Application No.: 09-04-___

Exhibit No.: SCE-2

Witnesses: Michael P. Short

Jorge A. Morales

Testimony On The Nuclear Decommissioning Of SONGS 2 & 3 And Palo Verde

Before the

Public Utilities Commission of the State of California

Rosemead, California

April 3, 2009

Testimony On The Nuclear Decommissioning Of SONGS 2 & 3 And Palo Verde

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Testimony On The Nuclear Decommissioning Of SONGS 2 & 3 And Palo Verde

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I.

POLICY

Until Commission Decision 06-11-025, Southern California Edison Company (SCE) owned a 75.05% interest in San Onofre Nuclear Generating Station Units 2 and 3 (SONGS 2 & 3), and was the operating agent. In that Decision, the Commission approved the transfer of the City of Anaheim's (Anaheim) 3.16% share of SONGS 2 & 3 to SCE. However, the Commission ruled that Anaheim would retain its decommissioning trust fund and a reduced portion of the decommissioning liability based on a pro-rata portion of the remaining life of SONGS 2 & 3.[1] Therefore, although SCE now owns a 78.21% interest in SONGS 2 & 3 and remains the operating agent, SCE owns a 76.30% share of the decommissioning liability for SONGS 2, and a 76.35% share of the decommissioning liability for SONGS 3. San Diego Gas & Electric Company's (SDG&E) 20% interest in the plant ownership and the decommissioning liability of SONGS 2 and 3 remains unchanged.[2]

SCE also owns a 15.8% interest in the Palo Verde Nuclear Generating Station Units 1, 2, and 3 (Palo Verde).[3] Arizona Public Service Company (APS) owns a 29.10% interest in Palo Verde, and is the operating agent.

This testimony provides updated decommissioning cost estimates for SONGS 2 & 3, and for SCE's share of Palo Verde. After decommissioning is complete for SONGS 2 & 3 and Palo Verde, SCE and SDG&E (herein collectively referred to as "the Utilities") will return any remaining decommissioning trust balances to customers.[4]

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[1] The City of Anaheim's remaining decommissioning liability for SONGS 2 & 3 through the remainder of the current NRC Licenses is estimated to be 1.91% for SONGS 2 and 1.86% for SONGS 3.

[2] The City of Riverside owns the remaining 1.79% interest in SONGS 2 & 3, including 1.79% of the decommissioning liability for SONGS 2 & 3.

[3] The remaining non-operating owners are Salt River Project (17.49%), El Paso Electric Company (15.80%), Public Service Company of New Mexico (10.20%), the Southern California Public Power Authority (5.91%), and Los Angeles Department of Water and Power (5.70%).

[4] CPUC Resolution E-3057, dated November 25, 1987, which adopted the Nuclear Decommissioning Master Trust Agreements.

The Utilities developed the updated SONGS 2 & 3 decommissioning cost estimate based on an assumption that they will commence decommissioning SONGS 2 & 3 when the Nuclear Regulatory Commission (NRC) operating licenses expire in 2022.[5] Similarly, SCE and the other Palo Verde owners intend to commence decommissioning the Palo Verde units soon after their NRC operating licenses expire.[6]

SCE currently projects that the decommissioning of SONGS 2 & 3 and Palo Verde will not be completed until at least 2053 and 2055, respectively. SCE attempted to accurately estimate the total cost of decommissioning the nuclear units, given the uncertainties associated with work that is projected to commence nearly 20 years in the future.

The Utilities request that the Commission find that the updated $3,658.8 million (100% share, 2008$) SONGS 2 & 3 Decommissioning Cost Estimate is reasonable. In addition, SCE requests that the Commission find that the updated $708.7 million (SCE share, 2007$) Palo Verde Decommissioning Cost Estimate is reasonable.

[5] The NRC operating licenses for SONGS Units 2 and 3 are currently set to expire on February 16, 2022 and November 15, 2022, respectively.

[6] The NRC operating licenses for Palo Verde Units 1, 2, and 3 are currently set to expire on June 1, 2025; March 24, 2026; and November 25, 2027; respectively.

