handling	-	164	5	21	181	13	-	75	458	458	-	-	2,584	101	-	-	-	111,602	2,983	-
2d.1.2.2	Fuel Handling	-	181	13	34	172	74	-	96	570	570	-	-	2,457	583	-	-	-	138,296	3,626	-
2d.1.2.3	Spent Fuel Pool Cooling	-	258	32	58	96	210	-	143	798	798	-	-	1,371	1,654	-	-	-	165,083	5,007	-
2d.1.2	Totals	-	603	50	114	448	297	-	314	1,826	1,826	-	-	6,412	2,338	-	-	-	414,981	11,617	-

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Decontamination of Site Buildings																					
2d.1.3.1	Fuel Storage	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-
2d.1.3	Totals	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-
2d.1.4	Scaffolding in support of decommissioning	-	203	4	2	16	2	-	54	282	282	-	-	205	18	-	-	-	10,421	4,492	-
2d.1	Subtotal Period 2d Activity Costs	1,055	1,577	185	244	633	737	-	1,256	5,687	5,687	-	-	9,047	6,012	-	-	-	773,714	43,397	-
Period 2d Additional Costs																					
2d.2.1	Final Site Survey Program Management	-	-	-	-	-	-	1,233	370	1,603	1,603	-	-	-	-	-	-	-	-	-	12,480
2d.2.2	Remedial Action Surveys	-	-	-	-	-	-	989	297	1,286	1,286	-	-	-	-	-	-	-	-	17,939	-
2d.2.3	Fuel Pool Concrete Decon	284	-	38	428	-	541	8	346	1,646	1,646	-	-	-	8,890	-	-	-	782,276	1,071	-
2d.2.4	Operational Tools & Equipment	-	-	15	69	504	-	-	87	675	675	-	-	11,710	-	-	-	-	292,750	32	-
2d.2	Subtotal Period 2d Additional Costs	284	-	53	497	504	541	2,230	1,100	5,209	5,209	-	-	11,710	8,890	-	-	-	1,075,026	19,042	12,480
Period 2d Collateral Costs																					
2d.3.1	Process decommissioning water waste	56	-	33	166	-	154	-	95	504	504	-	-	-	376	-	-	-	22,535	73	-
2d.3.3	Small tool allowance	-	39	-	-	-	-	-	6	45	45	-	-	-	-	-	-	-	-	-	-
2d.3.4	Decommissioning Equipment Disposition	-	-	117	73	464	67	-	109	830	830	-	-	6,000	529	-	-	-	304,968	88	-
2d.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	312	47	359	-	359	-	-	-	-	-	-	-	-	-
2d.3.6	NEI Program Fees	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
2d.3.7	N.H. Disposal Tax	-	-	-	-	-	-	262	65	327	327	-	-	-	-	-	-	-	-	-	-
2d.3	Subtotal Period 2d Collateral Costs	56	39	150	238	464	222	651	334	2,154	1,795	359	-	6,000	905	-	-	-	327,503	161	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	122	-	-	-	-	-	-	30	152	152	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	640	64	704	704	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	609	-	-	-	-	-	152	761	761	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	1,671	-	-	-	-	-	251	1,921	1,921	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	29	13	-	116	-	34	191	191	-	-	-	1,638	-	-	-	32,763	53	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	961	144	1,105	1,105	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	415	41	456	456	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	66	7	73	-	73	-	-	-	-	-	-	-	-	-
2d.4.10	Site O&M Cost	-	-	-	-	-	-	431	65	496	496	-	-	-	-	-	-	-	-	-	-
2d.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	346	52	398	398	-	-	-	-	-	-	-	-	-	-
2d.4.12	ISFSI Operating Costs	-	-	-	-	-	-	82	12	95	-	95	-	-	-	-	-	-	-	-	-
2d.4.13	Security Staff Cost	-	-	-	-	-	-	2,441	366	2,807	2,807	-	-	-	-	-	-	-	-	-	75,600
2d.4.14	DOC Staff Cost	-	-	-	-	-	-	7,718	1,158	8,875	8,875	-	-	-	-	-	-	-	-	-	90,000
2d.4.15	Utility Staff Cost	-	-	-	-	-	-	11,291	1,694	12,985	12,985	-	-	-	-	-	-	-	-	-	171,900
2d.4	Subtotal Period 2d Period-Dependent Costs	122	2,280	29	13	-	116	24,391	4,070	31,019	30,851	168	-	-	1,638	-	-	-	32,763	53	337,500
2d.0	TOTAL PERIOD 2d COST	1,516	3,896	417	992	1,601	1,615	27,272	6,759	44,069	43,542	527	-	26,757	17,444	-	-	-	2,209,007	62,653	349,980
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
2f.1.2	Terminate license									a											
2f.1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f.2.1	Final Site Survey	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
2f.2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
Period 2f Collateral Costs																					
2f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
2f.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	416	62	478	-	478	-	-	-	-	-	-	-	-	-
2f.3.3	NEI Program Fees	-	-	-	-	-	-	45	7	52	52	-	-	-	-	-	-	-	-	-	-
2f.3.4	N.H. Disposal Tax	-	-	-	-	-	-	5	1	7	7	-	-	-	-	-	-	-	-	-	-
2f.3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	1,912	287	2,199	1,721	478	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f.4.1	Insurance	-	-	-	-	-	-	556	56	612	612	-	-	-	-	-	-	-	-	-	-
2f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f.4.3	Health physics supplies	-	839	-	-	-	-	-	210	1,049	1,049	-	-	-	-	-	-	-	-	-	-

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2f Period-Dependent Costs (continued)																					
2f.4.4	Disposal of DAW generated	-	-	6	3	-	25	-	7	41	41	-	-	-	354	-	-	-	7,071	12	-
2f.4.5	Plant energy budget	-	-	-	-	-	-	386	58	444	444	-	-	-	-	-	-	-	-	-	-
2f.4.6	NRC Fees	-	-	-	-	-	-	361	36	397	397	-	-	-	-	-	-	-	-	-	-
2f.4.7	Emergency Planning Fees	-	-	-	-	-	-	58	6	64	-	64	-	-	-	-	-	-	-	-	-
2f.4.8	Site O&M Cost	-	-	-	-	-	-	375	56	431	431	-	-	-	-	-	-	-	-	-	-
2f.4.9	ISFSI Operating Costs	-	-	-	-	-	-	72	11	82	-	82	-	-	-	-	-	-	-	-	-
2f.4.10	Security Staff Cost	-	-	-	-	-	-	2,123	318	2,442	2,442	-	-	-	-	-	-	-	-	-	65,760
2f.4.11	DOC Staff Cost	-	-	-	-	-	-	4,998	750	5,748	5,748	-	-	-	-	-	-	-	-	-	57,149
2f.4.12	Utility Staff Cost	-	-	-	-	-	-	5,589	838	6,428	6,428	-	-	-	-	-	-	-	-	-	80,634
2f.4	Subtotal Period 2f Period-Dependent Costs	-	839	6	3	-	25	14,519	2,346	17,737	17,591	146	-	-	354	-	-	-	7,071	12	203,543
2f.0	TOTAL PERIOD 2f COST	-	839	6	3	-	25	28,722	6,321	35,916	35,292	624	-	-	354	-	-	-	7,071	223,949	209,783
PERIOD 2 TOTALS		7,882	62,080	20,635	16,573	25,906	43,696	271,101	93,269	541,143	497,596	39,349	4,198	382,025	149,275	963	393	-	26,662,880	1,039,965	3,233,510
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Containment	-	5,322	-	-	-	-	-	798	6,120	-	-	6,120	-	-	-	-	-	-	62,786	-
3b.1.1.2	Administration Building-Limited Areas	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	131	-
3b.1.1.3	Containment Enclosure Ventilation	-	162	-	-	-	-	-	24	187	-	-	187	-	-	-	-	-	-	2,048	-
3b.1.1.4	Emergency Feedwater Pump Building	-	278	-	-	-	-	-	42	319	-	-	319	-	-	-	-	-	-	3,194	-
3b.1.1.5	Equipment Vault	-	142	-	-	-	-	-	21	163	-	-	163	-	-	-	-	-	-	1,769	-
3b.1.1.6	Main Steam & Feedwater Pipe Chase	-	614	-	-	-	-	-	92	706	-	-	706	-	-	-	-	-	-	7,668	-
3b.1.1.7	Miscellaneous Structures	-	17	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	251	-
3b.1.1.8	Primary Auxiliary Building	-	1,527	-	-	-	-	-	229	1,757	-	-	1,757	-	-	-	-	-	-	18,811	-
3b.1.1.9	Security Improvements	-	630	-	-	-	-	-	95	725	-	-	725	-	-	-	-	-	-	6,420	-
3b.1.1.10	Steam Generator Blowdown Recovery	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	435	-
3b.1.1.11	Waste Processing	-	2,010	-	-	-	-	-	301	2,311	-	-	2,311	-	-	-	-	-	-	25,863	-
3b.1.1.12	Fuel Storage	-	887	-	-	-	-	-	133	1,020	-	-	1,020	-	-	-	-	-	-	9,965	-
3b.1.1	Totals	-	11,627	-	-	-	-	-	1,744	13,371	-	-	13,371	-	-	-	-	-	-	139,341	-
Site Closeout Activities																					
3b.1.2	Remove Rubble	-	404	-	-	-	-	-	61	465	-	-	465	-	-	-	-	-	-	2,479	-
3b.1.3	Grade & landscape site	-	367	-	-	-	-	-	55	423	-	-	423	-	-	-	-	-	-	915	-
3b.1.4	Final report to NRC	-	-	-	-	-	-	177	27	204	204	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	12,398	-	-	-	-	177	1,886	14,462	204	-	14,258	-	-	-	-	-	-	142,736	1,560
Period 3b Additional Costs																					
3b.2.1	Concrete Crushing	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
3b.2	Subtotal Period 3b Additional Costs	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	107	-	-	-	-	-	16	123	-	-	123	-	-	-	-	-	-	-	-
3b.3.2	Spent Fuel Capital and Transfer	-	-	-	-	-	-	1,049	157	1,207	-	1,207	-	-	-	-	-	-	-	-	-
3b.3.3	NEI Program Fees	-	-	-	-	-	-	113	17	130	-	-	130	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	107	-	-	-	-	1,163	191	1,461	-	1,207	254	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	1,401	140	1,542	-	1,542	-	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	5,765	-	-	-	-	-	865	6,630	-	-	6,630	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	486	73	559	-	-	559	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	645	64	709	-	709	-	-	-	-	-	-	-	-	-
3b.4.6	Emergency Planning Fees	-	-	-	-	-	-	145	15	160	-	160	-	-	-	-	-	-	-	-	-
3b.4.7	Site O&M Cost	-	-	-	-	-	-	945	142	1,086	1,086	-	-	-	-	-	-	-	-	-	-
3b.4.8	ISFSI Operating Costs	-	-	-	-	-	-	180	27	208	-	208	-	-	-	-	-	-	-	-	-
3b.4.9	Security Staff Cost	-	-	-	-	-	-	5,347	802	6,149	0	4,673	1,476	-	-	-	-	-	-	-	165,600
3b.4.10	DOC Staff Cost	-	-	-	-	-	-	12,187	1,828	14,015	-	-	14,015	-	-	-	-	-	-	-	134,057
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	7,588	1,138	8,726	0	2,094	6,632	-	-	-	-	-	-	-	107,443
3b.4	Subtotal Period 3b Period-Dependent Costs	-	5,765	-	-	-	-	28,924	5,094	39,783	1,086	9,386	29,311	-	-	-	-	-	-	-	407,100
3b.0	TOTAL PERIOD 3b COST	-	18,675	-	-	-	-	30,274	7,233	56,182	1,290	10,593	44,299	-	-	-	-	-	-	144,985	408,660

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	10,434	1,565	11,999	-	11,999	-	-	-	-	-	-	-	-	-
3c.3.2	NEI Program Fees	-	-	-	-	-	-	1,128	169	1,297	-	1,297	-	-	-	-	-	-	-	-	-
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	11,562	1,734	13,296	-	13,296	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	13,916	1,392	15,308	-	15,308	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	6,405	641	7,046	-	7,046	-	-	-	-	-	-	-	-	-
3c.4.5	Emergency Planning Fees	-	-	-	-	-	-	1,444	144	1,589	-	1,589	-	-	-	-	-	-	-	-	-
3c.4.6	ISFSI Operating Costs	-	-	-	-	-	-	1,792	269	2,061	-	2,061	-	-	-	-	-	-	-	-	-
3c.4.7	Security Staff Cost	-	-	-	-	-	-	40,495	6,074	46,569	-	46,569	-	-	-	-	-	-	-	-	1,213,783
3c.4.8	Utility Staff Cost	-	-	-	-	-	-	18,309	2,746	21,055	-	21,055	-	-	-	-	-	-	-	-	264,291
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	82,362	11,266	93,628	-	93,628	-	-	-	-	-	-	-	-	1,478,074
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	93,924	13,000	106,924	-	106,924	-	-	-	-	-	-	-	-	1,478,074
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1.1	Totals	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
Period 3d Collateral Costs																					
3d.3.1	N.H. Disposal Tax	-	-	-	-	-	-	33	8	42	-	42	-	-	-	-	-	-	-	-	-
3d.3	Subtotal Period 3d Collateral Costs	-	-	-	-	-	-	33	8	42	-	42	-	-	-	-	-	-	-	-	-
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	28	3	31	-	31	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	13	1	14	-	14	-	-	-	-	-	-	-	-	-
3d.4.5	Emergency Planning Fees	-	-	-	-	-	-	3	0	3	-	3	-	-	-	-	-	-	-	-	-
3d.4.6	ISFSI Operating Costs	-	-	-	-	-	-	4	1	4	-	4	-	-	-	-	-	-	-	-	-
3d.4.7	Security Staff Cost	-	-	-	-	-	-	83	12	95	-	95	-	-	-	-	-	-	-	-	2,480
3d.4.8	Utility Staff Cost	-	-	-	-	-	-	37	6	43	-	43	-	-	-	-	-	-	-	-	540
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	168	23	191	-	191	-	-	-	-	-	-	-	-	3,020
3d.0	TOTAL PERIOD 3d COST	-	-	925	-	-	12,501	202	2,138	15,766	15,533	233	-	-	-	-	-	2,217	436,202	-	3,020
PERIOD 3e - ISFSI Decontamination																					
Period 3e Direct Decommissioning Activities																					
Period 3e Additional Costs																					
3e.2.1	License Termination ISFSI	-	23	53	608	-	1,198	1,699	895	4,475	4,475	-	-	-	15,728	-	-	-	1,498,289	8,869	1,872
3e.2	Subtotal Period 3e Additional Costs	-	23	53	608	-	1,198	1,699	895	4,475	4,475	-	-	-	15,728	-	-	-	1,498,289	8,869	1,872
Period 3e Collateral Costs																					
3e.3.1	N.H. Disposal Tax	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	67	17	84	84	-	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3e.4.3	Plant energy budget	-	-	-	-	-	-	87	22	108	108	-	-	-	-	-	-	-	-	-	-
3e.4.4	Security Staff Cost	-	-	-	-	-	-	183	46	228	228	-	-	-	-	-	-	-	-	-	5,096
3e.4.5	Utility Staff Cost	-	-	-	-	-	-	271	68	338	338	-	-	-	-	-	-	-	-	-	3,866
3e.4	Subtotal Period 3e Period-Dependent Costs	-	-	-	-	-	-	607	152	759	759	-	-	-	-	-	-	-	-	-	8,961

