DRAFT 2022 Special Report of the Statewide Advisory Committee on Cooling Water Intake Structures

September 20, 2022

Acronyms and Abbreviations

1-in-10 LOLE	1-in-10 Loss of Load Expectation
AB	Assembly Bill
AFC	Application for Certification
Alamitos	Alamitos Generating Station
BAA	Balancing Authority Area
BARCT	Best Available Retrofit Control Technology
CAISO	California Independent System Operator
CARB	California Air Resources Board
CCC	California Coastal Commission
CCGT	Combined Cycle Gas Turbine
CEC	California Energy Commission
CERS	California Energy Resources Scheduling
COVID-19	Coronavirus Disease 2019
CPUC	California Public Utilities Commission
Diablo Canyon	Diablo Canyon Nuclear Power Plant
DWR	Department of Water Resources
Energy Agencies	California Public Utilities Commission, California Independent System Operator, and California Energy Commission
Huntington Beach	Huntington Beach Generating Station
IRP	Integrated Resource Planning
kV	Kilovolt
LADWP	Los Angeles Department of Water and Power
LCR	Local Capacity Requirement
Los Angeles Regional Water Board	Los Angeles Regional Water Quality Control Board
LTPP	Long-Term Procurement Plan
March 2022 SACCWIS Report	2022 Report of the SACCWIS

MGD	Million Gallons per Day
MVAR	Mega Volt, Ampere, Reactive
MW	Megawatt
New Source Review	New and Modified Stationary Source
NO_x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NQC	Net Qualifying Capacity
Ormond Beach	Ormond Beach Generating Station
OTC	Once-Through Cooling
PG&E	Pacific Gas and Electric
PPA	Power Purchase Agreement
PTA	Petition to Amend
PTC	Permit to Construct
PTO	Participating Transmission Owner
RECLAIM	Regional Clean Air Initiatives Market
Redondo Beach	Redondo Beach Generating Station
SACCWIS	Statewide Advisory Committee on Cooling Water Intake Structures
Santa Ana Regional Water Board	Santa Ana Regional Water Quality Control Board
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
Scattergood	Scattergood Generating Station
SCE	Southern California Edison
SCGT	Single Cycle Gas Turbine
SDG&E	San Diego Gas & Electric
SONGS	San Onofre Nuclear Generating Station
State Water Board	State Water Resources Control Board
Strategic Reserve	Strategic Reliability Reserve Fund
TED	Tracking Energy Development

TSO	Time Schedule Order

I. Executive Summary

The Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS) has prepared this report to the State Water Resources Control Board (State Water Board) to summarize the State of California's current electrical grid reliability needs. This report includes a recommendation from the SACCWIS to the State Water Board to extend compliance dates set forth in the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling, also known as the Once-Through Cooling (OTC) Policy,[1] for Alamitos Generating Station (Alamitos) Units 3, 4, and 5; Huntington Beach Generating Station (Huntington Beach) Unit 2; and Ormond Beach Generating Station (Ormond Beach) Units 1 and 2 for three years from December 31, 2023, through December 31, 2026, to support system reliability. The California Independent System Operator (CAISO), California Energy Commission (CEC), California Public Utilities Commission (CPUC), California State Lands Commission, California Coastal Commission (CCC), and State Water Board support a request from the Los Angeles Department of Water and Power (LADWP) to extend the OTC Policy compliance date of Scattergood Generating Station (Scattergood) Units 1 and 2 for five years, from December 31, 2024, to December 31, 2029, to support local system reliability. California Air Resources Board (CARB) staff will evaluate the LADWP's request over the next couple of months.

The OTC Policy was last amended in 2021. In August 2020, swaths of the western United States encountered a prolonged and extreme heat wave creating serious stresses on the western electricity grid. In response, the CPUC, CAISO, and CEC (the energy agencies), conducted a stack analysis as directed by the Final Root Cause Analysis Report, which identified grid reliability concerns in summer 2022 and uncertainties that could jeopardize grid reliability in summer 2023. Based on this analysis, the SACCWIS recommended extending the OTC Policy compliance schedule of Redondo Beach Generating Station (Redondo Beach) Units 5, 6, and 8 for two years, from

[1] State Water Resources Control Board (State Water Board). 2021. Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling. Sacramento, CA: State Water Board. Originally adopted in 2010.

December 31, 2021, through December 31, 2023. On October 19, 2021, the State Water Board amended the OTC Policy under Resolution No. 2021-0048,[2] which extended the compliance date of Redondo Beach, as recommended by the SACCWIS, to address system-wide grid reliability in the CAISO balancing authority area (BAA). This OTC Policy amendment was approved by the Office of Administrative Law on December 23, 2021.

On March 14, 2022, the SACCWIS convened and adopted the 2022 Report of the SACCWIS (March 2022 SACCWIS Report).[3] In March, the SACCWIS did not recommend any changes to the final compliance dates in the OTC Policy for power plants within the CAISO BAA because no new system-wide grid reliability issues in the CAISO BAA were identified at that time. Additionally, the CPUC and CAISO had conducted analyses prior to the March 2022 SACCWIS Report's release showing sufficient energy and transmission project development to support system reliability based on two previous CPUC decisions.

