

Report of the Statewide Advisory Committee on Cooling Water Intake Structures

April 2016

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 (ISO) balancing authority area.³ At this time, SACCWIS does not anticipate nor recommend a change to the final compliance schedule in the OTC Policy.

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 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 ISO and Los Angeles Department of Water and Power (LADWP) balancing authority areas that have achieved

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 (ARB), the California Independent System Operator Corporation (ISO), 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.

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	NQC⁴	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 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

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 presents recent performance for the remaining units at gas-fired OTC plants.

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.

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.

Table 2: Recent Performance of OTC Generating Units

Units	State Water Board Compliance Date	Unit Capacity	ANNUAL CAPACITY FACTORS			
			2012	2013	2014	2015 (<Oct)
Alamitos Unit 1	12/31/2020	175	2.20%	0.90%	1.40%	3.20%
Alamitos Unit 2	12/31/2020	175	4.00%	1.60%	5.40%	6.00%
Alamitos Unit 3	12/31/2020	326	13.00%	12.60%	16.60%	11.20%
Alamitos Unit 4	12/31/2020	324	9.70%	11.90%	18.70%	6.80%
Alamitos Unit 5	12/31/2020	485	9.70%	11.40%	1.70%	4.50%
Alamitos Unit 6	12/31/2020	485	7.10%	6.00%	4.50%	7.00%
Encina Unit 1	12/31/2017	107	14.20%	4.00%	2.00%	4.40%
Encina Unit 2	12/31/2017	104	13.90%	2.90%	2.60%	5.00%
Encina Unit 3	12/31/2017	110	16.30%	5.30%	4.70%	5.60%
Encina Unit 4	12/31/2017	300	14.10%	5.10%	6.30%	9.00%
Encina Unit 5	12/31/2017	330	17.80%	7.70%	9.90%	10.70%
Huntington Beach Unit 1	12/31/2020	215	12.60%	16.80%	22.30%	20.70%
Huntington Beach Unit 2	12/31/2020	215	27.30%	26.50%	26.20%	17.70%
Mandalay Unit 1	12/31/2020	218	5.20%	4.50%	3.60%	6.10%
Mandalay Unit 2	12/31/2020	218	5.50%	6.20%	4.00%	7.70%
Moss Landing Unit 1	12/31/2020	540	46.90%	48.40%	39.20%	33.80%
Moss Landing Unit 2	12/31/2020	540	47.00%	49.90%	47.00%	35.40%
Moss Landing Unit 6	12/31/2020	702	4.90%	4.30%	0.90%	7.00%
Moss Landing Unit 7	12/31/2020	702	4.40%	1.80%	0.40%	3.30%
Ormond Beach Unit 1	12/31/2020	806	2.70%	2.80%	0.80%	2.70%
Ormond Beach Unit 2	12/31/2020	806	1.00%	5.80%	2.40%	3.20%
Pittsburg Unit 5	12/31/2017	325	3.70%	2.30%	0.60%	4.60%

Pittsburg Unit 6	12/31/2017	325	3.30%	1.10%	1.10%	2.40%
Redondo Beach Unit 5	12/31/2020	179	3.30%	1.10%	2.30%	4.10%
Redondo Beach Unit 6	12/31/2020	175	5.00%	2.70%	2.10%	4.50%
Redondo Beach Unit 7	12/31/2020	505	8.40%	4.00%	0.90%	6.00%
Redondo Beach Unit 8	12/31/2020	496	1.40%	1.50%	3.30%	3.70%
LADWP BAA Units						
Harbor 5	12/31/2029	75	4.00%	3.00%	3.30%	1.90%
Haynes Unit 1	12/31/2029	230	15.00%	7.00%	12.70%	5.20%
Haynes Unit 2	12/31/2029	230	21.00%	19.00%	13.10%	10.10%
Haynes 8	12/31/2029	264	22.00%	48.00%	34.20%	43.80%
Scattergood Unit 1	12/31/2024	163	4.00%	11.00%	24.50%	6.20%
Scattergood Unit 2	12/31/2024	163	30.00%	19.00%	6.60%	23.60%

