Community Engagement Panel

May 22, 2014

Decommissioning Principles

With our co-owners, Southern California Edison is committed to:

Safety

- Safely decommissioning San Onofre
- Safely move the power plant's spent fuel into dry cask storage, until government approved long-term storage options are available

Stewardship

- Leave the community better off
- Spending Nuclear Trust Funds wisely
- Return any unused monies to ratepayers

Engagement

- Decommissioning process is inclusive, forward-thinking, involving diverse stakeholders

SCE Topics

Decommissioning Timeline

- Update on 20-year timeline, regulatory filings and key decisions

SCE briefing and CEP discussion

A. Spent fuel storage

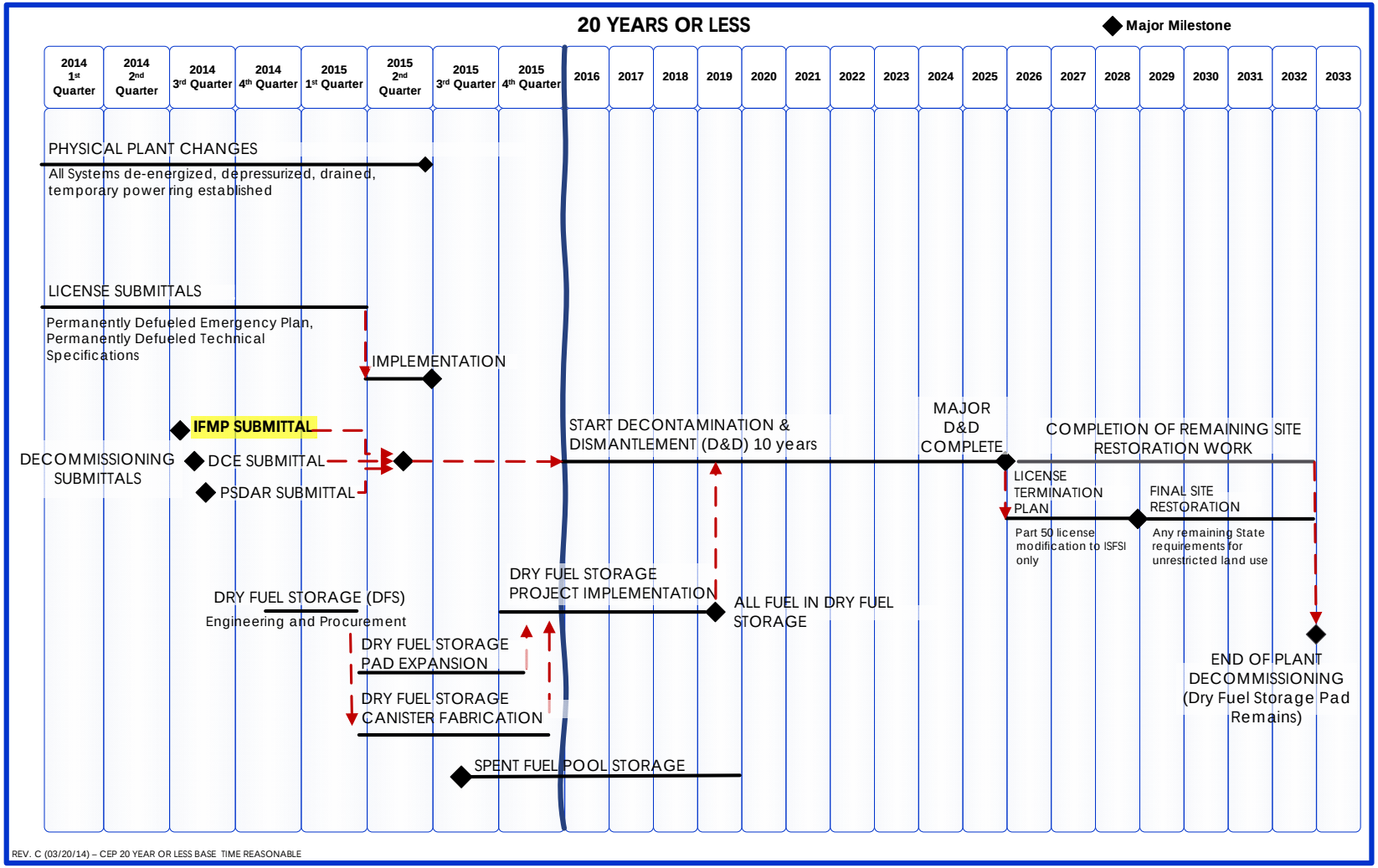
B. Irradiated Fuel Management Plan (IFMP)

