

# Assembly Utilities and Commerce Committee

## Local Electric Reliability & Once-Through Cooling

**Robert Weisenmiller**  
Chair, California Energy Commission

**Steve Berberich**  
President & Chief Executive Officer, California Independent System Operator

**Jonathan Bishop**  
Chief Deputy Director, State Water Resources Control Board

June 17, 2013



California Energy Commission



California ISO  
Shaping a Renewed Future



State Water Resources  
Control Board



California Public Utilities  
Commission



## CEC statewide planning studies and ISO operational studies essentially agree

On a statewide and ISO system basis, supply is adequate to cover a broad range of conditions

Local reliability concerns have been focused on South Orange and San Diego counties because of the ongoing shutdown of the San Onofre Nuclear Generating System (SONGS) nuclear plant, the largest supplier of electricity in Southern CA.

On June 7, 2013, Southern California Edison announced that it has decided to permanently retire units 2 and 3.

## Status of Key Actions to Mitigate Local Reliability Concerns in Southern Orange County and San Diego for Summer 2013:

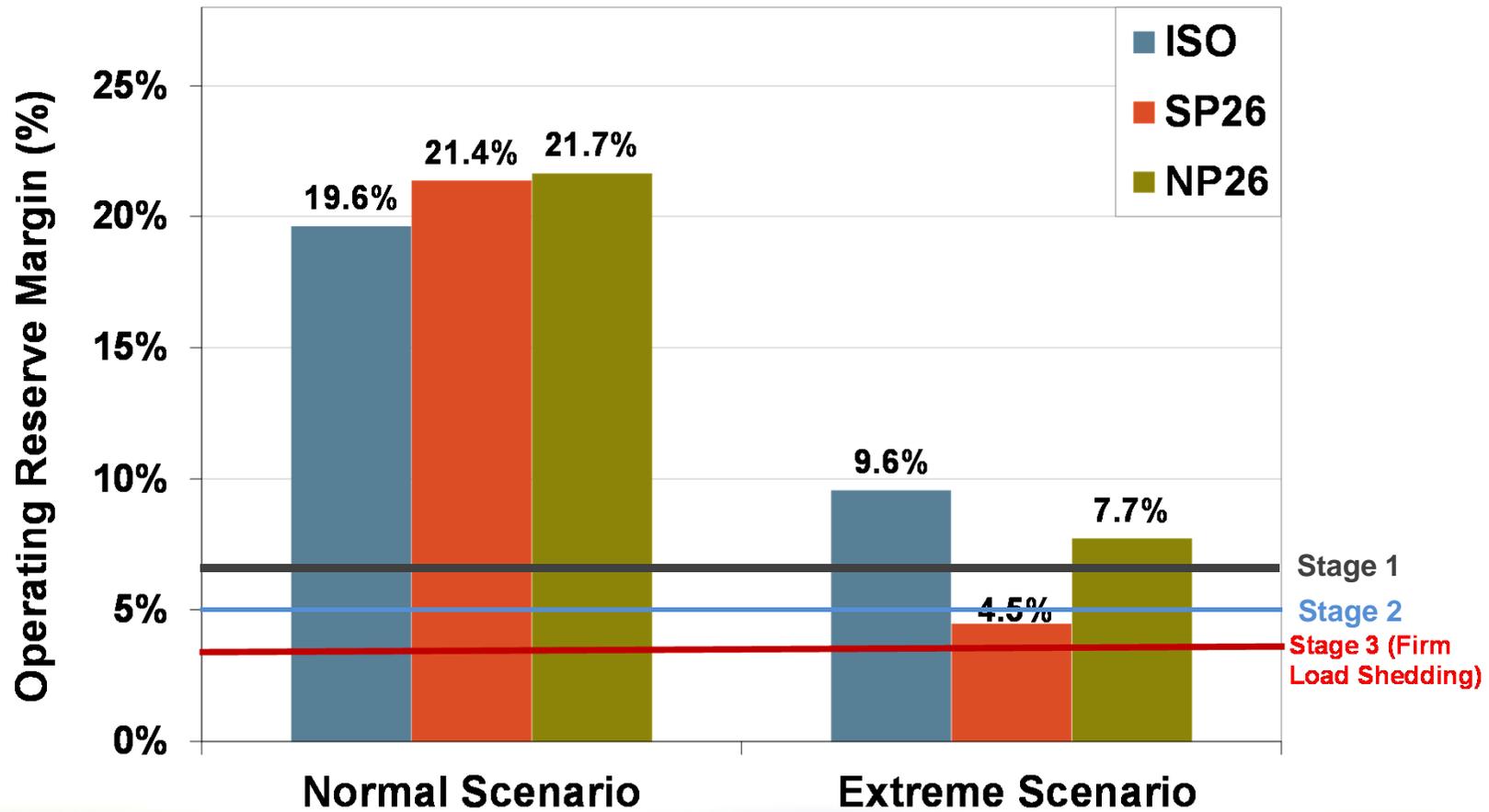
- Reconfigure Barre – Ellis 220 kV lines from existing two circuits to four circuits – completed and in service June 12, 2013
- Convert Huntington Beach units 3 & 4 into synchronous condensers – expected commercial completion by June 28, 2013
- 80 MVAR capacitors at Santiago and Johanna substation and 2x80 MVAR capacitors at Viejo – Installed and in service May 2013
- New resources South of Lugo: 1) El Segundo repower (564 MW) estimated fully available late June; 2) Sentinel (800 MW) fully available for use and 3) Walnut Creek (500 MW) fully available for use.
- Fully funded Flex Alerts
- Fully utilize available demand response
- Ensure that existing generation is well-maintained and available

