Report of the Statewide Advisory Committee on Cooling Water Intake Structures

July 2015

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 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

[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 Statewide 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.

for power plant cooling. Table 1 shows the plants in the ISO and LADWP balancing authority areas that have achieved compliance, several of which did so well in advance of their mandated 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
Potrero 3	206	Oct. 1, 2011	Retired Feb. 28, 2011
South Bay	296	Dec. 31, 2011	Retired Dec. 31, 2010
El Segundo 3	335	Dec. 31, 2015	Retired July 27, 2013[5]
Haynes 5, 6		Dec. 31, 2013	Retired June 2013[6]
Morro Bay 3, 4	650	Dec. 31, 2015	Retired Feb. 5, 2014
Contra Costa 6, 7	674	Dec. 31, 2017	Retired April 30, 2013[7]
Huntington Beach 3, 4	452	Dec. 31, 2020	Retired Nov. 1, 2012
San Onofre 2, 3	2,246	Dec. 31, 2022	Retired June 7, 2013[8]

The capacity of the remaining OTC plants are 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] NRG retired El Segundo 3 and replaced it with El Segundo 5-8.
[6] LADWP retired Haynes 5-6, and replaced them with Haynes 11-16.
[7] Although NRG retired Contra Costa Units 6-7, the Marsh Landing facility was constructed immediately next to the retired facility.
[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	SWRCB Compliance Date	Unit Capacity	ANNUAL CAPACITY FACTORS		
			2012	2013	2014
ISO BAA Units					
Alamitos Unit 1	12/31/2020	175	2.20%	0.90%	1.40%
Alamitos Unit 2	12/31/2020	175	4.00%	1.60%	5.40%
Alamitos Unit 3	12/31/2020	326	13.00%	12.60%	16.60%
Alamitos Unit 4	12/31/2020	324	9.70%	11.90%	18.70%
Alamitos Unit 5	12/31/2020	485	9.70%	11.40%	1.70%
Alamitos Unit 6	12/31/2020	485	7.10%	6.00%	4.50%
El Segundo Unit 4	12/31/2015	335	11.70%	12.40%	6.20%
Encina Unit 1	12/31/2017	107	14.20%	4.00%	2.00%
Encina Unit 2	12/31/2017	104	13.90%	2.90%	2.60%
Encina Unit 3	12/31/2017	110	16.30%	5.30%	4.70%
Encina Unit 4	12/31/2017	300	14.10%	5.10%	6.30%
Encina Unit 5	12/31/2017	330	17.80%	7.70%	9.90%
Huntington Beach Unit 1	12/31/2020	215	12.60%	16.80%	22.30%
Huntington Beach Unit 2	12/31/2020	215	27.30%	26.50%	26.20%
Mandalay Unit 1	12/31/2020	218	5.20%	4.50%	3.60%
Mandalay Unit 2	12/31/2020	218	5.50%	6.20%	4.00%
Moss Landing Unit 1	12/31/2020[9]	540	46.90%	48.40%	39.20%
Moss Landing Unit 2	12/31/2020	540	47.00%	49.90%	47.00%
Moss Landing Unit 6	12/31/2020	702	4.90%	4.30%	0.90%
Moss Landing Unit 7	12/31/2020	702	4.40%	1.80%	0.40%
Ormond Beach Unit 1	12/31/2020	806	2.70%	2.80%	0.80%
Ormond Beach Unit 2	12/31/2020	806	1.00%	5.80%	2.40%
Pittsburg Unit 5	12/31/2017	325	3.70%	2.30%	0.60%
Pittsburg Unit 6	12/31/2017	325	3.30%	1.10%	1.10%
Redondo Beach Unit 5	12/31/2020	179	3.30%	1.10%	2.30%
Redondo Beach Unit 6	12/31/2020	175	5.00%	2.70%	2.10%
Redondo Beach Unit 7	12/31/2020	505	8.40%	4.00%	0.90%

[9] In a signed settlement agreement, October 9, 2014, between Dynegy and the State Water Board staff, the OTC compliance date will extend from December 31, 2017 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. SACCWIS understands the State Water Board must modify the OTC policy to give effect to this provision of the settlement agreement.