C. Future decisions

NRC Requirements
Three Phases of Decommissioning

Decommissioning Planning	Major Decommissioning Activities	License Termination
SCE ceases operations and notifies NRC	SCE initiates cleanup activities, per the Post-shutdown Decommissioning Activities Report	SCE conducts final status survey and submits reports
SCE submits Post-shutdown Decommissioning Activities Report	NRC conducts periodic inspections	NRC conducts confirmatory surveys and reviews report
NRC reviews Post-shutdown Decommissioning Activities Report	SCE submits license termination plan	NRC approves final status survey report and modifies license
	SCE completes cleanup activities	Dry Fuel Storage Part 50 license remains
	NRC performs technical and environmental reviews of license termination plan and approves plan	

Proposed Decommissioning Timeline



Nuclear Regulatory Commission Submittals

Irradiated Fuel Management Plan (IFMP)

Description of Spent Fuel storage management and funding plan

Post-shutdown Decommissioning Activities Report (PSDAR)

Identifies the planned decommissioning activities, a schedule for the completion of these activities, estimate of the expected costs, and environmental impacts associated with the site-specific decommissioning activities

Decommissioning Cost Estimate (DCE)

Provides funding levels and process through the decommissioning periods

Permanently Defueled Emergency Plan (PDEP)

Description of station Emergency Plan and Emergency response organization commensurate with decommissioned conditions of the plant

Permanently Defueled Technical Specifications (PDTS)

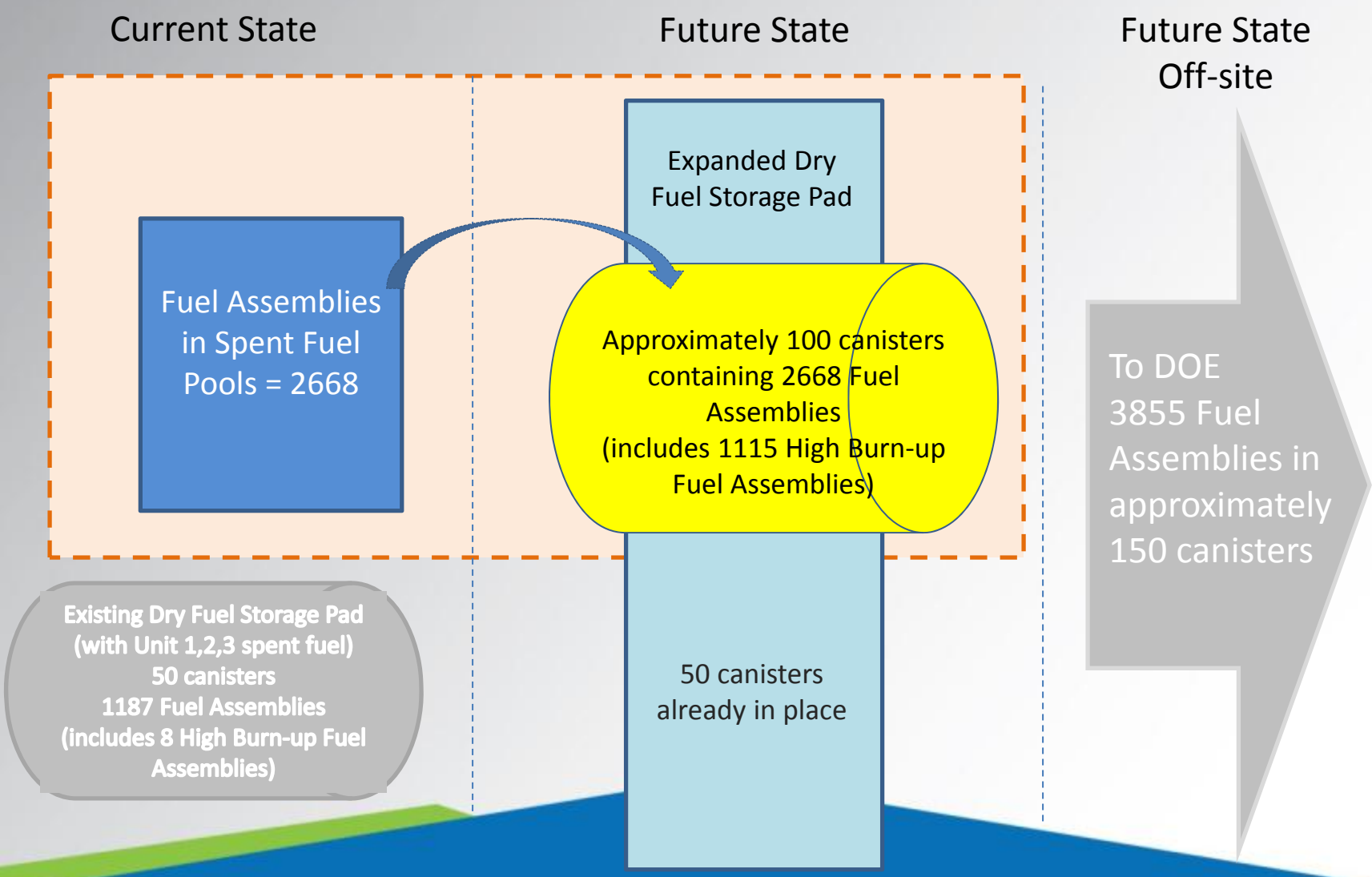
License basis for current defueled condition of the station

