Overview of the 2018 Report by the Statewide Advisory Committee on Cooling Water Intake Structures

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California Energy Commission
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OTC Progress and Reliability Assessment

- No changes are recommended for the OTC Policy compliance schedule at this time

- Resource, infrastructure, and reliability needs to be continually assessed by:
  - California Public Utilities Commission (CPUC)
  - California Independent System Operators (CAISO)
  - California Energy Commission (CEC)
Status of OTC Plants

- 9 plants have achieved compliance - some early
- 6 plants are on track to achieve compliance
- 3 replacement plant projects are under construction
- 1 plant has announced plans to retire
## OTC Compliance Achieved

<table>
<thead>
<tr>
<th>Facility &amp; Units</th>
<th>Net Qualifying Capacity (NQC, in MW)</th>
<th>Compliance Date</th>
<th>Retirement Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humboldt Bay 1, 2</td>
<td>135</td>
<td>Dec. 31, 2010</td>
<td>Retired Sept. 30, 2010</td>
</tr>
<tr>
<td>Huntington Beach 3, 4</td>
<td>452</td>
<td>Dec. 31, 2020</td>
<td>Retired Nov. 1, 2012</td>
</tr>
<tr>
<td>Contra Costa 6, 7</td>
<td>674</td>
<td>Dec. 31, 2017</td>
<td>Retired April 30, 2013</td>
</tr>
<tr>
<td>San Onofre 2, 3</td>
<td>2,246</td>
<td>Dec. 31, 2022</td>
<td>Retired June 7, 2013</td>
</tr>
<tr>
<td>Moss Landing 6, 7</td>
<td>1,509</td>
<td>Dec. 31, 2020</td>
<td>Retired Jan. 1, 2017</td>
</tr>
<tr>
<td>Encina 1</td>
<td>106</td>
<td>Dec. 31, 2017</td>
<td>Retired March 1, 2017</td>
</tr>
<tr>
<td>Mandalay 1, 2</td>
<td>430</td>
<td>Dec. 31, 2020</td>
<td>Retired Feb. 6, 2018</td>
</tr>
<tr>
<td>Facility &amp; Units</td>
<td>NQC</td>
<td>Compliance Date</td>
<td>Owner proposed Compliance Method</td>
</tr>
<tr>
<td>----------------------</td>
<td>------</td>
<td>-----------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Alamitos 1, 2, 6</td>
<td>848</td>
<td>Dec. 31, 2020</td>
<td>Plans to retire on Dec. 31, 2019 to allow Alamitos to be repowered</td>
</tr>
<tr>
<td>Alamitos 3, 4, 5</td>
<td>1,163</td>
<td>Dec. 31, 2020</td>
<td>Retire units</td>
</tr>
<tr>
<td>Encina Units 2-5</td>
<td>844</td>
<td>Dec. 31, 2018</td>
<td>Retire units by compliance date</td>
</tr>
<tr>
<td>Harbor 5</td>
<td>229</td>
<td>Dec. 31, 2029</td>
<td>Plans to repower on Dec. 31, 2029</td>
</tr>
<tr>
<td>Haynes 1, 2</td>
<td>444</td>
<td>Dec. 31, 2029</td>
<td>Plans to repower on Dec. 31, 2025</td>
</tr>
<tr>
<td>Haynes 8</td>
<td>575</td>
<td>Dec. 31, 2029</td>
<td>Plans to repower on Dec. 31, 2028</td>
</tr>
<tr>
<td>Huntington Beach 1</td>
<td>215</td>
<td>Dec. 31, 2020</td>
<td>Plans to retire on Dec. 31, 2019</td>
</tr>
<tr>
<td>Huntington Beach 2</td>
<td>215</td>
<td>Dec. 31, 2020</td>
<td>Retire unit</td>
</tr>
<tr>
<td>Moss Landing 1, 2</td>
<td>1,020</td>
<td>Dec. 31, 2020</td>
<td>Track 2*</td>
</tr>
<tr>
<td>Ormond Beach 1, 2</td>
<td>1,516</td>
<td>Dec. 31, 2020</td>
<td>Retire Units</td>
</tr>
<tr>
<td>Redondo Beach 7</td>
<td>493</td>
<td>Dec. 31, 2020</td>
<td>Plans to retire on Oct. 1, 2019 to allow Huntington Beach to repower</td>
</tr>
<tr>
<td>Redondo Beach 5, 6, 8</td>
<td>848</td>
<td>Dec. 31, 2020</td>
<td>Retire units</td>
</tr>
<tr>
<td>Scattergood 1, 2</td>
<td>367</td>
<td>Dec. 31, 2024</td>
<td>Plans to repower by Dec. 31, 2024</td>
</tr>
</tbody>
</table>

* Track 2 of the OTC Policy requires actions to reduce impingement and entrainment.
OTC Fleet Water Use

Source: Figure 1, pg. 9, 2018 SACCWIS Report
Resources to Replace OTC

Planned resources to replace SONGS and implement OTC:

• **Preferred resources***
  – Energy efficiency
  – Demand response
  – Distributed generation
  – Energy storage

• **Transmission solutions**
  – Reactive support (e.g., synchronous generators)
  – Transmission lines and grid upgrades

• **Conventional generation**

*Preferred resources are those used for efficiency, demand response, renewable resources, and distributed generation*
CEC Actions:

