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Decommissioning
San Onofre
Nuclear Generating Station

Community Engagement Panel

August 28, 2014

Post Shutdown Decommissioning Activities Report

Environmental Impact Evaluation

Decommissioning Cost Estimate

Overview

- Post Shutdown Decommissioning Activities Report (PSDAR)
- Decommissioning Plan
- Environmental Impact Evaluation (EIE)
- Decommissioning Cost Estimate (DCE)
- CEP Comments and Questions

Post-Shutdown Decommissioning Activities Report

Basis	• 10CFR50.82 and NRC Reg Guide 1.185 Rev 1 • Review of recent decommissioning plants' PSDAR submittals to NRC from other utilities
Content	• Description of the planned decommissioning activities • Schedule for the completion of these activities • Expected costs • Discussion of environmental impacts

Post Shutdown Decommissioning Activities Report Review Process

- SCE submits PSDAR for NRC review; copy sent to State of California
- NRC reviews and confirms PSDAR is adequate
- PSDAR available for public review and comment
- NRC public meeting to discuss the PSDAR
- Major decommissioning activities may commence 90 days after NRC receives PSDAR
- PSDAR is a living document; changes must be submitted to NRC and State of California

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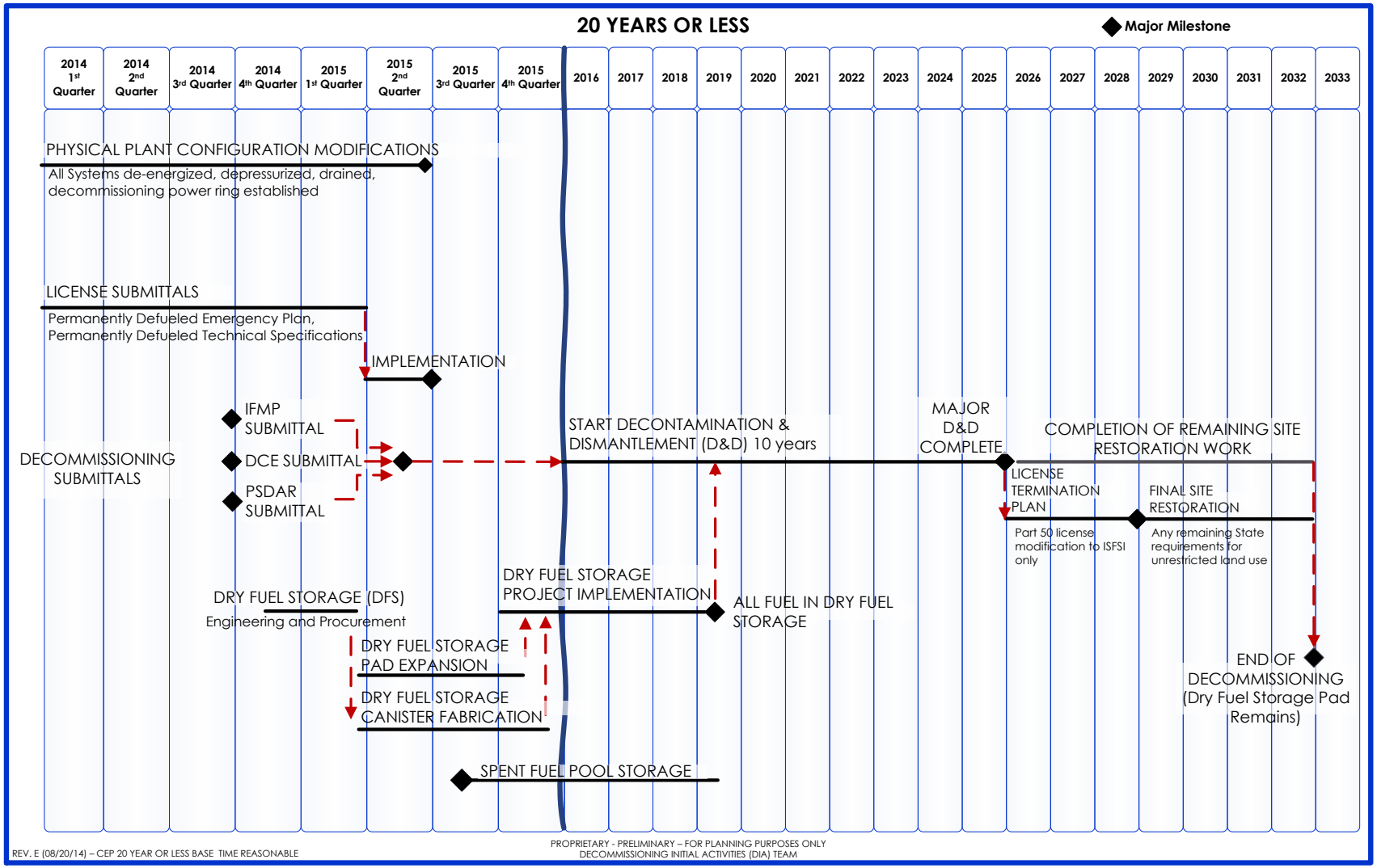
Decommissioning San Onofre Nuclear Generating Station

