[redacted]. However, this increase in distributed project costs is more than offset by a $[redacted] (100% share, 2014 $) decrease in undistributed DGC staffing costs.[32] The combined variance of these two cost categories resulted in a net cost savings of $[redacted] (100% share, 2014 $) achieved by SCE through the competitive bidding process for the DGC contract. All of these activities are required to decommission SONGS 2&3. The Commission, therefore, should find that these estimated costs are reasonable.

5. Substructure Removal

As briefly described above, the removal of remaining non-contaminated substructures, which is now estimated to occur during 2046-2049, will be a large-scale project that will require the expertise of a qualified third-party vendor. SCE estimates that the cost to perform this work scope, including the disposal of waste materials, will be lower than the cost assumed in the 2014 DCE.

The 2017 DCE assumed the cost would be $273.0 million[34] (100% share, 2014 $), whereas the 2014 DCE assumed the cost for the Substructure Removal project would be $303.8 million (100% share, 2014 $), a decrease of $30.8 million. The decrease is due to the identification of a closer waste disposal location.

6. Other Distributed Projects

The Other Distributed Projects cost category includes many distributed cost activities that either were not included in the 2014 DCE or for which the work scopes were determined to have changed substantially between the 2014 DCE and the 2017 DCE.

Examples of such activities include:

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31 [redacted]

32 For further discussion of DGC Staffing and the variance against the 2014 DCE, see Section IV.C.3 below.

33 [redacted]

34 *See* 2017 DCE, Appendix C, Table 2, line 224.

- GTCC Disposal – Under the DOE Standard Contract, the DOE is obligated to accept and dispose of "spent nuclear fuel" and "high level waste." The courts have determined that GTCC is "high level waste," which DOE is obligated to accept and dispose of under the DOE Standard Contract, but have stated that that does not mean that the government will have to bear the cost of GTCC waste disposal alone. The courts have not provided a disposal cost.[35]
- Cyber Security Modifications – Under 10 C.F.R. § 73.54, SCE was required to develop a cyber security plan that addressed eight milestones to ensure certain digital assets, such as computer and communication systems and networks, are secure and protected.
- California Environmental Quality Act (CEQA) – Under CEQA, the CSLC, as lead agency, is required to evaluate the SONGS decommissioning project and prepare an Environmental Impact Report (EIR) in response to SCE's application to modify and extend the existing CSLC lease regarding the offshore conduits. The CEQA process began in 2015. The CSLC is expected to certify the EIR in late of 2018. The CCC is then expected to review an application for a CDP for SONGS decommissioning based on the EIR, as well as its own additional analysis. The CCC is expected to consider SCE's CDP application by the end of 2018. Following the receipt of the CDP, physical decommissioning of the plant can proceed.
- Mesa Site Turnover – SCE's Mesa lease from the Navy consists of five parcels.[36] Parcel 5 is on the west side of U.S. Interstate Highway 5 (I-5) and includes a security station to control access to Parcels 6 and 7. Parcels 6 and 7 are located on the east side of I-5 and along with Parcel 5 comprise the area known as the Mesa site. Parcels 8 and 9 include a parking lot and lay-down area on the west side of I-5 and abut the SONGS site. SCE currently estimates that Parcels 5, 6, and 7 will be returned to the

[35] *Yankee Atomic Electric Co. v. U.S.,* 536 F.3d 1268, 1278 (Fed. Cir. 2008).

[36] *See* Appendix E for map of the parcel locations.

Navy in 2021, and Parcels 8 & 9 will be retained until the end of decommissioning. As part of the process to return Parcels 5, 6, and 7 to the Navy, SCE must first assess the property and remediate SONGS-caused contamination to the extent necessary to obtain "No Further Action Letters" from the California Department of Toxic Substances Control (DTSC) indicating the property is available for unrestricted use.[37]

- Substructure Removal Contractor Procurement – In 2044, SCE will begin efforts to procure a contractor for the removal of SONGS substructures and placement of permanent backfill. Because the dewatering, shoring, excavation, removal, and backfilling of the substructures will be a very large and specialized work scope, SCE will incur the cost to undertake a competitive procurement process to identify and select a specialty vendor to perform this work.
- Coastal Development Permit Extensions – SCE holds a CDP for the storage of SONGS 2&3 spent fuel in the Areva ISFSI system until November 2022, and a separate CDP to store SONGS 2&3 spent fuel in the Holtec ISFSI system until 2035. Therefore, the 2017 DCE assumes SCE will need to obtain CDP extensions from the CCC for the Areva and Holtec ISFSI systems prior to the expiration of the permits in 2022 and 2035, respectively.
- ISFSI Coastal Development Permit (CDP) Settlement – In August 2017, SCE reached a settlement agreement with parties who challenged the CDP, wherein SCE agreed to incur up to $4.3 million (100% share, 2014 $) on commercially reasonable efforts to identify an offsite location for SONGS spent fuel storage.
- Future DCE Updates – Under the Decommissioning Act, SCE is required to periodically revise the DCEs to include descriptions of changes in regulation, technology, and economics affecting the estimate of costs; and of additions and

[37] On April 24, 2017, the DTSC issued a No Further Action Letter for Parcel 5. The efforts to assess and remediate contamination for Parcels 6 and 7 are ongoing. SCE continues to hold Parcel 5 because it provides access to Parcels 6 and 7.

deletions to nuclear facilities.[38] SCE submits such DCE updates to the Commission in NDCTP proceedings.

- North Industrial Area (NIA) Sump Modifications – The NIA sump (located on the site formerly occupied by SONGS 1) currently discharges to the SONGS 2&3 dilution water system. The SONGS 2&3 dilution water system will be retired by SDS, and therefore the discharge pathway for the NIA sump will need to be modified.

The estimated costs for the Other Distributed Projects category are shown in Table IV-4 below:

Table IV-4
Reconciliation of 2017 DCE to 2014 DCE
Other Distributed Projects
(100% Share, Millions of 2014 $)

	Description	2017 DCE Total (2014 $)	2014 DCE Total (2014 $)	Variance
1	**Other Projects**			
2	GTCC Disposal	$ 40.7	$ 50.6	$ (9.9)
3	Cyber Security Modifications	9.4	1.9	7.5
4	CEQA	7.9	2.7	5.2
5	Mesa Site Turnover	20.3	17.8	2.6
6	**Previously Included Project Subtotal**	**$ 78.3**	**$ 72.9**	**$ 5.4**
7				
8	Substructure Removal Contractor Procurement	$ 7.0	$ -	$ 7.0
9	Coastal Development Permit Extensions	5.2	-	5.2
10	ISFSI CDP Settlement	4.3	-	4.3
11	DCE Update	3.7	-	3.7
12	NIA Sump Modifications	1.1	-	1.1
13	**New Projects Subtotal**	**$ 21.3**	**$ -**	**$ 21.3**
14	**Other Projects Total**	**$ 99.6**	**$ 72.9**	**$ 26.7**

The total estimated cost for these Other Distributed Projects in the 2017 DCE is $99.6 million (100% share, 2014 $). The estimated cost for such Other Distributed Projects in the 2014 DCE was $72.9 million (100% share, 2014 $). Thus, the 2017 DCE includes a $26.7 million increase for the Other Distributed Projects category.

[38] Pub. Utilities Code § 8326.

After the development of the 2014 DCE, SCE determined that the cost to complete several of its Other Distributed Project work scopes would be different than estimated in 2014. For example, in the 2014 DCE SCE estimated that the disposal cost for GTCC waste would be $50.6 million (100% share, 2014 $) based on the highest published disposal rates for Class C low level radioactive waste (LLRW). In the 2017 DCE, however, SCE assumed that the disposal cost for a canister of GTCC waste would be comparable to the disposal cost for a canister of spent fuel. This resulted in an estimated GTCC disposal cost in the 2017 DCE of $40.7 million[39] (100% share, 2014 $), a decrease of $9.9 million.

With respect to Cyber Security-related work, the 2014 DCE included $1.9 million (100% share, 2014 $) and assumed the work would be completed in 2013. At that time, SCE believed that after SCE submitted the certifications of permanently ceased operations for SONGS 2&3, SCE would no longer be subject to the cyber security requirements of 10 C.F.R. § 73.54. However, SCE subsequently determined that the SONGS Cyber Security Plan was still required because it was described in the Physical Security Plan License Condition for SONGS 2&3. Other decommissioning plants had sought an exemption from the cyber security requirements, but the NRC had not yet approved those requests. It was prudent for SCE to wait for the NRC to review these requests and provide further guidance prior to SCE submitting an exemption request so as to avoid any protracted delays in the NRC's review process. In the meantime, SCE was obligated to comply with the requirements related to performing cyber security assessments, but not the more costly implementation aspects of the requirements. When the NRC indicated a willingness to grant such exemption requests, SCE submitted a License Amendment Request (LAR) to the NRC in June 2017, wherein SCE requested removal of the requirement to fully implement the SONGS Cyber Security Plan. At the end of 2017, the NRC granted approval for SONGS to remove the cyber security license condition, thus waiving the implementation requirements. Prior to the NRC's granting of the exemption, SCE had expended $9.4 million[40] (100%

[39] *See* 2017 DCE, Appendix C, Table 2, line 188.

[40] *See* 2017 DCE, Appendix C, Table 2, line 191.

share, 2014 $) to implement cyber security assessments. SCE included this recorded amount in the 2017 DCE, resulting in a $7.5 million increase over the amount estimated in the 2014 DCE.

With respect to the CEQA project, the 2017 DCE forecast $7.9 million[41] (100% share, 2014 $). The 2014 DCE forecasted this major project at $2.7 million (100% share, 2014 $), resulting in an increase of $5.2 million. The increase occurred because the time and effort required to complete this activity were greater than assumed during the development of the 2014 DCE. Specifically, SCE originally anticipated the CEQA review would be completed in approximately one year. Given the complexity of and varied interests (Navy, local communities, environmental advocates) that must be considered, SCE now anticipates that it will be nearly a four-year effort. SCE underestimated the level of effort necessary to complete the CEQA review, resulting in the variance. This activity is required in order to begin D&D.

With respect to Mesa Site Turnover project, the 2017 DCE forecast $20.3 million[42] (100% share, 2014 $). The 2014 DCE forecasted this major project at $17.8 million (100% share, 2014 $), resulting in an increase of $2.6 million. The increase occurred because the time and effort required to complete this activity were greater than assumed during the development of the 2014 DCE. Specifically, SCE originally expected to return the property to the Navy in 2017 with limited environmental characterization. Subsequently, the Navy imposed stringent remediation standards for the property requiring more extensive characterization and remediation, so turnover is now expected to occur in 2021. SCE must comply with the Navy's requirements.

The remaining Other Distributed Projects were not included in the 2014 DCE because their scopes emerged after the 2014 DCE was developed. SCE estimated their costs as follows:

Substructure Removal Contractor Procurement – The 2017 DCE includes costs of $7.0 million[43] (100% share, 2014 $) for a competitive bidding process to select a substructure removal contractor, including the development of a Request for Proposal, proposal evaluation, and contract

[41] *See* 2017 DCE, Appendix C, Table 2, line 184.
[42] *See* 2017 DCE, Appendix C, Table 2, line 178.
[43] *See* 2017 DCE, Appendix C, Table 2, line 190.

award. The estimate is approximately one-half the cost to procure a DGC for the major D&D work because the scope of this effort is nearly half the scope of the DGC D&D work.

Coastal Development Permit (CDP) Extensions – The 2017 DCE includes costs of $5.2 million[44] (100% share, 2014 $) for SCE to obtain extensions for the Areva and Holtec CDPs. SCE holds a CDP to construct and operate the Areva ISFSI to store SONGS 2&3 spent fuel until November 2022, and a separate CDP to construct and operate the Holtec ISFSI to store SONGS 2&3 spent fuel until 2035. The 2017 DCE assumes SCE will need to obtain CDP extensions from the CCC for the Areva and Holtec ISFSI systems prior to the expiration of the permits in 2022 and 2035, respectively. SCE considered the recorded costs from past CDP applications and the complexities of the anticipated issues that will require evaluation in these two CDP extensions to estimate the cost to obtain these two CDP extensions.

ISFSI CDP Settlement – As part of the ISFSI CDP Settlement, SCE agreed to incur up to $4.0 million (100% share, nominal $) on commercially reasonable efforts to identify an offsite location for SONGS spent fuel storage. SCE also included $0.3 million (100% share, nominal $) for SCE outside counsel legal costs to reach the settlement.[45] SCE also included $0.8 million (100% share, nominal $) for attorney's fees to plaintiff's counsel, as agreed to in the settlement.[46] This $5.1 million (100% share, nominal $) increase was unforeseeable at the time the 2014 DCE was developed. This cost category was shared between SONGS 1 and SONGS 2&3. The amount allocated to SONGS 2&3 is $4.3 million (100% share, 2014 $). The settlement allowed SCE to proceed with transferring fuel to the ISFSI. It is also reasonable for SCE to explore offsite locations for the storage of spent fuel.

Future DCE Updates – SCE assumes a cost of $3.7 million[47] (100% share, 2014 $) to develop future DCE Updates because SCE now assumes that it will use a third-party vendor to develop

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[44] *See* 2017 DCE, Appendix C, Table 2, line 167.

[45] Given the ongoing analyses and the current uncertainty regarding the potential location and requirements for an acceptable alternative spent fuel storage site, the estimated cost to re-locate the SONGS 2&3 spent fuel to an alternative site are speculative and have not been included in the 2017 DCE.

[46] Under the California Civil Procedure Code, a prevailing plaintiff in a mandamus proceeding is entitled to seek recovery of attorney's fees. *See* Cal. Civ. Proc. Code § 1021.5.

[47] *See* 2017 DCE, Appendix C, Table 2, line 182.

the DCE Updates instead of preparing them in-house at an average cost of approximately $0.3 million (100% share, 2014 $) per update. Under the Decommissioning Act, SCE is required to periodically revise the DCEs and submit them to the Commission.

NIA Sump Modifications – The North Industrial Area (NIA) sump currently discharges to the SONGS 2&3 dilution water system. Because SDS will remove the dilution water system, the discharge path for the NIA sump must be modified. SCE provided an estimated cost of $1.1 million[48] (100% share, 2014 $) for this work scope.

Relative to the 2014 DCE, the cost increases for Other Distributed Projects described above are partially offset by the lower estimated cost to dispose of GTCC waste, and result in a net increase of $26.7 million (100% share, 2014 $). The Commission should find the increased estimated costs for the Other Distributed Projects reasonable because each of these projects is required to fulfill an unavoidable regulatory requirement or a contractual obligation.

7. Greater Than Class C (GTCC) Waste Storage

In the 2017 DCE, SCE assumes that it will be required to license and purchase ten new canisters for storing and disposing of GTCC waste from SONGS 2&3 D&D activities and will use two existing Areva canisters for storing GTCC waste from the spent fuel pools. In contrast, SCE assumed in the 2014 DCE that it would use the ten Areva canisters that were originally fabricated for storing and disposing spent fuel from SONGS 2&3. SCE made this change because, although the ten Areva canisters are licensed for storing and transporting spent fuel, they are not licensed for transporting GTCC waste.[49] Although the radiological and physical characteristics of spent fuel would seem to bound those of GTCC waste, SCE determined that the canisters may only be used for their intended (and licensed) purpose, and that they would need to be re-licensed before they could be used to store and transport GTCC waste. Because most of the GTCC waste generated at SONGS 2&3 will come from the reactor vessel internals segmentation project, which is scheduled near the beginning of D&D activities, and the time required to re-license the Areva canisters is uncertain, SCE determined that it would be

[48] *See* 2017 DCE, Appendix C, Table 2, line 192.

[49] The canisters can be used to store GTCC waste as long as the canister does not need to be modified. For these ten canisters, the canisters would need to be modified to store the GTCC from D&D activities.

imprudent to risk an unknown delay to the D&D schedule by allowing it to be constrained by an effort to re-license the Areva canisters. SCE determined that it would instead be more prudent to avoid such schedule uncertainties by obtaining ten new canisters that would already be licensed to store and transport GTCC waste.

The estimated cost for GTCC storage in the 2017 DCE is $26.6 million (100% share, 2014 $). The 2014 DCE did not include any costs for GTCC storage. This resulted in a cost increase of $26.6 million[50] (100% share, 2014 $). Nevertheless, the Commission should find this estimated cost increase reasonable because it will reduce the risk of substantially greater costs due to potential project delays resulting from a delay to re-license the Areva canisters for GTCC waste storage and disposal.

8. Plant Easement/Lease Renewals

SCE uses the land upon which the SONGS site is located pursuant to a grant of easement executed with the Navy in 1964. This easement expires in 2024. The Navy has informed SCE that the existing easement will not be renewed because the terms are outdated; therefore, a new real estate authorization will be negotiated. SCE anticipates that the new real estate authorization will: (1) modify land boundaries to exclude roads used by the public, exclude lands within the current easements that SCE does not use, include Parcels 8 and 9, and include lands that SCE occupies that are not within the current easements; and (2) include pricing that is consistent with the current fair market rental value of the property. The Navy will be required to perform a limited-scope NEPA review to issue this new real estate authorization. The public interest in the Navy's decision, mostly due to on-site spent fuel storage, may impact the extent of the Navy's NEPA review effort.

Due to the uncertainty of how long the spent nuclear fuel would be on-site and the potential for relocation of the ISFSI in 2035, the 2017 DCE conservatively assumes that SCE will have to negotiate real estate authorizations with the Navy two additional times. Therefore, the next real estate authorization will expire in 2035, requiring SCE to seek a renewal. It is assumed the terms and site use will remain the same, and that the term will also be 10 years. Thus, the cost for this effort is estimated to be less than for the previous negotiation. This effort will also require a limited-scope NEPA review.

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[50] *See* 2017 DCE, Appendix C, Table 2, line 169.

When the real estate authorization needs to be renewed again in 2045, SCE will request the Navy to specify the final site restoration and substructure removal requirements. SCE currently plans to commence this effort in 2040, such that the real estate authorization renewal and final site restoration and substructure removal requirements would be in place by 2045. This would facilitate performing the Substructure Removal civil works project during 2046-2049; and ISFSI decommissioning, NRC license termination, and final site restoration during 2050-2051. Because this real estate authorization renewal will identify the conditions under which the land will be returned to the Navy, the Navy will be required to perform a more robust NEPA review.

In the 2017 DCE, the estimated cost for Plant Easement/Lease Renewals is $27.1 million[51] (100% share, 2014 $). In the 2014 DCE, the estimated cost was $1.4 million (100% share, 2014 $). This results in an increase of $25.7 million. The 2017 DCE includes costs for SCE labor, contract support, Navy costs (such as consultations/review hours), surveys and mapping for three distinct real estate authorizations and three corresponding NEPA reviews. At the time the 2014 DCE was developed, discussions between SCE and the Navy had not yet progressed to that point that the need for three such updates to the Navy real estate authorization and three NEPA reviews was identified.

Because each of these updates to the Navy real estate authorization and any corresponding NEPA reviews will be required: (1) for SCE to fulfill the Navy's requirements for ongoing use of the SONGS site until SCE is ready to relinquish the land; (2) for the Navy to appropriately analyze and identify the final site restoration requirements; and (3) for SCE to implement the site restoration requirements to the satisfaction of the Navy, these Plant Easement/Lease Renewal costs are necessary decommissioning costs. SCE based the estimate on its recent history negotiating real estate matters with the Navy, as well as the costs incurred to date for SONGS real estate authorizations. Recent history with the Navy regarding the Mesa lease and the switchyard indicates that SCE's negotiations with the Navy will involve a lengthy and more complex undertaking than assumed in the 2014 DCE. The Commission, therefore, should find that these estimated costs are reasonable.

[51] *See* 2017 DCE, Appendix C, Table 2, lines 185-187.

9. Offshore Conduits Removal

The 2017 DCE includes an estimated cost to perform the full removal of the SONGS 2&3 offshore conduits as estimated in the 2014 DCE.

The 2017 DCE includes $91.6 million[52] (100% share, 2014 $) to fully remove the SONGS 2&3 offshore conduits. In the 2014 DCE, the estimated cost was $96.0 million (100% share, 2014 $). This results in a decrease of $4.4 million. This decrease occurred because the estimated value in the 2014 DCE includes a 5% adder for A&G, whereas the A&G adder is excluded from the 2017 DCE estimated value.

10. ISFSI Demolition

Following the removal of all spent fuel and GTCC waste by the DOE, SCE will demolish and remove the ISFSI and perform activities necessary for the final restoration of the SONGS site.

The 2017 DCE includes $19.2 million[53] (100% share, 2014 $) for ISFSI decommissioning costs. In the 2014 DCE, the estimated cost was $21.1 million (100% share, 2014 $). This results in a decrease of $1.9 million. At the time the 2014 DCE was prepared, the specific plans to expand the ISFSI had not been defined. Later in 2014, SCE entered into a contract with Holtec to expand the ISFSI. The ISFSI demolition cost in the 2017 DCE is based on a new estimate completed by High Bridge Associates and reflects both the Areva and Holtec ISFSIs.

11. Completed Projects

During the period between the permanent retirement of SONGS 2&3 on June 7, 2013, and December 31, 2017, SCE completed several Distributed Projects. The following completed projects are some of those already submitted to the Commission for reasonableness review:

- Included in 2014 reasonableness testimony: (1) Development of the Certified Fuel Handler Program; (2) Post-Fukushima Modifications; (3) Independent Spent Fuel Storage Installation (ISFSI) Pad Study; and (4) Spent Fuel Pool Analyses.[54]

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[52] *See* 2017 DCE, Appendix C, Table 2, line 229.

[53] *See* 2017 DCE, Appendix C, Table 2, line 241.

[54] The SONGS 2&3 Distributed Projects completed during 2014 are explained in greater detail in A.16-03-004, Exhibit SCE-09 at pages 18-21.

- Included in 2015 reasonableness testimony: (1) Nuclear Fuel Contracts Cancellations; (2) Legacy Radwaste Disposal; (3) Security Programs – Security Shutdown Strategy; (4) Regulatory Submittals; (5) Historical Site Assessment/Site Characterization; and (6) Transition Project Modifications – Special Purpose Vehicle (SPV) Feasibility Study.[55]

The following completed projects are being submitted for reasonableness review in this proceeding:

- Major Projects completed during 2016-2017: (1) the Spent Fuel Islanding project; (2) Selection of Decommissioning General Contractor; and (3) Transition Project Modifications, including the Large Organism Exclusion Device Modification, Special Purpose Vehicle - Implementation, Records Retention Project, and the Simplification and Streamlining Project.[56]

The following completed activity will be submitted for reasonableness review in the 2021 NDCTP:

- Defueled Safety Analysis Report (DSAR): Updates the current licensing basis for the decommissioning configuration state of SONGS 2&3 and is a reference available for reviewing decommissioning actions and plans affecting the SONGS 2&3 site.

The estimated costs for the Completed Projects are shown in Table IV-5 below:

[55] The SONGS 2&3 Distributed Projects completed during 2015 are explained in greater detail in A.16-03-004, Exhibit SCE-08 at pages 26-39, and in Exhibits SCE-10 and SCE-10C.

[56] The SONGS 2&3 Distributed Projects completed during 2016-2017 are explained in greater detail in A.18-03-XXX, Exhibit SCE-05.

Table IV-5
Reconciliation of 2017 DCE to 2014 DCE
Completed Projects
(100% Share, Millions of 2014 $)

	Description	2017 DCE Total (2014 $)	2014 DCE Total (2014 $)	Variance
1	2014 Reasonableness Review	$ 0.6	$ 0.6	$ (0.0)
2	2015 Reasonableness Review	93.5	76.8	16.7
3	2018 Reasonableness Review	27.2	19.2	8.0
4	Future Reasonableness Reviews	2.0	1.5	0.5
5	**Completed Projects Total**	**$ 123.3**	**$ 98.1**	**$ 25.2**

The total estimated cost for these Distributed Projects, as reflected in the 2017 DCE, was $123.3 million[57] (100% share, 2014 $). In the 2014 DCE, the total estimated cost for the SONGS 2&3 decommissioning-related Completed Distributed Projects completed during 2013-2017 was $98.1 million (100% share, 2014 $), resulting in a variance of $25.2 million more than estimated. The explanations for the variances associated with each of these Distributed Projects are provided in the testimony SCE provided to the Commission in its reasonableness review submittals for each of these completed projects. The 2014 and 2015 completed projects are not being reviewed in this proceeding.

C. Undistributed Activities

1. Contracted Services

Contracted Services are shorter-term supplemental resources, specialty contractors and consultants, third-party services, materials, and supplies that are provided on an as-needed basis to support SONGS. SCE must meet several NRC regulatory requirements,[58] and maintain and operate SONGS to support spent nuclear fuel in the spent fuel pools and ISFSI. SCE also must meet contractual obligations and provide support services (such as engineering, regulatory, financial, and custodial services) for the plant and the general facility,[59] as well as provide basic office services, to complete

[57] *See* 2017 DCE, Appendix C, Table 2, lines 1, 12, 15, 18, and 24.

[58] *See* Exhibit SCE-01, Section 1.F.2.a, Nuclear Regulatory Commission Requirements.

[59] The general facility includes SONGS office buildings, roads, parking lots, fencing, lighting, and all the services necessary to maintain the site in a condition suitable for all the activities that are needed to decommissioning the plant.

decommissioning planning and implement decommissioning. SCE utilizes Contracted Services for these purposes.

Contracted Services in the 2017 DCE consists of two distinct types of costs, recorded and estimated:

- June 2013-2017 recorded costs of $83.7 million (100% share, 2014 $) equaling an approximate annual average of $18.6 million (100% share, 2014 $);[60] and
- 2018-2051 estimated costs of $141.5 million (100% share, 2014 $) reflecting an approximate annual average of $4.2 million (100% share, 2014 $).

The estimated cost for Contracted Services for 2018-2051 includes support activities for the organizations shown in Table IV-6 below.

Table IV-6
Contracted Services
(100% Share, Millions of 2014 $)

	Description	2017 DCE 2018-2051 Total (2014 $)	Annual Average Over 2018-2051 (2014 $)
1	**Contracted Services (2018-2051)**		
2	Decommissioning Oversight	$ 50.9	$ 1.5
3	Maintenance and Work Control	31.3	0.9
4	Nuclear Regulatory Affairs and Nuclear Oversight	22.7	0.7
5	Site Engineering	13.8	0.4
6	Site Management & Administration	10.7	0.3
7	Emergency Preparedness	6.3	0.2
8	Decommissioning Finance	4.8	0.2
9	Operations	1.0	0.0
10	**Contracted Services (2018-2051) Total**	**$ 141.5**	**$ 4.2**

SCE discusses each of these below:[61]

[60] Recorded costs during 2014-2015 were reviewed for reasonableness in the 2015 NDCTP, A.16-03-004. Recorded costs during 2016-2017 have been submitted for reasonableness review in this proceeding. *See* Exhibit SCE-05.

[61] Each of these organizations also incurs common costs for items such as employment related training, office supplies, custodial support, and employment related travel expenses.

- Decommissioning Oversight – Contracted services include EPRI support, document governance, engineering consulting services, estimating services for supply chain, and radiation protection and environmental contract support.
- Maintenance/Work Control – Service vendor support to perform preventive and corrective maintenance on all electrical systems; mechanical systems; instrumentation and controls systems; other plant systems still in operation; and the seawall.
- Nuclear Oversight/Nuclear Regulatory Affairs – Consultants to support Nuclear Regulatory Affairs' (NRA) interface with the NRC regarding SONGS' compliance with regulatory requirements, and to support Nuclear Oversight's execution of SONGS' decommissioning quality assurance program (DQAP).
- Site Engineering – Software licenses, security computer maintenance, and consultants as required to resolve specific issues being faced.
- Site Management and Administration – Staffing consultant to determine appropriate SONGS staffing levels.
- Emergency Preparedness – Contractor support for planning functions that continue to be required by federal regulations as long as nuclear fuel is stored on-site, including periodic drills to verify the effectiveness of the SONGS emergency preparedness program.

The total estimated cost for Contracted Services in the 2017 DCE is $225.2 million[62] (100% share, 2014 $). In the 2014 DCE, the total estimated cost for Contracted Services was $34.6 million (100% share, 2014 $). This resulted in an increase of $190.6 million. The 2014 DCE assumed Contracted Services would involve only office supplies, computers, and related equipment for utility staff use, based upon an assumed cost of $10,500 per year per employee. SCE utilized this category more broadly for the services and activities discussed above. Therefore, there is a variance

[62] *See* 2017 DCE, Appendix C, Table 2, line 287.

between the DCEs because the 2014 DCE did not include forecasts for this broader group of services and activities.

SCE developed the estimated Contracted Services costs in the 2017 DCE by analyzing the costs incurred for these functions in 2013-2016, and then built them up throughout the remaining decommissioning schedule (2018-2051) based on the anticipated future contracted services requirements for the SONGS decommissioning organization. SCE only included the costs necessary to meet its regulatory requirements related to the safe storage of spent fuel on-site; and to provide services required to maintain the plant and general facility. As noted above, the annual requirements going forward are substantially lower than those recorded during the initial decommissioning period and reflect the changed conditions, including SCE's transition of certain work activities to the DGC. The Commission should find that they are reasonable.

2. Service Level Agreements/A&G

Beginning in 2016, SONGS implemented annual intra-company Service Level Agreements (SLAs) with SCE corporate service providers (e.g., HR, IT, Real Estate, Supply Management, Treasurer's, Environmental, and Controller's). Each SLA describes the specific administrative and general (A&G) functions and services SCE provides to SONGS that support and sustain the D&D activities. The SLAs meet the terms and conditions included in the Decommissioning Agreement between SCE and the Participants.[63]

The 2014 DCE included an A&G adder (5.0%) that was applied to the costs of each DCE line item to cover the costs of SCE corporate departments supporting SONGS decommissioning. To maintain the integrity of the values referenced from the 2014 DCE in the variance explanations provided elsewhere in this testimony (i.e., all other cost categories), SCE kept the 5% A&G adder with each DCE line item in Table IV-2 above. This results in the value for the SLA/A&G in line 17 of Table IV-2 being shown as zero dollars in the 2014 DCE column. Rather than comparing the SLA/A&G amount included in the 2017 DCE to zero, it is more appropriate to compare it to the

[63] Section 8.1.7.2 of the SONGS Decommissioning Agreement, dated April 23, 2015.

corresponding 5% A&G adder from the 2014 DCE. The number SCE calculated for the corresponding 5% A&G adder from the 2014 DCE for the period 2016-2051 is $160.8 million (100% share, 2014 $).

The 2017 DCE incorporated the SLA costs to replace the A&G adders during the 2016-2028 period. Beginning in 2029, the 2017 DCE resumes applying the 5% A&G adder to all remaining decommissioning costs until project completion in 2051. Under this approach, the 2017 DCE estimates the cost of these SCE corporate functions at $168.2 million[64] (100% share, 2014 $), an increase of $7.4 million, in comparison to the corresponding 5% adder noted above. Using the combination of SLAs and A&G adder provides greater transparency and certainty of costs for the benefit of Participant oversight and project cost control. The Commission should find the estimated costs for the SLAs/A&G adder reasonable because they more accurately reflect the anticipated costs for these corporate support functions.

3. DGC Staffing

DGC staff consists of SDS personnel who provide the project management of the D&D work being performed by SDS, and manage/perform the programs and functions transferred from SCE to SDS. Their project management function involves the continued planning, scheduling, and monitoring of the D&D work as timely as possible while maintaining a safe work environment. It also includes contracting with third party specialty vendors to complete specific tasks (e.g. RVI segmentation), and administering those contracts. SCE provides oversight of SDS's project management. This division of labor allows SDS and SCE to utilize their core competencies to complete the work in an efficient manner – SDS's expertise in deconstructing facilities and SCE's oversight role. This cost category also includes staffing for a DGC that will be required during substructure removal and ISFSI D&D/final site restoration to be performed during 2046-2051.

In the 2017 DCE, the estimated cost for DGC Staffing is $[redacted][65] (100% share, 2014 $). In the 2014 DCE, the estimated cost for DGC Staffing was $423.6 million (100% share, 2014

[64] *See* 2017 DCE, Appendix C, Table 2, line 381.

[65] *See* 2017 DCE, Appendix C, Table 2, lines 155 and 386.

$). This resulted in a decrease of $[redacted] million. This primarily reflects the result of the competitive procurement process that resulted in the selection of SDS.

4. Labor-Staffing

SCE records costs for the SONGS utility staff and security force as undistributed labor. The SONGS utility staff performs various decommissioning activities relating to state and federal regulatory requirements, external communications with stakeholders, and strategic planning and analysis. The utility staff's activities include complying with existing technical specifications; ensuring the health and safety of the workers and the public; planning and preparing the facility for decommissioning; retiring plant systems to minimize or eliminate costs; and keeping the public and stakeholders informed on decommissioning progress. The security force protects SONGS in accordance with NRC regulations 10 C.F.R. § 73 and 10 C.F.R. § 50.54, and has been sized to meet the current design basis threat assessment, pursuant to 10 C.F.R. § 73.

In the 2017 DCE, SCE estimates that Labor-Staffing costs will be $986.2 million[66] (100% share, 2014 $). In the 2014 DCE, SCE estimated that Labor-Staffing costs would be $1,029.4 million (100% share, 2014 $). This resulted in a decrease of $43.2 million (100% share, 2014 $) relative to the 2014 DCE. Now that SCE has four plus years of experience with the planning of decommissioning, it is better able to identify the required staffing to safely carry out the decommissioning of SONGS 2&3 and oversight of its contractors. The estimated staffing levels in the 2017 DCE were developed through a collaborative process between SONGS executive managers and Kenrich. The staffing levels were subsequently vetted by ABZ. The Commission should find these costs reasonable as they reflect the additional experience SCE has gained, have been reviewed by an industry expert, and represent a well-supported estimate of the staffing levels required going forward.

5. All Other Non-Labor

Non-Labor costs include a wide range of decommissioning activities and obligations, including the following:

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[66] *See* 2017 DCE, Appendix C, Table 2, line 265.

- Site Lease and Easement Expenses – SCE will be required to make annual easement and lease payments to the Navy for the onshore plant site and SONGS Mesa facility and to the CSLC for the SONGS 2&3 offshore conduits until the easement and lease agreements are terminated.
- Severance – Under the Decommissioning Act, SCE is required to provide severance benefits to SCE employees at SONGS whose jobs are eliminated as a result of the permanent retirement of SONGS.
- Energy – SCE must purchase electrical energy at retail rates to power the SONGS site.
- Loading Spent Fuel & GTCC Waste to DOE – Under the DOE Standard Contract, SCE is responsible for the cost to transfer spent fuel canisters from the ISFSI and loading them into DOE shipping containers on-site, and then onto the DOE's transportation device.
- Information Technology – SCE will be required to incur software and network licenses, pay network service providers, and provide internal technical support to site personnel at levels commensurate with site staffing until decommissioning is completed.
- Third Party Legal – SCE retains outside counsel as necessary to handle legal matters that require specific expertise or additional resources.
- Emergency Preparedness Fees – SCE provides funding to local jurisdictional authorities for their radiological emergency preparedness, and will continue to do so until all spent fuel has been removed from SONGS, under a memorandum of understanding.
- NRC Fees – As holder of the NRC licenses for SONGS, SCE will be required to pay 10 C.F.R. Part 171 annual license fees and 10 C.F.R. Part 170 inspection fees until the NRC licenses are terminated.

- Utility Staff Health Physics Supplies – After SDS completes the major D&D work, SCE will re-assume responsibility for providing health physics supplies as required to support the ISFSI-only staff.
- Community Engagement Panel – SCE has chartered a panel consisting of a group of representatives from surrounding cities and counties to serve as a conduit of information to the public and other stakeholders regarding decommissioning that seeks to educate and explain SONGS decommissioning matters of interest to the local public. SCE incurs costs to conduct quarterly CEP meetings at venues in the vicinity of SONGS.
- Environmental Permits and Fees – SONGS must comply with a variety of environmental regulations and maintain several environmental permits that will require periodic payments of fees.
- ISFSI Aging Management –The facility maintenance and inspection activities for the ISFSI, in compliance with the Areva and Holtec SARs, as will be determined by the ISFSI Aging Management Program to be developed.
- Security Related Expenses – As long as spent fuel remains on-site, the SONGS security force will continue to require uniforms, weapons, ammunition, other supplies and equipment, as well as background investigations, training, and vendor support.
- DGC Executive Oversight Committee – a five person committee that provides oversight and resolves contractual issues regarding the SDS contract. SCE and SDS share the cost of three independent members on the committee.
- Insurance – NRC regulations require SCE to maintain minimum levels of nuclear liability and property insurance until the spent fuel is removed from the SONGS site. SCE also maintains general liability insurance and excess workers' compensation insurance.

- Association Fees and Expenses – NEI membership fees, and costs related to an external Nuclear Oversight Board (NOB) and an outside advisor to SCE's Internal Nuclear Management Group (INMG).
- Water – SCE is required to purchase potable and service water for the SONGS Site.
- Office Space – During major D&D activities, SDS will demolish all existing office space on the SONGS site and provide temporary office space as necessary. After Major D&D is completed, SCE will need to provide office space for the remaining employees.
- Decommissioning Advisor – One or more outside consultants who provide subject matter expertise regarding decommissioning regulatory issues, spent fuel storage, and project management.
- Ground Water Monitoring – SCE will be required to periodically sample, analyze, and monitor the ground water beneath the SONGS site.

