



# Decommissioning **San Onofre** Nuclear Generating Station

# SONGS

## Decommissioning Plan & Fuel Transfer Updates

March 22, 2018

Tom Palmisano

Vice President Decommissioning &  
Chief Nuclear Officer



Decommissioning  
**San Onofre**  
Nuclear Generating Station

# DECOMMISSIONING GENERAL CONTRACTOR

Decommissioning San Onofre Nuclear Generating Station Safety | Stewardship | Engagement





# SONGS Decommissioning Solutions (SONGS DS)

- SONGS DS mobilized to site
- ~100 personnel on site
- Planning Decontamination & Dismantlement (D&D)
- Forecast to start 1Q 2019
- Project duration 8-10 years



# Early Project Milestones (Years 1-5)

- Staffing increases to peak levels
  - Up to 400 personnel
- Large component removal
  - Reactor vessels, steam generators, pressurizers
  - Removes radiological hazards
  - Work performed within controlled/monitored environments
  - Disposal of components & materials
- Early building demolition



# Late Phase Project Milestones (Years 6-8)

- Following hazard removal/mitigation
  - Open air demolition work
  - Major building demolition
  - Backfill and site grading
  - NRC license modified to ISFSI-only
  - Only ISFSI & switchyard remain
- Subsequent milestones
  - After fuel is transferred, ISFSI demolished and site restored per Navy

24

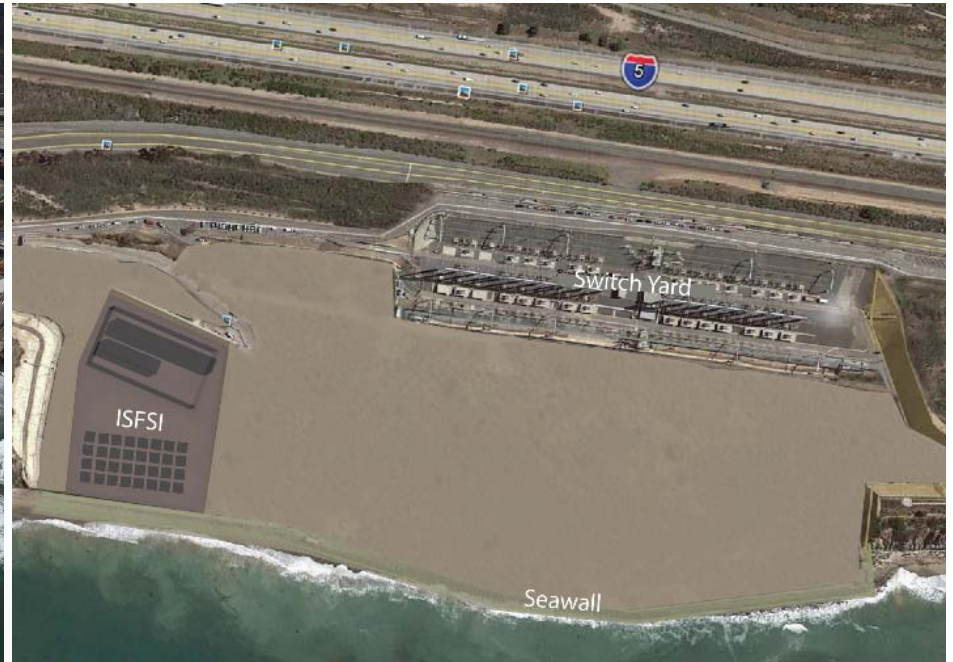


# SONGS

Today



Late 2020s





Decommissioning  
**San Onofre**  
Nuclear Generating Station

# ENVIRONMENTAL PERMITTING TO ENABLE D&D

Decommissioning San Onofre Nuclear Generating Station Safety | Stewardship | Engagement





# California Environmental Quality Act (CEQA)

- Commencement of major decommissioning requires two actions:
  - Certification of environmental impact report (EIR) by California State Lands Commission (CSLC) under CEQA, and
  - Issuance of coastal development permit (CDP) by California Coastal Commission (CCC), relying upon EIR by CSLC