Decommissioning Plan

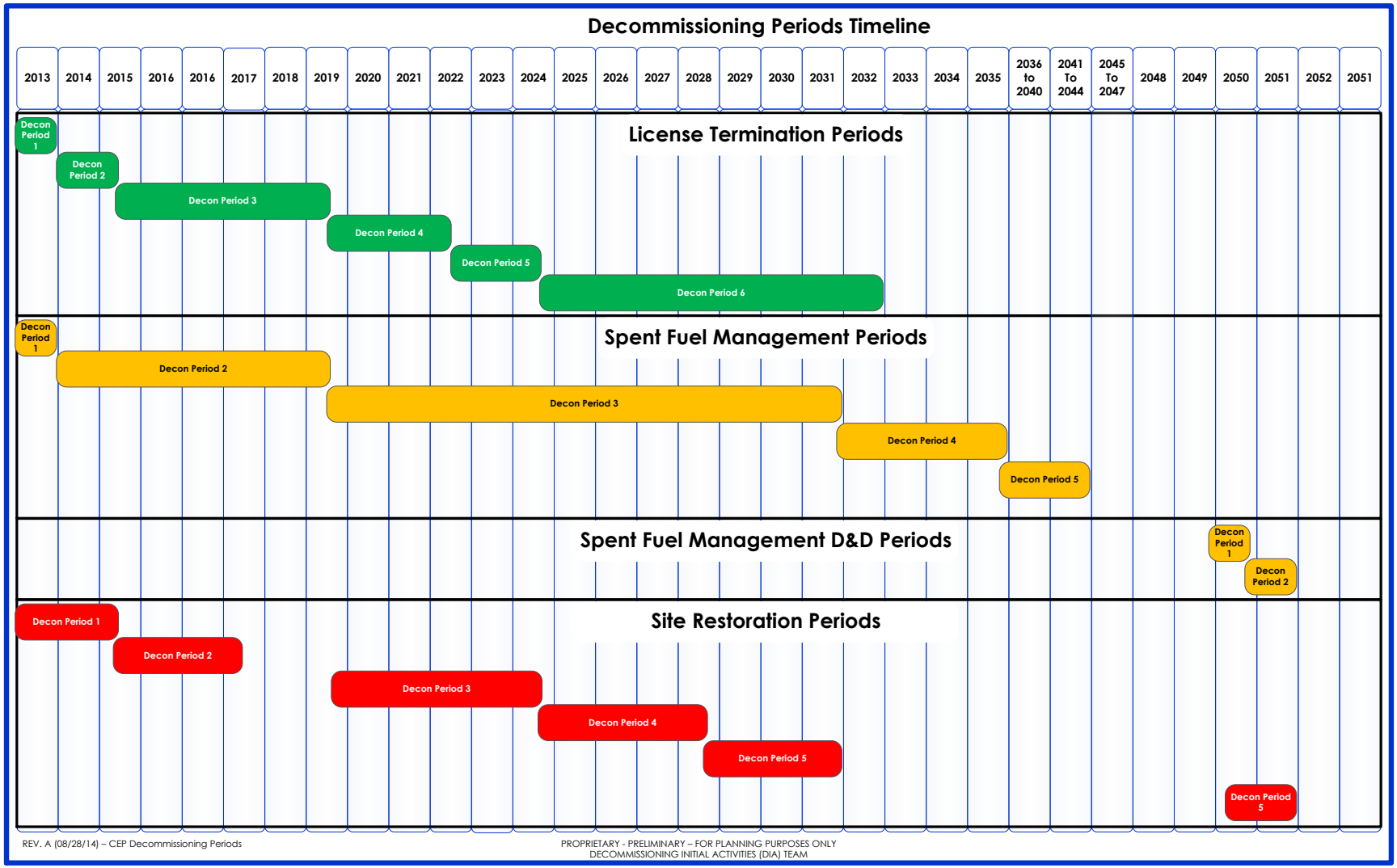
Decommissioning Plan



Decommissioning Periods

- License Termination
- Spent Fuel Management
- Site Restoration

Decommissioning Periods



Description of License Termination Periods

Dates	Decon Period		Summary Description
06/13 - 12/13	1	Transition to Decommissioning	Defuel Reactors Prepare NRC Submittals
01/14 - 06/15	2	Decommissioning Planning and Site Modifications	NRC Submittals Begin Historical Site Assessment, Cold and Dark Spent Fuel Pool Island
07/15 - 06/19	3	Decommissioning Preparations and Reactor Internal Seg	Vendor mobilization System Decontamination Reactor Internals removal preparations
07/19 - 09/22	4	Plant Systems and Large Component Removal	Remove SF Racks, Spent Fuel Island Remove and dispose Class B&C Wastes Remove and dispose of reactor and auxiliary systems Prepare License Termination Plan
10/22 - 07/24	5	Building Decontamination	Decontaminate Containment, Turbine, Aux Building Perform Rad Surveys
07/24 - 12/32	6	License Termination, Building Demolition	Remove all buildings

Spent Fuel and Site Restoration periods are separate

Description of Spent Fuel Management Periods

Dates	SNF Period		Summary Description
06/13 - 12/13	1	Spent Fuel Management Transition	Initial planning for spent fuel pool offload
01/14 - 06/19	2	Spent Fuel Transfer to Dry Storage	Prepare Irradiated Fuel Management Plan Select Dry Storage System Canister (DSCs) Expand ISFSI Load DSCs and Transfer to ISFSI
06/19 - 12/31	3	Decommissioning Units 1, 2 and 3	Storage Period during major decommissioning activities