Units	SWRCB Compliance Date	Unit Capacity	ANNUAL CAPACITY FACTORS		
			2012	2013	2014
Redondo Beach Unit 8	12/31/2020	496	1.40%	1.50%	3.30%
LADWP BAA Units					
Harbor 5	12/31/2029	75	4%	3%	3.30%
Haynes Unit 1	12/31/2029	230	15%	7%	12.70%
Haynes Unit 2	12/31/2029	230	21%	19%	13.10%
Haynes 8	12/31/2029	264	22%	48%	34.20%
Scattergood Unit 1	12/31/2024	163	4%	11%	24.50%
Scattergood Unit 2	12/31/2024	163	30%	19%	6.60%
Scattergood Unit 3	12/31/2015	497	14%	18%	16.10%

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

III. The California Public Utilities Commission (CPUC), 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 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 toward or, changes in retirement deadlines. In addition to system-wide analyses, the LTPP also evaluates capacity requirements in localized, high-demand areas. The 2010 LTPP (R.10-05-006) examined local needs in the San Francisco Bay Area and San Diego. The CPUC's 2012 LTPP (R.12-03-014) examined the effect of potential retirements of units using once-through cooling in Ventura County and the Los

Angeles Basin. At the same time, the CPUC examined the reliability needs that could result from the retirement of the Encina Power Station in San Diego County (Application 11-05-023). Both proceedings authorized CPUC-jurisdictional load serving entities to enter into contracts to bring new resources on-line before the OTC Policy compliance dates for OTC generation in these areas. With the retirement of SONGS, the CPUC, CEC, and ISO took appropriate steps to ensure reliability. After cooperatively establishing modeling assumptions, the ISO filed testimony in the 2012 long-term procurement plan proceeding, Track 4. The CPUC relied on this testimony, and that of other parties, in authorizing additional resources to be developed in the Los Angeles Basin and San Diego in light of the SONGS closure.

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 capacity 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. [10] The applications for those resources, which total 2,157 MW for SCE (1,883 MW via Tracks 1 and 4 and an additional 274 MW in the Moorpark sub-area of Ventura County) - and 600 MW for SDG&E - are currently under review by the CPUC.[11] A decision on the SDG&E application to re-power the Encina Power Station[12] was conditionally approved at the May 21st, 2015 Commission meeting. This Decision directs SDG&E to file an amended contract for 500 MW instead of the original 600 MW, with the remaining 100 MW allocated to preferred resources and energy storage. An

[10] 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

[11] SCE Application (A.14-11-016) for resources in Moorpark/Ventura County, available online at: http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=143307496

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

additional application from SDG&E to procure preferred resources and energy storage, including this additional 100 MW, is expected in January, 2016. See summary tables below for authorizations and details on pending applications of SCE Tracks 1 and 4, and SDG&E.

Table 3: Southern California Edison Tracks 1 and 4 Authorizations

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

Table 4: Southern California Edison Pending Application Details[13]

Resource Type	Location	Capacity	Status
Energy Efficiency	Western LA Basin	124 MW	Under Review
Demand Response	Western LA Basin	75 MW	Under Review
Distributed Generation	Western LA Basin	38 MW	Under Review
Energy Storage	Western LA Basin	264 MW	Under Review
Combined Cycle Gas Turbine	Alamitos	640 MW	Under Review
Combined Cycle Gas Turbine	Huntington Beach	644 MW	Under Review
Gas Combustion Turbine	Stanton	98 MW	Under Review
Energy Efficiency	Big Creek/Ventura	6 MW	Under Review
Distributed Generation	Big Creek/Ventura	6 MW	Under Review
Energy Storage	Big Creek/Ventura	0.5 MW	Under Review
Gas Combustion Turbine	Mandalay	262 MW	Under Review