The estimated costs for Non-Labor are shown in Table IV-7 below:

Table IV-7
Reconciliation of 2017 DCE to 2014 DCE
All Other Non-Labor
(100% Share, Millions of 2014 $)

	Description	2017 DCE Total (2014 $)	2014 DCE Total (2014 $)	Variance
1	**Non-Labor**			
2	Site Lease and Easement Expenses	$ 97.5	$ 19.5	$ 78.0
3	Severance	121.0	170.8	(49.8)
4	Energy	84.7	50.2	34.5
5	Loading Spent Fuel & GTCC Waste To DOE	30.6	-	30.6
6	Information Technology	31.9	6.6	25.3
7	Third Party Legal	23.8	-	23.8
8	Emergency Preparedness Fees	48.3	25.8	22.5
9	NRC Fees	31.2	53.6	(22.4)
10	Utility Staff Health Physics Supplies	3.7	25.8	(22.1)
11	Community Engagement Panel	12.5	34.0	(21.5)
12	Environmental Permits and Fees	6.7	27.1	(20.4)
13	ISFSI Aging Management	15.3	-	15.3
14	Security Related Expenses	11.8	18.8	(7.0)
15	DGC Executive Oversight Committee	3.7	-	3.7
16	Insurance	63.7	67.3	(3.6)
17	Association Fees and Expenses	8.6	11.0	(2.4)
18	Water	16.5	14.5	2.0
19	Office Space	1.7	-	1.7
20	Decommissioning Advisor	9.9	11.4	(1.5)
21	Ground Water Monitoring	0.5	-	0.5
22	Property Tax	-	74.7	(74.7)
23	DGC Non-Labor	-	35.9	(35.9)
24	Spent Fuel Maintenance	-	7.4	(7.4)
25	DAW Disposal	-	3.9	(3.9)
26	Tools and Equipment	-	1.3	(1.3)
27	**Non-Labor Total**	**$ 623.6**	**$ 659.6**	**$ (36.0)**

In the 2017 DCE, Other Non-Labor costs are estimated at $623.6 million[67] (100% share, 2014 $). In the 2014 DCE, Other Non-Labor costs were estimated at $659.6 million (100% share,

[67] *See* 2017 DCE, Appendix C, Table 2, line 375 (minus line 287 Contracted Services costs, which are discussed separately in Section IV.C.1).

2014 $). This resulted in a decrease of $36.0 million. This net decrease reflects numerous offsetting increases and decreases as explained below:[68]

- Site Lease and Easement Expenses – In the 2017 DCE, SCE estimates $97.5 million[69] (100% share, 2014 $) for site lease and easement expenses, compared with $19.5 million (100% share, 2014 $) in the 2014 DCE. This resulted in an increase of $78.0 million. SCE expects payments to the Navy to increase after the easement is renegotiated and the Navy resets the fees based on the current fair market rental value of the property.
- Severance – In the 2017 DCE, SCE estimates $121.0 million[70] (100% share, 2014 $) for employee severance costs, compared with $170.8 million (100% share, 2014 $) in the 2014 DCE. This resulted in a decrease of $49.8 million. SCE expects decreased severance costs because it has incurred lower than anticipated payouts to previously terminated SONGS employees. In addition, because many employees were reassigned to other positions within the company, they are no longer eligible for SONGS severance benefits.
- Energy – In the 2017 DCE, SCE estimates $84.7 million[71] (100% share, 2014 $) for energy costs compared with $50.2 million (100% share, 2014 $) in the 2014 DCE, resulting in an increase of $34.5 million. This variance reflects an updated forecast of energy usage levels (at retail energy rates) during 2019-2028 based upon how SDS plans to perform D&D.
- Loading Spent Fuel & GTCC Waste to DOE – In the 2017 DCE, SCE estimates that the cost to transfer spent fuel canisters from the ISFSI into DOE shipping containers

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[68] SCE is not providing variance analyses for variances ≤ $7.0 million or when the 2017 DCE did not include costs for items included in the 2014 DCE.

[69] *See* 2017 DCE, Appendix C, Table 2, line 358.

[70] *See* 2017 DCE, Appendix C, Table 2, line 353.

[71] *See* 2017 DCE, Appendix C, Table 2, line 308.

on-site, and then onto the DOE's transportation device, will be $30.6 million[72] (100% share, 2014 $). The 2014 DCE did not include a line item for this cost.

- Information Technology – In the 2017 DCE, SCE estimates $31.9 million[73] (100% share, 2014 $) for IT costs, compared with $6.6 million (100% share, 2014 $) in the 2014 DCE. This resulted in an increase of $25.3 million. The increased cost is due in part to some one-time payments to network service providers in 2018. After payment of these costs, SCE expects that ongoing support costs will be reduced after 2019.
- Third Party Legal – In the 2017 DCE, SCE estimates $23.8 million[74] (100% share, 2014 $) for third party legal expenses. This variance occurred because the 2014 DCE did not forecast these services as direct costs, but instead assumed that the costs were a part of overheads.[75] The services provided by outside legal counsel are required to perform normal business functions as well as tasks required by the NRC, and state and local agencies.
- Emergency Preparedness Fees – In the 2017 DCE, SCE estimates $48.3 million[76] (100% share, 2014 $) for emergency preparedness fees, compared with $25.8million (100% share, 2014 $) in the 2014 DCE. This resulted in an increase of $22.5 million. In the 2017 DCE, SCE anticipates that it will continue to incur emergency preparedness fees pursuant to a Memorandum of Understanding with local jurisdictional authorities until all spent fuel is removed from the SONGS site versus the assumption in the 2014 DCE that such payments would terminate when the spent fuel was removed from the pools.

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72 *See* 2017 DCE, Appendix C, Table 2, line 361.

73 *See* 2017 DCE, Appendix C, Table 2, line 325.

74 *See* 2017 DCE, Appendix C, Table 2, line 336.

75 Corporate support is provided by SCE from organizations other than SONGS (e.g., legal, treasurer's, finance, IT, supply chain).

76 *See* 2017 DCE, Appendix C, Table 2, line 303.

- Utility Staff Health Physics Supplies – In the 2017 DCE, SCE estimates $3.7 million[77] (100% share, 2014 $) for utility staff health physics supplies, compared with $25.8 million (100% share, 2014 $) in the 2014 DCE. This resulted in a decrease of $22.1 million. The decreased cost occurred because SDS will be performing the health physics functions for the major D&D work, and incurring the cost of its health physics supplies. SCE will re-assume responsibility for providing health physics supplies after the major D&D work is completed, as required to support the ISFSI-only staff.
- Community Engagement Panel (CEP) – In the 2017 DCE, SCE estimates $12.5 million[78] (100% share, 2014 $) for Community Engagement Panel expenses, compared with $34.0 million (100% share, 2014 $) in the 2014 DCE. This resulted in a decrease of $21.5 million. The decreased cost occurred because SCE has incurred lower CEP costs than estimated in the 2014 DCE and expects similar CEP expenditures in the future.
- NRC Fees – In the 2017 DCE, SCE estimates $31.2 million[79] (100% share, 2014 $) for NRC fees, compared with $53.6 million (100% share, 2014 $) in the 2014 DCE. This resulted in a decrease of $22.4 million. The decreased estimated cost occurred because the NRC reduced its 10 C.F.R. Part 171 annual license fees, and SCE expects to incur lower NRC inspection costs under 10 C.F.R. Part 170 than previously estimated.
- Environmental Permits and Fees – In the 2017 DCE, SCE estimates $6.7 million[80] (100% share, 2014 $) for environmental permits and fees, compared with $27.1 million (100% share, 2014 $) in the 2014 DCE. This resulted in a decrease of $20.4 million. The decreased estimated cost occurred primarily due to a reduction to

[77] *See* 2017 DCE, Appendix C, Table 2, line 373.
[78] *See* 2017 DCE, Appendix C, Table 2, line 280.
[79] *See* 2017 DCE, Appendix C, Table 2, line 340.
[80] *See* 2017 DCE, Appendix C, Table 2, line 313.

the annual NPDES Permit fees. Due to a reduction in the quantity of discharges from the plant associated with the permanent shutdown, SCE was able to negotiate with the SWRCB a reduction to the annual NPDES permit fees from $1.1 million per year to $0.2 million per year. In addition to the reduced NPDES fees, the other environmental fees (e.g., hazardous waste, pollution fees) were less than estimated in the 2014 DCE. The 2014 DCE was prepared before the impact of decommissioning on the fees assessed by various local and state agencies was determined.

- ISFSI Aging Management – In the 2017 DCE, SCE estimates $15.3 million[81] (100% share, 2014 $) for undistributed ISFSI Aging Management expenses. The 2014 DCE did not include a line item for this cost.

The total net variance for Other Non-Labor costs is a decrease of $36.0 million (100% share, 2014 $). Because these estimated costs are necessary to complete decommissioning and reflect SCE's experiences throughout four plus years of decommissioning and incurring these types of costs, the Commission should find these estimated costs reasonable.

[81] *See* 2017 DCE, Appendix C, Table 2, line 270.

V.

CONCLUSION

The 2017 DCE estimates that the total cost to decommission SONGS 2&3 will be $4,479 million (100% share, 2014 $), an increase of approximately 1.5% over the 2014 DCE that the Commission found reasonable in D.16-04-019.

In Chapter II of this testimony, SCE presented a detailed discussion of the methodology by which the 2017 DCE was developed and the bases for its underlying assumptions. SCE also explained that due to the existence of contract pricing for much of the decommissioning work, SCE was able to reduce the overall contingency factor of the 2017 DCE from 25% to 17%. In Chapter III, SCE presented the testimony of Mr. Nicholas Capik, the Managing Director of ABZ Incorporated, a major provider of decommissioning cost estimates for U.S. nuclear facilities. Mr. Capik described the independent review that he performed regarding the completeness and accuracy of the 2017 DCE. In Chapter IV, SCE provided a detailed reconciliation of the 2017 DCE to the 2014 DCE, including detailed discussions of significant cost changes between the two estimates.

Given SCE's thorough and detailed explanation of the 2017 DCE, SCE has met its burden to demonstrate that the 2017 DCE is a reasonable estimate of SONGS 2&3 decommissioning costs, and provides an appropriate basis for the Commission to evaluate the reasonableness of the decommissioning costs. The Commission, therefore, should find the 2017 SONGS 2&3 DCE to be reasonable.

Appendix A

Witness Qualifications

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF JOSE LUIS PEREZ

Q. Please state your name and business address for the record.

A. My name is Jose Luis Perez, and my business address is 2244 Walnut Grove Ave, Rosemead, CA 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company.

A. I am a Principal Manager, Nuclear CPUC Regulatory Affairs and Compliance, in the Regulatory Affairs Organization responsible for CPUC regulatory activities and financial planning & analysis for SONGS issues.

Q. Briefly describe your educational and professional background.

A. I earned an MBA from the University of California, Irvine in 1997. I earned a Bachelor of Science Degree in Civil Engineering from California State University, Long Beach in 1977. I am a Registered Professional Engineer in the State of California. Since joining Edison in 1982, I have held various management positions in nuclear generation business, finance, regulatory affairs, planning & strategy, and project controls organizations. In addition, I have managed various projects, including SONGS 1 decommissioning shortly after permanent shutdown and industry restructuring financial analysis. Prior to joining Edison, my professional background included various home office and jobsite positions in the civil engineering, nuclear power plant start-up, and project controls organizations of Bechtel Power Corporation and the collection and analysis of construction cost data for publication in cost estimating manuals for Marshall and Swift Publications.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor Exhibit SCE-03: *Testimony On The 2017 Decommissioning Cost Estimate for SONGS 2&3,* as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

ABZ, INCORPORATED

QUALIFICATIONS AND PREPARED TESTIMONY

OF NICHOLAS J. CAPIK

Q. Please state your name and business address for the record.

A. My name is Nicholas Joseph Capik, and my business address is 4451 Brookfield Corporate Drive, Suite 107, Chantilly, VA 20151.

Q. Who is your current employer?

A. ABZ, Incorporated.

Q. Briefly describe your present responsibilities at ABZ.

A. I am a Managing Director of ABZ. In that role, I am responsible for the management and execution of numerous ABZ projects performed for the nuclear industry.

Q. Briefly describe your educational and professional background.

A. I earned an BS in Mathematics from the Pennsylvania State University in 1983. I completed the Navy Nuclear Training Program in 1985. I served in the U.S. Navy from 1983 through 1991. Since 1991, I have been employed at ABZ. At ABZ, I have performed cost estimates for over 40 clients related to due diligence, decommissioning, accident cleanup, and site restoration. In this role, I was responsible for the development of assumptions, the selection of scenarios, the preparation of studies, and the presentation of results. I have supported litigation related to spent fuel storage, and tax issues related to decommissioning. I have had oversight and involvement of decommissioning activities at several nuclear facilities.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of Exhibit SCE-03: *Testimony On The 2017 Decommissioning Cost Estimate for SONGS 2&3,* as identified in the Table of Contents thereto.

Q. Was this material prepared by you?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Appendix B

Decommissioning Cost Estimate - Confidential

San Onofre Nuclear Generating Station Units 2 & 3
2017 Decommissioning Cost Estimate

Prepared For:
Southern California Edison
2244 Walnut Grove Avenue
Rosemead, CA 91770

Prepared By:
The Kenrich Group LLC
1919 M Street, NW
Suite 620
Washington, DC 20036

January 26, 2018

Revised March 8, 2018

Christopher F. Tierney
Vice President & Chief Financial Officer

DESCRIPTION OF MINOR REVISION

Revision Number: 1

Effective Date: March 8, 2018

The revisions made to the 2017 SONGS 2&3 Decommissioning Cost Estimate are minor in nature and do not revise or otherwise impact the content or results of the cost estimate.

Item 1 – The Spent Fuel Shipping Schedule in Appendix A has been revised to correct the number of Units 2 & 3 canisters transferred to the ISFSI.

Item 2 – Revised an activity description in Appendix B, "Detailed Project Schedule."

Item 3 – Within Appendix C, "Detailed Cost Tables," the notes to Appendix C have been attached.

Item 4 – The line numbers in Table 10, "Utility & Security Force Average Staffing By Period," have been corrected.

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APPENDICES

Acronyms and Abbreviations

APCD	Air Pollution Control District
CCC	California Coastal Commission
CoC	Certificate of Compliance
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
CEP	Community Engagement Panel
CFR	Code of Federal Regulations
CPUC	California Public Utilities Commission
CSLC	California State Lands Commission
D&D	Decontamination & Dismantlement
DCE	Decommissioning Cost Estimate
DGC	Decommissioning General Contractor
DOE	U.S. Department of Energy
DTSC	California Department of Toxic Substances Control
EIR/EIS	Environmental Impact Report/Statement
GTCC	Greater Than Class C
HP	Health Physics
INMG	SCE Internal Nuclear Management Group
ISFSI	Independent Spent Fuel Storage Installation
LLC	Limited Liability Company
LLRW	Low-Level Radioactive Waste
NDCTP	Nuclear Decommissioning Cost Triennial Proceeding
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NIA	North Industrial Area
NOB	Nuclear Oversight Board
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
PG&E	Pacific Gas and Electric Company
PSDAR	Post-Shutdown Decommissioning Activities Report
SAR	Safety Analysis Report
SCE	Southern California Edison Company
SDS	SONGS Decommissioning*Solutions*
SONGS	San Onofre Nuclear Generating Station
WBS	Work Breakdown Structure

I. Executive Summary

The 2017 San Onofre Nuclear Generating Station Units 2&3 (SONGS 2&3) Decommissioning Cost Estimate (2017 DCE) has been prepared by the Kenrich Group LLC[1] (Kenrich) for Southern California Edison Company (SCE).[2] ABZ, Inc. (ABZ) also performed an independent review of the 2017 DCE.

The 2017 DCE utilizes the same Work Breakdown Structure (WBS) and selected distributed cost estimates included in the 2014 SONGS 2&3 DCE (2014 DCE) prepared by Energy*Solutions*, and essentially is an update to that DCE. The 2017 DCE will be submitted for review by the California Public Utilities Commission (CPUC) in the 2018 Nuclear Decommissioning Cost Triennial Proceeding (NDCTP). SCE will also submit certain information contained in the 2017 DCE to the U.S. Nuclear Regulatory Commission (NRC) for its review.[3]

The 2017 DCE incorporates pricing from two significant contracts SCE has entered into for SONGS 2&3 decommissioning. In December 2014, SCE awarded a contract to Holtec International, Inc. (Holtec) to expand the SONGS Independent Spent Fuel Storage Installation (ISFSI) and transfer fuel from the SONGS 2&3 spent fuel pools to the ISFSI (ISFSI Expansion and Fuel Transfer Operations contract). In December 2016, SCE entered into a contract with the companies that have formed a joint venture called SONGS Decommissioning*Solutions* (SDS)[4], who will serve as the Decommissioning General Contractor (DGC) for major decontamination and dismantlement (D&D) activities. The ISFSI expansion project is in process, with transfer of spent fuel from the SONGS 2&3 spent fuel pools to the ISFSI planned to commence in 2018. SDS initially mobilized in January 2017, and is continuing to develop decommissioning plans and schedule. The DGC is currently expected to begin physical work in January 2019, following the approval of a Coastal Development Permit (CDP) by the California Coastal Commission (CCC). The 2017 DCE incorporates the pricing from both of these contracts.

In addition, the 2017 DCE incorporates and reflects recorded costs, new information, and experience gained from decommissioning activities SCE has completed since June 2013. Since announcing its decision in June 2013 to permanently retire SONGS 2&3, SCE has commenced preliminary decommissioning planning and performed other significant preparatory activities for

[1] Kenrich is a national management consulting firm with significant experience in power plant construction and decommissioning and in the energy industry more broadly in the United States and internationally.

[2] Per the SONGS Decommissioning Agreement dated April 23, 2015, Southern California Edison is currently the Decommissioning Agent acting on behalf of itself and the three other SONGS 2&3 Participants, including San Diego Electric & Gas Company, the City of Riverside, and the City of Anaheim.

[3] In accordance with 10 C.F.R. § 50.82(a)(8)(v), the licensee must annually submit to the NRC by March 31 a financial assurance status report.

[4] The contract is between Southern California Edison Company and Energy*Solutions* Services, Inc. and AECOM Energy & Construction, Inc., together the "contractor," and referred to herein as "SDS."

SONGS 2&3 decommissioning. The 2017 DCE incorporates recorded costs through September 2017 associated with these efforts.

The 2017 DCE for SONGS 2&3 is $4.702 billion in Nominal/2017 dollars. The 2014 DCE was $4.411 billion in 2014 dollars. For purposes of comparison to the 2014 DCE, the 2017 DCE expressed in 2014 dollars is $4.479 billion, which results in an approximate $68 million variance (less than 2%) between the two DCEs.

II. Introduction

A. Purpose And Scope Of 2017 DCE

In accordance with the California Nuclear Facilities Decommissioning Act of 1985 (Act), SCE is required by the CPUC to update the SONGS 2&3 DCE every three years in connection with the NDCTP. The DCE is reviewed by the CPUC to determine the sufficiency of SCE's and San Diego Gas & Electric Company's (SDG&E) nuclear decommissioning trust funds, and the amount of customer contributions to those trust funds, if any are required. The DCE is also used in subsequent CPUC reasonableness reviews of actual decommissioning costs.

On June 7, 2013, SCE announced its decision to cease power generation operations and permanently retire SONGS 2&3.[5] In 2014, SCE engaged Energy*Solutions* to "evaluate decommissioning alternatives and assist in the development of a detailed project schedule and DCE to support the preparation and submittal of a Post Shutdown Decommissioning Activities Report (PSDAR) in accordance with 10 C.F.R. § 50.82(a)(4)(i), which requires that a PSDAR be submitted [to the NRC] within two years following the permanent cessation of operations."[6] SCE submitted the PSDAR and 2014 DCE to the NRC on September 23, 2014 and to the CPUC on December 10, 2014.[7] The CPUC approved the 2014 DCE as reasonable in Decision (D.) 16-04-019 issued on April 21, 2016.

In 2017, SCE engaged Kenrich to prepare the 2017 DCE to reflect the actual costs and updated information and experience gained from SCE's decommissioning activities completed since June 2013. The 2017 DCE will be reviewed by the CPUC for the purposes identified above. New and updated information incorporated into the 2017 DCE includes: [8]

[5] SONGS 1 has largely been decommissioned and the site it occupied is now referred to as the North Industrial Area, which includes the SONGS ISFSI.

[6] Energy*Solutions*, "2014 Decommissioning Cost Analysis of the San Onofre Nuclear Generating Station Units 2&3," September 5, 2014.

[7] The NRC accepted the SONGS 2&3 PSDAR and found the 2014 Units 2&3 DCE estimate of $4.411 billion to be reasonable on August 20, 2015.

[8] Information in this DCE is intended to be current as of approximately September 30, 2017.

- The contract pricing for the contract awarded to Holtec International, Inc. (Holtec) for the ISFSI expansion and the transfer of spent fuel from the SONGS 2&3 spent fuel pools to the ISFSI;

- Contract value for the DGC contract awarded to SONGS Decommissioning*Solutions* (SDS) for the decontamination and dismantlement of SONGS 2&3, and the removal and disposal of hazardous and non-hazardous waste off the site;[9]

- Recorded costs for decommissioning activities through September 30, 2017;

- Revised U.S. Department of Energy (DOE) spent fuel acceptance date to reflect the DOE's continued failure to perform its contractual obligation to remove spent fuel from commercial nuclear reactors in the past four years;

- Revised environmental permitting approval dates based on the current permitting status and the requirements of the California Environmental Quality Act (CEQA) and the CCC's CDP processes;

- Revised project execution strategy to delay substructure removal until 2046;

- Updated undistributed cost projections based on historical recorded costs and revised projections;

- Updated ISFSI demolition costs to reflect the Holtec ISFSI pad; and

- Additional costs not included in the 2014 DCE.

In sum, significant components of the 2017 DCE are now based on competitively bid contracts, as well as three additional years of experience managing a decommissioning plant and overseeing decommissioning personnel. Where new information was not available, Kenrich worked with SCE personnel and third-party consultants to validate and refine the 2014 DCE cost and schedule assumptions. Table 1 and Figure 1 below provide a summary of the 2017 DCE in nominal/2017 dollars[10] and in 2014 dollars.

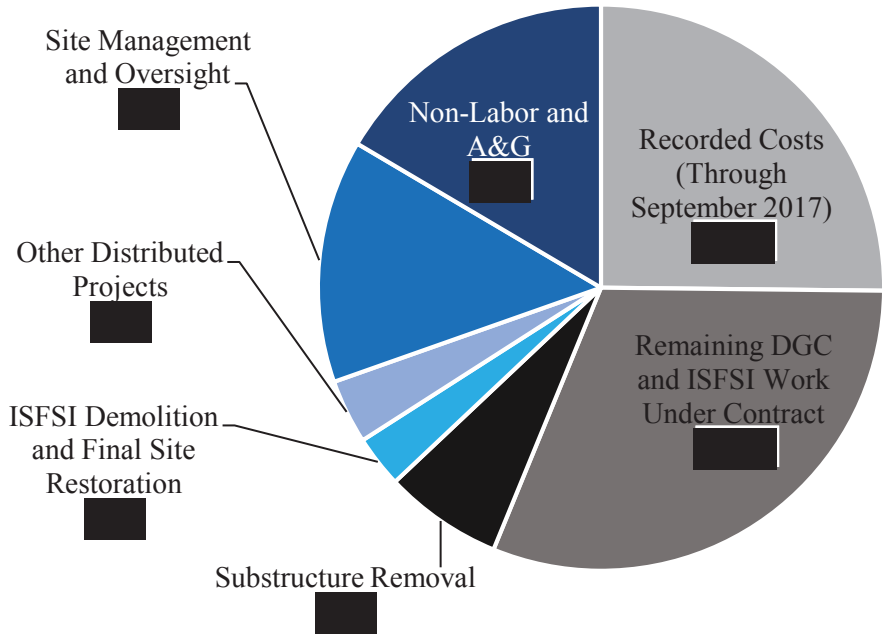
[9] See Appendix B for the schedule and activities for decontamination, and dismantlement.

[10] The 2017 DCE presents recorded costs in nominal dollars and estimated (i.e., October 2017-2051) costs in 2017 dollars.

TABLE 1 – 2017 DCE BY UPDATE CATEGORY [11, 12]
($ IN THOUSANDS)

	Description	2017 DCE (Nominal/ 2017$)	2017 DCE (2014$)
1	Recorded Costs (Through September 2017)	[redacted]	[redacted]
2	Remaining DGC and ISFSI Work Under Contract		
3	Substructure Removal		
4	ISFSI Demolition and Final Site Restoration		
5	Other Distributed Projects		
6	Site Management and Oversight		
7	Non-Labor and A&G		
8	**Total**	**$ 4,702,264**	**$ 4,478,566**

FIGURE 1 – 2017 DCE BY UPDATE CATEGORY
($ IN MILLIONS OF 2017 DOLLARS)



[11] Totals in tables throughout this report may not tie due to rounding.

[12] Of the $1,183,601 (nominal dollars) in recorded costs included in the 2017 DCE, $964,996 was recorded between June 2013 and December 2016, and $218,605 was recorded between January and September 2017 ($964,996 + $218,605 = $1,183,601).

B. Regulatory Framework

SONGS 2&3 decommissioning is governed by the following NRC regulations:

1. 10 C.F.R. Part 50 License – SCE holds a 10 C.F.R. Part 50 license for SONGS 2&3. SCE, as the license holder, must comply with all the requirements and standards of the Part 50 license. The Part 50 license authorizes SCE to store spent fuel on-site in wet storage (i.e., the spent fuel pool).

2. 10 C.F.R. Part 72 License – SCE is required to hold a 10 C.F.R. Part 72 license in order to store fuel on-site in dry storage at the ISFSI. The current ISFSI Part 72 license is a general license set forth in 10 C.F.R. § 72.210 and requires the possession of a Part 50 license.

3. 10 C.F.R. § 50.75(c) specifies the reporting and recordkeeping requirements for decommissioning planning and requires that the licensee provide adequate funding for termination of the Part 50 license.

4. 10 C.F.R. § 72.30 specifies the financial assurances and recordkeeping for decommissioning and requires that the licensee provide adequate funding for termination of the Part 72 license.

5. 10 C.F.R. § 50.54(bb) requires the licensee to submit written notification to the NRC within two years following permanent cessation of operation of the reactor or five years before expiration of the operating license(s), whichever occurs first, for review and preliminary approval of the program by which the licensee intends to manage and provide funding "for the management of all irradiated fuel at the reactor upon expiration of the reactor operating license until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository." The 2014 DCE was submitted pursuant to this requirement.

C. SONGS Decommissioning Background

SONGS is located in southern California on the shore of the Pacific Ocean, approximately 62 miles southeast of Los Angeles and 51 miles northwest of San Diego. The plant is located entirely within Marine Corps Base Camp Pendleton on land owned by the U.S. Department of the Navy (Navy), except for the offshore intake and outfall conduits. SONGS 2&3 occupy approximately 53 acres of the 84-acre SONGS site. Approximately 16 acres are occupied by the North Industrial Area (NIA), formerly the SONGS 1 site, which is where the ISFSI is located. Additional SONGS support activities occurred on Navy property across Interstate 5 from the SONGS site, referred to as the Mesa site.

SONGS 2&3 was a 2,250-megawatt nuclear generation facility consisting of two pressurized water reactors, which commenced operation in 1983 and 1984, respectively. On June 7, 2013, SCE announced plans to permanently retire SONGS 2&3. On June 12, 2013, SCE

submitted a Certification of Permanent Cessation of Power Operations to the NRC, certifying that SCE had permanently ceased power operations of SONGS 2&3, and surrendering SCE's authority to operate the units. SCE submitted to the NRC a Certification of Permanent Removal of Fuel for Unit 3 on June 28, 2013, and for Unit 2 on July 22, 2013. As a result of these submittals, SCE now holds an NRC license that does not permit power operations, but authorizes the possession of the SONGS facilities and licensed nuclear material.

As noted above, SCE has completed preliminary planning and performed other significant preparatory activities associated with SONGS 2&3 decommissioning. These activities include: (1) expanding the on-site spent fuel dry storage facility (also referred to as the ISFSI) and beginning preparations to transfer fuel from the spent fuel pools to the ISFSI; (2) planning the major decontamination, dismantlement, demolition and disposal efforts; (3) selecting a DGC to complete major portions of the decommissioning project, including the decontamination and dismantlement of SONGS 2&3, and removal and disposal of hazardous and non-hazardous waste from the site; (4) obtaining necessary approvals of various NRC license amendments now that SONGS 2&3 is permanently retired and being decommissioned; and (5) implementing various site projects to comply with regulatory requirements and other obligations, and prepare the site for major decommissioning activities.

Along with these efforts, SCE's legal and environmental teams have been working to complete the CEQA process and obtain a CDP so that major decontamination and dismantlement work by SDS can begin.

The current Grant of Easement for SONGS from the Navy is scheduled to expire May 11, 2024. Efforts to obtain a new real estate authorization from the Navy for the plant site are ongoing, and approval for the issuance of a new real estate authorization is expected by 2024.

D. The Kenrich Group

Kenrich is a national management consulting firm with substantial experience in the public utility industry, nuclear power plant construction and decommissioning, and other commercial and public construction projects. Kenrich professionals have prepared and sponsored expert testimony with respect to cost and schedule analyses, project management, and economic damages before state and federal courts, domestic and international arbitration tribunals, and state utility commissions.

Kenrich personnel have consulted with utilities for more than 30 years on a wide range of matters, including strategic planning and financial analyses to support management decision-making, reviews and investigations by state and federal regulatory commissions, and economic damages analyses in the context of business disputes. Kenrich's consultants include accountants, financial analysts, and engineers, and the firm typically focuses on complex and detailed accounting and financial issues, as well as cost and schedule performance on major projects, including nuclear power plant construction and decommissioning.

III. Summary of the 2017 DCE

A. General Approach

This 2017 DCE builds on the 2014 DCE, incorporating recorded costs through September 30, 2017; contract pricing for the ISFSI expansion contract awarded to Holtec in December 2014 and the DGC contract awarded to SDS in December 2016; site restoration costs estimated by third-party engineering firms; and revised SCE estimates for ongoing plant security and maintenance, and project oversight. Kenrich worked closely with SCE management and project oversight to develop the 2017 DCE. This DCE is generally consistent with the guidance provided in NRC Regulatory Guide 1.202, "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors."

SCE retained ABZ, Incorporated (ABZ) to perform an independent review of the 2017 DCE. ABZ is a management consulting and engineering firm specializing in providing services related to decommissioning costs, scheduling, and spent fuel storage. ABZ has prepared decommissioning cost estimates for numerous nuclear plant owners, including an estimate of SONGS 2&3 decommissioning costs for SCE in 2013, shortly following the announcement of the permanent retirement of SONGS 2&3.

B. Energy*Solutions* 2014 DCE

In January 2014, SCE retained Energy*Solutions* to evaluate decommissioning alternatives and assist in the development of a detailed project schedule and DCE to support the preparation and submittal of a PSDAR in accordance with 10 C.F.R. § 50.82(a)(4)(i), which requires that a PSDAR be submitted to the NRC within two years following the permanent cessation of facility operations.

The 2014 DCE included the following three cost categories:

- **License Termination** -- Decommissioning SONGS 2&3 to the extent required to terminate the plant's operating license pursuant to 10 C.F.R. § 50.75(c);

- **Spent Fuel Management** -- Post-shutdown management of spent fuel until acceptance by the DOE pursuant to 10 C.F.R. § 50.54(bb) and ISFSI decommissioning pursuant to 10 C.F.R. § 72.30; and

- **Site Restoration** -- Demolition of uncontaminated structures and restoration of the site in accordance with the Navy Grant of Easement and the California State Lands Commission (CSLC) requirements.

The 2014 DCE was prepared using a WBS to differentiate between these three major cost categories. The 2014 DCE included SCE's actual costs incurred from June 7, 2013 through December 31, 2013 and estimated costs thereafter.

The 2014 DCE was based on the following technical approach to decommissioning:

- Prompt DECON decommissioning methodology;[13]
- Decommissioning would be performed by a DGC with oversight by the SONGS participants;
- Spent fuel would be transferred from the spent fuel pools and stored in Multi-Purpose Canisters at an on-site ISFSI; and[14]
- The DOE would begin accepting spent fuel from the nuclear industry in 2024 and complete the removal and acceptance of all spent fuel stored at SONGS by 2049. A dry transfer facility would not be necessary to transfer the spent nuclear fuel canisters to DOE transport canisters.

The 2014 DCE followed the approach originally presented in the Atomic Industrial Forum/National Environmental Studies Project Report AIF/NESP-036, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates." The report was prepared in accordance with NRC Regulatory Guide 1.202, "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors." The estimate was based on compliance with current regulatory requirements and proven decommissioning technologies.

On December 10, 2014, SCE filed Application (A.)14-12-007 and submitted the 2014 SONGS DCE to the CPUC. On April 21, 2016, the CPUC issued D.16-04-019, determining that the 2014 SONGS DCE was reasonable. On August 20, 2015, the NRC accepted the PSDAR, and found the DCE to be reasonable, stating:

> The NRC staff reviewed the cost estimates against the guidance in RG 1.185, Section C.3 and finds that SCE's site-specific DCE and the costs of long-term storage of spent fuel for SONGS, Units 2 and 3, are considered reasonable, are described consistent with the guidance in RG 1.185, provide sufficient details

[13] DECON is one of three basic methods for decommissioning defined by the NRC. Under the DECON method, the equipment, structures, and portions of the facility and site that contain radioactive contaminants are promptly removed or decontaminated to a level that permits termination of the Part 50 license after cessation of operations.

[14] The three options for long-term post-shutdown spent fuel management currently available to power plant operators are as follows: (1) wet storage consisting of continued maintenance and operation of the spent fuel pools; (2) dry storage consisting of transfer of spent fuel from the fuel pool to on-site dry storage modules after a cooling period; or (3) a combination of the two as is the present case at SONGS. Maintaining the spent fuel pool for an extended duration following cessation of operations would prevent the reduction of the Part 50 license and result in higher annual maintenance and operating costs than the dry storage alternative. Transfer of spent fuel to an ISFSI requires additional expenditures for purchase and construction of the ISFSI and dismantlement and disposal of the ISFSI following the completion of spent fuel transfer to the DOE.

associated with the funding mechanisms, and meet the requirements of 10 CFR 50.82(a)(4)(i).[15]

C. 2017 DCE Structure

The 2017 DCE utilizes the WBS that was established in the 2014 DCE, [16] and is estimated in 2017 dollars. Certain comparisons of the 2014 and 2017 DCEs are provided in 2014 dollars for ease of comparison. Costs were de-escalated from 2017 dollars to 2014 dollars using escalation factors provided by SCE.

Consistent with the 2014 DCE, the 2017 DCE provides the total costs to decommission SONGS 2&3. The liability for the total decommissioning costs is shared between the SONGS participants.[17]

As noted above, the 2014 DCE summarized the decommissioning costs by the License Termination, Spent Fuel Management, and Site Restoration cost categories (as generally defined by the NRC). The costs were further summarized into sequential periods within each cost category. For the 2017 DCE, Kenrich revised the periods from the 2014 DCE and established common periods that include all cost categories to better align the estimated costs with SCE's current project schedule and to simplify cost and schedule reporting.[18]

The 2017 DCE periods were designed to reflect the timing and completion of certain decommissioning milestones, including the completion of: (1) ISFSI fuel transfer operations; (2) mobilization and transition of various program activities (e.g. radiation protection program, maintenance, etc.) to SDS; and (3) major D&D phases of work defined in the DGC contract.[19] The completion of these milestones are expected to trigger certain reductions in staffing and undistributed costs. Figure 2 illustrates how the 2017 DCE periods align to the DGC contract and the completion of fuel transfer operations.

