PREPARED DIRECT TESTIMONY

IN SUPPORT OF SDG&E’s 2014 SONGS COSTS

ON BEHALF OF

SAN DIEGO GAS & ELECTRIC COMPANY

(SDG&E Review Efforts)

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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I. Summary of Testimony and Reasonableness Review Standard (M. De Marco)

In this Application, San Diego Gas & Electric Company (“SDG&E”) seeks authorization to recover its 2014 San Onofre Generating Station (“SONGS”) Operations & Maintenance (“O&M”), as billed by Southern California Edison Company (“SCE”) or incurred solely by SDG&E, and “non O&M” SONGS costs. For purposes of this Application, SDG&E assumes that (absent the Commission’s adoption of Southern California Edison Company’s (“SCE”) proposed reasonableness standard) the reasonableness review standard employed by the Commission will be the “prudent manager” standard in this proceeding, specifically, “the prudence of a particular management action . . . depends on what the utility knew or should have known at the time that the managerial decision was made.”

As a minority owner of SONGS, SDG&E was neither the Decommissioning Agent that incurs most decommissioning costs nor was it responsible for making decisions and managing activities during decommission in 2014. The Decommissioning Agent role is currently filled by SCE, the majority owner of SONGS and the Nuclear Regulatory Commission’s (“NRC”) designated licensee for title and possession of the spent fuel at SONGS. As a minority owner, SDG&E did not have the contractual power in 2014 to block or veto any of SCE’s decisions during SONGS decommissioning. Furthermore, the vast majority of SDG&E’s 2014 costs subject to the Commission’s reasonableness review now, are simply a subset of the total (100%) costs incurred by SCE at SONGS. As it relates to this point, the Commission has previously recognized SDG&E’s limited role as a 20% minority owner and that its ability to influence SCE’s expenditures is limited.

Therefore, when applying the reasonableness review standard to SDG&E’s expenditures for 2014, it is important to take into account SDG&E’s limited role at SONGS. Besides

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1 In Ex. SCE-01 in support of the Joint Application, A.14-12-007, SCE proposes an annual revised reasonableness standard. Ex. SCE-01 “Testimony On The Nuclear Decommissioning Of SONGS 2 & 3” – Page 42, Lines 16-21. SCE is advocating a return to a standard formerly used by the Commission. See, generally, SCE’s Application for Rehearing of D.14-12-082 in proceeding A.12-12-012. SDG&E’s assumption that the Commission will apply the “prudent manager” standard in this proceeding should not be taken as a lack of support by SDG&E for SCE’s proposals in A.14-12-007 or other applications.
2 D.14-12-082 at 14 (2012 Nuclear Decommissioning Cost Triennial Proceeding Phase 2).
3 D.06-11-026 at 12.
fulfilling its financial obligations commensurate with SDG&E’s 20% ownership of the facility, SDG&E’s traditional role at SONGS as a minority owner has been to review SCE’s actions and provide oversight and feedback concerning SCE’s activities and costs, to the extent possible. As a minority owner, SDG&E has a responsibility to fund its share of decommissioning work. SDG&E is not the NRC-recognized agent responsible for the actual decommissioning work itself and thus, is not making “managerial decisions” concerning the specific type of work to undertake at SONGS during decommissioning.

The testimony that follows describes SDG&E’s continued involvement at SONGS as a “reviewer of” and “commenter on” major decommissioning activities at SONGS in 2014, as well as SDG&E’s own (100%) costs. In Chapter 2 below, I describe my role at SONGS as an “observer” of SCE through my role as SDG&E’s on-site representative and my participation in and observations of SCE’s decision-making processes for many of the major decommissioning activities undertaken in 2014.

Cognizant of its own lack of expertise in nuclear decommissioning, SDG&E engaged the services of nuclear decommissioning and spent fuel expert, Mr. Levin, to provide SDG&E an independent expert assessment of SCE’s decommissioning efforts at SONGS relative to industry practices and NRC mandates. Chapter 3 herein provides the testimony of Mr. Levin, and his expert review of many of SCE’s major decommissioning activities in 2014.

As part of its involvement at SONGS and to ensure accurate accounting, SDG&E tracks actual costs against SCE’s internal budgets, to the extent possible. Therefore, the testimony of Mr. Curtis in Chapter 4 describes SDG&E’s efforts to compare amounts incurred by SCE to SCE’s stated budget and investigate the reason for variances, if any.

Similarly, Ms. Dalu provides testimony in Chapter 5 describing SDG&E’s review of SCE invoices and ongoing efforts to align SDG&E’s SONGS amounts to the 2014 Decommissioning Cost Estimate (“DCE”) cost categories.4

In sum, the testimony provided in Ex. SDGE-02 describes SDG&E’s efforts to review and provide feedback on SCE’s activities and resulting costs at SONGS, as well as oversee SDG&E’s internal costs. Based on the information made available to SDG&E and because of its review and oversight, SDG&E believes the costs that SDG&E incurred related to SONGS in 2014 were reasonable.

