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California Energy Commission

Energy Commission Review of Southern California Electricity Reliability Additions and Replacements

2016 Integrated Energy Policy Report Workshop
Southern California Reliability Issues Related to the Closure of San
Onofre Nuclear Generation Station and the Phase-Out of Once
Through Cooling Technologies

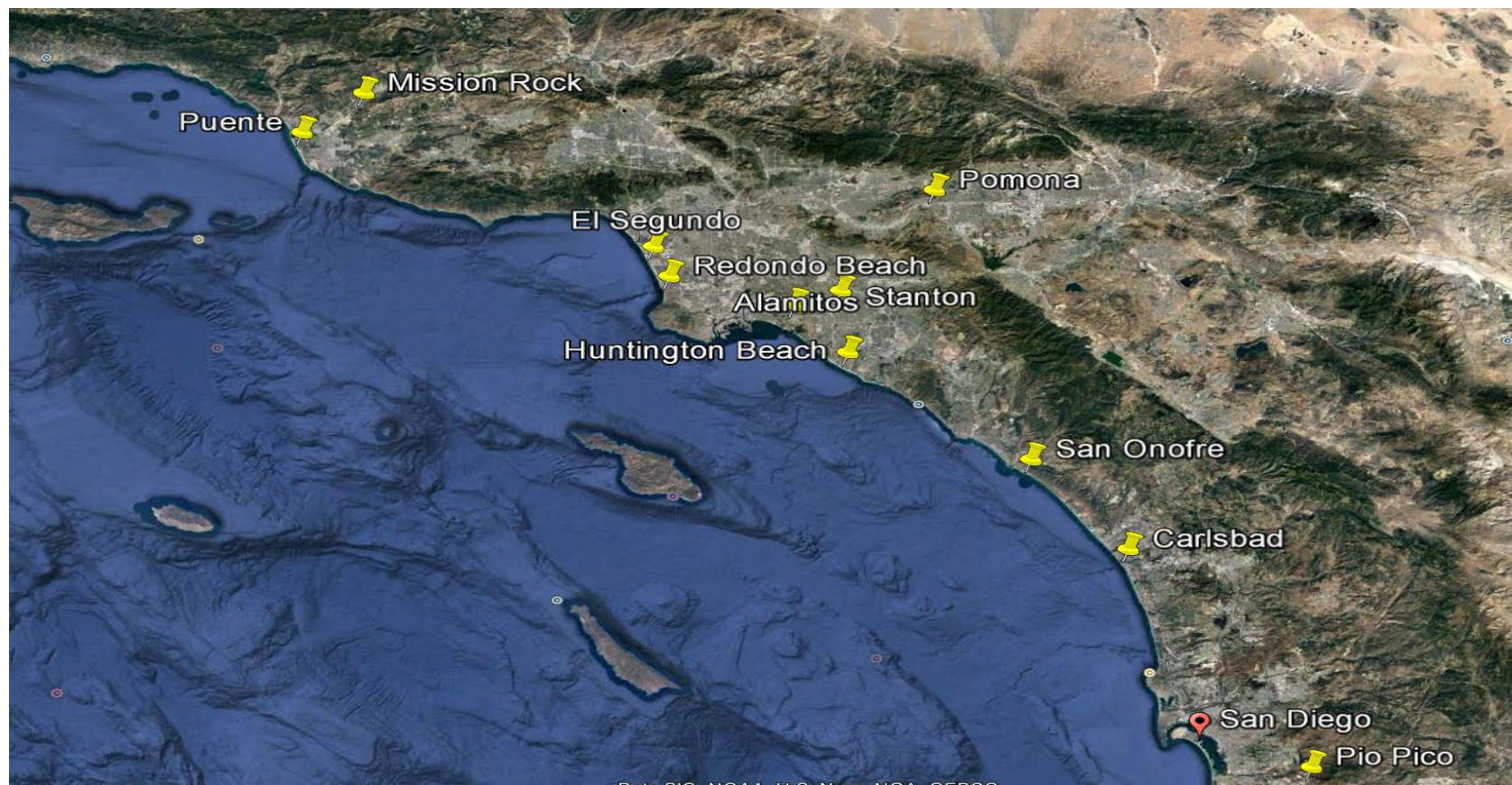
Sacramento, CA August 29, 2016

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Southern California Electricity Reliability Additions and Replacements