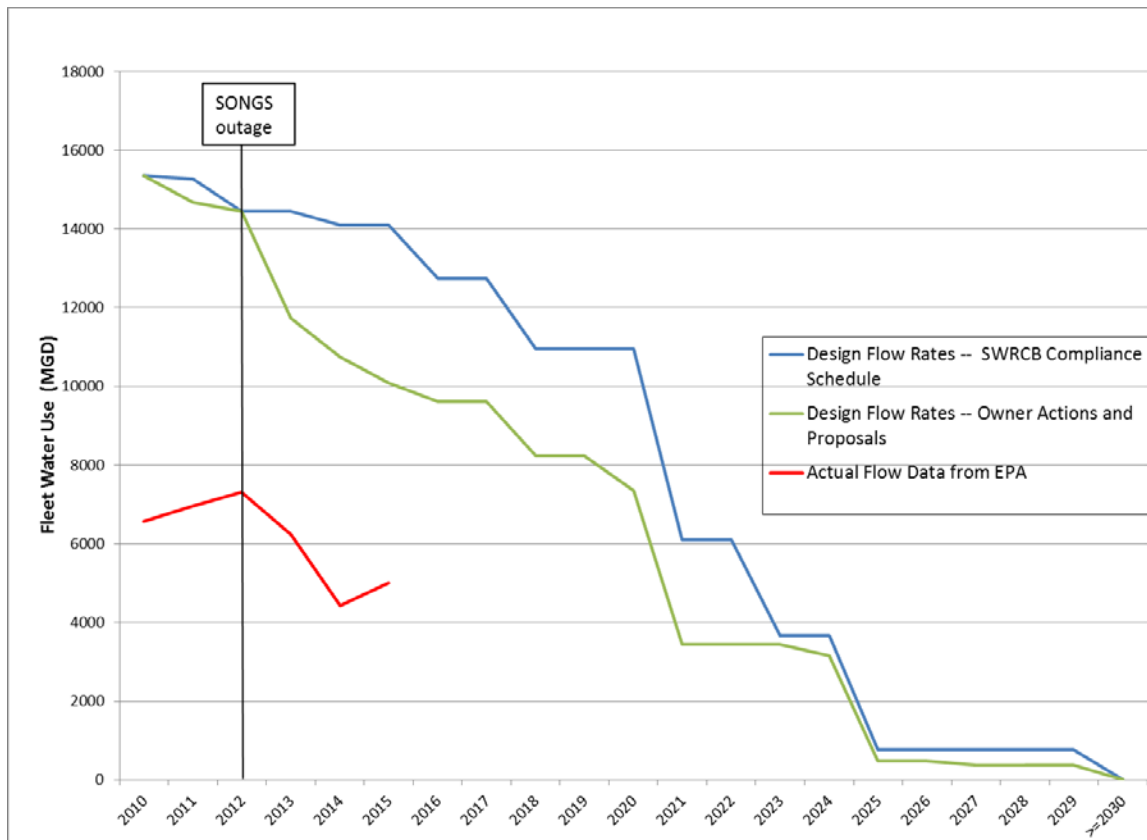
Source: California Energy Commission, Quarterly Fuel and Energy Report.

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, using the actual retirement dates and expected retirement dates based 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 2 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 (CPUC), California Independent System Operator (ISO) and California Energy Commission (CEC) Continue to Assess Resource, Infrastructure and Reliability Needs

The CPUC, ISO 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 ISO examines infrastructure upgrades and additions in its transmission planning process; and the CEC evaluates and, when necessary, issues applications for licenses to site new generation resources.

The CPUC's Long-Term Procurement Plan (LTPP) proceeding evaluates generation resources in the ISO system every two years. 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.

On March 13, 2014, the Commission authorized Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E) to procure up to 700 and 800 megawatts (MW), respectively, of additional capacity to meet local needs. Of that capacity, SCE and SDG&E were required to procure 400 and 200 MW, respectively, of preferred resources or energy storage. These authorizations were made in addition to previous authorizations discussed above, bringing the total minimum authorizations for SCE to 2,115 MW (1,900 MW in LA Basin and 215 MW in Big Creek/Ventura), and 800 MW for SDG&E.⁹ The Commission has since approved contracts for a total of 1,813 MW of capacity in SCE territory: 1,382 MW of gas fired generation and 431 MW of preferred resources and energy storage. An additional 274 MW of resources at Moorpark and 2 MW of behind-the-meter photovoltaic submitted through SCE's Preferred Resources Pilot are under review. For SDG&E, the Commission approved a 500 MW re-power of

⁹ CPUC Decision (D.13-02-015), available online at: <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M050/K374/50374520.PDF>, and CPUC Decision (D.) 14-03-004, available online at: <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M089/K008/89008104.PDF>

the Encina Power Station¹⁰ and directed SDG&E to allocate an additional 100 MW to preferred resources and energy storage. That Commission Decision has since been contested and is under review of the Court of Appeal. If the court finds that the Commission acted lawfully in approving the Encina contract, the Commission Decision will stand. The stated Commercial Online Date (COD) for the Encina plant is November 1, 2017.