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4 The DCE has been provided as Attachment B to SDGE-01.
II. SDG&E Overview of Initial Decommissioning Activities at SONGS in 2014
(M. De Marco)

My testimony herein describes my efforts on behalf of SDG&E to provide review and feedback on SCE’s major decommissioning activities at SONGS during 2014. I have reviewed SCE’s actions and decision-making in many ways. As SDG&E’s SONGS Site Representative, I personally observed SCE and sub-contractor employees engaged and focused on preparing the facility for decommissioning. SCE has provided me with unrestricted access to the facility, responded to SDG&E inquiries, and supported my efforts to provide SDG&E employees with access to the facility. In addition to the monthly executive level co-owner meetings already taking place at SONGS, SCE’s decommissioning director hosts a weekly co-owner meeting to discuss progress with current activities, identify and explain future activities, and seek co-owner review and comment. I attend those weekly meetings on behalf of SDG&E. I have attended presentations and meetings concerning vendor selections. Finally, I have frequently provided SDG&E feedback or concerns to SCE management. Descriptions of my review efforts by major activities undertaken in 2014 are provided below.

To SDG&E’s knowledge and belief, and based on the information SCE has made available to SDG&E, SCE approached the major SONGS decommissioning activities reasonably in 2014, and the resulting costs that SDG&E incurred related to those activities were reasonable. Furthermore, the costs that SDG&E incurred in 2014 overseeing those activities (such as my actions described herein) were reasonable.

A. Initial Decommissioning Planning and Activities

i. Retention of Decommissioning Advisor

Realizing the need for independent decommissioning expert advice, SCE procured Areva as the Decommissioning Advisor through a solicitation process with recognized industry vendors. The decommissioning advisor’s role is to provide a review of the decommissioning planning work from an independent perspective. Areva has a “deep bench” of experienced personnel in all aspects of decommissioning and spent fuel management. This allows Areva to employ industry experts with the experience and capabilities that correspond favorably with the decommissioning work occurring at SONGS.
As part of the weekly co-owner meetings, I followed the progress of SCE’s competitive solicitation efforts to secure the decommissioning advisor and provided SDG&E’s feedback concerning its efforts regarding a decommissioning advisor. For example, SDG&E urged SCE to have two separate entities serve as decommissioning advisor and decommissioning cost estimator when SCE was contemplating no such restriction. Ultimately SCE retained two different vendors for those roles. In the end, I reported to SDG&E senior management that SCE procured Areva, a qualified entity to serve as Decommissioning Advisor, through what, in my opinion and as based on information provided to me by SCE, was a reasonable and thorough selection process.

ii. Development of a New Decommissioning Cost Estimate

While SONGS was still operating and producing power, SONGS Unit 2 & 3 DCEs were developed by ABZ, Inc. for SCE with the intention of determining if the SONGS decommissioning trusts were sufficiently funded to pay for decommissioning responsibilities and if not, to calculate required ratepayer collections to the trusts. ABZ based its estimates in part on commercial nuclear industry information and analogous decommissioning data used to create other decommissioning cost estimates for other nuclear facility operators.

SONGS entered the decommissioning period in June 2013. NRC requirements\(^5\) specify that a detailed site-specific cost estimate must be submitted to the NRC within 2 years of shutdown. This requirement changes the purpose of the decommissioning cost estimates from estimates for trust fund collection purposes to estimates for an executable decommissioning plan and schedule –essentially a ‘bottoms up’ estimate.

SCE held a competitive solicitation process to select a vendor to draft the new DCE. I attended SCE’s co-owner solicitation overview meetings in early November 2013. SCE assessed the prospective vendors for the new DCE from two main perspectives: 1) technical capability and 2) commercial viability. The technical review was conducted primarily by SCE engineering while the commercial review was conducted primarily by SCE procurement. I reviewed SCE’s solicitation evaluation and spoke with SCE about its selection process. SCE narrowed the bidders down to two vendor finalists in late November. In December 2013, SCE senior management approved the selection of the Energy Solutions (“ES”)/Chicago Bridge & Iron

\(^5\) 10 CFR 50.82(a)(8)(iii) & (iv).
Based on information provided by SCE, in my judgment, SCE’s procurement process was impartial and competitive and its assessment of the potential DCE vendors was thorough, resulting in the selection of ES/CBI, a highly qualified vendor with decommissioning and decommissioning cost estimate creation experience, for the production of a detailed site specific DCE.

SCE conducted a project kickoff meeting in January 2014 and the first phase DCE draft was completed in March of 2014. During May 2014, the second phase DCE drafts were circulated among the SONGS co-owners for review and comment. SDG&E, along with Mr. Levin, conducted an in-depth review of the drafts and I conveyed SDG&E’s comments to SCE. SDG&E’s comments and concerns were addressed and, to the extent appropriate, incorporated into the DCE draft. In August 2014, SDG&E received the updated DCE. SDG&E again reviewed the draft and provided additional feedback. SDG&E also provided its internal (SDG&E only; 100%) costs to SCE for inclusion in the DCE. In September 2014, SCE reviewed our comments and provided responses for each comment in subsequent meetings. The DCE was subsequently submitted to the NRC in late September 2014.

Throughout the DCE development, SDG&E provided feedback, which was incorporated (when appropriate) into the final document. Based on its knowledge and on information provided by SCE, SDG&E believes the resulting DCE reflects an industry-accepted approach and takes into consideration the uniqueness of the SONGS site and particular SONGS attributes.