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
- COD expected 9/2016
- PPA - Yes





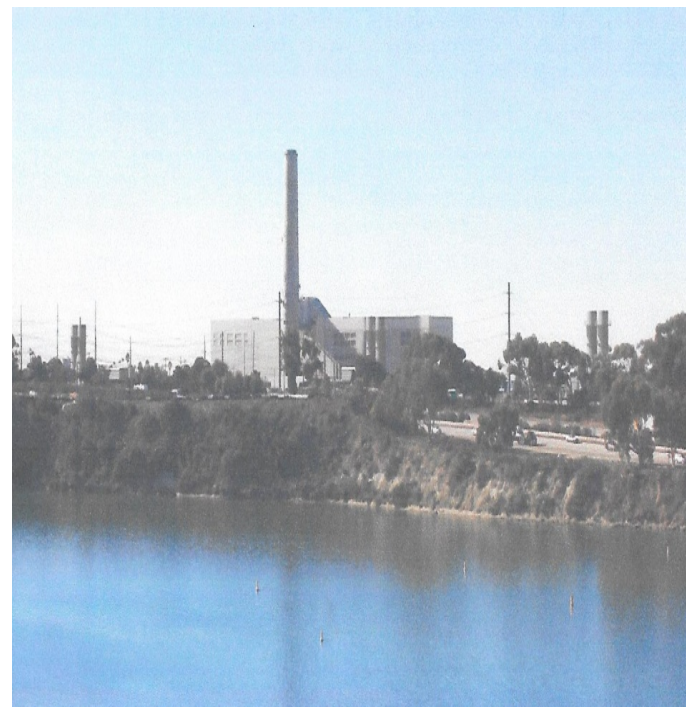
NRG Carlsbad Energy Center Project

Encina Power Station OTC
boiler Units 1-5 replacement

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

Energy Commission Process

- Petition to Amend filed 4/23/2013
- 632 MW LMS100 simple cycles
- Final Decision 7/2015
- tank demolition / site prep
underway; construction Oct 2016
- PPA – Yes (500 MW)