# Once-Through Cooling (OTC) Policy

- Minimize Entrainment and Impingement
- Methods of Compliance
  - Retrofit with recycled wet cooling (Cooling Towers)
  - Meet equivalent reductions in Entrainment & Impingement
  - Repower without Once Through Cooling
  - Cease operations
- Implementation
  - Staggered Compliance dates over 18 years
  - Required submittal of plans by generators
  - Review of plans by energy agencies to ensure grid reliability
  - Annual report by energy agencies on compliance date changes to maintain grid reliability
  - OTC policy includes mechanisms to adjust compliance dates in emergencies

Normal scenario operating reserve margins are adequate, extreme scenario margins (1–10) are greater than 3% threshold

### ISO, SP26 and NP26 Operating Reserve Margins at 2013 Summer Peak



Updated: 5/30/13

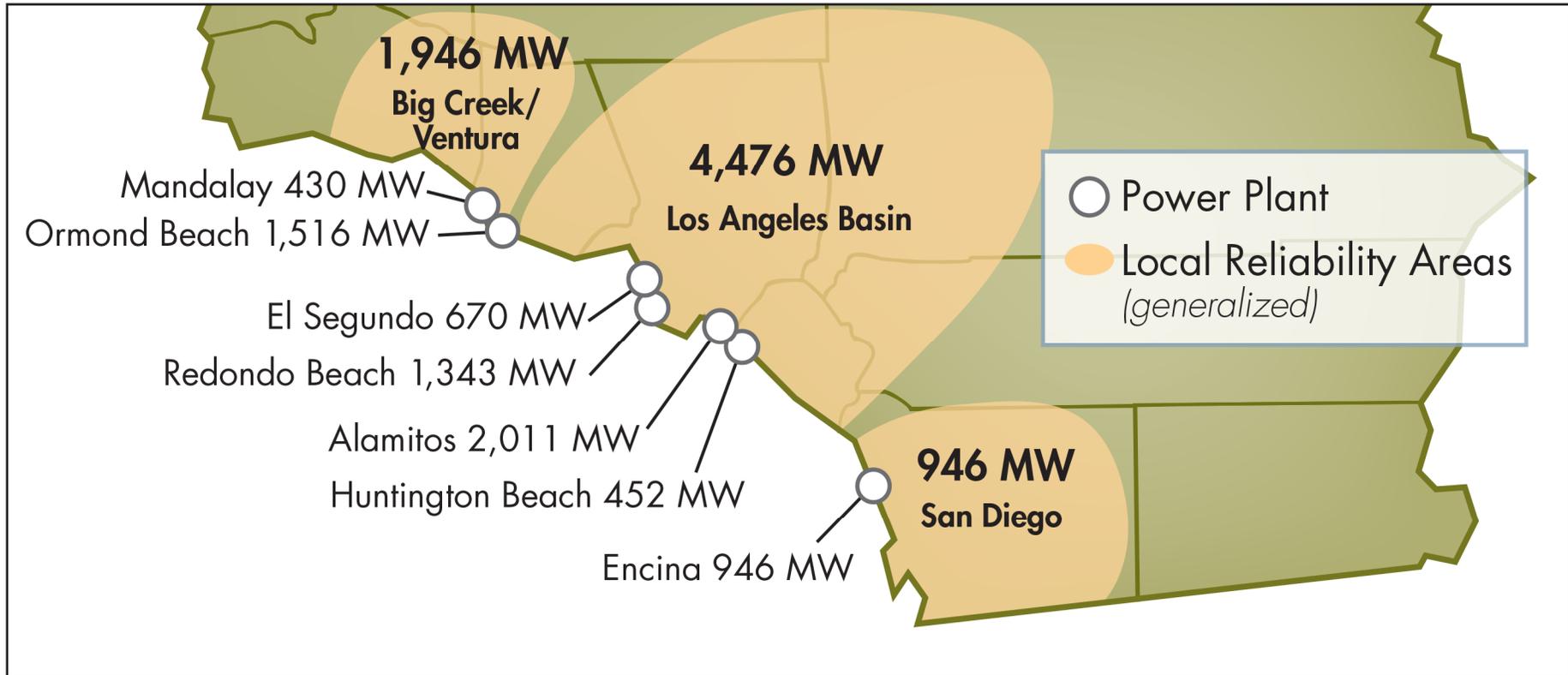
# List of OTC Generating Units in ISO BAA

Area	Generating Facility (Total Plant MW)	Unit	SWRCB Compliance Date	Existing Capacity (MW)	Compliance Status
Humboldt Local Capacity Area	Humboldt Bay (105 MW)	1	12/31/2010	Former 105 MW facility was repowered with 10 ICEs for total of 163 MW	Compliant – repowered plant
		2	12/31/2010		
Greater Bay Area Local Capacity Area	Contra Costa (674 MW)	6	12/31/2017	337	Compliant – Units retired and replaced by Marsh Landing power plant (760 MW) in April 2013
		7	12/31/2017	337	
	Pittsburg (1,311 MW**) **Unit 7 is non-OTC	5	12/31/2017	312	Owner proposes to utilize cooling tower of Unit 7 for Units 5 & 6 to comply.
		6	12/31/2017	317	
	Potrero (Retired)	3	10/1/2011	206	Retired
Central Coast (not a Local Capacity Area)	Moss Landing (2,530 MW)	1	12/31/2017	510	Owner believes units are in compliance until 2032.
		2	12/31/2017	510	
		6	12/31/2017	754	Owner proposes to retrofit plant to comply.
		7	12/31/2017	756	
	Morro Bay (650 MW)	3	12/31/2015	325	Owner may attempt to repower with two 50 MW, one 100MW or one 164 MW
		4	12/31/2015	325	
	Diablo Canyon (2,240 MW)	1	12/31/2024	1122	Compliance recommendation will come from Nuclear Review Committee in October 2013.
		2	12/31/2024	1118	
Big Creek-Ventura Local Capacity Area	Mandalay (430 OTC plus 130 MW non-OTC)	1	12/31/2020	215	Owner has proposed to retrofit plant to comply.
		2	12/31/2020	215	
	Ormond Beach (1,516 MW)	1	12/31/2020	741	Owner has proposed to retrofit plant to comply.
		2	12/31/2020	775	