12/31 - 12/35	4	Dry Storage Only Units 1, 2 and 3	Storage Period Unit 1 Fuel removed by DOE
12/35 - 12/49	5	Dry Storage Units 2 and 3	Storage Period Units 2 and 3 Fuel removed by DOE
Dates	**SNF D&D Period**		**Summary Description**
12/49 - 05/50	1	ISFSI License Termination	Preparation and NRC Review of License Termination Plan for ISFSI
05/50 - 09/51	2	ISFSI Demolition	Demolition and Site Restoration of ISFSI Preparation of Decommissioning Final Report - NRC Review

Description of Site Restoration Periods

Dates	SR Period		Summary Description
06/13 - 06/15	1	Transition to Site Restoration	Severance costs from Reduction in Staffing Environmental Assessment & Disposition of Waste - Mesa
06/15 - 07/17	2	Building Demolition during Decommissioning	Demolish South Yard and Mesa Structures Finish Grade and Re-vegetate Mesa Site Mesa Lease Termination
10/19 - 07/24	3	Subsurface Demolition Engineering & Permitting	Hydrogeological Investigation & Outfall Conduit Survey Subsurface Structure Removal Analysis Final Site Grading and Shoreline Protection Design
07/24 - 10/28	4	Building Demolition to 3 Feet Below Grade	De-tension and remove Containment Building Tendons Demolish All Power Block Structures
10/28 - 12/31	5	Subgrade Structure Removal Below -3 Feet	Install Sheet Piling and Dewatering System Demolish and backfill Structures Below -3 Feet Final Grading and Re-vegetate Site
05/50 - 12/51	6	Final Site Restoration and Lease Termination	Install Sheet Piling and Dewatering System Remove Unit 2 and Unit 3 Seawall, Pedestrian Walkway & Intake Remove RR Track, Gunite Slope Protection and Parking Finish Grading and Re-vegetate Site