Required NRC Decommissioning Submittals Schedule

Submittal	Target Date	Community Engagement Panel
Irradiated Fuel Management Plan (IFMP)	3Q2014	Feedback By June 6, 2014
Post-shutdown Decommissioning Activities (PSDAR)	3Q2014	Feedback
Decommissioning Cost Estimate (DCE)	3Q2014	Feedback
Permanently Defueled Emergency Plan (PDEP)	Submitted	Awareness
Permanently Defueled Technical Specifications (PDTS)	Submitted	Awareness

Spent Fuel Storage

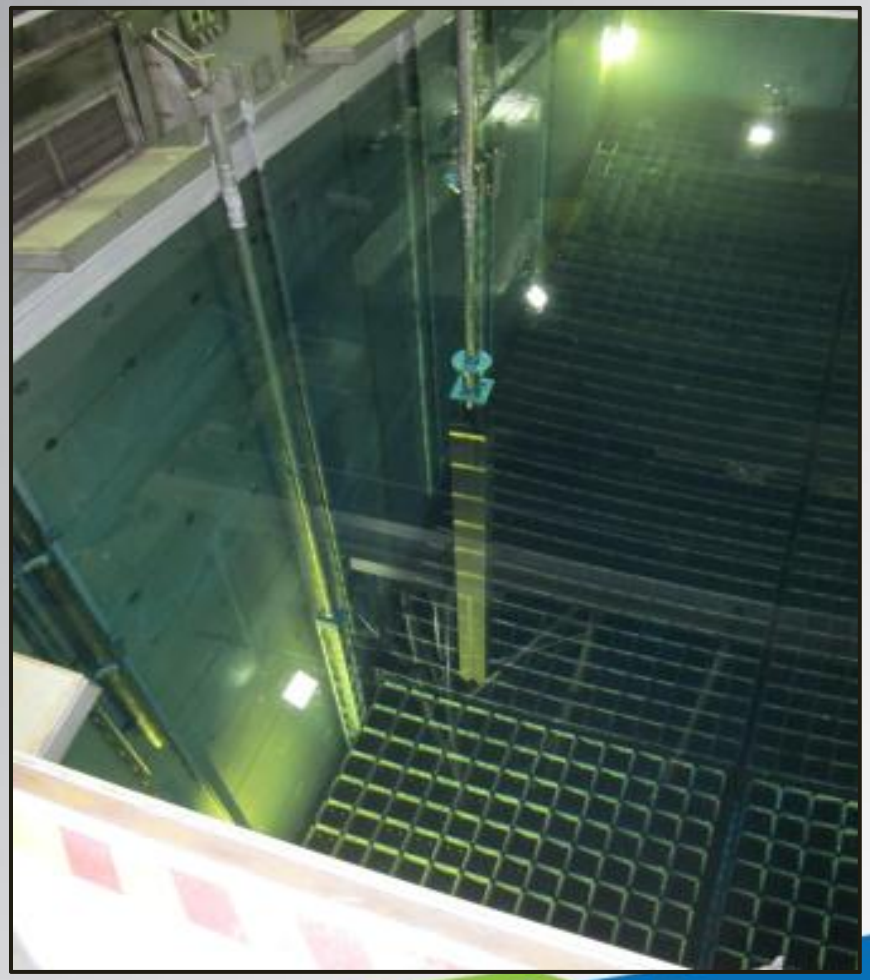
Spent Fuel Storage



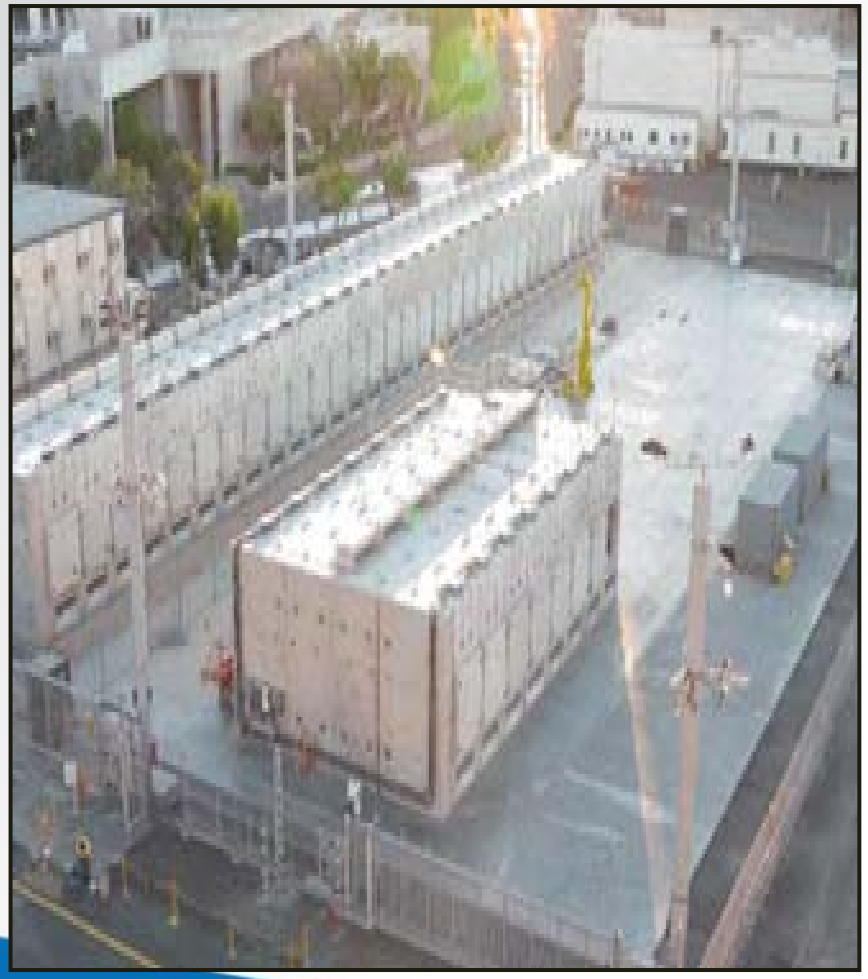
Spent Fuel Storage

- Approximately 1/3 of the Spent Fuel for SONGS Units 1,2 and 3 have been transferred to dry cask storage
- Currently 2668 Spent Fuel Assemblies reside in the SONGS Unit 2 and Unit 3 spent fuel pools
- Approximately 1/3 of the Spent Fuel for SONGS Units 1,2 and 3 are characterized as High Burn-up Fuel:
  - Unit 2 Pool - 570 Spent Fuel Assemblies
  - Unit 3 Pool - 545 Spent Fuel Assemblies
  - Dry Cask - 8 Spent Fuel Assemblies

Spent Fuel Pool to Dry Fuel Storage



Dry Fuel Storage



Dry Fuel Storage

Current ISFSI facility:

- 50 loaded Spent Fuel canisters
- 12 empty modules
- Space for 26 more modules

The existing ISFSI storage facility must be increased to accommodate approximately 100 additional canisters

Irradiated Fuel Management Plan

NRC Requirement

Irradiated Fuel Management Plan, 10 CFR 50.54 (bb) states:

"For nuclear power reactors licensed by the NRC, the licensee shall, within 2 years following permanent cessation of operation of the reactor …. submit written notification to the Commission for its review and preliminary approval of the ***program by which the licensee intends to manage and provide funding for the management of all irradiated fuel*** at the reactor following permanent cessation of operation of the reactor until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository."