**B. Implementation of Decommissioning Project Planning**

i. **Preparation of Site for Transition to Decommissioning General Contractor**

SDG&E believes that a majority of SONGS decommissioning should be undertaken by a qualified Decommissioning General Contractor (“DGC”) that has experience in the unique area of decommissioning. In late 2013, SCE began meeting with experienced decommissioning vendors to collect information on the most recent decommissioning practices and to assess each vendor’s capabilities related to fulfilling upcoming scopes of work at SONGS including, but not limited to, the decommissioning advisor, the DGC, regulatory submittal preparation, engineering

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6 ES owns and operates a low-level radiation waste facility in Clive, Utah. Both CBI and ES have experience in decommissioning nuclear facilities, for example, at Exelon’s Zion Station.

7 SDG&E and SCE previously referred to the DGC as the Decommissioning Operations Contractor or “DOC” in Commission filings.
analysis, and the preparation of various independent scopes of work. These meetings with vendors have continued to take place, with the most recent meeting occurring in August 2014. I attended many of these meetings and reviewed several SCE’s assessments of potential vendors.8 One of the key findings from these introductory meetings was that completing some major activities prior to the arrival of the DGC at SONGS would be advantageous because such activities would clarify the scope of work for the DGC. Such activities include, but not be limited to, the completion of the DCE, the Cold and Dark Initiative, and the Independent Spent Fuel Storage Installation (“ISFSI”). SDG&E agrees that completing these activities prior to the DGC’s arrival at SONGS is a reasonable approach because undertaking these activities in 2014 and 2015 will help define the scope of work and activities required for the DGC.

ii. The Cold and Dark Initiative

Several projects are already underway to prepare SONGS for the DGC, and many of them are components of the ‘Cold and Dark’ Project. The ‘Cold and Dark’ name alludes to SONGS systems being placed in the safest configuration for the DGC to begin tearing down and removing the facility. This is a familiar concept within the decommissioning industry to improve personnel safety. During the Cold and Dark Initiative, SONGS systems not required for maintaining the SONGS spent fuel will be depressurized and drained, thus rendered ‘cold.’ Likewise, systems not required for maintaining the SONGS spent fuel will be de-energized and thus rendered ‘dark.’

I reviewed SCE’s on-going Cold and Dark planning efforts and proposed plans and also sought peer review by SDG&E’s outside decommissioning expert Mr. Levin to make sure SCE’s proposed approach was sound and consistent with industry practices. Furthermore, by participating in planning and review meetings, I have been able to help protect SDG&E and its customers’ interests by ensuring continued service at the 12 kV level for local customers and the continuation of unimpaired operation of the SDG&E switchyard during the decommissioning process.

8 SCE prepared and issued a Request for Information (“RFI”) and subsequent Request for Production (“RFP”) for DGC in 2014. Final bids and the selection of the DGC are expected in 2015, with the DGC contracted by early 2016.
1. **The Temporary Power Ring**

One of the Cold and Dark activities is the establishment of the temporary power ring. The temporary power ring allows areas slated for decommissioning to be deenergized prior to the DGC beginning demolition activities. This temporary power ring, a conspicuously bright orange electrical distribution system, follows the perimeter of the plant to allow decommissioning personnel access to power for their own decommissioning equipment, while the area inside the perimeter is completely deenergized, including electrical busses, breakers, cabling, and station systems. This configuration is intended to reduce the possibility of an employee contacting equipment previously thought to be deenergized, resulting in electrical shock or the unintended actuation of a pump or motor resulting in personal injury. SDG&E believes that the benefits of the Temporary Power Ring are self-evident, and SDG&E’s share of costs paid for it in 2014 is reasonable.

2. **Isolating Spent Fuel Pool Cooling**

Another Cold and Dark activity is isolating the spent fuel pool cooling system. I observed that SCE assessed the advantages of isolating the spent fuel pool cooling systems from the remaining SONGS systems. The main benefit is the ability for the DGC to undertake decommissioning activities without effecting the continuous operation of the spent fuel pools. During the weekly meetings with SCE, I reviewed SCE’s progress in obtaining a vendor capable of completing this work. SCE conducted a competitive solicitation process, and I consulted with Mr. Levin regarding the viability of the design options SCE was considering for alignment with industry practices. SCE selected Westinghouse to conduct the spent fuel islanding. Based on the information provided to me by SCE, in my opinion, SCE undertook a competitive solicitation process that engaged qualified vendors and its selection of Westinghouse was reasonable.

iii. **The Independent Spent Fuel Storage Installation**

A third initial activity at SONGS in 2014 is the ISFSI system. When SONGS permanently shut down, SDG&E urged SCE to explore expedient and safe removal of fuel from the spent fuel pools to the ISFSI. SDG&E’s recommendations were based on its belief that continued spent fuel pool operations result in higher costs when compared with the passive ISFSI. SCE evaluated the various technologies currently licensed by the NRC and accepted for
use in U.S. nuclear facilities. SCE identified two prevalent technologies and through SCE’s competitive solicitation process Holtec was selected to: 1) design and construct the ISFSI pad; 2) construct the storage modules that would hold the spent fuel; and 3) safely and efficiently transfer the fuel from the spent fuel pools to the ISFSI storage location. The selection was completed in late December 2014 so Holtec is not expected to begin work (or incur costs) until 2015. I reported the final vendor selection to SDG&E senior management in December 2014.

