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

Prepared by the Inter-Agency Working Group
SACCWIS Meeting
March 5, 2018
Agenda

• Background
• Progress towards goals
• Water Usage by the OTC Fleet
• Relevant Actions by CEC, CPUC, and ISO
• Update on Existing OTC Plants & Generator Plans
• Recommendations & Next Steps
OTC Compliance and Infrastructure Planning

• SACCWIS annual review of adopted OTC facility compliance dates for infrastructure realities is a key element of adopted OTC policy

• CPUC, ISO and CEC continue to assess resource, infrastructure and reliability needs:
  – CPUC Long-Term Procurement Plan (LTPP)
  – ISO Transmission Planning Process (TPP)
  – CEC Application for Certification Process (AFC)
## Once-Through Cooling Compliance Achievement

<table>
<thead>
<tr>
<th>Facility &amp; Units</th>
<th>NQC</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 January 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 February 6, 2018</td>
</tr>
</tbody>
</table>
Historic and Projected Water Usage
Combined OTC Fleet

Source: CEC and SWRCB Staff
## Compliance Plans for Remaining Units

<table>
<thead>
<tr>
<th>Facility &amp; Units</th>
<th>NQC</th>
<th>Compliance Date</th>
<th>Owner proposed Compliance Method</th>
</tr>
</thead>
<tbody>
<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 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 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 to reduce impingement and entrainment
CEC Actions

• Alamitos – AFC was approved by the CEC on April 12, 2017.

• Huntington Beach – AFC was approved by the CEC on April 12, 2017.

• Redondo Beach – AFC is currently suspended.

• NRG Puente – AFC is suspended until May 1, 2018.
CPUC Actions

• Approved contracts for a total of 2,087 MW of capacity in SCE territory
  – 1,644 MW of gas fired generation
  – 443 MW of preferred resources and energy storage
  – 54.5 MW of resources under review

• Approved 500 MW re-power of Encina Power Station in SDG&E territory

• Operational 300 MW from Pio Pico in SDG&E territory
ISO Actions

• Continued facilitation of Board Approved Transmission Projects
  – Synchronous Condensers in service at Talega, Miguel and San Luis Rey (SDG&E territory) and Santiago (SCE service territory). Huntington Beach synchronous condensers retired.
  – Two other SDG&E territory and one SCE territory transmission projects are expected from July 2018 through 2022.

• The Draft 2017-2018 Transmission Plan (TPP) indicates that the authorized resources and previously-approved transmission projects are working together to meet the reliability needs in the LA Basin and San Diego areas.

• The Draft 2017-2018 TPP recommends approval of an alternate solution in the Moorpark and Santa Clara subareas due to the retirement of Mandalay and to allow Ormond Beach to retire.

• The ISO’s 2018 Local Capacity Technical Analysis was posted on May 1, 2017, and submitted to the SWRCB.
Moss Landing (2017, 2020)

- Moss Landing is single largest power generating facility in CA
  - Units 6 & 7 are old steam boilers, 750 MW each
  - Units 1-2 are new combined cycles, 510 MW each
- Units 6 & 7 retired December 31, 2016
- 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 is expected to occur during scheduled maintenance outages (no dual unit outages anticipated)
  - Track 2 is 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 two steam boiler units with total combined capacity of 1,486 MW
• CPUC authorized 215-290 MW in area where Ormond Beach and Mandalay are located (i.e., Moorpark subarea)
• Settlement with SWRCB in October 2014 determined Track 1 compliance infeasible
• January 19, 2018, NRG confirmed its intent to retire the facility by its compliance date with no further operations
• SACCWIS does not recommend a change in compliance dates
Los Angeles Basin and San Diego Local Capacity Areas

Note: Map does not reflect 2,895 MW of OTC capacity in LADWP’s balancing authority area.
Encina (2018)

- Consists of five steam boiler generating units using once-through cooling with an aggregate capacity of 950 MW.
- May 21, 2015, the CPUC approved 500 MW of the 600 MW originally requested - allocated remaining 100 MW to preferred or energy storage
- November 2015 CEC approved 600 MW Carlsbad Energy Center Project (CECP)
- February 23, 2017, SACCWIS adopted the Encina deferral request and a recommendation that the SWRCB defer the OTC compliance date for Encina Units 2-5 from December 31, 2017 to December 31, 2018.
- August 15, 2017, the State Water Board adopted the SACCWIS recommendation.
- On November 30, 2017, the Office of Administrative Law approved the OTC policy change.
- NRG is on track to complete the CECP by Q4 2018 to allow for retirement of the remaining Encina OTC units by December 31, 2018.
Redondo Beach (2020)

• Consists of four units; total capacity is approximately 1,300 MW
• Proposed repowering project is a natural-gas fired, combined-cycle, air-cooled electrical generating facility with net generating capacity of 496 MW
• AFC suspended November 2015
• Unit 7 is scheduled to shut down October 31, 2019 in advance of the OTC Policy compliance date
• Units 5, 6, and 8 are scheduled to shutdown December 31, 2020, on the OTC Policy compliance date.
• SACCWIS does not recommend a change in compliance dates
Alamitos (2020)

- Six units with a total capacity of approximately 2,000 MW and an OTC compliance date of December 31, 2020
- November 2014 AES awarded 640 MW PPA with SCE
  - Units 1, 2, and 6 are expected to be retired early on December 31, 2019
  - Units 3, 4, and 5 are expected to retire by December 31, 2020 compliance date
- April 12, 2017 Application for Certification (AFC) was approved by the CEC
- Construction is underway and on track to be online April 2020.
- SACCWIS does not recommend a change in compliance dates at this time
Huntington Beach (2020)

- Units 3 and 4
  - Retired October 31, 2012 and converted to synchronous condensers to provide voltage support in 2013
  - Both synchronous condensers shut down and retired on December 31, 2017
- Units 1 and 2
  - RA contract has been executed that would extend the operation of Huntington Beach units 1 and 2 through December 31, 2019 and December 31, 2020 respectively
  - Will be shut down and permanently retired at those contract end dates
- Repowering project - Awarded a PPA for 644 MW capacity with a planned initial delivery date of May 1, 2020
- Petition to Amend (PTA) was approved by the CEC on April 12, 2017.
- Construction is underway and on track to be online April 2020
- SACCWIS does not recommend a change in compliance date at this time
Conclusions

• No additional recommendations for compliance date are proposed at this time.
• ISO and CPUC have authorized resources to ensure reliability.
• ISO, CEC, and CPUC will continue to monitor developments and perform additional analyses with most recent data available to ensure reliability.
  – To the extent that any proposed plans do not come to pass, staff is evaluating timelines necessary to form a contingency, which could be procuring new resources or deferring existing deadlines.
• The Water Board should recognize that it may be necessary to modify final compliance dates for some generating units.