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# Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS)

## 2017 Report







# Report of the Statewide Advisory Committee on Cooling Water Intake Structures

**April 2017**

## I. Introduction

The Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS)[1] prepared this report for the State Water Resources Control Board (State Water Board) in connection with implementation plans submitted by non-nuclear power plant owners on April 1, 2011 and as contemplated by the State Water Board's Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (Once-Through Cooling [OTC] Policy).[2] The OTC Policy requires the SACCWIS to advise the State Water Board annually on whether the OTC Policy's compliance schedule takes into account the reliability of California's electricity supply, including local area reliability and statewide grid reliability, and permitting constraints. Section 3.B (4) of the OTC Policy provides that SACCWIS will report to the State Water Board with recommendations on modifications to the implementation schedule each year. This report focuses on generating facilities within the California Independent System Operator (CAISO) balancing authority area.[3] At this time, SACCWIS is closely monitoring the local reliability needs of the Encina Power Station (Encina) and considers the prudent course of action to commence the process to request the State Water Board to defer the compliance date for Encina units 2-5 until December 31, 2018 to maintain grid reliability. Otherwise, SACCWIS does not anticipate nor recommend changes to any other final compliance schedules in the OTC Policy.



[1] SACCWIS includes representatives from the California Energy Commission (CEC), California Public Utilities Commission (CPUC), California Coastal Commission (CCC), California State Lands Commission (SLC), California Air Resources Board (CARB), the California Independent System Operator Corporation (CAISO), and the State Water Resources Control Board (State Water Board).

[2] A copy of the Water Board's OTC Policy, effective on October 1, 2010, is available at the following Web site: http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/policy100110.pdf

[3] LADWP compliance dates were reviewed and modified by the Water Board in July 2011.

## II. Operational Developments Relevant to the OTC Policy

Since the OTC Policy was adopted, several units have retired or repowered, some in advance of their compliance date. The closure of the San Onofre Nuclear Generating Station (SONGS) resulted in a significant reduction in projected water use for power plant cooling. Table 1 shows the power plants in the CAISO and Los Angeles Department of Water and Power (LADWP) balancing authority areas that have achieved compliance in order of retirement date, several of which did so well in advance of their mandated retirement deadlines.

**Table 1: OTC Compliance Achievement**

| Facility & Units | NQC[4] | Compliance Date | Retirement Date |
|---|---|---|---|
| Humboldt Bay 1, 2 | 135 | Dec. 31, 2010 | Retired Sept. 30, 2010 |
| South Bay | 296 | Dec. 31, 2011 | Retired Dec. 31, 2010 |
| Potrero 3 | 206 | Oct. 1, 2011 | Retired Feb. 28, 2011 |
| Huntington Beach 3, 4 | 452 | Dec. 31, 2020 | Retired Nov. 1, 2012 |
| Contra Costa 6, 7 | 674 | Dec. 31, 2017 | Retired April 30, 2013[5] |
| El Segundo 3 | 335 | Dec. 31, 2015 | Retired July 27, 2013[6] |
| Haynes 5, 6 | 318 | Dec. 31, 2013 | Retired June 13, 2013[7] |
| San Onofre 2, 3 | 2,246 | Dec. 31, 2022 | Retired June 7, 2013[8] |
| Morro Bay 3, 4 | 650 | Dec. 31, 2015 | Retired Feb. 5, 2014 |
| El Segundo 4 | 335 | Dec. 31, 2015 | Retired Dec. 31, 2015 |
| Scattergood 3 | 497 | Dec. 31, 2015 | Retired Dec. 31, 2015 |
| Pittsburg | 1,159 | Dec 31, 2017 | Operations ceased Dec 31, 2016 |
| Moss Landing 6, 7 | 1,509 | Dec. 31, 2020 | Retired January 1, 2017 |
| Encina Unit 1 | 106 | Dec 31, 2017 | Retired March 1, 2017 |

The capacity of most of the remaining OTC plants is only used a small percentage of the time, but this capacity helps serve demand during peak hours and stressed operating conditions. Some of the capacity at these plants will need to be replaced to ensure system and local reliability. Table 2 reflects the current compliance

[4] Net Qualifying Capacity in MW.
[5] Although NRG retired Contra Costa Units 6-7, the Marsh Landing facility was constructed immediately next to the retired facility. The Marsh Landing Generating Station is a non-OTC generating facility.
[6] NRG retired El Segundo 3 and replaced it with El Segundo 5-8.
[7] LADWP retired Haynes 5-6, and replaced them with Haynes 11-16.
[8] San Onofre units were officially retired June 7, 2013, but they ceased power generation on Jan. 31, 2012.

plans for the remaining OTC generating units and Table 3 presents recent performance for the remaining units at gas-fired OTC plants.

**Table 2: OTC Compliance Plans for Remaining Units**

| Facility & Units | NQC | Compliance Date | Owner proposed Compliance Method |
|---|---|---|---|
| Alamitos 1,2,5 | 848 | Dec. 31, 2020 | Plans to retire on Dec.31, 2019 to allow Alamitos be repowered |
| Alamitos 3,4,6 | 1,163 | Dec. 31, 2020 | Retire units |
| Encina Units 2-5 | 844 | Dec. 31, 2017[9]) | Retire units by compliance date |
| Harbor 5 | 229 | Dec. 31, 2029 | Plans to repower on Dec.31,2026 |
| Haynes 1, 2 | 444 | Dec. 31, 2029 | Plans to repower on Dec.31,2023 |
| Haynes 8 | 575 | Dec. 31, 2029 | Plans to repower on Dec. 31, 2029 |
| Huntington Beach 1 | 215 | Dec. 31, 2020 | Plans to retire on Dec. 31, 2019 |
| Huntington Beach 2 | 215 | Dec. 31, 2020 | Retire unit |
| Mandalay 1, 2 | 430 | Dec. 31, 2020 | Repower with 262 MW Puente Power Project |
| Moss Landing 1, 2 | 1,020 | Dec. 31, 2020 | Track 2 |
| Ormond Beach 1, 2 | 1,516 | Dec. 31, 2020 | Retire Units |
| Redondo 7 | 493 | Dec. 31, 2020 | Plans to retire on Oct 1, 2019 to allow Huntington Beach repower[10] |
| Redondo Beach 5,6,8 | 848 | Dec. 31, 2020 | Retire units |
| Scattergood 1, 2 | 367 | Dec. 31, 2024 | Plans to repower by Dec 31,2020 |

[9] SACCWIS recommend that the State Water Board consider extending the compliance date for Encina to Dec. 31, 2018

[10] Redondo Beach 7 plans to retire early on October 1, 2019 to provide emission offsets for the Huntington Beach Repower per South Coast Air Quality Management District Rule 1304a(2).