II.

DECOMMISSIONING COST ESTIMATES

A. Decommissioning Methodology

The Utilities project that they will perform SONGS 2 & 3 decommissioning activities in three phases. During Phase I, the Utilities will decontaminate, dismantle, and dispose of the units and the site common facilities.[7] The Utilities will also continue to maintain the integrity and safety of the spent fuel while it remains on the SONGS site. The Utilities will maintain spent fuel in wet storage in spent fuel pools until it can be safely transferred to the SONGS 2 & 3 Independent Spent Fuel Storage Installation (ISFSI) or removed from the site by the U.S. Department of Energy (DOE). To safely store fuel in wet storage, the Utilities must maintain each plant system required for spent fuel pool operation until the fuel is removed. The Utilities will drain, de-energize, and secure all other plant systems. After the SONGS 2 & 3 spent fuel pools are empty, the Utilities will decommission the pools and their associated support structures and systems.

The Utilities assume that by the time the SONGS 2 & 3 fuel has cooled sufficiently to be removed from the spent fuel pools, the DOE will have removed enough SONGS 2 & 3 fuel from the SONGS site that it will not be necessary to further expand the ISFSI pads or to construct additional Advanced Horizontal Storage Modules (ASHM) to accommodate that fuel.[8] During Phase II, the Utilities will monitor the ISFSI until the DOE removes the last spent fuel from the site, which is assumed to occur by 2051 based on studies developed from the DOE Acceptance Priority Ranking & Annual Capacity Report (DOE/RW-0567), dated July 2004.[9]

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[7] The Utilities do not own the site upon which the SONGS facility is located. Instead, they are authorized to use the site under several lease contracts and grants of easement from the U.S. Department of the Navy and the California State Lands Commission. To terminate these agreements, the Utilities are required to remove all improvements they installed or constructed on the site, except as agreed by the lessors/grantors, return the site to a condition satisfactory to the grantor, and return the site to the lessors/grantors.

[8] If SONGS 2 and/or SONGS 3 permanently retire before 2022, the number of modules on site may be insufficient to accommodate the fuel from both SONGS 2 & 3 spent fuel pools. As a result, the Utilities will be required to use decommissioning funds to construct additional AHSM's to accommodate moving the SONGS 2 & 3 fuel in the pools at the time of permanent retirement into dry storage.

[9] This document is accessible on the DOE website at http://www.ocrwm.doe.gov/wat/pdf/apr_acr.pdf.

During Phase III, the Utilities will dismantle and dispose of the ISFSI, all remaining site common facilities, and the remaining structural foundations; terminate the NRC licenses; and complete the final site restoration work.

SCE projects that APS will carry out Palo Verde decommissioning activities in similar phases, with the last spent fuel being removed by the DOE from the Palo Verde site in 2053.

B. Decommissioning Cost Estimating Methodology

The SONGS 2 & 3 and Palo Verde decommissioning cost studies account for the unique features of the SONGS 2 & 3 and Palo Verde facilities, including their nuclear steam supply systems, electric power generation systems, and site buildings and structures, respectively. These studies are also intended to account for any changes in decommissioning technology, regulation, and economics that may have been identified during the most recent triennial period.[10] The scopes of work required to decommission SONGS 2 & 3 and Palo Verde are different. For example, as explained in Footnote 7 above, the Utilities do not own the site upon which the SONGS facility is located. The lease contracts and grants of easement for the SONGS site require the Utilities to remove all improvements installed or constructed on the site, including all of the SONGS underground foundations and the offshore cooling water conduits, and remove all residual radioactivity from plant operations on the site. The Utilities must also restore the SONGS premises to a condition satisfactory to the requirements of the lease contracts and grants of easement. In contrast, the Palo Verde owners own the land upon which that facility is located. Although the Palo Verde owners must remove all residual radioactivity from plant operations on the site to satisfy the NRC license termination criteria, they are not required to remove all improvements installed or constructed on the site.

