

DOCKETED

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Statewide Advisory Committee on Cooling Water Intake Structures

**2017 IEPR Joint Agency Workshop on
Energy Reliability in Southern California**

Diamond Bar, CA May 22, 2017

Rob Oglesby
Executive Director



Overview

- Southern California faces a unique set of challenges that impact reliability
 - Unexpected retirement of the San Onofre Nuclear Generating Station (San Onofre)
 - Unexpected major leak at Aliso Canyon Natural Gas Storage Field
 - Compliance with State Water Resource Control Board's (SWRCB) policy on once-through-cooling

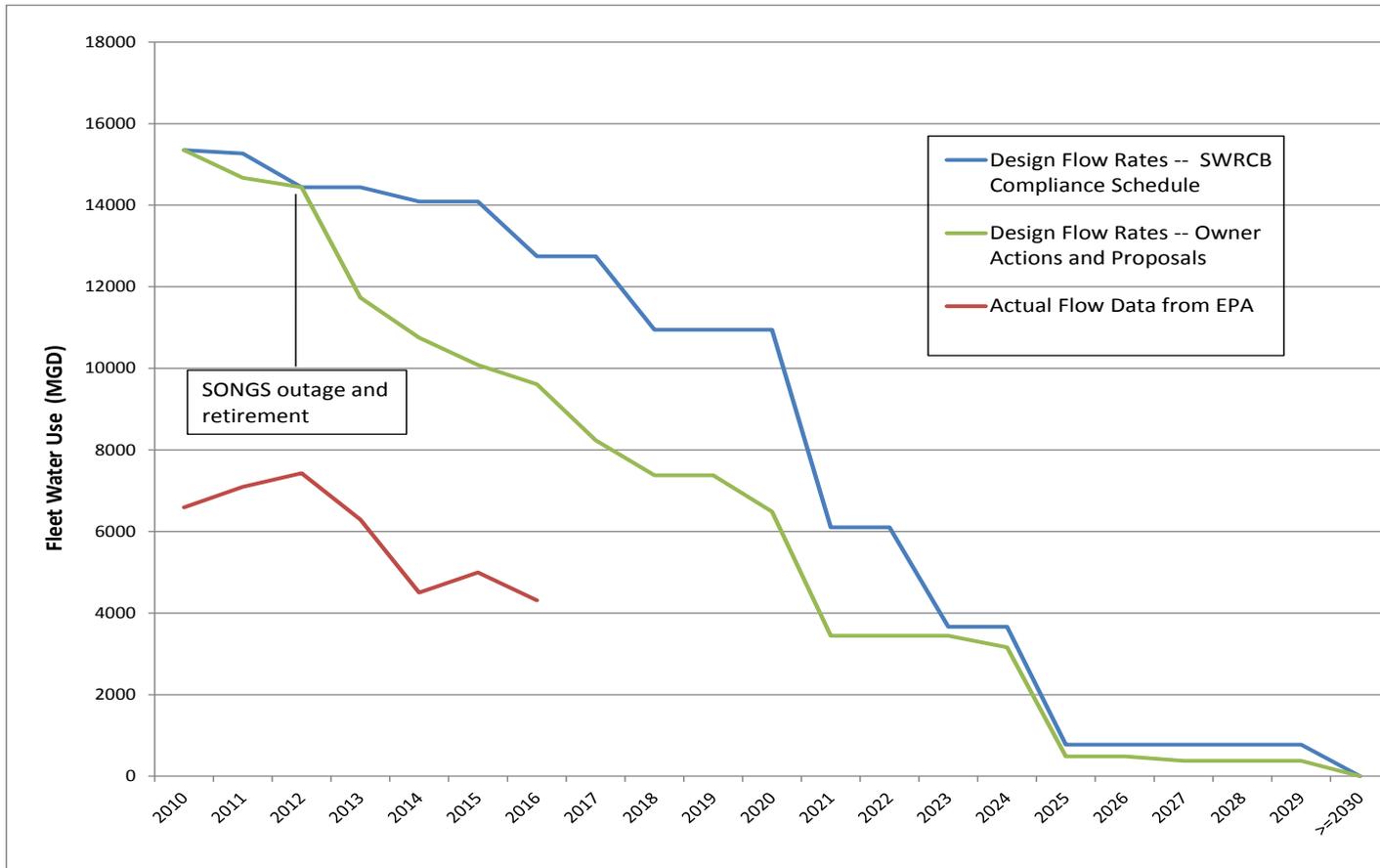


Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS)