# Permitting Update

- Preparation of the Draft EIR in progress
  - Anticipate Draft EIR will be issued by CSLC mid-May 2018
  - Draft EIR subject to a 60-day public review & comment
  - Certification of Final EIR anticipated at October 2018 CSLC public meeting
- Preparation of the CDP application in progress
  - Anticipate application submittal to CCC in June 2018
  - Approval of CDP anticipated at December 2018 CCC public hearing



Decommissioning  
**San Onofre**  
Nuclear Generating Station

# FUEL TRANSFER UPDATE

# Why Offload?

- Dry cask storage preferred over wet storage for decommissioning sites
- Support for prompt transfer to dry cask storage
  - National Academy of Sciences
  - Union of Concerned Scientists
  - California Energy Commission
- Precursor to offsite storage

# Dry Cask Storage

- Used fuel that has cooled for several years in pools can be stored in independent spent fuel storage installation (ISFSI)
- Fuel cooled by a passive cooling system
- 30-years industry experience
- More than 2,700 loaded casks and canisters in U.S.



Decommissioning  
San Onofre  
Nuclear Generating Station

# Decommissioning Sites

Site	Canisters	Dry Storage System	Transfer Timing
<b>Maine Yankee</b>	60	NAC-UMS	2002 to 2004
<b>SONGS</b> (AREVA System)	50	TN NUHOMS	2003 to 2012
<b>Zion</b>	61	NAC MAGNASTOR	2013 to 2015
<b>Kewaunee</b>	38	TN NUHOMS & NAC MAGNASTOR	2009 to 2017
<b>Crystal River</b>	39	TN NUHOMS	2017 to 2018
<b>Vermont Yankee</b>	42	Holtec HI-STORM	2008 to 2018



Decommissioning  
**San Onofre**  
Nuclear Generating Station

# SONGS Dry Cask Storage



34



Decommissioning  
San Onofre  
Nuclear Generating Station

# Transfer to Expanded ISFSI Underway



35



# Fuel Transfer

- Started January 2018
  - Unit 2 fuel moving first
  - All fuel in passive dry storage mid-2019 or earlier
- Security
  - Foundational priority during transport operations
  - SONGS Security Force engaged
  - Specially trained personnel provide constant protection during transfer and downloading activities



# Radiation Protection

- Safety for workers, the public, and the environment is another priority during the used fuel transfer
- Fuel handlers are qualified to move fuel and operate SONGS fuel handling equipment
- Radiological safety is addressed with constant monitoring
  - Specially trained radiation protection specialists
  - Remote monitoring during transfer and download operations
    - Dosimetry
    - Instrumentation

# NRC Information Notice: Fuel Loading

- NRC Information Notice (IN 2018-01)
  - Advises licensees regarding potential issues during fuel loading
  - Some sites have discovered damaged fuel during fuel loading
    - All SONGS fuel has been inspected and is transportable
    - Assemblies with indications are confined within “fuel cans”
  - Some sites also have experienced noble gas releases
    - SONGS has not experienced this issue
    - Fuel handling is done in sealed buildings



# Summary:

## SONGS Fuel Transfer Operation

- Safely managing used fuel on site at San Onofre is a foundational priority
- “Monthly Spent Fuel Progress Reports” available on [www.SONGScommunity.com](http://www.SONGScommunity.com)



