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Description:	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
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California ISO

2019 IEPR Update Joint Agency Workshop on Energy Reliability in Southern California

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

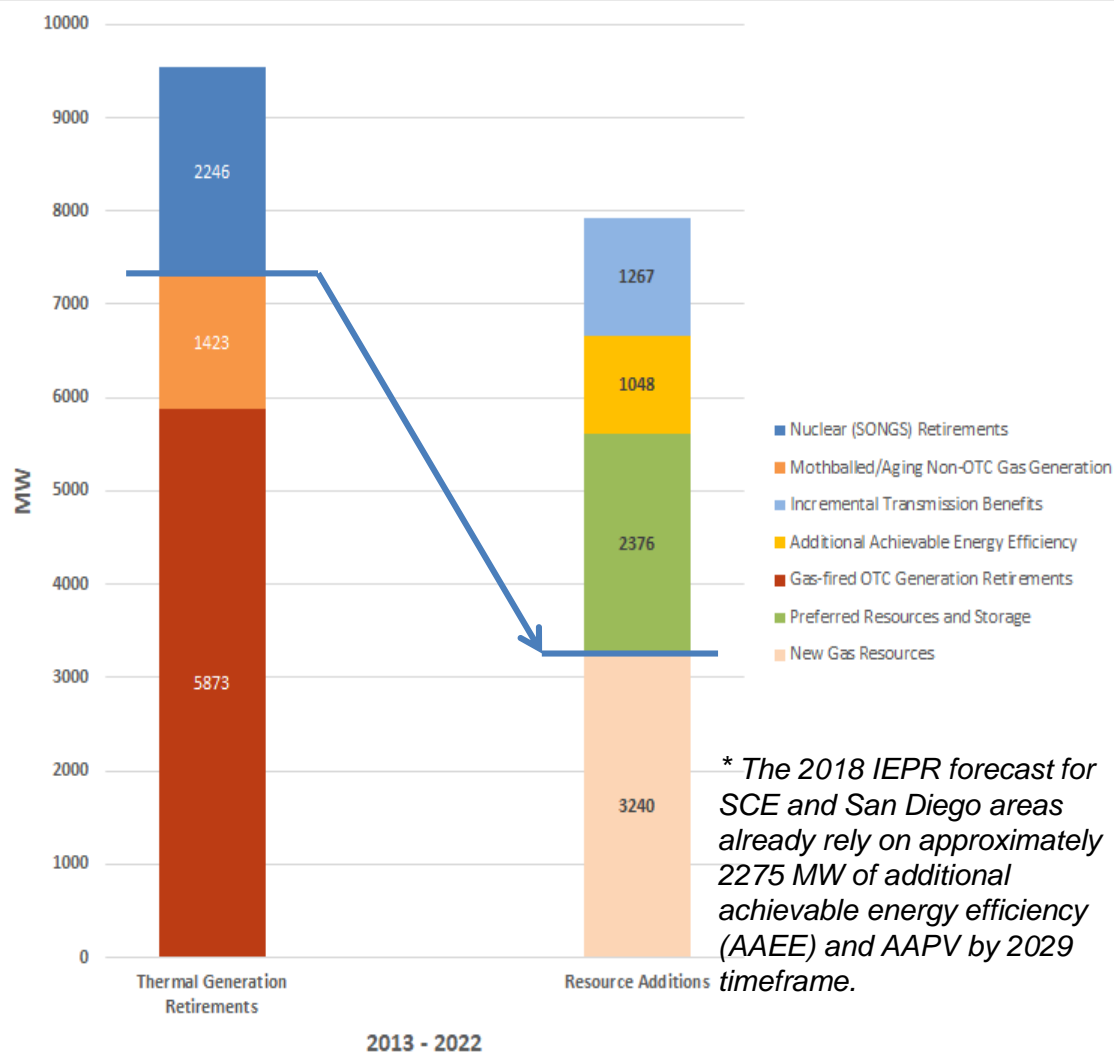
Neil Millar

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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.



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.