- OTC policy established SACCWIS
- SACCWIS considers OTC compliance date, owners' implementation plans, and grid reliability
- SACCWIS annual review of adopted OTC facility compliance dates for infrastructure realities



Historic and Projected Water Usage Combined OTC Fleet





OTC Power Plants in Southern California

SWRCB Compliance Dates

----- **operating** -----

Alamitos (2020)

Huntington Bch 1-2 (2020)

Redondo Beach (2020)

Encina (2017)

----- **retired** -----

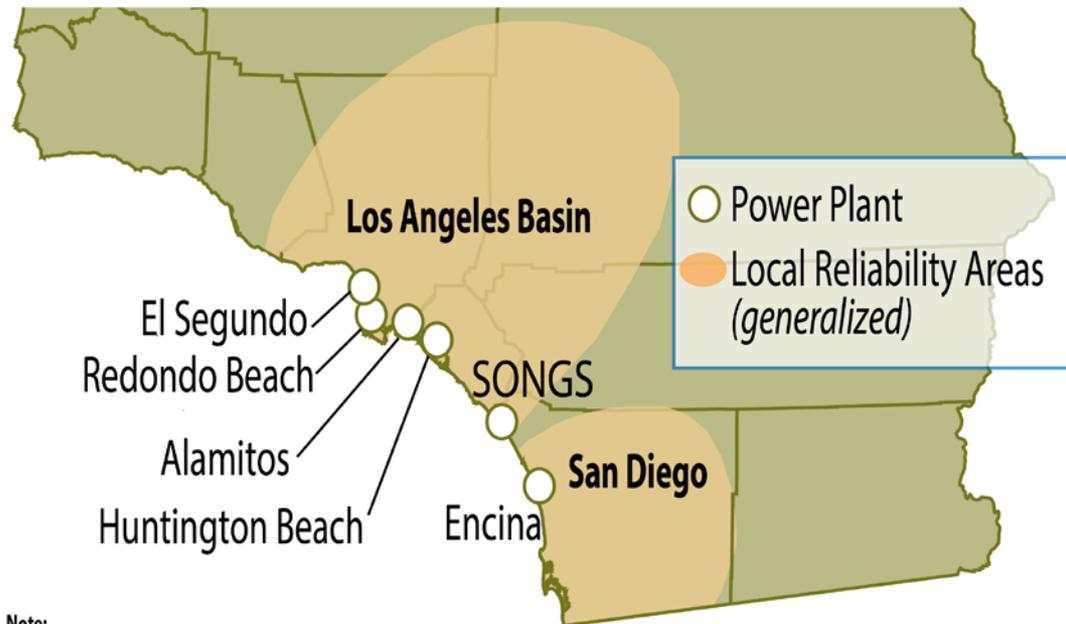
El Segundo 3 (2013)

El Segundo 4 (2015)

Huntington Bch 3-4 (2012)

San Onofre (2013)

South Bay (2010)



Note:

Map does not reflect 2,895 MW of OTC capacity in LADWP's balancing authority area.



Planned Resources to Replace San Onofre and Implement OTC

- Preferred resources
 - Energy efficiency
 - Demand response
 - Distributed generation
 - Storage
- Transmission solutions
 - Reactive support (e.g., synchronous generators)
 - Transmission lines and grid upgrades
- Conventional generation



OTC Retirements/Replacements

Facility	Capacity (MW)	SWRCB Compliance Date	Replacement Capacity	Online Date
Alamitos	2010	12/31/2020	640	6/1/2020
Huntington Beach	452	12/31/2020	644	5/1/2020
Redondo Beach	1356	12/31/2020	-	-
Stanton	98	N/A not OTC	-	7/1/2020
Encina	965	12/31/2017	500	Q4 2018