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Environmental Impact Evaluation

Environmental Impact Evaluation

Basis	• NUREG-0490 SONGS Environmental Impact Statement (EIS), 1981 • NUREG-0586 Generic EIS Decommissioning of Nuclear Facilities, 1988 • NUREG 1496 Generic EIS Support of Rulemaking for License termination • 10CFR51.53 Post Construction Environmental Reports (ER) • Consistent with the planned methods of Decontamination & Dismantlement (D&D) described in the PSDAR
Content	• All key impacts assessed found to be not detectable or so minor that they will neither destabilize or noticeably alter any important attribute of the resource (does not trigger additional ER or LAR) • Confirms differences are bounded by the Generic or existing Environmental Impact Statement

Environmental Impact Evaluation

Key EIE assumptions related to keeping impacts “Small”

Note: these assumptions may differ from DCE assumptions

- Assume that Ocean Conduits will not be removed
- Ensure no blasting will be used in decommissioning
- Maintain existing land ‘use’ (building / zoning) designations
- Limit dewatering to 1000 foot radius from site
- There are no drinking water wells in the area of SONGS
- Comply with existing permits, obtain other permits where required
- Limit excavations to area previously excavated during original construction
- Ensure air quality impacts are minimized (diesel engines)

Environmental Impact Evaluation

Key Impacts Assessed:

	Issue	D&D Activity	EIE Determination
1	On-site / Off-site Land Use	Use of lands	Small
2	Water Use / Quality	Use of surface or ground water	Small
3	Air Quality	Emissions and dust	Small
4	Aquatic / Terrestrial Ecology	Impact to existing ecologies	Small
5	Threatened & Endangered Species	Impact due to noise, dust, etc.	Small
6	Radiological / Rad Accidents	Occupational & Public dose	Small
7	Occupational Impact	Safety / Injuries	Small
8	Socioeconomics	Staffing and tax impacts	Small

Environmental Impact Evaluation

Key Impacts Assessed Continued:

	Issue	D&D Activity	EIE Determination
9	Environmental Justice	Impact to minority or low income	Small
10	Cultural, Historical, Archeological Resources	Impact to known archeological sites	Small
11	Aesthetics Impacts	Final site as-left configuration	Small
12	Noise	Noise above existing trains/I-5, etc.	Small
13	Transportation	Shipments from / to site	Small
14	Irreversible and Irretrievable Commitment of Resources	Consuming materials (gasses, fuel, solvents, etc.)	Small

Next Steps
Permitting Overview

- The project will adhere to the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) guidelines
- The following federal and state agencies are likely to play a key role in the decommissioning process:
  - U.S. Nuclear Regulatory Commission
  - U.S. Department of the Navy
  - U.S. Army Corps of Engineers
  - California State Lands Commission
  - California Coastal Commission
  - State and Regional Water Boards

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Decommissioning Cost Estimate

Preliminary for Planning Purposes Only

Decommissioning Cost Estimate

Basis	• 10CFR50.75(c), 10CFR72.30, 10CFR50.54(bb) • Energy*Solutions* estimating model and data • SONGS-specific walk down validation for quantities
Structure	• Discusses the Decommissioning Plan • Assurance of the Adequacy of Funding • Provides Total Cost by Period • Plan for Adjusting Funding • Summarizes the Costs of Services • Summarizes Undistributed Costs • Outlines Costs For: – License Termination – Spent Fuel Management – Site Restoration