# List of OTC Generating Units in ISO BAA (cont'd)

Area	Generating Facility (Total Plant MW)	Unit	SWRCB Compliance Date	Existing Capacity (MW)	Compliance Status
LA Basin Local Capacity Area	El Segundo (670 MW)	3	12/31/2015	335	CEC approved with an approved PPA; Replaces Units 1-3 with 560 MW; under construction (current COD of June 2013) Owner plans to repower.
		4	12/31/2015	335	
	Alamitos (2,011 MW)	1	12/31/2020	175	Owner plans to repower in stages: 2021 – 1,056 MW 2023 – 528 MW 2026 – 528 MW Have not filed yet with CEC nor is there an approved PPA
		2	12/31/2020	175	
		3	12/31/2020	332	
		4	12/31/2020	336	
		5	12/31/2020	498	
		6	12/31/2020	495	
	Huntington Beach (452 MW)	1	12/31/2020	226	Units 3 & 4 have been converted to synchronous condensers Owner plans to repower Units 1-4: 2018 – 470 MW 2021 – 469 MW Application filed at CEC and under review; Does not have an approved PPA
		2	12/31/2020	226	
		3	12/31/2020	225 (Retired)	
		4	12/31/2020	227 (Retired)	
	Redondo Beach (1,343 MW)	5	12/31/2020	179	Owner plans to repower: 2021 – 528 MW Application filed at CEC and data adequacy is under review; Does not have an approved PPA
		6	12/31/2020	175	
		7	12/31/2020	493	
		8	12/31/2020	496	
San Onofre (2,246 MW)	2	12/31/2022	1122	Retired 6/7/13	
	3	12/31/2022	1124		
San Diego Local Capacity Area	Encina (946 MW)	1	12/31/2017	106	Carlsbad is the proposed repower of Units 1-5 with 560 MW. CEC has approved the license; does not have a PPA
		2	12/31/2017	103	
		3	12/31/2017	109	
		4	12/31/2017	299	
		5	12/31/2017	329	
	South Bay	1-4	12/31/2011	692	Retired in 2010