Table D-1
Seabrook Station
Scenario 3: 2050 Shutdown, DECON Alternative, 2040 DOE Start Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
3e.0	TOTAL PERIOD 3e COST	-	23	53	608	-	1,198	2,542	1,106	5,529	5,529	-	-	-	15,728	-	-	-	1,498,289	8,869	10,833
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Direct Decommissioning Activities																					
Period 3f Additional Costs																					
3f.2.1	Site Restoration ISFSI	-	657	-	-	-	-	373	155	1,185	-	-	1,185	-	-	-	-	-	-	4,923	160
3f.2	Subtotal Period 3f Additional Costs	-	657	-	-	-	-	373	155	1,185	-	-	1,185	-	-	-	-	-	-	4,923	160
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.3	Heavy equipment rental	-	150	-	-	-	-	-	23	173	-	-	173	-	-	-	-	-	-	-	-
3f.4.4	Plant energy budget	-	-	-	-	-	-	44	7	51	-	-	51	-	-	-	-	-	-	-	-
3f.4.5	Security Staff Cost	-	-	-	-	-	-	94	14	108	-	-	108	-	-	-	-	-	-	-	2,610
3f.4.6	Utility Staff Cost	-	-	-	-	-	-	118	18	136	-	-	136	-	-	-	-	-	-	-	1,620
3f.4	Subtotal Period 3f Period-Dependent Costs	-	150	-	-	-	-	256	61	467	-	-	467	-	-	-	-	-	-	-	4,230
3f.0	TOTAL PERIOD 3f COST	-	812	-	-	-	-	630	216	1,658	-	-	1,658	-	-	-	-	-	-	4,923	4,390
PERIOD 3 TOTALS		-	19,511	978	608	-	13,699	127,570	23,693	186,059	22,352	117,750	45,957	-	15,728	-	-	2,217	1,934,492	158,777	1,904,978
TOTAL COST TO DECOMMISSION		**10,423**	**84,257**	**21,674**	**17,384**	**25,906**	**58,096**	**514,107**	**135,520**	**867,366**	**647,542**	**168,260**	**51,564**	**382,025**	**166,590**	**1,075**	**393**	**2,217**	**28,667,350**	**1,227,724**	**6,364,232**

TOTAL COST TO DECOMMISSION WITH 18.52% CONTINGENCY:	**$867,366**	**thousands of 2014 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 74.66% OR:	**$647,542**	**thousands of 2014 dollars**
SPENT FUEL MANAGEMENT COST IS 19.4% OR:	**$168,259**	**thousands of 2014 dollars**
NON-NUCLEAR DEMOLITION COST IS 5.94% OR:	**$51,564**	**thousands of 2014 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)	**168,057**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED	**2,217**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**41,694**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,227,724**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

															Burial Volumes						
Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	227	34	262	262	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	148	22	170	170	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	853	128	981	981	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	353	53	405	405	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	569	85	654	654	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	466	70	536	536	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	560	84	644	579	-	64	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	474	71	545	491	-	55	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	808	121	929	929	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	739	111	850	850	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Biological shield	-	-	-	-	-	-	57	9	65	65	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Steam generators	-	-	-	-	-	-	355	53	408	408	-	-	-	-	-	-	-	-	-	3,120
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	182	27	209	105	-	105	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.10	Main Condensers	-	-	-	-	-	-	45	7	52	-	-	52	-	-	-	-	-	-	-	400
1a.1.17.11	Plant structures & buildings	-	-	-	-	-	-	355	53	408	204	-	204	-	-	-	-	-	-	-	3,120
1a.1.17.12	Waste management	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.13	Facility & site closeout	-	-	-	-	-	-	102	15	118	59	-	59	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	4,302	645	4,948	4,357	-	591	-	-	-	-	-	-	-	37,827
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	273	41	314	314	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	3,000	450	3,450	3,450	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	159	24	183	183	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,300	345	2,645	2,645	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	140	21	161	161	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	13,689	2,053	15,742	15,151	-	591	-	-	-	-	-	-	-	73,753
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	852	128	980	-	980	-	-	-	-	-	-	-	-	-
1a.3.2	NEI Program Fees	-	-	-	-	-	-	175	26	201	201	-	-	-	-	-	-	-	-	-	-
1a.3.3	N.H. Disposal Tax	-	-	-	-	-	-	9	2	11	11	-	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	1,037	156	1,193	213	980	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	2,361	236	2,597	2,597	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	446	-	-	-	-	-	112	558	558	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	575	-	-	-	-	-	86	661	661	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	11	5	-	43	-	13	71	71	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	2,905	436	3,341	3,341	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	1,769	177	1,946	1,946	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	4,504	450	4,954	-	4,954	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M Cost	-	-	-	-	-	-	500	75	575	575	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	791	119	910	-	910	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	95	14	110	-	110	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	10,019	1,503	11,522	11,522	-	-	-	-	-	-	-	-	-	294,086
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	25,851	3,878	29,728	29,728	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	1,022	11	5	-	43	48,794	7,098	56,972	50,998	5,974	-	-	610	-	-	-	12,190	20	717,486

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1a.0	TOTAL PERIOD 1a COST	-	1,022	11	5	-	43	63,519	9,308	73,907	66,362	6,954	591	-	610	-	-	-	12,190	20	791,238
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	538	81	619	557	-	62	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	284	43	327	327	-	-	-	-	-	-	-	-	-	2,500
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	154	23	177	44	-	132	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD cooling assembly	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	CRD housings & ICI tubes	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Incore instrumentation	-	-	-	-	-	-	114	17	131	131	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	413	62	475	475	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	136	20	157	78	-	78	-	-	-	-	-	-	-	1,200
1b.1.1.10	Missile shields	-	-	-	-	-	-	51	8	59	59	-	-	-	-	-	-	-	-	-	450
1b.1.1.11	Biological shield	-	-	-	-	-	-	136	20	157	157	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.12	Steam generators	-	-	-	-	-	-	523	78	602	602	-	-	-	-	-	-	-	-	-	4,600
1b.1.1.13	Reinforced concrete	-	-	-	-	-	-	114	17	131	65	-	65	-	-	-	-	-	-	-	1,000
1b.1.1.14	Main Turbine	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.15	Main Condensers	-	-	-	-	-	-	177	27	204	-	-	204	-	-	-	-	-	-	-	1,560
1b.1.1.16	Auxiliary building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1.17	Reactor building	-	-	-	-	-	-	311	47	357	321	-	36	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	3,781	567	4,348	3,530	-	818	-	-	-	-	-	-	-	33,243
1b.1.2	Decon primary loop	172	-	-	-	-	-	-	86	257	257	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	172	-	-	-	-	-	3,781	653	4,606	3,788	-	818	-	-	-	-	-	-	1,067	33,243
Period 1b Additional Costs																					
1b.2.1	Spent Fuel Pool Isolation	-	-	-	-	-	-	10,813	1,622	12,434	12,434	-	-	-	-	-	-	-	-	-	-
1b.2.2	Site Characterization	-	-	-	-	-	-	4,912	1,474	6,386	6,386	-	-	-	-	-	-	-	-	27,690	10,132
1b.2.3	Misc Waste	-	-	11	18	-	44	-	15	87	87	-	-	-	353	-	-	-	22,760	122	-
1b.2	Subtotal Period 1b Additional Costs	-	-	11	18	-	44	15,725	3,110	18,908	18,908	-	-	-	353	-	-	-	22,760	27,812	10,132
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	803	-	-	-	-	-	-	120	923	923	-	-	-	-	-	-	-	-	-	-
1b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
1b.3.3	Process decommissioning water waste	42	-	23	117	-	109	-	68	358	358	-	-	-	265	-	-	-	15,875	52	-
1b.3.4	Process decommissioning chemical flush waste	0	-	9	61	-	479	-	130	680	680	-	-	-	-	112	-	-	11,955	21	-
1b.3.5	Small tool allowance	-	2	-	-	-	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-
1b.3.6	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
1b.3.7	Decon rig	1,500	-	-	-	-	-	-	225	1,725	1,725	-	-	-	-	-	-	-	-	-	-
1b.3.8	NEI Program Fees	-	-	-	-	-	-	74	11	85	85	-	-	-	-	-	-	-	-	-	-
1b.3.9	N.H. Disposal Tax	-	-	-	-	-	-	16	4	20	20	-	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,345	1,102	32	178	-	588	1,536	941	6,721	6,721	-	-	-	265	112	-	-	27,831	73	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	25	-	-	-	-	-	-	6	31	31	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	1,190	119	1,309	1,309	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	253	-	-	-	-	-	63	316	316	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	290	-	-	-	-	-	43	333	333	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	6	3	-	25	-	7	42	42	-	-	-	360	-	-	-	7,197	12	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	2,692	404	3,096	3,096	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	615	61	676	676	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	2,270	227	2,498	-	2,498	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M Cost	-	-	-	-	-	-	252	38	290	290	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	399	60	459	-	459	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	48	7	55	-	55	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	3,847	577	4,424	4,424	-	-	-	-	-	-	-	-	-	112,503
1b.4.14	DOC Staff Cost	-	-	-	-	-	-	5,430	815	6,245	6,245	-	-	-	-	-	-	-	-	-	64,137
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	13,091	1,964	15,055	15,055	-	-	-	-	-	-	-	-	-	214,491
1b.4	Subtotal Period 1b Period-Dependent Costs	25	543	6	3	-	25	29,835	4,392	34,828	31,817	3,011	-	-	360	-	-	-	7,197	12	391,131
1b.0	TOTAL PERIOD 1b COST	2,541	1,644	50	198	-	657	50,876	9,095	65,062	61,233	3,011	818	-	977	112	-	-	57,788	28,963	434,506

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1 TOTALS		2,541	2,666	61	203	-	700	114,395	18,403	138,969	127,595	9,965	1,409	-	1,586	112	-	-	69,978	28,982	1,225,745
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.1	Reactor Coolant Piping	125	108	16	45	-	204	-	149	647	647	-	-	-	932	-	-	-	106,498	4,404	-
2a.1.1.2	Pressurizer Relief Tank	31	26	6	17	-	70	-	43	192	192	-	-	-	330	-	-	-	36,618	1,074	-
2a.1.1.3	Reactor Coolant Pumps & Motors	130	95	121	218	-	1,591	-	531	2,686	2,686	-	-	-	4,900	-	-	-	815,840	4,873	100
2a.1.1.4	Pressurizer	52	54	602	158	-	1,229	-	431	2,527	2,527	-	-	-	3,785	-	-	-	291,623	2,602	1,875
2a.1.1.5	Steam Generators	372	5,770	3,962	4,652	2,118	7,662	-	4,955	29,491	29,491	-	-	39,678	23,600	-	-	-	3,509,084	23,233	5,750
2a.1.1.6	CRDMs/ICIs/Service Structure Removal	157	282	207	109	-	294	-	259	1,308	1,308	-	-	-	3,965	-	-	-	152,894	8,248	-
2a.1.1.7	Reactor Vessel Internals	136	3,710	10,308	2,361	-	17,817	349	14,979	49,659	49,659	-	-	-	1,878	963	393	-	340,946	31,550	1,394
2a.1.1.8	Reactor Vessel	114	6,748	2,544	1,889	-	3,257	349	7,907	22,808	22,808	-	-	-	9,391	-	-	-	961,036	31,550	1,394
2a.1.1	Totals	1,117	16,793	17,765	9,449	2,118	32,124	699	29,254	109,319	109,319	-	-	39,678	48,781	963	393	-	6,214,540	107,534	10,513
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	539	298	231	891	610	-	485	3,055	3,055	-	-	11,512	4,808	-	-	-	835,876	10,564	-
2a.1.3	Main Condensers	-	1,163	143	111	428	293	-	459	2,597	2,597	-	-	5,525	2,307	-	-	-	401,118	23,200	-
Cascading Costs from Clean Building Demolition																					
2a.1.4.1	Containment	-	922	-	-	-	-	-	138	1,060	1,060	-	-	-	-	-	-	-	-	10,792	-
2a.1.4.2	Containment Enclosure Ventilation	-	18	-	-	-	-	-	3	21	21	-	-	-	-	-	-	-	-	228	-
2a.1.4.3	Primary Auxiliary Building	-	170	-	-	-	-	-	25	195	195	-	-	-	-	-	-	-	-	2,090	-
2a.1.4.4	Waste Processing	-	223	-	-	-	-	-	33	257	257	-	-	-	-	-	-	-	-	2,874	-
2a.1.4.5	Fuel Storage	-	99	-	-	-	-	-	15	113	113	-	-	-	-	-	-	-	-	1,107	-
2a.1.4	Totals	-	1,431	-	-	-	-	-	215	1,646	1,646	-	-	-	-	-	-	-	-	17,090	-
Disposal of Plant Systems																					
2a.1.5.1	Aux Steam - Insulated - RCA	-	290	6	31	311	-	-	124	762	762	-	-	4,447	-	-	-	-	180,604	5,210	-
2a.1.5.2	Aux Steam - RCA	-	61	1	5	51	-	-	24	142	142	-	-	737	-	-	-	-	29,928	1,157	-
2a.1.5.3	Aux Steam Cond - Insulated	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	411	-
2a.1.5.4	Aux Steam Cond - Insulated - RCA	-	57	1	4	43	-	-	22	127	127	-	-	622	-	-	-	-	25,273	997	-
2a.1.5.5	Aux Steam Cond - RCA	-	5	0	0	1	-	-	1	8	8	-	-	18	-	-	-	-	720	93	-
2a.1.5.6	Aux Steam Heating - Insulated - RCA	-	42	0	2	22	-	-	14	81	81	-	-	311	-	-	-	-	12,616	719	-
2a.1.5.7	Condensate	-	757	40	217	2,160	-	-	550	3,725	3,725	-	-	30,927	-	-	-	-	1,255,954	15,162	-
2a.1.5.8	Condensate - Insulated	-	611	19	103	1,026	-	-	324	2,084	2,084	-	-	14,693	-	-	-	-	596,672	12,157	-
2a.1.5.9	Condensate Polisher	-	262	7	39	387	-	-	130	826	826	-	-	5,547	-	-	-	-	225,286	5,158	-
2a.1.5.10	Condenser Air Evacuation	-	313	6	33	329	-	-	133	814	814	-	-	4,714	-	-	-	-	191,432	5,857	-
2a.1.5.11	Condenser Air Evacuation - Insulated	-	26	0	2	21	-	-	10	59	59	-	-	299	-	-	-	-	12,152	486	-
2a.1.5.12	Condenser Air Evacuation - RCA	-	2	0	0	2	-	-	1	5	5	-	-	30	-	-	-	-	1,220	30	-
2a.1.5.13	Extraction Steam - Insulated	-	388	11	62	612	-	-	199	1,272	1,272	-	-	8,764	-	-	-	-	355,920	7,818	-
2a.1.5.14	Feedwater	-	118	1	4	40	-	-	36	200	200	-	-	574	-	-	-	-	23,303	2,407	-
2a.1.5.15	Feedwater - Insulated	-	623	22	120	1,198	-	-	356	2,318	2,318	-	-	17,144	-	-	-	-	696,236	12,345	-
2a.1.5.16	Feedwater - Insulated - RCA	-	125	5	28	276	-	-	77	511	511	-	-	3,950	-	-	-	-	160,431	2,385	-
2a.1.5.17	Feedwater - RCA	-	36	0	2	16	-	-	12	66	66	-	-	235	-	-	-	-	9,533	702	-
2a.1.5.18	Feedwater- Yard	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	7	-
2a.1.5.19	Feedwater- Yard - Insulated	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	270	-
2a.1.5.20	Heat Tracing	-	3	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	70	-
2a.1.5.21	Heat Tracing - RCA	-	25	1	5	48	-	-	14	93	93	-	-	688	-	-	-	-	27,938	498	-
2a.1.5.22	Main Steam	-	404	11	62	614	-	-	203	1,294	1,294	-	-	8,786	-	-	-	-	356,793	8,170	-
2a.1.5.23	Main Steam - Insulated	-	445	14	75	744	-	-	235	1,513	1,513	-	-	10,649	-	-	-	-	432,475	8,832	-
2a.1.5.24	Main Steam - Insulated - RCA	-	135	6	33	331	-	-	89	595	595	-	-	4,739	-	-	-	-	192,450	2,608	-
2a.1.5.25	Main Steam - RCA	-	106	5	25	245	-	-	68	448	448	-	-	3,510	-	-	-	-	142,542	2,094	-
2a.1.5.26	Main Steam Drain - Insulated	-	132	1	6	56	-	-	42	238	238	-	-	806	-	-	-	-	32,732	2,382	-
2a.1.5.27	Main Steam Drain - Insulated - RCA	-	33	0	2	19	-	-	12	66	66	-	-	269	-	-	-	-	10,942	555	-
2a.1.5.28	Moist Sep & Rhtr Drains	-	58	0	2	20	-	-	18	98	98	-	-	285	-	-	-	-	11,591	1,179	-
2a.1.5.29	Moist Sep & Rhtr Drains - Insulated	-	590	36	195	1,937	-	-	471	3,228	3,228	-	-	27,725	-	-	-	-	1,125,941	11,785	-
2a.1.5.30	Residual Heat Removal	2	26	0	1	4	2	-	8	42	42	-	-	55	14	-	-	-	3,139	512	-
2a.1.5.31	Residual Heat Removal-Insulated	160	156	23	40	51	149	-	172	749	749	-	-	724	1,169	-	-	-	106,746	4,242	-
2a.1.5.32	Steam Generator Blowdown	-	296	27	61	216	169	-	161	930	930	-	-	3,086	1,332	-	-	-	213,341	5,866	-
2a.1.5.33	Steam Generator Blowdown - Insulated	-	290	20	34	81	111	-	120	657	657	-	-	1,165	876	-	-	-	105,362	5,503	-
2a.1.5.34	Turbine Steam Seal - Insulated	-	142	3	17	165	-	-	63	389	389	-	-	2,357	-	-	-	-	95,728	2,782	-
2a.1.5	Totals	161	6,591	269	1,209	11,026	431	-	3,695	23,383	23,341	-	41	157,857	3,391	-	-	-	6,635,001	130,448	-
2a.1.6	Scaffolding in support of decommissioning	-	812	16	9	63	9	-	218	1,127	1,127	-	-	820	72	-	-	-	41,686	17,969	-