[13]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	Additional Track 4 Authorization	Total Authorization	Pending & Approved Applications
Preferred Resources & Energy Storage (Minimum)	--	200 MW	200 MW	0 MW
Optional: Any Resource	300 (Pio Pico)	300 to 600 MW	600 to 900 MW	900 MW
Total	300 MW	500 to 800 MW	800 to 1100 MW	900 MW

Table 6: San Diego Gas & Electric Pending Application Details

Resource Type	Location	Capacity	Status
Gas Combustion Turbine	Western SD County	300 MW	Approved
Gas Combustion Turbine	Encina site	500 MW	Conditionally Approved[14]

In addition to its work supporting the CPUC long term procurement plan 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

[14] SDG&E Must file an AL for an amended PPA for 500 MW instead of 600 MW, see discussion section on "Encina" below.

[15] 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

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 2014/2015 transmission planning process indicates that the authorized resources, forecast load, and previously-approved transmission projects working together meet the reliability needs in the LA Basin and San Diego areas. Only one minor project, South of Mesa 230 kV line upgrades, was identified in this planning cycle. 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 Plans[16] 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	6/30/2015
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 (as latest)

[16] 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

	Transmission Projects	PTO service territory	Target in-service dates
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

The CEC is the lead agency for licensing thermal power plants 50 MW and larger and has a regulatory certification process (certification process) under the California Environmental Quality Act.[17] Under this process, the CEC conducts an environmental analysis of each project's Application for Certification (application), 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 May 2015, the CEC received four Applications for Certification to replace some or all of the power production units at AES' Alamitos, AES Huntington Beach, AES Redondo Beach, and NRG Mandalay facilities, and two Petitions to Amend Certifications for Carlsbad and El Segundo facilities.

- The Alamitos application was underway following CEC's March 12, 2014 determination that the application is data adequate, but now AES intends to file a Supplemental Application for Certification (SAFC). On November 5, 2014, AES was selected by SCE for a Power Purchase Agreement, subject to the CPUC review and approval, for the Alamitos facility, with different equipment, configuration, and lower capacity than the information

[17] Under this program, a project developer files an Application for Certification 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.

submitted to the CEC in its application. At the December 16, 2014 status conference with the CEC, the applicant proposed substantial changes to the configuration of the Alamitos project that would reduce the nominal generating capacity from 1,995 MW to 1,040 MW. The applicant indicated that it would file an SAFC in the third quarter of 2015. CEC Staff is awaiting the new SAFC information before completing their Preliminary Staff Analyses.

- The Huntington Beach application was approved by the CEC on October 29, 2014. Subsequently, AES was selected for a Power Purchase Agreement by SCE for the Huntington Beach facility, subject to the CPUC review and approval, with different equipment, configuration than approved by the CEC. The applicant is expected to file a Petition to Amend Certification in mid-2015.
- The Redondo Beach application is in process. The CEC accepted the application as data adequate on August 27, 2013, and CEC staff published the Preliminary Staff Assessment (PSA) on July 28, 2014. AES submitted the Harbor Village Plan Initiative petition to the City of Redondo Beach, which sought the approval of the electorate in Redondo Beach for a land use plan for the RBEP site as a mixed-use development of 600 new residences, 250 hotel rooms, and 85,000 square feet of commercial space. On August 20, 2014, Applicant filed a “Notice of Suspension of Application for Certification” (Applicant’s Notice). On September 2, 2014, the CEC ordered that all proceedings in the AFC are suspended pursuant to the Applicant's Notice until April 1, 2015. 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 AFC process.
- The Puente Power Project (Mandalay) application was filed on April 15, 2015, and is in process. On June 2, 2015, CEC staff has determined that

all of the information has been provided to fulfill the AFC data adequacy requirements, including a May 28, 2015, letter from the Ventura County Air Pollution Control District deeming the request for Authority to Construct complete. The CEC accepted the AFC as data adequate on June 10, 2015.