## Table 3: Recent Performance of OTC Generating Units

| Units | SWRCB Compliance Date | Unit Capacity | ANNUAL CAPACITY FACTORS | | | |
|---|---|---|---|---|---|---|
| | | | 2013 | 2014 | 2015 | 2016 <Oct |
| Alamitos Unit 1 | 12/31/2020 | 175 | 0.9% | 1.4% | 3.0% | 2.7% |
| Alamitos Unit 2 | 12/31/2020 | 175 | 1.6% | 5.4% | 6.1% | 3.6% |
| Alamitos Unit 3 | 12/31/2020 | 326 | 12.6% | 16.6% | 10.8% | 8.8% |
| Alamitos Unit 4 | 12/31/2020 | 324 | 11.9% | 18.7% | 7.0% | 10.5% |
| Alamitos Unit 5 | 12/31/2020 | 485 | 11.4% | 1.7% | 3.4% | 2.6% |
| Alamitos Unit 6 | 12/31/2020 | 485 | 6.0% | 4.5% | 6.2% | 3.7% |
| Encina Unit 2 | 12/31/2017 | 104 | 2.9% | 2.6% | 5.1% | 1.4% |
| Encina Unit 3 | 12/31/2017 | 110 | 5.3% | 4.7% | 5.3% | 1.6% |
| Encina Unit 4 | 12/31/2017 | 300 | 5.1% | 6.3% | 8.2% | 3.3% |
| Encina Unit 5 | 12/31/2017 | 330 | 7.7% | 9.9% | 10.4% | 5.3% |
| Huntington Beach Unit 1 | 12/31/2020 | 215 | 17.7% | 22.3% | 19.0% | 14.6% |
| Huntington Beach Unit 2 | 12/31/2020 | 215 | 27.5% | 26.2% | 19.4% | 14.9% |
| Mandalay Unit 1 | 12/31/2020 | 218 | 4.5% | 3.6% | 5.9% | 4.0% |
| Mandalay Unit 2 | 12/31/2020 | 218 | 6.2% | 4.0% | 7.1% | 3.6% |
| Moss Landing Unit 1 | 12/31/2020 | 540 | 48.4% | 39.2% | 35.5% | 25.4% |
| Moss Landing Unit 2 | 12/31/2020 | 540 | 49.9% | 47.0% | 37.0% | 26.0% |
| Ormond Beach Unit 1 | 12/31/2020 | 806 | 2.8% | 0.8% | 2.5% | 0.9% |
| Ormond Beach Unit 2 | 12/31/2020 | 806 | 5.8% | 2.4% | 3.2% | 1.0% |
| Redondo Beach Unit 5 | 12/31/2020 | 179 | 1.1% | 2.3% | 3.5% | 1.8% |
| Redondo Beach Unit 6 | 12/31/2020 | 175 | 2.7% | 2.1% | 4.2% | 3.8% |
| Redondo Beach Unit 7 | 12/31/2020 | 505 | 4.0% | 0.9% | 4.5% | 1.3% |
| Redondo Beach Unit 8 | 12/31/2020 | 496 | 1.5% | 3.3% | 3.9% | 2.3% |
| ***LADWP BAA Units*** | | | | | | |
| Harbor 5 | 12/31/2029 | 75 | 3.0% | 3.3% | 2.4% | 4.0% |
| Haynes Unit 1 | 12/31/2029 | 230 | 7.0% | 12.7% | 6.5% | 12.3% |
| Haynes Unit 2 | 12/31/2029 | 230 | 19.0% | 13.1% | 8.0% | 16.0% |
| Haynes Unit 8 | 12/31/2029 | 264 | 48.0% | 34.2% | 38.0% | 40.9% |
| Scattergood Unit 1 | 12/31/2024 | 163 | 11.0% | 24.5% | 8.3% | 22.9% |
| Scattergood Unit 2 | 12/31/2024 | 163 | 19.0% | 6.6% | 21.2% | 5.9% |

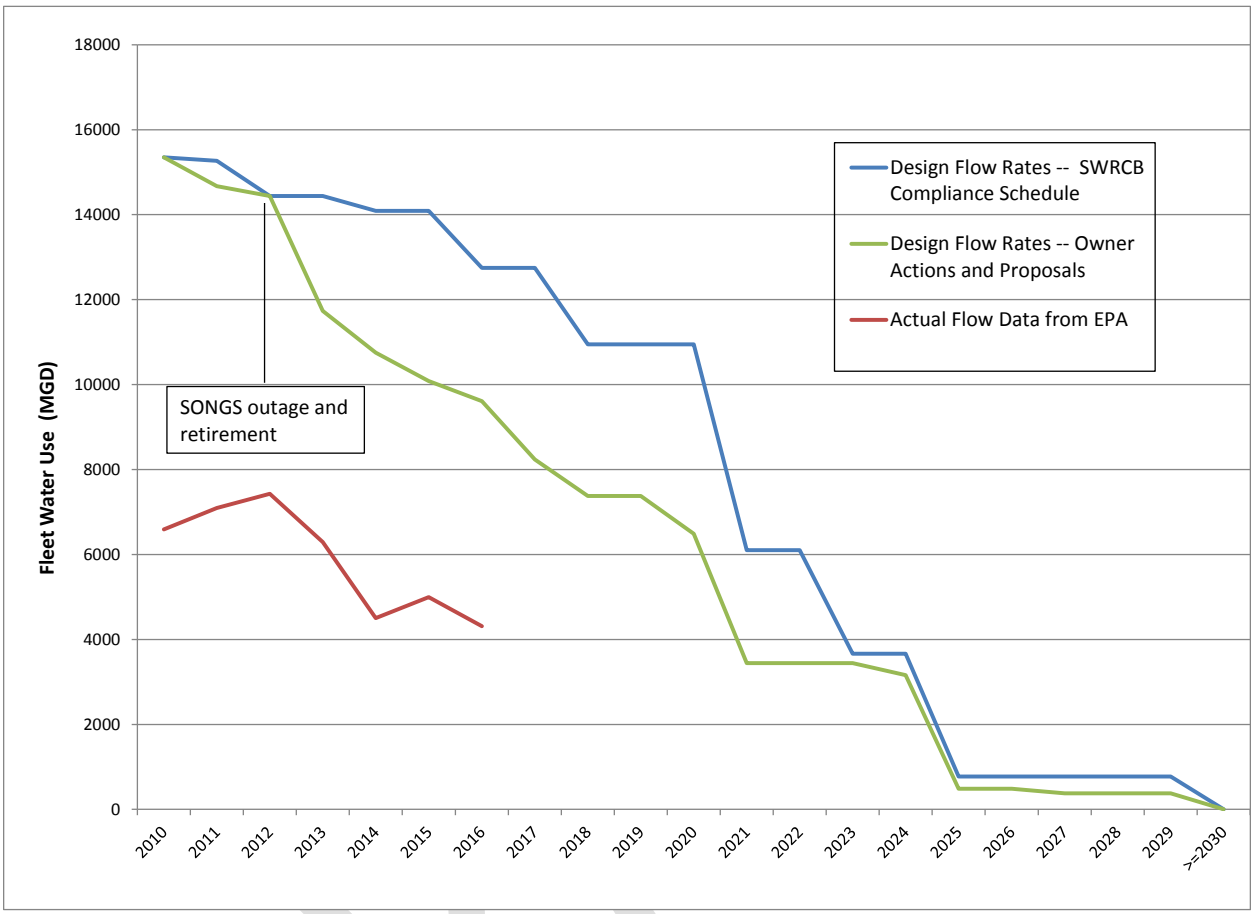
**Source: California Energy Commission, Quarterly Fuel and Energy Report. March, 2017**

**Water Usage by the OTC Fleet**

There are a number of perspectives from which to assess the impact of the OTC fleet on ocean and estuarine impingement and entrainment. All direct biological measures are beyond the scope of SACCWIS' responsibility. Figure 1 offers a rough indicator of environmental impact using water flow rates as the metric through time. The two upper lines show the design flow rates of the OTC fleet included within the OTC Policy adopted May 2010. The uppermost line shows the reduction in design water flow based on the OTC Policy compliance schedule as adopted (and amended) by the State Water Board. The green line shows the aggregate water flow using design flow rates, based on the actual retirement dates and expected retirement dates from on OTC owner implementation plans or other plans known to the SACCWIS agencies. The short red line is an estimate of actual flows for the OTC fleet. See Appendix A for actual flow data.

The red line is far below the two upper lines because virtually all fossil fuel OTC facilities are operating with annual capacity factors far below power plant permit expectations (the source of the design condition flow rates). Table 3 shows that most fossil fuel OTC facilities are operating at extremely low annual capacity factors. In addition, SONGS and some OTC facilities have retired well before their OTC compliance date, thus creating accelerated environmental benefits compared to the original compliance schedule. Finally, the red line is not extrapolated into the future because it is very difficult to gauge how these facilities will actually be operated and there is ambiguity about the relationship between electrical generation and water usage.

**Figure 1: Historic and Projected Water Usage by the Combined OTC Fleet**




**Source: CEC and State Water Board Staff**

## III. The California Public Utilities Commission, California Independent System Operator and California Energy Commission Continue to Assess Resource, Infrastructure, and Reliability Needs

The CPUC, CAISO and CEC continue to work together to study electric reliability issues associated with the compliance schedule under the OTC Policy. The CPUC considers procurement authorizations for its jurisdictional load serving entities; the CAISO examines infrastructure upgrades and additions in its transmission planning process; and the CEC evaluates and, when necessary, issues licenses to site new generation resources.