New Gas Generation (2013-2022)

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

Gas Retirements (2011-2022)

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

Nuclear Retirement (2013)

San Onofre Generating Station	2246
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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)

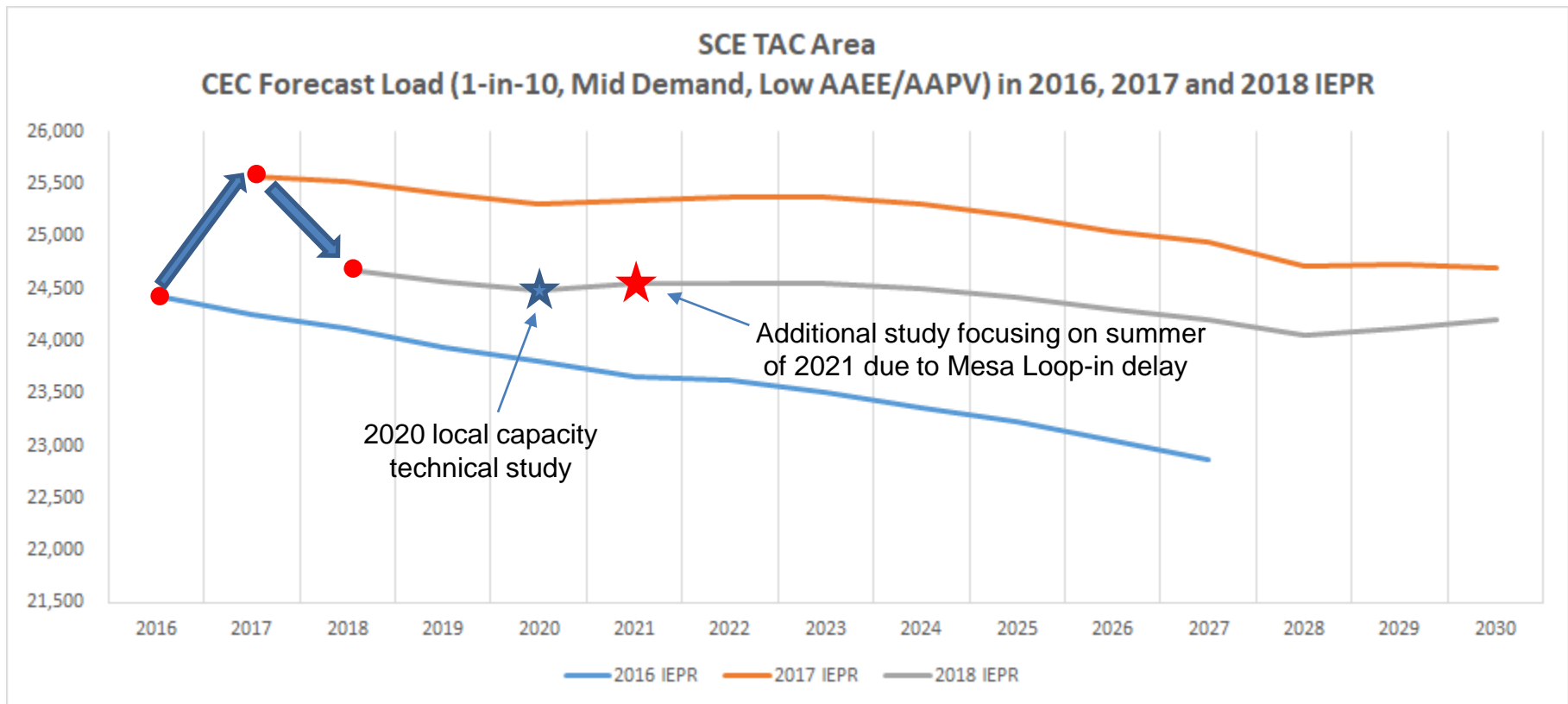
The mitigations under way address a number of remaining system concerns.