Since the March 2022 Report of the SACCWIS was approved, the energy agencies conducted a new reliability analysis that considers impacts from extreme weather events, wildfires, supply chain constraints, interconnection and permitting concerns, and improved climate change updates in the electricity demand forecast. The analysis also considered the potential for coincidental events that could further adversely impact system-wide reliability, such as a simultaneously occurring extreme heat wave, drought, and wildfire affecting transmission capacity. The resulting conclusions of this analysis identified a need for resource capacity beyond existing required planning criteria used to support the conclusions in the March 2022 SACCWIS Report. Specifically, this analysis identified a projected shortfall as high as 10,000 megawatts (MW) in summer 2025. The energy agencies presented these issues at a CEC workshop on May 20, 2022, and discussed potential options to address the risk to grid reliability during coincidental extreme events including separate capacity resources available for emergency contingency use. The

[2] State Water Resources Control Board (State Water Board). 2021. Resolution No. 2021-0048. Sacramento, CA: State Water Board.
[3] State Water Resources Control Board (State Water Board). 2022. 2022 Report of the Statewide Advisory Committee on Cooling Water Intake Structures. Sacramento, CA: State Water Board.

CEC, with participation of the Office of Governor Gavin Newsom and the CAISO, held another joint agency workshop on August 12, 2022, to discuss the role that the Diablo Canyon Nuclear Power Plant (Diablo Canyon) could have in supporting mid-term electric reliability and California's clean energy transition.

In recognizing these issues, the State Legislature subsequently adopted and the Governor signed Assembly Bill (AB) 205,[4] which created a state-wide Electricity Supply Strategic Reliability Reserve Program (Strategic Reserve) to bolster system reliability while California procures clean energy resources, including extending the operations of power plants currently scheduled for retirement. In response to projected shortfalls, the Strategic Reserve acknowledges that existing generation assets will be required to maintain reliability during extreme events as California transitions to a clean energy future. This report examines existing OTC power plants as potential assets to serve as emergency resources within the state's newly mandated Strategic Reserve and existing OTC power plants to support mid-term reliability.

The State Legislature also adopted, and the Governor signed, Senate Bill (SB) 846, which: allocated $1.4 billion to Pacific Gas and Electric (PG&E) to support relicensing costs associated with extension of the operations of the Diablo Canyon; set aside the existing CPUC decision authorizing the 2024 and 2025 retirement dates of Diablo Canyon Units 1 and 2, respectively; authorized a fee structure for PG&E to receive in return for continued operations of Diablo Canyon; and revised the State Water Board's OTC Policy compliance date for Diablo Canyon to October 31, 2030.[5]

The SACCWIS has evaluated three alternatives to support the Strategic Reserve and system-wide electrical reliability, which are discussed in greater detail in Section III of this report. The preferred alternative, A1, recommends that the State Water Board consider extending the OTC Policy compliance dates for Alamitos Units 3, 4, and 5; Huntington

[4] California State Legislature. 2022. Assem. Bill No. 205, approved by Governor June 30, 2022 (2021-2022 Reg. Sess.) (hereinafter Assembly Bill 205.) Sacramento, CA: California Legislative Information.
[5] Senate Bill 846 set retirement dates for Diablo Canyon Unit 1, October 31, 2029, and for Unit 2, October 31, 2030, which is different than the revised OTC compliance date.

Beach Unit 2; and Ormond Beach Units 1 and 2 for three years from December 31, 2023, through December 31, 2026. This alternative would add 2,854 MW in capacity to the Strategic Reserve.

Additionally, the March 2022 Report of the SACCWIS discussed a request from the LADWP to extend the OTC Policy compliance date of Scattergood Units 1 and 2 for five years from December 31, 2024, through December 31, 2029. In March 2022, the SACCWIS recognized that it may reconvene in 2022 to evaluate whether an extension to the OTC Policy compliance date for Scattergood is necessary to maintain local grid reliability in the LADWP BAA when more information is available. Between March and late August, the LADWP provided additional information.

The CAISO, CEC, CPUC, California State Lands Commission, CCC, and State Water Board have reviewed the LADWP's extension request and supporting documentation submitted to date and found no cause for objecting to the request; at this time, the CARB is abstaining from weighing-in on the request to extend the Scattergood compliance date to evaluate the request. The SACCWIS therefore supports LADWP's request to the State Water Board to amend the OTC Policy to extend the compliance date of Scattergood.

II. SACCWIS Role and Process

The SACCWIS includes representatives from the CEC, CPUC, CCC, California State Lands Commission, CARB, the CAISO, and the State Water Board. The State Water Board, in adopting the OTC Policy, impaneled the SACCWIS to advise the State Water Board on the implementation of the OTC Policy. The SACCWIS provides recommendations to ensure that the compliance schedule in the OTC Policy accounts for the reliability of California's electricity supply, including local area reliability, statewide grid reliability, and permitting constraints. Section 3.B(4) of the OTC Policy provides that the SACCWIS will report to the State Water Board with recommendations on any need for modifications to the compliance schedule each year.

The OTC Policy states that SACCWIS meetings shall be scheduled regularly and as needed. This includes the SACCWIS reconvening to present new information to the

State Water Board in the interest of preventing disruption in the state's electrical power supply. In addition, the OTC Policy indicates that the State Water Board shall consider the SACCWIS' recommendations and, if appropriate, consider modifications to the OTC Policy. If the SACCWIS energy agencies make a unanimous recommendation for an implementation schedule modification based on grid reliability, the State Water Board shall afford significant weight to the recommendation.

The SACCWIS is committed to realizing full compliance with the OTC Policy in the coming years, while maintaining the reliability of California's electric system and meeting the state's environmental and energy goals. The energy agencies are dedicated to monitoring and enhancing California's grid reliability and continue to work collaboratively to improve and perform new analysis that incorporates a range of risk scenarios.