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[15] August 20, 2015 letter from NRC to SCE Vice President and Chief Nuclear Officer, Mr. Thomas J. Palmisano (ADAM Accession No.: ML15204A383)

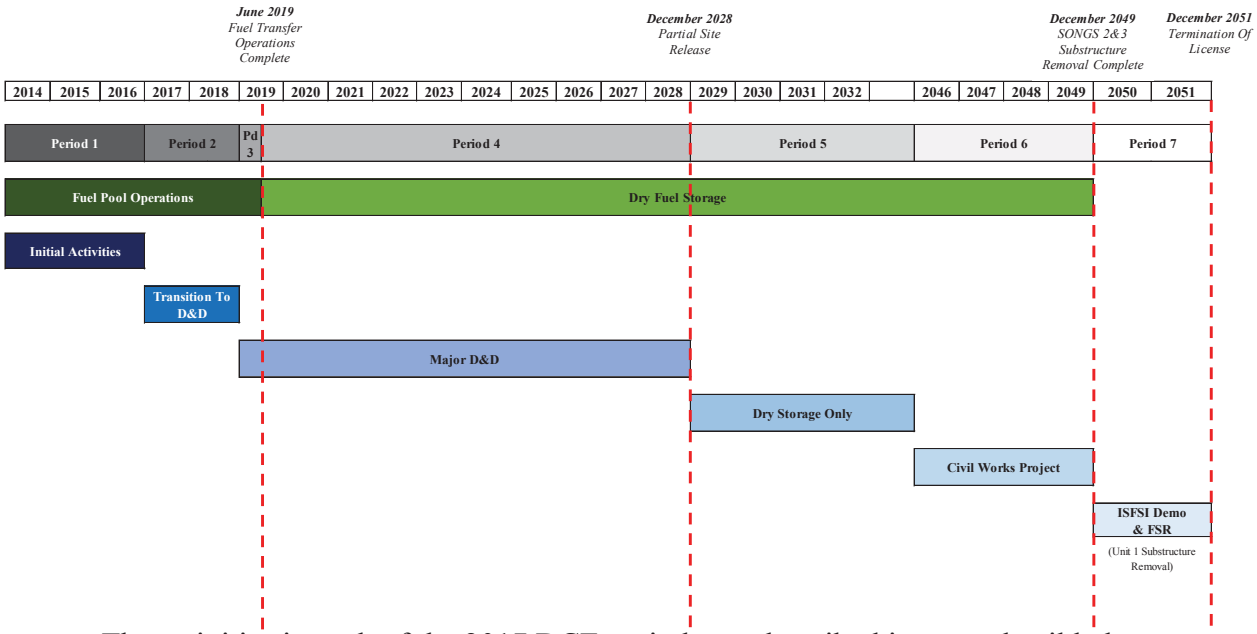
[16] The DCE line numbers in Appendix C of this report align to the line numbers in Appendix D of the 2014 DCE. The DCE line numbers in Appendix C of this report indicate the corresponding 2014 DCE: (1) NRC cost category, (2) 2014 DCE period, (3) cost type (i.e., distributed or undistributed), and (4) line number. For example, "LT-2-D-2.17" in Appendix C of this DCE corresponds to License Termination Period 2, distributed cost line number 2.17 in Appendix D of the 2014 DCE.

[17] The share of the liability for each of the SONGS Participants is provided in Appendix E.

[18] While new periods are used to summarize the costs in this DCE, the underlying cost structure remains the same as the 2014 DCE and will facilitate cost reconciliations between the two estimates.

[19] The phases of work in the DGC contract are described in more detail in Section V.D.3 below.

FIGURE 2 ALIGNMENT OF 2017 DCE PERIODS TO DECOMMISSIONING MILESTONES



The activities in each of the 2017 DCE periods are described in more detail below.

Period 1 – Initial Activities (June 2013 – December 2016)

Period 1 began on June 7, 2013 immediately following SCE's decision to permanently retire SONGS 2&3. As the decision was made approximately nine years before the units' Part 50 operating licenses would have expired, SONGS's premature retirement was unexpected. SCE spent the following six months reducing its workforce and beginning to formulate plans for decommissioning. This period includes preliminary decommissioning planning, obtaining necessary approvals of NRC license amendments, commencing the expansion of its on-site ISFSI facility, and procuring a DGC. The end of this period aligns with the selection and award of the DGC contract to SDS in December 2016.

Period 2 – Transition and Pool Storage (January 2017 – December 2018)

Period 2 began with the mobilization of SDS in January 2017 and extends through December 2018, during which time SCE will transition responsibility of D&D-related site management and support functions at SONGS to SDS. In addition, SCE will complete the CEQA process with CSLC and obtain a CDP from the CCC. The CEQA process and CDP are required for SDS to begin major decontamination and dismantlement work. Other activities during Period 2 include the ongoing expansion of the on-site ISFSI facilities, and various other smaller projects. In addition, SCE currently anticipates that Holtec will begin transferring spent fuel from the wet storage pools adjacent to the reactors into dry storage at the expanded on-site ISFSI in 2018. The fuel transfer operations will continue into Period 3.

Period 3 – D&D and Pool Storage (January 2019 – May 2019)

Period 3 begins with SDS's mobilization to commence the major physical work to decontaminate and dismantle SONGS 2&3. SDS's initial work during this period will primarily focus on the segmentation and packaging of reactor internals. The completion of the transfer of all fuel from the operating spent fuel pools into dry storage at the on-site ISFSI marks the end of Period 3. After the SONGS spent fuel pools are empty, related systems needed for the spent fuel pools will be retired, and otherwise applicable plant programs associated with spent fuel management will be modified, allowing SCE to further reduce SONGS staffing.

Period 4 – D&D and Dry Storage (June 2019 – December 2028)

Period 4 begins with the completion of fuel transfer operations and extends through the completion of the D&D work. Period 4 is expected to span approximately 9.6 years. This period includes the decontamination, dismantlement, demolition, removal, and waste disposal of the entire SONGS plant to approximately 3 feet below grade, with the exception of the on-site ISFSI and its associated security facilities, as well as the switchyard area. At the end of this period, SDS is expected to have completed all D&D work necessary to obtain NRC approval to reduce the Part 50 license site footprint to the ISFSI area only and to allow partial release of the SONGS site for unrestricted future use.

Period 5 – Dry Storage (January 2029 – December 2045)

During Period 5, the primary activity at SONGS will be the ongoing maintenance and security of the on-site ISFSI and the transfer of all SONGS spent fuel to the DOE. For purposes of the 2017 DCE, SCE has assumed that the DOE will begin performing its obligations nationally in 2028, which means that the DOE would begin removing the SONGS 2&3 spent nuclear fuel from the on-site ISFSI in 2034 under the pick-up rates published in the DOE's July 2004 "Acceptance Priority Ranking & Annual Capacity Report." In addition, Period 5 includes the Navy's National Environmental Policy Act (NEPA) environmental review process, associated with amending the SONGS real estate authorization to establish the site restoration or "end state" requirements for SONGS to return the property to the Navy. SCE will also initiate a Request For Proposal (RFP) process for substructure removal work.

Period 6 – Civil Works Project (January 2046 – December 2049)

Period 6 begins with a contractor mobilizing in order to perform the remaining work to restore the SONGS site for its return to the Navy. This work includes removing all onshore below-grade man-made structures, with the exception of the North Industrial Area where the on-site ISFSI is located. This work is currently expected to span approximately four years and is scheduled to be completed in December 2049. During Period 6, the DOE will continue to remove the remaining SONGS spent fuel from the ISFSI. SCE assumes all fuel is removed by the DOE by December 2049, marking the end of this period and the commencement of Period 7,

the demolition and removal of the ISFSI facilities and the final site restoration of the SONGS site.

Period 7 – ISFSI Demolition and Final Site Restoration (January 2050 – December 2051)

After all of the spent fuel is removed from SONGS, SCE can begin the final decommissioning and site restoration activities. These activities include dismantling and disposing of the ISFSI, completing the final site restoration work, obtaining NRC approval to terminate the remaining license covering the ISFSI, and returning the property to the Navy.[20] SCE projects that all decommissioning activities will be completed by 2051, approximately two years after the removal of the last spent fuel from the SONGS ISFSI.

In addition, for purposes of the 2017 DCE, SCE has assumed that the offshore intake and outfall conduits will be excavated and removed during this period.

At the end of decommissioning in 2051, all above and below ground man-made improvements, including the seawall and the offshore intake and outfall conduits, will be removed, and the site will be re-graded, re-vegetated, and returned to the Navy.

IV. Summary Of 2017 DCE Costs And Schedule

A. Summary Of 2017 DCE Recorded And Estimated Costs

SONGS has incurred $965.0 million (nominal dollars) through December 31, 2016 and estimates $3,737 million (2017 dollars) to complete decommissioning through 2051, for a total estimate of $4,702 million (Nominal/2017 dollars). The equivalent total in 2014 dollars is $4,479 million. Table 2 below summarizes the 2017 DCE by cost category.

[20] The Units 2&3 ISFSI Demolition and Final Site Restoration scope excludes the removal of the remaining Unit 1 foundations. The scope of the removal of the Unit 1 foundations is included in the Unit 1 DCE.

TABLE 2 SUMMARY OF 2017 DCE [21] [22]
($ IN THOUSANDS)

	Description	[A] Recorded Through 2016 (Nominal $)	[B] Estimate To Complete (2017$)	[C = A + B] Total Estimate At Completion (Nominal /2017$)	[D] Total Estimate At Completion (2014$)
1	**Distributed Projects**				
2	Completed Projects	$ 216,611	$ 1,234	$ 217,845	$ 214,024
3	ISFSI & Fuel Transfer Operations	140,047	142,385	282,432	270,210
4	Decontamination, Demolition, & Disposal	-	[redacted]	[redacted]	[redacted]
5	Other Projects	19,959	180,789	200,748	189,758
6	Substructure Removal	-	287,340	287,340	273,042
7	Offshore Conduit Removal	-	96,039	96,039	91,631
8	ISFSI Demolition	-	20,229	20,229	19,171
9	Final Site Restoration	-	7,267	7,267	6,905
10	**Distributed Subtotal**	[redacted]			
11					
12	**Undistributed Activities**				
13	Labor-Staffing	$ 336,628	$ 696,304	$ 1,032,932	$ 986,172
14	Non-Labor	241,104	639,572	880,676	848,786
15	Service Level Agreements	10,647	166,996	177,643	168,212
16	DGC Staffing	[redacted]			
17	**Undistributed Subtotal**				
18					
19	**Total**				

B. Summary Of 2017 DCE By Period

As discussed above, the 2017 DCE periods were designed to reflect the timing and completion of key decommissioning milestones that impact the cost estimate. The table below summarizes the 2017 DCE by period.

[redacted]

[22] The "estimate to complete" amounts in the tables through the report summarize period 2 through 7 costs (i.e., 2017 – 2051), which include January through September 2017 recorded costs.

TABLE 3 – SUMMARY OF 2017 DCE BY PERIOD (NOMINAL/2017$ IN THOUSANDS)

	Description	Period 1 Initial Activities (Nominal $)	Period 2 Transition and Pool Storage (2017$)	Period 3 D&D and Pool Storage (2017$)	Period 4 D&D and Dry Storage (2017$)	Period 5 Dry Storage (2017$)	Period 6 Civil Works Project (2017$)	Period 7 ISFSI Demolition & Final Site Restoration (2017$)	Total (Nominal/ 2017$)
1	Start	6/7/2013	1/1/2017	1/1/2019	6/1/2019	1/1/2029	1/1/2046	1/1/2050	
2	End	12/31/2016	12/31/2018	5/31/2019	12/31/2028	12/31/2045	12/31/2049	12/31/2051	
3	Duration (Years)	3 6	2 0	0 4	9 6	17 0	4 0	2 0	
4									
5	**Distributed Projects**								
6	Completed Projects	$ 216,611	$ 1,234	$ -	$ -	$ -	$ -	$ -	$ 217,845
7	ISFSI & Fuel Transfer Operations	140,047	138,943	3,442	-	-	-	-	282,432
8	Decontamination, Demolition, & Disposal	[redacted]							
9	Other Projects	19,959	42,196	7,922	55,867	31,318	43,488	-	200,748
10	Substructure Removal	-	-	-	-	-	263,698	23,642	287,340
11	Offshore Conduit Removal	-	-	-	-	-	670	95,369	96,039
12	ISFSI Demolition	-	-	-	-	-	-	20,229	20,229
13	Final Site Restoration	-	-	-	-	-	-	7,267	7,267
14	**Distributed Subtotal**	[redacted]							
15									
16	**Undistributed Activities**								
17	Labor-Staffing	$ 336,628	$ 125,814	$ 22,954	$ 284,800	$ 172,804	$ 75,196	$ 14,735	$ 1,032,932
18	Non-Labor	241,104	84,020	17,913	220,608	218,376	72,388	26,266	880,676
19	Service Level Agreements	10,647	27,510	4,518	83,094	20,521	22,210	9,143	177,643
20	DGC Staffing	[redacted]							
21	**Undistributed Subtotal**								
22									
23	**Total**	[redacted]							**$ 4,702,264**

TABLE 4 – SUMMARY OF 2017 DCE BY PERIOD (2014$ IN THOUSANDS)

	Description	Period 1 Initial Activities (2014 $)	Period 2 Transition and Pool Storage (2014$)	Period 3 D&D and Pool Storage (2014$)	Period 4 D&D and Dry Storage (2014$)	Period 5 Dry Storage (2014$)	Period 6 Civil Works Project (2014$)	Period 7 ISFSI Demolition & Final Site Restoration (2014$)	Total (2014$)
1	Start	6/7/2013	1/1/2017	1/1/2019	6/1/2019	1/1/2029	1/1/2046	1/1/2050	
2	End	12/31/2016	12/31/2018	5/31/2019	12/31/2028	12/31/2045	12/31/2049	12/31/2051	
3	Duration (Years)	3 6	2 0	0 4	9 6	17 0	4 0	2 0	
4									
5	**Distributed Projects**								
6	Completed Projects	$ 213,032	$ 992	$ -	$ -	$ -	$ -	$ -	$ 214,024
7	ISFSI & Fuel Transfer Operations	136,403	130,570	3,237	-	-	-	-	270,210
8	Decontamination, Demolition, & Disposal	[redacted]							
9	Other Projects	19,580	39,699	7,455	52,611	29,481	40,932	-	189,758
10	Substructure Removal	-	-	-	-	-	250,603	22,438	273,042
11	Offshore Conduit Removal	-	-	-	-	-	637	90,994	91,631
12	ISFSI Demolition	-	-	-	-	-	-	19,171	19,171
13	Final Site Restoration	-	-	-	-	-	-	6,905	6,905
14	**Distributed Subtotal**	[redacted]							
15									
16	**Undistributed Activities**								
17	Labor-Staffing	$ 332,184	$ 118,054	$ 21,564	$ 267,549	$ 162,337	$ 70,641	$ 13,843	$ 986,172
18	Non-Labor	239,691	79,724	17,005	210,259	208,221	68,862	25,023	848,786
19	Service Level Agreements	10,278	26,121	4,288	78,793	19,278	20,865	8,589	168,212
20	DGC Staffing	[redacted]							
21	**Undistributed Subtotal**								
22									
23	**Total**	[redacted]							**$ 4,478,566**

V. Bases Of Estimate And Key Assumptions

A. General Principles

Where available, Kenrich relied on executed contracts, actual cost data, and lessons learned from on-site performance to date. The cost estimate of decommissioning activities through the completion of the major decontamination, dismantlement, and waste disposal activities at SONGS in 2028 is based on competitively bid contracts and detailed project cost estimates prepared by SCE project managers. Kenrich worked with SCE personnel to ensure project cost estimates were reasonable and consistent with underlying key assumptions. Kenrich also worked with SCE to determine appropriate contingency factors to ensure that the total estimate remained reasonable and conservative. In addition, Kenrich incorporated project costs that were not included in the 2014 DCE, including those associated with the substantial environmental permitting efforts that are currently in process.

The majority of the cost estimates for activities after 2028, such as the substructures removal and the final site restoration are based on either the 2014 DCE values or updated estimates prepared by High Bridge Associates, experts in cost estimating.[23] Consistent with industry practice, the 2014 DCE used quantity take-offs from plant drawings and Unit Cost Factors.

Kenrich worked with knowledgeable SCE personnel to prepare cost estimates for the ongoing operations and maintenance of the SONGS facilities, as well as the oversight and support of the decommissioning project. Consistent with the 2014 DCE, these indirect project costs are referred to as undistributed costs in the 2017 DCE. Such undistributed costs include Utility Staffing, Contracted Services, Energy, Site Lease expenses, among other items. Kenrich worked closely with knowledgeable SCE personnel to develop detailed cost estimates that reflect the current known regulatory and project support requirements throughout the entire decommissioning project. Kenrich ensured these cost estimates were supported, reviewed by subject matter experts, and consistent with the project schedule and other key underlying assumptions.

B. Key Facts And Assumptions

Kenrich worked closely with SCE personnel to identify, define, and support the key assumptions underlying the 2017 DCE. As part of this process, subject matter experts were interviewed and meetings were held with cross-functional teams to review and refine the

[23] High Bridge Associates is a project management consulting and services company with experience supporting capital projects, decommissioning and closure projects, new build construction projects, and operating/maintenance programs in various markets. High Bridge has provided consulting and technical subject matter expert services to customers spanning Cost Estimating, Cost/Schedule Reviews, Risk Assessments, Due Diligence Evaluations, Feasibility Studies, Readiness Assessments, Contract Change Management/Claims, and Technical/Management Assessments.

assumptions. Additionally, relevant supporting documents were identified and reviewed to confirm accuracy and reasonableness.

The key assumptions and general bases of estimate for the 2017 DCE are summarized below. The detailed bases for the estimated costs for specific distributed and undistributed activities are described in subsequent sections of this report.

General

1. Costs are presented in the same WBS utilized in the 2014 DCE (see Appendix C). Distributed costs are summarized and discussed by major project, and undistributed costs are discussed by cost category.

2. Recorded costs for decommissioning activities through September 30, 2017 are included in this estimate.

3. Approximately $[redacted] billion of the SONGS decommissioning project are covered by two contracts (i.e., ISFSI expansion and fuel transfer operations with Holtec and the DGC contract with SDS). Those contract amounts are incorporated into this DCE.[24]

Decontamination, Dismantlement, Demolition, and Disposal to Achieve Partial Site Release

4. The DGC contract with SDS was executed in December 2016. SDS mobilized to the SONGS site and commenced Phase I work (transition and planning) on January 9, 2017.

5. The pricing of the SDS contract generally covers two phases of work: transition and planning (Phase I) and the decontamination, dismantlement, and removal of all man-made improvements to 3 feet below grade (and or deeper as required) to reduce the Part 50 license to the ISFSI area only (Phase II). In addition, SDS is expected to install backfill and perform other work as requested.

6. The CEQA review process completed by the CSLC will conclude with the issuance of an Environmental Impact Report that will be utilized by the CCC in connection with its issuance of a CDP in the last quarter of 2018. The CDP will allow physical decommissioning work to commence at SONGS. Accordingly, SDS is expected to begin Phase II work in January 2019.

7. SDS's Phase II work is estimated to be completed by December 2028, following the submission of Final Site Survey to the NRC and the approval of a partial site release, reducing the SONGS 2&3 NRC Part 50 license footprint to the ISFSI area only.[25]

[24] Contract milestone payments are aligned with SCE's current expected project schedule.

[25] SDS's Phase II work also covers non-radiological hazardous waste disposal, e.g., asbestos, chromates, lead paint, and polychlorinated biphenyls (PCBs).

8. Following the D&D work, the SONGS plant site will be backfilled to current grade levels. Clean material available on the SONGS plant site may be acceptable for purposes of backfill and additional required backfill material will be imported from offsite.[26]

9. The 2017 DCE includes costs to purchase and import backfill material from offsite.

Spent Nuclear Fuel and GTCC Waste

10. All spent fuel will be transferred from the SONGS 2&3 pools to the on-site ISFSI by June 1, 2019.

11. Greater Than Class C (GTCC) waste will be stored in twelve canisters (five for reactor internals and one for spent fuel pool hardware/contents at each unit). GTCC waste from the containment buildings (e.g., portions of the reactor vessel internals) and spent fuel pools will be loaded into canisters and the loaded canisters will be transferred to the ISFSI.

12. The DOE will remove all GTCC waste from SONGS by 2049.

13. The DOE will commence accepting spent fuel from the commercial nuclear industry in 2028. The DOE will accept the first SONGS 2&3 spent fuel in 2034. All SONGS spent fuel will be removed from the ISFSI by 2049.

14. SCE is responsible for the loading of spent fuel and GTCC waste canisters into DOE transportation containers. (No dry transfer facility is required.)

15. GTCC disposal costs are conservatively estimated to account for potential DOE charges for acceptance of GTCC waste (i.e., in addition to the one-mill fee charged per kilowatt of generation per the Standard Contract with the DOE).

Substructure Removal Below 3 Feet Below Grade (i.e., Below 27 Feet Elevation)

16. SCE anticipates submitting an application to the Navy to amend the then current real estate authorization to seek a Navy determination of the substructure removal requirements. The Navy is expected to establish those requirements after completing a NEPA process and to include the requirements within a new or amended real estate authorization. This will define the final site release criteria for turnover of the SONGS property back to the Navy. The

[26] Paragraph 12 of the Grant of Easement, U.S. Department of Navy to Southern California Edison Company and San Diego Gas & Electric Company, dated May 12, 1964 states, "That upon termination of the easement granted herein, the Grantees at their expense may remove, and if desired by the government, shall remove any and all improvements installed or constructed hereunder and shall restore the Premises to a condition satisfactory to the Director, Southwest Division, Bureau of Yards and Docks, except that the Grantees shall not be obligated to restore any natural material cut or filled in the necessary excavation and grading of the Premises and such surrounding area within the Reservation as may have been contaminated by the operation of the Nuclear Station." Thus, the contract states that the Navy will specify the final site restoration requirements. The Navy has not yet specified its decontamination, backfill, compaction, grading, or re-vegetation requirements. The Navy is expected to establish these requirements as a part of the NEPA process and specify them within a new real estate authorization.

application is currently expected to be filed in 2040, with a Navy decision by 2045. That timing may change depending upon the time frame for the DOE removal of the spent fuel.

17. The removal of substructures (i.e., man-made improvements remaining after the D&D work and reduction of the Part 50 license to the ISFSI area only) is expected to begin in 2046 and be completed by December 2049. The final site restoration criteria will not be known until the Navy amends the SONGS site real estate authorization to include such criteria. Therefore, for purposes of the 2017 DCE, it is assumed that all SONGS 2&3 substructures will be removed during 2046-2049 (Period 6) (excluding the ISFSI which will be removed in a subsequent period).[27]

18. The estimated costs for the substructure removal work scope included in the 2014 DCE were reviewed and updated by High Bridge Associates. High Bridge Associates validated the quantities contained in the 2014 DCE and reduced the costs for non-radioactive waste disposal (based on La Paz, Arizona disposal rates, as compared to Oregon state rates which were assumed for purposes of the 2014 DCE).[28]

19. All concrete and other demolition debris (including "clean;" i.e., non-radioactive, non-hazardous material) that is deemed by the Navy or SCE to be not suitable for purposes of backfill will be transported to and disposed at an out-of-state Class III landfill at La Paz, Arizona or other facilities as may be required.[29] Cost for transporting clean scrap metal to a recycler is included in the DCE. No credit is taken for any salvage value of the scrap metal.

Conduits, ISFSI Demolition, and Final Site Restoration

20. For purposes of the 2017 DCE, it is assumed the offshore intake and outfall conduit will be removed during Period 7, ISFSI Demolition and Final Site Restoration, and will be complete by 2050.

[27] Any determination in the 2017 DCE that accounts for only partial removal of substructures would be non-conservative, arbitrary and inconsistent with the U.S. Navy easement, and without basis. If the final site restoration requirements specified in the future by the Navy allow less than complete removal of non-contaminated structures below 3 feet below grade (i.e., 27 feet elevation), then that new assumption will be incorporated into the subsequent DCE update.

[29] This out-of-state disposal requirement is consistent with the Governor of the State of California Executive Order D-62-02.

21. Following the complete removal of SONGS spent fuel and GTCC waste in 2049, the ISFSI and related facilities, and all remaining man-made structures (e.g., gunite walls, roads and parking lots, rail facilities) will be demolished and removed.

22. The SONGS site will be re-established to meet Navy site restoration requirements, including grading and re-vegetated.

Other

23. SCE expects to return the Mesa site to the Navy by July 31, 2021. The April 2011 lease from the Navy is known as the "Mesa lease" and contains five parcels. Parcels 5, 6, and 7 are associated with the Mesa site and are being returned. Parcels 8 & 9 are adjacent to the SONGS site and will be retained and incorporated into a new site lease during the real estate authorization process.

C. Project Schedule

The 2017 DCE assumes the timing for completing major activities is generally the same as the 2014 DCE, with the exception of the timing for removing the substructures below 3 feet below grade, which moved from 2031 to 2049. The schedule assumed in the 2017 DCE is as follows:

- **June 1, 2019** – Fuel Transfer Operations Complete.
- **December 2028** – Completion of the D&D work and receipt of NRC approval of the amendment to achieve partial site release and reduce the Part 50 License to the ISFSI area only.
- **December 2049** – Completion of Substructures removal below 3 feet below grade (i.e., 27 feet elevation).
- **December 2049** – All spent fuel removed from the site.
- **December 2051** – Completion of ISFSI Demolition, Conduits Removal, Final Site Restoration, and Lease Termination.

D. Distributed Costs

1. Completed Projects

Following the transition to decommissioning in June 2013, SCE began efforts to prepare the site for decommissioning and obtain necessary approvals of NRC license amendments. During the period from June 7, 2013 to September 30, 2017, SCE began and completed projects

to implement "Cold & Dark,"[30] perform the initial site assessment, dispose of legacy radwaste, prepare and receive approval for regulatory submittals, and select a DGC.

During this period, SCE also implemented projects that were needed to comply with regulatory requirements and other obligations. SCE began and completed projects related to Security Shutdown Strategy, Large Organism Exclusion Device Modifications, Fuel Cancellation payments, and other efforts.

Kenrich incorporated the recorded costs for the completed projects into the 2017 DCE. SCE will support the reasonableness of costs incurred in separate filings in the 2015 and 2018 NDCTP.

2. ISFSI And Fuel Transfer Operations

Following a competitive bidding process, SCE awarded a contract to Holtec to license, design, and construct an expanded on-site ISFSI; and to supply, load, and transfer the multi-purpose canisters containing fuel assemblies, from the SONGS 2&3 spent fuel pools to the expanded ISFSI. Holtec's work scope generally includes:

- Perform engineering, procurement, and construction services for a new on-site ISFSI pad and supporting facilities (e.g., security building, haul path).
- Perform fuel inspections and spent fuel pool waste characterizations.
- Provide spent fuel canisters and vertical ventilated underground dry storage modules to store SONGS spent fuel assemblies.
- Load and transport the canisters to the ISFSI and place the canisters into the dry storage modules.
- Transport the loaded GTCC waste (reactor internals and certain other non-fuel waste material) canisters to the ISFSI.[31]
- Engineering analyses, documentation, licensing and permitting activities.

SCE also maintains an ISFSI oversight team to ensure safe and efficient execution of the work by Holtec. The estimate for ISFSI and Fuel Transfer Operations also includes these SCE project oversight costs.

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[30] Includes plant modifications to systems that are not required to support spent fuel pool cooling or to meet other license conditions and places SONGS in a Cold and Dark condition in preparation of dismantlement and decontamination.

[31] The Holtec contract milestone payment for transferring the GTCC waste to the ISFSI, as well as costs associated with the procurement of GTCC canisters is included in a separate line item in the DCE for "GTCC Waste Storage" within "Other Projects."

TABLE 5 ISFSI & FUEL TRANSFER OPERATIONS ESTIMATE
($ IN THOUSANDS)

	Description	Recorded Through 2016 (Nominal $)	Estimate To Complete (2017$)	Total Estimate At Completion (Nominal /2017$)	Total Estimate At Completion (2014$)
1	**ISFSI & Fuel Transfer Operations**				
2	ISFSI Expansion	$ 60,485	$ 74,100	$ 134,585	$ 128,026
3	Canister Fabrication	79,562	27,705	107,266	104,026
4	Spent Fuel Loading & Transfer to ISFSI	-	40,580	40,580	38,159
5	**ISFSI & Fuel Transfer Operations Total**	**$ 140,047**	**$ 142,385**	**$ 282,432**	**$ 270,210**

3. Decontamination, Dismantlement, Demolition, And Disposal

In December 2016, following a competitive bidding process, SCE executed a contract with SDS to perform the major decontamination, dismantlement, demolition, and disposal work at SONGS. The SDS work will include removing all SONGS 2&3 structures, systems, and components to 3 feet below grade (i.e., to 27 feet elevation) to permit the release of the property for unrestricted future use.[32] The SDS work will include characterizing, packaging, transporting, and disposing of waste from the SONGS site to appropriately licensed or permitted facilities.[33] Additionally, SDS will support SCE to modify or amend its NRC Part 50 license for SONGS 2&3, as well as its existing agreements with the U.S. Navy and other permitting agencies as required for completion of this work scope.

The work is divided into two phases:

Phase I: Transition and mobilization

Phase II: Decontamination, dismantlement, demolition, and waste disposal activities necessary to achieve partial site release and reduce the SONGS Part 50 license footprint to the ISFSI area only.

SDS will provide project management and field oversight, as well as planning and execution of D&D-related site management and support functions during the decommissioning of SONGS. SCE will perform oversight of SDS's activities, as required by the applicable licenses and permits, and will retain responsibility for license-related operations and security (i.e., spent fuel pool, fuel transfer, and ISFSI operations).

[32] SDS's work scope excludes the ISFSI and switchyard facilities.

[33] GTCC waste and spent fuel will be stored on the ISFSI and are not expected to be transported to a disposal facility during SDS's performance of the work.

Phase II D&D activities will include:

- Segmenting the SONGS 2&3 reactor vessels and internals, and loading them into storage containers.
- Removing and disposing of large components including SONGS 2&3 reactor pressure vessels, steam generators, pressurizers, and turbine-generators.
- Decontaminating and removing all structures, systems, and components as necessary to achieve partial site release and reduce the Part 50 license to the ISFSI area only.
- Removing certain above-seabed components of the ocean conduits.
- Necessary backfill work to achieve level grade for the power block area at an elevation of +30.0 feet.[34]
- Development of the partial site release plan in accordance with 10 C.F.R. § 20.1402 site release criteria. SDS will perform necessary D&D work to meet a radiological release criteria that does not exceed 15 millirem per year.[35]

The work scope under DGC contract does not include removing the intake/discharge structure beneath the seawall; ocean conduits; seawall and pedestrian walkway; gunite slope protection; and certain railroad track and site access roads.

Support for SCE-Retained Responsibilities

SCE will remain the licensed operator for NRC licenses associated with SONGS and will retain responsibility for interfacing and corresponding with the regulatory agencies in the management of licenses.[36] SCE will also continue to be the primary interface with the Navy (property owner), and the regulatory agencies and other government authorities responsible for existing permits and the issuance of new permits necessary to perform decommissioning. SDS will support SCE interface with the regulatory agencies and the Navy.[37]

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[34] Backfill material is excluded from the fixed price portion of SDS's contract scope.

[35] Per 10 C.F.R § 20.1402, the NRC site release criteria is 25 mrem per year calculated as the peak annual Total Effective Dose Equivalent ("TEDE") dose expected within the first 1,000 years after decommissioning. Release criteria is defined as residual radioactivity that is distinguishable from background radiation which results in a TEDE to an average member of the critical group, including that from groundwater sources of drinking water, and has been reduced to levels that are as low as reasonably achievable (ALARA).

[36] Nuclear operations are defined as operations and administration of installed, in-service structures, systems, and components within the Protected Area (PA).

[37] SCE will retain responsibility for personnel screening for access and badging to the SONGS protected areas (PAs) and vital areas (VAs) until all spent fuel is removed from the spent fuel pools and placed into storage on the ISFSI and the associated security plans are revised and approved. When the PAs/VAs are reduced to the ISFSI only, SCE will transition this responsibility to SDS for all areas except the ISFSI. SCE will retain responsibility for the

4. Substructure Removal

The substructure removal work will include the activities necessary to achieve the final "end state" requirements determined by the Navy (which are incremental to the NRC partial site release requirements that will be met during SDS's major D&D work). SCE currently plans to select a contractor to perform the substructure removal work in the mid-2040s.

For purposes of preparing the 2017 DCE, Kenrich retained High Bridge Associates to review and update the 2014 DCE estimate for the removal of substructures below 3 feet below grade.

More specifically, substructure removal activities will include the following:

- Removing substructure systems and components required to achieve "end state" requirements set forth in the applicable Navy real estate authorization for the SONGS Site. This work will include cleanup, remediation, and/or removal of structures, systems, and components, soils/debris, and/or contaminated groundwater, as required.[38]
- Backfilling excavations and voids with approved material and leveling the SONGS site, as required by regulatory and landowner closure requirements.
- Characterizing, packaging, transporting, processing, and disposing of SONGS waste as required to support the regulatory and landowner closure requirements.
- Removing the existing seawall and intake and outfall box culvert.

Excluded from the substructure removal work are the demolition and removal of the ISFSI after the spent nuclear fuel and GTCC waste is removed by the DOE. Also excluded is the other final site restoration work to meet requirements related to the final termination of the SONGS site easements (e.g., ocean conduits, gunite slopes, drainage requirements, access roads, etc.).

The estimated substructure removal costs are summarized in the table below.

industrial and commercial security requirements at SONGS until the security plans are revised and the NRC approves the reduction of the PA/VAs to the area associated with the on-site ISFSI. SDS will take over this responsibility following the transfer of all spent fuel and GTCC to the ISFSI and the implementation of the associated revised security plans.

[38] The activities may also include removal of certain above grade facilities remaining after the major D&D work performed by SDS, potentially including non-essential utilities, parking areas, roads, and other improvements.

TABLE 6 SUBSTRUCTURE REMOVAL ESTIMATE
($ IN THOUSANDS)

	Description	Recorded Through 2016 (Nominal $)	Estimate To Complete (2017$)	Total Estimate At Completion (Nominal /2017$)	Total Estimate At Completion (2014$)
1	**Substructure Removal**				
2	Excavation and Dewatering	$ -	$ 152,819	$ 152,819	$ 145,563
3	Demolition and Backfill	-	108,277	108,277	102,573
4	Other	-	8,833	8,833	8,386
5	Removal of Seawall and Box Culvert	-	17,410	17,410	16,520
6	**Substructure Removal**	**$ -**	**$ 287,340**	**$ 287,340**	**$ 273,042**

5. Offshore Conduit Removal

As was the case for the 2014 DCE, uncertainty remains regarding the requirements for removal of the offshore intake and outfall conduits located below the sea floor. For SONGS 1, the CSLC has allowed the SONGS 1 conduits to remain in place provided that the SONGS 1 Participants retain the liability to remove the SONGS 1 conduits should that be deemed by the CSLC to be necessary at a future date. For these reasons, the 2017 DCE continues to include an estimated cost to perform the full removal of the SONGS 2&3 offshore conduits as was estimated in the 2014 DCE. The 2017 DCE includes $96.0 million to fully remove the SONGS 2&3 offshore conduits.

6. ISFSI Demolition

Following the removal of all spent fuel and GTCC waste by the DOE, SCE will demolish and remove the ISFSI and perform activities necessary for the final restoration of the SONGS site. At the time the 2014 DCE was prepared, the specific plans to expand the ISFSI had not been defined. Later in 2014, SCE entered into a contract with Holtec to expand the ISFSI. Kenrich retained High Bridge Associates to update the ISFSI demolition estimate in the 2014 DCE to reflect the Holtec ISFSI pad. The updated estimate for ISFSI demolition is $20.2 million.

7. Final Site Restoration

The final restoration work includes the removal of the gunite slope protection; remaining railroad tracks, rails, and ballast; access roads and parking lots. In addition, this work includes any other work required by the Navy real estate authorization, which is expected to include the final grading and re-vegetation of the SONGS site. The total estimated final site restoration work in the 2017 DCE is $7.3 million. The 2014 DCE included, as part of final site restoration, the costs to remove the intake and outfall structure underneath the seawall, which required installing and removing dewatering equipment and a temporary seawall. The intake and outfall structure beneath the seawall, as well as the seawall itself, are now expected to be removed

during the civil works project (i.e., Period 6, 2046-2049). Therefore, the second dewatering process and temporary seawall are no longer necessary during final site restoration.

8. Other Distributed Projects

In addition to the major decommissioning projects discussed above, SCE must also perform other projects to comply with federal and state regulations and the terms of SCE's real estate authorizations with the Navy. These other projects and their associated estimated costs are shown in Table 7 and discussed in more detail below.