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2a.1	Subtotal Period 2a Activity Costs	1,278	27,330	18,492	11,009	14,527	33,467	699	34,326	141,127	141,086	-	41	215,393	59,360	963	393	-	14,128,220	306,805	10,513
Period 2a Additional Costs																					
2a.2.1	Remedial Action Surveys	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
2a.2	Subtotal Period 2a Additional Costs	-	-	-	-	-	-	1,896	569	2,465	2,465	-	-	-	-	-	-	-	-	34,397	-
Period 2a Collateral Costs																					
2a.3.1	Process decommissioning water waste	89	-	50	251	-	234	-	146	769	769	-	-	-	570	-	-	-	34,190	111	-
2a.3.2	Process decommissioning chemical flush waste	1	-	29	189	-	254	-	95	568	568	-	-	-	348	-	-	-	37,076	65	-
2a.3.3	Small tool allowance	-	247	-	-	-	-	-	37	284	256	-	28	-	-	-	-	-	-	-	-
2a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	7,008	1,051	8,059	-	8,059	-	-	-	-	-	-	-	-	-
2a.3.5	NEI Program Fees	-	-	-	-	-	-	241	36	277	277	-	-	-	-	-	-	-	-	-	-
2a.3.6	N.H. Disposal Tax	-	-	-	-	-	-	1,017	254	1,271	1,271	-	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	89	247	79	440	-	488	8,266	1,619	11,230	3,142	8,059	28	-	918	-	-	-	71,265	176	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	81	-	-	-	-	-	-	20	101	101	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	1,227	123	1,349	1,349	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	2,168	-	-	-	-	-	542	2,710	2,710	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	3,096	-	-	-	-	-	464	3,561	3,561	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	110	47	-	436	-	127	720	720	-	-	-	6,173	-	-	-	123,452	201	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	4,183	627	4,810	4,810	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	2,000	200	2,200	2,200	-	-	-	-	-	-	-	-	-	-
2a.4.9	Emergency Planning Fees	-	-	-	-	-	-	127	13	140	-	140	-	-	-	-	-	-	-	-	-
2a.4.10	Site O&M Cost	-	-	-	-	-	-	827	124	951	951	-	-	-	-	-	-	-	-	-	-
2a.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,309	196	1,505	-	1,505	-	-	-	-	-	-	-	-	-
2a.4.12	ISFSI Operating Costs	-	-	-	-	-	-	158	24	182	-	182	-	-	-	-	-	-	-	-	-
2a.4.13	Security Staff Cost	-	-	-	-	-	-	12,627	1,894	14,521	14,521	-	-	-	-	-	-	-	-	-	369,303
2a.4.14	DOC Staff Cost	-	-	-	-	-	-	21,954	3,293	25,247	25,247	-	-	-	-	-	-	-	-	-	262,309
2a.4.15	Utility Staff Cost	-	-	-	-	-	-	30,617	4,593	35,210	35,210	-	-	-	-	-	-	-	-	-	488,377
2a.4	Subtotal Period 2a Period-Dependent Costs	81	5,264	110	47	-	436	75,029	12,240	93,207	91,380	1,827	-	-	6,173	-	-	-	123,452	201	1,119,989
2a.0	TOTAL PERIOD 2a COST	1,449	32,841	18,680	11,497	14,527	34,391	85,890	48,755	248,029	238,073	9,886	70	215,393	66,450	963	393	-	14,322,940	341,580	1,130,502
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Disposal of Plant Systems																					
2b.1.1.1	Boron Recovery	26	52	3	5	8	19	-	33	146	146	-	-	114	149	-	-	-	14,480	1,293	-
2b.1.1.2	Boron Recovery - Insulated	901	845	75	151	501	434	-	876	3,784	3,784	-	-	7,179	3,471	-	-	-	517,584	30,494	-
2b.1.1.3	Chem & Volume Control	58	148	7	12	17	42	-	81	365	365	-	-	245	332	-	-	-	31,938	3,690	-
2b.1.1.4	Chem & Volume Control - Insulated	-	723	111	187	346	653	-	435	2,456	2,456	-	-	4,953	5,154	-	-	-	541,408	14,052	-
2b.1.1.5	Cntnmnt Encl Air Handling	-	152	3	14	117	8	-	60	354	354	-	-	1,676	66	-	-	-	72,382	2,982	-
2b.1.1.6	Cntnmnt Encl Air Handling - Insulated	-	18	2	2	2	8	-	7	38	38	-	-	28	61	-	-	-	5,196	318	-
2b.1.1.7	Cntnmnt On-line Purge	-	79	3	9	51	16	-	33	192	192	-	-	734	129	-	-	-	38,327	1,447	-
2b.1.1.8	Combust Gas Control - Insulated - RCA	-	29	1	3	29	-	-	12	74	74	-	-	410	-	-	-	-	16,656	510	-
2b.1.1.9	Combust Gas Control - RCA	-	5	0	1	8	-	-	3	17	17	-	-	121	-	-	-	-	4,897	101	-
2b.1.1.10	Containment Air Handling	-	480	12	46	381	34	-	194	1,148	1,148	-	-	5,455	268	-	-	-	239,230	9,033	-
2b.1.1.11	Containment Air Purge	-	158	7	23	170	26	-	75	458	458	-	-	2,427	202	-	-	-	111,933	3,010	-
2b.1.1.12	Containmnt Bldg Spray	-	114	-	-	-	-	-	17	131	-	-	131	-	-	-	-	-	-	2,309	-
2b.1.1.13	Containmnt Bldg Spray - Insulated	-	65	-	-	-	-	-	10	75	-	-	75	-	-	-	-	-	-	1,405	-
2b.1.1.14	Containmnt Bldg Spray - Insulated - RCA	-	24	1	3	34	-	-	12	74	74	-	-	483	-	-	-	-	19,609	451	-
2b.1.1.15	Containmnt Bldg Spray - RCA	-	7	0	0	2	-	-	2	11	11	-	-	31	-	-	-	-	1,257	128	-
2b.1.1.16	Contaminated Waste	54	45	4	7	2	28	-	47	187	187	-	-	35	223	-	-	-	16,145	1,715	-
2b.1.1.17	Demineralized Water	-	119	1	5	51	-	-	38	214	214	-	-	735	-	-	-	-	29,855	2,181	-
2b.1.1.18	Demineralized Water - Insulated	-	175	2	10	97	-	-	60	343	343	-	-	1,388	-	-	-	-	56,380	3,237	-
2b.1.1.19	Demineralized Water - Insulated - RCA	-	55	1	4	42	-	-	21	123	123	-	-	602	-	-	-	-	24,436	960	-
2b.1.1.20	Demineralized Water - RCA	-	32	0	2	17	-	-	11	61	61	-	-	239	-	-	-	-	9,722	532	-
2b.1.1.21	Diesel Generator - Insulated - RCA	-	3	0	1	5	-	-	2	10	10	-	-	72	-	-	-	-	2,914	58	-
2b.1.1.22	Drains - Floor	-	196	13	22	22	86	-	78	418	418	-	-	315	677	-	-	-	57,610	3,727	-
2b.1.1.23	Drains - Floor - Insulated	-	198	15	27	16	109	-	85	450	450	-	-	233	855	-	-	-	66,018	3,789	-
2b.1.1.24	Elec Distribution/Emer - Clean	-	45	-	-	-	-	-	7	52	-	-	52	-	-	-	-	-	-	930	-
2b.1.1.25	Elec Distribution/Emer - Contaminated	-	72	1	3	30	2	-	23	131	131	-	-	423	16	-	-	-	18,220	1,372	-
2b.1.1.26	Elec Distribution/Emer - RCA	-	444	5	28	280	-	-	158	915	915	-	-	4,009	-	-	-	-	162,811	8,216	-
2b.1.1.27	Elec Tunnel Air Handling	-	9	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	195	-

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (continued)																					
2b.1.1.28	Electrical Distrib - Clean	-	24	-	-	-	-	-	4	28	-	-	28	-	-	-	-	-	-	506	-
2b.1.1.29	Electrical Distrib - Contaminated	-	115	1	6	54	4	-	39	219	219	-	-	776	29	-	-	-	33,463	2,203	-
2b.1.1.30	Electrical Distrib - RCA	-	705	10	51	508	-	-	261	1,535	1,535	-	-	7,266	-	-	-	-	295,072	13,100	-
2b.1.1.31	Emerg FW Pumphouse Air Handling	-	12	-	-	-	-	-	2	14	-	-	14	-	-	-	-	-	-	265	-
2b.1.1.32	Fire Protection	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	451	-
2b.1.1.33	Fire Protection - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	37	-
2b.1.1.34	Fire Protection - Insulated - RCA	-	29	0	2	23	-	-	11	66	66	-	-	326	-	-	-	-	13,228	538	-
2b.1.1.35	Fire Protection - RCA	-	234	5	26	255	-	-	101	621	621	-	-	3,648	-	-	-	-	148,135	4,240	-
2b.1.1.36	Hot Water	-	37	-	-	-	-	-	6	43	-	-	43	-	-	-	-	-	-	786	-
2b.1.1.37	Hot Water - Insulated	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	240	-
2b.1.1.38	Hot Water - Insulated - RCA	-	29	0	2	17	-	-	10	58	58	-	-	245	-	-	-	-	9,965	483	-
2b.1.1.39	Hot Water - RCA	-	28	0	2	18	-	-	10	59	59	-	-	263	-	-	-	-	10,675	470	-
2b.1.1.40	Hydrogen Gas - RCA	-	11	0	1	6	-	-	4	23	23	-	-	93	-	-	-	-	3,770	185	-
2b.1.1.41	Incore Instrumentation	-	39	5	11	29	36	-	25	146	146	-	-	414	283	-	-	-	35,537	790	-
2b.1.1.42	Instrument Air	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.43	Instrument Air - RCA	-	254	3	14	136	-	-	86	491	491	-	-	1,941	-	-	-	-	78,817	4,512	-
2b.1.1.44	Leak Detection - RCA	-	9	0	1	5	-	-	3	17	17	-	-	74	-	-	-	-	3,014	144	-
2b.1.1.45	Mechanical Seal Supply - RCA	-	25	0	2	16	-	-	9	52	52	-	-	232	-	-	-	-	9,441	436	-
2b.1.1.46	Miscellaneous Equipment	-	0	-	-	-	-	-	0	0	-	-	0	-	-	-	-	-	-	8	-
2b.1.1.47	Miscellaneous Equipment - RCA	-	60	2	9	85	-	-	29	184	184	-	-	1,213	-	-	-	-	49,265	1,204	-
2b.1.1.48	Nitrogen Gas	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	53	-
2b.1.1.49	Nitrogen Gas - Insulated - RCA	-	31	0	2	18	-	-	11	61	61	-	-	252	-	-	-	-	10,225	503	-
2b.1.1.50	Nitrogen Gas - RCA	-	23	0	1	13	-	-	8	45	45	-	-	182	-	-	-	-	7,411	364	-
2b.1.1.51	Nuclear Inst	-	12	0	1	4	3	-	5	25	25	-	-	60	21	-	-	-	3,842	250	-
2b.1.1.52	Oil Colltn For RC Pumps - RCA	-	87	3	14	140	-	-	45	289	289	-	-	1,998	-	-	-	-	81,142	1,717	-
2b.1.1.53	PAB Air Handling	-	340	8	34	294	21	-	140	838	838	-	-	4,207	165	-	-	-	181,748	6,481	-
2b.1.1.54	PAB Air Handling - Insulated	-	53	4	9	26	25	-	25	143	143	-	-	372	200	-	-	-	28,365	1,008	-
2b.1.1.55	Potable Water	-	76	-	-	-	-	-	11	88	-	-	88	-	-	-	-	-	-	1,688	-
2b.1.1.56	Potable Water - Insulated	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	38	-
2b.1.1.57	Prim Comp Clng Water - Insulated - RCA	-	740	23	117	1,167	-	-	380	2,427	2,427	-	-	16,712	-	-	-	-	678,673	13,808	-
2b.1.1.58	Prim Comp Clng Water - RCA	-	541	23	122	1,214	-	-	338	2,239	2,239	-	-	17,387	-	-	-	-	706,102	10,472	-
2b.1.1.59	RCA Check Point Air Handling	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	82	-
2b.1.1.60	Radiation Monitoring - RCA	-	67	3	16	161	-	-	44	291	291	-	-	2,299	-	-	-	-	93,383	1,329	-
2b.1.1.61	Reactor Coolant	-	146	10	17	24	65	-	60	321	321	-	-	338	508	-	-	-	47,320	2,935	-
2b.1.1.62	Reactor Coolant - Insulated	71	57	6	8	0	33	-	60	235	235	-	-	2	256	-	-	-	17,041	2,393	-
2b.1.1.63	Reactor Make-up Water	-	186	8	24	150	36	-	82	486	486	-	-	2,152	288	-	-	-	106,254	3,627	-
2b.1.1.64	Reactor Make-up Water - Insulated	-	29	3	3	3	13	-	12	64	64	-	-	46	101	-	-	-	8,601	527	-
2b.1.1.65	Release Recovery	-	40	2	6	35	10	-	19	110	110	-	-	495	77	-	-	-	25,141	770	-
2b.1.1.66	Release Recovery - Insulated	-	6	0	1	1	2	-	2	12	12	-	-	9	18	-	-	-	1,554	102	-
2b.1.1.67	Resin Sluicing	89	107	8	16	45	49	-	94	408	408	-	-	638	389	-	-	-	51,344	3,588	-
2b.1.1.68	Rod Control & Position	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	35	-
2b.1.1.69	Roof Drains - Insulated - RCA	-	22	0	2	17	-	-	8	49	49	-	-	245	-	-	-	-	9,931	390	-
2b.1.1.70	Roof Drains - RCA	-	17	0	1	11	-	-	6	35	35	-	-	157	-	-	-	-	6,370	294	-
2b.1.1.71	Safety Injection	-	200	20	62	414	87	-	145	929	929	-	-	5,930	687	-	-	-	286,096	3,995	-
2b.1.1.72	Safety Injection - Insulated	-	134	11	17	47	55	-	58	322	322	-	-	672	431	-	-	-	55,906	2,508	-
2b.1.1.73	Sampling - Insulated	-	201	6	9	27	27	-	63	334	334	-	-	387	213	-	-	-	29,839	4,133	-
2b.1.1.74	Service Air	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	59	-
2b.1.1.75	Service Air - RCA	-	117	1	7	73	-	-	42	241	241	-	-	1,049	-	-	-	-	42,614	1,991	-
2b.1.1.76	Service Water - Insulated - RCA	-	140	9	46	454	-	-	111	760	760	-	-	6,502	-	-	-	-	264,033	2,799	-
2b.1.1.77	Service Water - RCA	-	143	6	33	324	-	-	90	595	595	-	-	4,636	-	-	-	-	188,275	2,716	-
2b.1.1.78	Sta Info & Alarm Comp	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	62	-
2b.1.1.79	Vents - Insulated - RCA	-	13	0	1	8	-	-	5	27	27	-	-	109	-	-	-	-	4,434	218	-
2b.1.1.80	Vents - RCA	-	97	2	10	99	-	-	41	249	249	-	-	1,417	-	-	-	-	57,545	1,780	-
2b.1.1.81	WP - Liquid Drains	-	464	37	60	64	233	-	197	1,054	1,054	-	-	911	1,835	-	-	-	158,163	8,696	-
2b.1.1.82	Waste Gas - Insulated	-	108	13	22	43	74	-	57	317	317	-	-	614	586	-	-	-	63,715	2,030	-
2b.1.1.83	Waste Processing Air Handling	-	569	11	47	404	28	-	218	1,277	1,277	-	-	5,778	222	-	-	-	249,327	10,558	-
2b.1.1.84	Waste Processing Liquid	3	19	1	1	3	5	-	8	40	40	-	-	38	36	-	-	-	3,906	372	-
2b.1.1.85	Waste Processing Liquid - Insulated	362	330	33	62	167	197	-	350	1,500	1,500	-	-	2,389	1,562	-	-	-	199,370	11,394	-
2b.1.1.86	Waste Processing Liquid - Yard	-	26	2	4	1	17	-	12	64	64	-	-	21	137	-	-	-	9,886	484	-
2b.1.1.87	Waste Processing Solid - Insul - RCA	-	341	9	48	472	-	-	164	1,033	1,033	-	-	6,759	-	-	-	-	274,481	6,307	-
2b.1.1.88	Waste Processing Solid - RCA	-	3	0	0	2	-	-	1	7	7	-	-	35	-	-	-	-	1,421	52	-
2b.1.1	Totals	1,564	11,441	561	1,513	9,304	2,484	-	5,898	32,764	32,266	-	498	133,196	19,646	-	-	-	6,702,845	241,374	-
2b.1.2	Scaffolding in support of decommissioning	-	1,015	20	11	79	11	-	272	1,409	1,409	-	-	1,025	90	-	-	-	52,107	22,461	-