Decommissioning  
**San Onofre**  
Nuclear Generating Station

# MARINE MITIGATION WHEELER NORTH REEF

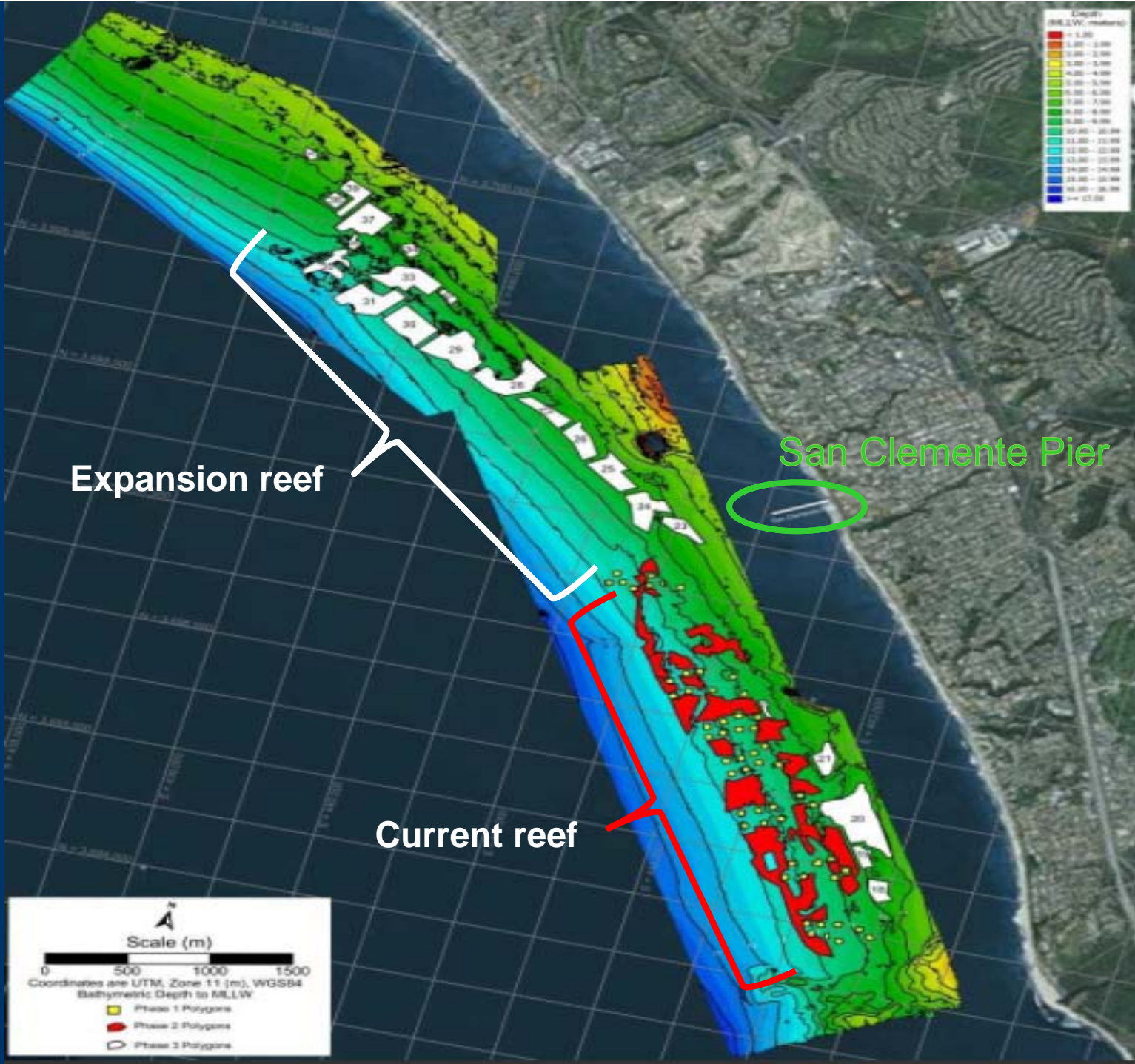
Decommissioning San Onofre Nuclear Generating Station Safety | Stewardship | Engagement





# Environmental Stewardship: Wheeler North Reef

- To mitigate impacts to local kelp forest caused by SONGS operations, in 1991 the CCC required SCE to:
  - Construct 150-acre artificial kelp reef
  - Provide funding for independent scientific oversight and monitoring
- Expansion project will increase reef by ~200 acres
  - Ensure compliance with fish standing stock
  - Construction starts summer 2018



# Rock Sourced from Catalina and Ensenada



Decommissioning San Onofre Nuclear Generating Station Safety | Stewardship | Engagement



# Rock Placed in Proper Conditions



SCAR - January 14, 2009  
new reef, approx. 10 meters N of NW corner of Module 17  
(c) Richard Herrmann / SCE



# Conditions Allow Kelp to Thrive



46