TABLE 7 OTHER DISTRIBUTED PROJECTS ESTIMATE
($ IN THOUSANDS)

	Description	Recorded Through 2016 (Nominal $)	Estimate To Complete (2017$)	Total Estimate At Completion (Nominal /2017$)	Total Estimate At Completion (2014$)
1	**Other Projects**				
2	ISFSI Aging Management	$ 385	$ 38,376	$ 38,761	$ 36,489
3	Coastal Development Permit Extensions	-	5,580	5,580	5,252
4	GTCC Waste Storage	-	28,270	28,270	26,632
5	Mesa Site Turnover	7,245	13,967	21,212	20,341
6	CEQA Permitting	3,169	5,162	8,331	7,914
7	Initial Real Estate Authorization Renewal And Plant Easements	646	14,658	15,305	14,427
8	Plant Lease Extension	-	4,118	4,118	3,878
9	Plant Lease Amendment For Final Site Restoration	-	9,290	9,290	8,745
10	Cyber Security Modifications	8,513	1,131	9,644	9,380
11	DCE Update	-	3,897	3,897	3,669
12	GTCC Disposal	-	43,200	43,200	40,662
13	ISFSI CDP Settlement	-	4,543	4,543	4,277
14	Substructure Removal Contractor Procurement	-	7,447	7,447	7,011
15	NIA Sump Modifications	-	1,150	1,150	1,081
16	**Other Projects Total**	**$ 19,959**	**$ 180,789**	**$ 200,748**	**$ 189,758**

a. ISFSI Aging Management

The "Aging Management" project was established to develop inspection and maintenance programs for the Areva and Holtec spent fuel dry storage systems. Also included are initial cask testing, inspection equipment and licensing costs for dry cask NRC Certificate of Compliance (CoC) renewals, and Safety Analysis Report (SAR) updates. Ongoing required annual maintenance and inspections of the spent fuel dry storage systems are included in the undistributed non-labor Aging Management category.

b. Coastal Development Permit Extensions

SCE holds a Coastal Development Permit for the storage of SONGS 2&3 spent fuel in the Areva ISFSI system until November 2022, and a separate CDP to store SONGS 2&3 spent fuel in the Holtec ISFSI system until 2035. Therefore, SCE will need to obtain CDP extensions

from the CCC for the Areva and Holtec ISFSI systems prior to the expiration of the permits in 2022 and 2035, respectively.

c. GTCC Waste Storage

As part of the DGC contract, SDS is responsible for preparing, characterizing, and packaging the GTCC waste into canisters, with the exception of the relatively small amount of GTCC waste which currently resides in the spent fuel pools and will be loaded by Holtec. Holtec will supply the GTCC canisters and is also responsible for transferring the loaded GTCC waste canisters to the ISFSI pad. The estimated costs cover the purchase and licensing of GTCC canisters, as well as their transfer from the containment buildings to the ISFSI pad.

d. Mesa Site Turnover

SCE's Mesa site consists of five parcels leased from the Navy. Parcel 5 is on the west side of U.S. Interstate Highway 5 (I-5) and includes a security station to control access to Parcels 6 and 7. Parcels 6 and 7 are located on the east side of I-5 and comprise the largest portion of the Mesa site. Parcels 8 and 9 include a parking lot and lay-down area on the west side of I-5.

SCE currently estimates that Parcels 5, 6, and 7 will be returned to the Navy in 2021, and Parcels 8 & 9 will be retained until the end of decommissioning. As part of the process to return the parcels to the Navy, SCE must first remediate any contamination and obtain "No Further Action Letters" from the California Department of Toxic Substances Control (DTSC) indicating the property is available for unrestricted use.[39] The estimated cost associated with the project is based on currently anticipated remediation requirements.

e. CEQA Permitting (California State Lands Commission)

Under CEQA, the CSLC, as lead agency, is required to evaluate the SONGS decommissioning project and prepare an Environmental Impact Report (EIR) in response to SCE's application to modify and extend the existing CSLC lease regarding the offshore conduits. The CEQA permitting process began in 2015. The CSLC is expected to issue a draft EIR in the second quarter of 2018 and issue its Final EIR in the third quarter of 2018. The California Coastal Commission is then expected to review an application for a CDP based on the EIR, as well as its own additional analysis. The CCC is expected to approve the CDP in the fourth quarter of 2018. Following the receipt of the CDP, the physical decommissioning of the plant can proceed.

[39] On April 24, 2017, the DTSC issued a No Further Action Letter for Parcel 5. The efforts to assess and remediate contamination for Parcels 6 and 7 are ongoing. SCE continues to hold Parcel 5 as it provides access to Parcels 6 and 7.

f. Real Estate Authorization Renewals and Plant Lease Amendments

The current SONGS Plant Easement with the Navy expires in 2024. SCE will therefore seek an extension (new real estate authorization) covering the time to complete major decommissioning activities. As a federal agency, the Navy must undertake a NEPA environmental review prior to issuing a new real estate authorization. The initial NEPA process is expected to be completed in 2024 and will allow SCE to continue using the property until 2035.

In 2030, SCE will begin the process to further extend the lease from 2035 until such time the property is projected to be to be turned over to the Navy. In 2040, the Navy is expected to undertake another NEPA review to determine the final site restoration conditions, including the substructure removal requirements. These end-state requirements should be determined by 2045, prior to beginning the civil works project in 2046.

g. Cyber Security Modifications

NRC regulations require a Cyber Security Plan at SONGS to ensure certain digital assets, such as computer and communication systems and networks, are secure and protected. SCE has implemented 7 of 8 Cyber Security Plan milestones. At the end of 2017 the NRC granted approval for a license amendment to remove the cyber security license condition, thus waiving the requirement to implement Milestone 8.

h. DCE Update

As part of the NDCTP, SCE is required to submit an updated DCE for approval by the CPUC.

i. GTCC Disposal

Presently, a disposal facility licensed to accept GTCC waste does not exist in the United States. Courts have determined that the DOE is obligated to accept and dispose of GTCC waste; however, issues regarding costs remain unsettled. For purposes of the 2017 DCE, the cost of shipping and disposing of a GTCC canister was assumed to equal the cost associated with a canister of SONGS spent fuel. The one-mill fee per kilowatt-hour of generation under the Standard Contract was used to estimate this cost.

j. ISFSI CDP Settlement

In August 2017, SCE reached a settlement agreement with parties opposed to the storage of spent fuel at SONGS. As part of that settlement, SCE agreed to incur up to $4 million on commercially reasonable efforts to identify an alternative location for SONGS spent fuel storage.

SCE also incurred third-party legal costs to reach the settlement. Given the ongoing analysis and current uncertainty relating to the potential location and requirements of an acceptable alternative spent fuel storage site, the associated costs with moving to an alternative site have not been included in this DCE.

k. Substructure Removal Contractor Procurement

In 2044, SCE will begin efforts to procure a contractor for the removal of SONGS substructures and placement of permanent backfill. The 2017 DCE therefore includes costs to cover a competitive bidding process, including the development of a Request for Proposal, proposal evaluation, and contract award. For purposes of this DCE, the effort was assumed to be approximately one-half the expended cost to procure a DGC for the major D&D work.

l. NIA Sump Modifications

The NIA sump currently discharges to the SONGS 2&3 dilution water system. The dilution water system will be retired by SDS, and therefore the discharge pathway for the NIA sump will need to be modified. Kenrich utilized the current budget estimate provided by the cognizant SCE Project Manager.

E. Undistributed Costs

Undistributed costs represent activities or fees, necessary to oversee, manage and support the overall decommissioning project. Undistributed costs are sometimes referred to as collateral, indirect, or "level of effort" costs. By their nature, such costs are not assignable to specific activities representing the physical work performed to decommission a nuclear plant.

Undistributed activities and cost items are characterized by a uniform rate of activity over a specific period of time. Accordingly, undistributed costs were estimated for each decommissioning period. Within each period, the undistributed costs are incurred at a fixed rate and are thus largely time-dependent.

The table below summarizes the undistributed costs incurred through 2016 and future costs estimated for each decommissioning period. The costs are also segregated between labor and non-labor. The labor items include staff to provide oversight, management and other support. Non-labor items include costs associated with services performed by third-parties, as well as rents, fees, and other costs necessary to ensure compliance with regulatory and other requirements.

TABLE 8 UNDISTRIBUTED COST ESTIMATE (NOMINAL/2017$ IN THOUSANDS)

	Description	Period 1 Initial Activities (Nominal $)	Period 2 Transition and Pool Storage (2017$)	Period 3 D&D and Pool Storage (2017$)	Period 4 D&D and Dry Storage (2017$)	Period 5 Dry Storage (2017$)	Period 6 Civil Works Project (2017$)	Period 7 ISFSI Demolition & Final Site Restoration (2017$)	Total (Nominal/ 2017$)
1	Start	6/7/2013	1/1/2017	1/1/2019	6/1/2019	1/1/2029	1/1/2046	1/1/2050	
2	End	12/31/2016	12/31/2018	5/31/2019	12/31/2028	12/31/2045	12/31/2049	12/31/2051	
3	Duration (Years)	3 6	2 0	0 4	9 6	17 0	4 0	2 0	
4	**Undistributed Activities**								
5	**Labor-Staffing**								
6	Site Management & Administration		$ 19,393	$ 3,379	$ 71,195	$ 16,666	$ 13,265	$ 1,901	
7	Plant Management		46,774	8,140	46,085	85,274	20,799	2,340	
8	Decommissioning Oversight		14,417	4,916	136,266	13,417	27,121	8,919	
9	**Utility Staff Subtotal**	**$ 245,555**	**$ 80,583**	**$ 16,436**	**$ 253,546**	**$ 115,356**	**$ 61,185**	**$ 13,159**	**$ 785,820**
10	Security Force	91,073	45,231	6,518	31,254	57,448	14,012	1,576	247,112
11	**Labor-Staffing Subtotal**	**$ 336,628**	**$ 125,814**	**$ 22,954**	**$ 284,800**	**$ 172,804**	**$ 75,196**	**$ 14,735**	**$ 1,032,932**
12									
13	**Non-Labor**								
14	Aging Management	$ -	$ -	$ 48	$ 4,209	$ 10,018	$ 1,955	$ -	$ 16,230
15	Association Fees and Expenses	817	1,332	251	3,910	1,958	478	215	8,961
16	Community Engagement Panel	2,304	1,640	279	5,482	2,405	566	283	12,958
17	Contracted Services	67,641	33,556	3,957	59,073	50,430	16,086	4,349	235,092
18	DAW Disposal	-	32	-	-	-	-	-	32
19	Decommissioning Advisor	2,515	1,231	278	6,392	-	-	-	10,416
20	DGC Executive Oversight Committee	-	508	144	3,306	-	-	-	3,958
21	Emergency Preparedness Fees	9,099	3,792	864	15,081	16,998	4,146	-	49,980
22	Energy	16,964	7,571	2,241	45,194	10,983	4,117	526	87,596
23	Environmental Permits and Fees	3,081	662	14	328	1,064	1,154	576	6,879
24	Ground Water Monitoring	-	-	-	-	391	92	46	529
25	Information Technology	12,886	5,248	479	7,494	2,486	3,033	1,365	32,991
26	Insurance	13,824	4,778	977	15,947	22,029	5,688	2,479	65,722
27	Third Party Legal	4,336	2,579	479	7,571	7,648	2,300	230	25,142
28	NRC Fees	4,566	2,836	248	9,169	10,369	2,455	2,646	32,291
29	Office Space	-	-	-	1,173	391	92	92	1,748
30	Security Related Expenses	1,552	1,209	422	1,017	5,461	2,192	526	12,378
31	Severance	89,594	9,135	6,001	9,782	2,367	-	6,165	123,044
32	Site Lease and Easement Expenses	8,049	5,710	1,039	21,040	47,825	11,552	5,930	101,145
33	Loading Spent Fuel & GTCC Waste To DOE	-	-	-	-	17,940	14,628	-	32,568
34	Tools and Equipment	49	-	-	-	-	-	-	49
35	Water	1,663	1,224	184	4,243	7,261	1,771	797	17,143
36	Utility Staff Health Physics Supplies	2,163	979	9	198	352	83	41	3,825
37	**Non-Labor Subtotal**	**$ 241,104**	**$ 84,020**	**$ 17,913**	**$ 220,608**	**$ 218,376**	**$ 72,388**	**$ 26,266**	**$ 880,676**
38									
39	Service Level Agreements	10,647	27,510	4,518	83,094	20,521	22,210	9,143	177,643
40	DGC Staffing	[redacted]							
41	**Undistributed Activities Subtotal**								
42									
43	**Distributed Projects**								
44									
45	**Total**								**$ 4,702,264**

TABLE 9 UNDISTRIBUTED COST ESTIMATE (2014$ IN THOUSANDS)

	Description	Period 1 Initial Activities (2014$)	Period 2 Transition and Pool Storage (2014$)	Period 3 D&D and Pool Storage (2014$)	Period 4 D&D and Dry Storage (2014$)	Period 5 Dry Storage (2014$)	Period 6 Civil Works Project (2014$)	Period 7 ISFSI Demolition & Final Site Restoration (2014$)	Total (2014$)
1	Start	6/7/2013	1/1/2017	1/1/2019	6/1/2019	1/1/2029	1/1/2046	1/1/2050	
2	End	12/31/2016	12/31/2018	5/31/2019	12/31/2028	12/31/2045	12/31/2049	12/31/2051	
3	Duration (Years)	3 6	2 0	0 4	9 6	17 0	4 0	2 0	
4	**Undistributed Activities**								
5	**Labor-Staffing**								
6	Site Management & Administration		$ 18,179	$ 3,175	$ 66,883	$ 15,656	$ 12,462	$ 1,785	
7	Plant Management		43,882	7,647	43,293	80,109	19,539	2,198	
8	Decommissioning Oversight		13,537	4,618	128,012	12,604	25,478	8,378	
9	**Utility Staff Subtotal**	**$ 242,544**	**$ 75,598**	**$ 15,440**	**$ 238,189**	**$ 108,369**	**$ 57,478**	**$ 12,362**	**$ 749,981**
10	Security Force	89,640	42,456	6,123	29,360	53,968	13,163	1,481	236,192
11	**Labor-Staffing Subtotal**	**$ 332,184**	**$ 118,054**	**$ 21,564**	**$ 267,549**	**$ 162,337**	**$ 70,641**	**$ 13,843**	**$ 986,172**
12									
13	**Non-Labor**								
14	Aging Management	$ -	$ -	$ 45	$ 3,958	$ 9,421	$ 1,838	$ -	$ 15,262
15	Association Fees and Expenses	800	1,277	237	3,701	1,882	459	207	8,564
16	Community Engagement Panel	2,267	1,556	267	5,268	2,311	544	272	12,486
17	Contracted Services	66,942	31,650	3,736	55,800	47,718	15,215	4,102	225,164
18	DAW Disposal	-	30	-	-	-	-	-	30
19	Decommissioning Advisor	2,470	1,156	261	6,011	-	-	-	9,899
20	DGC Executive Oversight Committee	-	477	135	3,109	-	-	-	3,722
21	Emergency Preparedness Fees	9,047	3,645	830	14,496	16,339	3,985	-	48,341
22	Energy	16,840	7,277	2,154	43,440	10,557	3,957	506	84,732
23	Environmental Permits and Fees	3,065	636	14	312	1,007	1,108	553	6,695
24	Ground Water Monitoring	-	-	-	-	368	87	43	497
25	Information Technology	12,845	4,945	454	7,117	2,361	2,881	1,296	31,900
26	Insurance	13,779	4,592	939	15,328	21,175	5,467	2,383	63,663
27	Third Party Legal	4,234	2,425	451	7,119	7,192	2,163	216	23,799
28	NRC Fees	4,539	2,725	239	8,813	9,967	2,360	2,544	31,187
29	Office Space	-	-	-	1,104	376	88	87	1,655
30	Security Related Expenses	1,536	1,150	403	973	5,166	2,069	496	11,792
31	Severance	89,524	8,599	5,657	9,222	2,232	-	5,812	121,047
32	Site Lease and Easement Expenses	7,996	5,488	999	20,223	45,970	11,104	5,700	97,481
33	Loading Spent Fuel & GTCC Waste To DOE	-	-	-	-	16,870	13,756	-	30,626
34	Tools and Equipment	49	-	-	-	-	-	-	49
35	Water	1,654	1,176	177	4,078	6,979	1,702	766	16,534
36	Utility Staff Health Physics Supplies	2,103	918	8	187	331	78	39	3,663
37	**Non-Labor Subtotal**	**$ 239,691**	**$ 79,724**	**$ 17,005**	**$ 210,259**	**$ 208,221**	**$ 68,862**	**$ 25,023**	**$ 848,786**
38									
39	Service Level Agreements	10,278	26,121	4,288	78,793	19,278	20,865	8,589	168,212
40	DGC Staffing	[redacted]							
41	**Undistributed Activities Subtotal**								
42									
43	**Distributed Projects**								
44									
45	**Total**								**$ 4,478,566**

1. Decommissioning Staffing

Since January 2017, SCE and SDS have been working closely to manage and implement the transition of numerous management programs and functions from SCE to SDS. Following this transition, SCE will maintain an oversight role with respect to SDS's contract. SCE will continue to be responsible for the ISFSI project, for ongoing nuclear operations, security, and other distributed projects (e.g., ISFSI Aging Management, Mesa Turnover). Following the completion of the SDS D&D contract, SCE will take back over the performance of the on-site programs and functions that had been transitioned to SDS.

With contracts now in place for the majority of the SONGS decommissioning work, SCE was able to carefully evaluate its own staffing needs. As part of the process to develop the staffing projections, each SONGS division was grouped into the following categories.

Site Management & Administration – Responsible for oversight and strategic planning, ensuring compliance with regulatory and permitting requirements, safety, security, and overall project cost and schedule.

Plant Management – Responsible for the operations, maintenance, and security of the plant facilities. Staffing levels are expected to decrease significantly after the nuclear fuel is transferred from the spent fuel pool to the ISFSI pad.

Project Oversight – Responsible for oversight of the SDS D&D contract, management of the ISFSI, and other distributed projects. The oversight role ensures all work is completed safely and in compliance with the contract, government regulations, and permits. The staffing levels will vary over the duration of the project based on the amount of physical work being performed (e.g., the number of radiological oversight personnel will decrease after D&D is complete).

As part of the process to estimate staffing needs, senior management met with SONGS division managers to identify major activities during each phase of the decommissioning project. The estimated staffing for each period was based on a "bottom up" assessment of each needed discipline and position. Kenrich also worked with SCE management to vet the underlying assumptions and confirm the rationale underlying the projections. This effort involved numerous interviews of SONGS division managers, an analysis of the plan to transition management and supervision responsibilities from SCE to SDS, and a reconciliation to the staffing levels in the 2014 DCE.[40]

Staffing levels at other utilities having nuclear decommissioning experience were reviewed and considered, while also taking into account site-specific requirements and characteristics of SONGS. To further ensure the reasonableness of the SONGS staffing projections, SCE retained ABZ, an industry expert in decommissioning cost estimating. SCE specifically requested ABZ to provide input based on their experiences working with other nuclear utilities and to confirm that the SONGS projections were in line with industry norms.

The table below summarizes the staffing projection by period. The average staffing levels estimated for each period are intended to account for anticipated adjustments within each decommissioning period.

[40] The 2014 DCE did not assume the transition of programs to the DGC, therefore the headcount for certain divisions, such as maintenance and radiological control and chemistry, decreased in the 2017 DCE, but the decommissioning oversight positions increased in the 2017 DCE.

TABLE 10 UTILITY & SECURITY FORCE AVERAGE STAFFING BY PERIOD[41]

	Description	Period 2 Transition and Pool Storage	Period 3 D&D and Pool Storage	Period 4 D&D and Dry Storage	Period 5 Dry Storage	Period 6 Civil Works Project	Period 7 ISFSI Demolition & Final Site Restoration
1	Start	1/1/2017	1/1/2019	6/1/2019	1/1/2029	1/1/2046	1/1/2050
2	End	12/31/2018	5/31/2019	12/31/2028	12/31/2045	12/31/2049	12/31/2051
3	Duration (Years)	2 0	0 4	9 6	17 0	4 0	2 0
4							
5	**Site Management & Administration**						
6	Site Management & Administration	16	11	10	1	3	-
7	Decommissioning Finance	5	8	8	1	4	1
8	Regulatory Affairs & Nuclear Oversight	10	8	8	2	4	4
9	**Total Site Management & Administration**	**30**	**27**	**26**	**4**	**11**	**5**
10							
11	**Plant Management**						
12	Plant Management	1	1	1	1	1	-
13	Operations	40	36	-	-	-	-
14	Radiological Control & Chemistry	13	-	-	-	-	-
15	Maintenance, Work Control, & PI/CAP	18	7	7	7	7	3
16	Engineering	15	7	7	7	7	3
17	EP Planning	3	3	2	2	2	1
18	Security	155	158	34	34	34	14
19	**Total Plant Management**	**244**	**212**	**51**	**51**	**51**	**20**
20							
21	**Decommissioning Oversight**	**23**	**38**	**45**	**-**	**22**	**16**
22							
23	**Total**	**296**	**277**	**122**	**55**	**84**	**41**

The costs associated with the projected staffing is based on average labor rates for each position. The staffing cost estimate includes labor burdens and short-term incentive compensation, and accounts for positions being filled by contractors.

The table below summarizes the labor-staffing costs by each project period.

[41] Excludes DGC staffing and third-party contractors at SONGS.

TABLE 11 UNDISTRIBUTED LABOR COST ESTIMATE (NOMINAL/2017$ IN THOUSANDS)

	Description	Period 1 Initial Activities (Nominal)	Period 2 Transition and Pool Storage (2017$)	Period 3 D&D and Pool Storage (2017$)	Period 4 D&D and Dry Storage (2017$)	Period 5 Dry Storage (2017$)	Period 6 Civil Works Project (2017$)	Period 7 ISFSI Demolition & Final Site Restoration (2017$)	Total (Nominal/ 2017$)
1	Start	6/7/2013	1/1/2017	1/1/2019	6/1/2019	1/1/2029	1/1/2046	1/1/2050	
2	End	12/31/2016	12/31/2018	5/31/2019	12/31/2028	12/31/2045	12/31/2049	12/31/2051	
3	Duration (Years)	3 6	2 0	0 4	9 6	17 0	4 0	2 0	
4	**Utility Staff**								
5	Site Management & Administration		$ 19,393	$ 3,379	$ 71,195	$ 16,666	$ 13,265	$ 1,901	
6	Plant Management		46,774	8,140	46,085	85,274	20,799	2,340	
7	Decommissioning Oversight		14,417	4,916	136,266	13,417	27,121	8,919	
8	**Utility Staff Subtotal**	**$ 245,555**	**$ 80,583**	**$ 16,436**	**$ 253,546**	**$ 115,356**	**$ 61,185**	**$ 13,159**	**$ 785,820**
9	Security Force	91,073	45,231	6,518	31,254	57,448	14,012	1,576	247,112
10	**Labor-Staffing Total**	**$ 336,628**	**$ 125,814**	**$ 22,954**	**$ 284,800**	**$ 172,804**	**$ 75,196**	**$ 14,735**	**$ 1,032,932**

TABLE 12 UNDISTRIBUTED LABOR COST ESTIMATE (2014$ IN THOUSANDS)

	Description	Period 1 Initial Activities (2014$)	Period 2 Transition and Pool Storage (2014$)	Period 3 D&D and Pool Storage (2014$)	Period 4 D&D and Dry Storage (2014$)	Period 5 Dry Storage (2014$)	Period 6 Civil Works Project (2014$)	Period 7 ISFSI Demolition & Final Site Restoration (2014$)	Total (2014$)
1	Start	6/7/2013	1/1/2017	1/1/2019	6/1/2019	1/1/2029	1/1/2046	1/1/2050	
2	End	12/31/2016	12/31/2018	5/31/2019	12/31/2028	12/31/2045	12/31/2049	12/31/2051	
3	Duration (Years)	3 6	2 0	0 4	9 6	17 0	4 0	2 0	
4	**Utility Staff**								
5	Site Management & Administration		$ 18,179	$ 3,175	$ 66,883	$ 15,656	$ 12,462	$ 1,785	
6	Plant Management		43,882	7,647	43,293	80,109	19,539	2,198	
7	Decommissioning Oversight		13,537	4,618	128,012	12,604	25,478	8,378	
8	**Utility Staff Subtotal**	**$ 242,544**	**$ 75,598**	**$ 15,440**	**$ 238,189**	**$ 108,369**	**$ 57,478**	**$ 12,362**	**$ 749,981**
9	Security Force	89,640	42,456	6,123	29,360	53,968	13,163	1,481	236,192
10	**Labor-Staffing Total**	**$ 332,184**	**$ 118,054**	**$ 21,564**	**$ 267,549**	**$ 162,337**	**$ 70,641**	**$ 13,843**	**$ 986,172**

2. Undistributed Non-Labor Costs

In addition to staffing, SCE incurs non-labor costs to support the decommissioning efforts. As part of the process to identify and estimate future non-labor costs, historical recorded costs were reviewed in detail. Kenrich worked with knowledgeable SONGS personnel to develop and estimate future decommissioning costs which are summarized in Table 13 and broken down below.

TABLE 13 UNDISTRIBUTED NON-LABOR COST ESTIMATE ($ IN THOUSANDS)

	Description	Recorded Through 2016 (Nominal $)	Estimate To Complete (2017$)	Total Estimate At Completion (Nominal /2017$)	Total Estimate At Completion (2014$)
1	**Non-Labor**				
2	Aging Management	$ -	$ 16,230	$ 16,230	$ 15,262
3	Association Fees and Expenses	817	8,144	8,961	8,564
4	Community Engagement Panel	2,304	10,653	12,958	12,486
5	Contracted Services	67,641	167,451	235,092	225,164
6	DAW Disposal	-	32	32	30
7	Decommissioning Advisor	2,515	7,901	10,416	9,899
8	DGC Executive Oversight Committee	-	3,958	3,958	3,722
9	Emergency Preparedness Fees	9,099	40,881	49,980	48,341
10	Energy	16,964	70,631	87,596	84,732
11	Environmental Permits and Fees	3,081	3,798	6,879	6,695
12	Ground Water Monitoring	-	529	529	497
13	Information Technology	12,886	20,105	32,991	31,900
14	Insurance	13,824	51,898	65,722	63,663
15	Third Party Legal	4,336	20,807	25,142	23,799
16	NRC Fees	4,566	27,724	32,291	31,187
17	Office Space	-	1,748	1,748	1,655
18	Security Related Expenses	1,552	10,826	12,378	11,792
19	Severance	89,594	33,450	123,044	121,047
20	Site Lease and Easement Expenses	8,049	93,096	101,145	97,481
21	Tools and Equipment	49	-	49	49
22	Water	1,663	15,480	17,143	16,534
23	Utility Staff Health Physics Supplies	2,163	1,662	3,825	3,663
24	Loading Spent Fuel & GTCC Waste To DOE	-	32,568	32,568	30,626
25	**Non-Labor Total**	**$ 241,104**	**$ 639,572**	**$ 880,676**	**$ 848,786**

a. Aging Management

Aging Management programs cover both the Areva and Holtec dry storage systems. In addition to the scope covered by the distributed Aging Management project, the programs include annual facility maintenance and inspection as well as in-service canister inspections every five years, in compliance with the respective Areva and Holtec SARs.

The Areva Aging Management undistributed costs begin in 2022, after the NRC Certificate of Compliance is renewed. These costs continue until the DOE is assumed to accept the final Areva canister from SONGS in 2037. The Holtec Aging Management costs begin in 2019 after all of the fuel has been transferred from the SONGS 2&3 spent pools to the ISFSI, and then continue until the DOE is assumed to accept the final Holtec canister in 2049.

b. Association Fees and Other Expenses

Association Fees and Other Expenses include Nuclear Energy Institute (NEI) membership fees, costs related to an external Nuclear Oversight Board (NOB), and an outside

advisor to SCE's Internal Nuclear Management Group (INMG). SCE remains an NEI member to obtain access to industry policies, standards, and guidance regarding decommissioning. The NOB is composed of independent review specialists who provide independent review of decommissioning activities.

NEI Fees are estimated to be incurred through Period 7 (ISFSI Demolition & Final Site Restoration); NOB costs are expected through Period 4 (major D&D); and SCE anticipates retaining an outside advisor to the INMG until 2022.

c. Community Engagement Panel

The SONGS Community Engagement Panel (CEP) holds periodic meetings with the public to provide information on various issues, including decommissioning plans, spent fuel management, emergency planning, security, and the environmental review process. CEP costs are estimated to be incurred through the end of Period 7 (ISFSI Demolition & Final Site Restoration). The annual estimate is based on the 2018 budgeted amounts per CEP meeting, and is adjusted proportionately based on the number of meetings estimated each year. Six CEP meetings are assumed in 2018, four CEP meetings per year are estimated during major D&D, through 2028, and one meeting per year is assumed after major D&D is complete.

d. Contracted Services

Contracted Services generally consist of shorter-term supplemental resources, specialty contractors and consultants, third-party services, materials, equipment, and supplies. SONGS senior management, division managers, and Kenrich worked together to identify and estimate the projected costs. Contracted Services costs were estimated for each decommissioning period in each of the following divisions: (1) Decommissioning Projects / Decommissioning Oversight; (2) Engineering; (3) Emergency Preparedness; (4) Maintenance; (5) Nuclear Oversight, Safety, Regulatory Affairs; (6) Operations; (7) Decommissioning Finance; and (8) Site Management & Administration.

Similar to the undistributed staffing, the projected needs for Contracted Services are reduced after major decommissioning milestones are achieved. For example:

- **Transition of SONGS Programs to SDS –** SDS will assume responsibility for the management of numerous SONGS programs by the end of 2017. Accordingly, the estimated costs for contracted services in the Maintenance and Decommissioning Projects divisions are significantly lower in 2018.

- **Completion of Fuel Transfer Operations –** After all spent fuel has been transferred to the ISFSI, the Operations division and its associated contracted services will no longer be needed.

- **D&D Complete** – Many of the contracted services costs in the Decommissioning Oversight and Site Management & Administration divisions will not be needed after SDS completes its work and the SONGS programs are reduced.

e. Decommissioning Advisor

The Decommissioning Advisor provides subject matter expertise and assistance on various matters, including regulatory issues, spent fuel storage, and project management. Decommissioning Advisor costs are estimated through Period 4 (D&D).

f. DGC Executive Oversight Committee

The SDS D&D contract requires an Executive Oversight Committee composed of five individuals charged with resolving contractual issues. The committee includes one person each from SCE and SDS, and three independent third-party members. SCE and SDS share the costs of the third-party positions.

g. Emergency Preparedness Fees

SCE provides funding to local jurisdictions for the management of radiological emergency preparedness, including planning, response, and recovery activities. Currently, SCE pays fees in accordance with a December 2015 Memorandum of Understanding (MOU) covering a period through 2020. The Emergency Preparedness fees are assumed to be paid annually until all spent fuel has been removed from SONGS.

h. Energy

SCE must purchase energy from the grid to power the site, including loads required for decommissioning work. The energy costs are based on historical retail electricity rates and on projected usage. The projected usage was prepared by SCE Engineering and reflects the major activities in each decommissioning period.

i. Environmental Permits And Fees

SONGS must comply with a variety of environmental regulations and maintain numerous permits, which involve the payment of fees. These permits and associated fees include: (1) the State Water Resource Control Board National Pollutant Discharge Elimination System (NPDES) permit fees and Stormwater Pollution Prevention Plan (SWPPP) fees; (2) State of California Board of Equalization mixed waste fees; (3) fees for the California Department of Environmental Health Permit, which includes the permit for Underground Storage Tanks; (4) Air Pollution Control District Permit (APCD) fees; (5) Diesel Generator permit fees; (6) California Coastal

Commission fees; (7) Refrigerant Management Program; and (8) Kelp consortium costs for monitoring and surveying ocean kelp.

During the D&D period, SDS will be responsible for certain permits and fees, including the NPDES permit, mixed waste fee, SWPPP fee, and APCD permit. However, SCE will continue to maintain other permits and incur other fees (e.g. Department of Environmental Health fees, Diesel Generator air permits, CCC fees, and Refrigerant Management Program fees) through this period.

j. Ground Water Monitoring

SCE is required to monitor the ground water beneath the site for the presence of tritium. The costs include sampling, analysis, and monitoring performed by third-party contractors and will be required through the end of SONGS decommissioning. During the D&D period, SDS will assume responsibility for ground water monitoring.

k. Information Technology

Information Technology (IT) costs include SONGS software and network licenses, internal technical support, and payments to network service providers. IT costs are expected to decrease after 2018 after one-time IT projects are completed, and ongoing support costs will be reduced after 2019.[42]

l. Insurance

NRC regulations require that SCE maintains a minimum level of nuclear liability and property insurance, including Nuclear Property Insurance (provided by Nuclear Electric Insurance Limited) and Nuclear Liability Insurance (provided by American Nuclear Insurers).[43] SCE must maintain nuclear-related insurance coverage until the spent nuclear fuel is removed from the SONGS site.[44]

In addition, SCE also maintains General Liability Insurance and Excess Workers' Compensation Insurance, the cost of which is generally a function of SONGS headcount. Historical costs were used as the primary basis to estimate future insurance costs.

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[42] Separately, SONGS also incurs costs associated with support provided by SCE corporate IT personnel and resources. The costs for such additional IT support are provided via a Service Level Agreement with SCE.

[43] Should the Participants choose to reduce current insurance coverage amounts, the future premiums would be reduced accordingly. In December 2017, the Participants received an exemption from the NRC allowing them to reduce insurance coverage.

[44] Insurance requirements per NRC regulations 10 C.F.R § 50.54(w) and 10 C.F.R § 140.11.

m. Third Party Legal

SCE retains outside counsel as necessary to handle legal matters that require specific expertise, or when legal matters require additional resources. For example, SCE engaged outside counsel to support decommissioning licensing proceedings before the NRC, and environmental/land use permitting proceedings before the CCC, CSLC, and other government agencies.

n. NRC Fees

The NRC charges two different types of fees to nuclear reactor licensees: (1) annual fees (Part 171 Fees), and (2) inspection fees (Part 170 Fees). The Part 171 Fees are fixed annual payments per licensee (i.e., an annual fee for each SONGS unit), including nuclear plants that have been permanently retired. The Part 171 fees are to cover generic (i.e., non-licensee specific) activities performed by the NRC. In contrast, the NRC charges licensees Part 170 Fees based on the time it spends on performance reviews, evaluations, incident investigations, and other activities that are specific to an individual licensee.

o. Office Space

Following the completion of major D&D, SCE will need to lease office space for the remaining employees as all the existing office space on the SONGS site will have been removed. The costs to install trailers and annual lease payments are included in the estimate. During major D&D, SDS is responsible for providing SCE's office space.

p. Security Related Expenses

Security Related Expenses include uniforms, weapons, ammunition, and other supplies and equipment to support the SONGS Security Force, as well as background investigations, training costs, and vendor support.

q. Severance

Under the California Nuclear Facilities Decommissioning Act of 1985,[45] SCE employees at SONGS who are severed as a result of the shutdown and permanent retirement of SONGS are eligible for severance benefits. These benefits include lump sum cash payments based on years of service, outplacement services, and reimbursement for educational expenses.

[45] California Public Utilities Code § 8322(g).

r. Site Lease And Easements

SCE makes annual lease and easement payments to the Navy for the SONGS plant site and Mesa, and to the CSLC for the SONGS offshore conduits. The current site lease with the Navy ends in 2024. As previously discussed, SCE expects to negotiate a new lease to cover the period after 2024 through the end of Period 7 (ISFSI Demolition and Final Site Restoration). The rate per acre in the new plant site lease agreement is expected to increase to account for the fair market value of the property.

The Mesa lease payments to the Navy are expected to remain consistent with the current agreement until Mesa Parcels 5, 6, and 7 are returned to the Navy in 2021. The conduits lease payments to the CSLC are expected to remain consistent with the current agreement, which includes periodic increases in lease payments, through the end of Period 7 (ISFSI Demolition and Final Site Restoration).

s. Water

Utilities includes expenses for water provided by the South Coast Water District (SCWD) Joint Regional Water Supply System (JRWSS). Costs were estimated based on historical recorded costs.

t. Utility Staff Health Physics Supplies

Health Physics (also referred to as HP or Radiation Protection) supplies, including personal radiological monitoring and protection equipment, are used by personnel performing work in radiological areas of the plant. Beginning in 2018, SDS will assume responsibility for the radiation protection program. SCE will resume responsibility after the D&D work is performed. Minimal Health Physics supplies will be needed to support the ISFSI only staff as virtually all contaminated materials will have been removed from the site.

u. Loading Spent Fuel And GTCC Waste To DOE

Under the Standard Contract with the DOE, SCE is responsible for transferring canisters from the ISFSI and loading them into DOE shipping containers on-site. The estimate assumes the DOE will accept the loaded canisters and that a "dry fuel transfer" facility is not necessary. The DOE will take title to the waste after it is loaded onto the DOE's transport device and the carrier signs for the shipment at the plant site. For purposes of the 2017 DCE, DOE loading costs are assumed to equal approximately 50% of the costs to load and transfer the spent fuel to the ISFSI. The timing of the DOE loading costs is based on the assumed Spent Fuel Shipping Schedule (Appendix A).

3. Service Level Agreements For Administrative & General Expenses

The 2014 DCE included 5% on all estimated costs to account for SCE's administrative and general (A&G) expenses supporting the SONGS decommissioning project. Beginning in 2016, SCE started to develop Service Level Agreements (SLAs) between the SONGS Participants and the SCE departments that support SONGS decommissioning. The SLAs are intended to provide additional transparency with respect to types of costs and level of support needed. There are separate SLAs for each SCE department supporting SONGS (e.g., Human Resources, IT, Legal, CPUC Regulatory Affairs). Beginning in 2029, after Period 4 is completed, corporate support functions are estimated in the A&G line item in lieu of separate SLAs, and is calculated as 5% of all other 2029-2051 estimated costs. The table below summarizes the SLAs and their associated estimated costs.