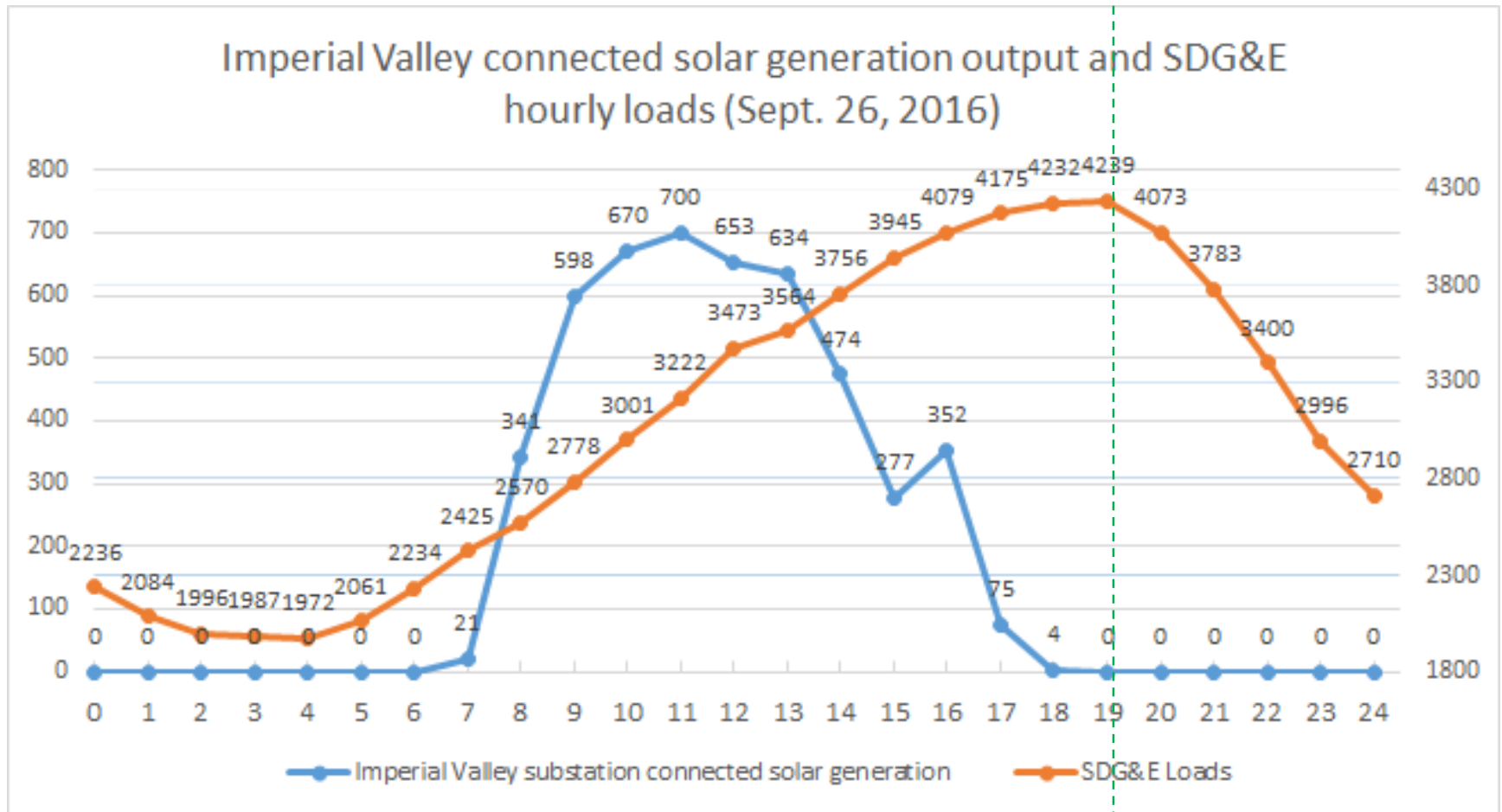
Overall, delays to mitigation plans have been successfully managed, with one remaining timing concern at this time.

- 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, Alamos 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.