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Decontamination of Site Buildings																					
2b.1.3.1	Containment	1,240	1,787	554	1,157	280	3,143	-	2,124	10,285	10,285	-	-	4,016	31,894	-	-	-	2,567,388	54,300	-
2b.1.3.2	Administration Building-Limited Areas	115	38	10	24	-	34	-	80	300	300	-	-	-	554	-	-	-	48,750	2,875	-
2b.1.3.3	Containment Enclosure Ventilation	28	11	3	7	0	9	-	20	78	78	-	-	5	154	-	-	-	13,736	727	-
2b.1.3.4	Main Steam & Feedwater Pipe Chase	69	3	0	1	1	1	-	36	110	110	-	-	19	14	-	-	-	1,928	1,417	-
2b.1.3.5	Miscellaneous Structures	8	3	1	2	-	3	-	6	22	22	-	-	-	46	-	-	-	4,014	206	-
2b.1.3.6	Non-Essential Switchgear Room	3	1	0	1	-	1	-	2	8	8	-	-	-	17	-	-	-	1,482	76	-
2b.1.3.7	Primary Auxiliary Building	286	154	30	76	47	100	-	228	921	921	-	-	672	1,654	-	-	-	171,902	8,216	-
2b.1.3.8	RCA Storage Facility	41	0	0	0	-	0	-	21	63	63	-	-	-	4	-	-	-	342	823	-
2b.1.3.9	Waste Processing	423	215	43	108	66	143	-	331	1,330	1,330	-	-	943	2,362	-	-	-	245,080	11,908	-
2b.1.3	Totals	2,214	2,212	642	1,376	395	3,433	-	2,848	13,118	13,118	-	-	5,655	36,698	-	-	-	3,054,622	80,549	-
2b.1	Subtotal Period 2b Activity Costs	3,777	14,668	1,222	2,899	9,778	5,928	-	9,018	47,291	46,793	-	498	139,875	56,435	-	-	-	9,809,575	344,385	-
Period 2b Additional Costs																					
2b.2.1	Remedial Action Surveys	-	-	-	-	-	-	2,687	806	3,493	3,493	-	-	-	-	-	-	-	-	48,748	-
2b.2.2	Excavation of Underground Services	-	2,288	-	-	-	-	868	473	3,629	-	-	3,629	-	-	-	-	-	-	18,000	-
2b.2	Subtotal Period 2b Additional Costs	-	2,288	-	-	-	-	3,555	1,280	7,123	3,493	-	3,629	-	-	-	-	-	-	66,748	-
Period 2b Collateral Costs																					
2b.3.1	Process decommissioning water waste	191	-	110	556	-	518	-	319	1,695	1,695	-	-	-	1,261	-	-	-	75,671	246	-
2b.3.2	Process decommissioning chemical flush waste	3	-	89	578	-	776	-	291	1,736	1,736	-	-	-	1,063	-	-	-	113,254	199	-
2b.3.3	Small tool allowance	-	248	-	-	-	-	-	37	285	285	-	-	-	-	-	-	-	-	-	-
2b.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	55,465	8,320	63,784	-	63,784	-	-	-	-	-	-	-	-	-
2b.3.5	NEI Program Fees	-	-	-	-	-	-	342	51	394	394	-	-	-	-	-	-	-	-	-	-
2b.3.6	N.H. Disposal Tax	-	-	-	-	-	-	975	244	1,219	1,219	-	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	193	248	199	1,134	-	1,294	56,782	9,262	69,113	5,329	63,784	-	-	2,324	-	-	-	188,925	445	-
Period 2b Period-Dependent Costs																					
2b.4.1	Decon supplies	946	-	-	-	-	-	-	236	1,182	1,182	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,739	174	1,912	1,912	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	2,759	-	-	-	-	-	690	3,449	3,449	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	4,540	-	-	-	-	-	681	5,221	5,221	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	111	48	-	443	-	129	731	731	-	-	-	6,268	-	-	-	125,364	204	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	4,722	708	5,430	5,430	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,977	198	2,174	2,174	-	-	-	-	-	-	-	-	-	-
2b.4.9	Emergency Planning Fees	-	-	-	-	-	-	180	18	198	-	198	-	-	-	-	-	-	-	-	-
2b.4.10	Site O&M Cost	-	-	-	-	-	-	1,172	176	1,348	1,348	-	-	-	-	-	-	-	-	-	-
2b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	1,855	278	2,133	-	2,133	-	-	-	-	-	-	-	-	-
2b.4.12	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	470	71	541	541	-	-	-	-	-	-	-	-	-	-
2b.4.13	ISFSI Operating Costs	-	-	-	-	-	-	224	34	258	-	258	-	-	-	-	-	-	-	-	-
2b.4.14	Security Staff Cost	-	-	-	-	-	-	17,895	2,684	20,579	20,579	-	-	-	-	-	-	-	-	-	523,383
2b.4.15	DOC Staff Cost	-	-	-	-	-	-	30,058	4,509	34,566	34,566	-	-	-	-	-	-	-	-	-	357,074
2b.4.16	Utility Staff Cost	-	-	-	-	-	-	41,686	6,253	47,939	47,939	-	-	-	-	-	-	-	-	-	662,789
2b.4	Subtotal Period 2b Period-Dependent Costs	946	7,299	111	48	-	443	101,977	16,838	127,662	125,073	2,589	-	-	6,268	-	-	-	125,364	204	1,543,246
2b.0	TOTAL PERIOD 2b COST	4,917	24,503	1,532	4,082	9,778	7,665	162,315	36,398	251,190	180,689	66,374	4,127	139,875	65,027	-	-	-	10,123,860	411,782	1,543,246
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d.1.1	Remove spent fuel racks	394	39	120	96	-	415	-	337	1,401	1,401	-	-	-	3,269	-	-	-	216,101	900	-
Disposal of Plant Systems																					
2d.1.2.1	FSB Air Handling	-	164	5	21	181	13	-	75	458	458	-	-	2,584	101	-	-	-	111,602	2,983	-
2d.1.2.2	Fuel Handling	-	181	13	34	172	74	-	96	570	570	-	-	2,457	583	-	-	-	138,296	3,626	-
2d.1.2.3	Spent Fuel Pool Cooling	-	258	32	58	96	210	-	143	798	798	-	-	1,371	1,654	-	-	-	165,083	5,007	-
2d.1.2	Totals	-	603	50	114	448	297	-	314	1,826	1,826	-	-	6,412	2,338	-	-	-	414,981	11,617	-
Decontamination of Site Buildings																					
2d.1.3.1	Fuel Storage	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-
2d.1.3	Totals	661	732	11	31	170	23	-	550	2,178	2,178	-	-	2,429	387	-	-	-	132,211	26,387	-
2d.1.4	Scaffolding in support of decommissioning	-	203	4	2	16	2	-	54	282	282	-	-	205	18	-	-	-	10,421	4,492	-
2d.1	Subtotal Period 2d Activity Costs	1,055	1,577	185	244	633	737	-	1,256	5,687	5,687	-	-	9,047	6,012	-	-	-	773,714	43,397	-

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2d Additional Costs																					
2d.2.1	Final Site Survey Program Management	-	-	-	-	-	-	1,233	370	1,603	1,603	-	-	-	-	-	-	-	-	-	12,480
2d.2.2	Remedial Action Surveys	-	-	-	-	-	-	989	297	1,286	1,286	-	-	-	-	-	-	-	-	17,939	-
2d.2.3	Fuel Pool Concrete Decon	284	-	38	428	-	541	8	346	1,646	1,646	-	-	-	8,890	-	-	-	782,276	1,071	-
2d.2.4	Operational Tools & Equipment	-	-	15	69	504	-	-	87	675	675	-	-	11,710	-	-	-	-	292,750	32	-
2d.2	Subtotal Period 2d Additional Costs	284	-	53	497	504	541	2,230	1,100	5,209	5,209	-	-	11,710	8,890	-	-	-	1,075,026	19,042	12,480
Period 2d Collateral Costs																					
2d.3.1	Process decommissioning water waste	56	-	33	166	-	154	-	95	504	504	-	-	-	376	-	-	-	22,535	73	-
2d.3.3	Small tool allowance	-	39	-	-	-	-	-	6	45	45	-	-	-	-	-	-	-	-	-	-
2d.3.4	Decommissioning Equipment Disposition	-	-	117	73	464	67	-	109	830	830	-	-	6,000	529	-	-	-	304,968	88	-
2d.3.5	NEI Program Fees	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
2d.3.6	N.H. Disposal Tax	-	-	-	-	-	-	262	65	327	327	-	-	-	-	-	-	-	-	-	-
2d.3	Subtotal Period 2d Collateral Costs	56	39	150	238	464	222	339	287	1,795	1,795	-	-	6,000	905	-	-	-	327,503	161	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	122	-	-	-	-	-	-	30	152	152	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	640	64	704	704	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	609	-	-	-	-	-	152	761	761	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	1,671	-	-	-	-	-	251	1,921	1,921	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	29	13	-	116	-	34	191	191	-	-	-	1,638	-	-	-	32,763	53	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	961	144	1,105	1,105	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	415	41	456	456	-	-	-	-	-	-	-	-	-	-
2d.4.9	Emergency Planning Fees	-	-	-	-	-	-	66	7	73	-	73	-	-	-	-	-	-	-	-	-
2d.4.10	Site O&M Cost	-	-	-	-	-	-	431	65	496	496	-	-	-	-	-	-	-	-	-	-
2d.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	346	52	398	398	-	-	-	-	-	-	-	-	-	-
2d.4.12	ISFSI Operating Costs	-	-	-	-	-	-	82	12	95	-	95	-	-	-	-	-	-	-	-	-
2d.4.13	Security Staff Cost	-	-	-	-	-	-	2,441	366	2,807	2,807	-	-	-	-	-	-	-	-	-	75,600
2d.4.14	DOC Staff Cost	-	-	-	-	-	-	7,718	1,158	8,875	8,875	-	-	-	-	-	-	-	-	-	90,000
2d.4.15	Utility Staff Cost	-	-	-	-	-	-	11,291	1,694	12,985	12,985	-	-	-	-	-	-	-	-	-	171,900
2d.4	Subtotal Period 2d Period-Dependent Costs	122	2,280	29	13	-	116	24,391	4,070	31,019	30,851	168	-	-	1,638	-	-	-	32,763	53	337,500
2d.0	TOTAL PERIOD 2d COST	1,516	3,896	417	992	1,601	1,615	26,960	6,713	43,710	43,542	168	-	26,757	17,444	-	-	-	2,209,007	62,653	349,980
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
2f.1.2	Terminate license									a											
2f.1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	167	50	217	217	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f.2.1	Final Site Survey	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
2f.2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	12,125	3,637	15,762	15,762	-	-	-	-	-	-	-	-	223,938	6,240
Period 2f Collateral Costs																					
2f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,446	217	1,663	1,663	-	-	-	-	-	-	-	-	-	-
2f.3.2	NEI Program Fees	-	-	-	-	-	-	45	7	52	52	-	-	-	-	-	-	-	-	-	-
2f.3.3	N.H. Disposal Tax	-	-	-	-	-	-	5	1	7	7	-	-	-	-	-	-	-	-	-	-
2f.3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	1,496	225	1,721	1,721	-	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f.4.1	Insurance	-	-	-	-	-	-	556	56	612	612	-	-	-	-	-	-	-	-	-	-
2f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f.4.3	Health physics supplies	-	839	-	-	-	-	-	210	1,049	1,049	-	-	-	-	-	-	-	-	-	-
2f.4.4	Disposal of DAW generated	-	-	6	3	-	25	-	7	41	41	-	-	-	354	-	-	-	7,071	12	-
2f.4.5	Plant energy budget	-	-	-	-	-	-	386	58	444	444	-	-	-	-	-	-	-	-	-	-
2f.4.6	NRC Fees	-	-	-	-	-	-	361	36	397	397	-	-	-	-	-	-	-	-	-	-
2f.4.7	Emergency Planning Fees	-	-	-	-	-	-	58	6	64	-	64	-	-	-	-	-	-	-	-	-
2f.4.8	Site O&M Cost	-	-	-	-	-	-	375	56	431	431	-	-	-	-	-	-	-	-	-	-
2f.4.9	ISFSI Operating Costs	-	-	-	-	-	-	72	11	82	-	82	-	-	-	-	-	-	-	-	-
2f.4.10	Security Staff Cost	-	-	-	-	-	-	2,123	318	2,442	2,442	-	-	-	-	-	-	-	-	-	65,760
2f.4.11	DOC Staff Cost	-	-	-	-	-	-	4,998	750	5,748	5,748	-	-	-	-	-	-	-	-	-	57,149
2f.4.12	Utility Staff Cost	-	-	-	-	-	-	5,589	838	6,428	6,428	-	-	-	-	-	-	-	-	-	80,634
2f.4	Subtotal Period 2f Period-Dependent Costs	-	839	6	3	-	25	14,519	2,346	17,737	17,591	146	-	-	354	-	-	-	7,071	12	203,543