Decommissioning Cost Estimate

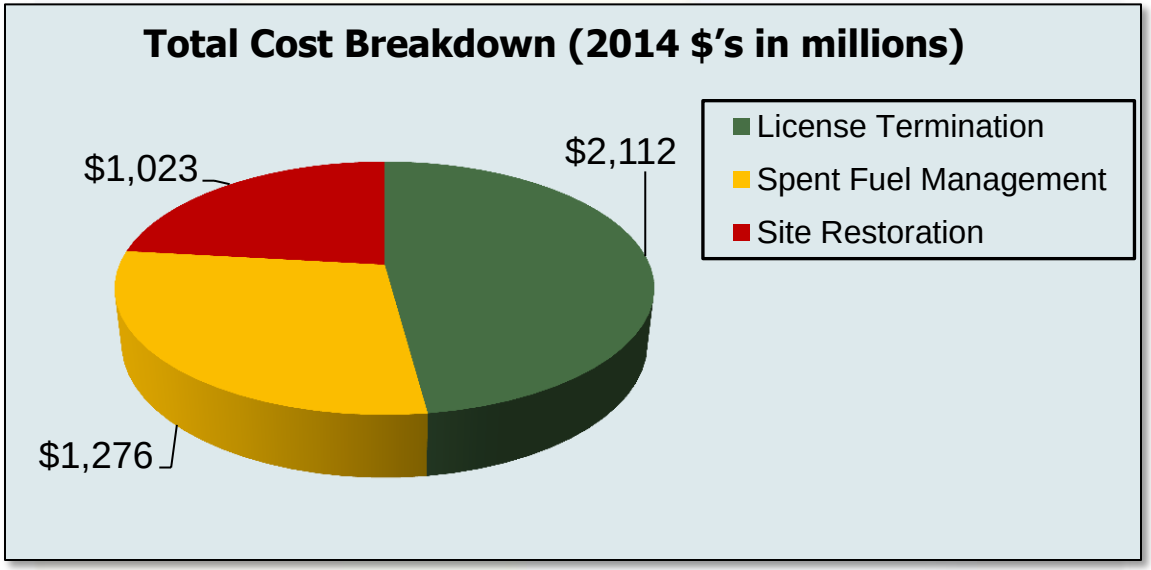
Key Assumptions

Note: these assumptions may differ from EIE assumptions

Assumption	DCE Assumption
Date Fuel is Out of Spent Fuel Pool	June 2019
DOE Performance Start Date	2024
Pool Islanding Date	June 2015
Substructure Excavation	All Substructures Removed
Duration of D&D	10 Years
Contingency	25% (22.8% weighted)
Ocean Conduits	Remove
Treatment of Class A Waste	No Class A Waste Exempt
Start of D&D	January 2016
Low Level Waste Burial Cost Escalation	D&D - CPI Post - D&D 7.33%