The CPUC's Long-Term Procurement Plan (LTPP) proceeding evaluates generation resources in the CAISO system every two years.[11] The intent is to evaluate whether existing and projected resources are sufficient to meet future demand, and to authorize procurement of additional resources in the event that they are insufficient. OTC retirement schedules are incorporated into this analysis and updated according to progress towards or changes in retirement deadlines. In addition to system-wide analyses, the LTPP also evaluates capacity requirements in localized, high-demand areas.

Tables 4 to 7, show the different authorizations and approvals for the Southern California Area.

**Table 4: Southern California Edison Tracks 1 and 4 Authorizations**

| Resource Type | Track 1 LCR (West LA Basin) MW | Track 1 LCR (Big Creek/ Ventura) MW | Additional Track 4 Authorization (West LA Basin) MW | Total Authorization MW | Pending and Approved Applications MW |
|---|---|---|---|---|---|
| **Preferred Resources & Energy Storage (Minimum)** | 200 | | 400 | 600 | 500 |
| **Gas-fired Generation (Minimum)** | 1000 | | -- | 1000 | 1000 |
| **Optional: Preferred Resources/Storage** | Up to 400 | | -- | Up to 400 | 0 |
| **Optional: Any Resource** | 200 | | 100 to 300 | 300 to 500 | 383 |
| **Any Resource** | | 215 (minimum) to 290 | | 215 (minimum) to 290 | 274 |
| **Total** | 1400 to 1800 | 215 to 290 | 500 to 700 | 2,115 to 2,790 | 2,157 |

[11] The CPUC is in the process of implementing a new Integrated Resource Planning process in response to the legislative requirements of SB350, which will serve as a successor to LTPP and will include the function of periodically evaluating generation resources in the CAISO system.

**Table 5: Southern California Edison Approved and Pending Application Details**[12]

| Resource Type | Location | Capacity MW | Status |
|---|---|---|---|
| **Energy Efficiency** | Western LA Basin | 101 | Approved |
| **Energy Efficiency** | Johanna/Santiago | 23 | Approved |
| **Demand Response** | Western LA Basin | 5 | Approved |
| **Distributed Generation** | Western LA Basin | 28 | Approved |
| **Distributed Generation** | Johanna/Santiago | 10 | Approved |
| **Energy Storage** | Long Beach | 100 | Approved |
| **Energy Storage** | Johanna/Santiago | 46 | Approved |
| **Energy Storage** | Western LA Basin | 118 | Approved |
| **Combined Cycle Gas Turbine** | Alamitos | 640 | Approved |
| **Combined Cycle Gas Turbine** | Huntington Beach | 644 | Approved |
| **Gas Combustion Turbine** | Stanton | 98 | Approved |
| **Energy Efficiency** | Big Creek/Ventura | 6 | Approved |
| **Distributed Generation** | Big Creek/Ventura | 6 | Approved |
| **Gas Combustion Turbine** | Mandalay | 262 | Approved |
| **Energy Storage** | Big Creek/Ventura | 0.5 | Under Review |
| **Gas Combustion Turbine** | Goleta | 54 | Under Review |



[12] For additional details, see Southern California Edison Applications Application A., 14-11-012, available online at: http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=143307429http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M143/K307/SearchRes.aspx?DocFormat=ALL&DocID=143307429.PDF
A. 14-11-016, available online at: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M143/K307/143307496.PDF

**Table 6: San Diego Gas & Electric Current Authorizations**

| Resource Type | D.13-03-029/ D.14-02-016 MW | Additional Track 4 Authorization MW | Total Authorization MW | Pending & Approved Applications MW |
|---|---|---|---|---|
| **Preferred Resources & Energy Storage** | -- | 200 (Minimum) | 300 | 56 |
| **Optional: Any Resource** | 300 (Pio Pico, CA) | 300 to 600 | 600 to 900 | 800 |
| **Total** | 300 | 500 to 800 | 800 to 1100 | 856 |

**Table 7: San Diego Gas & Electric Approved Application Details**

| Resource Type | Location | Capacity | Status |
|---|---|---|---|
| **Gas Turbine** | Pio Pico | 300 | Operational |
| **Gas Combustion Turbine** | Encina site | 500 | Approved[13] |

In addition to its work supporting the CPUC- LTPP proceeding, the CAISO has expanded its transmission planning process to explore transmission alternatives for improving reliability. The CAISO approved several transmission upgrades and additions in its 2013/2014 transmission planning process to help address local capacity requirement (LCR) issues associated with the compliance schedule under the OTC Policy and the closure of SONGS. The timing of the CAISO approved transmission projects and CPUC pending projects, as well as authorized procurement levels, for Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E) facilitate the compliance schedule of the OTC Policy. The CAISO's analysis in its most recent

[13] The CPUC approved this contract. The Decision (D.15-050-51) was contested but affirmed by the Court of Appeal of the State of California.
For additional details, see San Diego Gas & Electric Application A. 14-07-009, available online at: http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=98406519

2016/2017 Draft Transmission Plan Report [15] 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. However, due to the risks of local capacity area reliability concerns over summer 2018, the CAISO conducted an interim 2018 summer reliability study that would determine if there is a need to begin the process for an OTC compliance date deferral request for Encina in SDGE service territory. This interim study was completed at the end of 2016 and was the basis for recommendations to SACCWIS for the retirement deferral request for parts of Encina. More details are provided in Section V - Encina. Due to the inherent uncertainty in the significant volume of preferred resources and other conventional mitigations, the situation is being continually monitored in the Southern California Reliability Project[16] in case additional measures are needed. The following provides a summary of the reliability transmission projects approved by the CAISO Board of Governors in the 2012-2013, 2013-2014, 2014-2015, 2015-2016 and 2016-2017 Transmission Plans[17] to address reliability concerns related to the retirement of SONGS and OTC generating facilities in the LA Basin and San Diego local areas. In Table 8, the target in-service date and responsible Participating Transmission Owner (PTO) are identified.



[15] https://www.caiso.com/Documents/Draft2016-2017TransmissionPlan.pdf and https://www.caiso.com/Documents/AppendixD_Draft_2016-2017TransmissionPlan.pdf

[16] The Southern California Reliability Project is an inter-agency effort (1) monitoring both the development of replacement resources pursuant to CPUC authorization and CAISO Board decisions and the expected impacts of utility demand-side programs, and (2) creating options that could be triggered to maintain reliability in the event contingencies occur.

[17] http://www.caiso.com/Documents/BoardApproved2012-2013TransmissionPlan.pdf
http://www.caiso.com/Documents/Board-Approved2013-2014TransmissionPlan.pdf
http://www.caiso.com/Documents/Board-Approved2014-2015TransmissionPlan.pdf
http://www.caiso.com/Documents/Board-Approved2015-2016TransmissionPlan.pdf

**Table 8: In-service Dates for CAISO Board Approved Transmission Projects**

| | Transmission Projects | PTO service territory | Target in-service dates |
|---|---|---|---|
| 1 | Talega Synchronous Condensers (2x225 MVAR) | SDG&E | In-service (8/7/2015) |
| 2 | San Luis Rey Synchronous Condensers (2x225 MVAR) | SDG&E | 12/5/2017 |
| 3 | Imperial Valley Phase Shifting Transformers (2x400 MVA) | SDG&E | 6/1/2017 |
| 4 | Sycamore – Peñasquitos 230kV Line | SDG&E | 6/30/2018 |
| 5 | San Onofre Synchronous Condensers (1x225 MVAR) | SDG&E | 6/19/2018 |
| 6 | Miguel VAR Support (450 MVAR) | SDG&E | 6/28/2017 |
| 7 | Santiago Synchronous Condensers (3x81 MVAR) | SCE | 12/31/2017 |
| 8 | Mesa Loop-in Project and South of Mesa 230kV Line Upgrades | SCE | 6/1/2021 |
| 9 | Extension of Huntington Beach Unit 3 Synchronous Condenser (140 MVAR) | SCE | In-service (1/1/2017) Contract expires on 12/31/2017 |

The CEC is the lead agency for licensing fossil fuel power plants 50 MW and larger and has a regulatory certification process (certification process) under the California Environmental Quality Act.[18] Under this process, the CEC conducts an environmental analysis of each project's Application for Certification (AFC) including an analysis of alternatives and mitigation measures to minimize any significant adverse effect the project may have on the environment. These requirements do not, however, apply to the repowering or replacement of an existing power plant wherein the net increase in capacity is less than 50 MW.