During the solicitation process, I attended the finalists’ vendor presentations at SONGS, followed SCE’s solicitation progress through the weekly co-owner meetings, and conferred with Mr. Levin on the industry viability of the ISFSI storage technologies that SCE identified. In my opinion, based on the information provide by SCE, SCE’s solicitation process was competitive and impartial.

III. SDG&E Reasonableness Review Of The Decommissioning Activities Undertaken At Songs Units 2 & 3 During 2014 (A. Levin)

The purpose of my testimony is to provide my expert opinion regarding the decommissioning activities undertaken at SONGS during 2014, and whether they were reasonably undertaken in light of nuclear decommissioning industry best practices. SDG&E has retained me as a decommissioning expert. Part of my role is to continually review and provide my expert opinion on the reasonableness of decommissioning activities undertaken at SONGS in the context of the broader nuclear decommissioning industry. My testimony here addresses decommissioning activities at SONGS during 2014.

SONGS decommissioning of Units 2 & 3 is proceeding in a manner I would expect, based upon my prior and current industry experience. It is my opinion, based upon the information that I have received, that the proper activities are being performed at this stage of the SONGS decommissioning project and thus, are reasonable.

A. Introduction

During my 37-year career in the commercial nuclear industry, I have participated in

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9 At the SONGS Community Engagement Panel’s behest, SCE also investigated a technology emanating from Germany, but eliminated it as a possible option because it has not been approved by the NRC, and any such approval would result in a very prolonged assessment period before it could be used at SONGS.

10 Please see the direct testimony of Mr. DeMarco, Chapter 2 above, for a description of SDG&E’s oversight of the particular SONGS activities, and the direct testimonies of Mr. Curtis and Ms. Dalu, Chapters 3 and 4 below, respectively, for descriptions of SDG&E’s review of the resulting costs in 2014.
I have performed or participated in radiological characterizations of reactor pressure vessels and internals, historical site assessments, design and installation of dry cask storage technology, development of radiological release standards, selection of and contract negotiations with decommissioning operations contractors, and general oversight of decommissioning projects.

In my roles as Technical Advisor for TLG Services, Inc. (decommissioning cost estimators) and Director, Spent Fuel and Decommissioning, for Exelon Generation Company, LLC (“EGC”), I have had the opportunity to develop and review decommissioning cost estimates for more than 40 nuclear units. While at EGC, my responsibilities included the safe management of 12,600 metric tonnes of spent nuclear fuel, the implementation and oversight of dry cask storage for spent nuclear fuel at eight sites, the development of strategic initiatives to meet EGC’s long-term decommissioning and spent fuel management needs, and oversight of decommissioning cost estimates and EGC’s $12 billion decommissioning liability.

I have thoroughly reviewed the SONGS 2014 Decommissioning Cost Estimate (“2014 DCE”) and 2014 decommissioning activities. As discussed in further detail below, I find the activities performed in 2014 are reasonable when compared to the conduct of operations at similar, contemporary industry decommissioning projects.

**B. SONGS 2014 DCE as the Foundation for Project Planning and Schedule**

Activities executed at SONGS during 2014 generally followed the project scenario laid out in the 2014 DCE. Based on the information I have reviewed, it is my opinion that SCE has commenced DECON decommissioning activities appropriately and in concert with best industry practices.

11 Specifically, Cintichem, Inc., Trojan Nuclear Plant, Big Rock Point Plant, Dresden Nuclear Power Station Unit 1, Pathfinder Generating Plant, Shippingport Atomic Power Station, Rancho Seco Nuclear Generating Station, Crystal River Unit 3, Zion Nuclear Power Station, Vermont Yankee Nuclear Power Plant and San Onofre Nuclear Generating Station.

12 During my tenure at EGC, EGC owned-operated 17 operating and four retired nuclear units.

13 Peach Bottom Atomic Power Station, Limerick Generating Station, Oyster Creek Nuclear Generating Station, Byron Station, Braidwood Station, LaSalle County Station, Quad Cities Nuclear Power Station and Dresden Nuclear Power Station.
In general, the 2014 DCE follows the guidelines produced by the Atomic Industrial Forum ("AIF") Guidance. The 2014 DCE uses industry-accepted methods for cost estimating, appropriate site-specific inputs, and reasonable, conservative assumptions regarding the disposition of radiological, hazardous and municipal waste from the site. Additionally, the 2014 DCE generally conforms to the guidance for preparing decommissioning cost estimates provided by the NRC.

Following the DECON decommissioning scenario in the 2014 DCE, the major decommissioning activities at SONGS will begin with (1) the completion of the transfer of spent nuclear fuel into dry cask storage, and (2) major equipment removal (e.g., the reactor vessel, reactor internals, steam generators, primary loop piping and valves). Radioactively contaminated components will be disposed of at the NRC-licensed low-level radioactive waste ("LLRW") disposal facilities at Envirocare of Utah ("Envirocare" operated by ES) and Waste Control Specialists ("WCS") in Texas. Other non-hazardous, non-radioactive waste generated during decommissioning will be disposed of at an out-of-state municipal landfill. All of these activities and disposal plans are reasonably reflected in the 2014 DCE.