SACCWIS Watch List

- Alamitos, Huntington Beach, Encina/Carlsbad on the watch list
 - Replacement projects need to be online before these plants can retire
- No recommendations for an OTC compliance date change until now
- Recommending OTC compliance date change for Encina



Regulatory Background

- May 2015 – CPUC approved SDG&E procurement of 500 MW conventional generation and 100 MW preferred resources in Decision D.15-05-051
- July 2015 - CPUC approved SDG&E Power Purchase Tolling Agreement with NRG for 500 MW Carlsbad Energy Center Project (CECP)
- July 2015 - CEC approved amended license for 600 MW CECP (original permit May 2012 for 558 MW plant)
- November 2015 – CEC issued order on rehearing affirming decision approving the amendment. No party appealed the CEC’s decision.



Legal Challenges

- December 2015 – Intervenors filed Applications for Rehearing with the California Court of Appeal appealing the CPUC's decision
- December 2016 – First District Court of Appeals affirms CPUC decision
- January 9, 2017 – Deadline for CA Supreme Court review – no request received



Encina OTC Deferral Request

- ISO reliability analysis shows need for capacity at Encina site in summer 2018
- March 21, 2017, SACCWIS report presented to SWRCB recommending deferral of Encina OTC compliance date from *12/31/2017* to *12/31/2018* for units 2-5



Summary

- ISO, CEC, and CPUC continue to monitor developments of conventional generation, preferred resources, and transmission upgrades
 - In case of potential delays, staff is evaluating timelines necessary to initiate a contingency, which could be procuring new resources or deferring existing OTC deadlines.