Table 3: 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 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

¹⁰ SDG&E Application (A.14-07-009) available online at: <http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=98406519>

Table 4: Southern California Edison Approved and Pending Application Details¹¹

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	Under Review
Distributed Generation	Big Creek/Ventura	6	Under Review
Energy Storage	Big Creek/Ventura	0.5	Under Review
Gas Combustion Turbine	Mandalay	262	Under Review
Gas Combustion Turbine	Goleta	54	Under Review

¹¹ For additional details, see Southern California Edison Application A. 14-11-012, available online at: <http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=143307429>

Table 5: 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 (Minimum)	--	200	200	0
Optional: Any Resource	300 (Pio Pico,Ca)	300 to 600	600 to 900	900
Total	300	500 to 800	800 to 1100	900

Table 6: San Diego Gas & Electric Approved Application Details

Resource Type	Location	Capacity	Status
Gas Turbine	Pio Pico	300	Under Construction
Gas Combustion Turbine	Encina site	500	Approved ¹²

In addition to its work supporting the CPUC -LTPP proceeding, the ISO has expanded its transmission planning process to explore transmission alternatives for improving reliability. The ISO approved several transmission upgrades and additions in its 2013/2014 transmission planning process to help address local reliability issues associated with the compliance schedule under the OTC Policy and the closure of SONGS. The timing of the ISO approved transmission projects and CPUC pending projects, as well as authorized procurement levels, for SCE and SDG&E facilitate the compliance schedule of the OTC policy. The ISO's analysis in its most recent 2015/2016 transmission planning process indicates that the authorized resources, forecast load, and previously-approved transmission projects working together meet the

¹² The CPUC approved this contract, but it has since been protested and is under review by the Court of Appeal. 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>

reliability needs in the LA Basin and San Diego areas. Updated study results identified and addressed a subarea issue, which can be mitigated with a minor transmission solution, in the western LA Basin.¹³ 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 in case additional measures are needed. The following provides a summary of the reliability transmission projects approved by the ISO Board of Governors in the 2012-2013, 2013-2014, and 2014-2015 Transmission Plans¹⁴ 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 7, the target in-service date and responsible Participating Transmission Owner (PTO) are identified.

Table 7: In-service Dates for ISO 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	6/30/2017
3	Imperial Valley Phase Shifting Transformers (2x400 MVA)	SDG&E	6/1/2017
4	Sycamore – Penasquitos 230kV Line	SDG&E	6/1/2017
5	San Onofre Synchronous Condensers (1x225 MVAR)	SDG&E	6/1/2018
6	Santiago Synchronous Condensers (1x225 MVAR)	SCE	6/1/2018
7	Mesa Loop-in Project and South of Mesa 230kV Line Upgrades	SCE	12/31/2020

¹³ <http://www.caiso.com/Documents/Draft2015-2016TransmissionPlan.pdf>

¹⁴ <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>

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.¹⁵ 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.

As of February 2016, the CEC received four AFC's to replace some or all of the power production units at AES' Alamitos, AES Huntington Beach, AES Redondo Beach, and NRG Mandalay facilities, and three Petition to Amend (PTA) Certifications for NRG Carlsbad, NRG El Segundo facilities, and AES Huntington Beach.

- The Alamitos application is in process. AES submitted an application on December 27, 2013 for a 1,936 MW power plant, and on March 12, 2014, the CEC accepted the application as data adequate. On November 5, 2014, AES was selected by SCE for a Power Purchase Agreement (PPA) for a 640 MW power plant for the Alamitos facility, with different equipment, configuration, and lower capacity than the information submitted to the CEC in its application. The CPUC approved SCE procurement selection of the Alamitos 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 October 26, 2015, the applicant submitted a Supplemental Application for Certification (SAFC), replacing the prior application, for a 1,040 MW power plant, comprised of Phase 1, 640 MW Combined Cycle Gas Turbine (CCGT) and Phase 2, 400 MW of Simple Cycle Gas Turbines (SCGT). The City of Long Beach and AES have entered into a Memorandum of Understanding (MOU) for the

¹⁵ 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.

demolition of the existing Alamitos Units 1-6. CEC staff issued data requests to the applicant on February 12, 2016 and is working on the Preliminary Staff Assessment (PSA), while awaiting the Preliminary Determination of Compliance (PDOC) from South Coast Air Quality Management District. The PDOC is needed in order for CEC staff to complete the PSA.

- The Huntington Beach PTA is in process. 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 644 MW CCGT and Phase 2, 200 MW of SCGT. CEC staff is working on the amended PSA, while awaiting the South Coast Air Quality Management District to issue the PDOC. The PDOC is needed in order for CEC staff to complete the PSA.
- The Redondo Beach application is currently suspended. AES submitted an AFC on November 20, 2012 for a repowering project. The CEC accepted the application as data adequate on August 27, 2013, and CEC staff published the PSA on July 28, 2014. AES suspended project review for seven months to pursue a local initiative to redevelop the site for non-generation uses, but the Voters in the City of Redondo Beach rejected the initiative on March 3, 2015. On March 20, 2015, AES submitted a letter to the CEC Committee assigned to the proceeding, asking the Committee to resume the proceeding and proposing an aggressive schedule. On April 10, 2015, the CEC held a status conference to officially restart the application process. On November 6, 2015, AES and City of Redondo Beach, an intervenor in the proceeding, jointly submitted a Petition for

Suspension of the AFC until August 1, 2016. AES agreed to market the property to third parties or developer partners. On November 25, 2015, the CEC Committee ordered the proceeding suspended without a specified end date. The applicant or other party can make a motion to reopen the proceeding, and the CEC Committee reserves its authority to reopen the proceeding.