Once the site has been cleared of LLRW and municipal waste, the NRC licensee (SCE) will (1) submit a license termination plan to NRC for its approval, and (2) the site will be restored to a state acceptable to the State of California and various federal agencies. Spent nuclear fuel will remain on site at the SONGS ISFSI until accepted and removed by the Department of Energy ("DOE") for storage off site or disposal.

The decommissioning process at SONGS began in 2013. The activities performed to date generally reflect the decommissioning process as discussed in the AIF Guidelines and documented in the 2014 DCE for the SONGS site. The activities commenced or continued in 2014 are those typically expected early in the nuclear plant decommissioning process.

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16 The DECON decommissioning scenario is defined by the NRC as “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 license after cessation of operations. (Decontamination is initiated within a couple of years after shutdown and continues until completed, usually within 7 to 10 years)”. Id. at I.202-3.
C. Benchmarking SONGS Decommissioning Activities to Recent Industry Decommissioning Projects

In order to assess the 2014 SONGS decommissioning activities for SONGS, I have made comparisons to contemporary activities underway at other recently retired commercial nuclear plants in the U.S., specifically: Kewaunee Power Station (“Kewaunee”), Crystal River Unit 3 Nuclear Generating Plant (“CR3”), Vermont Yankee Nuclear Power Station (“VY”), and Zion Nuclear Power Station (“Zion”). Kewaunee and CR3 were retired in 2013, and VY was retired in 2014. Zion was retired in 1998, and after a short period of safe storage, moved into active decommissioning in 2010.

Of the five (including SONGS) recently-retired nuclear plants, SONGS and Zion are beginning the DECON immediate dismantlement decommissioning scenario (with Zion waiting 12 years to start). Kewaunee, CR3 and VY have all chosen to enter into a SAFSTOR\textsuperscript{17} decommissioning scenario.

Both DECON or SAFSTOR decommissioning has very similar activities that must be performed. These activities include filing all required regulatory documents and studies, moving plant systems, structures and components into “Cold and Dark” configurations, isolating the spent fuel pool from the original plant cooling and filtration systems, obtaining a site historical assessment, and moving spent fuel into dry storage. Regardless of the decommissioning scenario, it is my opinion the activities performed at SONGS in 2014, should be performed early in decommissioning, and are the most cost-effective way to manage decommissioning trust fund assets. While some of these activities have large initial investments (e.g., dry cask storage), the life-cycle costs of these activities are far lower than if they were not undertaken. For four of the five plants (SONGS, CR3, Kewaunee and Zion), I have personally reviewed and verified that moving spent nuclear fuel into dry cask storage early in the decommissioning project is beneficial both financially to the trust funds, and in safety during decommissioning for the plant staff.

\textsuperscript{17} The SAFSTOR decommissioning scenario is defined by the NRC as having placed the facility “in a safe, stable condition and maintained in that state (safe storage). The facility is decontaminated and dismantled at the end of the storage period to levels that permit license termination.” \textit{Id.}
D. SONGS Decommissioning Activities Undertaken In 2014

During 2014, SCE performed activities scheduled in the 2014 DCE’s DECON Period 2, Spent Nuclear Fuel Period 2 (“SNF Period 2”) and Site Restoration Period 1 (“SR Period 1”), as discussed further below, for Units 2 & 3.

i. DECON Period 2 Activities

DECON Period 2 is described in the 2014 DCE as “Decommissioning Planning and Site Modifications.”18 In 2014, major DECON Period 2 activities performed at SONGS included the following:

1. “Cold and Dark” – depressurizing, draining and de-energizing non-essential systems, and placing all systems, structures and components in configurations safe to begin decommissioning activities. Temporary power, ventilation, fire protection and communications equipment are installed to facilitate decommissioning activities. There are two major subtasks under the “Cold and Dark” task including:

   a. Spent fuel pool isolation; providing independent cooling and filtration systems
   b. Installation of a temporary power ring to provide redundant offsite power for decommissioning

2. Legacy Low-Level Radioactive Waste – a corollary to the “Cold and Dark” task, to clear the site of any LLRW created during the operating lifetime of the units.

3. Development of the Request for Quotation (RFQ) for a DGC – includes a canvassing effort to determine interest, down-selecting candidates to those who are qualified, and preparation of a work bid package.

4. Historical Site Assessment – a study to document radiological and hazardous material contamination and spills which occurred during the operating lifetime.

5. Regulatory Submissions – NRC documentation, submitted in accordance with regulatory requirements. The major submissions to the NRC included, but were not limited to:

   a. Post-Shutdown Decommissioning Activities Report (“PSDAR”)
   b. Decommissioning Cost Estimate (2014 DCE)
   c. Irradiated Fuel Management Plan (“IFMP”)
   d. Certified Fuel Handler Program

e. Post Shutdown Emergency Plan
f. Post Shutdown Site Security Plan
g. Post Shutdown Quality Assurance Plan
h. Post Shutdown Fire Protection Plan
i. Defueled Radiation Protection Manual
j. Defueled Technical Specifications

The transition-to-decommissioning activities performed at SONGS are consistent with those performed, or planned to be performed, at other decommissioning projects across the nuclear industry. Kewaunee, CR3, Zion and VY are scheduling emergency planning changes and security modifications, and have submitted exemption requests to NRC. Additionally, all are planning or have already performed Historical Site Assessments and removal of legacy LLRW. In all cases, these activities are the same as or very similar to those undertaken during 2014 at SONGS.