[18] Under this program, a project developer files an Application for Certification (AFC) to initiate the siting process. The CEC Chairman then establishes a siting committee to preside over the process. Once the CEC determines the applicant has submitted adequate information to proceed (referred to as data adequate), the proceeding begins. The certification proceeding could take up to a year or longer. For example, the certification process for the Carlsbad Energy Center proceeding took almost five years.

As of January 2017, the AES' Alamitos AFC, NRG Mandalay (Puente) AFC, and AES Huntington Beach Petition to Amend (PTA) Certifications are in process. The Redondo Beach AFC is suspended.

The unexpected retirement of SONGS and the scheduled retirement of roughly 5,000 MW of capacity along the Southern California coastline between 2015 and 2020 have motivated management of the CEC, CPUC, CAISO and CARB to create the Southern California Reliability Project. This inter-agency effort is (1) monitoring both the development of replacement resources pursuant to CPUC authorization and CAISO Board decisions and the expected impacts of utility demand-side programs, and (2) creating options that could be triggered to maintain reliability in the event contingencies occur. As presented by CEC staff and confirmed by the State Water Board representative at the August 29, 2016 workshop within the CEC's 2016 Integrated Energy Policy Report update proceeding, one contingency option is to delay OTC compliance dates for specific facilities if needed to "bridge the gap" between the expected online date of new resources and an existing OTC facility's compliance date. Making such recommendations is the function for which State Water Board created SACCWIS. What is new is the inter-agency effort to pay particular attention to the Southern California region. On February 23, 2017, this inter-agency group used the SACCWIS process to adopt the recommendation to request that the State Water Board defer the once-through cooling compliance date for the Encina units 2-5 from December 31, 2017 to December 31, 2018.

## IV. South Coast Air Quality Management District (SCAQMD) Rulemaking Activity

Internal Offset Bank

The cost and availability of emission offsets to meet air quality permitting requirements in Southern California, particularly in the SCAQMD, have historically been an area of concern for project developers. In 2014, SCAQMD staff started the rulemaking processes to provide limited internal offset bank access to power plant projects needed for grid reliability to support the state energy agencies' Preliminary

Reliability Plan for Los Angeles Basin and San Diego.[19] To date, the SCAQMD staff has prepared two proposed rules (PR 1304.2 and PR 1304.3) to access the internal offset bank that apply to power plants contracted to sell energy to an investor-owned utility (IOU) and for power plants approved by a publicly owned utility (POU). The proposed rules provide an offset "bank of last resort" when there is insufficient offset availability in the open market. The proposed rules prevent excess withdrawals from the internal offset bank, while encouraging preferred resources to be developed, by tying project eligibility to CPUC-LTPP authorized gas-fired resources for IOU projects and to projects serving native load, identified in an approved Integrated Resource Plan for POU projects. Developers would pay a mitigation fee for the offsets, and the funds would be applied towards air quality improvement projects.

Over the course of rule development, SCAQMD staff has observed a change in momentum for the rules. Despite SCAQMD staff's public request for information on potential power plant projects that may need to use the internal offset bank in the future, only two projects have been identified thus far. One is still in the early stages of permitting and may restrict operation to remain below offset thresholds. For the other project, only very preliminary discussions have taken place and no permit application has been submitted. At the January 2017 Stationary Source Committee meeting, SCAQMD staff made the formal recommendation to temporarily suspend rulemaking work; staff will monitor the progress of these two projects over the next few months and provide an update to the Stationary Source Committee this summer. Next steps are likely to be determined at that juncture, and CARB staff will continue to monitor the situation.

RECLAIM

Over the last 16 months, the SCAQMD Governing Board has adopted amendments to the RECLAIM program to achieve additional programmatic $NO_x$ reductions from compliance years 2016 through 2022 from the largest $NO_x$ sources (including power plants), to implement Best Available Retrofit Control Technology (BARCT) requirements, and to address excess RECLAIM Trading Credits (RTCs) for

[19] http://www.energy.ca.gov/2013_energypolicy/documents/2013-09-09_workshop/2013-08-30_prelim_plan.pdf

facilities that have shut down due to their potential to delay installation of emission controls. Electrical generating units now have the option to opt-out of $NO_x$ RECLAIM, apportion $NO_x$ limits among facilities under common control, and comply with any source specific rule limits within three years of an approved opt-out plan. The new shutdown provisions only apply to facilities with an initial RTC allocation. The $NO_x$ RTC holdings for future compliance years for a facility that shuts down will be reduced to BARCT emission levels. The rule acknowledges conditions upon which a facility may temporarily suspend operation and not be considered shutdown (e.g., cyclic operations; economic fluctuations; shutdown due to maintenance, repair, replacement, or fuel availability; or it has an approved Planned Non-Operational Plan pursuant to the rule). A facility shutdown may be self-reported or could be deemed shutdown by the SCAQMD after several findings are made.

On March 23, 2017, the CARB approved the SCAQMD's 2016 Air Quality Management Plan (AQMP), which includes a measure to examine further NOx reductions from RECLAIM and to eventually sunset the program as its original advantages appear to be diminishing. This would be achieved in two ways: (1) a 5 tons per day NOx reduction commitment as soon as feasible and no later than 2025, and (2) a transition to a command-and-control regulatory structure requiring BARCT-level controls as soon as practicable. A working group will convene in spring of 2017 to examine the future of the RECLAIM program and develop options and timing for the transition to a command-and-control regulatory structure. CARB staff will continue to monitor this activity.

## V. REVIEW OF GENERATING FACILITY COMPLIANCE DATES THROUGH 2020

This section identifies specific issues associated with generating facilities in the CAISO's balancing authority area that have compliance dates in the OTC Policy. These facilities include: Encina, Pittsburg, Moss Landing, Ormond Beach, Mandalay, Huntington Beach, Alamitos and Redondo Beach. Specifics for each power plant represent the aspirations of the owners of these facilities, which may not coincide with

the regulatory decisions made by the CPUC, CAISO and CEC affecting the amount and type or timing of resources to be procured.[20]

**Encina**

The Encina facility consists of five steam boiler generating units using once-through cooling with an aggregate capacity of 950 MW. In its original April 1, 2011 implementation plan, NRG proposed different approaches for the five units. For Units 1-3 (an aggregate of 318 MW capacity), NRG proposed repowering with a new flexible combined cycle facility, the Carlsbad Energy Center, consisting of two combined cycle units with an aggregate capacity of 550 MW. In 2013, NRG informed the State Water Board that it still plans to replace Units 1-3 with the Carlsbad Energy Center but no longer intends to pursue Track 2 compliance options and will retire Units 4 and 5 no later than the final compliance date for Encina of December 31, 2017. NRG announced that it will seek to redesign the Carlsbad Energy Center as a set of peaking units, pursuant to an agreement reached among the company, the City of Carlsbad and, SDG&E.