- The Puente Power Project (Mandalay) application for a 262 MW power plant was filed on April 15, 2015, and is in process. On June 2, 2015, CEC staff determined that all of the information has been provided to fulfill the application's data adequacy requirements, and CEC itself accepted the application as data adequate on June 10, 2015. On May 28, 2015, the Ventura County Air Pollution Control District (VCAPCD) issued a letter deeming the request for Authority to Construct to be complete. CEC staff and intervenor City of Oxnard have issued data requests. Discovery in the proceeding closed March 7, 2016. The City of Oxnard has a moratorium in place until June 30, 2016 that prohibits the expansion of existing, or development of new, energy facilities within the coastal zone pending the City's completion of studies and updates to the local coastal program, zoning ordinances, and other land use regulations. CEC staff is working on the PSA and finalizing the Alternatives analysis, while awaiting the Preliminary Determination of Compliance from the VCAPCD.
- The El Segundo Energy Center (ESEC) PTA has been suspended by the applicant. El Segundo Energy Center submitted two PTA's the ESEC on April 23, 2013 and December 23, 2015. On February 18, 2016, the applicant submitted a Notice of Suspension of PTA and plans to notify the CEC within six months whether it intends to pursue modified amendments or to withdraw the respective PTAs in their entirety. The existing El Segundo Generating Station Unit 4 retired December 31, 2015 and the entire El Segundo facility is now in compliance with the OTC policy.
- The Carlsbad Energy Center PTA has been approved. The CEC approved the application in May 2012 for NRG Energy's Carlsbad Energy

Center, which would replace three of the units at Encina Power Station. NRG submitted a PTA on May 2, 2014 to replace all five units plus a small combustion turbine at Encina with six units of simple-cycle combustion turbines totaling 632 MW. On July 30, 2015, the CEC approved the PTA. A Petition for Reconsideration of the CEC's July 30, 2015 Decision approving Amended Carlsbad Energy Center was heard by the CEC Commission on September 23, 2015, and on November 12, 2015, the CEC adopted a decision closing the Petition for Reconsideration with no changes or modifications to the initial CEC decision. The licensing of the amended Carlsbad Energy Center is now complete.

The unexpected retirement of SONGS and the scheduled retirement of roughly 5000 MW of capacity along the Southern California coastline between 2015 and 2020 have motivated management of the CEC, CPUC, ISO and ARB 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 ISO 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 17, 2015 workshop within the CEC's 2015 Integrated Energy Policy Report update proceeding, one 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. If this inter-agency group determines that such a compliance date delay is appropriate, it would use the SACCWIS process to make such a request to the State Water Board.

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

Emission offset market availability and cost remains an issue with respect to air permits for new and replacement gas-fired generator projects in Southern California, particularly in the SCAQMD. The SCAQMD staff have been conducting a rulemaking process to provide additional options for securing offsets for power plant projects to support the state energy agencies' Preliminary Reliability Plan for Los Angeles Basin and San Diego.¹⁶

To date, SCAQMD staff has met informally with key stakeholders, held three working group meetings (July and November 2014 and April 2015), and released two draft rules: one that applies to power plants that have contracted to sell energy to an Investor-Owned Utility (IOU) (PR 1304.2) and the other for power plants approved by a Publicly-Owned Utility (POU) (PR 1304.3). Based on comments received, SCAQMD staff issued revised rule drafts on February 25, 2016, and held another working group meeting on March 1, 2016. The draft rules incorporate limitations to prevent excess withdrawals from the internal 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. The IOUs and POUs would work with SCAQMD staff to project the amount of offsets needed for the authorized fossil-fuel generation capacity in the South Coast Air Basin and reserve the requisite internal bank offsets. The reserved offsets would be debited from the internal offset bank prior to issuance of the permit to construct and upon payment of a non-refundable offset fee. The fee is to be paid on an annual basis or as a single lump-sum payment. The offset fee proceeds will be used to obtain emission reductions consistent with the needs of SCAQMD's Air Quality Management Plan, with priority given to air quality improvement projects in communities where power plants are located and to environmental justice areas. SCAQMD staff expects to issue the formal notice of preparation for the rules' draft environmental assessment in the March/April 2016 timeframe, followed by public workshops. The rules are expected to go before the SCAQMD Governing Board

¹⁶ http://www.energy.ca.gov/2013_energy_policy/documents/2013-09-09_workshop/2013-08-30_prelim_plan.pdf

(Governing Board) for adoption during the third or fourth quarter of this year. Technical staff of most SACCWIS agencies will continue to participate in the rule development process.