TABLE 14 SERVICE LEVEL AGREEMENT (A&G) COST ESTIMATE
($ IN THOUSANDS)

	Description	Recorded Through 2016 (Nominal $)	Estimate To Complete 2017 - 2028 (2017$)	Estimate To Complete 2029 - 2051 (2017$)	Total Estimate At Completion (Nominal /2017$)	Total Estimate At Completion (2014$)
1	**Service Level Agreements (A&G)**					
2	Audit Services	$ -	$ 9,893	$ -	$ 9,893	$ 9,404
3	Controllers	-	12,193	-	12,193	11,587
4	Corporate Communications	228	1,933	-	2,161	2,043
5	Corporate Security	-	2,878	-	2,878	2,754
6	CPUC Regulatory Affairs	-	10,982	-	10,982	10,444
7	Decommissioning Finance	1,128	718	-	1,846	1,760
8	Environmental Policy	-	1,833	-	1,833	1,726
9	Environmental Services	107	2,243	-	2,349	2,211
10	Human Resources	-	8,005	-	8,005	7,588
11	Information Governance	-	1,092	-	1,092	1,033
12	Information Technology	7,037	24,820	-	31,857	30,461
13	Legal	-	10,883	-	10,883	10,226
14	Local Public Affairs	-	764	-	764	719
15	Real Properties	247	659	-	906	856
16	Risk Management	-	300	-	300	283
17	Short Term Incentive Plan (STIP)	-	6,050	-	6,050	5,684
18	Supply Management	1,375	9,341	-	10,716	10,147
19	Tax	-	1,874	-	1,874	1,787
20	Transportation Services	525	4,989	-	5,514	5,308
21	Treasurers	-	3,672	-	3,672	3,461
22	A&G (2029 - 2051)	-	-	51,874	51,874	48,732
23	**Service Level Agreements (A&G) Total**	**$ 10,647**	**$ 115,122**	**$ 51,874**	**$ 177,643**	**$ 168,212**

4. DGC Staffing

[redacted]

[redacted]

F. 2017 DCE Costs By NRC Cost Category

SONGS distributed projects are classified into one of the following three NRC cost categories: (1) License Termination (LT); (2) Spent Fuel Management (SNF); and (3) Site Restoration (SR). License Termination activities are those required to decontaminate the site and reduce residual radioactivity in order to terminate the NRC licenses pursuant to 10 C.F.R § 50.75(c). License termination activities are expected to be completed in 2028, following the SDS D&D work, and NRC approval of the partial site release.

Spent Fuel Management activities are those required to operate and maintain the on-site spent fuel storage facilities until such time the spent fuel is removed by the DOE, in accordance with 10 C.F.R § 50.54(bb). The decommissioning of the ISFSI after the spent fuel is transferred offsite (10 C.F.R § 72.30) is also classified as a Spent Fuel Management activity.

The remaining distributed costs are classified as Site Restoration costs, which are primarily driven by the terms of the easement and lease agreements with the Navy and CSLC. Site Restoration distributed projects include non-radiological decommissioning activities, such as the removal of non-contaminated substructures below 3 feet below grade.

The classification of distributed projects in this DCE to NRC cost categories is generally consistent with how projects were classified in the 2014 DCE.

Undistributed costs are also assigned to NRC cost categories. Certain undistributed cost items are assignable to a single NRC cost category (e.g., 100% of the annual cost to load spent fuel to the DOE is classified as Spent Fuel Management). However, given their nature, there are many other undistributed cost items which support multiple decommissioning activities (e.g., energy costs). These undistributed costs are allocated to License Termination, Spent Fuel Management, and Site Restoration based on the distributed cost amounts in each NRC cost category.[46]

The table below summarizes the 2017 DCE costs by NRC cost category.

[46] The undistributed costs incurred to date were recorded to each NRC cost category based on the allocation percentages assumed in the 2014 DCE.

TABLE 15 2017 DCE BY NRC COST CATEGORY
($ IN THOUSANDS)

	Description	Recorded Through 2016 (Nominal $)	Estimate To Complete (2017$)	Total Estimate At Completion (Nominal /2017$)	Total Estimate At Completion (2014$)
1	**License Termination**				
2	Distributed	[redacted]			$ [redacted]
3	Undistributed				
4	**License Termination Subtotal**				**$ 1,906,728**
5					
6	**Spent Fuel Management**				
7	Distributed	[redacted]			$ [redacted]
8	Undistributed				
9	**Spent Fuel Management Subtotal**				**$ 1,367,361**
10					
11	**Site Restoration**				
12	Distributed	[redacted]			
13	Undistributed				
14	**Site Restoration Subtotal**	**$ 166,324**	**$ 1,098,532**	**$ 1,264,856**	**$ 1,204,476**
15					
16	**Total**	[redacted]			**$ 4,478,566**

G. Contingency

Contingency is used in cost estimates to account for the costs of unplanned events and circumstances that often occur during the performance of a project. As defined in the American Association of Cost Engineers Project and Cost Engineers' Handbook, contingency is "an amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, or effect is uncertain and that experience shows will likely result, in aggregate, in additional costs."

Examples of costs intended to be covered by contingency include planning and estimating errors and omissions, design development and changes within scope, minor price fluctuations, and variations in the market and environmental conditions. Contingency is not intended to cover all unknowns or unplanned occurrences. For example, contingency usually excludes major scope changes, extraordinary events such as strikes and natural disasters, specified "management reserves" for defined issues, and general price escalation or currency effects.

The consensus in industry literature is that a primary consideration in determining appropriate amounts for contingency on a particular project is the stage of development and level of confidence in the estimated known base project costs. The 2014 DCE used a 25%

contingency factor,[47] which was deemed reasonable by the CPUC in D.16-04-019 given the then-existing level of uncertainty in the then-current DCE.[48]

Given the current stage of decommissioning, a lower contingency factor is warranted in some areas. Kenrich and knowledgeable SCE personnel reviewed each major category of costs and determined an individual contingency factor for each group. In determining the contingency factors for each cost grouping, consideration was given to contracting status (e.g., ISFSI and D&D work are under contract), technical complexity, estimating approach, and other variables.

The remaining work associated with ISFSI is primarily the loading and transfer of spent fuel canisters to the ISFSI. The associated contingency factor reflects that this work is under contract and benefits from significant learning and industry experience over many decades. The D&D work is also under contract, following a rigorous competitive procurement process. However, the contingency factor for this work also accounts for the significant influence of site-specific factors on D&D work. For other distributed work, not currently under contract and planned to occur in the relative distant future, the same 25% contingency factor used in the 2014 DCE was used in this DCE. With regard to undistributed labor and non-labor costs, the associated contingency factors account for a significantly more rigorous process used to develop the estimates contained in this DCE. In contrast to the 2014 DCE, the estimated headcount and non-labor costs for each division were subject to more substantial and iterative internal review and updating processes.

The table below summarizes the contingency factor applied to the to-go costs for each estimate.

[47] Contingency of 25% was applied to all costs in the 2014 DCE with the following exceptions: 2013 and 2014 Actual Expenditures 0%; Department of Navy Easement Payments 15%; Hazardous and Asbestos Wastes 50%; Site Characterization Surveys 15%; Temporary Facilities 15%; Backfill and Compaction 15%.

[48] Specifically referring to SONGS in its 2012 NDCTP decision, the CPUC stated, "[t]he Commission finds the reasonableness of a contingency amount is significantly related to the stage of decommissioning and the activities projected, including particular site-specific challenges. Consequently, the reasonable contingency factor may vary between nuclear plants and at different stages of decommissioning." (D.14-12-082 at 38). Further, in its April 20, 2017 proposed decision pertaining to PG&E's updated cost estimates for the decommissioning of its two nuclear power plants, the CPUC specifically noted that PG&E use of a 25% contingency factor for Diablo Canyon raised questions in light of other information which had been supplied by PG&E's third-party decommissioning cost consultant, TLG Services, Incorporated (TLG). Specially, TLG estimated contingency on a line item basis and the resulting composite contingency factor was 17.4%.

TABLE 16 CONTINGENCY FACTORS APPLIED IN 2017 DCE

2017 DCE Category	Contingency Factor
Recorded Costs Through September 2017	0%
ISFSI & Fuel Transfer Operations	[redacted]
[redacted]	
Substructure Removal	25%
Other Projects	15-25%
Offshore Conduit Removal	25%
ISFSI Demolition	25%
Final Site Restoration	25%
Undistributed Labor	10%
Undistributed Non-Labor	15%
Service Level Agreements	10%

The composite contingency factor included in the 2017 DCE is approximately [redacted] percent of base estimated costs.

TABLE 17 CONTINGENCY INCLUDED IN THE SONGS 2&3 2017 DCE ($ IN THOUSANDS)

	Description	2017 DCE (Nominal /2017$)	2017 DCE (2014$)
1	Base Estimated Costs	[redacted]	
2	Estimated Contingency		
3	**Subtotal Estimated Costs**	**$ 3,518,663**	**$ 3,322,641**
4	Recorded Costs	1,183,601	1,155,925
5	**Total DCE Value**	**$ 4,702,264**	**$ 4,478,566**

VI. Additional Discussion Regarding The Project Schedule

The SONGS decommissioning project schedule defines the sequence and timing of activities, the completion dates for major project milestones, and the duration of each decommissioning period. The 2017 DCE is presented in 2017 dollars. These constant dollars are spread over the duration of the SONGS entire decommissioning project based on the 2017 DCE project schedule.[49]

In accordance with the contract, SDS has developed a baseline schedule for completing its major D&D and achieving partial site release. SCE incorporated SDS's Baseline Schedule

[49] To assess the adequacy of the amount of funds residing in the Nuclear Decommissioning Trust, the annual constant dollar cash flows are escalated and discounted to present value.

into the overall decommissioning project schedule on which the 2017 DCE is based. The completion dates were mapped to corresponding 2017 DCE milestones.

As described earlier, the decommissioning schedule is comprised of seven (7) periods. Each period is generally defined by the major focus of activity on-site, as well as the licensing status of the plant (i.e., from an NRC perspective). SONGS is currently planning and preparing for the physical decommissioning of the plant facilities (Periods 1 and 2). The major D&D work is expected to begin in 2019 and estimated to be completed by late 2028 (Periods 3 and 4). At the conclusion of the major D&D work, all structures, systems, and components on-site will have been removed to at least 3 feet below grade and the NRC Part 50 license will have been reduced to the ISFSI area only.

From 2029 until 2046, when the work to remove the below-grade structures begins, the only significant activity at the site will be the transfer of spent fuel canisters to the DOE (Period 5). During this period, SCE will become informed regarding the regulatory and landowner "end-state" requirements for the SONGS site. The demolition and removal of the ISFSI and remaining below-grade structures will be performed after 2046 (Periods 6 and 7). This timing of this work is determined in part by the anticipated date by which the DOE is expected to have removed all SONGS spent fuel. The DOE is currently assumed to begin removing SONGS 2&3 spent fuel in 2034 and complete the removal of all fuel by 2049. Final site restoration and license termination is projected to be completed by 2051.

Two critical milestones include the completion of spent fuel transfer operations (i.e., transfer of all spent fuel from the wet pools to the ISFSI) in mid-2019 and the completion of major D&D work in late 2028. After each of these milestones, SONGS's licensing status and regulatory requirements change such that the associated costs to manage and support (e.g., operations, maintenance, security, management, and contract oversight) the decommissioning of the site will be substantially reduced.

SCE currently anticipates commencing spent fuel transfer operations in 2018 and is targeting completion in early to mid-2019. Fuel transfer operations are relatively complex, subject to extensive regulatory oversight, and intended to be performed 24 hours per day, seven days per week. Accordingly, for purposes of this DCE, SCE included schedule margin in its determination of the June 1, 2019 milestone completion date.

The critical activities driving the overall duration of major D&D work are the removal of the nuclear steam supply system (NSSS) equipment (e.g., reactor vessels, steam generators, reactor coolant pumps) from inside the containment buildings, and then the decontamination, demolition, and removal of the containment buildings. The decontamination, demolition, and removal of other SONGS buildings and facilities will be performed concurrently.

SCE and SDS are continuing to plan and schedule major D&D work. Currently, SDS intends to complete the physical decommissioning work in 2025 and obtain final NRC approval of the final site survey and partial site release in 2026. SDS's schedule is currently based on performing the preparation and segmentation of the reactor vessel internals and NSSS large component removal at both Units 2 and 3 in parallel. These activities include relatively high-risk

cutting and material handling operations. As another example of uncertainty that is currently inherent in the major D&D schedule, SCE is currently planning for increased radiological decontamination efforts associated with the below-grade structures that will remain at SONGS after SDS completes its work. Accordingly, for purposes of this DCE, SCE has included schedule margin in its determination of the planned completion date of major D&D in late 2028.[50]

VII. Waste Disposal

The disposition of waste is a significant activity in the decommissioning of SONGS. A brief description of the waste to be generated from the SONGS decommissioning process is described below. In addition, the estimated quantity of each type of waste is summarized in Table 18 below.

Spent Nuclear Fuel – Under the Nuclear Waste Policy Act of 1982, the DOE is responsible for the removal and permanent disposal of all SONGS spent nuclear fuel. In the 2014 DCE, SCE assumed the DOE would begin accepting spent fuel from domestic commercial nuclear power plants in 2024 at the rate published in DOE's July 2004 Acceptance Priority Ranking & Annual Capacity Report. Due to DOE inactivity in the past four years, SCE revised its spent fuel shipping schedule for the 2017 DCE to assume that the DOE will begin accepting spent fuel from the nuclear industry in 2028.

GTCC Waste – GTCC waste will be generated when SDS segments the reactor vessel internals. Additional GTCC waste may reside in the spent fuel pools. GTCC waste cannot be disposed of in a federally licensed low-level radioactive waste (LLRW) disposal facility. As explained above, courts have held that the DOE must accept GTCC waste, but currently there is no disposal facility in the U.S. that is licensed to accept it. Therefore, GTCC waste will be packaged and stored in licensed canisters on the SONGS ISFSI until final disposal.

Low-Level Radioactive Waste (LLRW) – 10 C.F.R. § 61 outlines the requirements for LLRW and identifies the criteria for the classifications of waste materials that can be accepted at federally licensed LLRW disposal facilities. SDS will characterize, package, and transport offsite the Class A, Class B, and Class C waste.

Exempt Waste – It is assumed that some waste generated during the decommissioning of SONGS will receive NRC approval to be disposed of at a facility that accepts very low-level waste. According to the NRC, "10 CFR 20.2002 is available for use by licensees for wastes that typically are a small fraction of the Class A limits contained in Part 61, and for which the extensive controls in Part 61 are not needed to ensure protection of public health and safety and the environment. Thus, 10 CFR 20.2002 provides an alternative, safe, risk-informed disposal

[50] The 2028 date is generally consistent with the schedule that was assumed in the 2014 DCE.

method for these materials, which are frequently called 'very low-level waste' (VLLW), or 'low-activity waste' (LAW)."[51]

Non-Radiologically Contaminated Waste – Radiologically clean concrete or debris will be disposed of at an out of state Class III landfill. This material will be scanned for radiological contamination prior to leaving SONGS to meet all applicable regulatory requirements. Non-contaminated reinforcing and structural steel may be recycled.

Non-Radiologically Contaminated Hazardous and Industrial Waste Disposal – Lead shielding and other hazardous materials and chemicals will be removed and properly disposed of during decommissioning. Non-Radioactive contaminated surfaces coated with tightly adhering and undamaged lead-based paint will be removed as non-hazardous building demolition debris.

Table 18 summarizes the estimated waste disposal quantities by class for the remainder of SONGS decommissioning.

TABLE 18 REMAINING WASTE DISPOSAL QUANTITIES

	Description	Period 2 Transition and Pool Storage (lbs)	Periods 3 & 4 D&D (lbs)	Period 5 Dry Storage (lbs)	Period 6 Civil Works Project (lbs)	Period 7 ISFSI Demolition & Final Site Restoration (lbs)	Total (lbs)
1	Start	1/1/2017	1/1/2019	1/1/2029	1/1/2046	1/1/2050	
2	End	12/31/2018	12/31/2028	12/31/2045	12/31/2049	12/31/2051	
3	Duration (Years)	2.0	10.0	17.0	4.0	2.0	
4	**Class B, C, GTCC**						
5	Class B	-	69,320	-	-	-	69,320
6	Class C	5,700	inc	-	-	-	5,700
7	GTCC	-	222,800	-	-	-	222,800
8	**Class B, C, GTCC Subtotal**	**5,700**	**292,120**	**-**	**-**	**-**	**297,820**
9	**Class A**						
10	Class A	-	395,096,463	-	-	502,383	395,598,846
11	Class A - Containerized Waste	7,950	inc	-	-	-	7,950
12	**Class A Subtotal**	**7,950**	**395,096,463**	**-**	**-**	**502,383**	**395,606,796**
13	**Other**						
14	Out of State Landfill / Exempt	-	489,594,000	-	1,074,296,250	394,648,923	1,958,539,173
15	Scrap Metal Recycler	-	105,391,000	-	71,736,000	10,325,800	187,452,800
16	**Other Subtotal**	**-**	**594,985,000**	**-**	**1,146,032,250**	**404,974,723**	**2,145,991,973**
17							
18	**Waste Total**	**13,650**	**990,373,583**	**-**	**1,146,032,250**	**405,477,106**	**2,541,896,589**

[51] "Low-Level Waste Disposal Under 10 C.F.R. § 20.2002." U.S. NRC, 21 September 2017, https://www.nrc.gov/waste/llw-disposal/10cfr20-2002-info.html, accessed December 1, 2017.

VIII. References

1. Energy*Solutions*, "2014 Decommissioning Cost Analysis of the San Onofre Nuclear Generating Station Units 2&3," September 5, 2014

2. August 20, 2015 letter from NRC to SCE Vice President and Chief Nuclear Officer, Mr. Thomas J. Palmisano (ADAM Accession No.: ML15204A383)

3. Application 14-12-007 "Joint Application Of Southern California Edison Company (U 338-E) And San Diego Gas & Electric Company (U 902-E) For 2014 SONGS Units 2&3 Decommissioning Cost Estimate And Related Decommissioning Issues," December 10, 2014

4. California Public Utilities Commission Decision 16-04-109, "Decision Approving Decommissioning Cost Estimate," April 21, 2016

5. State of California State Lands Commission, "Lease P.R.C. No. 4862.1," November 19, 1984

6. Department of the Navy, "Grant of Easement," May 1964

7. State of California, Executive Order D-62-02, September 2002

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

9. California Public Utilities Commission Proposed Decision A.16-03-006, "Decision Approving Decommissioning Cost Estimate," April 20, 2017

Appendix A

Spent Fuel Shipping Schedule

SONGS Units 1, 2, and 3
Spent Fuel Shipping Schedule
2028 DOE Acceptance
(as of 1/2/2018)

	On-Site Inventory (Beginning of Year)					On-Site Transfers (During Year)		Off-Site Transfers (During Year)			
	Unit 1 Fuel Assemblies at Morris	Unit 1 Fuel Assemblies in ISFSI	Units 2 & 3 Fuel Assemblies in Pools	Units 2 & 3 Fuel Assemblies in ISFSI	Units 1, 2, & 3 Canisters in ISFSI*	Units 2 & 3 Fuel Assemblies Transferred to ISFSI	Units 2 & 3 Canisters Transferred to ISFSI	Unit 1 Assemblies Transferred to DOE	Unit 2 Assemblies Transferred to DOE**	Unit 3 Assemblies Transferred to DOE**	Units 1, 2, & 3 Canisters Transferred from ISFSI to DOE*
2016	270	395	2,668	792	50	-	-	-	-	-	-
2017	270	395	2,668	792	50	-		-	-	-	-
2018	270	395	2,668	792	110	2,220	60	-	-	-	-
2019	270	395	448	3,012	170	448	13	-	-	-	-
2020	270	395	-	3,460	182	-	-	-	-	-	-
2021	270	395	-	3,460	182	-	-	-	-	-	-
2022	270	395	-	3,460	182	-	-	-	-	-	-
2023	270	395	-	3,460	182	-	-	-	-	-	-
2024	270	395	-	3,460	182	-	-	-	-	-	-
2025	270	395	-	3,460	182	-	-	-	-	-	-
2026	270	395	-	3,460	182	-	-	-	-	-	-
2027	270	395	-	3,460	182	-	-	-	-	-	-
2028	270	395	-	3,460	182	-	-	96	-	-	4
2029	270	299	-	3,460	178	-	-	48	-	-	2
2030	270	251	-	3,460	176	-	-	120	-	-	5
2031	270	131	-	3,460	171	-	-	48	-	-	2
2032	270	83	-	3,460	169	-	-	48	-	-	2
2033	270	35	-	3,460	167	-	-	-	-	-	-
2034	270	35	-	3,460	167	-	-	35	48	48	6
2035	270	-	-	3,364	161	-	-	-	192	96	12
2036	270	-	-	3,076	149	-	-	-	120	168	12
2037	270	-	-	2,788	137	-	-	-	48	72	5
2038**	270	-	-	2,668	132	-	-	-	74	111	5
2039	270	-	-	2,483	127	-	-	-	111	111	6
2040	270	-	-	2,261	121	-	-	-	111	74	5
2041	270	-	-	2,076	116	-	-	-	-	-	-
2042	270	-	-	2,076	116	-	-	-	111	111	6
2043	270	-	-	1,854	110	-	-	-	74	111	5
2044	270	-	-	1,669	105	-	-	-	111	74	5
2045	270	-	-	1,484	100	-	-	-	-	-	-
2046	270	-	-	1,484	100	-	-	-	222	222	12
2047	270	-	-	1,040	88	-	-	-	74	74	4
2048	270	-	-	892	84	-	-	-	222	222	12
2049	270	-	-	448	72	-	-	-	208	240	13
2050***	270	-	-	-	59	-	-	270	-	-	13
2051	-	-	-	-	-	-	-	-	-	-	-

* Excluding GTCC Waste

** Before 2038, SONGS 2 & 3 fuel assemblies shipped in Areva 24-PTH canisters Beginning in 2038, SONGS 2 & 3 fuel assemblies shipped in Holtec MPC canisters

*** Unit 1 fuel assemblies transferred to DOE from GE facility in Morris, Illinois in TADS (21 assemblies per TAD)

Appendix B

Detailed Project Schedule

San Onofre Nuclear Generating Station Units 2 and 3 Decommissioning Schedule (Period 2 – 4)

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Based on SONGS DS Schedule Submitted 09/14/2017

2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028

2014 DCE Containment NSSS Removal Duration

2017 Containment Nuclear Steam Supply Systems Removal

U2 and U3 Containment NSSS Baseline

Unit 2 Containment

U2 – Containment Prep (1/19 – 10/19) | U2 – RV Internals Segmentation (10/19 – 1/21) | U2 – RV Shell (10/20 – 4/22) | U2 – Large Component Removal (1/21 – 4/22)

Complex Cutting and Handling Operations
Performed in Parallel in lieu of Series as in 2014 DCE

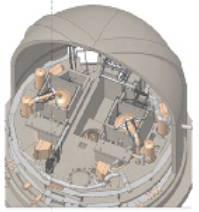
Unit 3 Containment

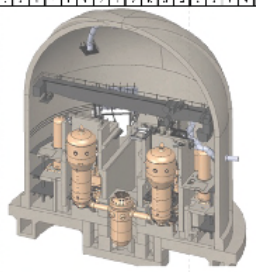
U3 – Containment Prep (2/19 – 10/19) | U3 – RV Internals Segmentation (10/19 – 1/20) | U3 – RV Shell (1/21 – 4/22) | U3 – Large Component Removal (1/21 – 5/22)

◇7/20 U1 Reactor Pressure Vessel

◇1/21 Final GTCC Offload

Additional Six Months to Manage Project Risk





2018 | 2019

2014 DCE Dry Storage Fuel Transfer Campaign

2017 Dry Storage Fuel Transfer Campaign

Spent Fuel Loading Services (1/18 – 10/18) | Closeout and Demobilization (10/18 – 12/18)

Additional Five Months Due to 24/7 Dual Plant Spent Fuel Offload

2014 DCE Containment Decontamination and Demolition

2017 Containment Decontamination and Demolition

U2 and U3 Containment Decontamination & Demolition Baseline

U2 Containment Decon (1/20 – 6/20) | U2 Interior Demo (6/20 – 6/23) | U2 Open Air Demo (7/25 – 8/25) | U2 Additional Decon (8/25 – 12/25)

U3 Containment Decon (6/23 – 12/23 3/24) | U3 Interior Demo (6/24 – 7/24) | Power Block Area Backfill (7/24 – 10/24) | U3 Open Air Demo (7/25 – 8/25) | U3 Additional Decon (8/25 – 12/25)

Additional Decontamination of Remaining Sub-Structure Surfaces to Leave as Clean as Practical for Subsequent Removal in 2046 – 2049

Risk Duration for Segregating, Handling and Packaging Concrete Rubble if not Considered for Backfill. Contract and Strategic Change Under Consideration.
Areas depicted: △ and △ or △

Auxiliary Radwaste Building

Auxiliary Building Decontamination & Demolition

Aux Radwaste Planning & Characterization (10/19 – 4/20) | Aux Radwaste Systems Removal (4/20 – 4/22) | Aux Radwaste Decon (4/21 – 4/22)

Aux Radwaste Building Demo (11/22 – 6/23) | Aux Radwaste Additional Decon (7/23 – 7/25) | Remove Tents (6/23 – 7/23)

Auxiliary Control Building

Install Tents (4/21 – 10/21)

Aux Control Planning & Characterization (6/21 – 11/21) | Aux Control Systems Removal (11/21 – 4/22) | Aux Control Decon (4/22 – 5/22) | Aux Control Building Demo (5/22 – 11/22) | Aux Control Additional Decon (7/23 – 8/23)

Unit 2 – Turbine Building

Turbine Building Decontamination & Demolition

U2 Planning & Characterization (1/20 – 10/20) | U2 Decon (10/20 – 12/20 1/21) | U2 Building Demo (1/21 – 2/22) | U2 Additional Decon (4/22 – 4/24)

U2 Systems Removal (6/20 – 8/20)

Unit 3 - Turbine Building

U3 Planning & Characterization (7/20 – 1/21) | U3 Systems Removal (1/21 – 6/21) | U3 Decon (6/21 – 7/21) | U3 Building Demo (6/21 – 6/23) | U3 Additional Decon (12/23 – 12/24)

Unit 2 – Safety Equipment Building

Systems Removal & Decon

Planning & Characterization (4/20 – 7/20) | Systems Removal (7/20 – 6/21) | Decon (6/21 – 10/21) | Remove Safety Injections Systems (10/21)

Interior – Open Air Demo

Interior Demo (7/24 – 5/24) | Open Air Demo (1/24 3/25) | Additional Decon (7/25 – 9/25)

Unit 3 – Safety Equipment Building

Systems Removal & Decon

Planning & Characterization (1/21 – 4/21) | Systems Removal (4/21 – 2/22) | Decon (2/22 – 5/22) | Remove Safety Injections Systems (9/21)

Interior – Open Air Demo

Interior Demo (6/23 – 1/24) | Open Air Demo (12/24 1/25) | Additional Decon (3/25 – 5/25)

Unit 2 – Penetration Building

Systems Removal & Decon

Planning & Characterization (7/22 – 10/22) | Systems Removal (10/22 – 1/23) | Decon (1/23 – 4/23)

Interior – Open Air Demo

Interior Demo (4/23 – 6/23) | U2 FSS (CVS) Penetration (7/24) | Open Air Demo (11/24 12/24) | Additional Decon (2/25 – 4/25)

Unit 3 – Penetration Building

Systems Removal & Decon

Planning & Characterization (4/23 – 6/23) | Systems Removal (6/23 – 7/23) | Decon (7/23 – 8/23)

Interior – Open Air Demo

Interior Demo (11/23 – 12/23) | U3 FSS (CVS) Penetration (8/24) | Open Air Demo (11/24 12/24) | Additional Decon (2/25 – 4/25)

Unit 2 – Fuel Handling Building

Systems Removal & Decon

Planning & Characterization (1/20 – 4/21) | Systems Removal (4/21 – 1/22) | Decon (1/22 – 4/22)

Interior – Open Air Demo

Interior Demo (11/23 – 6/24) | U2 FSS (CVS) Fuel Handling (7/24) | Open Air Demo (10/24 1/25) | Additional Decon (1/25 – 7/25)

Unit 3 – Fuel Handling Building

Systems Removal & Decon

Planning & Characterization (1/20 – 4/21) | Systems Removal (4/21 – 12/22) | Decon (12/22 – 5/23)

Interior – Open Air Demo

Interior Demo (6/23 – 6/23) | U3 FSS (CVS) Fuel Handling (7/24) | Open Air Demo (10/24 11/24) | Additional Decon (1/25 – 7/25)

Additional Decon of These Ancillary Buildings May Change Means and Methods to Rip-and-Ship

Project Closeout

- Final Status Surveys
- Contract Final Acceptance
- Administrative Closeout

Tertiary Major Finish Milestones

Intake Area Backfill (12/22 – 3/23)

P epare LTP (1/2/19 – 12/22)

◇7/20 Remove Unit 1 Reactor Vessel from Site (Unit 1 DCE)

◇4/21 Nuclear Security SAS Building

◇5/21 864/865 Buildings

◇5/21 862/863 Buildings

◇5/21 Maintenance Building

◇6/21 U2 Diesel Generator Building

◇6/21 Fire Protection Tanks

◇6/21 Outage Control Building

◇6/21 AWS Building

◇6/21 841 / 842 Modulars

◇10/21 U2 Main Transformer

◇11/21 K60 Warehouse

◇11/21 K70 South Security Building

◇12/21 K40 / K50 Office Building

◇1/22 K10 / K20 / K30 Buildings

◇2/22 U3 Diesel Generator Building

◇3/22 U3 Main Transformer

◇5/22 Intake Area / Structure

◇11/22 Full Flow Demineralizers

◇9/23 Removal of Off-Shore Components

◇12/22 Submit License Termination Plan to NRC

NRC Review of License Termination Plan (1/23 – 7/24)

LTP ASLB Hearing Support (6/23 – 1/25)

◇7/24 License Termination Plan NRC Approval

OCA Area Backfill (7/25 – 9/25)

◇2/25 U3 Diesel Generator Tanks

◇3/25 U2 Diesel Generator Tanks

◇4/25 T10 / T20 Shop

FSS Preparation (8/25 – 1/26)

NRC FSS Approval Period (1/26 – 12/26)

◇5/26 Final Status Survey Approval and License Termination

◇6/26 Final Acceptance Certification

◇6/25 HazMat Building

◇6/25 Rems Staging Area

◇6/25 OCA Parking Yard Utilities

◇6/25 Multi-Purpose Building 60

◇6/25 Yard / Drains / Utilities

◇6/25 Security Building L50

◇7/25 Sewage Plant

Phase Legend:

- 2017 Major Work Activity
- 2017 Period of Work Performed
- 2014 DCE Equivalent Period of Work Performed

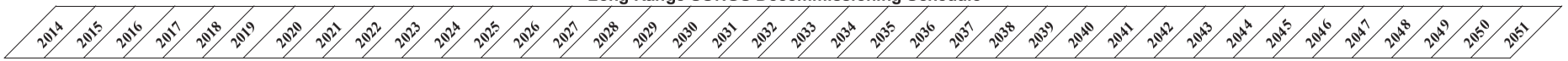
Activity Legend:

Projected Baseline Plus 12 Months

- Summary
- Planning & Characterization
- Systems Removal
- Decon
- Support Activities
- Open Air Demo
- Combined Demo
- Interior Demo
- Backfill
- Additional Decon (Duration Undefined)

Rev. 3 – Issued 3/7/18

Long Range SONGS Decommissioning Schedule



Period 1 - Initial Activities
(June 2013 - Dec 2016)

- DGC Selection
- Fuel Cancellation
- Preps for Decommissioning

Period 2 - Transition and Pool Storage
(Jan 2017 - Dec 2018)

- Program Transition
- CEQA Permitting Approval
- ISFSI Pad / Security Building Completion
- Pool to Pad Campaign

Period 3 - D&D and Pool Storage
(Jan 2019 - May 2019)

- Pool to Pad Completion
- ISFSI Only Transition

Period 4 - D&D and Dry Storage
(June 2019 - Dec 2028)

- Nuclear Steam Supply System (NSSS)
- Large Component Removal (LCR)
- Building Decontamination
- Building Demolition
- Licensed Material Removal
- Part 50 License Partial Site Release
- Temporary Backfill

Period 5 - Dry Storage
(Jan 2029 - Dec 2045)

Dewatering

Period 6 - Civil Works Project
(Jan 2046 - Dec 2049)

- Civil Works Request for Proposal (RFP) (3)
- Oversight Team Mobilization (3)
- Seawall / Walkway Removal
- Civil Works Contractor Selection (3)
- Site Dewatering
- Substructure Removal
- Permanent Backfill

Period 7 - ISFSI Demolition & Final Site Restoration
(Jan 2050 - Dec 2051)

- ISFSI Demolition (AREVA and Holtec)
- Ocean Conduit Removal
- Site Vegetation
- Final License Termination

(1) All Unit 1 fuel at SONGS is expected to be removed from the site by the end of 2034
(2) Period 7 also includes the removal of Unit 1 substructures
(3) These activities occur prior to Period 6

Rev 4 - Issued 12/6/17

Appendix C

Detailed Cost Table

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

	DCE No.[1]		Description	Total (Nominal / 2017$) Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
1	**Completed Projects - 2015 NDCTP**			**$ 1,223**	**$ 2,671**	**$ 89,834**	**$ (137)**	**$ -**	**$ 1,563**	**$ -**	**$ 95,154**
2											
3	LT-2-D-2 18		Planning & Design For Cold and Dark	1,888	1,008	14,977	1,054	-	1,373	-	20,299
4	LT-2-D-2 19		Implement Cold and Dark (Repower Site)	2,151	415	52,191	(663)	-	1,522	-	55,615
5	LT-2-D-2 20		Install 12 kV Service Line to Power Temp Power Ring	1,579	2,779	4,746	419	-	758	-	10,281
6	LT-2-D-2 21		Drain & De-Energize Non-Essential Systems (DEC Process)	2,363	946	1,299	14	-	1,487	-	6,111
7	LT-2-D-2 29		Implement Control Room Modifications (Command Center Relocation)	-	4	340	3	-	3	-	350
8	**Completed Activities - Initial D&D Activities Subtotal**			**$ 7,981**	**$ 5,152**	**$ 73,553**	**$ 826**	**$ -**	**$ 5,143**	**$ -**	**$ 92,655**
9											
10	LT-2-D-2 26		Install Spent Fuel Pool System Modifications - Unit 2	139	2,814	1,159	31	-	129	-	4,271
11	LT-2-D-2 27		Install Spent Fuel Pool System Modifications - Unit 3	139	2,814	1,159	31	-	129	-	4,271
12	**Completed Activities - Spent Fuel Islanding Subtotal**			**$ 277**	**$ 5,627**	**$ 2,317**	**$ 63**	**$ -**	**$ 258**	**$ -**	**$ 8,543**
13											
14	LT-2-D-2 07		Prepare Defueled Safety Analysis Report (DSAR)	1	-	1,991	8	-	21	-	2,021
15	**Completed Activities - Phase 2 Regulatory Compliance Subtotal**			**$ 1**	**$ -**	**$ 1,991**	**$ 8**	**$ -**	**$ 21**	**$ -**	**$ 2,021**
16											
17	LT-2-D-2 22		Select Decommissioning General Contractor (DGC)	1,219	7	11,842	392	-	809	-	14,270
18	**Completed Activities - DCG RFP & Prep Subtotal**			**$ 1,219**	**$ 7**	**$ 11,842**	**$ 392**	**$ -**	**$ 809**	**$ -**	**$ 14,270**
19											
20	LT-2-D-LOED	[2]	Large Organism Exclusion Device Modification	69	1,070	178	(4)	-	51	-	1,364
21	LT-D-SPV	[2]	Special Purpose Vehicle Support	-	-	442	-	-	6	-	448
22	LT-3-D-RecB	[2]	Records Backlog	-	-	1,807	186	-	20	-	2,014
23	LT-3-D-S&S	[2]	Simplification & Streamlining Project	1	6	1,329	33	-	8	-	1,377
24	**Completed Activities - Transition Modifications Subtotal**			**$ 69**	**$ 1,076**	**$ 3,757**	**$ 215**	**$ -**	**$ 84**	**$ -**	**$ 5,202**
25											
26	**Completed Projects And Activities Subtotal**			**$ 10,771**	**$ 14,534**	**$ 183,294**	**$ 1,368**	**$ -**	**$ 7,877**	**$ -**	**$ 217,845**
27											
28	**ISFSI & Fuel Transfer Operations**										
29	SNF-1-D-7 02	[3]	Holtec Long Lead Items and Areva Contract Closure	95	16,342	32,106	(12,796)	-	445	1,026	37,219
30	SNF-2-D-8 07		ISFSI Pad Study	-	-	199	2	-	2	-	203
31	SNF-2-D-8 08	[4]	Design ISFSI Expansion, Fuel Inspection, and Oversight	1,284	103	76,028	2,808	-	916	3,589	84,729
32	SNF-2-D-8 09		Construct ISFSI Expansion	96	5	44,885	267	-	177	4,225	49,655
33	SNF-2-D-8 10	[5]	Fabrication of Spent Fuel Canisters - Unit 2	24	1,696	27,107	8,978	-	568	317	38,690
34	SNF-2-D-8 11	[5]	Fabrication of Spent Fuel Canisters - Unit 3	23	1,696	19,640	8,979	-	490	528	31,357
35	SNF-2-D-8 12	[6]	Load Fuel Canisters and Fuel Transfer Operations - Unit 2	-	-	17,684	-	-	-	2,606	20,290
36	SNF-2-D-8 13	[6]	Load Fuel Canisters and Fuel Transfer Operations - Unit 3	-	-	17,684	-	-	-	2,606	20,290
37	**ISFSI & Fuel Transfer Operations Subtotal**			**$ 1,523**	**$ 19,842**	**$ 235,332**	**$ 8,239**	**$ -**	**$ 2,598**	**$ 14,899**	**$ 282,432**
38											
39	**Decontamination, Demolition, & Disposal**										
40	[redacted]		Prepare Integrated Work Sequence and Schedule for Decommissioning	-	-	[redacted]	-	-	-	[redacted]	[redacted]
41			Modify Containment Access- Unit 2	-	-		-	-	-		
42			Modify Containment Access- Unit 3	-	-		-	-	-		
43			Remove and Dispose of Missile Shields - Unit 2	-	-		-	[redacted]	-		
44			Remove and Dispose of Reactor Head - Unit 2	-	-		-		-		
45			Remove and Dispose of Missile Shields - Unit 3	-	-		-		-		
46			Remove and Dispose of Reactor Head - Unit 3	-	-		-		-		
47			Prepare Activity Specifications - U2	-	-		-	-	-		
48		[2]	Waste Contracts	-	-		-	-	-		
49			Install GARDIAN System	-	-		-	-	-		
50	**Decontamination, Demolition, & Disposal - Initial D&D Activities Subtotal**			**$ -**	**$ -**		**$ -**		**$ -**		**$**