# Southern California OTC

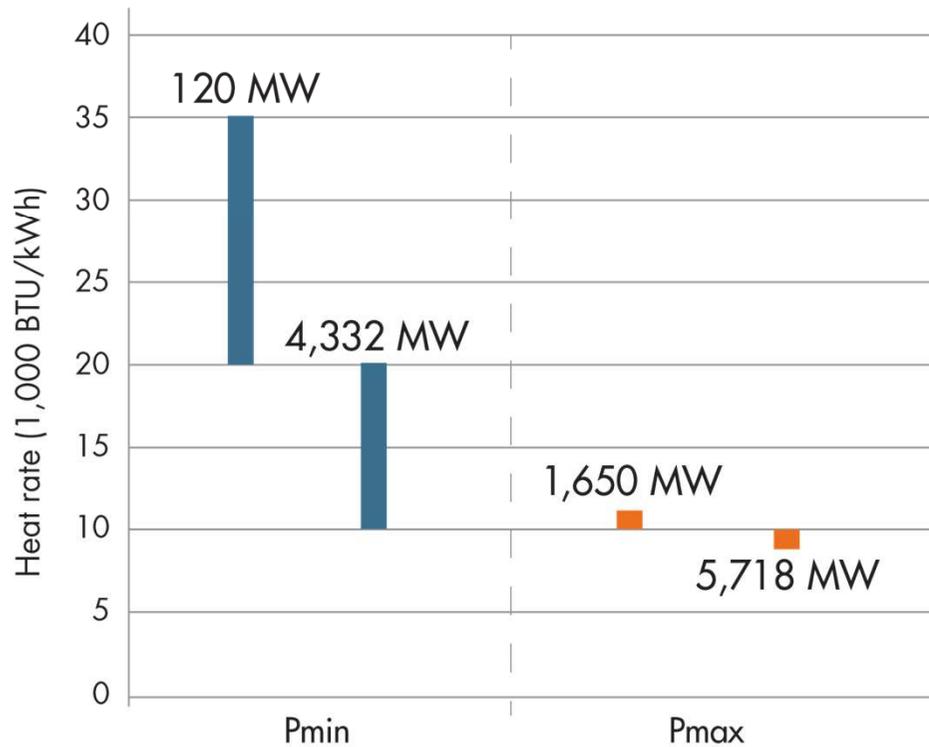


**Caveat**

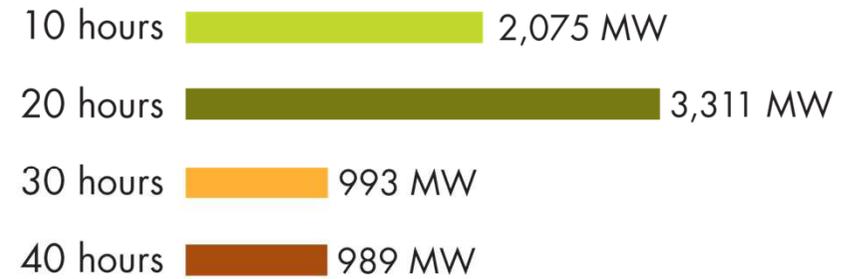
Map does not reflect 2,200 MW of OTC capacity in LADWP's balancing authority area.