As in 2004, SCE, as agent for the Utilities, retained ABZ, Inc. (ABZ),[11] to assist it in preparing the 2009 site-specific decommissioning cost study and analysis for the SONGS 2 & 3

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[10] California Public Utilities Code §8326.

[11] ABZ, Inc., is an engineering and management consulting firm that has prepared decommissioning estimates and decontamination studies for more than 30 commercial nuclear power plants, including Calvert Cliffs 1&2, Duane Arnold, Nine Mile Point 1&2, and Vermont Yankee.

decommissioning. SCE provided information and direction to ABZ for estimating SONGS 2 & 3 decommissioning costs that included experience gained during the last nine years decommissioning SONGS 1. The Utilities' 2009 SONGS 2 & 3 Decommissioning Cost Estimate contains a level of detail similar to the 2004 SONGS 2 & 3 Decommissioning Cost Estimate, as updated in 2005, that was adopted in the 2005 NDCTP.[12] The Utilities applied a contingency factor of 25% in the 2009 SONGS 2 & 3 Decommissioning Cost Estimate.[13]

APS, the Palo Verde operating agent, retained TLG Services, Inc. (TLG),[14] on behalf of the Palo Verde owners, to prepare a site-specific decommissioning cost study and analysis in 2007 for the decommissioning of Palo Verde. APS provided direction to TLG consistent with the levels of detail contained in previous Palo Verde decommissioning cost estimates. TLG used drawings and inventory documents to estimate concrete volumes, steel quantities, and numbers and sizes of components, and used a unit cost factor method of estimating (e.g., $/cubic yard for concrete removal, $/ton for steel removal). After TLG identified item quantities and unit cost factors, they estimated the costs by multiplying the item quantities by their respective unit cost factors. TLG based costs for project management, administration, equipment rental, and security on a critical path schedule for the decommissioning effort.

As discussed above, one of the major differences between the scopes of work in the updated SONGS 2 & 3 and Palo Verde cost studies is that the Palo Verde cost study assumes that APS: (1) will abandon structures or foundations deeper than three feet below grade in place, and (2) dispose of non-contaminated demolition materials at the Palo Verde site. Therefore, APS avoids removal and disposal

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[12] The Utilities filed their Joint Application and prepared testimony exhibits and workpapers associated with their 2005 SONGS 2 & 3 and Palo Verde Decommissioning Cost Estimates on November 10, 2005 (i.e., the 2005 NDCTP).

[13] D.07-01-003, the CPUC decision for the 2005 NDCTP, the Commission ordered that "Edison, SDG&E, and PG&E shall serve testimony in their next triennial review of nuclear decommissioning trusts and related decommissioning activities that demonstrates that they have made all reasonable efforts to conservatively establish an appropriate contingency factor for inclusion in the decommissioning revenue requirements." (*See* Ordering Paragraph No. 8, p. 34.) The basis for the 25% contingency factor used in SCE's 2008 SONGS 2 & 3 Decommissioning Cost Estimate is provided in Section IV.A.3 of Exhibit SCE-1 in this proceeding.

[14] TLG Services, Inc., has prepared estimates for many nuclear and fossil units, and has been involved in the planning, execution, and technical support of the Big Rock Point, Connecticut Yankee, Maine Yankee, Rancho Seco, Trojan, and Yankee Rowe decommissioning projects.

costs for materials deeper than three feet below grade, and disposal costs for non-contaminated materials regardless of where on site they were located during plant operation. These avoided costs result in a cost difference for Palo Verde decommissioning, as compared to SONGS 2 & 3, that SONGS 2 & 3 cannot achieve under current SONGS site lease and easement requirements.