RECLAIM Rulemaking

The Governing Board adopted amendments to the NO_x RECLAIM program on December 4, 2015, to implement Best Available Retrofit Control Technology (BARCT) requirements, including a 12 Ton-Per-Day (TPD) shave of outstanding NO_x RECLAIM allocations compared to the 14 TPD shave recommended by SCAQMD staff. Additional provisions allow electrical generating units to opt-out of NO_x RECLAIM. The opt-out plan needs to demonstrate that at least 99 percent of the generating unit's NO_x emissions for the most recent three compliance years are at current BARCT or Best Available Control Technology (BACT). The power plant operator would need to comply with any source specific rule limits no later than three years after approval of their opt-out plan. Operators with multiple generating units under common control have the opportunity to apportion the NO_x limits among its facilities. A provision to address NO_x allocations from shutdowns was also proposed by SCAQMD staff; however, the Governing Board remanded the shutdown provision back to staff and directed them to return to the NO_x RECLAIM Working Group for further discussion and analysis, and bring a shutdown proposal back to the Governing Board for consideration. The original staff proposal included a provision to address the retirement of RECLAIM Trading Credits (RTCs) from complete facility closure or equipment shutdowns that represent at least 25 percent of a facility's emissions for any quarter within the previous two compliance years and would have applied to the OTC power plants. Permits associated with the equipment being shut down would have been surrendered and the RTCs for future years would have been retired.

Following the December Governing Board meeting, the chair of the state Senate Committee on Environmental Quality sent a letter to the SCAQMD Governing Board asking it to reconsider its vote on the NO_x RECLAIM shave. Specifically, the Committee and co-signing members of the State Senate requested that the Governing Board consider achieving additional reductions from NO_x RECLAIM by adopting an

additional two TPD shave, bringing the total shave to 14 TPD; adopting a provision that recaptures NO_x allocations from shutdown facilities; and adopting a schedule for the shave that achieves greater reductions in the earlier years. The Governing Board discussed the request at their meeting on March 4, 2016. The motion to reopen the decision failed.

V. REVIEW OF GENERATING FACILITY COMPLIANCE DATES THROUGH 2020

This section identifies specific issues associated with generating facilities in the ISO'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, ISO and CEC affecting the amount and type or timing of resources to be procured.¹⁷

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.

¹⁷ For example, in Decison12-04-046, 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.

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 SCGT power plant. SDG&E submitted an application to the CPUC for approval of a PPA with NRG, and NRG noted that they do not intend to modify the existing compliance deadline of December 31, 2017 whether or not this application is approved. On May 21, 2015 the CPUC adopted a Decision (D 15-05-051) which would approve 500 MW of the 600 MW originally requested and allocate 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 the advice letter was approved by the Commission in July 2015, but 6 intervenors filed Applications for Rehearing with the appellate section. In December of 2015, the Commission re-affirmed their approval of the Carlsbad PPTA. In response to this, petitioners requested that the Court of Appeal overturn the Commission's decision. On February 1, 2016 the Commission responded to this petition. The Court of Appeal will ultimately decide whether the Commission's Decision approving the PPTA was lawfully made. If the Court of Appeal does not grant the writ petition, the CPUC Decision stands. This is expected to be determined by the summer of 2016.

On February 29, 2016, NRG announced via Form 10-K filing to the Securities and Exchange Commission that it does not now expect Carlsbad to be commercially operational until winter 2018.¹⁸ This is a delay of several months from the November 1, 2017 date included in the PPA approved by the CPUC. Further delays due to the court appeals, even if overcome by NRG, have the potential for further delays in the date of commercial operation for Carlsbad. If the actual on-line date of the Carlsbad plant is delayed it may result in a request for OTC compliance date delays for one or more units at Encina. This situation will be closely monitored by SACCWIS, and the State Water Board should expect a further report from SACCWIS later this year.

In its most recent transmission studies, the ISO modeled Encina as offline at the end of 2017, which creates a need for new resources to satisfy local reliability

¹⁸ NRG Energy, Inc., Form 10-K, p. 98, 2/29/2016, see <http://investors.nrg.com/phoenix.zhtml?c=121544&p=irol-SECText&TEXT=aHR0cDovL2FwaS50ZW5rd2l6YXJkLmNvbS9maWxpbnmcueG1sP2lwYWdlPTEwNzgwODEyJkRTRVE9MCZTRVE9MCZTUURFUOM9UOVdVEIPTI9FTIRJUKUmc3Vic2lkPTU3#s25C0190B88FD603E85CBB2843826F997>

requirements. In response to CPUC authorizations, the ISO has performed its studies with modeling the proposed Carlsbad power plant and other resources identified by SDG&E, starting with year 2018. Since the CPUC approval of the PPA for Carlsbad Energy Center per Decision D.15-05-051, the ISO has performed Local Capacity Requirement (LCR) analyses with the updated CPUC-approved capacity of 500 MW for the project starting in summer 2018. This Decision also authorized 100 MW for preferred resources and energy storage in lieu of the 100 MW of conventional resources. Under the circumstances of NRG's announced delay for Carlsbad, the ISO will be conducting sensitivity studies in summer 2018 to determine if some Encina capacity must be online to satisfy local reliability requirements. At this time SACCWIS does not recommend a change in compliance dates for the units at the Encina facility.