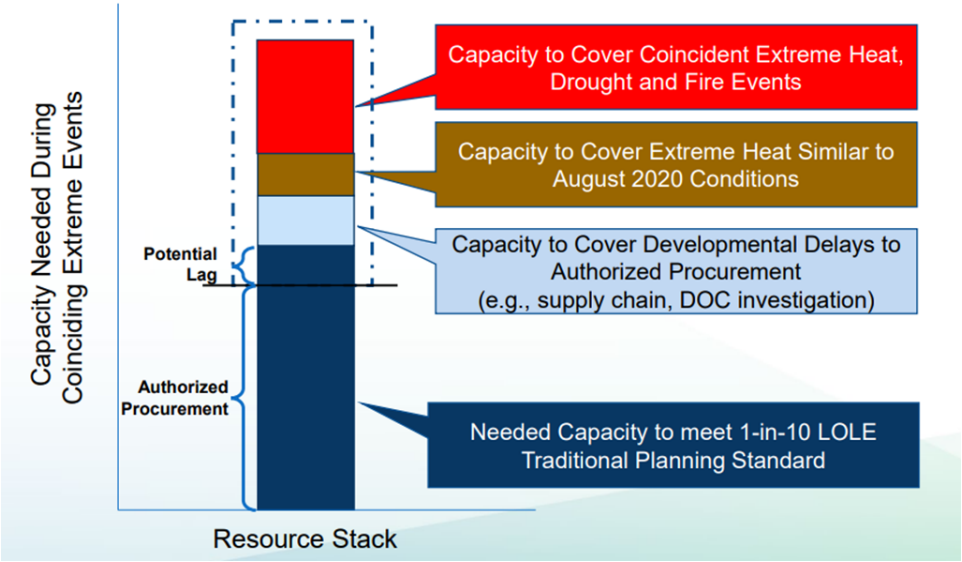
III. Summer 2022 SACCWIS Update - Recommendations and Alternatives for CAISO BAA

On March 14, 2022, the SACCWIS voted on and adopted the March 2022 SACCWIS Report. The March 2022 SACCWIS Report recommended no changes to the compliance dates in the OTC Policy[6], but noted that the SACCWIS would continue to closely monitor grid reliability needs throughout the state and would reconvene if necessary.

Following the release of the March 2022 SACCWIS Report, the CEC hosted a public workshop on May 20, 2022, to present an updated analysis of grid reliability performed by the energy agencies.[7] The updated analysis focused on summer 2022 and 2025 and identified four broad categories of capacity needs during coinciding extreme events. These are illustrated in Figure 1 below.

6 Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS). 2022 Report of the SACCWIS, March 14, 2022. Sacramento, CA: SWRCB.
7 California Energy Commission (CEC). 2022. Staff Workshop on Summer and Midterm Reliability, Docket 21-ESR-01. Sacramento, CA: CEC.

Figure 1: Reliability Impacts and Capacity Needs



Source: Erne, David, *CEC Staff Workshop on Summer and Midterm Reliability*, Docket 21-ESR-01, May 20, 2022, "Reliability Workshop Overview," slide 4.

The first category reflects capacity needed to meet traditional grid reliability planning (shown in dark blue in Figure 1) based on evaluating the supply necessary to meet demand such that the system is not likely to have more than one outage event in ten years, also referred to as a one-in-ten loss of load expectation (1-in-10 LOLE). Both supply and demand side issues can affect the quantity of resources needed to meet the 1-in-10 LOLE standard. The CPUC's 2021 energy procurement requirement for 11,500 MW by 2026 by their jurisdictional load serving entities used the CEC's demand forecast adopted in early 2021.[8] The first category reflects the analysis used to support the conclusions in the March 2022 SACCWIS Report.

The CEC's demand forecast update in January 2022 projects a greater demand through 2026 than was anticipated in 2021, in part because the forecast was improved to

[8] California Public Utilities Commission (CPUC). 2021. Decision Requiring Procurement to Address Mid-Term Reliability, D.21-06-035. San Francisco, CA: CPUC.

incorporate additional potential climate change impacts on demand.[9] Additional generation resource supply will be needed to meet this greater demand and maintain a 1-in-10 LOLE through 2026.

Consequently, there is a potential lag in meeting a 1-in-10 LOLE, represented by the top portion of the dark blue bar above the black line illustrated in Figure 1.

The second category (shown in light blue in Figure 1) is the capacity needed to cover development delays for previously authorized procurement of new generation and storage resources. As California is procuring unprecedented quantities of clean energy resources, many load serving entities and project developers are facing a series of issues that are leading to project delays or the potential for project cancellations. These issues are described in greater detail in Section VI.

The third category (shown in brown in Figure 1) consists of the capacity resources needed to address conditions that are not incorporated in the traditional planning standard. These include extreme events such as the west-wide heat wave experienced in August 2020, which led to multiple incidents of load curtailment.

The fourth category (shown in red in Figure 1) consists of the resources needed to address coincident extreme events, such as the Bootleg fire that occurred in Oregon in summer 2021, which reduced imports to the CAISO footprint by 3,000 MW during a simultaneously occurring widespread heat wave.

Based on these four categories of capacity needs, the estimated electrical capacity impacts identified in California for summer 2022 and 2025 are as shown in Table 1 below.

[9] California Energy Commission (CEC). 2022. Adopted Final 2021 Integrated Energy Policy Report Volume IV, California Energy Demand Forecast, 21-IEPR-01 TN#241581. Sacramento, CA: CEC.

Table 1: Estimated Impact on Energy Reliability

Issue	2022	2025
Lag in incorporation of updated demand forecasts and policy goals in procurement targeting 1-in-10 LOLE traditional planning metric	1,700 MWs	1,800 MWs
Extreme weather and fire risks to energy assets not completely captured in a 1-in-10 traditional planning efforts	4,000 – 5,000 MWs	4,000-5,000 MWs
Project development delay scenarios (estimated)	600 MWs	1,600 – 3,800 MWs
Total risk in a coincidental situation	~7,000 MWs	~10,000 MWs

Source: Erne, David, *CEC Staff Workshop on Summer and Midterm Reliability*, Docket 21-ESR-01, May 20, 2022, "Reliability Workshop Overview," slide 8.