SCE used the Palo Verde TLG study as a resource to develop SCE's 2009 Decommissioning Cost Estimate for SCE's share of Palo Verde. While reviewing the Palo Verde TLG study, SCE determined that some of the assumptions it was based on were inconsistent with SCE's experience in decommissioning SONGS 1 or on SCE's preferred level of risk tolerance. Therefore, consistent with SCE's prior decommissioning cost estimates for Palo Verde, SCE developed and applied what it believes are appropriate adjustments to the TLG Study to develop its 2009 Palo Verde Decommissioning Cost Estimate. In addition, SCE applied a 25% contingency for all costs included in its 2009 Palo Verde Decommissioning Cost Estimate, including LLRW disposal costs.[15]

C. Decommissioning Schedules

The 2009 SONGS 2 & 3 and Palo Verde decommissioning cost estimates are based on an assumption that decommissioning will commence promptly after the current NRC operating licenses expire.[16] The cost estimates also assume that the DOE will open its permanent repository in 2020,[17] and will remove the last spent fuel from the SONGS and Palo Verde sites by 2051 and 2053, respectively. The estimates include costs for spent fuel monitoring until 2051 and 2053, respectively, in Phase II of decommissioning, based on studies referenced in Section II.B above. The estimates forecast that Phase III, including ISFSI demolition and removal, NRC license termination, and final site restoration will be

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[15] *See* Footnote 13, *supra*.

[16] *See* Footnotes 5 and 6, *supra*.

[17] Office of Civilian Radioactive Waste Management (OCRWM) , Yucca Mountain Repository, About The Project, http://www.rw.doe.gov/ym_repository/about_project/index.shtml, accessed on October 1, 2008, states that under the Best Achievable Repository Construction Schedule, the DOE would begin receipt of spent nuclear fuel on March 31, 2017. However, OCRWM Director Ward Sproat has been widely quoted that the 2017 date will not be met. For example, see Mother Jones, "The Nuclear Option", May/June 2008 Issue, stated that, "The repository's most recent opening date was set for 2017. But that date "is clearly out the window," says Ward Sproat, who directs the Yucca project for the DOE. "Based on what I'm seeing right now it's a two- to three-year slip from that.""

completed at SONGS 2 & 3 and Palo Verde within two years after removal of all spent fuel from their respective ISFSIs.

The 2009 SONGS 2 & 3 and Palo Verde decommissioning cost estimates assume the use of current technologies under current regulations and at current cost levels.[18] The cost estimates contain reasonable estimates of the scope and cost of future work to set aside sufficient funds. These cost estimates are not based on detailed planning studies because these decommissioning activities will not be performed until many years in the future. The Utilities are not presently adopting the schedules or sequences of activities embedded in the estimates for any purpose other than for cost estimation.

D. Cost Estimates

Based on the assumptions stated above, Tables II-1 and II-2 provide the cost estimates to decommission SONGS 2 & 3 and Palo Verde:

Table II-1
2009 San Onofre Nuclear Generating Station Units 2 & 3
Decommissioning Cost Estimates

Line No.	San Onofre Nuclear Generating Station Units 2 & 3[19]	100% Share, 2008$ x 1000
1.	Unit 2	$1,790,907
2.	Unit 3	$1,867,898
3.	TOTAL	$3,658,805

[18] *See* Footnote 10, *supra*.

[19] *See* Section I of this testimony.

Table II-2
2009 Palo Verde Nuclear Generating Station
Decommissioning Cost Estimates

Line No.	Palo Verde Nuclear Generating Station	SCE Share, 2007$ x 1000
1.	Unit 1	$221,117
2.	Unit 2	$233,362
3.	Unit 3	$254,212
4.	TOTAL	$708,691

E. Reconciliation to Previous Decommissioning Cost Estimates

1. SONGS 2 & 3 Cost Changes

The 2009 SONGS 2 & 3 Decommissioning Cost Estimate increased by $124.5 million (100% share, 2008$) over the 2005 SONGS 2 & 3 Decommissioning Cost Estimate adopted in the 2005 NDCTP. Table II-3 provides a reconciliation of the updated SONGS 2 & 3 decommissioning cost estimate to the 2005 SONGS 2 & 3 Decommissioning Cost Estimate adopted in the 2005 NDCTP.