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2f.0	TOTAL PERIOD 2f COST	-	839	6	3	-	25	28,306	6,258	35,437	35,292	146	-	-	354	-	-	-	7,071	223,949	209,783
PERIOD 2 TOTALS		7,882	62,079	20,635	16,573	25,906	43,696	303,471	98,124	578,366	497,596	76,574	4,197	382,025	149,275	963	393	-	26,662,880	1,039,965	3,233,510
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Containment	-	5,322	-	-	-	-	-	798	6,120	-	-	6,120	-	-	-	-	-	-	62,786	-
3b.1.1.2	Administration Building-Limited Areas	-	8	-	-	-	-	-	1	9	-	-	9	-	-	-	-	-	-	131	-
3b.1.1.3	Containment Enclosure Ventilation	-	162	-	-	-	-	-	24	187	-	-	187	-	-	-	-	-	-	2,048	-
3b.1.1.4	Emergency Feedwater Pump Building	-	278	-	-	-	-	-	42	319	-	-	319	-	-	-	-	-	-	3,194	-
3b.1.1.5	Equipment Vault	-	142	-	-	-	-	-	21	163	-	-	163	-	-	-	-	-	-	1,769	-
3b.1.1.6	Main Steam & Feedwater Pipe Chase	-	614	-	-	-	-	-	92	706	-	-	706	-	-	-	-	-	-	7,668	-
3b.1.1.7	Miscellaneous Structures	-	17	-	-	-	-	-	3	20	-	-	20	-	-	-	-	-	-	251	-
3b.1.1.8	Primary Auxiliary Building	-	1,527	-	-	-	-	-	229	1,757	-	-	1,757	-	-	-	-	-	-	18,811	-
3b.1.1.9	Security Improvements	-	630	-	-	-	-	-	95	725	-	-	725	-	-	-	-	-	-	6,420	-
3b.1.1.10	Steam Generator Blowdown Recovery	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	435	-
3b.1.1.11	Waste Processing	-	2,010	-	-	-	-	-	301	2,311	-	-	2,311	-	-	-	-	-	-	25,863	-
3b.1.1.12	Fuel Storage	-	887	-	-	-	-	-	133	1,020	-	-	1,020	-	-	-	-	-	-	9,965	-
3b.1.1	Totals	-	11,627	-	-	-	-	-	1,744	13,371	-	-	13,371	-	-	-	-	-	-	139,341	-
Site Closeout Activities																					
3b.1.2	Remove Rubble	-	404	-	-	-	-	-	61	465	-	-	465	-	-	-	-	-	-	2,479	-
3b.1.3	Grade & landscape site	-	367	-	-	-	-	-	55	423	-	-	423	-	-	-	-	-	-	915	-
3b.1.4	Final report to NRC	-	-	-	-	-	-	177	27	204	204	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	12,398	-	-	-	-	177	1,886	14,462	204	-	14,258	-	-	-	-	-	-	142,736	1,560
Period 3b Additional Costs																					
3b.2.1	Concrete Crushing	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
3b.2	Subtotal Period 3b Additional Costs	-	405	-	-	-	-	9	62	476	-	-	476	-	-	-	-	-	-	2,250	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	107	-	-	-	-	-	16	123	-	-	123	-	-	-	-	-	-	-	-
3b.3.2	NEI Program Fees	-	-	-	-	-	-	113	17	130	-	-	130	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	107	-	-	-	-	113	33	254	-	-	254	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	1,401	140	1,542	-	1,542	-	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	5,765	-	-	-	-	-	865	6,630	-	-	6,630	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	486	73	559	-	-	559	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	645	64	709	-	709	-	-	-	-	-	-	-	-	-
3b.4.6	Emergency Planning Fees	-	-	-	-	-	-	145	15	160	-	160	-	-	-	-	-	-	-	-	-
3b.4.7	Site O&M Cost	-	-	-	-	-	-	945	142	1,086	1,086	-	-	-	-	-	-	-	-	-	-
3b.4.8	ISFSI Operating Costs	-	-	-	-	-	-	180	27	208	-	208	-	-	-	-	-	-	-	-	-
3b.4.9	Security Staff Cost	-	-	-	-	-	-	5,347	802	6,149	0	4,673	1,476	-	-	-	-	-	-	-	165,600
3b.4.10	DOC Staff Cost	-	-	-	-	-	-	12,187	1,828	14,015	-	-	14,015	-	-	-	-	-	-	-	134,057
3b.4.11	Utility Staff Cost	-	-	-	-	-	-	7,588	1,138	8,726	0	2,094	6,632	-	-	-	-	-	-	-	107,443
3b.4	Subtotal Period 3b Period-Dependent Costs	-	5,765	-	-	-	-	28,924	5,094	39,783	1,086	9,386	29,311	-	-	-	-	-	-	-	407,100
3b.0	TOTAL PERIOD 3b COST	-	18,675	-	-	-	-	29,224	7,075	54,975	1,290	9,386	44,299	-	-	-	-	-	-	144,985	408,660
PERIOD 3c - Fuel Storage Operations																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c.3.1	NEI Program Fees	-	-	-	-	-	-	1,068	160	1,228	-	1,228	-	-	-	-	-	-	-	-	-
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	1,068	160	1,228	-	1,228	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	13,204	1,320	14,524	-	14,524	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	6,077	608	6,685	-	6,685	-	-	-	-	-	-	-	-	-
3c.4.5	Emergency Planning Fees	-	-	-	-	-	-	1,370	137	1,508	-	1,508	-	-	-	-	-	-	-	-	-

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3c Period-Dependent Costs (continued)																					
3c.4.6	ISFSI Operating Costs	-	-	-	-	-	-	1,701	255	1,956	-	1,956	-	-	-	-	-	-	-	-	-
3c.4.7	Security Staff Cost	-	-	-	-	-	-	38,420	5,763	44,183	-	44,183	-	-	-	-	-	-	-	-	1,151,606
3c.4.8	Utility Staff Cost	-	-	-	-	-	-	17,371	2,606	19,976	-	19,976	-	-	-	-	-	-	-	-	250,753
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	78,143	10,689	88,831	-	88,831	-	-	-	-	-	-	-	-	1,402,359
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	79,210	10,849	90,059	-	90,059	-	-	-	-	-	-	-	-	1,402,359
PERIOD 3d - Fuel Storage Operations/Shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1.1	Totals	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	925	-	-	12,501	-	2,106	15,533	15,533	-	-	-	-	-	-	2,217	436,202	-	-
Period 3d Collateral Costs																					
3d.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	19,613	2,942	22,555	-	22,555	-	-	-	-	-	-	-	-	-
3d.3.2	NEI Program Fees	-	-	-	-	-	-	1,440	216	1,656	-	1,656	-	-	-	-	-	-	-	-	-
3d.3.3	N.H. Disposal Tax	-	-	-	-	-	-	33	8	42	-	42	-	-	-	-	-	-	-	-	-
3d.3	Subtotal Period 3d Collateral Costs	-	-	-	-	-	-	21,087	3,166	24,253	-	24,253	-	-	-	-	-	-	-	-	-
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	17,802	1,780	19,582	-	19,582	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3d.4.4	NRC ISFSI Fees	-	-	-	-	-	-	8,193	819	9,013	-	9,013	-	-	-	-	-	-	-	-	-
3d.4.5	Emergency Planning Fees	-	-	-	-	-	-	1,848	185	2,033	-	2,033	-	-	-	-	-	-	-	-	-
3d.4.6	ISFSI Operating Costs	-	-	-	-	-	-	2,293	344	2,637	-	2,637	-	-	-	-	-	-	-	-	-
3d.4.7	Security Staff Cost	-	-	-	-	-	-	51,800	7,770	59,570	-	59,570	-	-	-	-	-	-	-	-	1,552,657
3d.4.8	Utility Staff Cost	-	-	-	-	-	-	23,420	3,513	26,933	-	26,933	-	-	-	-	-	-	-	-	338,079
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	105,356	14,411	119,767	-	119,767	-	-	-	-	-	-	-	-	1,890,736
3d.0	TOTAL PERIOD 3d COST	-	-	925	-	-	12,501	126,443	19,684	159,553	15,533	144,020	-	-	-	-	-	2,217	436,202	-	1,890,736
PERIOD 3e - ISFSI Decontamination																					
Period 3e Direct Decommissioning Activities																					
Period 3e Additional Costs																					
3e.2.1	License Termination ISFSI	-	23	53	608	-	1,198	1,978	965	4,824	4,824	-	-	-	15,728	-	-	-	1,498,289	11,051	1,968
3e.2	Subtotal Period 3e Additional Costs	-	23	53	608	-	1,198	1,978	965	4,824	4,824	-	-	-	15,728	-	-	-	1,498,289	11,051	1,968
Period 3e Collateral Costs																					
3e.3.1	N.H. Disposal Tax	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	-	-	-	-	-	236	59	295	295	-	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	67	17	84	84	-	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3e.4.3	Plant energy budget	-	-	-	-	-	-	87	22	108	108	-	-	-	-	-	-	-	-	-	-
3e.4.4	Security Staff Cost	-	-	-	-	-	-	183	46	228	228	-	-	-	-	-	-	-	-	-	5,096
3e.4.5	Utility Staff Cost	-	-	-	-	-	-	271	68	338	338	-	-	-	-	-	-	-	-	-	3,866
3e.4	Subtotal Period 3e Period-Dependent Costs	-	-	-	-	-	-	607	152	759	759	-	-	-	-	-	-	-	-	-	8,961
3e.0	TOTAL PERIOD 3e COST	-	23	53	608	-	1,198	2,821	1,175	5,877	5,877	-	-	-	15,728	-	-	-	1,498,289	11,051	10,929
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Direct Decommissioning Activities																					
Period 3f Additional Costs																					
3f.2.1	Site Restoration ISFSI	-	901	-	-	-	-	528	214	1,643	-	-	1,643	-	-	-	-	-	-	6,788	160
3f.2	Subtotal Period 3f Additional Costs	-	901	-	-	-	-	528	214	1,643	-	-	1,643	-	-	-	-	-	-	6,788	160

Table D-2
Seabrook Station
Scenario 4: 2050 Shutdown, DECON Alternative, 2100 DOE End Date
(thousands of 2014 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	7	-	-	-	-	-	1	8	-	-	8	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	7	-	-	-	-	-	1	8	-	-	8	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3f.4.3	Heavy equipment rental	-	150	-	-	-	-	-	23	173	-	-	173	-	-	-	-	-	-	-	-
3f.4.4	Plant energy budget	-	-	-	-	-	-	44	7	51	-	-	51	-	-	-	-	-	-	-	-
3f.4.5	Security Staff Cost	-	-	-	-	-	-	94	14	108	-	-	108	-	-	-	-	-	-	-	2,610
3f.4.6	Utility Staff Cost	-	-	-	-	-	-	118	18	136	-	-	136	-	-	-	-	-	-	-	1,620
3f.4	Subtotal Period 3f Period-Dependent Costs	-	150	-	-	-	-	256	61	467	-	-	467	-	-	-	-	-	-	-	4,230
3f.0	TOTAL PERIOD 3f COST	-	1,058	-	-	-	-	784	276	2,118	-	-	2,118	-	-	-	-	-	-	6,788	4,390
PERIOD 3 TOTALS		-	19,756	978	608	-	13,699	238,482	39,060	312,583	22,701	243,466	46,417	-	15,728	-	-	2,217	1,934,492	162,824	3,717,074
TOTAL COST TO DECOMMISSION		**10,423**	**84,501**	**21,674**	**17,384**	**25,906**	**58,096**	**656,348**	**155,587**	**1,029,918**	**647,891**	**330,005**	**52,022**	**382,025**	**166,590**	**1,075**	**393**	**2,217**	**28,667,350**	**1,231,771**	**8,176,328**

TOTAL COST TO DECOMMISSION WITH 17.79% CONTINGENCY:	**$1,029,918**	**thousands of 2014 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 62.91% OR:	**$647,891**	**thousands of 2014 dollars**
SPENT FUEL MANAGEMENT COST IS 32.04% OR:	**$330,005**	**thousands of 2014 dollars**
NON-NUCLEAR DEMOLITION COST IS 5.05% OR:	**$52,022**	**thousands of 2014 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	**168,057**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	**2,217**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**41,694**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,231,771**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX E

ISFSI DECOMMISSIONING

Table E
Seabrook Station
ISFSI Decommissioning Cost Estimate
(thousands of 2014 dollars)

Activity Description	Removal Costs	Packaging Costs	Transport Costs	LLRW Disposal Costs	Other Costs	Total Costs	Burial Volume Class A (cubic feet)	Craft Manhours	Oversight and Contractor Manhours
Decommissioning Contractor									
Planning (characterization, specs and procedures)	-	-	-	-	217	217	-	-	1,096
Decontamination (activated HSM disposition)	23	53	608	1,198	-	1,881	15,728	169	-
License Termination (radiological surveys)	-	-	-	-	1,085	1,085	-	8,700	-
Subtotal	**23**	**53**	**608**	**1,198**	**1,302**	**3,183**	**15,728**	**8,869**	**1,096**
Supporting Costs									
NRC and NRC Contractor Fees and Costs	-	-	-	-	396.7	396.7	-	-	776
N.H. Disposal Tax	-	-	-	-	235.9	235.9	-	-	
Insurance	-	-	-	-	67.1	67.1	-	-	
Property taxes	-	-	-	-	-	-	-	-	
Plant energy budget	-	-	-	-	86.7	86.7	-	-	
Security Staff Cost	-	-	-	-	182.7	182.7	-	-	5,096
Oversight Staff Cost	-	-	-	-	270.7	270.7	-	-	3,866
Subtotal	**-**	**-**	**-**	**-**	**1,240**	**1,240**	**-**	**-**	**9,737**
Total (w/o contingency)	**23**	**53**	**608**	**1,198**	**2,542**	**4,423**	**15,728**	**8,869**	**10,833**
Total (w/25% contingency)	**29**	**66**	**759**	**1,497**	**3,177**	**5,529**			

The application of contingency (25%) is consistent with the evaluation criteria referenced by the NRC in NUREG-1757 ("Consolidated Decommissioning Guidance, Financial Assurance, Recordkeeping, and Timeliness," U.S. NRC's Office of Nuclear Material Safety and Safeguards, NUREG-1757, Vol. 3, Rev. 1, February 2012)

ATTACHMENT F

Escalation Analysis for the Seabrook Station by TLG

Document N35-1705-002, Rev. 0

ESCALATION ANALYSIS

for the

SEABROOK STATION

2014 DECOMMISSIONING COST ESTIMATE

prepared for

NextEra Energy Seabrook, LLC

prepared by

TLG Services, Inc.
Bridgewater, Connecticut

May 2015

{W2354388.2}

APPROVALS

Project Manager	William A. Cloutier, Jr.	13 May 2015
	William A. Cloutier, Jr.	**Date**
Technical Manager		5/13/15
	Francis W. Seymore	**Date**

REVISION LOG

No.	Date	Item Revised	Reason for Revision
0	05-13-2015		Original Issue

DECOMMISSIONING COST ESCALATION STUDY

Purpose

The Nuclear Decommissioning Financing Committee ("NDFC" or "Committee") reviews the status of the nuclear decommissioning trust fund and certain of the funding assumptions annually to ensure that changes are captured and embedded in the financial models that determine the contributions that are necessary to achieve the targeted fund balances by the time the funds are needed to decommission the Seabrook Station. By statute, the estimate of the costs to decommission the Seabrook Station is updated every four years. As it has in the past, TLG Services Inc. ("TLG") prepared the current decommissioning cost estimate, which reflects the cost to decommission the Plant in year-end 2014 (i.e., nominal) dollars. Because the actual decommissioning will not occur for many years and, under certain scenarios, may continue for decades, the nominal-dollar estimates must be escalated into the year of expenditure. That is, we must determine the dollar value of all expenditures at the time they are expected to be incurred. Those escalated dollars then provide the basis for financial planning and asset management. Because many of the decommissioning activities occur long in the future, small fluctuations in escalation on the cost side, and investment earnings on the trust balance side, have an exponential impact on the resources required over the long periods of time associated with most decommissioning scenarios.