NRG submitted a PTA to the CEC on May 2, 2014 to replace all five units plus a small combustion turbine at Encina with a 600 MW Simple Cycle Gas Turbines (SCGT) power plant. The CEC approved the Amendment on July 30, 2015. SDG&E submitted an application to the CPUC for approval of a PPA with NRG. On May 21, 2015, the CPUC adopted a Decision (D 15-05-051) which approved 500 MW of the 600 MW originally requested and allocated the remaining 100 MW to preferred resources or energy storage. The Decision ordered SDG&E to file the revised contract within 30 days. Pursuant to this Decision, SDG&E filed an advice letter seeking approval of a Power Purchase Tolling Agreement (PPTA) with Carlsbad in June 2015. That advice letter was approved by the Commission in July 2015, but six intervenors filed Applications for Rehearing within the CPUC appellate section. In November 2015, the CPUC re-affirmed in Decision (D.) 15-11-024 its earlier approval of the Carlsbad PPTA

[20] For example, in Decision 12-04-046, Ordering Paragraph #3, the CPUC has limited the ability of jurisdictional investor owned utilities to enter into contracts with facilities using once-through cooling beyond their compliance dates in the OTC Policy. This decision influences the sequence of steps and therefore the timing of any potential extension of compliance dates under the OTC Policy.

in response to the Applications for Rehearing. In response, petitioners requested that the California First District Court of Appeals overturn the CPUC's decision. The Court of Appeals accepted the petition for consideration and ordered final briefing from the petitioner and respondents.

The First District Court of Appeals ruled on December 1, 2016, that the CPUC's Decision (D.) 14-03-004 was supported by the evidence and that the plaintiffs were not hurt when the CPUC decided to approve only a scaled down PPA (from 600 MW to 500 MW). With this ruling, the First District Court of Appeals affirmed the CPUC's decision of granting the PPTA to SDG&E and NRG for the 500 MW Carlsbad Energy Center project. The Sierra Club, Protect Our Communities Foundation and the Center for Biological Diversity had until January 9, 2017 to seek Supreme Court review, which they did not.

Given the continuing delays in resolution of the intervener's petition to the courts, NRG began notifying the financial community of delays in Carlsbad Energy Center online dates. On February 29, 2016, NRG announced via Form 10-K filing to the Securities and Exchange Commission (SEC) that it does not now expect Carlsbad to be commercially operational until winter 2018.[21] This is a delay of one year from the November 1, 2017 date included in the PPA approved by the CPUC. NRG has delayed the commercial operation date of Carlsbad several times from November 1, 2017 (per the PPTA approved by the CPUC), to Q1 2018 (as reported in NRG's 10-K filing to the SEC) and then again to Q2 2018 (as reported in NRG's 10-Q filing to the SEC) and finally to Q4 2018 (based on the latest NRG's 10-Q filing to the SEC). In the generator update letter to the State Water Board dated January 4, 2017, NRG is optimistic that Carlsbad Energy Center will be online in the fourth quarter of 2018. With the recent litigation of the CPUC's approval of Carlsbad resolved, NRG can move forward with the project.

Recent discussions with NRG revealed in early January 2017 that NRG is committed to its Q4 2018 target project completion for Carlsbad, consistent with what was highlighted in their September 2016 10Q report. This confirms that Carlsbad will

[21] NRG Energy, Inc., Form 10-K, p. 98, 2/29/2016, see http://investors.nrg.com/phoenix.zhtml?c=121544&p=irol-SECText&TEXT=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbmcueG1sP2lwYWdlPTEwNzgwODEyJkRTRVE9MCZTRVE9MCZTUURFU0M9U0VDVElPTl9FTlRJUkUmc3Vic2lkPTU3#s25C0190B88FD603E85CBB2843826F997

not be available by summer of 2018. NRG's current plan is for Carlsbad construction to begin April 1, 2017 with a 21-month construction timeframe. According to NRG, there is interplay between the timing of some of Encina's generating unit retirements and Carlsbad's construction. For example, NRG has stated that Encina Unit 1 must be shut down to facilitate generation interconnection related to construction of the Carlsbad Energy Center. Per its plan, Encina Unit 1 (106 MW) was taken off-line on March 1, 2017 in order to begin work on the Carlsbad units. This results in the unavailability of 106 MW from Encina when Unit 1 is no longer in service. However, other Encina units may be considered to fulfill any evident needs for summer 2017 and 2018. As reported to SACCWIS, NRG was planning to retire Encina in compliance with the OTC Policy and was not planning to seek an extension of the OTC deadline applicable to Encina to operate beyond 2017. NRG believes the members of SACCWIS are in the best position to make that determination and to request an extension to the OTC compliance deadline.

Under the circumstances of NRG's announced delay for Carlsbad, the CAISO conducted an interim analysis for the year 2018 updating key parameters and study assumptions from the 2017 LCR analysis to determine whether the OTC compliance schedule for Encina (December 31, 2017) and the revised online date for Carlsbad (Q4 2018) would adversely impact the reliability of the LA Basin and San Diego local capacity requirement areas. The CAISO, in consultation with the CEC and CPUC, developed study assumptions and scenarios for the Encina 2018 grid reliability study and conducted its studies applying the methodologies employed in the 2017 analysis without Encina to determine the need for Encina capacity while Carlsbad Energy Center is under construction. The study also assumed other preferred resources procured by SCE and SDG&E in response to CPUC authorizations and are expected to be implemented and in service prior to June 1, 2018. The results of the Encina 2018 grid reliability study demonstrated that Encina capacity was shown as needed to mitigate reliability concerns on the electric transmission system in the LA Basin and San Diego LCR areas.

Based upon the CAISO analysis, SACCWIS considers the prudent course of action to be to commence the process to request the State Water Board to defer the

compliance date for Encina Units 2-5 until December 31, 2018 to maintain grid reliability. The purpose of the interim study was solely to determine the need to commence this process at the earliest opportunity and accommodate State Water Board timelines. The interim study will not be relied upon to determine local capacity requirements and procurement for the 2018 Resource Adequacy year, as those CPUC adopted requirements will ultimately be determined by the CPUC after consideration of the CAISO 2018 Local Capacity Technical Analysis (LCTA) that will be published by May 1, 2017 as part of its annual resource requirements cycle in support of the CPUC's resource adequacy process. More detailed information about the CAISO interim Encina 2018 reliability study and SACCWIS recommendations can be found at: http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/saccwis/docs/saccwis_encina_2018rpt.pdf.

NRG confirmed that Encina would be available if, at the request of the CAISO, the State Water Board were to extend the OTC Policy compliance date. Operation of Encina in 2018 would be subject to compensation to cover recurring, standard as well as non-recurring O&M costs. While all of Encina's units are maintained to the same standard and are of similar reliability, Units 4 and 5 are the more cost effective units to maintain and operate, followed by either Units 2 or 3. As noted above, Unit 1 was retired ahead of the other units.

The energy agencies presented the SACCWIS Encina report to the State Water Board meeting on March 21, 2017. Based upon the SACCWIS' recommendation to ensure grid reliability the State Water Board will follow the process to consider an amendment to the OTC-Policy on the compliance date for Encina, from Dec. 31, 2017 to Dec. 31, 2018.

If the Encina OTC Policy compliance date were extended, and capacity need for Encina were determined in the CAISO's 2018 LCTA, then SDG&E and NRG could enter into a PPA subject to approval by the CPUC. Per the CPUC rules, any such bilateral contract would require the CPUC approval via a Tier 3 advice letter. For reference, the 2017 Encina capacity contract was filed on June 9, 2016 and approved by the CPUC on October 27, 2016.

Regarding electrical configurations and permit constraints, Encina currently operates under an administratively continued National Pollutant Discharge Elimination System (NPDES) permit (No. CA0001350, Order R9-2006-0043). On March 9, 2016, the San Diego Regional Water Quality Control Board (SDRWQCB) issued draft NPDES Order R9-2016-0002 and the associated Tentative Time Schedule Order No. R9-2016-0007, which requires Cabrillo Power I LLC to comply with specified requirements in Order Number R9-2016-002. Cabrillo does not anticipate changes to the draft NPDES permit that would introduce permit conditions that would impact the availability of or preference for either unit.