Table II-3
Reconciliation of SCE's SONGS 2 & 3 Decommissioning Cost Estimates
2009 Cost Estimate vs. 2005 Cost Estimate

Line No.	San Onofre Nuclear Generating Station Units 2 & 3	100% Share, 2008$ x 1000[20]
1.	2009 SONGS 2 & 3 Decommissioning Cost Estimate	$3,658,805
2.	2005 SONGS 2 & 3 Decommissioning Cost Estimate	$3,534,300
3.	CHANGE	$124,505
4.	*Reconciliation:*	
5.	Staffing and Separation Costs	$394,966
6.	Dismantling and Disposal Costs	($323,249)
7.	Energy and Miscellaneous Costs	$76,795
8.	Spent Fuel Dry Storage Costs	($24,006)
9.	CHANGE	$124,505

[20] Totals may not add due to rounding.

a) Staffing and Separation Costs

Estimated staffing and separation costs for SONGS 2 & 3 decommissioning increased by approximately $395.0 million (100%, 2008$). This cost increase is attributable to five contributing factors.

First, the final design base threat regulations issued by the NRC subsequent to the completion of the 2005 SONGS 2 & 3 Decommissioning Cost Estimate mandated a significant increase in the security staffing requirements as long as licensed nuclear material (i.e., spent nuclear fuel) remains onsite, both in wet storage in the spent fuel pools until 2034, and in dry storage thereafter until the DOE removes the last of the SONGS 2 & 3 spent fuel from the ISFSI.[21]

Second, as described in Section II.E.1.d below, the DOE has announced that its projected start date for removing spent fuel from U.S. commercial nuclear power plants will be delayed from 2015 until at least 2020. SCE now projects that the DOE will not remove the last SONGS 2&3 spent fuel from the ISFSI until 2051, an increase of approximately six years above the previous estimate. Therefore, the increased security staffing levels for dry spent fuel storage will be required for an additional six years.

Third, utility labor rates and craft labor rates from the San Diego union hall have increased at a rate slightly higher than the Consumer Price Index since the previous SONGS 2 & 3 decommissioning cost estimate was developed.

Fourth, the application of a 25% contingency factor to the entire 2009 SONGS 2 & 3 Decommissioning Cost Estimate, as explained in Section II.B above, contributed to increased staffing costs.

Finally, the increased labor rates flowed through to higher projected staff separation costs after their jobs come to an end after the units permanently cease operations. However, the increase in staffing and separation costs is almost completely offset by a decrease in dismantling and disposal costs.

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[21] Details of the orders are "Safeguards Information" and SCE is not allowed to disclose this information to non-Safeguards cleared personnel under 10 C.F.R. 73.21, "Protection of Safeguards Information: Performance Requirements."

b) Dismantling and Disposal Costs

Three factors combined to yield a substantial change in the estimated dismantling and disposal costs. First, the projected volume of material from SONGS 2 & 3 that will require disposal as Class A Low Level Radioactive Waste (LLRW) increased from 921,122 cubic feet to 1,508,800 cubic feet. This 64% increase in the volume of Class A LLRW was projected based on lessons learned by the Utilities from the SONGS 1 decommissioning project. Second, the estimated disposal fees for Class A, including Southwestern LLRW Compact expert fees and Utah state taxes, as projected in the Joint LLRW Burial Cost Study prepared for SCE and PG&E were substantially lower than the aggregate LLRW burial rate that was applied in the previous SONGS 2 & 3 decommissioning cost estimate.[22] Third, given the difficulty in accurately projecting LLRW volumes and the uncertainties inherent in projecting LLRW burial rates several decades into the future, the Utilities applied contingency to LLRW disposal costs.

Notwithstanding the increased projected LLRW volumes and the application of contingency, the LLRW burial rates identified in the Joint LLRW Burial Cost Study were so much lower than the composite LLRW burial rate that was applied in the 2005 SONGS 2 & 3 Decommissioning Cost Estimate that a net decrease of $323.2 million (100% share, 2008$) in LLRW disposal cost levels resulted.

c) Energy and Miscellaneous Costs

The projected costs for energy, insurance, equipment, tools, lease payments, supplies, and corporate overheads increased by a combined total of $76.8 million (100% share, 2008$) over the 2005 SONGS 2 & 3 Decommissioning Cost Estimate. Approximately $52 million of this increase was due to higher energy costs compared with the energy costs that were used in the previous cost estimate.