In preparation for the four-year comprehensive review by the Committee in Docket No. 2007-1, TLG prepared a decommissioning cost analysis for the Seabrook Station for NextEra Energy. As an extension of this analysis, which was developed in constant 2006 dollars, TLG developed schedules of the inflated costs in 2007.[1] In that analysis, TLG reviewed each applicable cost component separately to determine the rate by which each component was expected to escalate annually and, using an accepted aggregation methodology, determined that the decommissioning costs – in aggregate – were expected to escalate annually at a composite rate of 3.04%, rather than the then-extant assumption of 4.5%. The Committee in its Final Report and Order in that docket adopted certain elements of TLG's analysis, but determined (1) there was insufficient support for the labor escalation factors and the "other" factor, and (2) in the interests of gradualism, the Committee approved of a cost escalation factor of 4.2%.

1 "Escalation Analysis for the Seabrook Station," TLG Document F08-1553-003, Rev. 0, dated February 2007

In Docket NDFC 2009-1, TLG updated the cost schedules using 2008 [2] indices and addressed the Committee's questions concerning the 2007 analysis. That updated and improved analysis indicated that the rate at which the decommissioning costs are growing had slowed further, escalating annually at 2.91% through the end of the decommissioning period. The cost escalation report, prepared by TLG, was based upon forecasting indices developed by IHS Global Insight. The report was reviewed by IHS Global Insight and found to be reasonable. The Committee, however, determined that cost escalation should be examined during the four-year comprehensive review process and, accordingly, declined to adjust the escalation factor established in NDFC Docket 2007-1 of 4.2%.

In Docket NDFC 2011-1, TLG updated the cost schedules using 2010[3] indices. That updated analysis indicated that the rate at which the decommissioning costs are growing continues to slow, escalating annually at 2.68% through the end of the decommissioning period. The cost escalation report, prepared by TLG, was based upon forecasting indices developed by IHS Global Insight. The report was reviewed by IHS Global Insight and found to be reasonable. The Committee reviewed the escalation factor established in NDFC Docket 2007-1 of 4.2% and, in the interests of gradualism, approved a reduction in the cost escalation factor to 3.85%.

Consistent with past practice, in conjunction with its updated decommissioning cost estimates (in 2014 dollars) presented in this docket, TLG was asked to update its cost escalation analysis. The results reflect that the rate at which the decommissioning costs are escalating has slowed further and that those costs are expected to escalate annually at 2.58% through the end of the decommissioning period. This means that for the fourth comprehensive update in a row, the best estimate of the annual rate at which the decommissioning costs will escalate is less than 3%; materially lower than the 3.85% factor assumed for funding purposes. The following narrative describes the methodology used to escalate the schedule of decommissioning expenditures.

<u>Background</u>

Having developed the year-end best estimate of the costs to decommission Seabrook Station, the mathematics to transform those costs to the year in which they will actually be incurred is relatively straightforward. The key to the analysis is selecting the appropriate forecasting indices for each of the major cost components.

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2 "Escalation Analysis for the Seabrook Station," TLG Document F08-1553-004, Rev. 0, dated March 2009

3 "Escalation Analysis for the Seabrook Station, 2010 Decommissioning Cost Estimate," TLG Document N35-1636-002, Rev. 0, dated May 2011

For that, TLG has relied upon guidance from the Nuclear Regulatory Commission ("NRC") and the industry-wide recognized expertise of IHS.

The NRC divides its reference costs for decommissioning into categories of labor, energy, and low-level radioactive waste (LLRW) disposal (also referred to as "Burial"). To provide guidance to operators and regulators and promote uniformity, the NRC periodically reissues NUREG-1307, "Report on Waste Burial Charges." While the escalation of a portion of the disposal costs for LLRW at Seabrook Station are governed by contract, NUREG-1307 is helpful in that it can be used to monitor the change in disposal costs over time and identifies the appropriate indices that should be used to escalate the labor and energy cost components: the Employment Cost Index published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS) and the Producer Price Index, respectively.

TLG also allocates its costs for decommissioning into categories, with the NRC's labor category further subdivided into "labor" and "equipment and materials," and an "other" category added for miscellaneous fees, taxes and other unique or one-time expenditures.

Consistent with standards defined in the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC), Topic 410-20,[4] TLG develops future cash flows by escalating four of the cost categories (labor, equipment and materials, energy and other) with indices provided by IHS. IHS is a publically traded company which acquired Global Insight in 2008. The combined company includes well-known businesses such as Cambridge Energy Research Associates (CERA), Jane's Information Group, and IHS Herold; it also includes the former companies known as DRI (Data Resources, Inc.) and WEFA (Wharton Econometric Forecasting Associates). For this analysis, the escalation rate for the disposal of the majority of the volume of LLRW has been established based upon an agreement between NextEra Energy Seabrook and Energy*Solutions*, the disposal service provider.

Since the timeframe of decommissioning typically exceeds that of the published indices, for years beyond the published index, the inflation factor is determined using a "moving-average" method, averaging the most recent 25 years of indices to determine the future year index. This is a well-accepted methodology for determining longer-term projections, one that has been reviewed and deemed appropriate by IHS, and is the same methodology that was used in prior escalation reports presented to the Committee.

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4 Accounting Standards Codification, Topic 410-20, Financial Accounting Standards Board, July 2009. ASC 410-20-55-14 states: "It is expected that uncertainties about the amount and timing of future cash flows can be accommodated by using the expected present value technique and therefore will not prevent the determination of a reasonable estimate of fair value."

Assumptions and Methodology

The base year (2014) costs were extracted from the "Decommissioning Cost Analysis for the Seabrook Station" (Document No. N35-1705-001), issued in May 2015. The decommissioning cost scenarios selected for inclusion in this escalation analysis are listed below:

Scenario (-001 Report Designation)	Cost (millions)	Shutdown Date	End Date
2 (NDFC)	1,118.6	2030	2101
4 (NDFC)	1,029.9	2050	2101

The scenarios analyzed were based upon (1) the current license expiration date (40 year operating life); and (2) license expiration assuming the NRC grants the Plant's request for license extension to 2050. While TLG believes the spent fuel and ISFSI decommissioning activities will be completed much sooner, the end date for the cost escalation analysis coincides with the cessation of dry fuel storage operations and decommissioning of the independent dry fuel storage facility (ISFSI), assumed by the Committee to be 2101.

Decommissioning costs were divided into the five escalation categories, for which future rate of inflation factors were established. The five categories are:

Labor — Wages, fringes and benefits for craft, salaries and benefits for professional workers, clerical, administrative, service, contract workers, as well as for certain trades

Equipment & Material — Heavy equipment, specialty tooling, packaging, small tools, construction materials, consumables, rental equipment and temporary construction facilities (trailers)

Energy — Electrical power purchases (as a large industrial customer) to support site operations

LLRW Waste Disposal — Costs for the processing of low-level radioactive waste as well as for the controlled disposal of material that cannot be recovered (released for unrestricted use)

Other	Site operating costs (not already accounted for), for example, taxes, fees, and costs for specialized services and project support activities (may include unspecified contributions from labor, equipment and materials, and transportation), and payments for one-time disposal services (e.g., GTCC)

The following tables reflect the percentage of each cost component relative to the total costs to decommission the Plant:

Cost Category	Scenario 2 (NDFC 2030) Costs (thousands of 2014 $)	Percent of Total Costs
Labor	666,922	59.6%
Equipment & Material	149,379	13.4%
Energy	18,944	1.7%
Waste Disposal (Class A)	65,839	5.9%
Waste Disposal (Class B and C)	26,214	2.3%
Other	191,312	17.1%
Total	1,118,610	100.0%

Cost Category	Scenario 4 (NDFC 2050) Costs (thousands of 2014 $)	Percent of Total Costs
Labor	597,895	58.1%
Equipment & Material	158,291	15.4%
Energy	18,944	1.8%
Waste Disposal (Class A)	65,839	6.4%
Waste Disposal (Class B and C)	26,214	2.5%
Other	162,735	15.8%
Total	1,029,918[5]	100.0%

5 The cost to decommission the Plant assuming license extension is marginally lower than decommissioning the Plant under the current (2030) license life because, with the same completion date (2100) for the transfer of the spent fuel, the spent fuel is on site for less time (20 years) after the cessation of Plant operations with the later shutdown date, i.e., there are fewer years of spent fuel caretaking costs in the 2050 cost estimate.

Escalation

As previously noted, escalation factors for the cost categories (exclusive of Waste Disposal) were obtained from IHS. Forecast data for labor, equipment/ materials, energy, and general inflation were available through 2039. In order to extrapolate beyond the available IHS data, TLG calculated a 25-year moving average inflation factor to extend the IHS indices through 2101, the end point of the NDFC decommissioning scenario.

Index Selection

The following table identifies the IHS forecast data sets used for the five cost categories (exclusive of Class A LLRW Disposal). Consistent with the NRC's guidance, TLG escalates the labor component of its decommissioning cost estimates using an Employment Cost Index, Private Industry Workers, Total Compensation (ECIPCTNS) and the energy cost component with a Producer Price Index for fuels, related products and power (WPIP05).

Use of the Consumer Price Index, Services (CUSASNS) for general services, site operating costs and one-time expenditures is consistent with the intent of the index (the measure of the average change in prices over time of services).

IHS Forecast Database	TLG Cost Category
ECI Total Compensation, Private Industry Workers (ECIPCTNS)	Labor Expenditures Inflation
Producer Price Index, Machinery & Equipment (WPIP11)	Equipment/Material Expenditures Inflation
Producer Price Index, Fuels and Related Products and Power (WPIP05)	Energy Expenditures Inflation
Consumer Price Index, Services (CUSASNS)	Other Items Expenditures Inflation
Waste disposal escalation rate established based upon an agreement between NextEra Energy Seabrook and Energy*Solutions*, the disposal service provider	Class A Disposal and Recycling Expenditures Inflation
Consumer Price Index, Services (CUSASNS)	Class B and C Disposal Expenditures Inflation

Labor

The decommissioning process is labor intensive, with labor representing more than half of the total cost. The estimates for Seabrook include the cost of the craft labor performing field activities, the field supervision and support services, project management, administration, security, and costs for specialty contractors. The Employment Cost Index (ECI) is a quarterly measure of changes in labor costs. It is one of the principal economic indicators used by the Federal Reserve Bank. The index shows changes in wages and salaries and benefit costs, as well as changes in total compensation. The ECIPCTNS index, provided by IHS, is a yearly estimate of change in the cost of labor, defined as compensation per employee hour worked. The self-employed, owners-managers, and unpaid family workers are excluded from coverage. The ECI is designed as a fixed-weight index at the occupational level, thus eliminating the effects of employment shifts among occupations. Both components of compensation, wages/salaries, and benefits, are covered.

In addition to TLG's judgment, IHS has confirmed that the selected index is appropriate to use in determining the rate at which the labor costs will escalate over time.

Equipment and Material

Equipment and material costs in the decommissioning estimates include small tools and consumables as well as the heavy construction equipment involved in the dismantling, demolition and movement of materials around the site. The Producer Price Indexes (PPI) measures monthly average changes in selling prices received by domestic producers for their output. Most of the information used in the PPI is obtained by sampling of industries in the mining and manufacturing sectors of the economy. The indexes reflect price trends for a constant set of goods and services representing the total output of an industry.

In addition to TLG's judgment, IHS has confirmed that the selected index, the Producer Price Index for Machinery and Equipment (WPIP11) is appropriate to use in determining the rate at which the equipment and material costs will escalate over time.

Energy

Energy costs in the decommissioning estimate include only direct energy purchases, primarily electric power and fuel oil for heating. TLG uses a broad based power escalation index, the Producers Price Index for Fuels and Related Products and Power (WPIP05). While the WPIP05 index has some volatility (since it tracks in part the price of oil), the cost of energy in the decommissioning estimates is a small percentage and therefore has little effect on the overall escalation rate for decommissioning cost.

In addition to TLG's judgment, IHS has confirmed that the selected index is appropriate to use in determining the rate at which energy costs will escalate over time.

Low-Level Radioactive Waste Disposal

The escalation basis for low level radioactive waste disposal (Class A) was specified in the Energy*Solutions* Life-of-Plant Disposal Agreement with NextEra Energy. Energy*Solutions* does not have a license to dispose of the more highly radioactive waste (Classes B and C), for example, generated in the dismantling of the reactor vessel. However, the Texas Compact disposal facility is now operational and able to accommodate Class B and C waste. Operated by Waste Control Specialists (WCS), the disposal facility is also able to accept limited quantities of non-Compact waste. Since NextEra Energy does not have a similar "Life-of-Plant" disposal agreement with WCS, the Consumer Price Index, Services (CUSASNS) has been used to project future expenditures associated with the disposal of Class B and C low-level radioactive waste.

Other

"Other" costs in the decommissioning estimates include such items as licensing fees, taxes, special services (for example, a fee for the geologic disposal of Greater-than-Class C waste), as well as labor-intensive activities such as radiological surveys that include costs for off-site analytical services. Because the "Other" costs contain this variety of cost components, TLG uses a Consumer Price Index to project future expenditures. The CPI measures changes in the prices of goods and services. It is therefore more representative of the non-labor cost elements included in the decommissioning estimates. Accordingly, the use of the Consumer Price Index for Services (CUSASNS) for "Other" costs reflects more accurately the cost components with the "Other" category than the use of the "Labor" escalation factor as a proxy.

In addition to TLG's judgment, IHS has confirmed that the selected index is appropriate to use in determining the rate at which the "other" costs will escalate over time.

<u>Results – Scenario 2 (NDFC 2030)</u>

The composite average annual escalation rates for each of the five cost categories are provided in the following table.

Cost Category	Scenario 2 (NDFC 2030) Composite Average Annual Rate (%)
Labor	2.71%
Equipment/Material	1.13%
Energy	2.27%
LLRW Disposal and Recycling	2.14%
Other Items	2.64%
Overall	2.58%[6]

The Plant's operating license currently expires on March 15, 2030. The following table compares the total cost to decommission the Plant as of 2030 under Scenario 2 (NDFC) assuming (1) the currently approved escalation factor of 3.85%; (2) the calculated escalation factor of 2.58%; and (3) an assumed escalation factor of 3.50%, which we understand the Joint Owners are proposing the Committee adopt for funding purposes[7]:

Cost in 2014 Dollars (millions)	Cost Escalation Factor (%)	Total Decommissioning Costs in Year of Expenditure Dollars (millions)
1,118.6	2.58	2,984.4
1,118.6	3.50	4,676.5
1,118.6	3.85	5,623.2

No discounting of the escalated dollars was performed.

Table A provides escalated schedules of annual expenditures in each of the five cost categories for Scenario 2 (the NDFC 2030 Scenario) through to the end of the decommissioning period (*i.e.*, 2101).

6 The same methodology was utilized for Scenario 1 (Current Operating License with first fuel pickup in 2040 and last fuel shipment in 2063). The Composite Annual Escalation Rate for this scenario was calculated to be 2.48%.

7 At nearly a full percentage point higher than the escalation factor calculated by TLG and affirmed by IHS, the Joint Owners' recommended 3.5% cost escalation factor is very conservative, resulting in a buffer of more than $1.5 billion between our expectation of the decommissioning costs and the target to which the Joint Owners will fund the Trust.