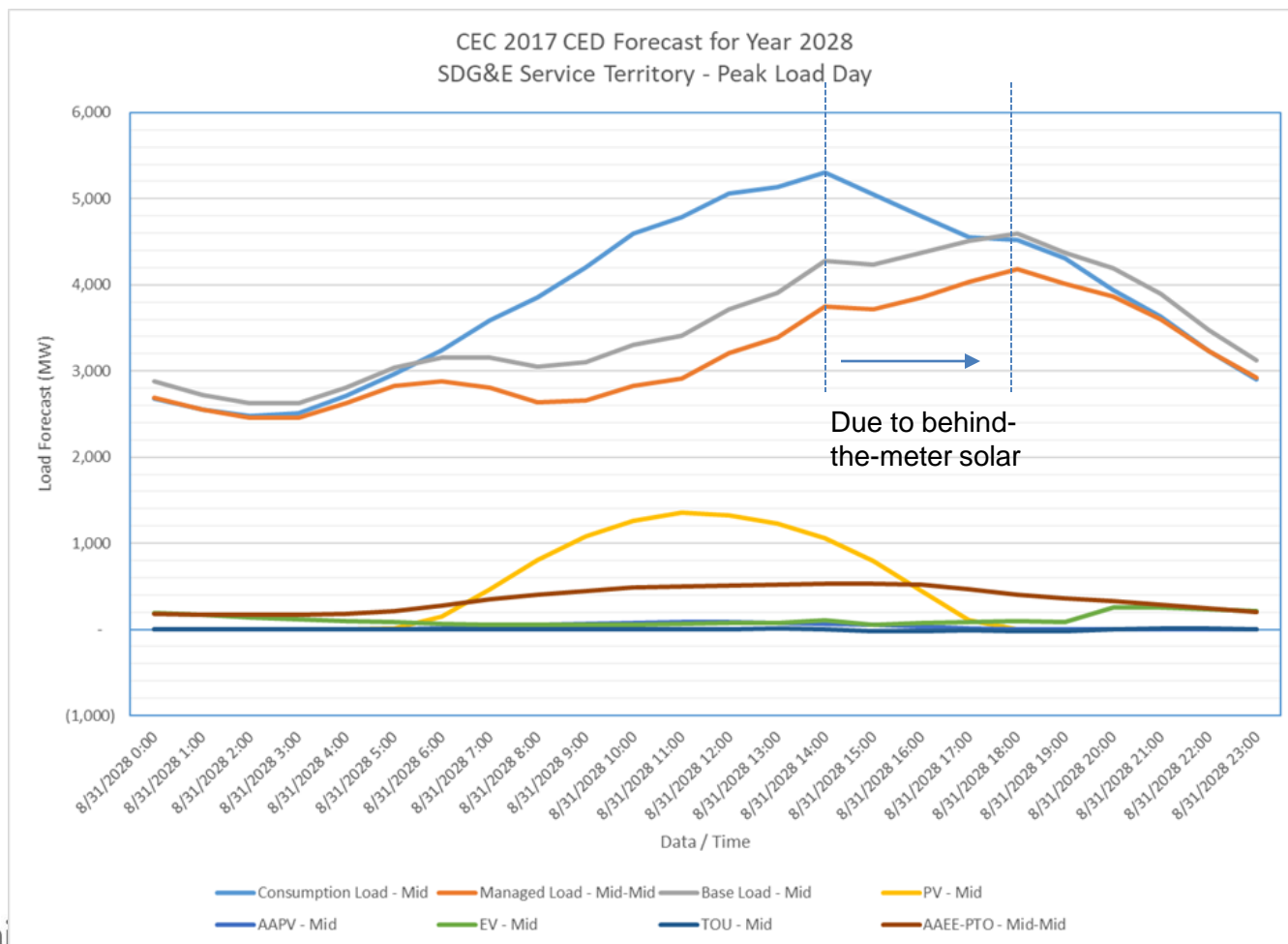
The latest load forecast shows a decrease in the SCE service area from the previous forecast; this may provide some relief to the challenges brought on by the Mesa loop-in delay; studies for the summer of 2021 are under way.



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.



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.