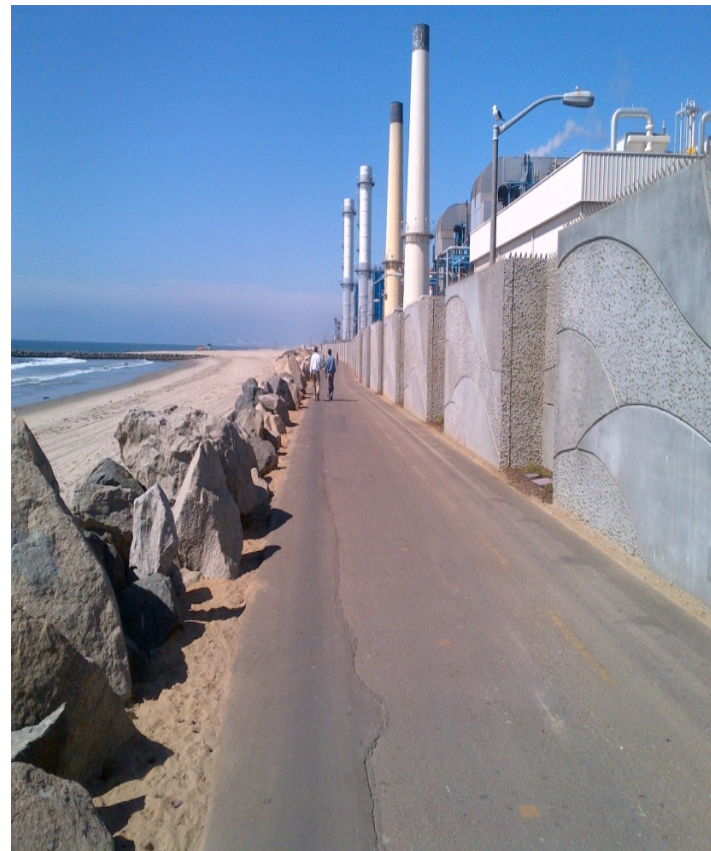
NRG El Segundo Energy Center

El Segundo Generating Station
boiler Units 1-2 replacement

- City of El Segundo
- OTC compliance date 12/31/2015

Energy Commission Process

- 560 MW two 1x1 Flex-Plant CTCC
w / ACC
- On-line 8/2013
- PPA - Yes





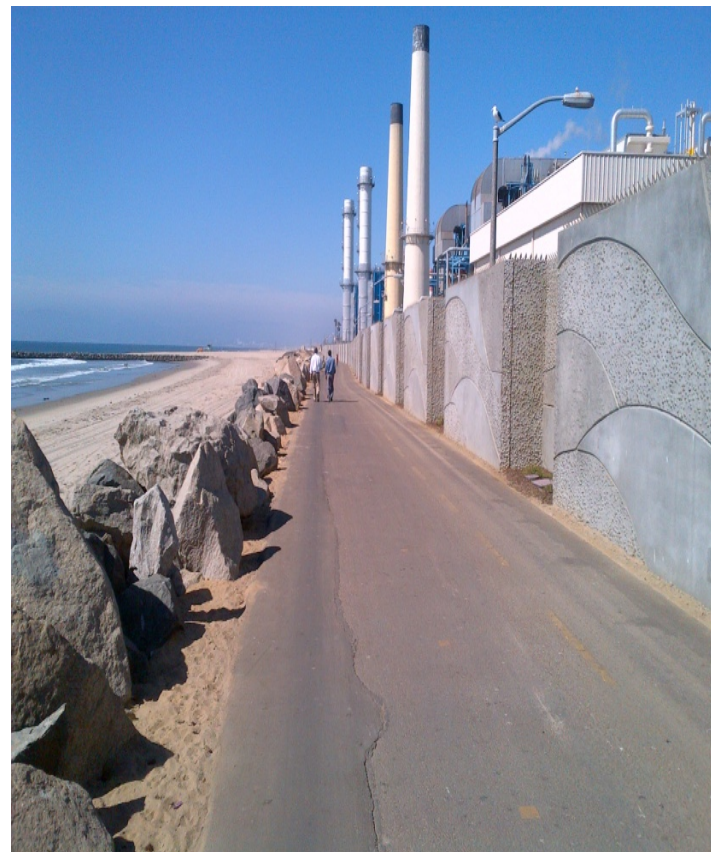
NRG El Segundo Energy Center

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





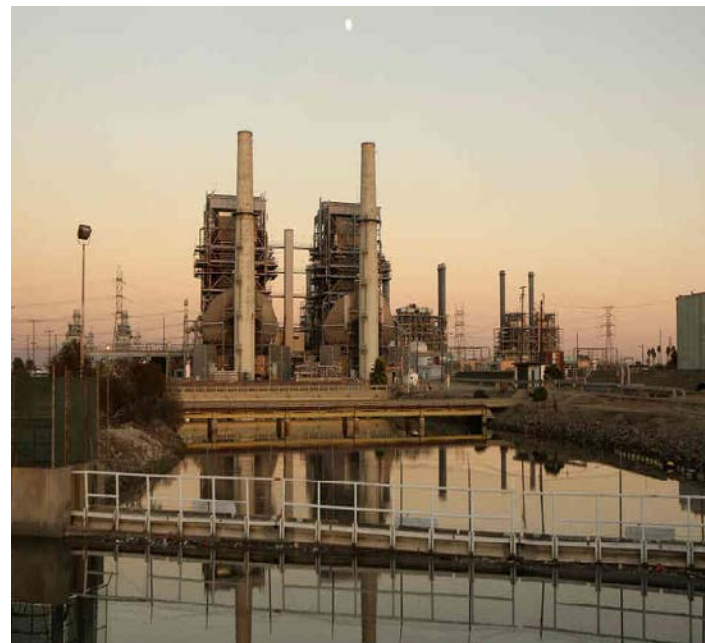
AES Alamitos

Alamitos Generating Station OTC
boiler Units 1-6 replacement

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

Energy Commission Process

- AFC supplement filed 10/2015
 - 640 MW 2x1 CTCC w / ACC
 - 400 MW LMS100 simple cycles
- Decision expected 12/2016
- 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

- Petition to Amend filed 9/2015
 - 644 MW 2x1 CTCC w / ACC
 - 200 MW LMS100 simple cycles
 - Decision expected 12/2016
- 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
- City and AES in negotiations
- PPA - No