California Energy Commission

Local Capacity Annual Assessment Tool

**2017 IEPR Joint Agency Workshop on
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Diamond Bar, CA May 22, 2017

Lana Wong
Energy Assessments Division

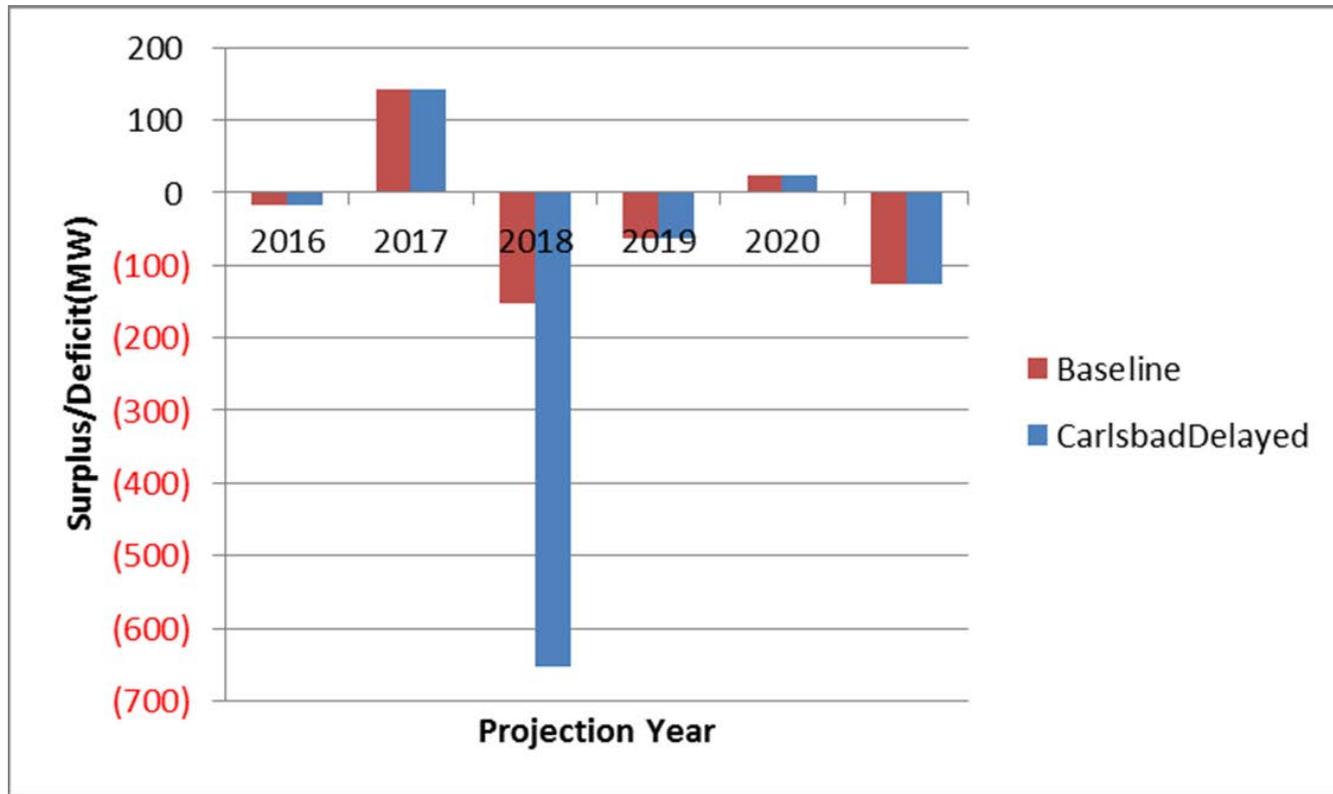


Local Capacity Annual Assessment Tool (LCAAT)

- Develop annual projections of resources versus local capacity requirements for Southern California
- Provide an analytic basis for understanding the timing and nature of a shortfall in any local capacity area and/or subarea in Southern California
- Issues surfaced by LCAAT, confirmed by a power flow study, could lead to a recommendation to trigger mitigation measures or other actions



Illustrative Example: One Year Delay of Carlsbad in SD Subarea





California Energy Commission

Energy Commission Review of Southern California Electricity Reliability Additions and Replacements

2017 IEPR Joint Agency Workshop on Energy Reliability in Southern California

Diamond Bar, CA May 22, 2017

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Pio Pico Energy Center

Apex Power Group

- San Diego Co. (Otay Mesa)
- Greenfield site
- 300 MW simple cycles

Energy Commission Process

- Final Decision 9/12/2012
- Construction started 2/2015
- Units 1-3 Commissioned Q4 2016





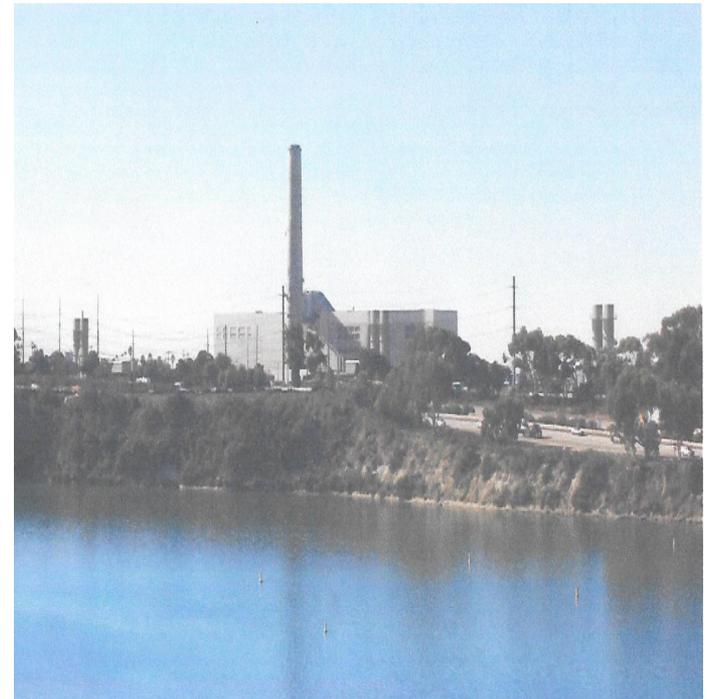
NRG Carlsbad Energy Center Project

Encina Power Station OTC
boiler Units 1-5 replacement

- City of Carlsbad
- Current OTC date - 12/31/2017

Energy Commission Process

- 632 MW LMS100 simple cycles
- Final Decision 7/2015
- Under construction
- Tentative online - Oct 2018
- PPA – Yes (500 MW)