The combination of the conditions described in Table 1 would result in the potential need for approximately 7,000 MW of additional capacity to maintain grid reliability in the instance of a coinciding event in 2022. However, specific to the aforementioned shortfalls, the energy agencies have identified 2,000 MW of additional contingency resources that could be employed in the event of an emergency above the 1-in-10 LOLE, which include voluntary or reimbursed load reduction and the procurement of additional, non-OTC emergency generation. Despite the identified contingency resources, a large shortfall remains at 5,000 MW in 2022 and increases to approximately 10,000 MW in 2025. The planned retirement of Diablo Canyon contributed to the increase in the shortfall of 10,000 MW in 2025. SB846 revised the OTC Policy compliance date for Diablo Canyon to October 31, 2030, to support mid-term reliability. Diablo Canyon's Net Qualifying Capacity (NQC) was 2,280 MW as of 2020.

The Strategic Reliability Reserve Fund

Despite the previous and ongoing efforts of the energy agencies to increase contingency reserves, the impact of emerging risks, especially those outside of traditional resource planning activities, has exceeded the ability of existing procurement planning processes

to adapt in the near-term. Consequently, legislative action was taken in a coordinated state-wide effort to address electrical reliability in these unprecedented times.

On June 30, 2022, Governor Newsom signed AB 205 (Stats. 2022, ch. 61) into law to support and expedite the state's transition to clean energy and help maintain energy reliability in the face of climate change. AB 205 finds that extreme events from climate change, including heat waves, wildfires, and drought, combined with other factors, such as supply chain disruptions, are jeopardizing California's ability to build out the electrical infrastructure needed to maintain affordability and reliability.[10] In the context of energy reliability and resource planning activities, AB 205 defines extreme events as follows:

> *Event occurring at a time and place in which weather, climate, or environmental conditions, including temperature, precipitation, drought, fire, or flooding, present a level of risk that would constitute or exceed a one-in-ten event, as referred to by the North American Electric Reliability Corporation, including when forecast in advance by a load-serving entity or local publicly owned electric utility.*[11]

In response to these conditions, AB 205 established several programs and allocated associated funding, including $2.95 billion for the creation of the Strategic Reserve.[12] The Strategic Reserve is intended as a transitional tool to address the reliability risks from extreme events identified in the CEC's May 20, 2022 workshop, by providing funding to secure conventional generation, as well as efficiency upgrades, demand response, distributed generation, and long-duration storage. The Strategic Reserve will enable demand-side programs to scale up, new and clean resources to come online, critical grid assets to be hardened, and new planning processes to continue to be implemented. This program is expected to remain in operation through 2026, but may be extended if circumstances warrant continuation.

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10 California Legislature. 2022. Assembly Bill 205, Chapter 8.9, Article 1, Sec. 25790, subd. (b). Sacramento, CA: California Legislative Information.
11 California Legislature. 2022. Assembly Bill 205, Chapter 8.9, Article 1, Sec. 25790.5 subd. (b)(1). Sacramento, CA: California Legislative Information.
12 California Legislature. 2022. Bill Text - Assembly Bill 205. Sacramento, CA: California Legislative Information.

Relevant for the SACCWIS to consider are the Strategic Reserve provisions that allow contracting with and extending the life of existing generating facilities planned for retirement, such as OTC power plants.[13] Specifically, the Strategic Reserve requires the Department of Water Resources (DWR) to prioritize contracts with non-preferred resources, such as remaining fossil-fueled OTC units. The structure of the Strategic Reserve and these contracts means that any extensions of fossil-fueled resources would not compete with utility procurement of clean resources, enabling the state to continue to pursue its long-term clean energy goals and mandates. Additionally, Strategic Reserve contracts would permit all utilities and balancing authorities within California to access Strategic Reserve resources as they address the challenges of increasingly frequent and extreme climate-driven events, supply chain issues, and other related hurdles.[14]

AB 205 identified DWR as the Strategic Reserve contract administrator because of its extensive experience managing electric generation resources through the State Water Project hydroelectricity fleet. Previous state legislation also granted DWR the authority to oversee the California Energy Resources Scheduling (CERS) program. The CERS program resulted from the energy crisis that occurred in 2000 and 2001, whereby AB 1X (Keeley 2002) amended Division 27[15] and authorized DWR to purchase power on behalf of California's Investor-Owned Utilities to prevent rolling blackouts.[16] DWR managed upwards of 50 long-term contracts with various electric generators through 2015, when the last contract expired.

DWR is moving quickly to identify eligible resources to bolster reliability through 2026.

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[13] California Legislature. 2022. Assembly Bill 205, Sec. 4. Sacramento, CA: California Legislative Information. See Section 4 for additional discussion of programs created by Assembly Bill 205.
[14] A balancing authority is the responsible entity that maintains demand and resource balance within its area according to the North American Electric Reliability Corporation. The CAISO and the Los Angeles Department of Water and Power are both BAAs.
[15] California Legislature. 2002. Assembly Bill 1X, Division 27, Chapter 4. Sacramento, CA: California Legislative Information.
[16] Department of Water Resources (DWR). 2001. California Energy Resources Scheduling. Sacramento, CA: DWR.