Results – Scenario 4 (NDFC 2050)

The composite average annual escalation rates for each of the five cost categories are provided in the following table.

Cost Category	Scenario 4 (NDFC 2050) Composite Average Annual Rate (%)
Labor	2.70%
Equipment/Material	1.16%
Energy	2.25%
LLRW Disposal and Recycling	2.19%
Other Items	2.64%
Overall	2.51%

Upon approval of the pending license extension, the Plant's operating license will be extended from March 15, 2030 to March 15, 2050. The following table compares the total cost to decommission the Plant as of 2050 under Scenario 4 (NDFC) assuming (1) the currently approved escalation factor of 3.85%; (2) the calculated escalation factor of 2.51%; and (3) an assumed escalation factor of 3.50%, which we understand the Joint Owners are proposing the Committee adopt for funding purposes:

Cost in 2014 Dollars (millions)	Cost Escalation Factor (%)	Total Decommissioning Costs in Year of Expenditure Dollars (millions)
1,029.9	2.51	3,516.7[8]
1,029.9	3.50	5,945.0
1,029.9	3.85	7,205.9

No discounting of the escalated dollars was performed.

Table B provides escalated schedules of annual expenditures in each of the five cost categories for Scenario 4 (the NDFC 2050 Scenario) through to the end of the decommissioning period (*i.e.*, 2101).

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8 Please note that, while the 2014 cost for this scenario is lower, the "Total Decommissioning Costs in Year of Expenditure" are higher because the plant's decontamination and dismantling costs in Scenario 4 occur 20 years later in time than in Scenario 2.

TABLE A
SCHEDULE OF EXPENDITURES – SCENARIO 2 (NDFC 2030)
(thousands, year-of-expenditure dollars)

Year	Labor	Equipment & Materials	Energy	Class A Disposal	Class B/C Disposal	Other	Yearly Totals
2030	70,069	1,744	3,899	59		13,633	89,404
2031	106,642	22,153	6,827	10,179	8,012	38,064	191,877
2032	111,379	43,458	4,371	34,055	24,652	23,085	241,000
2033	103,091	32,152	3,860	20,674	8,990	17,086	185,853
2034	99,620	25,985	3,604	13,207	0	13,822	156,238
2035	89,778	20,238	3,185	11,481	0	12,972	137,654
2036	68,777	4,496	1,594	3,938	0	7,555	86,360
2037	50,026	6,932	643	21	0	3,778	61,400
2038	37,867	9,058	498	0	0	3,787	51,210
2039	13,515	1,860	103	0	0	3,005	18,483
2040	7,277	0	0	0	0	2,861	10,138
2041	7,456	0	0	0	0	2,928	10,384
2042	7,660	0	0	0	0	3,006	10,666
2043	7,868	0	0	0	0	3,085	10,953
2044	8,103	0	0	0	0	3,175	11,278
2045	8,298	0	0	0	0	3,250	11,548
2046	8,520	0	0	0	0	3,336	11,856
2047	8,748	0	0	0	0	3,425	12,173
2048	9,005	0	0	0	0	3,525	12,530
2049	9,219	0	0	0	0	3,609	12,828
2050	9,463	0	0	0	0	3,705	13,168
2051	9,713	0	0	0	0	3,804	13,517
2052	9,997	0	0	0	0	3,916	13,913
2053	10,234	0	0	0	0	4,009	14,243
2054	10,505	0	0	0	0	4,116	14,621
2055	10,784	0	0	0	0	4,225	15,009
2056	11,102	0	0	0	0	4,349	15,451
2057	11,366	0	0	0	0	4,453	15,819
2058	11,669	0	0	0	0	4,571	16,240
2059	11,981	0	0	0	0	4,693	16,674
2060	12,334	0	0	0	0	4,831	17,165
2061	12,629	0	0	0	0	4,946	17,575
2062	12,966	0	0	0	0	5,077	18,043
2063	13,314	0	0	0	0	5,212	18,526
2064	13,708	0	0	0	0	5,366	19,074

TABLE A
SCHEDULE OF EXPENDITURES – SCENARIO 2 (NDFC 2030)
(thousands, year-of-expenditure dollars)

Year	Labor	Equipment & Materials	Energy	Class A Disposal	Class B/C Disposal	Other	Yearly Totals
2065	14,037	0	0	0	0	5,493	19,530
2066	14,412	0	0	0	0	5,639	20,051
2067	14,797	0	0	0	0	5,789	20,586
2068	15,233	0	0	0	0	5,959	21,192
2069	15,597	0	0	0	0	6,101	21,698
2070	16,014	0	0	0	0	6,263	22,277
2071	16,440	0	0	0	0	6,430	22,870
2072	16,924	0	0	0	0	6,619	23,543
2073	17,326	0	0	0	0	6,776	24,102
2074	17,787	0	0	0	0	6,957	24,744
2075	18,260	0	0	0	0	7,142	25,402
2076	18,797	0	0	0	0	7,352	26,149
2077	20,096	996	0	0	0	7,536	28,628
2078	20,632	1,008	0	0	0	7,736	29,376
2079	21,183	1,020	0	0	0	7,942	30,145
2080	21,809	1,035	0	0	0	8,175	31,019
2081	22,330	1,044	0	0	0	8,370	31,744
2082	22,926	1,057	0	0	0	8,593	32,576
2083	23,538	1,070	0	0	0	8,821	33,429
2084	24,233	1,085	0	0	0	9,081	34,399
2085	24,812	1,095	0	0	0	9,297	35,204
2086	25,474	1,109	0	0	0	9,544	36,127
2087	26,154	1,122	0	0	0	9,798	37,074
2088	26,926	1,138	0	0	0	10,086	38,150
2089	27,570	1,149	0	0	0	10,326	39,045
2090	28,306	1,163	0	0	0	10,601	40,070
2091	29,061	1,177	0	0	0	10,883	41,121
2092	29,919	1,194	0	0	0	11,203	42,316
2093	30,634	1,205	0	0	0	11,470	43,309
2094	31,452	1,220	0	0	0	11,775	44,447
2095	32,292	1,234	0	0	0	12,088	45,614
2096	33,245	1,253	0	0	0	12,444	46,942
2097	34,039	1,264	0	0	0	12,740	48,043
2098	34,948	1,279	0	0	0	13,079	49,306
2099	35,881	1,295	0	0	0	13,427	50,603

TABLE A
SCHEDULE OF EXPENDITURES – SCENARIO 2 (NDFC 2030)
(thousands, year-of-expenditure dollars)

Year	Labor	Equipment & Materials	Energy	Class A Disposal	Class B/C Disposal	Other	Yearly Totals
2100	36,839	4,477	0	0	0	149,893	191,209
2101	12,206	1,733	1,095	8,615	0	35,874	59,523
Totals	1,876,812	200,498	29,679	102,229	41,654	733,562	2,984,434
Percentage by Category							
	62.9%	6.7%	1.0%	3.4%	1.4%	24.6%	100.0%

TABLE B
SCHEDULE OF EXPENDITURES – SCENARIO 4 (NDFC 2050)
(thousands, year-of-expenditure dollars)

Year	Labor	Equipment & Materials	Energy	Class A Disposal	Class B/C Disposal	Other	Yearly Totals
2050	119,010	3,105	5,988	88		23,053	151,244
2051	178,533	24,866	10,576	15,242	13,549	64,364	307,130
2052	181,366	43,139	6,804	51,006	41,684	39,035	363,034
2053	176,089	43,199	6,021	30,963	15,199	28,888	300,359
2054	175,321	43,532	5,636	19,775		23,367	267,631
2055	156,880	33,166	4,988	17,187		21,926	234,147
2056	116,630	5,709	2,494	5,896		12,766	143,495
2057	84,843	8,796	1,007	31		6,383	101,060
2058	64,227	11,486	785			6,395	82,893
2059	22,921	2,357	163			5,072	30,513
2060	12,334					4,831	17,165
2061	12,629					4,946	17,575
2062	12,966					5,077	18,043
2063	13,314					5,212	18,526
2064	13,708					5,366	19,074
2065	14,037					5,493	19,530
2066	14,412					5,639	20,051
2067	14,797					5,789	20,586
2068	15,233					5,959	21,192
2069	15,597					6,101	21,698
2070	16,014					6,263	22,277
2071	16,440					6,430	22,870
2072	16,924					6,619	23,543
2073	17,326					6,776	24,102
2074	17,787					6,957	24,744
2075	18,260					7,142	25,402
2076	18,797					7,352	26,149
2077	20,498	1,466				7,536	29,500
2078	21,046	1,484				7,736	30,266
2079	21,607	1,501				7,942	31,050
2080	22,245	1,524				8,175	31,944
2081	22,777	1,538				8,370	32,685
2082	23,385	1,556				8,593	33,534
2083	24,009	1,575				8,821	34,405
2084	24,718	1,598				9,081	35,397

TABLE B
SCHEDULE OF EXPENDITURES – SCENARIO 4 (NDFC 2050)
(thousands, year-of-expenditure dollars)

Year	Labor	Equipment & Materials	Energy	Class A Disposal	Class B/C Disposal	Other	Yearly Totals
2085	25,309	1,613				9,297	36,219
2086	25,984	1,632				9,544	37,160
2087	26,678	1,652				9,798	38,128
2088	27,465	1,676				10,086	39,227
2089	28,122	1,692				10,326	40,140
2090	28,872	1,712				10,601	41,185
2091	29,643	1,732				10,883	42,258
2092	30,518	1,758				11,203	43,479
2093	31,248	1,774				11,470	44,492
2094	32,082	1,796				11,775	45,653
2095	32,938	1,817				12,088	46,843
2096	33,910	1,844				12,444	48,198
2097	34,721	1,861				12,740	49,322
2098	35,648	1,883				13,079	50,610
2099	36,600	1,906				13,427	51,933
2100	37,577	5,095				149,893	192,565
2101	13,644	2,118	1,095	8,615		40,988	66,460
Totals	2,227,639	265,158	45,557	148,803	70,432	759,097	3,516,686
Percentage by Category							
	63.3%	7.5%	1.3%	4.2%	2.0%	21.6%	100.0%

ATTACHMENT G

Non-Confidential Escalation Forecast Explanation Report by IHS Global Insight
(Confidential version submitted under separate cover)

IHS Escalation Forecasts

Escalation Analysis for the Seabrook Station Decommissioning Cost Estimate 2014

John Mothersole, Director of Research, Pricing and Purchasing Service

EXECUTIVE SUMMARY

TLG Services, Inc. ("TLG") has prepared a comprehensive study analyzing the costs to decommission the Seabrook Nuclear Power Station ("Seabrook Station") in December 31, 2014 dollars. Because decommissioning will not begin until at least 2030 and will take decades to complete, it is necessary to determine the rate by which each of the decommissioning cost components will escalate each year. In support of its comprehensive report to the New Hampshire Nuclear Decommissioning Financing Committee ("NDFC"), NextEra Energy Seabrook, LLC requested that the IHS Pricing and Purchasing Service (IHS) prepare a report which would (1) explain IHS's forecasting methodology, (2) review and opine upon the reasonableness of TLG's use of IHS inflation forecasts to calculate cost escalation for the Seabrook Station; and (3) provide our opinion of likely escalation of the various categories of costs associated with decommissioning the Plant.

As detailed below, the costs to decommission Seabrook Station are broken down into five categories: (1) Labor, (2) Machinery and Equipment, (3) Energy, (4) Low Level Radioactive Waste Disposal (or Burial), and (5) Other. While each category requires separate escalation analysis, as TLG notes, the categories have disparate weights relative to the overall decommissioning cost, with Labor on the high end accounting for approximately 60% of the overall cost, down to Energy on the low end representing only 1.7% of the cost. Based on our review, TLG relied upon proper IHS indices when estimating decommissioning cost escalation for the Seabrook Station and its calculation of an overall composite cost escalation factor of 2.58% is reasonable. Our understanding is that the Joint Owners of Seabrook Station have proposed to use a 3.5% cost escalation factor. This creates a 35% percentage buffer and, as TLG reports, a dollar buffer of nearly $1.7 billion between the anticipated total costs ($2.98 billion) and the target assuming for decommissioning funding purposes ($4.7 billion). The details of our experience and analysis follow.

EXPERIENCE

IHS' Pricing and Purchasing Group relies on its economists and analysts to provide the best possible forecast of pricing conditions. Among our leading economists is John Mothersole (the affiant), the Director of Research for the IHS Pricing and Purchasing team where he has worked for the past 30 years. He helps supervise the Pricing and Purchasing Service's price and wage forecasts and is directly responsible for its nonferrous metal forecasts. During his tenure with IHS, John has been an analyst in numerous departments focusing on different areas of the U.S. and global economies. Because of this significant breadth of experience, John provides the final review and approval of IHS' Pricing and Purchasing Service Forecast, the service's quarterly outlook for global price, wage and cost escalation. John holds a graduate degree in economics from the University of Maryland.

Beyond the Pricing and Purchasing group, the overall company IHS also has a strong history of expertise in econometric modeling and forecasting. IHS Global Insight is the global leader in economic and financial analysis, holding a leadership position in the forecasting and market intelligence industries for more than 40 years. IHS is consistently among the most accurate economic forecasting firms in the world, including recognition as the most accurate macroeconomic forecaster for 2013 by Consensus Economics.[1] Furthermore IHS, the parent company of Global Insight, is a leading global source of critical information and insight, dedicated to providing the most complete and trusted data and expertise to customers around the world. This breadth and depth of information allows IHS forecasters to draw on a wealth of knowledge from across the company and around the world when forecasting.

There is no greater testament to IHS Pricing and Purchasing Service's strength in forecasting than its loyal client base. For more than 30 years, the U.S. government's Defense Contract Audit Agency (DCAA) has used our inflation projections to evaluate contract proposals for the Department of Defense. For the past 20 years, the U.S. Centers for Medicare and Medicaid Services has used our detailed price and wage forecasts when setting reimbursement rates for health facilities. Additional clients of the Pricing and Purchasing Service span the global economy, with most sectors represented; manufacturing companies represent 25% of our revenue, aerospace and defense companies 22%, energy companies 17% and government/services/consulting companies 36%.

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Figure 1: [redacted]

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[1] Please see http://www.ihsglobalinsight.com/Accolades for more information.

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FORECAST MODEL TESTING

The goal of any forecasting model is to predict the future. While there will always be differences between forecasted and actual results, minimizing those differences is extremely important to IHS. Systematically reviewing and analyzing forecast error is a central part of the company's forecasting process. The Pricing and Purchasing Service employs a three-pronged approach for measuring forecast performance: annual "null model solves", quarterly evaluation of forecast differences by sector and for individual models, and model re-estimation.

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FORECAST TRACK RECORD

When reviewing how the escalation models perform, it is important to keep in mind that we are forecasting escalation over a long (10-25 year) period. We would expect that, over shorter-term periods, there will be differences between projected and actual results. For example, in looking at forecast differences of the five components used by TLG in preparing its 2010 decommissioning cost escalation rate estimate for Seabrook Station (see Appendix A) the most noteworthy development was the rise in energy prices that occurred in late 2010 and early 2011. Aggregate demand was seen to be softening, not just in the United States but globally, with the expectation that top-line inflation would remain in check. However, the advent of the Arab Spring, which began in late 2010 and gathered momentum in the first quarter of 2011, created concerns over Middle Eastern and North African oil supplies and pushed prices well above fundamentals. The same tensions in oil markets helped to lift other commodity prices, which in turn, impacted supply chains in a number of goods producing industries.