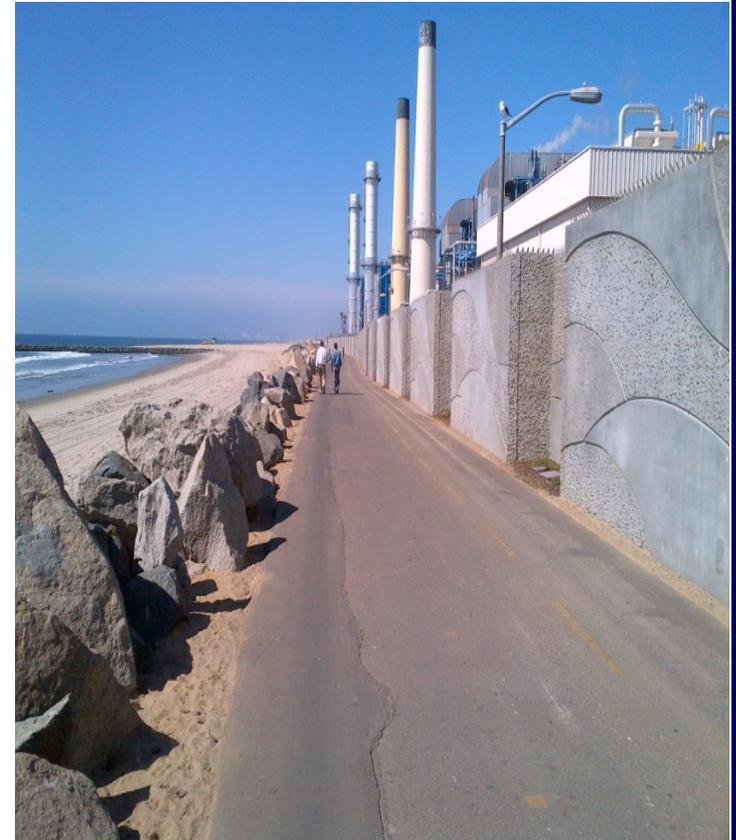
NRG El Segundo Energy Center

El Segundo Generating Station
OTC boiler Units 3-4 replacement

- OTC compliance dates 12/2013 and 12/2015

Energy Commission Process

- 449 MW 1x1 fast-start CTCC w / ACC
- 110 MW Trent 60 simple cycles
- PPA – No
- Petition withdrawn and Proceeding terminated





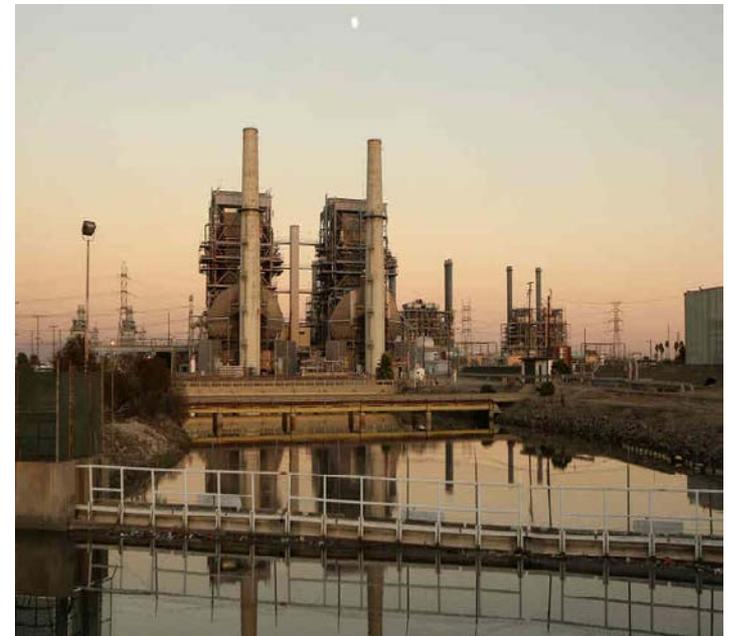
AES Alamitos

Alamitos Generating Station OTC boiler Units 1-6 replacement

- City of Long Beach
- OTC compliance date 12/31/2020

Energy Commission Process

- 640 MW 2x1 CTCC w / ACC
- 400 MW LMS100 simple cycles
- In preconstruction
- Tentative online Jun 2020
- PPA – Yes (640 MW CTCC only)