While the Strategic Reserve enables DWR to construct, own, or operate certain resources, the pace at which they may be planned and procured is currently unclear given the recent implementation of the program and commencement of DWR's efforts. Enabling DWR to contract with existing resources will allow the state to address reliability concerns and populate the Strategic Reserve more expeditiously and with more certainty while it works to secure additional resources. The SACCWIS will continue to monitor the progress towards procuring contingency reserves at the energy agencies and at DWR. The energy agencies will also continue to conduct ongoing reliability assessments.

In evaluating non-preferred resources, the energy agencies identified remaining fossil-fueled OTC power plants in CAISO's BAA as potential assets for the Strategic Reserve, which is expected to operate through 2026 unless circumstances warrant continuation. In the CAISO BAA, fossil-fueled OTC power plants scheduled to retire by December 31, 2023, include:

- Alamitos Unit 3,4,5 - 1,137 MW
- Huntington Beach Unit 2 - 226 MW
- Redondo Beach Units 5, 6, 8 - 834 MW
- Ormond Beach Units 1 and 2 - 1,491 MW

These four OTC plants, totaling 3,688 MW in capacity, are part of the existing generating fleet that may be utilized by the Strategic Reserve to support system-wide grid reliability.

The CAISO BAA, nuclear OTC power plant scheduled to retire in 2024 and 2025, but extended through SB846 include:

- Diablo Canyon Unit 1 – 1,140 MW
- Diablo Canyon Unit 2 – 1,140 MW

To support the near-term transitional goals of the Strategic Reserve in the interest of grid reliability, the SACCWIS recommends Alternative A1 listed below.

Alternative A1 (Recommended) - Extend Alamitos, Huntington, and Ormond Beach for three years

The SACCWIS recommends that the State Water Board extend the OTC Policy compliance dates for three of the available OTC power plants – Alamitos, Huntington Beach, and Ormond Beach – for three years, from December 31, 2023, to December 31, 2026, to match the authorization date of the Strategic Reserve, which is expected to operate through 2026.

This alternative would provide 2,854 MW in capacity to the Strategic Reserve to be used during extreme events to support system-wide grid reliability concerns. Enabling DWR to secure these existing resources would allow the state to address reliability risks more expeditiously and with greater certainty.

Alternative A1 considers that Alamitos and Huntington Beach have existing, co-located combined-cycle non-OTC units that will continue operating regardless of the planned retirement of each power plant's remaining OTC units. Extending the operation of these power plants will not result in significant land use changes.

Additionally, Ormond Beach previously received support from the local government for its most recent OTC Policy extension. On November 18, 2019, the State Water Board received a comment from the Oxnard City Manager noting support for an extension of Ormond Beach from December 31, 2020, to December 31, 2023, pending a then-under-consideration agreement between the Oxnard City Council and GenOn on a plan to perform comprehensive decommissioning, dismantling, and remediation of the site. Since that time, the Oxnard City Council and GenOn agreed to mutually acceptable terms. After receiving preliminary support from the Oxnard city manager, the SACCWIS believes this agreement may be able to be extended with the proposed OTC compliance extension to December 31, 2026, which could further support the decommissioning, dismantling, and remediation of the site. However, the SACCWIS acknowledges that this agreement must still be reviewed and considered by the Oxnard City Council. The SACCWIS also recognizes that the consideration of Alternative A1 is based on the best available information, and additional information may be needed to fully understand land

use impacts associated with operations beyond 2023. The State Water Board may take updated or newly available information into account in its final consideration of the proposed extensions.

Alternative A1 does not include a recommendation to extend the OTC Policy compliance date for Redondo Beach, recognizing the land use challenges that would be associated with the power plant's continued operations, as described in detail below.

Alternative A2 - Extend Alamitos, Huntington Beach, Ormond Beach, and Redondo Beach for Three Years.

In this alternative, the SACCWIS would recommend that the State Water Board extend the OTC Policy compliance dates for all existing OTC power plants in the CAISO BAA – Alamitos, Huntington Beach, Ormond Beach, and Redondo Beach – for three years, from December 31, 2023, to December 31, 2026. This alternative would maximize, at roughly 3,688 MW, the existing OTC capacity available to meet mid-term reliability needs within the Strategic Reserve.

This alternative provides the greatest amount of capacity from OTC power plants within the CAISO BAA. However, Redondo Beach has land use challenges that would complicate extending its OTC Policy compliance date; specifically, the property upon which the power plant is located is no longer owned by its operator as of March 2020, and the owner is currently leasing the land through 2023. There are also covenants resulting from the previous sale of the property that may result in litigation should the compliance date be extended, and would likely limit AES' ability to operate the power plant beyond 2023. These circumstances would likely complicate contracting with DWR for the purposes of the Strategic Reserve.

Alternative A3 – No Action

In this alternative, the SACCWIS would recommend no change to the OTC Policy compliance dates for Alamitos, Huntington Beach, Ormond Beach, and Redondo Beach. The four power plants would stop using OTC water on or before December 31, 2023.

Without these OTC power plants, the Strategic Reserve would need to procure up to 2,854 MW of additional new resources. As described above, procurement of new resources may be impacted by supply chain issues and other delays that could challenge meeting the 1-in-10 LOLE planning standard. Alternative A3 would result in reduced capability to support grid reliability during extreme events, such as the west-wide heat wave experienced in August 2020, and coincident extreme events, such as the Bootleg fire in Oregon that reduced imports to the CAISO footprint by 3,000 MW in 2021 during a heat wave.