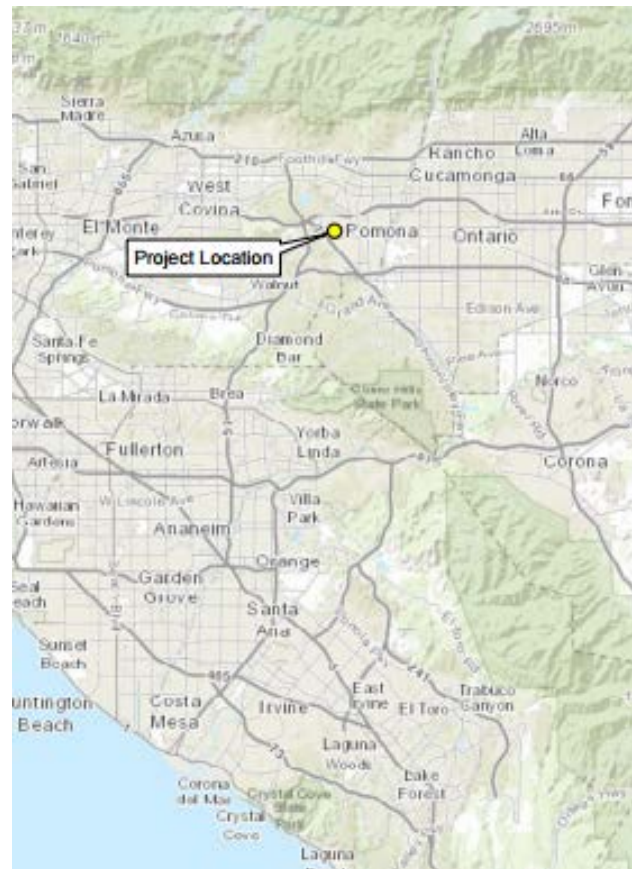
Pomona Repower Project

AltaGas

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

Energy Commission Process

- Small Power Plant Exemption proceeding ($\geq 50\text{MW}$, $\leq 100\text{MW}$)
- Filed 3/22/2016
- PPA - No





California Energy Commission

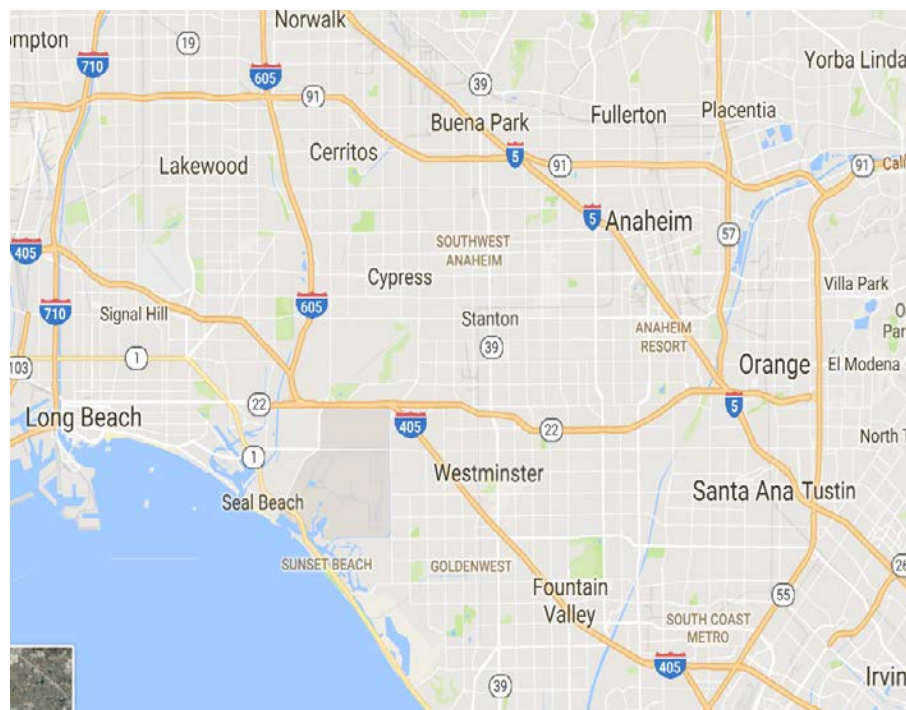
Stanton Reliability Energy Center

Wellhead/W-Power

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

Energy Commission Process

- AFC 10/2016
- 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
- Information Hearing 8/27/2015
- Final Decision expected 4/2017
- 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

- Information Hearing 7/26/2016
- 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



Southern California Electricity Reliability Additions and Replacements

Questions or comments?