AES Huntington Beach

Huntington Beach Generating Station OTC boiler Units 1-4 replacement

- City of Huntington Beach
- OTC compliance date 12/31/2020

Energy Commission Process

- 644 MW 2x1 CTCC w / ACC
- 200 MW LMS100 simple cycles
- In preconstruction – tentative online June 2020
- PPA - Yes (644 MW)





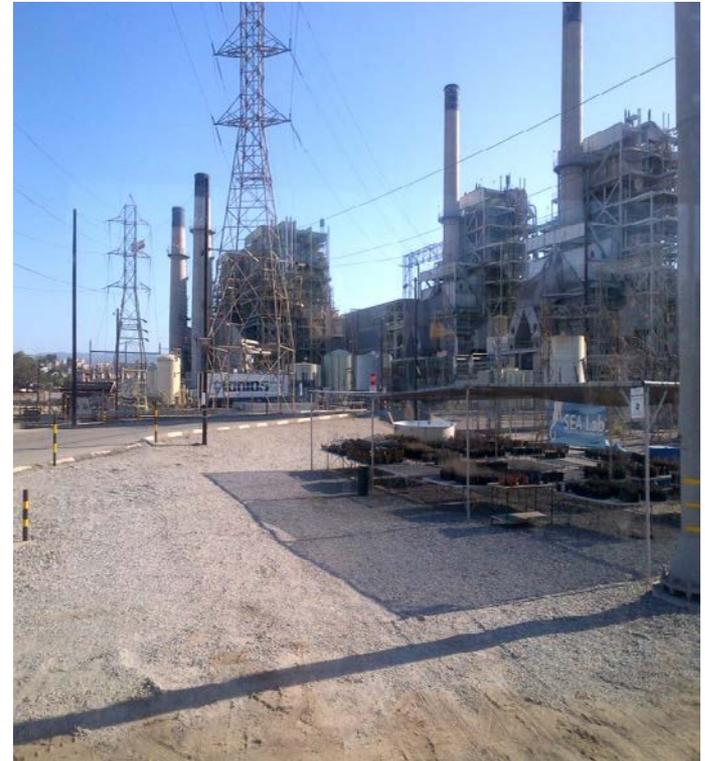
AES Redondo Beach

Redondo Beach Generating Station
OTC boiler Units 5-8 replacement

- City of Redondo Beach
- OTC compliance date 12/31/2020

Energy Commission Process

- 496 MW 3x1 CTCC w / ACC
- Proceedings are suspended



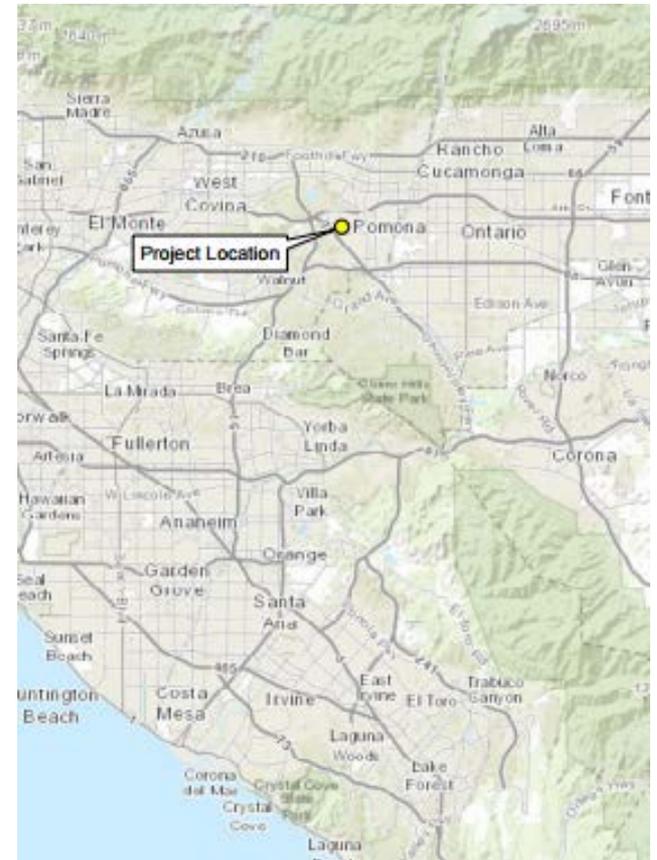
Pomona Repower Project

AltaGas

- City of Pomona
- Brownfield site
- replacing an LM5000 w / a
- 100 MW LMS100 simple cycle