Pittsburg

Both NRG's Pittsburg Units 5 and 6 use once-through cooling and are 312 MW and 317 MW steam boilers, respectively. Pittsburg Unit 7 is a 682 MW steam boiler unit that has water-cooled cooling towers. Unit 7 is interconnected to Units 5 and 6 and cannot operate independently of them. To start Pittsburg Unit 7, NRG must start either Unit 5 or 6 first. The final compliance date for Pittsburg under the OTC Policy is December 31, 2017. In response to the State Water Board letter on February 12, 2016 regarding most current information on the implementation update for Pittsburg Generation Station (PGS), NRG continued to affirm its proposed plan to sever the existing cooling towers from Unit 7, connect them to Units 5 and 6 to achieve Track 1 compliance, and then retire Unit 7. This sequence of steps would eliminate once-through cooling at Units 5 and 6 but also would result in the loss of capacity from Unit 7. To finance and construct this new configuration, NRG asserts it needs a multi-year contract from a load serving entity, in advance of December 31, 2017. While NRG has had discussion with PG&E regarding a potential contract that would enable the retrofitting project to go forward, no contract is in place at this time. In a settlement agreement between NRG and the State Water Board, dated October 9, 2014, the State Water Board approved NRG's April 1, 2011 implementation plan to use Track 1. The

settlement agreement reiterates NRG's need for a PPA to enable the conversion project. Lack of a contract could lead NRG to permanently retire the facility.

The ISO's 2015-2019 local capacity study showed that the Pittsburg subarea requirements drop to zero once four transmission system upgrades become operational.¹⁹ SACCWIS understands that three of these four upgrades will be completed in time to ensure reliability should the Pittsburg units retire on the OTC Policy compliance date.

On April 6, 2015, PG&E filed an advice letter for approval to reductor approximately 40 miles of a 230-kV transmission line.²⁰ On February 19, 2016, the CPUC rejected this advice letter without prejudice on multiple grounds.

SACCWIS will continue to monitor the circumstances affecting the reliability of the Pittsburg sub-area, in particular results from additional ISO modeling. SACCWIS does not recommend a change in compliance dates for the units at the Pittsburg facility.

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 1510 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).

¹⁹ The ISO's 2015-2019 local capacity study final results released March 3, 2014 show that the Pittsburg subarea requirements drop to zero with the completion of the Moraga #2 230/115 kV transformer replacement (in-service 2016) Tesla-Pittsburg 230 kV lines reductor (in-service 2015) , Contra Costa-Moraga 230 kV reductor (in-service 2016), and the Vaca Dixon – Lakeville 230 kV reductor project (in-service 2018).

²⁰ The Vaca Dixon – Lakeville 230 kV reductor project.

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 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 2013, Dynegy announced it had secured a contract for the next three years for the output from Units 6 and 7. In the 2015-2016 transmission planning process, the ISO identified a potential need of power blocks 1 and 2 (dispatched at derated capacity) to mitigate future loading concerns on 230kV lines from the Moss Landing Substation under overlapping contingency conditions.¹³

SACCWIS understands that the State Water Board compliance date extension to 2020 will allow Dynegy to pursue Track 2 compliance for its Moss Landing units. Dynegy Moss Landing began entrainment sampling on March 22, 2015, in accordance with its Impingement Mortality and Entrainment Monitoring Plan. 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 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 of 2016. These devices are expected to be delivered in July 2016 with work anticipated to begin by August, 2016 depending on completion of Monterey County permit approval process. 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 1486 MW. The final compliance date for the Ormond Beach facility under the OTC Policy is December 31, 2020. In a settlement agreement, October 9, 2014, between the State Water Board and NRG, Track 1 has been determined to be infeasible for Ormond Beach Generating Station. In its implementation plan update of February 12, 2016, to the State Water

Board, NRG stated its intent to comply with the OTC Policy by December 31, 2020, using Track 2 compliance. NRG submitted an Impingement and Entrainment Sampling Plan to the State Water Board on December 15, 2014. The 36-month entrainment sampling study is planned during 2016-2018 to establish Best Technology Available to achieve compliance with Track 2 requirements. The ISO plans to continue 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 3 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. The settlement agreement dated October 9, 2014, between the State Water Board and NRG, reflects that Track 1 compliance is not feasible for the Mandalay Generating Station.²¹ Compliance can be achieved either through retiring the OTC units and pursuing a replacement project or pursuing Track 2. NRG is pursuing a replacement project, the 262 MW simple cycle generating facility known as the Puente Power Project, at the Mandalay site to comply with the OTC Policy by December 31, 2020.