It is my understanding that SCE personnel appropriately selected these activities through industry benchmarking as being the best practices with respect to occupational and public health and safety, and minimizing total project cost. I have recently personally observed a similar approach at other plants transitioning to decommissioning, including Zion and CR3, and based upon my experience, I agree with the choice of work to be performed at this stage of the project.

ii. Spent Nuclear Fuel Period 2 Activities

SNF Period 2 is described in the 2014 DCE as Spent Fuel Transfer to Dry Storage. During 2014, SCE completed the selection process for a dry cask storage vendor. The selected vendor, Holtec, will be responsible for providing design, fabrication and construction services to provide dry cask storage systems, expand the ISFSI, and provide certain services to move spent fuel out of the spent fuel pools into dry storage.

Based on my industry experience, Holtec is one of three vendors I would rely upon for providing dry cask storage systems; the others are AREVA and NAC International. I have worked with all three in the past (during my tenure at Exelon), and find that technically, any one of them can provide safe and reliable systems for spent fuel storage and ultimate transportation off site. Given the lack of space for an ISFSI, the proximity of the storage location to public land, and the proposed below-grade placement, Holtec is a reasonable choice. Holtec began

\[19 Id.\]
work on the task in 2014. See the direct testimony of Mr. De Marco, in Chapter 2 above, for a
description of SDG&E’s involvement in the ISFSI vendor selection process.

The decision to move spent fuel into dry storage early in the decommissioning project is
beneficial both financially to the trust funds, and in safety during decommissioning for the plant
staff. Maintaining spent fuel in the fuel pools during decommissioning has several distinct
disadvantages:

1. Maintaining spent fuel in the pools until DOE can accept it for disposition is costly. A
   much larger site security force and several additional plant personnel (in maintenance, 
   engineering and operations) are required to keep spent fuel in the pools at SONGS. The
   additional cost is approximately $20 million to $30 million per year to keep spent fuel in
   the pools compared to maintaining it in dry cask storage. If spent fuel is anticipated to
   remain on site for more than 15 years, the life-cycle costs for dry storage are typically
   more favorable.

2. Negative impact upon decommissioning schedule. With spent fuel remaining in the spent
   fuel pools, decommissioning would have to proceed around the spent fuel pools. Only
   after DOE completed accepting all spent fuel from the SONGS site could the pool
   facilities be decommissioned. This decommissioning scenario would lengthen the overall
   decommissioning schedule by several years.

3. Occupational health and safety. While both spent fuel pool storage and dry cask storage
   provide reasonable assurance of public health and safety, decontamination and
   demolition activities result in a somewhat greater risk of spent fuel damage if the fuel
   remains in the pools. Moving spent fuel into dry storage – away from decommissioning
   activities – mitigates this risk.

iii. Site Restoration Period 1 Expenses

SR Period 1 is described in the 2014 DCE as Transition to Site Restoration. In 2014, a
portion of the Historical Site Assessment was performed for the overall SONGS site, including
the Mesa site and facilities east of Interstate 5 (both of which are outside of the NRC licensed
areas).

A primary goal early in all decommissioning projects is to “shrink” the footprint of the
plant site by releasing for unrestricted use any land and facilities utilized during plant operations.
This is done for two reasons: (a) to prevent the migration of radiological and hazardous material
that could lead to contamination to areas previously unaffected, and (b) to control site security

\[20 \text{ Id.}\]
The Mesa site, part of Marine Corps Base Camp Pendleton and under the control of the Department of the Navy, was leased to Edison for the provision of maintenance, repair and emergency services to SONGS during operations, and also housed Edison’s administration facilities. While it was anticipated that no radiological and/or hazardous material will be found at the Mesa site, it remains the responsibility of SCE to demonstrate the Mesa site is free of contaminants.

To do so, SCE moved all of its activities off of the Mesa site, and included the Mesa site in the Historical Site Assessment, in preparation of releasing the land back to the Navy. In my expert opinion, I believe this to be a reasonable activity to be performed at this juncture of the decommissioning project.
IV. SDG&E Oversight of SONGS Invoices (T. Curtis)

The purpose of my testimony is to describe my oversight of SCE’s SONGS invoicing. As SDG&E’s SONGS Financial Project Manager, my SONGS responsibilities include reviewing invoices presented by the Decommissioning Agent, currently SCE, for errors. In addition, my review of invoices determines whether the amounts billed are accurate, valid, correctly stated and related to decommissioning activities undertaken. The purpose of my review is to assure that the costs reflected in the SCE invoices for Units 2 & 3 are appropriately incurred decommissioning costs and that the costs are supportable for the decommissioning activities being completed.

A. Appropriately Incurred Charges

Using my knowledge and professional experience as a CPA and my knowledge of SONGS decommissioning activities, I review the invoiced charges to verify that decommissioning costs are appropriately incurred. SCE provides SDG&E with a monthly Consolidated Cost Performance Report. The report provides a discussion of the activities for both O&M and Capital cost categories. SCE also provides a weekly status update of decommissioning activities, which I review. Using my judgment, I follow up, as needed, with SCE to obtain further details and explanations of how the activities and their resulting costs are decommissioning related.

B. Cost are Supportable

Using my knowledge and professional experience, I review on a sample basis individual charges and obtain supporting documents from SCE to confirm the invoiced costs and that the work is decommissioning related. Supporting documents include, but are not limited to, vendor invoices, contracts and purchase orders.

