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<td>Description:</td>
<td>The reliability of the LA Basin and San Diego was impacted by the SONGS closure, the scheduled retirement of once-through cooled resources, and gas supply concerns, necessitating mitigations. Presentation by Neil Millar, California Independent System Operator</td>
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<td>Filer:</td>
<td>Raquel Kravitz</td>
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2019 IEPR Update Joint Agency Workshop on Energy Reliability in Southern California

South Coast Air Quality Management District
Diamond Bar, CA
May 23, 2019

Neil Millar
Executive Director, Infrastructure Development
The reliability of the LA Basin and San Diego was impacted by the SONGS closure, the scheduled retirement of once-through cooled resources, and gas supply concerns, necessitating mitigations.

Remaining Installed OTC capacity: 3,690 MW

Voltage stability and thermal loading concerns
Less than half of the gas-fired generation retiring in the LA Basin / San Diego area is being replaced with new gas generation – despite retirement of 2246 MW of SONGS baseload generation.

* The 2018 IEPR forecast for SCE and San Diego areas already rely on approximately 2275 MW of additional achievable energy efficiency (AAEE) and AAPV by 2029 timeframe.

- Walnut Creek: 500 MW
- El Segundo Energy Center: 550 MW
- Western LA Basin - PPA-approved: 1382 MW
- Track 1 SDG&E (Pio Pico/Escondido): 308 MW
- Carlsbad Energy Center: 500 MW
- **Total**: 3240 MW

**Gas Retirements (2011-2022)**
- Encina: 946 MW
- El Segundo #3: 335 MW
- El Segundo #4: 335 MW
- Alamitos: 2011 MW
- Huntington Beach: 904 MW
- Redondo: 1342 MW
- Etiwanda: 640 MW
- Long Beach (long-term assumption): 260 MW
- Cabrillo Power II: 188 MW
- Inland Empire Unit #1 (mothballed): 335 MW
- **Total**: 7296 MW

**Nuclear Retirement (2013)**
- San Onofre Generating Station: 2246 MW
A number of resource and transmission projects have been completed and several remain underway.

- **Resource procurement:**
  - LA Basin: 1,813 MW (energy efficiency, behind-the-meter PV, energy storage, demand response, conventional resources); these are resources that were approved by the CPUC as part of LCR need for the western LA Basin.
  - San Diego: 800 MW (conventional resources); SDG&E also received approval for 88 MW of battery energy storage system and demand response (D.18-05-024).

- **Dynamic Reactive Support – synchronous condensers**
  - Talega, Miguel, San Luis Rey, San Onofre and Santiago – in service
  - Interim use of Huntington Beach units 3 & 4 synchronous condensers ended December 2017

- **Other transmission projects**
  - Imperial Valley phase-shifting transformer – in service
  - Sycamore-Penasquitos 230 kV transmission line – in service
  - Mesa 500 kV Loop-in – March 2022 (too late for summer 2021)
  - S-Line upgrade targeting 2021 to reduce local capacity requirements for the overall San Diego-Imperial Valley area - December 2021 (too late for summer 2021)
The mitigations under way address a number of remaining system concerns.
Overall, delays to mitigation plans have been successfully managed, with one remaining timing concern at this time.

- **Carlsbad Energy Center - Resolved**
  - The in-service date of the Carlsbad Energy Center was delayed due to prior legal challenges beyond the summer of 2018
  - The compliance date for Encina Units 2 – 5 were deferred until December 31, 2018 to maintain grid reliability
  - The Encina units were procured through the ISO’s annual CPM process, and subsequently retired following the completion of the Carlsbad Energy Center

- **Sycamore – Penasquitos 230 kV Line Project - Resolved**
  - Received CPUC approval for permit to construct in October 2016
  - Operational plans were put in place to manage the project’s in-service date shifting beyond June 1; the line was energized August 29, 2018 and is now in service

- **Mesa 500 kV Loop-In Project – Active Concern**
  - Received CPUC approval for permit to construct in February 2017
  - However, the risk adjusted schedule in-service date has moved from June 2021 to March 2022 – the schedule and phasing are being examined and reviewed for the possibility of advancing to an earlier in-service date
  - If delayed beyond Q2 2021, Alamitos generation OTC compliance dates of December 31, 2020 may need to be extended until the Mesa Loop-in project is placed in service. Study results for the summer of 2021 to determine the need for OTC extension will be available early this summer.
The latest load forecast shows a decrease in the SCE service area from the previous forecast; this may provide some relief to the challenges brought on by the Mesa loop-in delay; studies for the summer of 2021 are under way.

![SCE TAC Area](image)

- 2020 local capacity technical study
- Additional study focusing on summer of 2021 due to Mesa Loop-in delay
Peak shifts to later hours are reducing the capacity benefits of grid-connected solar in San Diego/Imperial Valley area, significantly offsetting impacts of other gains.
The downward trend for capacity benefits of grid connected solar in the area is expected to continue into the future; this presents further challenges with forecasted load growth and may require further mitigation measures.

Due to behind-the-meter solar
Next Steps

• The ISO is continuing to coordinate with utilities and state agencies to monitor the situation regarding:
  – Timing of the Mesa Loop-in project
  – Assessing the growing impacts under “net load” (managed load) conditions and continued reliance on natural gas generation fleet

• Note that impacts of restrictions on Aliso Canyon utilization and other restrictions on the natural gas system are addressed in a separate presentation.