- Alamitos:
  - Application for Certification (AFC) approved by the CEC on April 12, 2017

- Huntington Beach:
  - AFC approved by the CEC on April 12, 2017

- Redondo Beach:
  - AFC currently suspended

- NRG Puente
  - AFC suspended until May 1, 2018
CPUC: Pending Actions

CPUC Actions:

• Approved contracts for a total of 2,087 MW of capacity in Southern California Edison (SCE) territory
• Approved 500 MW re-power of Encina Power Station in San Diego Gas & Electric (SDG&E) territory
• Operational 300 MW from Pio Pico in SDG&E territory
CAISO: Pending Actions

CAISO Actions:

• Continued facilitation of Board-approved transmission projects
• Draft 2017-2018 Transmission Plan (TPP) indicates that authorized resources and previously approved transmission projects are working together to meet the reliability needs in the LA Basin and San Diego areas
• Draft 2017-2018 TPP recommends approval of an alternate solution in the Moorpark and Santa Clara subareas to allow Ormond Beach to retire
• 2018 Local Capacity Technical Analysis posted on May 1, 2017, and submitted to the State Water Board
Moss Landing (2017, 2020)

- Moss Landing is single largest power generating facility in California:
  - Units 6 & 7 retired December 31, 2017
  - Units 1-2 new combined cycle generating turbines, 510 MW each
    - Variable speed drive controls on Units 1-2 completed December 16, 2016
    - Units 1 & 2 are scheduled for Track 2 compliance by December 31, 2020
  - All construction expected to occur during scheduled maintenance outages (no dual unit outages anticipated)
  - Track 2 compliance not expected to impact operating range in MW of units or maximum achievable capacity factor
- SACCWIS does not recommend a change in compliance dates
Ormond Beach (2020)

- Consists of 2 steam boiler units with total combined capacity of 1,486 MW
- CPUC authorized 215-290 MW in the area where Ormond Beach located (i.e., Moorpark subarea)
- Settlement with the State Water Board in October 2014 determined Track 1 compliance infeasible
- January 19, 2018, NRG confirmed intent to retire facility by its compliance date with no further operations
- **SACWIS does not recommend a change in compliance date**
Local Capacity Areas

Los Angeles Basin and San Diego Local Capacity Areas

- Big Creek/Ventura
- Mandalay
- Ormond Beach
- El Segundo
- Redondo Beach
- Alamitos
- Huntington Beach
- SONGS
- Encina
- San Diego
Encina (2018)

• 5 Steam Boiler OTC units for 950 MW aggregated capacity

• Notable Dates:
  – November 2015 - CEC approved 600 MW Carlsbad Energy Center Project (CECP)
  – February 23, 2017 - SACCWIS recommended deferral of Encina’s OTC compliance date for Units 2-5 from December 31, 2017, to December 31, 2018
  – August 15, 2017 – State Water Board adopted the SACCWIS amendment to the OTC Policy to extend the compliance date by one year to Dec. 31, 2018
  – November 30, 2017 - OAL approved OTC Policy amendment
  – NRG on track to complete CECP by Q4 2018
    • Enables retirement of the remaining Encina OTC units by December 31, 2018
Redondo Beach (2020)

• 4 units with total capacity of approximately 1,300 MW
• Proposed repowering project is natural-gas fired, combined-cycle, air-cooled, electrical generating facility with net generating capacity of 496 MW

• Notable Dates:
  – AFC suspended until November 2015
  – Unit 7 scheduled to shut down October 31, 2019, in advance of the OTC Policy compliance date
  – Units 5, 6, and 8 scheduled to shutdown December 31, 2020, on the OTC Policy compliance date

• SACCWIS does not recommend a change in compliance dates
Alamitos (2020)

• 6 units with a total capacity of approximately 2,000 MW
• OTC Policy compliance date: December 31, 2020
• Notable Dates:
  – Units 1, 2, and 6 expected to retire early on December 31, 2019
  – Units 3, 4, and 5 expected to retire by the OTC Policy compliance date
  – April 12, 2017 - AFC approved by the CEC
  – Construction underway and on track to be online April 2020
• SACCWIS does not recommend a change in compliance date
Huntington Beach (2020)

• Units 1 and 2 with a total capacity of 452 MW
• OTC Policy compliance date of December 31, 2020
  – Resource adequacy contract executed that will extend the operation of Huntington Beach units 1 and 2 through December 31, 2019 and December 31, 2020 respectively
  – To be permanently retired at those contract end dates

• Repowering project:
  – PPA awarded for 644 MW capacity with planned initial delivery date of May 1, 2020

• SACCWIS does not recommend a change in compliance date
LADWP OTC Compliance Schedule Status

• Findings in the 2017 Grid Reliability Report mirror those reported in previous reports and continue to underscore that LADWP’s OTC compliance schedule is the most aggressive that is also feasible

• Harbor, Haynes, and Scattergood are on track for compliance with the OTC Policy

• Scattergood units 1 & 2 are the next units in the repowering schedule
Conclusions

• No recommendations for changes to compliance dates are proposed at this time
• CAISO and CPUC have authorized resources to ensure grid reliability
• CAISO, CEC, and CPUC will continue to monitor developments and perform additional analyses with most recent data available to ensure reliability
• The State Water Board should recognize that it may be necessary to modify final compliance dates for some generating units