The effect of the unexpected rise in oil and other commodity prices can be seen in the forecasts for the producer price index forecasts for energy and related products (WPIP05) and machinery and equipment (WPIP11). Both forecasts underpredicted actual price increases in 2011. For energy and related products, a fairly large 6.4% increase was projected for 2011. Instead prices for energy and related products rose 16.4%. Likewise, the forecast for machinery and equipment called for a 0.6% increase (the largest in four years); a 1.3% increase was recorded. Top-line inflation, as measured by the consumer price index (CPI), also felt the effects of these stronger than expected price increases – our forecast was for a CPI increase in 2011 of 1.9%. Consumer price inflation was actually 3.1%. Because energy comprises only 1.7% by weight of the overall costs, the overall decommissioning cost escalation rate is materially unaffected by the pricing forecast for energy. Using an extreme example, one could double the 2.27% cost escalation for energy and the effect on the overall decommissioning escalation rate would be less than .05% (*i.e.*, moving it from 2.58% to 2.59%).

Compensation and service costs inflation, which are less influenced by energy prices than other sectors of the economy, recorded increases very close to that expected. The employment cost index for total compensation for private industry workers (ECIPCTNS) was projected to increase 2.2% in 2011, which was exactly the rate of increase experienced. Likewise, the consumer price index for services (CUSASNS) was project to rise 2.1%, very close to the 1.7% actually recorded.

The transitory nature of the large price increase posted in oil markets was highlighted by price movements over the next three years, which saw energy prices decline. These declines occurred even before the fundamental shift in energy markets that saw prices plunge beginning late in 2014.

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TLG USED THE CORRECT FORECAST INDICES TO DETERMINE COST ESCALATION FOR SEABROOK STATION

The price and wage index forecasts upon which TLG relied are generated as a part of the broader IHS Pricing and Purchasing subscription services. Changes to the forecasts of other indices not directly related to those used by TLG will filter through the IHS model and may change, however minutely, the overall movement of each index.

Each of the indexes that TLG has selected for use in its decommissioning cost escalation forecast is well-matched with the costs being targeted. The labor cost measure, the employment cost index, total compensation, private industry workers, (ECIPCTNS) is a broad labor cost measure that includes the collection of workers involved in decommissioning. It focuses only on private industry, leaving out all public sector employees who would not be expected to be involved. It also includes construction workers, as well as white collar staff used in supervision and engineering. And it would also include support personal directly employed on the project as well as any NextEra Energy Seabrook workers. As a measure of compensation, this employment cost index covers benefit costs in addition to regular wages and salaries, an attribute that makes the index especially attractive given that benefit cost increases have been the driving factor in labor cost escalation in recent years and are an increasing element in overall compensation.

Equipment costs are modeled with the producer price index for machinery and equipment (WPIP11). This broad measure of machinery and equipment prices and includes the range of equipment that will be used in decommissioning: construction equipment, other non-electrical machinery such as compressors, and metal cutting equipment. It will also include electrical equipment associated with on-site power sources and computing equipment to be used by the engineering staffs.

Energy costs incurred in decommissioning are modeled with the producer price index for fuels, related products and power (WPIP05). This energy price index includes diesel and gasoline prices, along with lubricating oils used in the vehicle and equipment fleet on the project. The index also includes electricity prices, appropriate for the power costs associated with decommissioning. Taken together, the fuels, related products and power price index covers all categories of energy expenses to be expected incurred in the decommissioning process.

Low level radioactive waste disposal (burial) costs are modeled using the consumer price index for services. No historic price or price index exists for nuclear burial costs. Moreover the mix of expenses associated with a nuclear waste burial facility cover a range of very different categories weighted toward services: monitoring, security, facility maintenance. This argues for a broad service based inflation measure with a relatively high labor component. The consumer price index for services (CUSASNS) includes by definition a large service component and is therefore well matched to the various support functions associated with a nuclear waste burial site, making it a very reasonable measure for these types of expenses.

"Other" expenses are also modeled using the consumer price index for services (CUSASNS). This is reasonable and appropriate given that most of these expenses – site landscaping or remediation, long-term security, etc., are primarily services that will have a high labor component (whether performed internally by company personal or contracted to outside vendors). The index captures this aspect of these expenses quite well and is therefore well matched.

IHS believes TLG is using the indices appropriately for the categories as described above and outlined in the table below and is calculating cost escalation in a proper fashion. Furthermore, the creation of the 100 year forecast using the moving average function as an extrapolation technique is both reasonable and has been recommended and/or used by IHS in the past for very long term forecasts beyond the end date of end our longest 25 year forecasts.

TLG Category	IHS Proxy	Series Description
Labor	ECIPCTNS	Employment Cost Index - Private Industry Workers, Compensation
Machinery & Equipment	WPIP11	Producer Price Index - Machinery & Equipment
Energy	WPIP05	Producer Price Index - Fuels & Related Products & Power
Low Level Radioactive Waste Disposal (Burial)	CUSASNS	Consumer Price Index, Services
Other	CUSASNS	Consumer Price Index, Services

IHS Long-Term Macroeconomic and Inflation Forecast

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Conclusion

Overall, based on our experience, background and expertise, the likelihood that the U.S. economy will experience strong inflation is still low. TLG has used appropriate indices to forecast the rate by which the costs to decommission Seabrook Station will escalate annually. IHS performs the detailed analyses underlying the projections for these indices. While no forecast is perfect, our methodology and interrelated system of models have a proven track record of accuracy and predictive quality. Finally, TLG has formed an overall composite escalation rate using a weighted average of the individual components, a calculation that is both appropriate and reasonable. The 2.58% composite escalation factor that resulted from this calculation is a reasonable estimate of the rate by which the decommissioning cost components will escalate through the decommissioning period. Moreover, it provides a comfortable margin when referenced against the long-term consumer price inflation forecast of 2.1%. Seabrook Station's use of 3.50% as the escalation assumption provides an even more comfortable buffer relative to the TLG composite escalation factor of 2.58%.

Appendix A: Forecast Track Record (percent Changes – First Year of Forecast)

The table below shows each of the five indexes used by TLG in its 2010 report with the HIS projected change during the first year of the forecast for that year and the actual change.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ECI: Private industry workers, compensation (ECIPCTNS)										
Actual	**3.1**	**2.9**	**3.1**	**2.9**	**1.4**	**1.9**	**2.2**	**1.9**	**1.9**	**2.1**
*Forecast**	*3.3*	*3.3*	*3.4*	*2.9*	*1.7*	1.8	2.2	2.2	2.2	2.2
PPI Commodity data - Machinery and equipment (WPIP11)										
Actual	**1.3**	**2.0**	**0.9**	**1.9**	**1.2**	**-0.1**	**1.3**	**1.1**	**0.7**	**0.8**
Forecast	*0.8*	*0.4*	*1.9*	*0.5*	*0.1*	-0.6	0.6	0.8	0.2	0.8
PPI Commodity data - Fuels and related products and power (WPIP05)										
Actual	**23.2**	**6.6**	**6.5**	**20.8**	**-26.0**	**17.1**	**16.2**	**-1.8**	**-0.1**	**-0.9**
Forecast	*3.0*	*5.2*	*-4.3*	*9.1*	*-31.5*	7.0	6.4	1.1	1.8	0.3
Consumer Price Index, All-Urban (CPI)**										
Actual	**3.4**	**3.2**	**2.9**	**3.8**	**-0.3**	**1.6**	**3.1**	**2.1**	**1.5**	**1.6**
Forecast	*2.0*	*2.5*	*1.5*	*2.5*	*-1.9*	1.9	1.9	2.0	1.4	1.3
CPIU - Services (CUSASNS)										
Actual	**3.3**	**3.8**	**3.3**	**3.5**	**1.4**	**0.8**	**1.7**	**2.1**	**2.4**	**2.6**
Forecast	*2.7*	*3.6*	*3.2*	*3.3*	*1.6*	1.2	2.1	2.3	2.8	2.9

*Forecasts for ECIPCTNS (ECI, Private Industry Workers, Total Compensation) were unavailable in 2005. Forecast values for 2005 represent the projection for ECIWSSCVNS (ECI, All Civilian Workers, Total Compensation), which was available at the time.

**The consumer price index is not used in the current study as an escalation factor

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Table 1: Completed Plant Applications for License Renewal

Completed Applications as of May 13, 2015: Seventy-six (76) Licenses Renewed

• Calvert Cliffs, Units 1 and 2 • Oconee Nuclear Station, Units 1, 2 and 3 • Arkansas Nuclear One, Unit 1 • Edwin I. Hatch Nuclear Plant, Units 1 and 2 • Turkey Point Nuclear Plant, Units 3 and 4 • North Anna, Units 1 and 2 • Surry, Units 1 and 2 • Peach Bottom, Units 2 and 3 • St. Lucie, Units 1 and 2 • Fort Calhoun Station, Unit 1 • McGuire, Units 1 and 2 • Catawba, Units 1 and 2 • H.B. Robinson Nuclear Plant, Unit 2 • R.E. Ginna Nuclear Power Plant, Unit 1 • V.C. Summer Nuclear Station, Unit 1 • Dresden, Units 2 and 3 • Quad Cities, Units 1 and 2 • Farley, Units 1 and 2 • Arkansas Nuclear One, Unit 2 • D.C. Cook, Units 1 and 2 • Millstone, Units 2 and 3 • Point Beach, Units 1 and 2 • Browns Ferry, Units 1, 2, and 3	• Brunswick, Units 1 and 2 • Nine Mile Point, Units 1 and 2 • Monticello • Palisades • James A. Fitzpatrick • Wolf Creek, Unit 1 • Shearon Harris, Unit 1 • Oyster Creek • Vogtle, Units 1 and 2 • Three Mile Island, Unit 1 • Beaver Valley, Units 1 and 2 • Susquehanna, Units 1 and 2 • Cooper Nuclear Station • Duane Arnold Energy Center • Vermont Yankee Nuclear Power Station • Kewaunee Power Station • Palo Verde, Units 1, 2 and 3 • Prairie Island, Units 1 and 2 • Salem, Units 1 and 2 • Hope Creek • Columbia Generating Station • Pilgrim 1, Unit 1 • Limerick, Units 1 and 2 • Callaway, Unit 1

Source: http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html

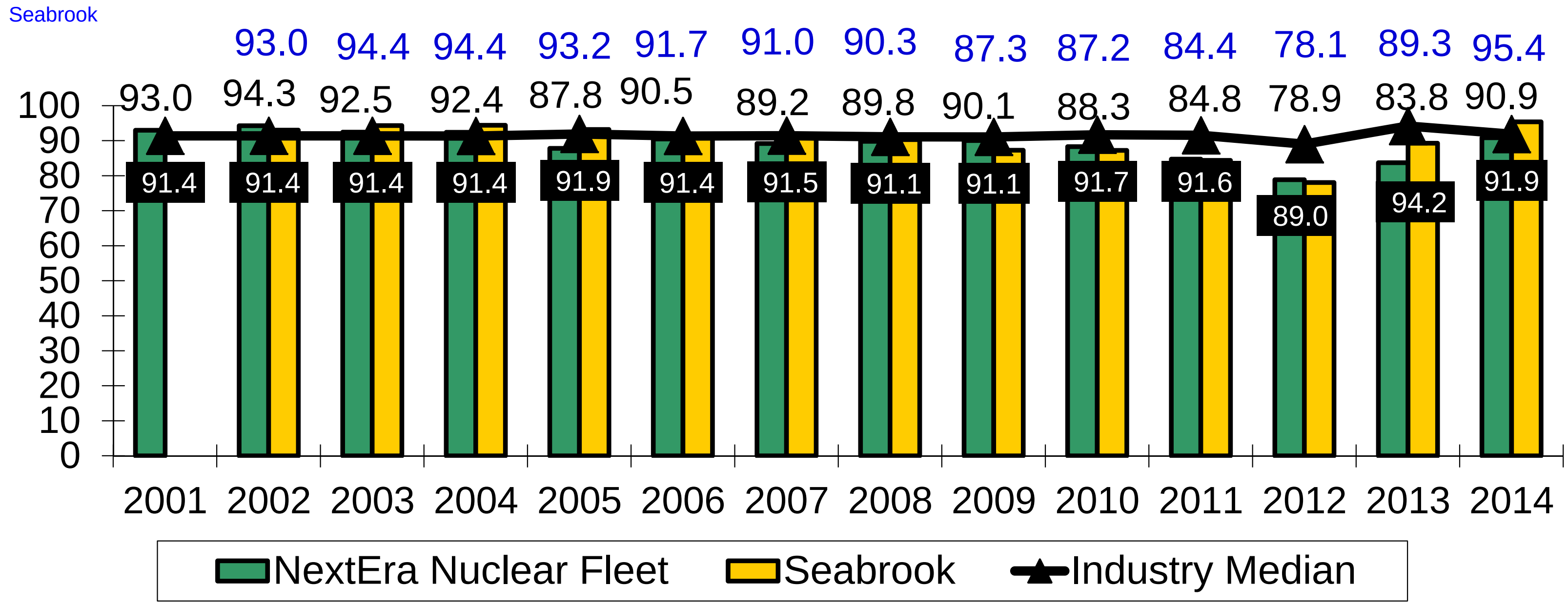
Table 2: Plant Applications for License Renewal Under Review

Applications Under Review as of May 13, 2015: Eighteen (18) Licenses Under Review

- Indian Point, Units 2 and 3 - Application received April 30, 2007
- Diablo Canyon, Units 1 and 2 - Application received November 24, 2009
- Seabrook Station, Unit 1 - Application received June 1, 2010
- Davis-Besse Nuclear Power Station, Unit 1 - Application received August 30, 2010
- South Texas Project, Units 1 and 2 – Application received October 28, 2010
- Grand Gulf Nuclear Station, Unit 1 – Application received November 1, 2011
- Sequoyah Nuclear Plant, Units 1 and 2 – Application received January 15, 2013
- Byron Station, Units 1 and 2 - Application received May 29, 2013
- Braidwood Station, Units 1 and 2 - Application received May 29, 2013
- Fermi, Unit 2 – Application received April 30, 2014
- LaSalle County Station, Units 1 and 2 - Application received December 9, 2014

Source: http://www.nrc.gov/reactors/operating/licensing/renewal/applications.html

Table 3: Seabrook, NextEra Nuclear Fleet and Industry Unit Capability Factors[1,2]



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[1] Green bars (Prior to 2006) represent combined Turkey Point Nuclear Plant and St. Lucie Nuclear Plant Performance. 2003 data reflects the addition of Seabrook, 2006 data reflects the addition of Duane Arnold and 2008 reflects the addition of Point Beach to the NextEra Nuclear fleet. Note the Industry Data is as of Fourth Quarter 2014.

[2] In 2012, Seabrook operated at 85% power for a portion of the year due to generator stator cooling fouling, an issue with the non-nuclear secondary side of the Plant. 2012 was also a refueling outage year. The stator issue was successfully resolved in the Fall 2012 refueling outage and operation was restored to 100%.

Table 4: Seabrook and NextEra Nuclear NRC Safety and Reliability Performance Indicators (As of March 17, 2015)

NRC Performance: Indicators

	Turkey Point Unit 3	Turkey Point Unit 4	St. Lucie Unit 1	St. Lucie Unit 2	Seabrook Station	Duane Arnold	Point Beach Unit 1	Point Beach Unit 2
Initiating Events Cornerstone								
Unplanned Reactor Scrams per 7000 Critical Hours (Automatic and Manual)								
Unplanned Reactor Power Changes per 7000 Critical Hours								
Unplanned Scrams with Complications								
Mitigating Systems Cornerstone								
Mitigating System Performance								
Safety System Functional Failures								
Barriers Cornerstone								
RCS Activity								
RCS Leakage								
Emergency Preparedness Cornerstone								
Emergency Response Organization (ERO) Drill/Exercise Performance								
ERO Drill Participation								
Alert and Notification System Performance								
Occupational Radiation Safety Cornerstone								
Occupational Exposure Control Effectiveness								
Public Radiation Safety Cornerstone								
RETS/ODCM Radiological Effluent Occurrence								
Physical Protection Cornerstone								
Protected Area Security Equipment Performance Index								

Acceptable Performance Licensee Response Band **Green** **White** **Yellow** **Red**