NRG filed an AFC with the CEC on April 15, 2015, and an Authority to Construct/Determination of Compliance application with the VCAPCD on March 19, 2015. VCAPCD expects to issue the Preliminary Determination of Compliance by the end of April 2016. Based on this schedule, the CEC expects to issue its PSA by late May 2016, followed by VCAPCD's Final Determination of Compliance by late June 2016, and CEC's Final Staff Assessment by mid-August 2016. VCAPCD is not delegated by U.S. EPA to issue federal Prevention of Significant

²¹ 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".

Deterioration (PSD) permits. NRG has indicated the project does not require a PSD permit²² and has stated they control the necessary offsets to mitigate the project's net NO_x emission increases.

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 COD of June 1, 2020. Both the Proposed Decision and Alternate Proposed Decision by Commissioner Florio, issued January 11, 2016, stay a decision until the CEC completes its review of the Puente Power Project. An Alternate Proposed Decision by Commissioner Peterman, issued February 12, 2016, would approve the Puente Power Project contract. The CPUC decision on the proposed contract is spring 2016.

In a February 12, 2016 update to its implementation plan to the State Water Board, NRG confirmed its intent to achieve Track 1 compliance and replace Units 1 and 2 with the Puente Power Project. NRG stated that a delay in CPUC approval, or a rejection of the contract, would impact the project's commercial operation date.

The City of Oxnard has expressed concerns about the proposed Puente Power Project and has proposed modifying several local ordinances to limit allowable uses of the site and surrounding area. The City expects to review and possibly act on the proposed modifications by mid-2016. It has also identified nearby locations that may provide suitable alternatives sites for the expected power production facilities. The City has also identified significant concerns about the expected effects of sea level rise and coastal erosion at the site. All these concerns are being incorporated as part of the AFC review.

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

²² Official confirmation of concurrence on PSD applicability by U.S. EPA is expected to occur during the public notice comment period that commences upon issuance of the Preliminary Determination of Compliance.

energy storage system. Calpine filed the AFC with CEC on December 31, 2015. On January 29, 2016, CEC staff identified the AFC as deficient and outlined the information needed to fulfill data adequacy requirements. Similarly, the VCAPCD deemed the project's Authority to Construct/Determination of Compliance application incomplete on February 24, 2016. 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 ISO has modeled the 262 MW NRG project to replace Mandalay Units 1 and 2, as well as 12.5 MW of preferred resources in its recent 2015-2016 transmission planning studies.¹⁴ The study results for the long-term (until 2025) LCR need for the Moorpark sub-area indicated that SCE-selected procurement would mitigate the identified local resource deficiency for the Moorpark sub-area.²³ 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.

Huntington Beach

AES' Huntington Beach Generating Station (HBGS) 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 2, 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.

There are several sources of information about future plans for Huntington Beach power generating facility: (1) approval of a PPA between AES and SCE by the CPUC, (2) discussions between AES and the CEC preparatory to AES submitting a permit amendment, and (3) formal responses by AES to State Water Board regarding its OTC implementation plans. The nature of repowering projects, their schedules, and perceived need to continue to operate existing facilities at the Huntington Beach site to assure local reliability differ among these alternative sources.

²³ <http://www.caiso.com/Documents/AppendixD-Draft2015-2016TransmissionPlan.pdf>

In its implementation plan update dated February 12, 2016, to the State Water Board AES confirmed its intent to use the OTC Policy's Track 1 compliance alternative for Units 1 and 2 through a repowering project that impacts both its Huntington Beach and Redondo Beach facilities. On October 29, 2014, CEC approved the AFC for a 939 MW electrical generating facility consisting of two independently operated 3-on-1 combined-cycle gas turbine power blocks to replace Units 1 and 2. On September 14, 2015, the applicant submitted a permit amendment for an 844 MW power plant, comprised of Phase 1, a 644 MW CCGT and Phase 2, 200 MW SCGT.

In its updated implementation plan AES estimates it will retire Huntington Beach Unit 1 by December 31, 2019 and Redondo Beach Unit 7 by October 1, 2019 to meet SCAQMD offset requirements and enable the commissioning of the new replacement generating facility of 644 MW CCGT plant, expected to begin commercial operation by March 1, 2020. This replacement generating facility was selected by SCE in its local capacity resource portfolio related to the LTPP Tracks 1 and 4 at the CPUC. In the updated implementation plan, AES estimates that it will retire Unit 2 by December 31, 2020, to meet the State Water Board's OTC implementation date and to provide offsets for the 200 MW peakers. In September 2015, AES submitted a request to amend its CEC license for the new Huntington Beach Energy Project for a change in the generating technology and size of the project to be developed at AES' Huntington Beach. The proposed amendment would allow a new 644 MW CCGT in place of the 470 MW power block 1 and 200 MW of open cycle gas turbine peakers in place of power block 2. AES expects commercial operation of power block 1 to begin during the first or second quarter of 2020 and commercial operation of power block 2 starting in the first quarter of 2024. AES proposes in its PTA demolition of the synchronous condensers (Units 3 and 4) beginning in May 2020.