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

			Total (Nominal / 2017$)							
	DCE No.[1]	Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
51										
52	[redacted]	Design, Specify, and Procure Special Items and Materials		-	-	[redacted]	-	-	-	[redacted]
53		Test Special Cutting and Handling Equipment and Train Operators		-	-		-	-	-	
54		Finalize Internals and Vessel Segmenting Details - Unit 2		-	-		-	-	-	
55		Segment, Package and Dispose of Reactor Internals - Unit 2		-	-		-	[redacted]	-	
56		Segment, Package and Dispose of Reactor Internals - Unit 3		-	-		-		-	
57	**Decontamination, Demolition, & Disposal - Internals and Vessel Segmentation Subtotal**		$	- $	- $	$	- $	$	- $	$
58										
59	[redacted]	Remove Underground Diesel Tank - Unit 2		-	-		-	-	-	
60		Remove Underground Diesel Tank - Unit 3		-	-		-	-	-	
61		Remove and Dispose of Spent Fuel Storage Racks - Unit 2		-	-		-	[redacted]	-	
62		Remove and Dispose of Spent Fuel Storage Racks - Unit 3		-	-		-		-	
63		Drain Spent Fuel Pool and Process Liquid Waste - Unit 2		-	-		-	-	-	
64		Drain Spent Fuel Pool and Process Liquid Waste - Unit 3		-	-		-	-	-	
65		Remove Protected Area Security Fencing		-	-		-	-	-	
66	**Decontamination, Demolition, & Disposal - Removal Of Spent Fuel Systems/Equipment Subtotal**		$	- $	- $	$	- $	[redacted]	- $	$
67										
68	[redacted]	Remove and Dispose of Steam Generators - Unit 2		-	-		-		-	
69		Remove and Dispose of Steam Generators - Unit 3		-	-		-		-	
70	**Decontamination, Demolition, & Disposal - Steam Generator Removal Subtotal**		$	- $	- $	$	- $	$	- $	$
71										
72	[redacted]	Upgrade Rail Spur		-	-		-	-	-	
73		Remove, Package and Dispose of Non-Essential Systems - Unit 2		-	-		-	[redacted]	-	
74		Remove, Package and Dispose of Non-Essential Systems - Unit 3		-	-		-		-	
75	**Decontamination, Demolition, & Disposal - Non-Essential System Removal Subtotal**		$	- $	- $	$	- $	$	- $	$
76										
77	[redacted]	Remove, Package and Dispose of Essential Systems		-	-		-	[redacted]	-	
78		Reactor Vessel Insulation Removal and Disposal - Unit 2		-	-		-		-	
79		Segment, Package and Dispose of Reactor Pressure Vessel - Unit 2		-	-		-		-	
80		Reactor Vessel Insulation Removal and Disposal - Unit 3		-	-		-		-	
81		Segment, Package and Dispose of Reactor Pressure Vessel - Unit 3		-	-		-		-	
82		Remove and Dispose of Pressurizer - Unit 2		-	-		-		-	
83		Remove and Dispose of Pressurizer - Unit 3		-	-		-		-	
84		Remove and Dispose of Turbine Gantry Crane - Unit 2		-	-		-		-	
85		Remove and Dispose of Turbine Gantry Crane - Unit 3		-	-		-		-	
86	**Decontamination, Demolition, & Disposal - Large Component Removal Subtotal**		$	- $	- $	$	- $	$	- $	$
87										
88	[redacted]	Demolish Service Building (K-10, 20, 30)		-	-		-	[redacted]	-	
89		Demolish South Security Processing Facility (K-70)		-	-		-		-	
90		Demolish South Yard Area Buildings T-10, 20, 60 and Haz Mat		-	-		-		-	
91		Procure Clean Building Demolition Equipment		-	-		-		-	
92		Demolish Diesel Generator Building - Unit 3		-	-		-		-	
93		Demolish Diesel Generator Building - Unit 2		-	-		-		-	
94		Demolish Condensate Building and Transformer Pads - Unit 2		-	-		-		-	
95		Demolish Full Flow Area and Turbine Building - Unit 2		-	-		-		-	
96		Demolish AWS Building		-	-		-		-	
97		Demolish Building L-50		-	-		-		-	

Appendix C
Table 1
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(Dollars In Thousands, 100% Share)

			Total (Nominal / 2017$)							
	DCE No.[1]	Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
98	[redacted]	Demolish Maintenance Building 4 (B-64/B-65)		-	-	-	[redacted]	-	[redacted]	[redacted]
99		Demolish Maintenance Building 5 (B-62/B-63)		-	-	-		-		
100		Demolish Outage Control Center		-	-	-		-		
101		Demolish Maintenance Building 2 (B-49/B-50)		-	-	-		-		
102		Demolish Maintenance Building 1 (B-43/B-44)		-	-	-		-		
103		Demolish Auxiliary Radwaste Building - Common		-	-	-		-		
104		Demolish Auxiliary Control Building - Common		-	-	-		-		
105		Remove Systems and Demolish Make-Up Demineralizer Structures		-	-	-		-		
106		Install Concrete Plugs in Intake and Discharge Structures		-	-	-	-	-		
107		Demolish Intake and Discharge Structures to 3-Feet Below Grade		-	-	-		-		
108	**Decontamination, Demolition, & Disposal - Initial Plant Building Demo Subtotal**		**$**	**-**	**$**	**-**	**$**	**-**	**$**	**$**
109										
110	[redacted]	Decon Containment Building - Unit 3		-	-	-	[redacted]	-		
111		Decon Penetration Building - Unit 3		-	-	-		-		
112		Decon Safety Equipment and MSIV Building - Unit 3		-	-	-		-		
113		Decon Fuel Handling Building - Unit 3		-	-	-		-		
114		Decon Containment Building - Unit 2		-	-	-		-		
115		Decon Penetration Building - Unit 2		-	-	-		-		
116		Decon Safety Equipment and MSIV Building - Unit 2		-	-	-		-		
117		Decon Fuel Handling Building - Unit 2		-	-	-		-		
118		Decon Turbine Building - Unit 2		-	-	-		-		
119		Decon Auxiliary Radwaste Building - Common		-	-	-		-		
120		Decon Auxiliary Control Building - Common		-	-	-		-		
121	**Decontamination, Demolition, & Disposal - Building Decontamination Subtotal**		**$**	**-**	**$**	**-**	**$**	**-**	**$**	**$**
122										
123	[redacted]	Remove Protected Area Pavement		-	-	-	[redacted]	-		
124		Demolish Condensate Building and Transformer Pads - Unit 3		-	-	-		-		
125		Demolish Full Flow Area and Turbine Building - Unit 3		-	-	-		-		
126		Demolish Unit 3 Fuel Handling Building to 3-Feet Below Grade		-	-	-		-		
127		Demolish Penetration Building - Unit 3		-	-	-		-		
128		Demolish Unit 2 Fuel Handling Building to 3-Feet Below Grade		-	-	-		-		
129		Demolish Penetration Building - Unit 2		-	-	-		-		
130	**Decontamination, Demolition, & Disposal - Final Plant Building Demo Subtotal**		**$**	**-**	**$**	**-**	**$**	**-**	**$**	**$**
131										
132	[redacted]	[2] Offshore Conduit Diffuser and Risers		-	-	-	-	-		
133										
134		[2] Backfill		-	-	-	-	-		
135										
136		Demolish Staging Warehouse		-	-	-	[redacted]	-		
137		Demolish Administration Building (K-40/50)		-	-	-		-		
138		Detension and Remove Unit 3 Containment Building Tendons		-	-	-	-	-		
139		Demolish Safety Equipment and MSIV Building - Unit 3		-	-	-	[redacted]	-		
140		Demolish Unit 3 Containment Building to 3-Feet Below Grade		-	-	-		-		
141		Detension and Remove Unit 2 Containment Building Tendons		-	-	-		-		
142		Demolish Safety and MSIV Equipment Building - Unit 2		-	-	-		-		
143		Demolish Unit 2 Containment Building to 3-Feet Below Grade		-	-	-		-		
144	**Decontamination, Demolition, & Disposal - Containment Building Demo Subtotal**		**$**	**-**	**$**	**-**	**$**	**-**	**$**	**$**
145										

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

	DCE No.[1]		Description		Total (Nominal / 2017$) Labor	Material	Cont	Other	Disposal	Overheads	Contingency	Total
146	[redacted]		Prepare License Termination Plan		-	-	[redacted]	-	-	-	[redacted]	[redacted]
147			Final Status Survey		-	-		-	[redacted]	-		
148			Subsurface Structure Removal Engineering Planning and Design		-	-		-	-	-		
149	**Decontamination, Demolition, & Disposal - Final Survey/License Termination Subtotal**				**$ -**	**$ -**		**$ -**	**$** [redacted]	**$ -**		**$**
150												
151	[redacted]	[2]	Waste Taxes (Pass Through)		-	-	-	-		-		
152		[2]	Waste Taxes (Pass Through)		-	-	-	-		-		
153	**Decontamination, Demolition, & Disposal - Waste Subtotal**				**$ -**	**$ -**	**$ -**	**$ -**	**$** [redacted]	**$ -**		**$**
154												
155	[redacted]				-	-	[redacted]	-	-	-		
156												
157	[redacted]				**$ -**	**$ -**		**$ -**	[redacted]	**$ -**		**$**
158												
159	**Other Projects**											
160	SNF-2-D-AM Areva	[2]	Areva ISFSI Relicensing	[7]	-	-	12,550	8	-	-	2,441	14,998
161	SNF-2-D-AM Holtec 1	[2]	Holtec ISFSI I&M Program Development	[7]	-	-	14,892	25	-	3	2,843	17,763
162	SNF-2-D-AM Holtec 2	[2]	Holtec ISFSI Relicensing		-	-	5,000	-	-	-	1,000	6,000
163	**ISFSI Aging Management Subtotal**				**$ -**	**$ -**	**32,441**	**$ 32**	**$ -**	**$ 3**	**$ 6,284**	**$ 38,761**
164												
165	SNF-2-D-EP Holtec	[2]	Environmental Permitting - Holtec		-	-	3,000	-	-	-	600	3,600
166	SNF-2-D-EP Areva	[2]	Environmental Permitting - Areva		-	-	1,650	-	-	-	330	1,980
167	**Coastal Development Permit Extension Subtotal**				**$ -**	**$ -**	**4,650**	**$ -**	**$ -**	**$ -**	**$ 930**	**$ 5,580**
168												
169	SNF-2-D-GTCC	[2]	GTCC Waste Storage		-	-	22,616	-	-	-	5,654	28,270
170												
171	SR-1-D-14 01		Mesa Site Phase I and II Site Assessment and Lease Surrender	[8]	526	-	7,213	25	-	173	1,118	9,054
172	SR-1-D-14 02		Disposition Hazardous Waste from Mesa Site		113	-	10	-	-	73	-	195
173	SR-1-D-14 03		Mesa Site Characterization Survey		15	-	138	(102)	-	10	-	61
174	SR-2-D-15 02		Obtain Required Permits - Mesa	[9]	-	-	55	26	-	1	-	82
175	SR-2-D-15 09		Mesa Buildings - Demo, Maintenance	[10]	258	42	8,783	64	-	99	545	9,791
176	SR-2-D-15 11		Demolish Mesa Roads and Parking Lots		-	396	591	-	-	-	197	1,185
177	SR-2-D-15 12		Finish Grading and Re-vegetate Mesa Site		-	400	304	-	-	-	141	845
178	**Mesa Site Turnover Subtotal**				**$ 911**	**$ 838**	**$ 17,093**	**$ 13**	**$ -**	**$ 356**	**$ 2,001**	**$ 21,212**
179												
180	LT-3-D-DCE	[2]	DCE Update		-	-	2,183	375	-	-	189	2,747
181	SNF-D-DCE	[2]	DCE Update		-	-	1,000	-	-	-	150	1,150
182	**DCE Update Subtotal**				**$ -**	**$ -**	**3,183**	**$ 375**	**$ -**	**$ -**	**$ 339**	**$ 3,897**
183												
184	SR-3-D-16 05		Obtain CEQA Permit & Approvals	[11]	947	16	5,896	327	-	433	712	8,331
185	SR-3-D-16 03		Initial Real Estate Authorization Renewal and Plant Easement	[12]	2,377	-	9,418	640	-	647	2,223	15,305
186	SR-D-NEPA 2	[2]	Plant Lease Extension		1,397	-	1,576	45	-	414	686	4,118
187	SR-D-NEPA 3	[2]	Plant Lease Amendment For Final Site Restoration		1,663	-	5,532	54	-	493	1,548	9,290
188	SNF-D-GTCC Disp	[2]	GTCC Disposal		-	-	36,000	-	-	-	7,200	43,200
189	SNF-2-D-CDP	[2]	ISFSI CDP Settlement		-	-	3,743	800	-	-	-	4,543
190	SR-D-RFP	[2]	Substructure Removal Contractor Procurement		4,741	59	-	-	-	1,406	1,241	7,447
191	SNF-1-D-7 05		Cyber Security Modifications		341	671	8,241	55	-	336	-	9,644
192	SNF-D-NIA Sump	[2]	NIA Sump Modifications		-	-	1,000	-	-	-	150	1,150
193	**Other Projects Subtotal**				**$ 12,377**	**$ 1,583**	**$ 151,389**	**$ 2,341**	**$ -**	**$ 4,088**	**$ 28,969**	**$ 200,748**
194												

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

				Total (Nominal / 2017$)							
	DCE No.[1]	Description		Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
195	**Substructure Removal**										
196	SR-D-BKFL REM	[2] Backfill Removal		3,358	2,713	-	-	-	996	1,767	8,833
197	SR-5-D-18 02	Install Sheet Piling and Excavation Shoring		-	20,385	10,280	-	-	-	7,666	38,332
198	SR-5-D-18 03	Install Dewatering System and Effluent Treatment and Discharge Controls		-	-	-	29,053	-	-	7,263	36,316
199	SR-5-D-18 04	Demolish and Backfill Unit 3 Condensate Storage Area Below -3 Feet		-	292	207	-	569	-	267	1,334
200	SR-5-D-18 05	Demolish and Backfill Unit 3 Diesel Generator Building Below -3 Feet		-	166	118	-	276	-	140	701
201	SR-5-D-18 06	Demolish and Backfill Unit 3 Fuel Handling Building Below -3 Feet		-	449	344	-	938	-	433	2,163
202	SR-5-D-18 07	Demolish and Backfill Unit 3 Radwaste and Control Building Below -3 Feet		-	1,183	1,062	-	1,819	-	1,016	5,079
203	SR-5-D-18 08	Demolish and Backfill Unit 3 Turbine Building Structure Below 9 Ft Elevation		-	5,374	4,502	-	7,880	-	4,439	22,195
204	SR-5-D-18 09	Demolish and Backfill Unit 3 Safety Equipment Building Below -3 Feet		-	841	828	-	4,120	-	1,447	7,237
205	SR-5-D-18 10	Demolish and Backfill Unit 3 Penetration Area Below -3 Feet		-	394	323	-	801	-	380	1,899
206	SR-5-D-18 11	Demolish and Backfill Unit 3 Full Flow Building Below -3 Feet		-	148	104	-	256	-	127	637
207	SR-5-D-18 12	Demolish and Backfill Unit 3 Containment Building Below -3 Feet		-	1,789	1,358	-	5,048	-	2,049	10,243
208	SR-5-D-18 13	Demolish and Backfill Unit 2 Condensate Storage Area Below -3 Feet		-	292	207	-	569	-	267	1,334
209	SR-5-D-18 14	Demolish and Backfill Unit 2 Diesel Generator Building Below -3 Feet		-	166	118	-	276	-	140	701
210	SR-5-D-18 15	Demolish and Backfill Unit 2 Fuel Handling Building Below -3 Feet		-	449	344	-	938	-	433	2,163
211	SR-5-D-18 16	Demolish and Backfill Unit 2 Radwaste and Control Building Below -3 Feet		-	1,282	1,098	-	1,819	-	1,050	5,249
212	SR-5-D-18 17	Demolish and Backfill Unit 2 Turbine Building Structure Below 9 Ft Elevation		-	5,374	4,502	-	7,881	-	4,439	22,195
213	SR-5-D-18 18	Demolish and Backfill Unit 2 Safety Equipment Building Below -3 Feet		-	841	828	-	4,120	-	1,447	7,237
214	SR-5-D-18 19	Demolish and Backfill Unit 2 Penetration Area Below -3 Feet		-	394	323	-	801	-	380	1,899
215	SR-5-D-18 20	Demolish and Backfill Unit 2 Full Flow Building Below -3 Feet		-	405	248	-	256	-	227	1,137
216	SR-5-D-18 21	Demolish and Backfill Unit 2 Containment Building Below -3 Feet		-	1,786	1,356	-	5,048	-	2,047	10,237
217	SR-5-D-18 22	Demolish and Backfill Intake Structure Below -3 Feet		-	10,418	7,867	-	25,339	-	10,906	54,529
218	SR-5-D-18 24	Remove Sheet Piling and Excavation Shoring		-	-	11,967	-	-	-	2,992	14,958
219	SR-5-D-18 25	Remove Dewatering System and Effluent Treatment		-	-	-	6,947	-	-	1,737	8,684
220	SR-6-D-19 06	Remove and Stockpile Existing Seawall Erosion Protection		-	11	6	-	-	-	4	21
221	SR-6-D-19 07	Remove Unit 2 and 3 Seawall and Pedestrian Walkway		-	3,032	3,258	-	4,606	-	2,724	13,620
222	SR-6-D-19 08	Remove Remaining Intake and Outfall Box Culvert		-	464	341	-	2,211	-	754	3,770
223	SR-6-D-19 10	Backfill and Compaction of Excavation		-	2,217	1,495	-	-	-	928	4,640
224	**Substructure Removal Subtotal**			**$ 3,358**	**$ 60,862**	**$ 53,084**	**$ 36,000**	**$ 75,573**	**$ 996**	**$ 57,468**	**$ 287,340**
225											
226	**Offshore Conduit Removal**										
227	SR-3-D-16 01	Hydrogeologic Investigation and Outfall Conduit Survey		-	130	302	104	-	-	134	670
228	SR-5-D-18 23	Remove Off Shore Intake and Outfall Conduits		-	43,901	12,606	-	19,788	-	19,074	95,369
229	**Offshore Conduit Removal Subtotal**			**$ -**	**$ 44,031**	**$ 12,908**	**$ 104**	**$ 19,788**	**$ -**	**$ 19,208**	**$ 96,039**
230											
231	**ISFSI Demolition**										
232	SNF D&D-1-D-12 01	Preparation and NRC Review of License Termination Plan		-	-	118	161	-	-	70	349
233	SNF D&D-2-D-13 01	Install GARDIAN Bulk Assay System		-	-	-	546	-	-	137	683
234	SNF D&D-2-D-13 02	Decon Areva Modules	[13]	-	47	111	-	141	-	75	374
235	SNF D&D-2-D-13 03	Final Status Survey of ISFSI		-	82	520	-	-	-	151	753
236	SNF D&D-2-D-13 04	Clean Demo of Areva ISFSI Pad and Modules	[14]	-	1,049	1,923	-	1,270	-	1,060	5,302
237	SNF D&D-2-D-13 05	Demolish ISFSI Security Building	[15]	-	266	199	-	528	-	248	1,240
238	SNF D&D-2-D-13 06	Restore ISFSI Site		-	512	346	-	-	-	215	1,073
239	SNF D&D-2-D-13 07	Preparation of Final Report on Decommissioning and NRC Review		-	-	55	-	-	-	14	69
240	SNF D&D-2-D-13 08	[2] Clean Demo of Holtec ISFSI Pad and Modules		-	1,946	1,452	-	4,910	-	2,077	10,386
241	**ISFSI Demolition Subtotal**			**$ -**	**$ 3,902**	**$ 4,725**	**$ 707**	**$ 6,849**	**$ -**	**$ 4,046**	**$ 20,229**
242											

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

			Total (Nominal / 2017$)							
	DCE No.[1]	Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
243	**Final Site Restoration**									
244	SR-6-D-19 01	Obtain Required Permits and Approvals	-	20	410	130	-	-	140	700
245	SR-6-D-19 03	Procure Site Restoration Equipment	-	400	-	-	-	-	100	500
246	SR-6-D-19 12	Install Shoreline Erosion Control and Restoration Features	-	142	10	-	-	-	38	190
247	SR-6-D-19 13	Remove Railroad Tracks, Rails and Ballast	-	35	64	-	-	-	25	123
248	SR-6-D-19 14	Remove Gunite Slope Protection	-	362	267	-	1,728	-	589	2,946
249	SR-6-D-19 15	Remove Access Roads and Parking Lots	-	179	244	-	-	-	106	529
250	SR-6-D-19 16	Finish Grading and Re-Vegetate Site	-	834	987	-	-	-	455	2,276
251	**Final Site Restoration Subtotal**		**$ -**	**$ 1,973**	**$ 1,981**	**$ 130**	**$ 1,728**	**$ -**	**$ 1,453**	**$ 7,267**
252										
253	**Distributed Subtotal**									
254										
255	**Labor-Staffing**									
256	LT-U-1 01	Utility Staff	153,426	544	101,384	1,302	-	59,298	16,414	332,367
257	SNF-U-2 01	Utility Staff	196,990	399	39,185	1,045	-	68,546	18,789	324,954
258	SR-U-3 01	Utility Staff	44,437	24	61,492	68	-	11,056	11,423	128,499
259	**Utility Staff Subtotal**		**$ 394,852**	**$ 967**	**$ 202,061**	**$ 2,415**	**$ -**	**$ 138,899**	**$ 46,625**	**$ 785,820**
260										
261	LT-U-1 03	Security Force	11,563	4	146	17	-	2,200	601	14,532
262	SNF-U-2 04	Security Force	163,052	58	2,487	45	-	54,788	12,148	232,580
263	**Security Force Subtotal**		**$ 174,615**	**$ 62**	**$ 2,633**	**$ 63**	**$ -**	**$ 56,989**	**$ 12,749**	**$ 247,112**
264										
265	**Labor-Staffing Subtotal**		**$ 569,468**	**$ 1,029**	**$ 204,694**	**$ 2,478**	**$ -**	**$ 195,888**	**$ 59,375**	**$ 1,032,932**
266										
267	**Non-Labor**									
268	SNF-U-AM Areva	[2] Areva ISFSI Aging Management	-	-	3,713	-	-	-	557	4,270
269	SNF-U-AM Holtec	[2] Holtec ISFSI Aging Management	-	-	10,400	-	-	-	1,560	11,960
270	**Aging Management Subtotal**		**$ -**	**$ -**	**$ 14,113**	**$ -**	**$ -**	**$ -**	**$ 2,117**	**$ 16,230**
271										
272	LT-U-1 17	Association Fees and Expenses	-	3	2,393	2,193	-	9	540	5,138
273	SNF-U-2 26	[2] Association Fees and Expenses	-	-	212	1,838	-	-	307	2,357
274	SR-U-3 17	[2] Association Fees and Expenses	-	-	481	793	-	-	191	1,466
275	**Association Fees and Expenses Subtotal**		**$ -**	**$ 3**	**$ 3,086**	**$ 4,825**	**$ -**	**$ 9**	**$ 1,039**	**$ 8,961**
276										
277	LT-U-1 15	Community Engagement Panel	382	63	2,324	4,285	-	157	679	7,890
278	SNF-U-2 25	[2] Community Engagement Panel	-	-	26	2,440	-	-	370	2,836
279	SR-U-3 21	[2] Community Engagement Panel	-	-	8	1,933	-	-	291	2,232
280	**Community Engagement Panel Subtotal**		**$ 382**	**$ 63**	**$ 2,358**	**$ 8,658**	**$ -**	**$ 157**	**$ 1,340**	**$ 12,958**
281										

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

				Total (Nominal / 2017$)							
	DCE No.[1]		Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
282	LT-U-1 08		Contracted Services [16]	705	9,613	78,768	7,991	-	92	6,641	103,810
283	SNF-U-2 11		Contracted Services [16]	349	11,718	62,692	18,422	-	165	10,528	103,875
284	SR-U-3 06		Contracted Services [16]	19	761	21,008	2,452	-	18	3,433	27,690
285	SR-U-Bank	[2]	Bank Fees And Interest	-	-	-	(68)	-	-	-	(68)
286	SR-U-Inv Adj	[2]	Vendor Invoice Adjustment	-	-	-	(213)	-	(1)	-	(214)
287	**Contracted Services Subtotal**			**$ 1,073**	**$ 22,092**	**$ 162,468**	**$ 28,583**	**$ -**	**$ 274**	**$ 20,602**	**$ 235,092**
288											
289	LT-U-1 09		DAW Disposal	-	-	21	-	-	-	-	21
290	SNF-U-2 12		DAW Disposal	-	-	10	-	-	-	-	10
291	**DAW Disposal Subtotal**			**$ -**	**$ -**	**$ 32**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 32**
292											
293	LT-U-1 25		Decommissioning Advisor	-	735	6,854	10	-	25	698	8,322
294	SNF-U-2 28	[2]	Decommissioning Advisor	-	-	292	-	-	-	44	336
295	SR-U-3 22	[2]	Decommissioning Advisor	-	-	1,528	-	-	-	229	1,758
296	**Decommissioning Advisor Subtotal**			**$ -**	**$ 735**	**$ 8,674**	**$ 10**	**$ -**	**$ 25**	**$ 971**	**$ 10,416**
297											
298	LT-U-CO	[2]	DGC Executive Oversight Committee	-	-	2,696	-	-	-	404	3,100
299	SR-U-CO	[2]	DGC Executive Oversight Committee	-	-	746	-	-	-	112	857
300	**DGC Executive Oversight Committee Subtotal**			**$ -**	**$ -**	**$ 3,441**	**$ -**	**$ -**	**$ -**	**$ 516**	**$ 3,958**
301											
302	SNF-U-2 09		Emergency Preparedness Fees	-	22	150	44,615	-	90	5,103	49,980
303	**Emergency Preparedness Fees Subtotal**			**$ -**	**$ 22**	**$ 150**	**$ 44,615**	**$ -**	**$ 90**	**$ 5,103**	**$ 49,980**
304											
305	LT-U-1 10		Energy	-	-	-	46,606	-	137	4,762	51,505
306	SNF-U-2 13		Energy	-	-	-	16,988	-	31	2,036	19,055
307	SR-U-3 07		Energy	-	-	-	14,814	-	-	2,222	17,036
308	**Energy Subtotal**			**$ -**	**$ -**	**$ -**	**$ 78,408**	**$ -**	**$ 168**	**$ 9,020**	**$ 87,596**
309											
310	LT-U-1 24		Environmental Permits and Fees	2	-	344	3,348	-	27	82	3,802
311	SNF-U-2 27	[2]	Environmental Permits and Fees	-	-	676	346	-	-	153	1,176
312	SR-U-3 23	[2]	Environmental Permits and Fees	-	-	193	1,460	-	-	248	1,901
313	**Environmental Permits and Fees Subtotal**			**$ 2**	**$ -**	**$ 1,212**	**$ 5,154**	**$ -**	**$ 27**	**$ 484**	**$ 6,879**
314											
315	SNF-U-GW	[2]	Ground Water Monitoring	-	-	340	-	-	-	51	391
316	SR-U-GW	[2]	Ground Water Monitoring	-	-	120	-	-	-	18	138
317	**Ground Water Monitoring Subtotal**			**$ -**	**$ -**	**$ 460**	**$ -**	**$ -**	**$ -**	**$ 69**	**$ 529**
318											
319	LT-U-1 20		Information Technology [17]	2,532	1,605	6,001	6,044	-	1,687	1,035	18,905
320	SNF-U-2 20		Information Technology [17]	-	998	3,730	389	-	-	768	5,885
321	SR-U-3 15		Information Technology [17]	-	1,670	2,746	649	-	-	760	5,825
322	LT-U-1 21		Telecommunications [18]	1,275	35	137	88	-	815	-	2,350
323	LT-U-1 22		Personal Computers [18]	-	9	9	-	-	-	-	18
324	SNF-U-2 22		Personal Computers [18]	-	7	-	-	-	-	-	7
325	**Information Technology Subtotal**			**$ 3,808**	**$ 4,324**	**$ 12,623**	**$ 7,171**	**$ -**	**$ 2,502**	**$ 2,563**	**$ 32,991**
326											

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

				Total (Nominal / 2017$)							
	DCE No.[1]	Description		Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
327	LT-U-1 05	Insurance		1	-	-	18,981	-	-	1,090	20,072
328	LT-U-1 14	Workers Compensation Insurance	[19]	-	-	-	384	-	-	-	384
329	SNF-U-2 06	Insurance		-	-	-	35,022	-	-	5,030	40,052
330	SR-U-3 04	Insurance		-	-	-	4,533	-	-	680	5,213
331	**Insurance Subtotal**			**$ 1**	**$ -**	**$ -**	**$ 58,921**	**$ -**	**$ -**	**$ 6,800**	**$ 65,722**
332											
333	LT-U-Legal	[2] Third-Party Legal		-	-	8,960	(125)	-	16	1,047	9,899
334	SNF-U-Legal	[2] Third-Party Legal		-	-	9,533	16	-	20	1,119	10,688
335	SR-U-Legal	[2] Third-Party Legal		(836)	-	5,285	6	-	(405)	505	4,555
336	**Third-Party Legal Subtotal**			**$ (836)**	**$ -**	**$ 23,778**	**$ (103)**	**$ -**	**$ (369)**	**$ 2,671**	**$ 25,142**
337											
338	LT-U-1 07	NRC Fees		-	-	4	10,756	-	43	964	11,767
339	SNF-U-2 08	NRC Fees		-	-	30	17,916	-	3	2,574	20,523
340	**NRC Fees Subtotal**			**$ -**	**$ -**	**$ 34**	**$ 28,673**	**$ -**	**$ 46**	**$ 3,538**	**$ 32,291**
341											
342	LT-U-Office	[2] Office Space		-	20	1,000	-	-	-	153	1,173
343	SNF-U-Office	[2] Office Space		-	356	3	-	-	-	54	413
344	SR-U-Office	[2] Office Space		-	104	37	-	-	-	21	162
345	**Office Space Lease Subtotal**			**$ -**	**$ 480**	**$ 1,040**	**$ -**	**$ -**	**$ -**	**$ 228**	**$ 1,748**
346											
347	LT-U-1 04	Security Related Expenses		-	166	216	249	-	2	56	690
348	SNF-U-2 05	Security Related Expenses		1	1,913	6,562	1,305	-	10	1,310	11,102
349	SR-U-3 03	Security Related Expenses		2	124	323	116	-	4	17	586
350	**Security Related Expenses Subtotal**			**$ 4**	**$ 2,203**	**$ 7,101**	**$ 1,671**	**$ -**	**$ 16**	**$ 1,383**	**$ 12,378**
351											
352	SR-U-3 11	Severance		104,551	-	1,816	4,142	-	8,452	4,084	123,044
353	**Severance Subtotal**			**$ 104,551**	**$ -**	**$ 1,816**	**$ 4,142**	**$ -**	**$ 8,452**	**$ 4,084**	**$ 123,044**
354											
355	LT-U-1 06	Site Lease and Easement Expenses		1	-	69	4,102	-	-	350	4,521
356	SNF-U-2 07	Site Lease and Easement Expenses		-	-	-	41,587	-	-	6,238	47,825
357	SR-U-3 05	Site Lease and Easement Expenses		2	-	223	43,225	-	-	5,348	48,798
358	**Site Lease and Easement Expenses Subtotal**			**$ 3**	**$ -**	**$ 292**	**$ 88,914**	**$ -**	**$ -**	**$ 11,936**	**$ 101,145**
359											
360	SNF-U-SFL	[2] Loading Spent Fuel & GTCC Waste To DOE		-	-	28,320	-	-	-	4,248	32,568
361	**Loading Spent Fuel & GTCC Waste To DOE Subtotal**			**$ -**	**$ -**	**$ 28,320**	**$ -**	**$ -**	**$ -**	**$ 4,248**	**$ 32,568**
362											
363	LT-U-1 19	Tools and Equipment		-	-	14	35	-	-	-	49
364	**Tools and Equipment Subtotal**			**$ -**	**$ -**	**$ 14**	**$ 35**	**$ -**	**$ -**	**$ -**	**$ 49**
365											
366	LT-U-1 18	Water	[20]	-	-	-	3,890	-	9	436	4,336
367	SNF-U-2 18	Water	[20]	-	-	-	8,275	-	6	1,119	9,400
368	SR-U-3 13	Water	[20]	-	-	-	2,965	-	-	443	3,408
369	**Water Subtotal**			**$ -**	**$ -**	**$ -**	**$ 15,130**	**$ -**	**$ 15**	**$ 1,998**	**$ 17,143**
370											
371	LT-U-1 02	Utility Staff Health Physics Supplies		-	114	1,012	28	-	8	21	1,183
372	SNF-U-2 02	Utility Staff Health Physics Supplies		-	152	2,305	46	-	13	127	2,643
373	**Utility Staff Health Physics Supplies Subtotal**			**$ -**	**$ 266**	**$ 3,317**	**$ 74**	**$ -**	**$ 21**	**$ 148**	**$ 3,825**
374											
375	**Non-Labor Subtotal**			**$ 108,987**	**$ 30,189**	**$ 274,329**	**$ 374,880**	**$ -**	**$ 11,432**	**$ 80,859**	**$ 880,676**

Appendix C
Table 1
Detailed Cost Table By Cost Type
(Dollars In Thousands, 100% Share)

				Total (Nominal / 2017$)							
	DCE No.[1]		Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
376											
377	**Service Level Agreements**										
378	LT-U-SLA	(2)	Service Level Agreements	32,318	(9)	2,301	30,114	-	9,098	6,278	80,099
379	SNF-U-SLA	(2)	Service Level Agreements	7,908	(9)	2,080	9,175	-	25,896	3,521	48,571
380	SR-U-SLA	(2)	Service Level Agreements	9,783	(1)	132	8,254	-	26,401	4,403	48,973
381	**Service Level Agreements Subtotal**			**$ 50,010**	**$ (19)**	**$ 4,514**	**$ 47,543**	**$ -**	**$ 61,395**	**$ 14,202**	**$ 177,643**
382											
383	**DGC Staffing**										
384	[redacted]			-	-	[redacted]	-	-	-	[redacted]	[redacted]
385	[redacted]			-	-		-	-	-		
386	**Subtotal DGC Staffing**			**$ -**	**$ -**	**$**	**$ -**	**$ -**	**$ -**	**$**	**$**
387											
388	**Undistributed Subtotal**			**$**	**$**	**$**	**$**	**$ -**	**$**	**$**	**$**
389											
390	**Total**			**$**	**$**	**$**	**$**	**$**	**$**	**$**	**$**