- The El Segundo Energy Center Petition to Amend is under review. On April 23, 2013, ESEC filed a petition with the California Energy Commission requesting to replace utility boiler Units 3 and 4 with one new combined cycle generator (Unit 9), one steam turbine generator (Unit 10) and two simple-cycle gas turbines (Units 11 and 12) for the El Segundo Energy Center (ESEC) project totaling 449 MW. The current amendment proposes the demolition of Units 3 and 4, to be replaced with Units 9, 10, 11, and 12, which all use dry cooling technology. CEC staff received the Final Determination of Compliance (FDOC) from the South Coast Air Quality Management District (SCAQMD). CEC staff published the Final Staff Assessment (FSA) Part A on October 6, 2014, which contains the staff's independent evaluation for all technical sections with the exception of Air Quality. The Air Quality section will be published in a subsequent FSA Part B. The applicant is seeking several changes to the FDOC that will require the issuance of an errata to the FDOC by SCAQMD.
- The Carlsbad Energy Center petition to amend is also under review, as discussed above. 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. Developments in January 2014 suggested that the Carlsbad Energy Center will be redesigned as peaking power plants, requiring an amendment to the permit for the Carlsbad Energy Center. NRG submitted a Petition to Amend 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. CEC staff received the Preliminary Determination of Compliance (PDOC) from the San Diego Air Pollution Control District on December 12, 2014. CEC staff released the

Preliminary Staff Analysis regarding the amendment on December 17, 2014 and the Final Staff Analysis on February 17, 2015, which is a milestone in the certification process.

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 the California Air Resources Board (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 explained by representatives of the CEC and the State Water Board at the August 20, 2014 workshop within the CEC's 2014 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. Since 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. 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 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.[18]

Rule 1304.1

On September 6, 2013, SCAQMD adopted Rule 1304.1 – Electrical Generating Facility Fee for Use of Offset Exemption – to enable the imposition of fees for emission offsets provided from SCAQMD's internal offset bank for utility steam boiler repower projects. SCAQMD's existing Rule 1304(a)(2) exempts from provision of offsets any steam generating boilers that are replaced by advanced generation technologies such as combined-cycle gas turbines. Although the exemption removes the offset obligation from the power plant operator, SCAQMD itself must provide the offsets to satisfy federal New Source Review requirements. Importantly, such offsets have historically been provided from the District's internal bank free of charge. With Rule 1304.1 in place, electrical generating facilities that use the Rule 1304(a)(2) offset exemption must now pay fees when using this exemption. The fee proceeds will be invested in air pollution improvement projects consistent with SCAQMD's Air Quality Management Plan. SCAQMD's rule requires generator developers to make a payment on an annual basis or as a single payment - or a combination of both - at the election of the applicant. A refund of fees is available via written request prior to the commencement of operation for cancelled projects, or prior to the commencement of construction for project amendments that will reduce capacity. SACCWIS will continue to monitor whether this rule has an adverse impact on repowering projects.

Proposed Rules 1304.2 and 1304.3

Separately, on February 7, 2014, SCAQMD's Governing Board authorized its staff to start work on a proposed rulemaking to allow new power plants and expansion projects at existing power plants to access the SCAQMD internal offset bank to meet offset requirements by paying mitigation fees for projects deemed necessary by the state energy agencies for grid reliability. To date, SCAQMD staff has met informally with key stakeholders, held three working group meetings (July and November 2014

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

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). 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 Long-Term Procurement Plan (LTPP) authorized gas-fired resources for IOU projects and to projects serving native load and 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 the power plants are located and to environmental justice areas. SCAQMD staff requested comments on the April 2015 versions of the draft rules from the stakeholder Working Group and plans to hold a fourth working group meeting in the near future. The rules are expected to go before the SCAQMD Governing Board for adoption in late third quarter to early fourth quarter of this year. Technical staff of most SACCWIS agencies will continue to participate in the rule development process.