The ISO will be evaluating whether the Huntington Beach synchronous condensers are needed beyond their contractual expiration dates as part of the ISO 2016-2017 Transmission Planning Process and the 2017 LCR assessment.²⁴ The Reliability Must Run contract for synchronous condenser Unit 3 expires at the end of 2016, whereas the contract for Unit 4 expires at the end of 2017. Previous ISO studies

²⁴ The 2017 LCR assessment is currently performed as part the 2016-2017 Transmission Planning Process.

indicated that the Huntington Beach synchronous condensers at Units 3 and 4 cannot be retired until at least three critical transmission projects are placed in-service: Talega synchronous condensers (in-service August 7, 2015), San Luis Rey synchronous condensers (in-service date June 30, 2017), and the Imperial Valley phase shifting transformers (in-service date June 01, 2017). In addition, the new Carlsbad Energy Center Project, a replacement project for the existing Encina power plant, or electrically equivalent resource with equal capacity, would need to be in service prior to the retirement of Huntington Beach synchronous condensers. In its 2015-2016 transmission planning studies, the ISO modeled the proposed 644 MW Huntington Beach repowering to replace Huntington Beach 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 consists of six units using once-through cooling. Total capacity of these units is approximately 2000 MW. The final compliance date for the Alamitos facility under the OTC Policy is December 31, 2020. In a February 12, 2016, 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 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 5 will be retired

after the AEC CCGT commences operation and that Units 3, 4, and 6 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.

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 approvals for the additional 200 MW of storage and 400 MW of gas peakers.

The existing Alamitos units are contracted and expected to remain operational through May 31, 2018 and will be retired on an individual basis. This will take place if it is no longer economic to operate and sell into the spot market, the unit needs to be decommissioned to allow for a new replacement, or the unit reaches its OTC compliance date. AES plans to shut down Units 1, 2, and 5 on December 31, 2019 to provide emission offsets for the new 640 MW CCGT, which has a commercial operation date of April 1, 2020. Units 3, 4, and 6 are anticipated to comply with the OTC policy by December 31, 2020.

In its 2015-2016 transmission planning studies, the ISO modeled the proposed 640 MW Alamitos Energy Center to replace Alamitos after 2020. The ISO recently published draft results of the LCR studies as part of its 2015-2016 Transmission Planning Process. The study results for 2021 show that in the event one of the planned transmission projects, Mesa Loop-in, is delayed beyond summer 2021, a resource deficiency occurs, and a temporary extension of Redondo Beach or Alamitos 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.

Redondo Beach

AES' Redondo Beach Generating Station consists of four units using once-through cooling. Total capacity of these units is approximately 1300 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. In its implementation plan update of February 12, 2016, AES confirmed the OTC Policy compliance timeline for its units. Unit 7 is scheduled to shut down October 1, 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. In addition, AES states that given future uncertainty, AES' Redondo Beach may look at alternatives that would allow AES to comply with the OTC policy while continuing operation of the existing units.

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 ISO modeled Redondo Beach offline after 2020 in its transmission planning studies. The ISO recently published draft results of the LCR studies as part of its 2015-2016 Transmission Planning Process. The study results for 2021 show that in the event one of the planned transmission projects, Mesa Loop-in, is delayed beyond summer 2021, a resource deficiency occurs, and a temporary extension of Redondo Beach or Alamitos 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. 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 a few owners are 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. 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. Provided that Huntington Beach and Encina generating stations maintain their scheduled compliance dates per the OTC Policy, at this time, SACCWIS does not recommend an extension of the final compliance schedule in the OTC Policy for any facility. As discussed above, new information about the delay in start of commercial operations for the new Carlsbad Energy Center Project until 1Q2018 raised the possible need to delay the compliance date of some Encina units. Further studies are required to examine the reliability implications of the new Carlsbad delay and develop a specific approach to respond to any identified reliability need. SACCWIS intends to provide a supplemental report to the State Water Board later in 2016.

In the future, SACCWIS plans to provide additional information to the State Water Board concerning new infrastructure development in the ISO's local capacity areas and system to advance implementation of the OTC Policy.

APPENDIX A

ACTUAL WATER FLOW DATA FOR ONCE-THROUGH COOLING FACILITIES

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

Source: EPA Flow Data, (Intergraded Compliance Information System (ICIS) Database) Renan Jauregui, Updated on May 3, 2016