Operationally, NRG generating units would not be able to exceed the allowed operational MW for the interconnection or exceed air permit limits. The Authority to Construct (ATC) for Carlsbad issued by the San Diego Air Pollution Control District does not require the shut down and demolition of the existing Encina boilers and peaking turbine. However, there are constraints on their operation once the new Carlsbad turbines come online. The emissions from the existing Encina boilers and peaking turbine are required to reach zero tons of $NO_x$ per year once the shakedown period for all six Carlsbad turbines has ended. The ATC also phases-in declining $NO_x$ and $PM_{10}$ emission limits as more Carlsbad turbines become operational, since the emissions from the existing generating units are required to offset the emissions from the new turbines to meet air quality regulations. Regardless, the CEC license "requires the existing Encina boilers and turbine to cease operations once the amended Carlsbad Energy Center Project is operational." The shutdown of Encina is officially part of the Carlsbad project so any changes to what was proposed would require an approved amendment. (See verification item AQ-47 from CEC Final Commission Decision, 07-AFC-06C).

**Pittsburg**

NRG Delta indicated in its response to the State Water Board letter, dated January 4, 2017, that it permanently ceased once-through-cooling operation for all three units (5, 6 and 7) at the Pittsburg Generating Station as of December 31, 2016 at 11:59 pm. NRG indicated that it has placed the Pittsburg units on long term outage effective

January 1, 2017 to preserve deliverability status for a potential replacement project at the same location that would not use once-through-cooling.

Consequently, the Pittsburg Power Plant has come into compliance with its OTC schedule before its originally projected date.

**Moss Landing**

Dynegy's Moss Landing facility consists of two types of units – older steam boiler units and new combined cycle units. Units 6 and 7 are steam boilers with a capacity of roughly 750 MW each for a total of 1,510 MW. Power blocks 1 and 2 refer to two combined cycle facilities; each 510 MW power block consists of two combustion turbines and a heat recovery steam generator. The final compliance date for Moss Landing under the original OTC Policy is December 31, 2017. In a signed settlement agreement, October 9, 2014, between Dynegy and the State Water Board, it was determined that the OTC compliance date will extend to December 31, 2020 for Units 1 and 2 and Units 6 and 7. The OTC amendment was approved by the State Water Board on April 7, 2015 (Resolution No. 2015-0018).

In its November 25, 2013 letter to the State Water Board, Dynegy stated its intent to implement Track 2 for Units 1 and 2 as well as Units 6 and 7. In its November 2014 updated implementation plan, Dynegy again stated its intent to implement Track 2 for Units 1 and 2 and identified its plans to achieve Track 2 compliance through prior flow reduction credits, use of operational controls, and installation of technology controls. Dynegy also stated its intent to implement Track 2 for Units 6 and 7 by December 31, 2020 or cease operation until compliance is achieved. In its January 5, 2017 letter to the State Water Board, Dynegy indicated that it no longer intends to achieve Track 2 compliance for Units 6 and 7 and instead intends to retire both units. Later on, Dynegy sent to the State Water Board an update of its Implementation Plan and confirmed that Units 6 and 7 were shut down on January 1, 2017.[22]

SACCWIS understands that the State Water Board compliance date extension to 2020 will allow Dynegy to pursue Track 2 compliance for Moss Landing Units 1 and 2.

[22] Dynegy Settlement updated Implementation Plan
http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/moss_landing/

In accordance with its Impingement Mortality and Entrainment Monitoring Plan, Dynegy Moss Landing began entrainment sampling on March 22, 2015 and plans to complete studies by April 2017. Dynegy Moss Landing also reduced flow during the spring of 2015 by taking planned maintenance outages of twenty days in April at Unit 2 and nine days in May at Unit 1. In 2016, Dynegy Moss Landing reduced flow during the spring and fall entrainment and impingement seasons by taking a total of 69 planned outages in February, March, October, and November. In preparation for meeting the Settlement Agreement's December 31, 2016 deadline to install variable speed drive controls on the water pumps for Units 1 and 2, Dynegy Moss Landing issued a purchase order for these controls in January 2016. Dynegy Moss Landing completed installation of the variable speed drive controls on December 16, 2016.

All construction necessary to implement Track 2 compliance measures is expected to occur during scheduled maintenance outages for Units 1 and 2. Dynegy Moss Landing does not anticipate that any dual unit outages will be necessary to complete the construction of Track 2 compliance measures.

After Track 2 compliance, Dynegy Moss Landing projects that the maximum capacity factor for both Unit 1 and Unit 2 will be 78 percent of the allowable capacity factor before Track 2 compliance.

SACCWIS does not recommend a change in compliance dates for the units at the Moss Landing facility.

**Ormond Beach**

NRG's Ormond Beach Generating Station consists of two steam boiler units using once-through cooling with a combined capacity of 1,486 MW. The final compliance date for the facility under the OTC Policy is December 31, 2020. An October 9, 2014, settlement agreement between the State Water Board and NRG determined Track 1 to be infeasible. In its implementation plan update of January 4, 2017, to the State Water Board, NRG confirmed its intent to retire the facility by its compliance date to comply with the OTC Policy, and does not expect to continue to operate beyond the OTC compliance date. The CAISO plans to model Ormond Beach as offline after 2020 in its transmission planning studies and will continue to

provide the results of those studies to SACCWIS. At this time, SACCWIS does not recommend a change in compliance dates for the Ormond Beach facility.

**Mandalay**

NRG's Mandalay Generating Station consists of three units. Units 1 and 2 use once-through cooling and have a capacity of 215 MW each. Unit 3 is a peaking combustion turbine with an air quality permit allowing only a very limited number of operating hours each year due to lack of emission controls. The final compliance date for the Mandalay facility under the OTC Policy is December 31, 2020. An October 9, 2014, settlement agreement between the State Water Board and NRG determined that Track 1 compliance is not feasible.[23] NRG proposes to comply by retiring its units utilizing once- through cooling and pursuing a replacement project, the 262 MW simple cycle generating facility known as the Puente Power Project, at the Mandalay site to comply by December 31, 2020.

NRG filed an AFC for the Puente Power Project for 262 MW with the CEC on April 15, 2015, and is currently undergoing licensing. An Authority to Construct/Determination of Compliance application was filed with the Ventura County Air Pollution Control District (VCAPCD) on March 19, 2015, and the Final Determination of Compliance was issued on October 13, 2016.[24] The CEC released the Final Staff Assessment on December 8, 2016. On January 20, 2017, the CEC committee assigned to conduct proceedings on the AFC established a schedule with target dates of March 2017 for the Presiding Members Proposed Decision and of May 2017 for the Final Decision by the full Energy Commission. On March 10, 2017, the CEC committee reopened the record and ordered additional analysis of coastal flood risk, alternatives, compliance and closure, and additional biological surveys. A hearing is scheduled May 1, 2017 to establish a revised schedule. In its January 4, 2017, implementation

[23] The definition of not feasible in Section 5 of the OTC Policy is "cannot be accomplished because of space constraints or the inability to obtain necessary permits due to public safety considerations, unacceptable environmental impacts, local ordinances, regulations, etc. Cost is not a factor to be considered when determining feasibility under Track 1".

[24] VCAPCD has not been delegated by U.S. EPA to implement federal Prevention of Significant Deterioration (PSD) requirements. As such, the VCAPCD did not make a PSD applicability determination for the Puente Power Project as part of the Determination of Compliance. The applicant has determined that PSD does not apply to the project.

plan update, NRG stated that it is on track to achieve commercial operation by June 2020.

The CPUC authorized procurement of between 215 MW and up to 290 MW in the Moorpark sub-area of the Big Creek/Ventura local reliability area where Mandalay is located, and NRG Energy Center Oxnard LLC was selected by SCE as one of the successful bidders for gas-fired generation in the Moorpark sub-area. SCE's Application to the CPUC for Approval of its 2013 LCR Request for Offers (A.1411016) includes the Puente Power Project with a commercial online date of June 1, 2020. The final Decision to approve the Puente Power Project contract was issued in May 2016 (D.16-05-050). On December 5, 2016, the CPUC denied applications for rehearing of the Decision filed by the City of Oxnard, California Environmental Justice Alliance and Sierra Club, and the Center for Biological Diversity.