IV. LADWP BAA and Scattergood

On February 3, 2022, the LADWP requested an OTC Policy compliance date extension for Scattergood for five years from December 31, 2024, to December 31, 2029, to support local system reliability during the transition to a zero-carbon grid. Section III of the March 2022 SACCWIS Report includes additional details. In March 2022, the SACCWIS recognized they may reconvene in 2022 to evaluate whether an extension to the OTC Policy compliance date for Scattergood is necessary to maintain local grid reliability in the LADWP BAA when more information is available. Between March and late August, the LADWP provided some additional information.

Pursuant to section 1.K of the OTC Policy, the SACCWIS advises the State Water Board on schedules for power plants not under the jurisdiction of the CPUC or operating within the CAISO BAA. Additionally, section 3.B(2) of the OTC Policy states that the SACCWIS may consult with other appropriate agencies, including the LADWP, in the process of reviewing implementation schedules and providing recommendations to the State Water Board.

The following alternatives consider this extension request.

Alternative B1 (Recommended) – Support Extending the OTC Compliance Date for Scattergood for Five Years

The CAISO, CEC, CPUC, California State Lands Commission, CCC, and State Water Board reviewed the LADWP's extension request and supporting documentation submitted

to date and found no cause for objecting to the request, though the CARB is abstaining from commenting at this time to evaluate the request. The SACCWIS therefore supports the LADWP's request to the State Water Board to amend the OTC Policy to extend the compliance date of Scattergood Units 1 and 2 for five years, from December 31, 2024, to December 31, 2029.

Alternative B2: Oppose Extending the OTC Compliance Date for Scattergood for Five Years

In this alternative, the SACCWIS would oppose the State Water Board in amending the OTC Policy to extend the compliance date of Scattergood Units 1 and 2 for five years, from December 31, 2024, to December 31, 2029. The LADWP has indicated that this alternative would leave the western sub-basin of the LADWP BAA susceptible to shortfalls and potential brownouts or blackouts on high-demand days.

V. Status of Compliance and Once-Through Cooling Water Use

Since the OTC Policy was adopted in 2010, several power generating units have retired, repowered, or come into compliance. The closure of the San Onofre Nuclear Generating Station (SONGS) resulted in a significant reduction in projected ocean or estuarine water use for power plant cooling. Table 2 shows the power plants in the CAISO and LADWP BAAs that have achieved compliance, several of which did so in advance of their mandated compliance deadlines.

Table 2: OTC Compliance Achievement

Facility & Units	NQC (MW)[17]	OTC Policy Scheduled Compliance Date	Actual Compliance 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[18]
Contra Costa 6, 7	674	Dec. 31, 2017	Retired Apr. 30, 2013[19]
San Onofre 2, 3	2,246	Dec. 31, 2022	Retired June 7, 2013[20]
Haynes 5, 6	535	Dec. 31, 2013	Retired June 13, 2013[21]
El Segundo 3	335	Dec. 31, 2015	Retired July 27, 2013[22]
Morro Bay 3, 4	650	Dec. 31, 2015	Retired Feb. 5, 2014
El Segundo 4	335	Dec. 31, 2015	Retired Dec. 31, 2015
Scattergood 3	497	Dec. 31, 2015	Retired Dec. 31, 2015
Pittsburg	1,159	Dec. 31, 2017	Operations ceased Dec. 31, 2016
Moss Landing 6, 7	1,509	Dec. 31, 2020	Retired Jan. 1, 2017
Encina 1	106	Dec. 31, 2017	Retired Mar. 1, 2017
Mandalay 1, 2	430	Dec. 31, 2020	Retired Feb. 5, 2018
Encina 2-5	844	Dec. 31, 2018	Retired Dec. 11, 2018

[17] Net Qualifying Capacity (NQC) in megawatts (MW). NQC is the net amount of capacity available from a resource that can be counted towards meeting resource adequacy requirements.
[18] Huntington Beach Units 3 and 4 were converted to synchronous condensers in 2013. OTC water was used in a limited capacity until September 30, 2018.
[19] Although NRG retired Contra Costa Units 6-7, the Marsh Landing was constructed immediately next to the retired facility. The Marsh Landing Generating Station is a non-OTC generating facility.
[20] San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 were officially retired June 7, 2013, but they ceased power generation on Jan. 31, 2012.
[21] The LADWP retired Haynes Generating Station Units 5 and 6 and replaced them with Haynes Generating Station Units 11, 12, 13, 14, 15, and 16, which do not use OTC technology.
[22] NRG retired El Segundo Unit 3 and replaced it with El Segundo Units 5, 6, 7, and 8, which do not use OTC technology.

Facility & Units	NQC (MW)[17]	OTC Policy Scheduled Compliance Date	Actual Compliance Date
Redondo Beach 7	493	Dec. 31, 2020	Retired Oct. 1, 2019
Alamitos 1, 2, 6	848	Dec. 31, 2020	Retired Dec. 31, 2019
Huntington Beach 1	215	Dec. 31, 2020	Retired Dec. 31, 2019
Moss Landing 1, 2	1,020	Dec. 31, 2020	Complied Oct. 23, 2020[23]
Total Capacity (MW)	12,985	--	--

Table 3 reflects the current compliance plans for the remaining power generating units that use ocean or estuarine water for cooling purposes. Table 4 presents recent performance of the OTC units in percent of annual capacity factors. The annual capacity factor is defined as the ratio of the electrical energy produced by a generating unit for the year divided by the maximum energy that could have been produced at continuous full power operation. The capacity factor provides one indication of how a generating unit is used. Generating units used to meet peak power needs typically have lower capacity factors. The capacity of most of the remaining OTC power plants is only used a small percentage of the time, but this capacity helps serve demand during peak hours and stressed operating conditions.

[23] Dynegy Moss Landing complied with Track 2 of the OTC Policy.