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

	DCE No.[1]		Description	Total (2014$) Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
1	**Completed Projects - 2015 NDCTP**			**$ 1,236**	**$ 2,663**	**$ 88,707**	**$ (134)**	**$ -**	**$ 1,569**	**$ -**	**$ 94,041**
2											
3	LT-2-D-2 18		Planning & Design For Cold and Dark	1,887	1,008	14,875	1,067	-	1,372	-	20,208
4	LT-2-D-2 19		Implement Cold and Dark (Repower Site)	2,083	412	50,494	(458)	-	1,479	-	54,010
5	LT-2-D-2 20		Install 12 kV Service Line to Power Temp Power Ring	1,535	2,746	4,617	413	-	738	-	10,050
6	LT-2-D-2 21		Drain & De-Energize Non-Essential Systems (DEC Process)	2,343	946	1,288	16	-	1,477	-	6,070
7	LT-2-D-2 29		Implement Control Room Modifications (Command Center Relocation)	-	4	332	3	-	3	-	343
8	**Completed Activities - Initial D&D Activities Subtotal**			**$ 7,849**	**$ 5,116**	**$ 71,606**	**$ 1,041**	**$ -**	**$ 5,069**	**$ -**	**$ 90,680**
9											
10	LT-2-D-2 26		Install Spent Fuel Pool System Modifications - Unit 2	136	2,795	1,125	43	-	126	-	4,225
11	LT-2-D-2 27		Install Spent Fuel Pool System Modifications - Unit 3	136	2,795	1,125	43	-	126	-	4,225
12	**Completed Activities - Spent Fuel Islanding Subtotal**			**$ 272**	**$ 5,589**	**$ 2,251**	**$ 85**	**$ -**	**$ 253**	**$ -**	**$ 8,450**
13											
14	LT-2-D-2 07		Prepare Defueled Safety Analysis Report (DSAR)	1	-	1,946	11	-	20	-	1,978
15	**Completed Activities - Phase 2 Regulatory Compliance Subtotal**			**$ 1**	**$ -**	**$ 1,946**	**$ 11**	**$ -**	**$ 20**	**$ -**	**$ 1,978**
16											
17	LT-2-D-2 22		Select Decommissioning General Contractor (DGC)	1,179	7	11,471	406	-	784	-	13,847
18	**Completed Activities - DCG RFP & Prep Subtotal**			**$ 1,179**	**$ 7**	**$ 11,471**	**$ 406**	**$ -**	**$ 784**	**$ -**	**$ 13,847**
19											
20	LT-2-D-LOED	[2]	Large Organism Exclusion Device Modification	66	1,054	171	(3)	-	49	-	1,337
21	LT-D-SPV	[2]	Special Purpose Vehicle Support	-	-	424	1	-	5	-	430
22	LT-3-D-RecB	[2]	Records Backlog	-	-	1,733	183	-	19	-	1,936
23	LT-3-D-S&S	[2]	Simplification & Streamlining Project	1	6	1,262	50	-	7	-	1,325
24	**Completed Activities - Transition Modifications Subtotal**			**$ 67**	**$ 1,060**	**$ 3,589**	**$ 230**	**$ -**	**$ 81**	**$ -**	**$ 5,027**
25											
26	**Completed Projects And Activities Subtotal**			**$ 10,603**	**$ 14,435**	**$ 179,568**	**$ 1,640**	**$ -**	**$ 7,776**	**$ -**	**$ 214,024**
27											
28	**ISFSI & Fuel Transfer Operations**										
29	SNF-1-D-7 02	[3]	Holtec Long Lead Items and Areva Contract Closure	95	16,219	30,966	(12,666)	-	438	986	36,039
30	SNF-2-D-8 07		ISFSI Pad Study	-	-	199	2	-	2	-	203
31	SNF-2-D-8 08	[4]	Design ISFSI Expansion, Fuel Inspection, and Oversight	1,219	102	72,413	2,808	-	879	3,450	80,871
32	SNF-2-D-8 09		Construct ISFSI Expansion	92	5	42,362	263	-	170	4,061	46,953
33	SNF-2-D-8 10	[5]	Fabrication of Spent Fuel Canisters - Unit 2	24	1,696	25,947	9,012	-	563	305	37,547
34	SNF-2-D-8 11	[5]	Fabrication of Spent Fuel Canisters - Unit 3	23	1,696	18,782	8,943	-	487	508	30,439
35	SNF-2-D-8 12	[6]	Load Fuel Canisters and Fuel Transfer Operations - Unit 2	-	-	16,574	(1)	-	-	2,505	19,078
36	SNF-2-D-8 13	[6]	Load Fuel Canisters and Fuel Transfer Operations - Unit 3	-	-	16,574	-	-	-	2,505	19,079
37	**ISFSI & Fuel Transfer Operations Subtotal**			**$ 1,453**	**$ 19,719**	**$ 223,817**	**$ 8,362**	**$ -**	**$ 2,540**	**$ 14,321**	**$ 270,210**
38											
39	**Decontamination, Demolition, & Disposal**										
40	[redacted]		Prepare Integrated Work Sequence and Schedule for Decommissioning	-	-	[redacted]	-	-	-	[redacted]	[redacted]
41			Modify Containment Access- Unit 2	-	-		-	-	-		
42			Modify Containment Access- Unit 3	-	-		-	-	-		
43			Remove and Dispose of Missile Shields - Unit 2	-	-		-		-		
44			Remove and Dispose of Reactor Head - Unit 2	-	-		-		-		
45			Remove and Dispose of Missile Shields - Unit 3	-	-		-		-		
46			Remove and Dispose of Reactor Head - Unit 3	-	-		-		-		
47			Prepare Activity Specifications - U2	-	-		-	-	-		
48		[2]	Waste Contracts	-	-		-	-	-		
49			Install GARDIAN System	-	-		-	-	-		
50	**Decontamination, Demolition, & Disposal - Initial D&D Activities Subtotal**			**$ -**	**$ -**	**$**	**$ -**	**$**	**$ -**	**$**	**$**

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

	DCE No.[1]	Description	Total (2014$) Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
51										
52	[redacted]	Design, Specify, and Procure Special Items and Materials		-	-	-	-	-	[redacted]	[redacted]
53		Test Special Cutting and Handling Equipment and Train Operators		-	-	-	-	-		
54		Finalize Internals and Vessel Segmenting Details - Unit 2		-	-	-	-	-		
55		Segment, Package and Dispose of Reactor Internals - Unit 2		-	-	-	[redacted]	-		
56		Segment, Package and Dispose of Reactor Internals - Unit 3		-	-	-		-		
57	**Decontamination, Demolition, & Disposal - Internals and Vessel Segmentation Subtotal**		$	- $	- $	$	- $	$	- $	$
58										
59	[redacted]	Remove Underground Diesel Tank - Unit 2		-	-		-	-	-	
60		Remove Underground Diesel Tank - Unit 3		-	-		-	-	-	
61		Remove and Dispose of Spent Fuel Storage Racks - Unit 2		-	-		-	[redacted]	-	
62		Remove and Dispose of Spent Fuel Storage Racks - Unit 3		-	-		-		-	
63		Drain Spent Fuel Pool and Process Liquid Waste - Unit 2		-	-		-	-	-	
64		Drain Spent Fuel Pool and Process Liquid Waste - Unit 3		-	-		-	-	-	
65		Remove Protected Area Security Fencing		-	-		-	-	-	
66	**Decontamination, Demolition, & Disposal - Removal Of Spent Fuel Systems/Equipment Subtotal**		$	- $	- $	$	- $	[redacted] $	- $	$
67										
68	[redacted]	Remove and Dispose of Steam Generators - Unit 2		-	-		-		-	
69		Remove and Dispose of Steam Generators - Unit 3		-	-		-		-	
70	**Decontamination, Demolition, & Disposal - Steam Generator Removal Subtotal**		$	- $	- $	$	- $	$	- $	$
71										
72	[redacted]	Upgrade Rail Spur		-	-		-	-	-	
73		Remove, Package and Dispose of Non-Essential Systems - Unit 2		-	-		-	[redacted]	-	
74		Remove, Package and Dispose of Non-Essential Systems - Unit 3		-	-		-		-	
75	**Decontamination, Demolition, & Disposal - Non-Essential System Removal Subtotal**		$	- $	- $	$	- $	$	- $	$
76										
77	[redacted]	Remove, Package and Dispose of Essential Systems		-	-		-		-	
78		Reactor Vessel Insulation Removal and Disposal - Unit 2		-	-		-		-	
79		Segment, Package and Dispose of Reactor Pressure Vessel - Unit 2		-	-		-		-	
80		Reactor Vessel Insulation Removal and Disposal - Unit 3		-	-		-		-	
81		Segment, Package and Dispose of Reactor Pressure Vessel - Unit 3		-	-		-		-	
82		Remove and Dispose of Pressurizer - Unit 2		-	-		-		-	
83		Remove and Dispose of Pressurizer - Unit 3		-	-		-		-	
84		Remove and Dispose of Turbine Gantry Crane - Unit 2		-	-		-		-	
85		Remove and Dispose of Turbine Gantry Crane - Unit 3		-	-		-		-	
86	**Decontamination, Demolition, & Disposal - Large Component Removal Subtotal**		$	- $	- $	$	- $	$	- $	$
87										
88	[redacted]	Demolish Service Building (K-10, 20, 30)		-	-		-		-	
89		Demolish South Security Processing Facility (K-70)		-	-		-		-	
90		Demolish South Yard Area Buildings T-10, 20, 60 and Haz Mat		-	-		-		-	
91		Procure Clean Building Demolition Equipment		-	-		-	-	-	
92		Demolish Diesel Generator Building - Unit 3		-	-		-	[redacted]	-	
93		Demolish Diesel Generator Building - Unit 2		-	-		-		-	
94		Demolish Condensate Building and Transformer Pads - Unit 2		-	-		-		-	
95		Demolish Full Flow Area and Turbine Building - Unit 2		-	-		-		-	
96		Demolish AWS Building		-	-		-		-	
97		Demolish Building L-50		-	-		-		-	

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

	DCE No.[1]	Description	Total (2014$) Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
98		Demolish Maintenance Building 4 (B-64/B-65)	-	-		-		-		
99		Demolish Maintenance Building 5 (B-62/B-63)	-	-		-		-		
100		Demolish Outage Control Center	-	-		-		-		
101		Demolish Maintenance Building 2 (B-49/B-50)	-	-		-		-		
102		Demolish Maintenance Building 1 (B-43/B-44)	-	-		-		-		
103		Demolish Auxiliary Radwaste Building - Common	-	-		-		-		
104		Demolish Auxiliary Control Building - Common	-	-		-		-		
105		Remove Systems and Demolish Make-Up Demineralizer Structures	-	-		-		-		
106		Install Concrete Plugs in Intake and Discharge Structures	-	-		-	-	-		
107		Demolish Intake and Discharge Structures to 3-Feet Below Grade	-	-		-		-		
108	**Decontamination, Demolition, & Disposal - Initial Plant Building Demo Subtotal**		$ -	$ -	$	-	$	-	$	$
109										
110		Decon Containment Building - Unit 3	-	-		-		-		
111		Decon Penetration Building - Unit 3	-	-		-		-		
112		Decon Safety Equipment and MSIV Building - Unit 3	-	-		-		-		
113		Decon Fuel Handling Building - Unit 3	-	-		-		-		
114		Decon Containment Building - Unit 2	-	-		-		-		
115		Decon Penetration Building - Unit 2	-	-		-		-		
116		Decon Safety Equipment and MSIV Building - Unit 2	-	-		-		-		
117		Decon Fuel Handling Building - Unit 2	-	-		-		-		
118		Decon Turbine Building - Unit 2	-	-		-		-		
119		Decon Auxiliary Radwaste Building - Common	-	-		-		-		
120		Decon Auxiliary Control Building - Common	-	-		-		-		
121	**Decontamination, Demolition, & Disposal - Building Decontamination Subtotal**		$ -	$ -	$	-	$	-	$	$
122										
123		Remove Protected Area Pavement	-	-		-		-		
124		Demolish Condensate Building and Transformer Pads - Unit 3	-	-		-		-		
125		Demolish Full Flow Area and Turbine Building - Unit 3	-	-		-		-		
126		Demolish Unit 3 Fuel Handling Building to 3-Feet Below Grade	-	-		-		-		
127		Demolish Penetration Building - Unit 3	-	-		-		-		
128		Demolish Unit 2 Fuel Handling Building to 3-Feet Below Grade	-	-		-		-		
129		Demolish Penetration Building - Unit 2	-	-		-		-		
130	**Decontamination, Demolition, & Disposal - Final Plant Building Demo Subtotal**		$ -	$ -	$	-	$	-	$	$
131										
132	[2]	Offshore Conduit Diffuser and Risers	-	-		-	-	-		
133										
134	[2]	Backfill	-	-		-	-	-		
135										
136		Demolish Staging Warehouse	-	-		-		-		
137		Demolish Administration Building (K-40/50)	-	-		-		-		
138		Detension and Remove Unit 3 Containment Building Tendons	-	-		-		-		
139		Demolish Safety Equipment and MSIV Building - Unit 3	-	-		-		-		
140		Demolish Unit 3 Containment Building to 3-Feet Below Grade	-	-		-		-		
141		Detension and Remove Unit 2 Containment Building Tendons	-	-		-		-		
142		Demolish Safety and MSIV Equipment Building - Unit 2	-	-		-		-		
143		Demolish Unit 2 Containment Building to 3-Feet Below Grade	-	-		-		-		
144	**Decontamination, Demolition, & Disposal - Containment Building Demo Subtotal**		$ -	$ -	$	-	$	-	$	$
145										

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

	DCE No.[1]		Description		Total (2014$) Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
146	[redacted]		Prepare License Termination Plan		-	-	[redacted]	-	-	-	[redacted]	[redacted]
147			Final Status Survey		-	-		-	[redacted]	-		
148			Subsurface Structure Removal Engineering Planning and Design		-	-		-	-	-		
149	**Decontamination, Demolition, & Disposal - Final Survey/License Termination Subtotal**				$ -	$ -	$ [redacted]	$ -	$ [redacted]	$ -	$ [redacted]	$ [redacted]
150												
151	[redacted]	[2]	Waste Taxes (Pass Through)		-	-	-	-	[redacted]	-	[redacted]	[redacted]
152		[2]	Waste Taxes (Pass Through)		-	-	-	-		-		
153	**Decontamination, Demolition, & Disposal - Waste Subtotal**				$ -	$ -	$ -	$ -	$ [redacted]	$ -	$ [redacted]	$ [redacted]
154												
155	[redacted]				-	-	[redacted]	-	-	-	[redacted]	[redacted]
156												
157	**Decontamination, Demolition, & Disposal Subtotal**				$ -	$ -	$ [redacted]	$ -	$ [redacted]	$ -	$ [redacted]	$ [redacted]
158												
159	**Other Projects**											
160	SNF-2-D-AM Areva	[2]	Areva ISFSI Relicensing	[7]	-	-	11,763	7	-	-	2,346	14,117
161	SNF-2-D-AM Holtec 1	[2]	Holtec ISFSI I&M Program Development	[7]	-	-	13,964	24	-	3	2,733	16,724
162	SNF-2-D-AM Holtec 2	[2]	Holtec ISFSI Relicensing		-	-	4,686	-	-	-	961	5,647
163	**ISFSI Aging Management Subtotal**				$ -	$ -	$ 30,414	$ 32	$ -	$ 3	$ 6,040	$ 36,489
164												
165	SNF-2-D-EP Holtec	[2]	Environmental Permitting - Holtec		-	-	2,812	-	-	-	577	3,388
166	SNF-2-D-EP Areva	[2]	Environmental Permitting - Areva		-	-	1,546	-	-	-	317	1,864
167	**Coastal Development Permit Extension Subtotal**				$ -	$ -	$ 4,358	$ -	$ -	$ -	$ 894	$ 5,252
168												
169	SNF-2-D-GTCC	[2]	GTCC Waste Storage		-	-	21,197	-	-	-	5,435	26,632
170												
171	SR-1-D-14 01		Mesa Site Phase I and II Site Assessment and Lease Surrender	[8]	494	-	6,784	27	-	163	1,075	8,542
172	SR-1-D-14 02		Disposition Hazardous Waste from Mesa Site		113	-	9	-	-	73	-	195
173	SR-1-D-14 03		Mesa Site Characterization Survey		15	-	133	(102)	-	10	-	56
174	SR-2-D-15 02		Obtain Required Permits - Mesa	[9]	-	-	54	26	-	1	-	81
175	SR-2-D-15 09		Mesa Buildings - Demo, Maintenance	[10]	254	42	8,558	62	-	97	524	9,537
176	SR-2-D-15 11		Demolish Mesa Roads and Parking Lots		-	381	554	-	-	-	190	1,125
177	SR-2-D-15 12		Finish Grading and Re-vegetate Mesa Site		-	385	285	-	-	-	135	805
178	**Mesa Site Turnover Subtotal**				$ 875	$ 807	$ 16,377	$ 14	$ -	$ 344	$ 1,923	$ 20,341
179												
180	LT-3-D-DCE	[2]	DCE Update		-	-	2,046	360	-	-	181	2,588
181	SNF-D-DCE	[2]	DCE Update		-	-	937	-	-	-	144	1,081
182	**DCE Update Subtotal**				$ -	$ -	$ 2,983	$ 360	$ -	$ -	$ 326	$ 3,669
183												
184	SR-3-D-16 05		Obtain CEQA Permit & Approvals	[11]	902	15	5,573	325	-	414	685	7,914
185	SR-3-D-16 03		Initial Real Estate Authorization Renewal and Plant Easement	[12]	2,231	-	8,836	616	-	607	2,137	14,427
186	SR-D-NEPA 2	[2]	Plant Lease Extension		1,309	-	1,477	43	-	388	660	3,878
187	SR-D-NEPA 3	[2]	Plant Lease Amendment For Final Site Restoration		1,558	-	5,185	52	-	462	1,488	8,745
188	SNF-D-GTCC Disp	[2]	GTCC Disposal		-	-	33,741	-	-	-	6,921	40,662
189	SNF-2-D-CDP	[2]	ISFSI CDP Settlement		-	-	3,508	769	-	-	-	4,277
190	SR-D-RFP	[2]	Substructure Removal Contractor Procurement		4,444	56	-	-	-	1,318	1,193	7,011
191	SNF-1-D-7 05		Cyber Security Modifications		337	670	7,959	81	-	332	-	9,380
192	SNF-D-NIA Sump	[2]	NIA Sump Modifications		-	-	937	-	-	-	144	1,081
193	**Other Projects Subtotal**				$ 11,657	$ 1,549	$ 142,546	$ 2,293	$ -	$ 3,868	$ 27,845	$ 189,758
194												

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

				Total (2014$)							
	DCE No.[1]		Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
195	**Substructure Removal**										
196	SR-D-BKFL REM	[2]	Backfill Removal	3,147	2,608	-	-	-	933	1,698	8,386
197	SR-5-D-18 02		Install Sheet Piling and Excavation Shoring	-	19,594	9,635	-	-	-	7,369	36,599
198	SR-5-D-18 03		Install Dewatering System and Effluent Treatment and Discharge Controls	-	-	-	27,926	-	-	6,981	34,907
199	SR-5-D-18 04		Demolish and Backfill Unit 3 Condensate Storage Area Below -3 Feet	-	280	194	-	533	-	256	1,264
200	SR-5-D-18 05		Demolish and Backfill Unit 3 Diesel Generator Building Below -3 Feet	-	159	111	-	259	-	135	664
201	SR-5-D-18 06		Demolish and Backfill Unit 3 Fuel Handling Building Below -3 Feet	-	431	322	-	879	-	416	2,048
202	SR-5-D-18 07		Demolish and Backfill Unit 3 Radwaste and Control Building Below -3 Feet	-	1,137	995	-	1,705	-	976	4,813
203	SR-5-D-18 08		Demolish and Backfill Unit 3 Turbine Building Structure Below 9 Ft Elevation	-	5,165	4,219	-	7,386	-	4,267	21,037
204	SR-5-D-18 09		Demolish and Backfill Unit 3 Safety Equipment Building Below -3 Feet	-	809	776	-	3,861	-	1,391	6,838
205	SR-5-D-18 10		Demolish and Backfill Unit 3 Penetration Area Below -3 Feet	-	379	303	-	751	-	365	1,798
206	SR-5-D-18 11		Demolish and Backfill Unit 3 Full Flow Building Below -3 Feet	-	143	98	-	240	-	122	603
207	SR-5-D-18 12		Demolish and Backfill Unit 3 Containment Building Below -3 Feet	-	1,719	1,272	-	4,731	-	1,969	9,692
208	SR-5-D-18 13		Demolish and Backfill Unit 2 Condensate Storage Area Below -3 Feet	-	280	194	-	533	-	256	1,264
209	SR-5-D-18 14		Demolish and Backfill Unit 2 Diesel Generator Building Below -3 Feet	-	159	111	-	259	-	135	664
210	SR-5-D-18 15		Demolish and Backfill Unit 2 Fuel Handling Building Below -3 Feet	-	431	322	-	879	-	416	2,048
211	SR-5-D-18 16		Demolish and Backfill Unit 2 Radwaste and Control Building Below -3 Feet	-	1,233	1,030	-	1,705	-	1,009	4,976
212	SR-5-D-18 17		Demolish and Backfill Unit 2 Turbine Building Structure Below 9 Ft Elevation	-	5,165	4,219	-	7,386	-	4,267	21,038
213	SR-5-D-18 18		Demolish and Backfill Unit 2 Safety Equipment Building Below -3 Feet	-	809	776	-	3,861	-	1,391	6,838
214	SR-5-D-18 19		Demolish and Backfill Unit 2 Penetration Area Below -3 Feet	-	379	303	-	751	-	365	1,798
215	SR-5-D-18 20		Demolish and Backfill Unit 2 Full Flow Building Below -3 Feet	-	390	232	-	240	-	219	1,081
216	SR-5-D-18 21		Demolish and Backfill Unit 2 Containment Building Below -3 Feet	-	1,716	1,271	-	4,731	-	1,968	9,686
217	SR-5-D-18 22		Demolish and Backfill Intake Structure Below -3 Feet	-	10,013	7,373	-	23,749	-	10,483	51,618
218	SR-5-D-18 24		Remove Sheet Piling and Excavation Shoring	-	-	11,216	-	-	-	2,876	14,091
219	SR-5-D-18 25		Remove Dewatering System and Effluent Treatment	-	-	-	6,678	-	-	1,669	8,347
220	SR-6-D-19 06		Remove and Stockpile Existing Seawall Erosion Protection	-	10	5	-	-	-	4	20
221	SR-6-D-19 07		Remove Unit 2 and 3 Seawall and Pedestrian Walkway	-	2,914	2,826	(38)	4,606	-	2,618	12,927
222	SR-6-D-19 08		Remove Remaining Intake and Outfall Box Culvert	-	446	210	(18)	2,211	-	725	3,574
223	SR-6-D-19 10		Backfill and Compaction of Excavation	-	2,131	1,401	-	-	-	892	4,424
224	**Substructure Removal Subtotal**			**$ 3,147**	**$ 58,501**	**$ 49,416**	**$ 34,547**	**$ 71,258**	**$ 933**	**$ 55,239**	**$ 273,042**
225											
226	**Offshore Conduit Removal**										
227	SR-3-D-16 01		Hydrogeologic Investigation and Outfall Conduit Survey	-	125	283	100	-	-	129	637
228	SR-5-D-18 23		Remove Off Shore Intake and Outfall Conduits	-	42,198	10,838	(163)	19,788	-	18,334	90,995
229	**Offshore Conduit Removal Subtotal**			**$ -**	**$ 42,323**	**$ 11,121**	**$ (63)**	**$ 19,788**	**$ -**	**$ 18,463**	**$ 91,631**
230											
231	**ISFSI Demolition**										
232	SNF D&D-1-D-12 01		Preparation and NRC Review of License Termination Plan	-	-	111	155	-	-	67	333
233	SNF D&D-2-D-13 01		Install GARDIAN Bulk Assay System	-	-	-	525	-	-	131	656
234	SNF D&D-2-D-13 02	[13]	Decon Areva Modules	-	45	104	-	136	-	72	357
235	SNF D&D-2-D-13 03		Final Status Survey of ISFSI	-	78	488	-	-	-	145	711
236	SNF D&D-2-D-13 04	[14]	Clean Demo of Areva ISFSI Pad and Modules	-	1,009	1,802	-	1,190	-	1,019	5,020
237	SNF D&D-2-D-13 05	[15]	Demolish ISFSI Security Building	-	255	186	-	495	-	238	1,174
238	SNF D&D-2-D-13 06		Restore ISFSI Site	-	492	325	-	-	-	206	1,023
239	SNF D&D-2-D-13 07		Preparation of Final Report on Decommissioning and NRC Review	-	-	52	-	-	-	13	65
240	SNF D&D-2-D-13 08	[2]	Clean Demo of Holtec ISFSI Pad and Modules	-	1,871	1,361	-	4,602	-	1,997	9,831
241	**ISFSI Demolition Subtotal**			**$ -**	**$ 3,750**	**$ 4,429**	**$ 680**	**$ 6,423**	**$ -**	**$ 3,889**	**$ 19,171**
242											

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

			Total (2014$)							
	DCE No.[1]	Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
243	**Final Site Restoration**									
244	SR-6-D-19 01	Obtain Required Permits and Approvals	-	19	384	125	-	-	135	663
245	SR-6-D-19 03	Procure Site Restoration Equipment	-	385	-	-	-	-	96	481
246	SR-6-D-19 12	Install Shoreline Erosion Control and Restoration Features	-	137	9	-	-	-	37	182
247	SR-6-D-19 13	Remove Railroad Tracks, Rails and Ballast	-	33	60	-	-	-	24	116
248	SR-6-D-19 14	Remove Gunite Slope Protection	-	348	164	(14)	1,728	-	566	2,793
249	SR-6-D-19 15	Remove Access Roads and Parking Lots	-	173	229	-	-	-	102	503
250	SR-6-D-19 16	Finish Grading and Re-Vegetate Site	-	801	925	-	-	-	438	2,164
251	**Final Site Restoration Subtotal**		**$ -**	**$ 1,897**	**$ 1,772**	**$ 111**	**$ 1,728**	**$ -**	**$ 1,397**	**$ 6,905**
252										
253	**Distributed Subtotal**									
254										
255	**Labor-Staffing**									
256	LT-U-1 01	Utility Staff	147,700	538	95,923	1,316	-	57,551	15,777	318,805
257	SNF-U-2 01	Utility Staff	187,798	394	37,206	1,074	-	65,874	18,060	310,406
258	SR-U-3 01	Utility Staff	41,681	24	57,641	66	-	10,379	10,980	120,770
259	**Utility Staff Subtotal**		**$ 377,179**	**$ 956**	**$ 190,770**	**$ 2,457**	**$ -**	**$ 133,803**	**$ 44,817**	**$ 749,981**
260										
261	LT-U-1 03	Security Force	11,010	4	138	18	-	2,128	577	13,875
262	SNF-U-2 04	Security Force	155,557	58	2,344	45	-	52,636	11,677	222,317
263	**Security Force Subtotal**		**$ 166,567**	**$ 61**	**$ 2,482**	**$ 63**	**$ -**	**$ 54,764**	**$ 12,255**	**$ 236,192**
264										
265	**Labor-Staffing Subtotal**		**$ 543,746**	**$ 1,017**	**$ 193,252**	**$ 2,519**	**$ -**	**$ 188,567**	**$ 57,071**	**$ 986,172**
266										
267	**Non-Labor**									
268	SNF-U-AM Areva	[2] Areva ISFSI Aging Management	-	-	3,480	-	-	-	535	4,015
269	SNF-U-AM Holtec	[2] Holtec ISFSI Aging Management	-	-	9,747	-	-	-	1,499	11,247
270	**Aging Management Subtotal**		**$ -**	**$ -**	**$ 13,227**	**$ -**	**$ -**	**$ -**	**$ 2,035**	**$ 15,262**
271										
272	LT-U-1 17	Association Fees and Expenses	-	3	2,253	2,122	-	8	519	4,906
273	SNF-U-2 26	[2] Association Fees and Expenses	-	-	198	1,767	-	-	296	2,261
274	SR-U-3 17	[2] Association Fees and Expenses	-	-	451	762	-	-	184	1,397
275	**Association Fees and Expenses Subtotal**		**$ -**	**$ 3**	**$ 2,903**	**$ 4,651**	**$ -**	**$ 8**	**$ 999**	**$ 8,564**
276										
277	LT-U-1 15	Community Engagement Panel	382	63	2,234	4,128	-	156	653	7,615
278	SNF-U-2 25	[2] Community Engagement Panel	-	-	24	2,345	-	-	356	2,725
279	SR-U-3 21	[2] Community Engagement Panel	-	-	7	1,858	-	-	280	2,145
280	**Community Engagement Panel Subtotal**		**$ 382**	**$ 63**	**$ 2,265**	**$ 8,332**	**$ -**	**$ 156**	**$ 1,288**	**$ 12,486**
281										

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

				Total (2014$)							
	DCE No.[1]	Description		Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
282	LT-U-1 08	Contracted Services	(16)	684	9,499	75,723	7,883	-	75	6,383	100,247
283	SNF-U-2 11	Contracted Services	(16)	340	11,309	59,271	17,865	-	155	10,120	99,060
284	SR-U-3 06	Contracted Services	(16)	18	732	19,705	2,361	-	17	3,300	26,134
285	SR-U-Bank	(2) Bank Fees And Interest		-	-	-	(67)	-	-	-	(67)
286	SR-U-Inv Adj	(2) Vendor Invoice Adjustment		-	-	-	(209)	-	(1)	-	(210)
287	**Contracted Services Subtotal**			**$ 1,042**	**$ 21,540**	**$ 154,700**	**$ 27,833**	**$ -**	**$ 247**	**$ 19,803**	**$ 225,164**
288											
289	LT-U-1 09	DAW Disposal		-	-	20	-	-	-	-	20
290	SNF-U-2 12	DAW Disposal		-	-	10	-	-	-	-	10
291	**DAW Disposal Subtotal**			**$ -**	**$ -**	**$ 30**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 30**
292											
293	LT-U-1 25	Decommissioning Advisor		-	730	6,487	16	-	25	671	7,930
294	SNF-U-2 28	(2) Decommissioning Advisor		-	-	274	-	-	-	42	316
295	SR-U-3 22	(2) Decommissioning Advisor		-	-	1,432	-	-	-	220	1,653
296	**Decommissioning Advisor Subtotal**			**$ -**	**$ 730**	**$ 8,193**	**$ 16**	**$ -**	**$ 25**	**$ 934**	**$ 9,899**
297											
298	LT-U-CO	(2) DGC Executive Oversight Committee		-	-	2,527	-	-	-	389	2,915
299	SR-U-CO	(2) DGC Executive Oversight Committee		-	-	699	-	-	-	107	806
300	**DGC Executive Oversight Committee Subtotal**			**$ -**	**$ -**	**$ 3,225**	**$ -**	**$ -**	**$ -**	**$ 496**	**$ 3,722**
301											
302	SNF-U-2 09	Emergency Preparedness Fees		-	22	144	43,181	-	89	4,905	48,341
303	**Emergency Preparedness Fees Subtotal**			**$ -**	**$ 22**	**$ 144**	**$ 43,181**	**$ -**	**$ 89**	**$ 4,905**	**$ 48,341**
304											
305	LT-U-1 10	Energy		-	-	-	45,237	-	134	4,577	49,948
306	SNF-U-2 13	Energy		-	-	-	16,421	-	30	1,957	18,409
307	SR-U-3 07	Energy		-	-	-	14,239	-	-	2,136	16,375
308	**Energy Subtotal**			**$ -**	**$ -**	**$ -**	**$ 75,897**	**$ -**	**$ 164**	**$ 8,670**	**$ 84,732**
309											
310	LT-U-1 24	Environmental Permits and Fees		2	-	334	3,317	-	26	79	3,758
311	SNF-U-2 27	(2) Environmental Permits and Fees		-	-	633	333	-	-	147	1,114
312	SR-U-3 23	(2) Environmental Permits and Fees		-	-	181	1,403	-	-	238	1,822
313	**Environmental Permits and Fees Subtotal**			**$ 2**	**$ -**	**$ 1,149**	**$ 5,053**	**$ -**	**$ 26**	**$ 465**	**$ 6,695**
314											
315	SNF-U-GW	(2) Ground Water Monitoring		-	-	319	-	-	-	49	368
316	SR-U-GW	(2) Ground Water Monitoring		-	-	112	-	-	-	17	130
317	**Ground Water Monitoring Subtotal**			**$ -**	**$ -**	**$ 431**	**$ -**	**$ -**	**$ -**	**$ 66**	**$ 497**
318											
319	LT-U-1 20	Information Technology	(17)	2,524	1,547	5,684	5,993	-	1,680	995	18,424
320	SNF-U-2 20	Information Technology	(17)	-	960	3,496	374	-	-	738	5,568
321	SR-U-3 15	Information Technology	(17)	-	1,605	2,574	624	-	-	730	5,533
322	LT-U-1 21	Telecommunications	(18)	1,275	35	137	88	-	815	-	2,350
323	LT-U-1 22	Personal Computers	(18)	-	9	9	-	-	-	-	18
324	SNF-U-2 22	Personal Computers	(18)	-	7	-	-	-	-	-	7
325	**Information Technology Subtotal**			**$ 3,799**	**$ 4,163**	**$ 11,900**	**$ 7,080**	**$ -**	**$ 2,496**	**$ 2,463**	**$ 31,900**
326											

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

				Total (2014$)							
	DCE No.[1]	Description		Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
327	LT-U-1 05	Insurance		1	-	-	18,675	-	-	1,048	19,723
328	LT-U-1 14	Workers Compensation Insurance	(19)	-	-	-	381	-	-	-	381
329	SNF-U-2 06	Insurance		-	-	-	33,712	-	-	4,835	38,547
330	SR-U-3 04	Insurance		-	-	-	4,358	-	-	654	5,011
331	**Insurance Subtotal**			**$ 1**	**$ -**	**$ -**	**$ 57,126**	**$ -**	**$ -**	**$ 6,536**	**$ 63,663**
332											
333	LT-U-Legal	(2) Third-Party Legal		-	-	8,460	(122)	-	16	1,006	9,359
334	SNF-U-Legal	(2) Third-Party Legal		-	-	9,013	15	-	19	1,076	10,123
335	SR-U-Legal	(2) Third-Party Legal		(802)	-	5,013	7	-	(389)	486	4,315
336	**Third-Party Legal Subtotal**			**$ (802)**	**$ -**	**$ 22,486**	**$ (100)**	**$ -**	**$ (353)**	**$ 2,568**	**$ 23,799**
337											
338	LT-U-1 07	NRC Fees		-	-	4	10,480	-	42	927	11,452
339	SNF-U-2 08	NRC Fees		-	-	28	17,229	-	3	2,474	19,735
340	**NRC Fees Subtotal**			**$ -**	**$ -**	**$ 32**	**$ 27,709**	**$ -**	**$ 45**	**$ 3,401**	**$ 31,187**
341											
342	LT-U-Office	(2) Office Space		-	19	937	-	-	-	147	1,104
343	SNF-U-Office	(2) Office Space		-	343	3	-	-	-	52	397
344	SR-U-Office	(2) Office Space		-	100	35	-	-	-	20	154
345	**Office Space Lease Subtotal**			**$ -**	**$ 461**	**$ 975**	**$ -**	**$ -**	**$ -**	**$ 219**	**$ 1,655**
346											
347	LT-U-1 04	Security Related Expenses		-	160	205	245	-	2	54	667
348	SNF-U-2 05	Security Related Expenses		1	1,847	6,180	1,261	-	10	1,259	10,559
349	SR-U-3 03	Security Related Expenses		2	121	309	114	-	4	16	566
350	**Security Related Expenses Subtotal**			**$ 4**	**$ 2,129**	**$ 6,694**	**$ 1,620**	**$ -**	**$ 16**	**$ 1,329**	**$ 11,792**
351											
352	SR-U-3 11	Severance		102,979	-	1,796	4,018	-	8,329	3,925	121,047
353	**Severance Subtotal**			**$ 102,979**	**$ -**	**$ 1,796**	**$ 4,018**	**$ -**	**$ 8,329**	**$ 3,925**	**$ 121,047**
354											
355	LT-U-1 06	Site Lease and Easement Expenses		1	-	68	3,996	-	-	336	4,401
356	SNF-U-2 07	Site Lease and Easement Expenses		-	-	-	39,974	-	-	5,996	45,970
357	SR-U-3 05	Site Lease and Easement Expenses		2	-	218	41,749	-	-	5,141	47,110
358	**Site Lease and Easement Expenses Subtotal**			**$ 3**	**$ -**	**$ 286**	**$ 85,719**	**$ -**	**$ -**	**$ 11,473**	**$ 97,481**
359											
360	SNF-U-SFL	(2) Loading Spent Fuel & GTCC Waste To DOE		-	-	26,543	-	-	-	4,083	30,626
361	**Loading Spent Fuel & GTCC Waste To DOE Subtotal**			**$ -**	**$ -**	**$ 26,543**	**$ -**	**$ -**	**$ -**	**$ 4,083**	**$ 30,626**
362											
363	LT-U-1 19	Tools and Equipment		-	-	14	34	-	-	-	49
364	**Tools and Equipment Subtotal**			**$ -**	**$ -**	**$ 14**	**$ 34**	**$ -**	**$ -**	**$ -**	**$ 49**
365											
366	LT-U-1 18	Water	(20)	-	-	-	3,773	-	9	419	4,201
367	SNF-U-2 18	Water	(20)	-	-	-	7,975	-	6	1,076	9,056
368	SR-U-3 13	Water	(20)	-	-	-	2,850	-	-	426	3,276
369	**Water Subtotal**			**$ -**	**$ -**	**$ -**	**$ 14,598**	**$ -**	**$ 15**	**$ 1,921**	**$ 16,534**
370											
371	LT-U-1 02	Utility Staff Health Physics Supplies		-	113	970	28	-	8	20	1,139
372	SNF-U-2 02	Utility Staff Health Physics Supplies		-	150	2,192	47	-	12	122	2,524
373	**Utility Staff Health Physics Supplies Subtotal**			**$ -**	**$ 263**	**$ 3,162**	**$ 75**	**$ -**	**$ 20**	**$ 142**	**$ 3,663**
374											
375	**Non-Labor Subtotal**			**$ 107,408**	**$ 29,374**	**$ 260,155**	**$ 362,842**	**$ -**	**$ 11,283**	**$ 77,722**	**$ 848,786**

Appendix C
Table 2
Detailed Cost Table By Cost Type
(2014 Dollars In Thousands, 100% Share)

				Total (2014$)							
	DCE No.[1]		Description	Labor	Material	Contract	Other	Disposal	Overheads	Contingency	Total
376											
377	**Service Level Agreements**										
378	LT-U-SLA	(2)	Service Level Agreements	30,319	(9)	2,204	28,976	-	8,542	6,034	76,066
379	SNF-U-SLA	(2)	Service Level Agreements	7,435	(8)	1,993	8,847	-	24,284	3,385	45,935
380	SR-U-SLA	(2)	Service Level Agreements	9,171	-	127	7,936	-	24,745	4,232	46,211
381	**Service Level Agreements Subtotal**			**$ 46,925**	**$ (17)**	**$ 4,324**	**$ 45,759**	**$ -**	**$ 57,571**	**$ 13,651**	**$ 168,212**
382											
383	**DGC Staffing**										
384	[redacted]			-	-	[redacted]	-	-	-	[redacted]	[redacted]
385	[redacted]			-	-		-	-	-		
386	**Subtotal DGC Staffing**			**$ -**	**$ -**	**$**	**$ -**	**$ -**	**$ -**	**$**	**$**
387											
388	**Undistributed Subtotal**			**$** [redacted]	**$** [redacted]	**$**	**$** [redacted]	**$**	**$** [redacted]	**$**	**$**
389											
390	**Total**			**$**	**$**	**$**	**$**	**$** [redacted]	**$**	**$**	**$**

Notes To Appendix C

Notes:

(1) The DCE line numbers align to the line numbers in Appendix D of the 2014 DCE. The DCE line numbers indicate the corresponding 2014 DCE (1) NRC cost account, (2) 2014 DCE period, (3) cost type (i.e., distributed or undistributed), and (4) line number. For example, "LT-2-D-2.17" in Appendix C of this DCE corresponds to License Termination Period 2 distributed cost line number 2.17 in Appendix D of the 2014 DCE.