C. Budget Variance Review

My variance review process obtains and reviews SCE’s annual O&M and capital budget by month, by SCE manager/director, and by project. While SCE’s annual 2014 budget was not approved by the other SONGS co-owners, including SDG&E, SDG&E’s share of SCE’s monthly budget information is nevertheless input into SDG&E’s budget management system solely for comparison and reporting of budget to actual variances.

21 See the Testimony of Ms. Dalu, Chapter 5.
SCE provides a monthly review of budget performance in the Consolidated Cost Performance Report. The Report provides brief explanations for any variances between budget and actual costs. SDG&E submits inquiries to SCE regarding significant under and over budget line items to determine the reason(s) for the under- or over-run compared to budget and to determine whether the variance is timing related or a permanent variance, such as a change in work scope or project delays. Notices of these changes are obtained by the Team Lead, Mr. De Marco, through his attendance at the weekly co-owners meetings on decommissioning.

SDG&E investigates changes to the timing of decommissioning activity costs and revises budgeted amounts as needed.

Based on my review of the invoices issued by SCE, as well as my review of SCE’s Consolidated Cost Performance Report, I follow up on potential budget changes with the SCE Budget Manager to obtain updated monthly cash flows and update the SDG&E budget quarterly outlook. As needed, I inform SDG&E management of significant budget variances, along with explanations and relate potential budget changes.

I inform SDG&E Generation and Resource Planning management, as needed, of potential issues, concerns or potential changes in budget outlook on a monthly basis to keep SDG&E apprised of issues it may wish to address with SCE at the monthly SONGS co-owner executive decommissioning meetings.

\[22\] See the testimony of Mr. De Marco, Chapter 2 above.
V. SDG&E’s Accounting and Tracking of SONGS Costs (T. Dalu)

The purpose of my testimony is to explain how SDG&E tracked costs, whether invoiced from SCE or another third party, or internal SDG&E (100%) costs in 2014, and the process SDG&E Generation Accounting used to review those costs. My testimony also discusses the upcoming changes to SCE invoices and SONGS cost categorization that are expected to occur in the near future and explains why SDG&E is unable to provide most of its cost information in accordance with DCE categories at this time.

i. SDG&E Cost Tracking and Review Processes for SONGS 2014 Costs

Traditionally, SDG&E receives a monthly invoice from SCE for SDG&E’s portion of its 20% share of SONGS costs, plus SCE overheads, incurred during the prior month. For example, in April 2014, SDG&E received an invoice from SCE for SONGS costs incurred during March. The SONGS costs are billed to SDG&E as either capital or O&M and segregated between Unit 1 (alone) or Units 2 & 3 (combined).

Under the current process, SDG&E has 15 calendar days from the date the invoice is received until the payment date to review and pay the invoice. Upon receipt of the invoice, SDG&E Generation Accounting performs several key functions. It reviews the invoice for errors, comparing total costs by type (Capital, O&M or Severance), to the prior month’s invoice and reviews the supporting detailed O&M and Capital Expenditure schedules for unusual or unexpected fluctuations. The invoice is reviewed for mathematical accuracy. In addition, the overhead rates appearing in the invoice are validated for compliance with applicable SONGS agreements. SDG&E Generation Accounting also reviews the invoice to see if it agrees with the O&M and Capital Expenditure supporting schedules, such as the Statement of O&M Expenses and the Capital Expenditure Summary Reports, and any other relevant documentation provided by SCE.

Once approved by SDG&E Generation Accounting, the invoice package, which consists of the invoice, the Statement of O&M Expenses, the Capital Expenditure summary Report and the supporting schedules for severance charges, is sent to Mr. Curtis for review and approval for payment. After approval by SDG&E’s Nuclear Team, the full package is returned to Generation Accounting and reviewed by SDG&E Management before payment is issued. For additional information on the review by the SDG&E Nuclear Team, see the direct testimony of Mr. Curtis above at Chapter 4.
Invoices received from third parties, such as SDG&E consultant fees, internal labor, and outside counsel costs, are tracked using specifically identified decommissioning work orders and are reviewed monthly by the Nuclear Team and/or other applicable SDG&E departments.

**ii. Future SDG&E Cost Tracking and Review Processes for SONGS Costs**

At the time of this testimony’s submission, SDG&E and the other SONGS co-owners (i.e., SCE, and the Cities of Riverside and Anaheim) are finalizing a Decommissioning Agreement. Upon completion, the Decommissioning Agreement will govern SONGS decommissioning costs and activities for Units 1, 2 & 3. The Decommissioning Agreement is expected to be executed in mid-April 2015.

Assuming that the Decommissioning Agreement is executed in its current form, under the terms of the Decommissioning Agreement, SDG&E will receive decommissioning invoices from SCE on a monthly basis that will segregate costs by unit and by decommissioning cost categories required by the NRC and/or the Commission. This new invoice format is designed to mimic the cost categorization in the recently-submitted 2014 DCE. Specifically, SCE will bill SDG&E for decommissioning costs by Unit (1, 2 & 3) and under the three major NRC-designated decommissioning work categories: License Termination, Spent Fuel Storage and Site Remediation. In addition, Major Activities within each of the three categories, as defined in the DCE, will be identified by a Work Breakdown Structure (“WBS”) element/activity, consistent with those noted in the DCE.