Table 3: OTC Compliance Plans for Remaining Units

Facilities and Units	NQC (MW) as of 12/2020	OTC Policy Scheduled Compliance Date	Owner Proposed Compliance Method
Alamitos 3, 4, 5	1,137	Dec. 31, 2023	Plans to comply by Dec. 31, 2023[24]
Diablo Canyon 1	1,140	Oct. 31, 2030	Updated by SB846
Diablo Canyon 2	1,140	Oct. 31, 2030	Updated by SB846
Harbor 5	75	Dec. 31, 2029	Plans to comply by Dec. 31, 2029
Haynes 1, 2, 8	724	Dec. 31, 2029	Plans to comply by Dec. 31, 2029
Huntington Beach 2	226	Dec. 31, 2023	Plans to comply by Dec. 31, 2023
Ormond Beach 1, 2	1,491	Dec. 31, 2023	Plans to comply by Dec. 31, 2023
Redondo Beach 5, 6, 8	834	Dec. 31, 2023	Plans to comply by Dec. 31, 2023
Scattergood 1, 2	326	Dec. 31, 2024	Plans to comply by Dec. 31, 2024[25]
Total Capacity (MW)	7,583	--	--

[24] The SACCWIS recommends extensions for the OTC Policy compliance dates for Alamitos, Huntington Beach, and Ormond Beach from December 31, 2023, to December 31, 2026.

[25] The CAISO, CEC, CPUC, California State Lands Commission, CCC, and State Water Board support an extension request from the LADWP to extend the OTC compliance date for Scattergood from December 31, 2024, to December 31, 2029. At this time, the CARB is abstaining from weighing in on the request to extend the Scattergood compliance date.

Table 4: Recent Performance of Natural Gas OTC Generating Units

CAISO BAA Facilities and Units	OTC Policy Scheduled Compliance Date	NQC (MW)	Annual Capacity Factors (Percent)							
			2014	2015	2016	2017	2018	2019	2020	2021
Alamitos 3	Dec. 31, 2023	321	16.60	10.80	10.40	6.67	10.13	5.58	6.46	5.69
Alamitos 4	Dec. 31, 2023	336	18.70	7.00	9.90	8.78	9.60	5.59	4.50	6.37
Alamitos 5	Dec. 31, 2023	480	1.70	3.40	1.90	3.06	2.93	1.24	5.42	4.52
Huntington Beach 2	Dec. 31, 2023	226	26.20	19.40	12.40	9.03	6.99	4.12	5.69	4.45
Ormond Beach 1	Dec. 31, 2023	741	0.80	2.50	0.70	1.64	1.31	0.55	4.98	2.00
Ormond Beach 2	Dec. 31, 2023	750	2.40	3.20	0.80	1.75	1.28	1.63	5.26	4.04
Redondo Beach 5	Dec. 31, 2023	179	2.30	3.50	1.40	2.52	2.04	1.94	1.85	2.37
Redondo Beach 6	Dec. 31, 2023	175	2.10	4.20	3.10	4.18	1.67	2.50	3.95	3.50
Redondo Beach 8	Dec. 31, 2023	480	3.30	3.90	1.70	3.99	2.79	1.88	4.99	3.38
LADWP BAA Facilities and Units										
Harbor 5	Dec. 31, 2029	75	3.30	2.40	4.00	2.29	1.01	3.40	0.39	2.59
Haynes 1	Dec. 31, 2029	230	12.70	6.50	12.30	3.45	1.64	4.05	5.13	1.70
Haynes 2	Dec. 31, 2029	230	13.10	8.00	16.00	5.34	1.13	1.18	3.92	1.76
Haynes 8	Dec. 31, 2029	264	34.20	38.00	40.90	39.56	45.39	39.22	48.89	34.62
Scattergood 1	Dec. 31, 2024	163	24.50	8.30	22.90	5.32	4.47	3.62	3.15	2.84
Scattergood 2	Dec. 31, 2024	163	6.60	21.20	5.90	2.09	2.38	6.62	10.36	1.87

Source: California Energy Commission, Quarterly Fuel and Energy Reporting data 2021.

Once-Through Cooling Water Use

Figure 2 illustrates ocean and estuarine water flow rates of the OTC power plant fleet through time, including projected flow rates with the recommended extensions of the compliance dates for Alamitos, Huntington Beach, Ormond Beach, and Scattergood. The uppermost line in solid green shows the OTC Policy compliance schedule as it was originally adopted in 2010, while the solid blue shows the current OTC Policy compliance schedule as last amended in 2021.[26] The dotted blue line shows the OTC Policy compliance schedule with the proposed extensions for Alamitos, Huntington Beach, Ormond Beach, and Scattergood. The red line shows actual flow rates from the OTC fleet. See Appendix A for actual flow rate data. The dashed red line shows projected flow rates, including the proposed extensions for Alamitos, Huntington Beach, Ormond Beach, and Scattergood, for 2022 through 2026.