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: El Segundo, 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.[19]

El Segundo

NRG completed a repowering project that consists of two combined cycle facilities that use dry air cooling. This project reached commercial operation in summer 2013. As part of that repowering, NRG retired Unit 3 (Units 1 and 2 retired previously). El Segundo Unit 4 uses once through cooling technology. The final compliance date for El Segundo Unit 4 under the OTC Policy is December 31, 2015. NRG submitted a Petition to Amend on April 28, 2013 to the CEC to repower Unit 4, which proposes the demolition of Units 3 and 4, to be replaced with Units 9, 10, 11, and 12 and dry cooling technology.

In its original April 1, 2011 implementation plan, NRG stated that it intended to repower El Segundo Unit 4 and wanted an extension of its compliance date to 2017 to enable NRG to pursue repowering without the loss of operating capacity at the El Segundo facility. In a letter submitted to the State Water Board dated January 30, 2013, NRG stated it will retire unit 4 no later than December 31, 2015, and in a letter submitted to the State Water Board dated November 7, 2013, NRG states that demolition of units 3 and 4 and construction of units 9 through 12 would follow the retirement of unit 4 by its OTC compliance deadline of December 31, 2015. At this time, NRG does not have a power purchase agreement with a load serving entity to support repowering Unit 4. The ISO modeled Unit 4 as offline after 2015 as part of its planning studies. At this time, SACCWIS does not recommend a change in compliance date for El Segundo Unit 4.

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

[19] For example, in Decisison12-04-046, 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 Statewide Policy. This decision influences the sequence of steps and therefore the timing of any potential extension of compliance dates under the Statewide Policy.

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. NRG received a permit from the CEC for such a facility in June 2012. For Units 4-5 (an aggregate of 632 MW), NRG proposed retrofitting these units pursuant to the Track 2 option to reduce environmental impacts. In 2013, NRG informed the State Water Board that it still plans to replace Units 1-3 with the Carlsbad Energy Center but it 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 Petition to Amend 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 combustion gas turbine power plant. SDG&E has submitted an application to the CPUC for approval of a power purchase agreement 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 21st, 2015 the CPUC adopted a Decision 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 orders SDG&E to file the revised contract within 30 days.

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 regional reliability requirements. In response to CPUC authorizations, the ISO has performed its studies with modeling the proposed Carlsbad power plant and other resources identified by San Diego Gas and Electric, starting with year 2018. Once the contracts for these resources and the expected in-service dates are known with certainty, the ISO will perform future analysis with the updated in-service dates. SACCWIS will continue to monitor the circumstances affecting the Encina compliance date and bring forward any recommended change based on more complete information.

Pittsburg

NRG's Pittsburg Units 5 and 6 are 312 MW and 317 MW steam boilers, respectively. Both units use once-through cooling. 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 independent 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 SWRCB on April 23rd, 2015, regarding most current information on 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, 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, but NRG has not yet obtained a contract that would support the implementation of the retrofit project. In a settlement agreement between NRG and the State Water Board, 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 power purchase agreement to enable the conversion project and lack of a contract could lead NRG to permanently retire the facility.

The ISO's 2015-2019 local capacity study final results show that the Pittsburg subarea requirements drop to zero once four transmission system upgrades become operational.[20] Based on updated information from the ISO, SACCWIS understands these upgrades will be completed in time to ensure reliability should the Pittsburg units retire on the OTC Policy compliance date. SACCWIS will continue to monitor the circumstances affecting the reliability of the Pittsburg sub-area. SACCWIS does not recommend a change in compliance dates for the units at the Pittsburg facility.

[20] 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 reconductoring (in-service 2015) , Contra Costa-Moraga 230 kV reconductoring (in-service 2016), and the Vaca Dixon – Lakeville 230 kV reconductoring project (in-service 2018).

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 OTC Policy is December 31, 2017. In a signed settlement agreement, October 9, 2014, between Dynegy and the State Water Board staff, 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 SACCWIS understands the State Water Board must modify the OTC policy to give effect to this provision of the settlement agreement.

In its April 1, 2011 implementation plan, Dynegy proposed a 2032 compliance date for power blocks 1 and 2, and to implement Track 2 retrofit measures by 2017 for Units 6 and 7. 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 such time 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. While Moss Landing is not located within an ISO local reliability area, power blocks 1 and 2 are newer dispatchable combined cycle facilities. 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.