(2) These line items were not included in the 2014 DCE, and therefore a new DCE No. has been created.

(3) The description for DCE line number SNF-1-D-7.02 in the 2014 DCE of "Design and Fabricate Spent Fuel Canisters" has been updated to "Holtec Long Lead Items and Areva Contract Closure" to better reflect the associated costs.

(4) The description for DCE line number SNF-2-D-8.08 in the 2014 DCE of "Design ISFSI Expansion" has been updated to "Design ISFSI Expansion, Fuel Inspection, and Oversight" to better reflect the associated costs.

(5) The description for DCE line numbers SNF-2-D-8.10 and SNF-2-D-8.11 in the 2014 DCE of "Purchase and Fabrication of Spent Fuel Canisters and AHSMs" for Units 2 & 3, respectively, have been updated to "Fabrication of Spent Fuel Canisters" to better reflect the associated costs.

(6) The description for DCE line numbers SNF-2-D-8.12 and SNF-2-D-8.13 in the 2014 DCE of "Deliver and Load Spent Fuel Canisters and Transfer to ISFSI" for Units 2 & 3, respectively, have been updated to "Load Fuel Canisters and Fuel Transfer Operations" to better reflect the associated costs.

(7) In Advice Letter 3589-E, Aging Management recorded costs were included in DCE No. SNF-2-D-AM. In the 2017 DCE, Areva and Holtec Aging Management costs are estimated separately, and therefore the Areva and Holtec recorded costs are also shown separately and are included in DCE Nos. SNF-2-D-AM Areva and SNF-2-D-AM Holtec 1.

(8) The description for DCE line number SR-1-D-14.01 in the 2014 DCE of "Mesa Site Phase I and II Site Assessment" has been updated to "Mesa Site Phase I and II Site Assessment and Lease Surrender" to better reflect the associated costs.

(9) The description for DCE line number SR-2-D-15.02 in the 2014 DCE of "Obtain Required Permits For Mesa, South Access and South Yard" has been updated to "Obtain Required Permits - Mesa" to better reflect the associated costs.

(10) The description for DCE line number SR-2-D-15.09 in the 2014 DCE of "Demolish Mesa Buildings" has been updated to "Mesa Buildings - Demo, Maintenance" to better reflect the associated costs.

(11) The description for DCE line number SR-3-D-16.05 in the 2014 DCE of "Obtain Required Permits and Approvals" has been updated to "Obtain CEQA Permit & Approvals" to better reflect the associated costs.

(12) The description for DCE line number SR-3-D-16.03 in the 2014 DCE of "Environmental Impacts Analyses for Lease Termination Activities" has been updated to "Initial Real Estate Authorization Renewal and Plant Easement" to better reflect the associated costs.

(13) The description for DCE line number SNF D&D-2-D-13.02 in the 2014 DCE of "Decon AHSMs" has been updated to "Decon Areva Modules" to better reflect the associated costs.

(14) The description for DCE line number SNF D&D-2-D-13.04 in the 2014 DCE of "Clean Demolition of ISFSI AHSMs and Pad" has been updated to "Clean Demo of Areva ISFSI Pad and Modules" to better reflect the associated costs.

(15) The description for DCE line number SNF D&D-2-D-13.05 in the 2014 DCE of "Clean Demolition of ISFSI Support Structures" has been updated to "Demolish ISFSI Security Building" to better reflect the associated costs.

Notes To Appendix C

(16) The description for DCE line numbers LT-U-1.08, SNF-U-2.11, and SR-U-3.06 in the 2014 DCE of "Materials and Services" has been updated to "Contracted Services" to better reflect the associated costs.

(17) The description for DCE line numbers LT-U-1.20, SNF-U-2.20, and SR-U-3.15 in the 2014 DCE of "Non-Process Computers" has been updated to "Information Technology" to better reflect the associated costs.

(18) All estimated (i.e., 2017-2051) undistributed Information Technology costs that are not covered by the IT Service Level Agreement are captured in DCE line items LT-U-1.20, SNF-U-2.20, and SR-U-3.15, "Information Technology," and therefore DCE line items LT-U-1.21, LT-U-1.22, and SNF-U-2.22 for Telecommunications and Personal Computers do not include any estimated costs.

(19) Estimated costs (i.e., 2017-2051) for workers compensation insurance are included in DCE line items LT-U-1.05, SNF-U-2.06, and SR-U-3.04, "Insurance."

(20) The description for DCE line numbers LT-U-1.18, SNF-U-2.18, and SR-U-3.13 in the 2014 DCE of "Utilities (Water, Gas, Phone)" has been updated to "Water" to better reflect the associated costs.

(21) The undistributed DGC staffing costs associated with the fixed price contract are included in the distributed project for Decontamination, Demolition, & Disposal.

Appendix D

Annual Cash Flow Tables By NRC Cost Category

Appendix D
Table 1-A
Annual Cash Flow Table By NRC Cost Category - Unit 2

Nominal / 2017 Dollars in Thousands

Period	Year	License Termination	Spent Fuel Management	Site Restoration	Total
Pd 1 - Initial Activities	2013	$ 40,388	$ 40,591	$ 40,988	$ 121,967
	2014	56,443	39,579	12,731	108,753
	2015	63,557	55,132	25,520	144,209
	2016	43,464	62,700	1,044	107,208
Pd 2 -Transition & Pool Storage	2017	104,155	67,490	4,667	176,313
	2018	61,943	68,965	3,710	134,618
Pd 3					
Pd 4 - D&D and Dry Storage	2019	49,280	27,254	9,911	86,445
	2020	58,306	15,799	1,847	75,951
	2021	141,012	8,718	2,240	151,971
	2022	153,239	8,077	22,202	183,517
	2023	65,533	5,536	52,406	123,475
	2024	40,938	5,423	32,450	78,811
	2025	31,276	5,344	24,942	61,562
	2026	60,901	5,747	15,901	82,548
	2027	17,045	5,536	41,145	63,726
	2028	19,853	5,678	1,871	27,402
Pd 5 - Dry Storage	2029	-	9,883	1,241	11,124
	2030	-	9,842	-	9,842
	2031	-	10,224	20	10,244
	2032	-	10,528	24	10,552
	2033	-	12,192	18	12,209
	2034	-	12,170	18	12,187
	2035	-	13,401	20	13,422
	2036	-	12,628	-	12,628
	2037	-	11,127	-	11,127
	2038	-	10,971	-	10,971
	2039	-	11,445	-	11,445
	2040	-	11,363	68	11,431
	2041	-	10,905	45	10,950
	2042	-	11,626	43	11,669
	2043	-	11,629	27	11,656
	2044	-	11,041	4,317	15,359
	2045	-	10,440	4,308	14,748
Pd 6 - Civil Works Project	2046	-	8,600	29,378	37,977
	2047	-	7,150	76,564	83,714
	2048	-	8,454	62,150	70,604
	2049	-	35,143	14,931	50,074
Pd 7 - ISFSI Demolition & Final Site Restoration	2050	-	12,763	12,744	25,507
	2051	-	6,125	23,682	29,807
	Total	**$ 1,007,333**	**$ 697,217**	**$ 523,173**	**$ 2,227,722**

Appendix D
Table 1-B
Annual Cash Flow Table By NRC Cost Category - Unit 3

Nominal / 2017 Dollars in Thousands

Period	Year	License Termination	Spent Fuel Management	Site Restoration	Total
Pd 1 - Initial Activities	2013	$ 40,388	$ 40,161	$ 40,988	$ 121,538
	2014	56,270	39,421	12,731	108,422
	2015	63,601	47,813	27,164	138,577
	2016	43,688	65,477	5,157	114,322
Pd 2 -Transition & Pool Storage	2017	99,851	69,885	15,574	185,310
	2018	62,289	70,530	11,543	144,362
Pd 3					
Pd 4 - D&D and Dry Storage	2019	52,448	28,927	16,145	97,520
	2020	76,967	17,443	5,994	100,404
	2021	122,673	10,562	8,131	141,366
	2022	118,848	9,931	27,672	156,451
	2023	65,340	7,406	55,726	128,472
	2024	46,564	7,293	39,281	93,137
	2025	53,899	7,214	37,747	98,860
	2026	51,797	6,684	23,721	82,202
	2027	23,351	6,473	40,386	70,210
	2028	19,859	6,615	1,895	28,369
Pd 5 - Dry Storage	2029	-	10,908	1,241	12,150
	2030	-	10,811	-	10,811
	2031	-	11,192	834	12,027
	2032	-	11,568	1,011	12,579
	2033	-	13,203	749	13,952
	2034	-	13,174	757	13,930
	2035	-	14,552	867	15,420
	2036	-	13,700	-	13,700
	2037	-	12,199	-	12,199
	2038	-	12,100	-	12,100
	2039	-	12,517	-	12,517
	2040	-	12,435	2,879	15,314
	2041	-	12,034	1,916	13,950
	2042	-	12,698	1,804	14,502
	2043	-	12,701	1,123	13,824
	2044	-	12,688	9,105	21,794
	2045	-	11,972	8,718	20,690
Pd 6 - Civil Works Project	2046	-	9,654	29,648	39,302
	2047	-	8,492	76,834	85,326
	2048	-	9,508	61,774	71,282
	2049	-	36,198	34,134	70,331
Pd 7 - ISFSI Demolition & Final Site Restoration	2050	-	12,763	66,431	79,194
	2051	-	6,125	72,005	78,130
	Total	**$ 997,833**	**$ 735,025**	**$ 741,683**	**$ 2,474,542**

Appendix D
Table 2-A
Annual Cash Flow Table By NRC Cost Category - Unit 2

2014 Dollars in Thousands

Period	Year	License Termination	Spent Fuel Management	Site Restoration	Total
Pd 1 - Initial Activities	2013	$ 40,388	$ 40,591	$ 40,988	$ 121,967
	2014	56,443	39,579	12,731	108,753
	2015	62,388	54,147	25,017	141,552
	2016	41,851	60,067	1,026	102,945
Pd 2 -Transition & Pool Storage	2017	97,798	63,427	4,397	165,622
	2018	58,415	64,919	3,512	126,845
Pd 3					
Pd 4 - D&D and Dry Storage	2019	46,449	25,691	9,376	81,515
	2020	54,947	14,904	1,767	71,617
	2021	132,808	8,224	2,138	143,170
	2022	144,304	7,618	20,915	172,837
	2023	61,728	5,225	49,370	116,323
	2024	38,580	5,120	30,609	74,309
	2025	29,487	5,044	23,539	58,070
	2026	57,385	5,423	15,014	77,822
	2027	16,089	5,226	38,808	60,123
	2028	18,764	5,358	1,787	25,909
Pd 5 - Dry Storage	2029	-	9,361	1,170	10,531
	2030	-	9,325	-	9,325
	2031	-	9,680	19	9,698
	2032	-	9,965	22	9,988
	2033	-	11,534	17	11,550
	2034	-	11,513	17	11,529
	2035	-	12,671	19	12,691
	2036	-	11,946	-	11,946
	2037	-	10,530	-	10,530
	2038	-	10,383	-	10,383
	2039	-	10,835	-	10,835
	2040	-	10,754	64	10,818
	2041	-	10,323	43	10,365
	2042	-	11,004	40	11,044
	2043	-	11,003	25	11,028
	2044	-	10,452	4,057	14,510
	2045	-	9,889	4,049	13,938
Pd 6 - Civil Works Project	2046	-	8,106	27,855	35,962
	2047	-	6,743	72,797	79,540
	2048	-	7,972	58,788	66,760
	2049	-	33,100	14,123	47,223
Pd 7 - ISFSI Demolition & Final Site Restoration	2050	-	12,071	12,050	24,121
	2051	-	5,804	22,433	28,238
	Total	**$ 957,823**	**$ 665,525**	**$ 498,584**	**$ 2,121,932**

Appendix D
Table 2-B
Annual Cash Flow Table By NRC Cost Category - Unit 3

2014 Dollars in Thousands

Period	Year	License Termination	Spent Fuel Management	Site Restoration	Total
Pd 1 - Initial Activities	2013	$ 40,388	$ 40,161	$ 40,988	$ 121,538
	2014	56,270	39,421	12,731	108,422
	2015	62,436	46,872	26,631	135,939
	2016	42,075	63,001	4,981	110,057
Pd 2 -Transition & Pool Storage	2017	93,754	65,719	14,650	174,122
	2018	58,747	66,431	10,886	136,065
Pd 3					
Pd 4 - D&D and Dry Storage	2019	49,431	27,304	15,243	91,978
	2020	72,511	16,489	5,671	94,671
	2021	115,546	9,997	7,703	133,246
	2022	111,934	9,400	26,065	147,399
	2023	61,546	7,022	52,495	121,063
	2024	43,875	6,917	37,039	87,831
	2025	50,781	6,841	35,592	93,213
	2026	48,817	6,323	22,375	77,514
	2027	22,025	6,126	38,094	66,245
	2028	18,770	6,258	1,810	26,839
Pd 5 - Dry Storage	2029	-	10,345	1,170	11,515
	2030	-	10,255	-	10,255
	2031	-	10,610	786	11,396
	2032	-	10,963	952	11,916
	2033	-	12,505	705	13,210
	2034	-	12,477	712	13,189
	2035	-	13,776	816	14,592
	2036	-	12,976	-	12,976
	2037	-	11,560	-	11,560
	2038	-	11,467	-	11,467
	2039	-	11,865	-	11,865
	2040	-	11,784	2,710	14,494
	2041	-	11,407	1,803	13,210
	2042	-	12,034	1,698	13,732
	2043	-	12,033	1,057	13,090
	2044	-	12,023	8,565	20,588
	2045	-	11,351	8,201	19,552
Pd 6 - Civil Works Project	2046	-	9,120	28,115	37,235
	2047	-	8,027	73,056	81,083
	2048	-	8,986	58,430	67,416
	2049	-	34,114	32,373	66,487
Pd 7 - ISFSI Demolition & Final Site Restoration	2050	-	12,071	63,258	75,328
	2051	-	5,804	68,532	74,336
	Total	**$ 948,906**	**$ 701,836**	**$ 705,892**	**$ 2,356,634**

Appendix E

Share Of Liability For SONGS Participants

Appendix E
Share Of Liability For SONGS Participants

Cost Categories	SDG&E	Riverside	Anaheim	SCE
SONGS 1	20%	0%	0%	80%
SONGS 2	20%	1.79%	2.4737%	75.7363%
SONGS 3	20%	1.79%	2.4625%	75.4775%
Common Facilities (Units 2 & 3)	20%	1.79%	2.4681%	75.7419%
SONGS 1 Fuel	20%	0%	0%	80%
SONGS 2/3 Fuel	20%	1.79%	2.3398%	75.8702%
ISFSI Maintenance and D&D	20%	1.6066%	2.2686%	76.1248%
San Diego Switchyard	100%	0%	0%	0%
Edison Switchyard	0%	0%	0%	100%
Interconnection Facilities	50%	0%	0%	50%
Nuclear Fuel Cancellation Charges	20%	1.79%	0%	78.21%

Note:
SDG&E, Riverside, and Anaheim incur additional costs related to oversight activities that are not included in the 2017 DCE.

Appendix C

Reconciliation - Confidential

Southern California Edison
SONGS 2&3 2017 Decommissioning Cost Estimate
Reconciliation Of Kenrich 2017 SONGS 2&3 DCE To SCE Testimony
(2014 Dollars In Millions, 100% Share)

	Description	2017 DCE Kenrich Report (2014 $)	Adjustments (2014 $) DGC Staffing Adjustment	Cold & Dark Adjustment	Non-Labor Adjustment	Other Projects Adjustment	2017 DCE SCE Testimony (2014 $)
1	**Distributed Projects**						
2	ISFSI & Fuel Transfer Operations	$ 270.2	$ -	$ -	$ -	$ -	$ 270.2
3	Final Site Restoration	6.9	-	-	-	-	6.9
4	ISFSI Aging Management	-	-	-	-	36.5	36.5
6	Substructure Removal	273.0	-	-	-	-	273.0
7	Other Projects	189.8	-	-	-	(90.2)	99.6
8	GTCC Waste Storage	-	-	-	-	26.6	26.6
9	Plant Easement/Lease Renewals	-	-	-	-	27.1	27.1
10	Offshore Conduit Removal	91.6	-	-	-	-	91.6
11	ISFSI Demolition	19.2	-	-	-	-	19.2
12	Completed Projects	214.0	-	(90.7)	-	-	123.3
14							
15	**Undistributed Activities**						
16	Contracted Services	$ -	$ -	$ -	$ 225.2	$ -	$ 225.2
17	Service Level Agreements	168.2	-	-	-	-	168.2
19	Labor-Staffing	986.2	-	-	-	-	986.2
20	All Other Non-Labor	848.8	-	-	(225.2)	-	623.6
22							
23	**Total**	**$ 4,478.6**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4,478.6**

General Note:
Totals may not reconcile due to rounding.

Appendix D

Declaration of Todd R. Adler Regarding the Confidentiality of Certain Data

SCE's 2018 NUCLEAR DECOMMISSIONING COST TRIENNIAL PROCEEDING

DECLARATION OF TODD R. ADLER

REGARDING THE CONFIDENTIALITY OF CERTAIN DATA

I, Todd R. Adler, declare and state:

1. I am employed by Southern California Edison (SCE) as a Principal Manager for Nuclear Projects Management, San Onofre Nuclear Generating Station (SONGS). In my position as Principal Manager, I have responsibility regarding the Decommissioning General Contractor (DGC) Agreement between SCE, Energy*Solutions* Services, Inc. (Energy*Solutions*), and AECOM Energy & Construction, Inc. (AECOM), dated December 20, 2016 (DGC Agreement). EnergySolutions and AECOM formed a joint venture known as SONGS Decommissioning*Solutions* (SDS). I also am familiar with the Independent Spent Fuel Storage Installation (ISFSI) Agreement between SCE and Holtec International (ISFSI Agreement), dated December 5, 2015. I had responsibility for overseeing and reviewing Exhibits SCE-03 and SCE-05, which contain certain confidential information pertaining to the DGC Agreement and ISFSI Agreement. Thomas J. Palmisano, Vice President of SONGS Decommissioning and Chief Nuclear Officer, delegated authority to me to sign this declaration regarding the confidentiality of this information, as described below.

2. I am making this declaration in accordance with the instructions set forth in Decision 16-08-024 and Decision 17-09-023 of R. 14-11-001, which were issued August 25, 2016, and September 28, 2017, respectively, and govern the submission of confidential documents to the Commission.

3. I have personal knowledge of the facts and representations herein and, if called upon to testify, could and would do so, except for those facts expressly stated to be based upon information and belief, and as to those matters, I believe them to be true.

4. Listed below are the data for which SCE is seeking confidential protection and the basis for SCE's confidentiality request. Paragraphs 5-10 also provide additional reasons supporting SCE's confidentiality claim.

Location of Confidential Data	Pages (if available)	Description of Information that is Confidential	Basis for SCE's Confidentiality Claim
Exhibit SCE-03	8, 14, 20-21, 37-38 Appendix B, DCE, pp. B-9, 18-19, 21, 23, 34-35, 45-47, 49, 60-63, 65, 68-72, 74, 77. Appendix C, p. C-1.	1. DGC Agreement contract terms, including decommissioning plans and pricing terms contained therein. 2. Contingency and cost-estimating information pertaining to the DGC Agreement and ISFSI Agreement.	California Gov. Code § 6255 (the public interest served by not disclosing the information is clearly outweighed by the public interest served by disclosure of the record).
Exhibit SCE-05	34	1. DGC Agreement contract terms, including decommissioning plans and pricing terms contained therein.	California Gov. Code § 6255 (the public interest served by not disclosing the information is clearly outweighed by the public interest served by disclosure of the record).

5. Both the DGC Agreement and ISFSI Agreement require SCE to make reasonable efforts to protect the confidentiality of the terms and conditions in the agreements. The agreements require confidentiality because they contain commercially sensitive pricing terms and proprietary information, such as work sequencing and scope. If this information was publicly disclosed without protection, competitors, including potential vendors for decommissioning sub-contract work and other activities, could mis-use the information to the detriment of SCE's customers. For example, if a vendor seeking to bid on a subcontract or another activity knew the DGC Agreement or ISFSI Agreement pricing terms, the vendor would have an opportunity to adjust its bid prices (e.g., the vendor could bid higher than it otherwise may have bid).

6. Public release of this information could also hinder SCE's ability to obtain favorable contract terms for related decommissioning work not covered under the DGC Agreement and ISFSI Agreement. For example, if a vendor (who SCE has not yet contracted with for SONGS decommissioning) was aware of various terms in the DGC Agreement and ISFSI Agreement, the

vendor could mis-use this information during contract negotiations to extract terms favorable to the vendor that the vendor may not have otherwise sought.

7. Finally, it is also in the best interest of the long-term success of the SONGS decommissioning project that SDS and Holtec remain commercially competitive throughout the terms of the DGC Agreement and ISFSI Agreement, respectively. Both agreements are long-term agreements that will require SDS' and Holtec's continued performance for the next decade and beyond. If information regarding the agreements was disclosed without protection, their competitors could mis-use the information against them during the bidding process for other decommissioning projects across the world and potentially threaten the financial health of both companies. This in turn could threaten the companies' ability to complete contractually required services for SONGS in the future without interruption.

8. The other category of information that SCE seeks to maintain as confidential is contingency. SCE has applied various contingency amounts on the remaining decommissioning work identified in the 2017 SONGS 2&3 decommissioning cost estimate (DCE) submitted in this proceeding, including work to be completed under the DGC Agreement and ISFSI Agreement. The contingency reflects SCE's judgment of potential costs, based on the technical complexity, contracting status, estimating approach, and timing, of the remaining work scope. It is in SCE customers' interest for contingency included for the DGC Agreement and ISFSI Agreement to be protected as confidential, because the disclosure of the information without protection could allow vendors to mis-use the information to the detriment of SCE's customers. For example, if a vendor (including SDS, Holtec, or one of their competitors) knew the contingency SCE has applied in the 2017 DCE to work to be completed under the DGC Agreement and ISFSI Agreement, the vendor would have an opportunity to manipulate its negotiating strategy pertaining to new contracts and/or change orders regarding that work (e.g., the vendor could demand higher prices than it otherwise would have demanded).

9. The confidential information identified in Paragraph 4 cannot be provided in a form that can be further aggregated, redacted, summarized, masked, or otherwise protected in a manner that would allow partial disclosure of the data while protecting confidential information.

10. For the reasons described above, the confidential information should be protected from public disclosure. Information regarding the DGC Agreement and ISFSI Agreement, including the pricing terms of those agreements and contingency SCE applied in the 2017 DCE for work remaining under those agreements, is market sensitive information that should remain confidential under GO-66-C Section 2.2(b) ("unfair business advantage") and GO 66-C Section 2.8 ("Information obtained in confidence from other than a business regulated by this Commission where the disclosure would be against the public interest").

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on March 13, 2018 at San Onofre Nuclear Generating Station, near San Clemente, California.

/s/ Todd R. Adler
Todd R. Adler

Appendix E

SONGS Mesa Lease and Station Easement Boundaries

Path: P:\Data\Confidential\SONGS\Misc\Maps\20154003_EasementMaps\SONGS_ParcelMap_bw.mxd

EXHIBIT 20

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Al Bates
Manager, Regulatory Affairs &
Oversight

10 CFR 50.82
10 CFR 72.30

March 20, 2018

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

Subject: **Docket Nos. 50-206, 50-361, 50-362, and 72-41**
10 CFR 50.82(a)(8)(v-vii) and 10 CFR 72.30(c)
Decommissioning Funding Status Report
San Onofre Nuclear Generating Station Units 1, 2, and 3
and Independent Spent Fuel Storage Installation

Dear Sir or Madam:

As required by 10 CFR 50.82(a)(8)(v), 10 CFR 50.82(a)(8)(vii), and 10 CFR 72.30(c), this letter provides the status of the decommissioning funding for San Onofre Nuclear Generating Station (San Onofre) Units 1, 2, and 3 and the San Onofre Independent Spent Fuel Storage Installation (ISFSI) as of December 31, 2017

Based on the requirements in 10 CFR 50.82(a)(8)(v) and 10 CFR 50.82(a)(8)(vii), this information is reported on an annual basis for SONGS Units 1, 2, and 3 because the units were permanently shut down and site-specific decommissioning cost estimates (DCEs) have been submitted for each of these units. In addition, based on the requirements in 10 CFR 72.30(c), information demonstrating the adequacy of funding for the San Onofre ISFSI is reported at intervals not to exceed three years, and is included. The required information for Southern California Edison, San Diego Gas & Electric, the City of Anaheim, and the City of Riverside is provided in the Enclosure.

There are no commitments contained in this letter or its enclosure.

If you have any questions regarding this matter, please contact me at (949) 368-6945.

Sincerely,

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Enclosure: San Onofre Nuclear Generating Station Units 1, 2, and 3 and ISFSI Decommissioning Funding Status Report for Calendar Year 2017

cc: K. Kennedy, Regional Administrator, NRC Region IV
M. G. Vaaler, NRC Project Manager, San Onofre Units 1, 2, and 3
W. C. Allen, NRC Project Manager, San Onofre ISFSI

Enclosure

San Onofre Nuclear Generating Station Units 1, 2, and 3 and Independent Spent Fuel Storage Installation (ISFSI) Decommissioning Funding Status Report for Calendar Year 2017

San Onofre Nuclear Generating Station Units 1, 2, and 3
and Independent Spent Fuel Storage Installation (ISFSI)
Decommissioning Funding Status Report
For Calendar Year 2017

San Onofre Unit 1 was a pressurized water reactor (PWR) rated at 1347 MWt. San Onofre Units 2 and 3 were pressurized water reactors (PWR) rated at 3438 MWt. Provided below is the information required by 10 CFR 50.82(a)(8)(v) and (vii) for San Onofre Units 1, 2, and 3; and the information required by 10 CFR 72.30(b) for the San Onofre ISFSI. This information is reported every year for San Onofre Units 1, 2, and 3 because site-specific decommissioning cost estimates (DCEs) have been submitted for them and they are currently being decommissioned.

The San Onofre ISFSI is located on the partially decommissioned site of San Onofre Unit 1, and is operated under a 10 CFR 72 General License issued to the holders of a 10 CFR 50 license.

The SONGS Unit 1 co-owners are reported as follows:

Southern California Edison (SCE)	80.00 %
San Diego Gas & Electric (SDG&E)	20.00 %
	100.00 %

The San Onofre Units 2 and 3 co-owners are reported as follows:

Southern California Edison (SCE)	78.21 %
San Diego Gas & Electric (SDG&E)	20.00 %
City of Anaheim (Anaheim)	0.00 %
City of Riverside (Riverside)	1.79 %

The decommissioning liability is shared between the current owners and former owner, Anaheim, as set forth below for each unit:

Owner	Unit 1 Decommissioning Liability	Unit 2 Decommissioning Liability	Unit 3 Decommissioning Liability
SCE	80.00%	75.7363%	75.7475%
SDG&E	20.00%	20.0000%	20.0000%
Anaheim	0.00%	2.4737%	2.4625%
Riverside	0.00%	1.7900%	1.7900%

All dollar amounts are in 100% share, 2017 dollars.

1) The estimated costs to decommission San Onofre Units 1, 2, and 3, and the San Onofre ISFSI, including all decommissioning and spent fuel storage costs estimated to be required pursuant to 10 CFR 50.75(b) and (c); 10 CFR 50.54(bb); and 10 CFR 72.30(b) are shown below:

The site-specific estimates for decommissioning include the following radiological decommissioning costs associated with terminating the site license pursuant to 10 CFR 50.75(b); non-radiological site restoration costs; spent fuel storage costs pursuant to 10 CFR 50.54(bb); and ISFSI decommissioning costs pursuant to 10 CFR 72.30(b):

	San Onofre Unit 1[1]
Estimate of License Termination Costs	$ 76.8 million
Less: Lic. Term. Costs during 2017	$ 1.3 million
"To Go" License Termination Costs	$ 75.5 million
Estimate of Site Restoration Costs	$ 92.6 million
Less: Site Restor. Costs during 2017	$ 0.3 million
"To Go" Site Restoration Costs	$ 92.3 million
Estimate of Fuel Storage Costs	$ 46.0 million
Less: Fuel Storage Costs during 2017	$ 0.4 million
"To Go" Fuel Storage Costs	$ 45.6 million
Estimate of ISFSI Decommissioning Costs	$ 5.3 million
Total Unit 1 "To Go" Costs as of 1/1/2018	$ 218.7 million

	San Onofre Unit 2[2]
Estimate of License Termination Costs	$1,017.0 million
Less: Lic. Term. Costs through 12/31/2017	$ 305.2 million
"To Go" License Termination Costs	$ 711.8 million
Estimate of Site Restoration Costs	$ 527.8 million
Less: Site Restor. Costs through 12/31/2017	$ 90.5 million
"To Go" Site Restoration Costs	$ 437.3 million
Estimate of Fuel Storage Costs	$ 687.0 million
Less: Fuel Storage Costs through 12/31/2017	$ 259.0 million
"To Go" Fuel Storage Costs	$ 428.0 million
Estimate of ISFSI Decommissioning Costs	$ 18.9 million
Total Unit 2 "To Go" Costs as of 1/1/2018	$1,596.0 million

	San Onofre Unit 3[2]
Estimate of License Termination Costs	$1,007.5 million
Less: Lic. Term. Costs through 12/31/2017	$ 302.5 million
"To Go" License Termination Costs	$ 705.0 million
Estimate of Site Restoration Costs	$ 746.6 million
Less: Site Restor. Costs through 12/31/2017	$ 102.2 million
"To Go" Site Restoration Costs	$ 644.4 million
Estimate of Fuel Storage Costs	$ 724.6 million
Less: Fuel Storage Costs through 12/31/2017	$ 254.7 million
"To Go" Fuel Storage Costs	$ 469.9 million
Estimate of ISFSI Decommissioning Costs	$ 18.9 million
Total Unit 3 "To Go" Costs as of 1/1/2018	$1,838.2 million

The site-specific decommissioning cost estimates for San Onofre Units 1, 2, and 3 and the San Onofre ISFSI include: (1) the cost to perform all decommissioning activities; (2) the cost of meeting the 10 CFR 20.1402 radiological criteria for unrestricted site use; and (3) adequate contingency factors for all costs.

2) Each San Onofre co-owner has established one or more external sinking trust fund accounts as provided in 10 CFR 50.75(e)(1)(ii) for their respective shares of the San Onofre Units 1, 2, and 3 decommissioning obligation, which also includes the San Onofre ISFSI. The Decommissioning Trust Fund amounts remaining at the end of calendar year 2017 (net of pending Trust Fund withdrawals and estimated capital gains taxes) are:[3][4][5]

Co-Owner	San Onofre Unit 1	San Onofre Unit 2	San Onofre Unit 3
SCE	$ 303.5 million	$ 1,180.4 million	$ 1,370.9 million
SDG&E [5]	$ 150.5 million	$ 357.5 million	$ 412.5 million
Anaheim [5]	N/A	$ 52.2 million	$ 52.2 million
Riverside [5]	N/A	$ 27.9 million	$ 30.8 million
TOTAL	$ 454.0 million	$ 1,618.0 million	$ 1,866.4 million

3) Each San Onofre co-owner deposits its decommissioning fund contributions into their respective external sinking fund accounts as provided in 10 CFR 50.75(e)(1)(ii). The annual amounts projected to be collected in 2018 are:

Co-Owner	San Onofre Unit 1	San Onofre Unit 2	San Onofre Unit 3
SCE	$ 0.0 million	$ 0.0 million	$ 0.0 million
SDG&E [5]	$ 0.0 million	$ 0.0 million	$ 0.0 million
Anaheim [5]	N/A	$ 0.0 million	$ 0.0 million
Riverside [5]	N/A	$ 0.0 million	$ 0.0 million
TOTAL	$ 0.0 million	$ 0.0 million	$ 0.0 million

4) The amounts spent on San Onofre Units 1, 2, and 3 decommissioning work performed during 2017 are summarized below:

Cost Category	San Onofre Unit 1	San Onofre Unit 2	San Onofre Unit 3
License Term.	$ 1.5 million	$ 91.7 million	$ 88.9 million
Site Restoration	$ 0.9 million	$ 5.5 million	$ 11.3 million
Spent Fuel Storage	$ 0.6 million	$ 52.3 million	$ 53.3 million
ISFSI Decom.	$ 0.0 million	$ 0.0 million	$ 0.0 million
TOTAL	$ 3.0 million	$ 149.5 million	$ 153.5 million

5) The composite escalation rate and after tax investment rates of return for San Onofre Units 1, 2, and 3 Decommissioning are summarized below:

Composite Rate	San Onofre Unit 1	San Onofre Unit 2	San Onofre Unit 3
Rate of Return	3.17%	3.32%	3.32%
Escalation	2.69%	2.91%	2.91%
Real Earnings Rate	0.48%	0.41%	0.41%

The composite investment rates of return less the composite escalation rates yield composite real earnings rates less than the 2% real rate of return allowed under 10 CFR 50.75(e)(1)(ii).

6) None of the co-owners of San Onofre Units 1, 2, and 3 or the San Onofre ISFSI is relying on any contracts for the purposes of providing decommissioning funding pursuant to 10 CFR 50.75(e)(1)(v). There have been no modifications to the method of providing financial assurance.

7) The amounts of decommissioning funds available as of December 31, 2017 for San Onofre Units 1, 2, and 3 License Termination, Site Restoration, Spent (Irradiated) Fuel Management, and ISFSI Decommissioning costs are shown in the tables below:[4]

San Onofre Unit 1	Estimated "To Go" Decommissioning Cost	Cost Ratios	12/31/2017 Net Trust Balance
License Termination Costs	$ 75.5 million	34.5%	$ 156.7 million
Site Restoration Costs	$ 92.3 million	42.2%	$ 191.7 million
Spent Fuel Management Costs	$ 45.6 million	20.8%	$ 94.6 million
ISFSI Decommissioning Costs	$ 5.3 million	2.4%	$ 11.0 million
TOTAL	$ 218.7 million	100.0%	$ 454.0 million