A potential project, located in the Moorpark sub-area but outside the coastal zone, is currently in review at CEC. Calpine's Mission Rock Energy Center (MREC) will be a nominal 275 MW natural gas-fired peaking power plant, including a 25-MW battery energy storage system. Calpine filed the AFC with CEC on December 31, 2015, and the application was found to be data adequate on May 17, 2016. The discovery period is scheduled to close on February 23, 2017; there is currently no estimated date for issuance of the Preliminary Staff Assessment. The project's Authority to Construct/Determination of Compliance application is also currently under review at the VCAPCD. The project is on a 12-month AFC schedule and Calpine is assuming commercial operation by September 2020.

Given the Track 1 procurement activities to date, the CAISO has modeled the 262 MW NRG project to replace Mandalay Units 1, 2 and 3, as well as modeling 12.5 MW of preferred resources in its recent draft 2016-2017 transmission planning study report.[25] The draft study results for the long-term (2026) LCR need for the Moorpark sub-area indicated that SCE-selected procurement would mitigate the identified local resource deficiency for the Moorpark sub-area. SACCWIS will continue to monitor the circumstances affecting the Mandalay compliance date. At this time, SACCWIS does not recommend a change in compliance dates for the Mandalay facility.

[25] https://www.caiso.com/Documents/AppendixD_Draft_2016-2017TransmissionPlan.pdf

**Huntington Beach**

AES' Huntington Beach Generating Station (Huntington Beach) consists of four units. Units 3 and 4 retired on October 31, 2012 and were converted to synchronous condensers to provide voltage support in 2013. Units 1 and 2 use once-through cooling and each has a capacity of 226 MW. As shown in Table 3, Huntington Beach Units 1-2 are operating at a substantially higher level than most OTC facilities. The final compliance date for the Huntington Beach facility under the OTC Policy is December 31, 2020.

In its implementation plan update dated January 6, 2017, to the State Water Board, AES confirmed its intention to comply with the OTC Policy for Huntington Beach generating units that utilize OTC per the compliance dates. AES does not plan to request any extension to the current OTC compliance dates. A resource adequacy (RA) contract has been executed with SCE that would extend the operation of Huntington Beach units 1 and 2 through December 31, 2019 and December 31, 2020 respectively. The RA contract with SCE is still subject to approval from the CPUC. AES has also executed a reliability must run contract with the CAISO for the Huntington Beach synchronous condenser units 3 and 4 through December 31, 2017. Both synchronous condensers are contracted through December 31, 2017, at which time both synchronous condensers units will be shut down and retired. These units need to be disconnected in order to provide the interconnection capacity for the new 644 MW Combined Cycle Gas Turbine (CCGT) and allow enough time to construct the new 230 kV interconnection in the switchyard. Units 1, 3 and 4 will be shut down to enable the new CCGT at Huntington Beach to be placed in service. The development of new generating resources is contingent upon the approval and issuance of a license and permits to construct by the CEC and SCAQMD by May 1, 2017 to meet the commercial operation date and PPA date of the new Huntington Beach Energy Project.

The Huntington Beach PTA was approved by the CEC on April 12, 2017. AES submitted an application for a 939 MW CCGT power plant, which was approved by the CEC on October 29, 2014. Subsequently, AES was selected for a PPA for a 644 MW power plant by SCE for the Huntington Beach facility, with different equipment

configuration than approved by the CEC. The CPUC approved SCE procurement selection of the Huntington Beach repowering project for the western LA Basin local capacity needs per Decision D.15-11-041 at the November 19, 2015 CPUC voting meeting. On September 14, 2015, the applicant submitted a PTA for an 844 MW power plant, comprised of Phase 1, a 644MW CCGT and Phase 2, 200 MW of SCGT. CEC staff released the Final Staff Assessment - Volume 1, preliminary engineering and environmental evaluation on October 17, 2016 and Final Staff Assessment - Volume 2, addressing Air Quality and Public Heath on December 9, 2016. The Amendment Presiding Members Proposed Decision was issued February 24, 2017 recommending approval subject to conditions. The full Energy Commission approved the revised project on April 12, 2017.

Huntington Beach was awarded a PPA for 644 MW capacity with a planned commercial online date of March 2020. This will respectively require the shutdown of one Huntington Beach unit prior to the OTC Policy compliance date to satisfy the SCAQMD rules for new emission sources. Huntington Beach Unit 1 will be shut down and permanently retired on December 31, 2019. AES does not plan to retrofit any of the existing units with alternate cooling technologies to comply with Track 1 or utilize any operational or technical measures to comply with Track 2. If there is a possibility that Unit 2 would be needed beyond its current OTC Policy compliance date, AES would need to know this well in advance. In the event of any continued need, current State and Regional Water Board regulatory and permitting issues would need to be addressed and a suitable contracting mechanism developed for continued operation of Huntington Beach units within a reasonable time frame. Otherwise, none of the existing units will be available as a potential electrical resource beyond December 31, 2020.

The CAISO is assuming that the Huntington Beach synchronous condensers will retire by the end of 2017 in the reliability studies performed in the 2016-2017 Transmission Planning Process and the 2018 LCR assessment.[26] Other dynamic reactive support projects summarized in Table 8 are expected to be implemented and placed in service prior to June 2018. The CAISO continues to monitor the progress of these projects as part of the Southern California Reliability Project.

[26] The 2018 LCR assessment is currently being performed with expected final report in May 2017.

In its 2016-2017 transmission planning process reliability studies, the CAISO modeled the proposed 644 MW Huntington Beach repowering to replace the Huntington Beach generating facility after 2020. SACCWIS will continue to monitor the circumstances affecting the Huntington Beach compliance date. At this time, however, SACCWIS does not recommend a change in compliance date for the Huntington Beach facility, but its role in maintaining reliability in the LA Basin requires that repowering activities be closely watched.

**Alamitos**

AES' Alamitos Generating Station (Alamitos) consists of six units using once-through cooling. Total capacity of these units is approximately 2,000 MW. The final compliance date for the Alamitos facility under the OTC Policy is December 31, 2020. In a January 6, 2017 update to their implementation plan, AES reaffirmed its intent to repower the Alamitos facility in order to comply with Track 1 of the OTC Policy and to shut down and to permanently retire all generating units at Alamitos that utilize OTC per the compliance dates included in the OTC Policy.

On December 27, 2013, AES filed an AFC with the CEC to repower the facility with four 3-on-1 combined-cycle gas turbine power blocks with a net generating capacity of 1,936 MW. As mentioned in Section III, on November 5, 2014, AES was awarded a PPA with SCE for the Alamitos Energy Center, with different equipment, configuration, and smaller capacity (640 MW) than the information submitted in the AFC to CEC. On October 26, 2015, the applicant submitted a supplement application for certification (SAFC), replacing the prior application, for a 1,040 MW power plant, comprised of Phase 1 - 640 MW CCGT and Phase 2 - 400 MW SCGT. The SAFC indicates that Units 1, 2, and 6 will be retired after the AEC CCGT commences operation and that Units 3, 4, and 5 will likely operate through at least December 31, 2020. The SAFC also states that the City of Long Beach and Project Owner have entered into a MOU for the demolition of the existing units. CEC staff released the Final Staff Assessment - Volume 1, preliminary engineering and environmental evaluation on September 23, 2016 and Final Staff Assessment - Volume 2, addressing air quality and public heath on December 9, 2016. The Presiding

Members Proposed Decision was issued on February 13, 2017 recommending approval subject to conditions. The full Energy Commission approved the project on April 12, 2017.

The 640 MW of CCGT and 100 MW of energy storage was awarded to AES in a recent SCE Requirement Request For Offer while AES is pursuing contracts and approvals for the additional 200 MW of storage and 400 MW of gas peakers.

In its implementation plan update of January 6, 2017, AES updated the OTC Policy compliance timeline for its units. The existing Alamitos units are contracted, units 1, 2 and 6 through December 31, 2019 and units 3, 4 and 5 through December 31, 2020, and expected to remain operational until the end of their contract term and then permanently retire in compliance with the OTC Policy[27]. AES plans to shut down Units 1, 2, and 6 early on December 31, 2019 to provide emission offsets for the new 640 MW CCGT, which has a commercial operation date of April 1, 2020. AES indicates that approval and issuance of a license and permit to construct by the CEC and SCAQMD by May 1, 2017 are needed to meet the commercial operation date and PPA date of the new Alamitos Energy Center. The schedule is on track to achieve this timeline.