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 staff and NRG, Track 1 has been determined to be infeasible for Mandalay and Ormond Beach Generating Stations. The CPUC authorized procurement of between 215MW and up to 290 MW in the Moorpark sub-area of the Big Creek/Ventura local reliability area where Ormond Beach is located. NRG is evaluating a replacement project at the Ormond Beach facility and reports it is on track to comply with the OTC Policy by December 31, 2020. NRG has not yet obtained a contract that would support either a replacement project at Ormond Beach or technology and operational controls to achieve Track 2 compliance. 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 Mandalay and Ormond Beach Generating Stations[21], and compliance can be achieved either through retiring the OTC units and pursuing a replacement project or pursuing Track 2. NRG is evaluating a replacement project at the Mandalay facility and reports it is on track to comply with the OTC Policy by December 31, 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

[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."

Application to the CPUC for Approval of its 2013 Local Capacity Requirements Request for Offers per CPUC Decision D.13-02-015 specifies that NRG plans to build a 262-MW peaking generating unit at the Mandalay site with a commercial online date of June 1, 2020. In its implementation plan update of April 23, 2015, to the SWRCB, NRG confirmed its intent to achieve Track 1 compliance and replace Units 1 and 2 with the 262-MW Puente Power Project. NRG filed an Application for Certification with the CEC on April 15, 2015, and an Authority to Construct/Determination of Compliance application with the Ventura County Air Pollution Control District (VCAPCD) on March 19, 2015. Although the CEC and VCAPCD applications are still in review, NRG has indicated the project does not require a federal Prevention of Significant Deterioration permit and has stated they control the necessary offsets to mitigate the project's net NOx emission increases. 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, and plans to continue to model these, up to the upper limit of the authorized level (i.e., 290 MW) if needed, in its upcoming annual transmission planning studies and will provide the results of those studies to SACCWIS. 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 facilities: (1) the submission of a proposed power purchase agreement by SCE to the CPUC for review and approval, (2) discussions between AES and the CEC preparatory to AES submitting a permit amendment, and (3) formal

responses by AES to SWRCB 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.

In its implementation plan update of March 31, 2013, 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. CEC has since approved the Application for Certification (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. In its November 8, 2013 implementation plan update, AES conveyed that the construction and demolition schedule provided in the AFC proceeding is not indicative of current plans and was generated to analyze the maximum potential environmental impacts that could occur under the most aggressive schedule.

In its April 23, 2015 implementation plan update AES estimates it will retire Huntington Beach Unit 1 by October 31, 2019 to meet SCAQMD offset requirements and enable the commissioning of the new replacement generating facility of 644 MW combined cycle gas turbine (CCGT) plant, expected to begin commercial operation by May 1, 2020. This replacement generating facility recently was selected by Southern California Edison (SCE) Company in its local capacity resource portfolio related to the Long-Term Procurement Plan (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 SWRCB's OTC implementation date. AES-SL plans to amend the California Energy Commission (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-HB. An amendment to the license will be submitted in the summer of 2015 that will detail a new 644 MW CCGT in place of the 470 MW power block one and 200 MW of open cycle gas turbine peakers in place of power block two. AES assumed that the synchronous condensers will run through September 30, 2018 at the latest, at which time they will be retired.

ISO studies 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 date 2015), San Luis Rey synchronous condensers (in-service date 2017), and the Imperial Valley phase shifting transformers (in-service date 2017). In addition, Carlsbad Energy Center Project, a replacement project for the existing Encina power plant, or electrically equivalent resource with same amount of capacity, would also need to be in service prior to the retirement of Huntington Beach synchronous condensers. In its 2015-2016 transmission planning studies (i.e., local capacity requirement studies), the ISO intends to model at least 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.