Energy Commission Process

- Small Power Plant Exemption proceeding ($\geq 50\text{MW}$, $\leq 100\text{MW}$)
- In Discovery
- Tentative Decision - unknown
- PPA - No





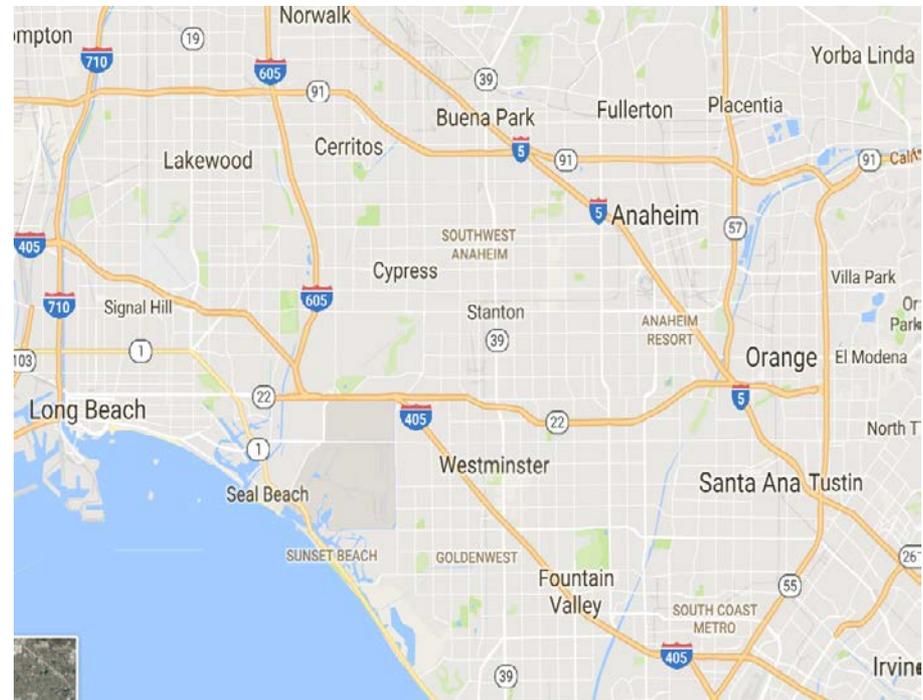
Stanton Reliability Energy Center

Wellhead/W-Power

- 98 MW (2 LM6000) w / Integrated battery
- Greenfield / commercial site
- City of Stanton

Energy Commission Process

- In Discovery
- Tentative Decision - Q3 2018
- PPA - Yes





NRG Puente Power Plant

Mandalay Generating Station

OTC boiler Units 1-2 replacement

- City of Oxnard
- OTC compliance date 12/31/2020

Energy Commission Process

- 262 MW GE 7HA simple cycle
- In Evidentiary Hearings
- Tentative Decision - Q4 2017
- PPA - Yes





Mission Rock Energy Center

- Calpine
- Ventura County, near Santa Paula
- Greenfield / industrial site
- 275 MW LM6000 simple cycles
- Clutch and synchronous condenser controls for each CTG
- 25 MW /100 MWh battery system
- Energy Commission Process
- In Discovery – tentative Decision Q1 2018
- PPA - No





Acronyms

ACC - air cooled condenser (“dry cooling”)

AFC - application for certification

COD – commercial operation date

OTC - once through cooling

CTCC - combustion turbine combined cycle

CTG - combustion turbine generator

GE - General Electric

MW - megawatt

PPA - power purchase agreement