Decommissioning Cost Estimate Breakdown

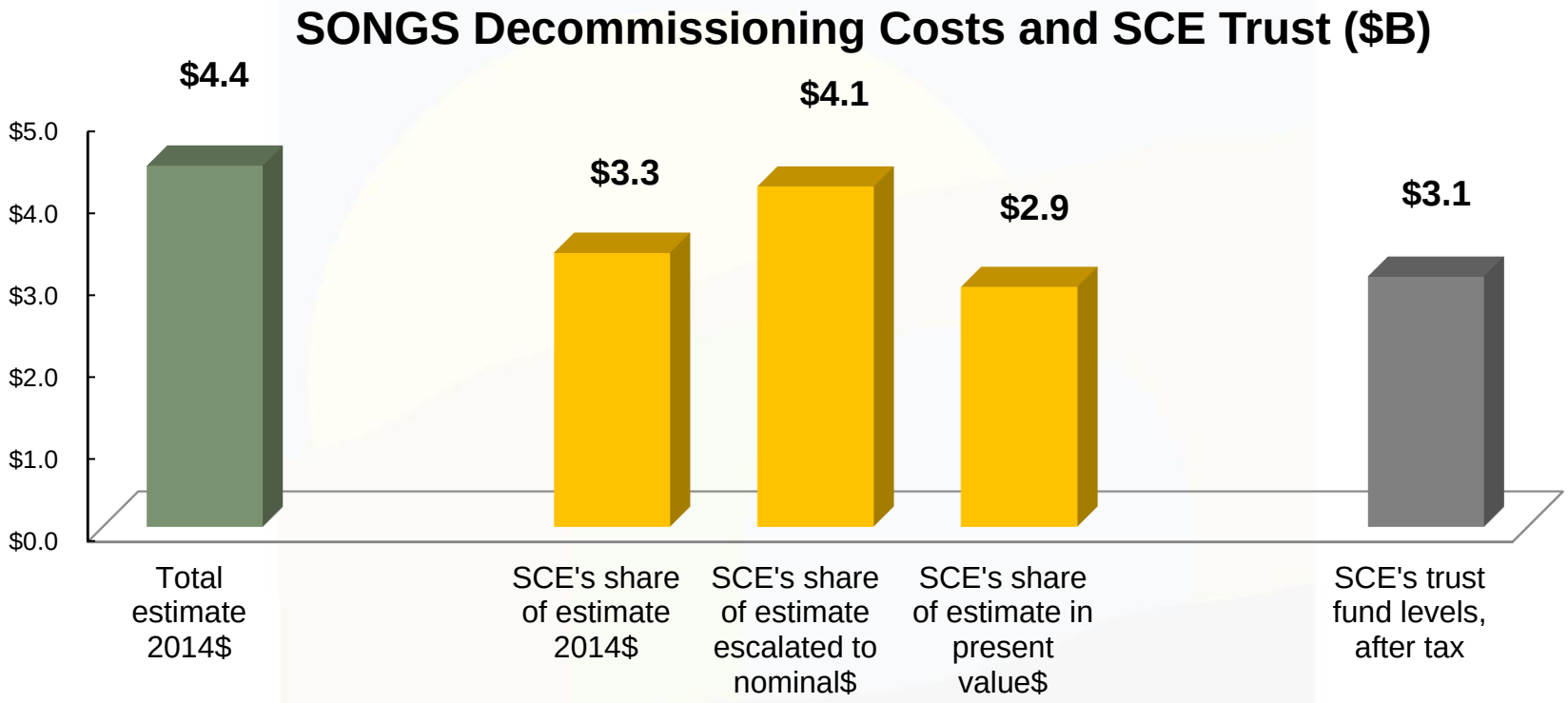
Total Cost = $4.411B (2014 $'s, 100% Level)



Description of Cost Categories:

1. License Termination: Decommissioning planning through reactor and other plant system D&D
2. Spent Fuel Management: Transfer of spent fuel into and management of dry cask storage, and ultimate demolition of the ISFSI
3. Site Restoration Costs: Clean building demolition and site grading

Cost Estimate & Trust Fund Detail



Cost estimate assumes decommissioning occurs in 2014. However, decommissioning will occur over time, thus cost escalation and present valuing of nominal cash flows to 2014 yields $2.9 billion cost for SCE.

Trust Fund and Regulatory Oversight

SCE Decommissioning Trust Committee

- The Nuclear Decommissioning Trusts are overseen by a five member committee (2 internal, 3 external) who are nominated by management, confirmed by the Edison Board, and approved by the CPUC. Responsibilities include:
  - Prudently manage the investments in the Trust
  - Approve asset allocation based on expected decommissioning schedule provided by the company
  - Hire and manage investment advisors and trustee
  - Hire and manage other advisors as appropriate

Regulatory Oversight of Decommissioning Trusts

- CPUC regulates all spending from the Nuclear Decommissioning Trust, including review, approval and reasonableness
  - Filed a request for interim access to the Trust in November 2013
  - Will file an application for permanent approval with site specific DCE in 2014
- NRC regulates all radiological decommissioning
- NRC regulates spent fuel management

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CEP Comments & Questions

Timeline

- Open discussion and comments from CEP
- Comments to SCE deadline September 5
- NRC submittals by late September

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Decommissioning Principles

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