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 Statewide Policy is December 31, 2020. In a November 8, 2013, update to their implementation plan, AES is reaffirmed its intent to repower the Alamitos facility in order to comply with Track 1 of the Statewide 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. All six operating units and retired Unit 7 would be demolished as part of the proposed project. Construction and demolition activities at the site would occur from first quarter 2016 until third quarter 2027. As mentioned in Section III, on November 5, 2014, AES was awarded a Power Purchase Agreement contract with SCE, pending CPUC approval, for the Alamitos Energy Center, with different equipment, configuration, and smaller capacity (640 MW) than the information submitted in the AFC to CEC. January 2015 project status documents from the CEC siting case indicate AES is currently working toward filing a Supplemental AFC and has been coordinating with CEC staff on informational needs. AES indicates a reduced project size of 1,040 MW

and a proposed filing of the SAFC in 3rd quarter 2015. SWRCB requested an updated implementation plan from AES detailing descriptions of any changes, along with the detailed schedule for such activity.

In August of 2015, AES intends to provide additional information to the CEC as well as new applications to the SCAQMD for a revised AEC that will consist of 640 MW of CCGT generation, 300 MW of energy storage, and 400 MW of gas peakers. The 640 MW of CCGT and 100 MW of energy storage was awarded to AES in a recent SCE RFO, while AES is pursuing approvals for the additional 200 MW of storage and 400 MW of gas peakers. On April 23, 2015, AES responded and again re-affirmed its intent to utilize Track 1 compliance and permanently retire all six generation units. These units - which are contracted and expected to remain operational through May 31, 2018 – 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. Units 5 and 6 are contingent upon AES' other generators – if the CPUC approves new AES CCGTs at Alamitos and Huntington Beach, units 5 and 6 would be retired in 2019 to qualify for emission offsets. If these PPAs are not approved, Units 5 and 6 will operate until their 2020 compliance deadline, and Unit 1 would no longer need to be de-rated to 136 MW on October 1, 2019. In its 2015-2016 transmission planning studies (i.e., local capacity requirement studies, the ISO intends to model at least the proposed 640 MW Alamitos Energy Center to replace Alamitos after 2020 and will continue to provide the results of those studies to SACCWIS. At this time, however, SACCWIS does not recommend a change in compliance date for the Alamitos facility.

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' Application for Certification at the CEC was suspended until April 1, 2015. AES had proposed alternative land use of the site, 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. AES has resumed repowering the facility, and the permitting process is underway again. In its implementation plan update of April 23, 2015, AES provided a revised OTC Policy compliance timeline for its units. Unit 5 is scheduled to shutdown August 31, 2019 in advance of the OTC Policy compliance date to accommodate the new Alamitos CCGT, while Units, 6, 7, and 8 are scheduled to shutdown December 31, 2020 on the OTC Policy compliance date. In addition, AES states that given future uncertainty, AES-RB reserves the right to modify its plans and pursue alternatives that would allow continued operation of the existing units beyond the OTC Policy compliance date.

AES has not yet obtained a contract that would support the repowering project. Given the Track 1 and Track 4 procurement activities to date, the ISO intends to model Redondo Beach 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 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[22]. The CPUC has authorized new electric resources to replace a portion of the OTC capacity subject to the statewide 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

[22] For example, Alamitos Generating Station's total capacity is about 2,000 MW, and SCE has submitted an application to the CPUC for 640 MW conventional generation and 100 MW storage at Alamitos. In its April 23, 2015 generator response letter to the SWRCB, AES indicates it plans to revise its Application for Certification with the CEC for a reduced project size at Alamitos for 1,340 MW, comprised of 640 MW CCGT, 400 MW of open cycle gas turbine peakers and 300 MW of battery energy storage. Ormond Beach is another example demonstrating that not all OTC units need to be replaced. Ormond Beach is 1,486 MW, and NRG has not yet obtained a contract that would support either a replacement project or technology and operational controls to achieve Track 2.

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 OTC facilities would still mean ocean water usage reductions faster than contemplated by the compliance dates of the adopted OTC policy. At this time, SACCWIS does not recommend an extension of the final compliance schedule in the OTC Policy for any facility. 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.