In its 2016-2017 transmission planning studies, the CAISO modeled the proposed 640 MW Alamitos Energy Center to replace Alamitos OTC generation after 2020. In the 2015-2016 transmission planning process, the CAISO performed a sensitivity LCR study for 2021 timeframe with the Mesa Loop-In project delayed. The study results indicated that a local capacity deficiency occurs for the LA Basin, and a temporary extension of Redondo Beach or Alamitos generation beyond the December 31, 2020 compliance date could be a potential mitigation option. SACCWIS will continue to monitor the circumstances affecting the Alamitos compliance date. At this time, SACCWIS does not recommend a change in compliance date for the Alamitos facility, but its role in maintaining reliability in the LA Basin requires that repowering activities be closely watched.

[27] The resource adequacy contracts for the Alamitos units are subject to CPUC approval.

**Redondo Beach**

AES' Redondo Beach Generating Station consists of four units using once-through cooling. Total capacity of these units is approximately 1,300 MW. The final compliance date for the Redondo Beach facility under the OTC Policy is December 31, 2020. In 2013, AES proposed to repower the Redondo Beach facility in order to comply with the OTC Policy. The proposed repowering project is a natural-gas fired, combined-cycle, air-cooled electrical generating facility with a net generating capacity of 496 MW. As previously mentioned in Section III, AES' AFC at the CEC is suspended. AES proposed alternative land use of the site, the CEC suspended the application on September 2, 2014, and a ballot initiative with the City of Redondo Beach occurred on March 3, 2015. The voters of the City of Redondo Beach rejected the ballot initiative, resulting in AES resuming permitting efforts to repower the facility. On November 6, 2015, AES and the City filed a petition with the CEC requesting that the AFC proceeding be suspended until August 1, 2016. On November 25, 2015, the CEC suspended the proceedings, but stated that the suspension will remain in place until the applicant or other party makes a motion to reopen the proceeding and the Committee grants the requested reopening. In early 2016, AES placed the power plant and its 51-acre site on the commercial real estate market. On August 12, 2016, AES and the City of Redondo Beach submitted a notice of agreement to continue the suspension until February 1, 2017.

In its implementation plan update of January 6, 2017, AES updated the OTC Policy compliance timeline for its units. Unit 7 is scheduled to shut down October 31, 2019 in advance of the OTC Policy compliance date to accommodate the provision of SCAQMD Rule 1304(a)(2) for offset exemptions for the new Huntington Beach CCGT, while Units 5, 6, and 8 are scheduled to shutdown December 31, 2020 on the OTC Policy compliance date.

AES has not yet obtained a contract that would support repowering its Redondo Beach units. Given the Track 1 and Track 4 LTPP activities to date, the CAISO modeled Redondo Beach offline after 2020 in its transmission planning studies. The CAISO, in the 2015-2016 transmission planning process, performed a sensitivity

assessment for the 2021 LCR study with the Mesa Loop-In project delayed. The study results indicated that in the event that the Mesa Loop-in project is delayed beyond summer 2021, a local capacity deficiency would occur, and a temporary extension of Redondo Beach or Alamitos generation beyond the December 31, 2020 compliance date could be a potential mitigation option. SACCWIS will continue to monitor the circumstances affecting the Redondo Beach compliance date. At this time, SACCWIS does not recommend a change in compliance date for the Redondo Beach facility.

## VI. Conclusion

SACCWIS members continue to assess the reliability impacts to the electric grid in connection with implementation of the OTC Policy. SACCWIS does not believe all of the OTC units will need to be replaced with new OTC units in order to satisfy demands. Some OTC units, such as Pittsburg, will just be shut down and effectively replaced though new transmission lines or other projects at different locations. The CPUC has authorized new electric resources to replace a portion of the OTC capacity subject to the OTC Policy and is currently considering additional replacement capacity. Some owners of OTC units are retiring them in advance of the compliance dates established by the OTC Policy. The majority are pursuing infrastructure replacement plans to comply with the policy, while one owner is pursuing Track 2 to comply with the policy.

Existing facilities using once-through cooling technology may still require an extension under the OTC Policy's compliance schedule if one or more uncertainties combine to threaten local or system reliability or if replacement infrastructure is not developed on a schedule that matches with the existing OTC compliance dates.

During this past year Pittsburg Generating Station came into compliance with the OTC schedule on December 31, 2016, one year before its originally projected date, Moss Landing Units 6 and 7 came into compliance on January 1, 2017, four years before its revised compliance date, and Encina Unit 1 came into compliance on March 1, 2017, before its compliance date.

The closure and retirement of SONGS (in 2012, far in advance of its scheduled compliance date of 2022) has accelerated aggregate reduction in ocean water intake flows so much that even several limited term compliance date deferrals of fossil fuel

OTC facilities would still mean ocean water usage reductions occur faster than contemplated by the compliance dates of the adopted OTC Policy. With the potential delay of the Carlsbad Energy Center beyond summer 2018, SACCWIS recommended an extension of the final compliance schedule in the OTC Policy for the Encina generating facility Units 2 – 5 at the meeting on February 23, 2017 and presented its plan to the State Water Board at their March 21, 2017 meeting. The State Water Board will be asked to consider an amendment to the compliance deadline of the OTC Policy for Encina units 2-5 for one year from December 31, 2017 to December 31, 2018.

Currently, SACCWIS does not recommend any change on the compliance schedule in the OTC Policy for the other generating facilities.

## APPENDIX A

## ACTUAL WATER FLOW DATA FOR ONCE-THROUGH COOLING FACILITIES

| | Average Annual Inflow (MGD) | | | | | | |
|---|---|---|---|---|---|---|---|
| Power Plant Name | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Humboldt Bay Power Plant Units 1&2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Potrero Power Plant | 152 | 0 | 0 | 0 | 0 | 0 | 0 |
| Contra Costa Generating Station | 15.4 | 33 | 53 | 17 | 0 | 0 | 0 |
| Pittsburg Power Plant | 18.8 | 16.9 | 79 | 48.8 | 26 | 67 | 32 |
| Moss Landing Power Plant | 289.9 | 212.3 | 396.4 | 353.6 | 244.9 | 312.5 | 231 |
| Diablo Canyon Nuclear Power Plant | 2347 | 2368 | 2277 | 2311 | 2242 | 2360 | 2372 |
| Morro Bay Power Plant | 21.5 | 41.7 | 50.2 | 22.7 | 0.2 | 0.0 | 0 |
| El Segundo Generating Station | 112.9 | 97 | 197 | 217 | 107 | 135 | 7 |
| Haynes Generating Station Units 1&2 | 720 | 812 | 886 | 725 | 471 | 506 | 448 |
| Scattergood Generating Station | 276.4 | 299 | 296.8 | 272 | 244 | 311 | 151 |
| Harbor Generating Station | 45.5 | 44.0 | 47.3 | 46.8 | 49.6 | 49.1 | 47 |
| Alamitos Generating Station | 2.9 | 106 | 375 | 496 | 332 | 324 | 317 |
| Redondo Beach Generating Station | 59 | 180 | 178 | 95 | 107 | 142 | 95 |
| Mandalay Generating Station | 39.7 | 56 | 77 | 109 | 63 | 78 | 56 |
| Ormond Beach Generating Station | 12 | 18 | 71 | 133 | 68 | 98 | 60 |
| Huntington Beach Generating Station | 202.9 | 242.6 | 238.5 | 178 | 169 | 159.6 | 134 |
| South Bay Power Plant | 34.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Encina Power Plant | 211.9 | 314.5 | 531.1 | 264.0 | 338.6 | 410.2 | 325 |
| San Onofre Nuclear Generating Station | 2030 | 2256 | 1677 | 1003 | 42 | 42 | 37 |

**Source: EPA Flow Data, (Intergraded Compliance Information System (ICIS) Database) Renan Jauregui, Updated on Feb 3, 2017**