Irradiated Fuel Management Plan Purpose and Requirement

Irradiated Fuel Management Plan

- For San Onofre, the “program” is to move the fuel from the spent fuel pools (“wet storage”) to the Independent Spent Fuel Storage Installation (ISFSI)
- The NRC review in accordance with its standard process
  - Required review for completeness, technical review, Safety Evaluation report
- No standard format or specific content guidance
  - Kewaunee, Crystal River, and Zion IFMPs used as a template

San Onofre Irradiated Fuel Management Plan Overview

Irradiated Fuel Management Plan key points

- 2668 irradiated fuel assemblies in spent fuel pools ("wet storage") to be safely transferred to the ISFSI, also known as dry fuel storage pad or "dry storage" by 2019
- 2024 assumed start date for DOE acceptance of spent fuel from the industry, and San Onofre fuel will be removed by 2049
- Adequacy of existing funds to cover all aspects of decommissioning, including cost of irradiated fuel management
- Living document that can be revised and updated
- Spent fuel pools will be isolated from their normal support systems and replaced by stand-alone cooling and filtration units (also termed a "spent fuel pool island")

NRC Review Criteria

IFMP Review and Approval Criteria

NRC to evaluate and provide preliminary approval of the spent fuel management and funding program, the submittal should include:

- Estimated cost to isolate the spent fuel pool (SFP) and fuel handling systems or the cost to construct an ISFSI or a combination of wet/dry storage;
- Estimated annual cost for the operation of the selected option (wet or dry storage or a combination of the two) until DOE takes possession of the fuel;
- Estimated cost for the preparation, packaging, and shipping the fuel to DOE;
- Estimated cost to decommission the spent fuel storage facility; and
- A brief discussion of each of the areas identified and the estimated time for these activities

San Onofre Irradiated Fuel Management Plan Overview

What the IFMP does not include:

- Expansion footprint of the Independent Spent Fuel Storage Installation
- Selection of the fuel canister vendor, design or type
- Decisions on canning or not canning fuel assemblies

Industry Comparison of Irradiate Fuel Management Plans

Recent IFMP submittals

Plant	Number of Fuel Assemblies in wet Storage	Completed by date from wet to dry Storage	IFMP Submittal
Crystal River	1243	2019	December 3, 2013 (updated) November 29, 2011
Kewaunee	1079	2016	April 25, 2014 (updated) February 26, 2013 (updated) December 19, 2008
San Onofre	2668	2019	Forecast late August 2014