# Southern CA OTC Gas-Fired Generator Characteristics

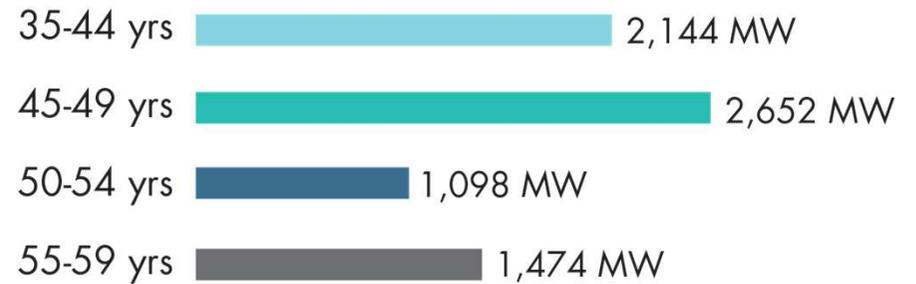
## Heat rates



## Start up times



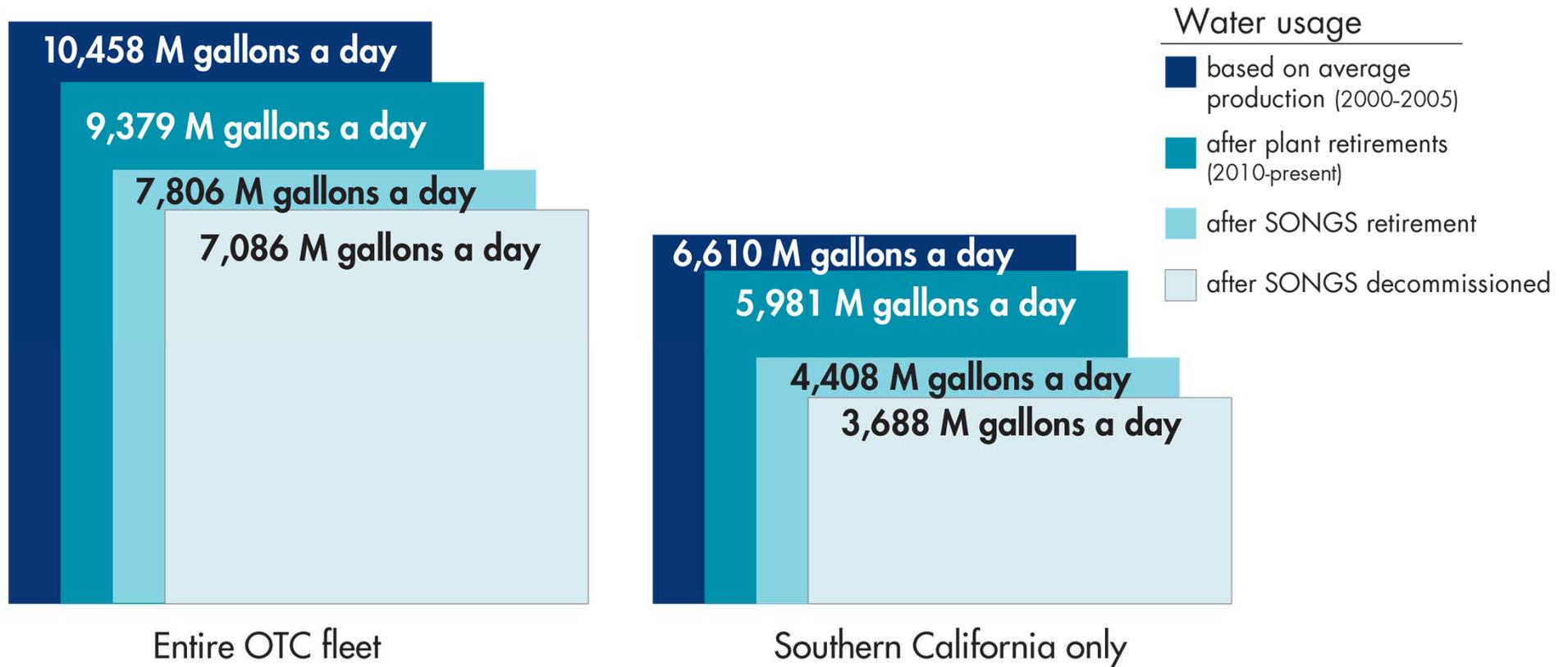
## Age



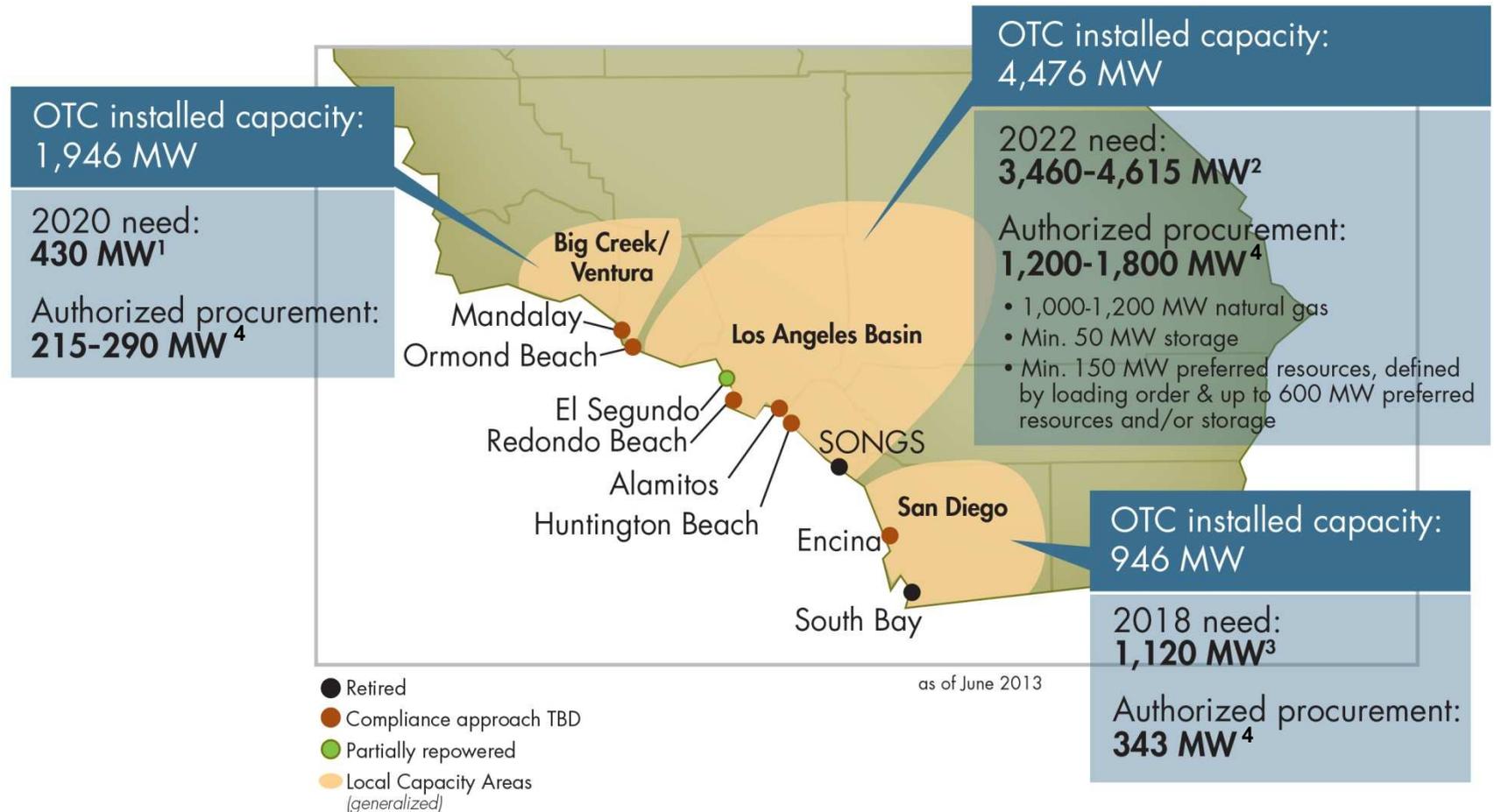
2012 Annual Capacity Factors: 1-27% (Average 9%)