Once SDG&E Generation Accounting receives the required information from SCE, SDG&E Generation Accounting will create individual work orders in SDG&E’s accounting system that will map to the WBS elements. Coupled with the new invoice format, this new system will enable SDG&E to independently track and report its share of decommissioning costs, compare them to the DCE and report them to the NRC and/or Commission, as needed.

Under the new process, SDG&E intends to review and provide payment within 15 calendar days. Just as SDG&E Generation Accounting does today, the invoice will be reviewed for errors and accuracy by SDG&E Generation Accounting and the Nuclear Team, and Management. In addition, under the new process, SDG&E’s work orders should align with SCE’s work orders, so SDG&E’s invoice review will also include confirmation that the work order provided is correct and mapped properly.
For those costs that are not billed to SDG&E by SCE, such as internal SDG&E costs, SDG&E will also track those costs to specifically identified decommissioning work orders that align with the DCE. To my knowledge and belief, SCE will begin using this new invoice format in Q1 2015 and SDG&E will be able to implement the necessary changes to its accounting system once it receives necessary information from SCE. SCE has also informed SDG&E that it intends on re-issuing the 2013 and 2014 invoices to SDG&E in the revised format in 2015. It is unclear to SDG&E exactly when it will receive the reissued invoices.

iii. Application of Future Cost Tracking System and SDG&E’s 2014 SONGS Costs

All invoices received by SDG&E from SCE in 2014 use the old format, and do not break down the invoiced amounts by unit, NRC cost category or WBS. Therefore, SDG&E is unable to provide its 2014 SONGS costs in the same categories used by the DCE, or compare its 2014 SONGS costs to the DCE estimate for 2014 at this time.

Based on information provided by SDG&E, it is my knowledge and belief that SCE will re-issue invoices to SDG&E for June 2013 through December 2014 in the new format in 2015. Therefore, as stated in SDG&E’s Application, SDG&E respectfully seeks the ability to file supplemental testimony concerning its 2014 costs, which will provide SDG&E’s 2014 invoiced costs through December 31, 2014 broken down by unit, NRC cost category and WBS, once SCE has provided the information, SDG&E has modified its own SAP system to accommodate the new cost categorization system, and SDG&E has been able to verify the data. At the time of this submission, it is not clear to SDG&E when these events will occur.

For those costs that are not billed to SDG&E by SCE, such as internal SDG&E costs, SDG&E will track those costs to specifically identified decommissioning work orders that align with the DCE as well. SDG&E is already transitioning its internal system to do so, and expects to be able to track these costs using specifically identified work orders that will allow these costs to be allocated to the appropriate “cost bucket” once it has finished modifying its own SAP system to accommodate the new cost categorization system.

\[23\] At the time this testimony was submitted, SDG&E has not yet received invoices from SCE in the new format.
Witness Qualifications of Adam H. Levin

My name is Adam H. Levin, and my business address is 7642 Trillium Boulevard, Sarasota, Florida 34241. I have been retained by SDG&E to provide professional consulting services as Decommissioning Advisor directly to SDG&E.

Since April 2013, I have been consulting to the nuclear energy industry, doing business as AHL Consulting. I currently provide decommissioning and spent fuel management consulting services to Duke Energy Florida Crystal River 3 (Decommissioning Project Management Oversight Board), Entergy Nuclear Vermont Yankee (Third Party Decommissioning Advisor – through Price Waterhouse Cooper), Dairyland Power Cooperative LaCrosse Boiling Water Reactor (Decommissioning Advisor – through Techsource), as well as SDG&E (Decommissioning Advisor). Additionally, I am providing consulting services to the Department of Energy (DOE), Office of Nuclear Energy (DOE-NE), where I serve on several steering committees overseeing the activities of the Nuclear Fuels Storage and Transportation Project (NFST Project). The NFST Project is DOE’s program to implement recommendations made by the Blue Ribbon Commission on America’s Nuclear Future, regarding the long-term management of spent nuclear fuel in the United States.

Prior to April 2013, I spent 16 years at Exelon Generation in Illinois, the last seven years as the Director of Spent Fuel and Decommissioning for Exelon’s fleet of 19 operating and four retired nuclear units. Specifically, in this role I provided governance and oversight to Exelon’s decommissioning activities and decommissioning cost estimating, and supported Exelon’s corporate finance and tax organizations with trust fund asset management and financial reporting.

I began my career in 1977 providing site characterization analyses for decommissioning the Shippingport reactor, and have been involved in cost estimating and/or technical engineering decommissioning activities at the vast majority of the commercial nuclear plant decommissioning projects in the U.S. to date. I hold a master’s degree in nuclear engineering and a bachelor’s degree in physics from Rensselaer Polytechnic Institute.

The purpose of my testimony in this proceeding is to provide my expert opinion regarding the reasonableness of certain decommissioning activities undertaken by SCE at
SONGS Units 2 & 3 during 2014. I am sponsoring Chapter 3 in Ex. SDGE-02 in support of the Application.

This material was personally reviewed by me and I believe it to be correct that it is factual in nature. Insofar as the material is in the nature of opinion or judgment, it represents my best judgment.

I have not previously testified before this Commission.