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[22] In D.07-01-003, the CPUC decision for the 2005 NDCTP, the Commission ordered that "Edison, SDG&E, and PG&E shall serve testimony in their next triennial review of nuclear decommissioning trusts and related decommissioning activities that demonstrates that they have mad all reasonable efforts to conservatively forecast the cost of low level radioactive waste storage." ." (*See* Ordering Paragraph No. 7, p. 34.) SCE provided testimony regarding the development and results of the Joint LLRW Burial Cost Study in Exhibit SCE-1, Section IV.A.2 for this proceeding. The Joint LLRW Burial Cost Study is provided as a Workpaper to Exhibit SCE-1.

d) Spent Fuel Dry Storage Costs

In SCE's 2005 SONGS 2 & 3 Decommissioning Cost Estimate, which was adopted by the Commission in D.07-01-003, SCE projected that the DOE would commence accepting fuel from domestic commercial nuclear power plants in 2015, based on the Acceptance Priority Ranking & Annual Capacity Report (DOE/RW-0567) published by the DOE in July 2004. Subsequently, the DOE publicly declared that it does not expect to open its permanent repository until 2020.[23]

SCE also changed its assumptions regarding the sequence in which the DOE would take the SONGS fuel. In prior decommissioning cost estimates, SCE assumed that the DOE, beginning in 2015, would have taken the (1) SONGS 1 fuel from the SONGS ISFSI, (2) SONGS 1 fuel stored at the General Electric facility at Morris, Illinois, and (3) SONGS 2 & 3 fuel from the ISFSI. Under the former assumptions, SONGS 2 & 3 decommissioning funds would have been used to provide 65 canisters for fuel and 5 canisters for GTCC waste, per unit, to empty the spent fuel pools after final core discharges. Under the updated assumptions, SCE assumes that the DOE, beginning in 2020, will take (1) SONGS 1 fuel from the General Electric facility at Morris, Illinois; (2) SONGS 2 & 3 fuel directly from the SONGS 2 & 3 spent fuel pools, placing it in their own canisters paid for from the federal Nuclear Waste Fund; (3) SONGS 1 fuel from the ISFSI; and (4) SONGS 2 & 3 fuel from the ISFSI. Under these assumptions, SONGS 2 & 3 decommissioning funds would be used to provide only 19 canisters for fuel and 5 canisters for GTCC waste, per unit, to transfer the SONGS 2 & 3 fuel that the DOE would not be able to remove from the pools during the post-operational 12-year cooling period (2023-2034) to the ISFSI. The decrease in the number of AHSMs and canisters that will be required results in a decrease of $24.0 million (100% share, 2008$).

2. Palo Verde Cost Changes

SCE's 2009 Palo Verde Decommissioning Cost Estimate decreased by $52.295 million (SCE Share, 2007$), or approximately 7%, below SCE's 2004 Palo Verde Decommissioning Cost Estimate adopted in the 2005 NDCTP. Table II-4 provides a comparison of SCE's updated Palo Verde

[23] *See* http://www.nei.org/keyissues/nuclearwastedisposal/yuccamountain/.

decommissioning cost estimate to SCE's 2004 Palo Verde Decommissioning Cost Estimate adopted in the 2005 NDCTP.

Table II-4
Comparison of SCE's Palo Verde Decommissioning Cost Estimates
2009 Cost Estimate vs. 2004 Cost Estimate

Line No.	Palo Verde Nuclear Generating Station	SCE Share, 2007$ x 1000
1.	2008 Palo Verde Decommissioning Cost Estimate	$708,691
2.	2005 Palo Verde Decommissioning Cost Estimate	$760,986
3.	CHANGE	($52,295)
4.	*SCE Adjustments:*	
5.	Dismantling and Disposal Costs	($74,805)
6.	Miscellaneous Costs	($243)
7.	Contingency	$22,753
8.	CHANGE	($52,295)

a) Dismantling and Disposal Costs

In SCE's 2004 Palo Verde Decommissioning Cost Estimate, SCE adjusted the projected LLRW volumes upward to the levels first projected in SCE's 1998 Palo Verde Decommissioning Cost Estimate. In light of SCE's experience with SONGS 1 decommissioning, however, SCE further increased the projected volume by the same factor that its projected volumes of LLRW from SONGS 2 & 3 increased in the 2009 SONGS 2&3 Decommissioning Cost Estimate.