SCE Future Decisions for Spent Fuel Storage

SCE Future Decisions for Spent Fuel Storage

Cask Selection

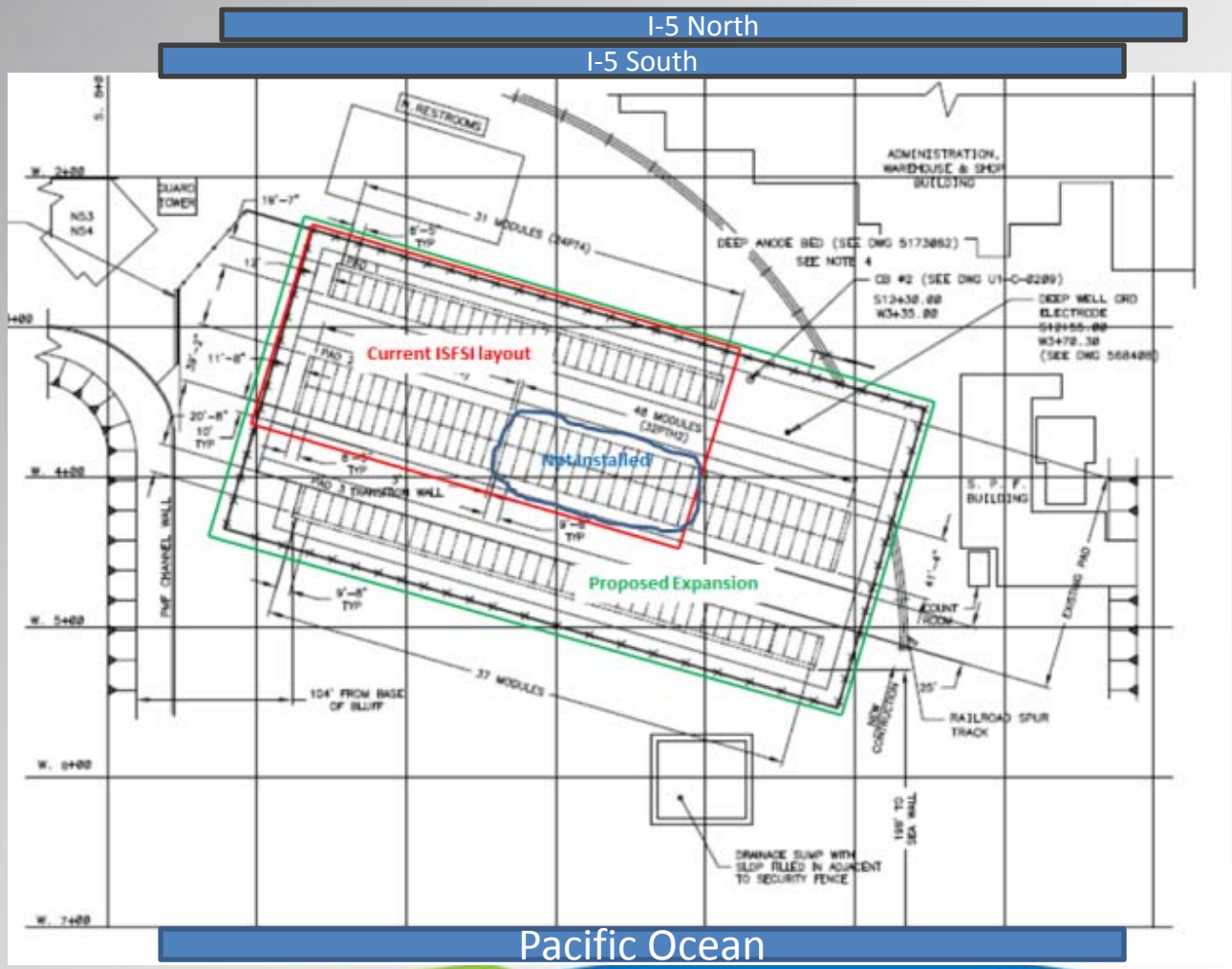
All three vendors were determined to be technically acceptable

- AREVA TN NUHOMS 24PT design is currently utilized at SONGS. The 32PTH2 system was designed and licensed specifically for enhanced SONGS requirements
- Holtec Umax system - Umax is designed for the SONGS criteria, but would require a minor license amendment for the seismic requirements
- NAC MAGNASTOR design - The NAC system design can be modified to meet the SONGS design criteria, but would require a more involved license amendment

SCE Future Decisions for Spent Fuel Storage

- Canister Capacity (i.e., 24, 32, or 37 Fuel Assemblies)
- Canning Fuel Assemblies for High Burn-up Fuel
- Location of ISFSI expansion

SONGS Independent Spent Fuel Storage Installation Expansion

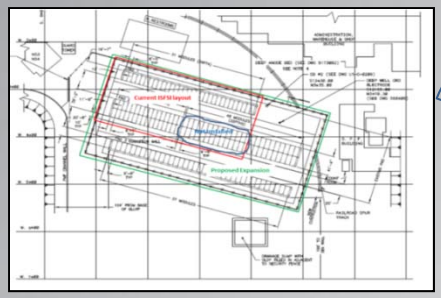


The existing ISFSI storage facility must be increased to accommodate approximately 100 additional canisters

The concept to the left shows relative expansion requirement

Red line shows existing installation

SONGS Independent Spent Fuel Storage Installation Expansion



- Relative expansion requirements shown
- Red line shows existing installation, with two options for expansion

Decommissioning Principles

Safety

Stewardship

Engagement