2012 Summer (June – September) Capacity Factors: 1-40% (Average 12%)

# OTC Water Usage Reduction – System & Southern CA 2010 - 2013



# OTC retirements and SONGS closure create local capacity shortfalls.



<sup>1</sup> ISO 2011-2012 Transmission Plan – Table 3.3-1

<sup>2,3</sup> ISO 2012-2013 Transmission Plan – Section 3.5, Nuclear Generation Backup Plan Studies

For LA Basin, low need is preliminary result of sensitivity studies requested by CARB for AB1318 report – includes incremental uncommitted EE, DR and CHP.

<sup>4</sup>Authorized procurement was based upon analyses that included SONGS online through 2022. The ISO and the CPUC are currently developing new scenarios that exclude SONGS.

# Potential Additions Replacing OTC Retirements

## CEC Power Plant Permitting: OTC Replacement Facilities

Name	New Capacity	Associated OTC Facility	Retired Capacity	New Plant Location	Status
<b>CEC-Approved OTC Replacements</b>					
Humboldt	163	Humboldt 1-2	105	North Coast	operational 10/1/2010
Marsh Landing	760	Contra Costa 6-7	674	Bay Area	Operational 5/1/2013
<b>CEC-Approved Projects Available</b>					
El Segundo Repower	560	replaces ES 1-3	335	W LA Basin	Expected COD 8/1/2013; has PPA
Carlsbad	560	Encina 1-5	946	NW San Diego	CEC permit issued May 2012; no PPA
Pio Pico	300	none	--	SW San Diego	CEC permit issued Sept 2012; no PPA
<b>Projects under CEC Review</b>					
Quail Brush	100	none	--	W San Diego	applicant requested 1-year license suspension; no PPA
Huntington Beach Repower	939	replaces HB 1-4	904	W LA Basin	under review; no PPA
Redondo Beach Repower	496	replaces RB 5-8	1343	W LA Basin	data adequacy being reviewed; no PPA
El Segundo 4 Repower	435	replaces ES 4	335	W LA Basin	Petition to Amend accepted 6/12/2013; no PPA
<b>Expected Projects</b>					
Alamitos Repower	2000	replaces AL 1-6	2001	W LA Basin	AFC expected December 2013; no PPA



## Next Steps

- State energy and environmental agencies and the ISO are working together at the Governor's direction to identify options for meeting reliability needs including preferred resources, transmission system upgrades and conventional generation
- Additional technical work should be ready for public release in about 90 days, with regulatory deliberations to follow
- Additional CEQA/Permitting and contract approval will be needed for most projects