In addition, SCE noted that the TLG Palo Verde Study assumed that only a small quantity of the volume of the six Palo Verde Stored Steam Generators (i.e., 1,238 cubic feet per steam generator) would require disposal as LLRW. Recognizing that the SONGS 1 steam generators had to be disposed of in their entirety and that the SONGS 2 & 3 steam generators are projected to require disposal in their entirety, after consultation with industry experts, and after considering SCE's level of risk tolerance, SCE determined that a more conservative and appropriate approach would be to assume that the Palo Verde Stored Steam Generators will also require disposal in their entirety as LLRW. Therefore, SCE added the remaining volumes of the Palo Verde Stored Steam Generators to the quantity of materials that will require disposal as LLRW. Moreover, because Decontamination, Removal,

Packaging, and Shipping costs will also be incurred proportionate to the entire volumes of the Palo Verde Stored Steam Generators, SCE also adjusted those projected cost elements upward on a proportionate basis.

Notwithstanding the adjustments described above that increased the projected volume of Palo Verde materials that will require handling and disposal as Bulk Class A LLRW,[24] the LLRW burial rates that were applied in the Palo Verde TLG Study, which were comparable to the rates in the Joint LLRW Burial Cost Study that was developed by SCE and PG&E, were so much lower than the composite LLRW burial rate used in SCE's 2004 Palo Verde Decommissioning Cost Estimate that the aggregate effect of all of these adjustments was to decrease SCE's updated cost estimate for Palo Verde dismantling and disposal costs by $74.8 million (2007$, SCE share) below the LLRW disposal costs that were included in that cost estimate.

b) Miscellaneous Costs

Changes to the numerous other cost categories in SCE's 2005 Palo Verde Decommissioning Cost Estimate resulted in net decrease of approximately $0.2 million (2007$, SCE share) of the total cost estimate as compared to SCE's previous Palo Verde decommissioning cost estimate.

A portion of this cost change was due to changed assumptions regarding onsite dry storage of the Palo Verde spent fuel. SCE's 2005 Palo Verde Decommissioning Cost Estimate was based on an assumption that the Palo Verde decommissioning project would need to provide more dry spent fuel storage capacity than was included in the 2004 Palo Verde TLG Study to empty the Palo Verde spent fuel pools after permanent cessation of operations. Based on the revised spent fuel management assumptions contained in the 2007 Palo Verde TLG Study, SCE eliminated that adjustment in this cost estimate.

However, it was necessary for SCE to develop a new adjustment to provide for onsite monitoring of the Palo Verde spent fuel until 2053, when SCE projects that the DOE will remove

[24] *See* Footnote 17, *supra*.

the last spent fuel from the Palo Verde ISFSI. SCE made this adjustment because SCE wants to ensure it retains sufficient funding for the expected spent fuel monitoring period in the event that Palo Verde's assumption that the DOE will take over the Site Specific Part 72 License and be responsible for continued operation and maintenance of the Palo Verde ISFSI in 2038 does not come to fruition.[25] This new adjustment almost completely offsets the cost saving arising from the reduced amount of spent fuel dry storage capacity that will be required.[26]

c) Contingency

In SCE's 2005 Palo Verde Decommissioning Cost Estimate, SCE applied a 35% contingency factor to all Palo Verde decommissioning costs except LLRW disposal costs, to which no contingency factor was applied. Subsequently, in the Settlement Agreement adopted in that proceeding, SCE agreed to apply a reduced contingency factor of 25% to all Palo Verde decommissioning costs except LLRW disposal. The basis for the reduced Palo Verde contingency factor was that SCE had incorporated lessons learned from the SONGS 1 decommissioning project into its cost estimates for its other nuclear units.

SCE has applied a 25% Contingency Factor to all costs included in its 2009 Palo Verde decommissioning cost estimate, including LLRW disposal costs. As explained in Exhibit SCE-1, a contingency factor of 25% is appropriate for industrial projects that are in a preliminary state of development, scheduled several years in the future, prior to the development of detailed engineering studies or work plans, or the issuance of contracts to perform work.[27] This resulted in an upward adjustment of $22.8 million (2007$, SCE share) above SCE's contingency adjustment in SCE's 2004 Palo Verde Decommissioning Cost Estimate that was adopted in the 2005 NDCTP.

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[25] *See* 2007 TLG Decommissioning Cost Study for the Palo Verde Nuclear Generating Station, dated March 2008, Section 2, Page 8 of 9.

[26] *See* Workpapers for Exhibit SCE-2.

[27] *See* Footnote 13, *supra*.

Appendix A

Witness Qualifications

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

QUALIFICATIONS OF MICHAEL P. SHORT

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

A. My name is Michael P. Short, and my business address is 5000 South Pacific Coast Highway, San Clemente, California 92674-0128.

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

A. I became the Vice President of Engineering and Technical Services at the San Onofre Nuclear Generating Station in October 2008, and am the senior executive at the SONGS site responsible for the SONGS Unit 1 Decommissioning Project, the SONGS Independent Spent Fuel Monitoring Installation (ISFSI), and for the Decommissioning Estimates for SONGS 2 & 3 and Palo Verde. Prior to my current assignment, I have served as Director of Nuclear Oversight and Director of Systems Engineering. In these capacities, I have been responsible for managing the oversight activities of the decommissioning of San Onofre Unit 1, and of the design and construction of the Independent Spent Fuel Storage Installation for Units 1, 2, and 3.

Q. Briefly describe your educational and professional background.

A. I received my Bachelor of Science degree in Engineering from the University of California, Irvine in 1974. I worked as a Nuclear Reactor Plant Engineering for Westinghouse Electric Corporation and United States Navy Nuclear Reactors from 1974 to 1976. In 1976, I joined Southern California Edison as a Nuclear Plant Engineer performing system assessments, inspections and testing at San Onofre Nuclear Generating Station. Since joining Southern California Edison, I have held several technical management positions related to the project management, construction, and operation of the San Onofre Nuclear Generating Station.

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

A. The purpose of my testimony in this proceeding is to sponsor the Policy testimony in Exhibit SCE-2 "*Testimony On The Nuclear Decommissioning Of SONGS 2 & 3 And Palo Verde,* as identified in the Table of Contents above.

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.

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

QUALIFICATIONS OF JORGE A. MORALES

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

A. My name is Jorge A. Morales and my business address is 5000 South Pacific Coast Highway, San Clemente, California 92674-0128.

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

A. I am the Manager of Projects at the San Onofre Nuclear Generating Station. In this position, I am responsible for managing all capital projects at SONGS. In addition, I am responsible for managing the SONGS Unit 1 Decommissioning Project, the Dry Cask Spent Fuel Storage Project, and the Decommissioning Cost Estimates for SONGS 1, 2, & 3, and Palo Verde.

Q. Briefly describe your educational and professional background.

A. I am a Licensed Professional Engineer in the State of California. I received my Bachelor of Science degree in Mechanical Engineering from the University of Puerto Rico in 1972. I worked as a Manufacturing Engineer with Emerson Electric through 1974. I received a Masters degree in Business Administration from the University of California, Irvine in 1980, and have over 30 years of experience in the power industry in engineering, construction, and maintenance of fossil fired and nuclear power plants

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

A. The purpose of my testimony in this proceeding is to sponsor the non-Policy testimony in Exhibit SCE-2 "*Testimony On The Nuclear Decommissioning Of SONGS 2 & 3 And Palo Verde"* as identified in the Table of Contents above.

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.