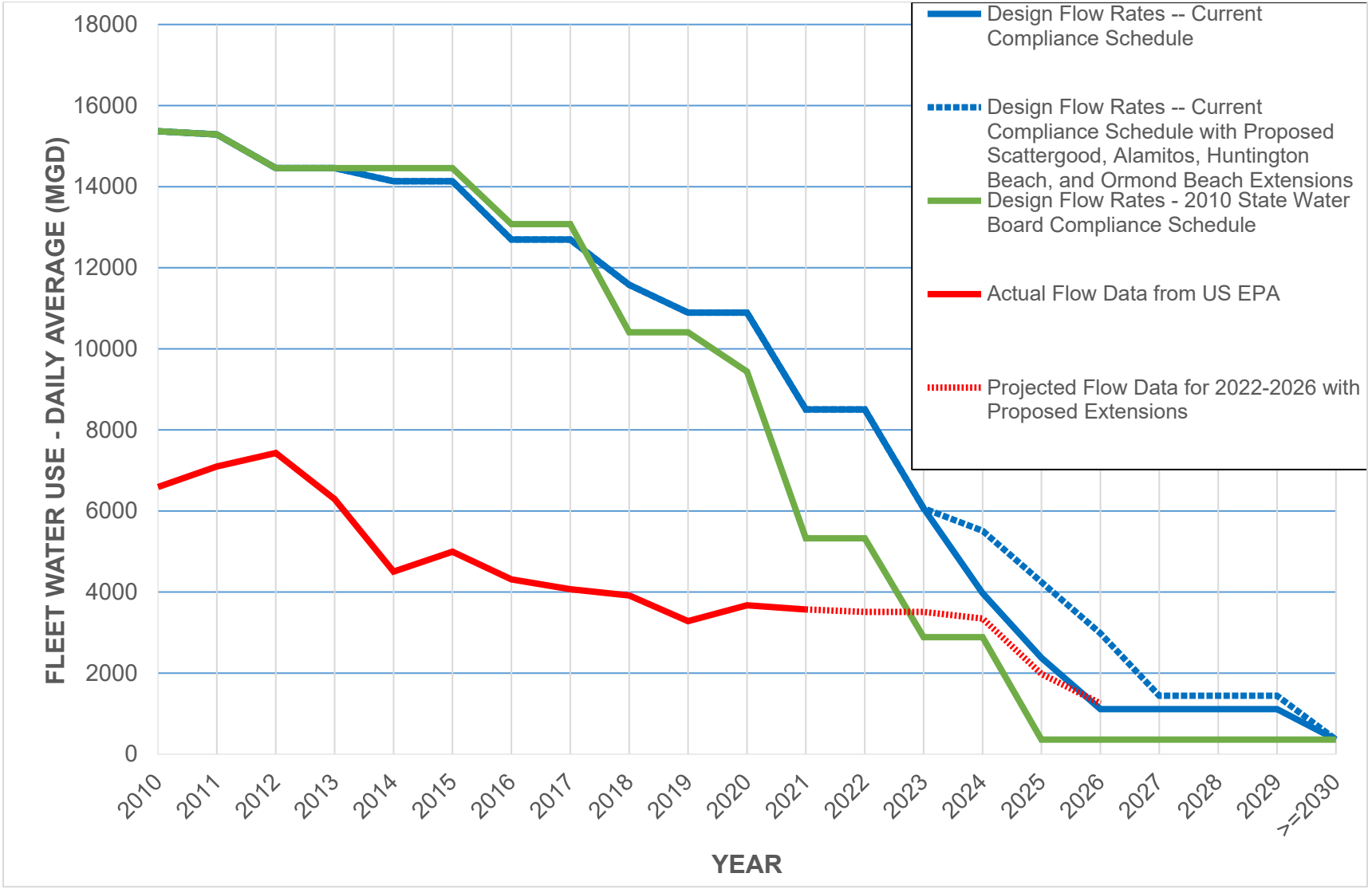
The solid red line is below the blue line because fossil-fueled OTC power plants have generally operated with annual capacity factors below power plant permit limits (the source of the design flow rates). In addition, SONGS and several other OTC power plants retired before their OTC compliance dates, thus creating accelerated environmental benefits compared to the original compliance schedule.

Projected OTC flow rates (dashed red line) exceed in 2024 the OTC Policy compliance schedule as it was originally adopted in 2010 (solid green line). However, projected OTC flow rates are still within the most current OTC Policy compliance schedule. Additionally, owners and operators are required to offset the impacts of impingement and entrainment associated with continued operations by participating in the interim mitigation program established by the OTC Policy, as determined in Resolution No. 2015-0057. Overall,

[26] The solid blue line in Figure 2 reflects the compliance dates for all facilities listed in the OTC Policy, including Diablo Canyon's most recently OTC Policy compliance dates of November 2, 2024 for Unit 1, and August 26, 2025 for Unit 2. However, the California Assembly passed Senate Bill 846 (SB 846, Cunningham and Dodd) on August 31, 2022, which extends Diablo Canyon's compliance date through October 31, 2030. The OTC Policy and Figure 2 have not yet been updated to reflect this new compliance date.

projected OTC flow rates will likely continue to decrease over time and meet the goals of the OTC Policy once final compliance is achieved.

Figure 2: Historic and Projected Water Usage by the OTC Power Plant Fleet in Million Gallons per Day (MGD)



Source: CEC and State Water Board Staff, Updated August 22, 2022.

VI. Grid Resource, Infrastructure Planning, and Status

The following discussion covers the energy agencies' roles specific to infrastructure and planning activities for grid reliability, including authorities and permissions granted to the CEC via AB 205. This section also provides status updates on resource planning and procurement under the CPUC's jurisdiction, including an explanation of procurement delays. Finally, this discussion provides updates on CAISO's transmission development projects.

CEC

The CEC is the lead agency for licensing fossil fuel power plants of 50 MW and larger and has a regulatory certification process under the California Environmental Quality Act. 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 apply to the repowering or replacement of an existing power plant wherein the net increase in capacity is less than 50 MW.

AB 205 and the Strategic Reserve vests the CEC through July 1, 2027, with the exclusive jurisdiction to certify sites on which facilities are proposed for the Strategic Reserve. The CEC will establish a process to expedite the review of an application, including California Environmental Quality Act exemption under certain circumstances.[27]

In addition to coordinating with the DWR to implement the Strategic Reserve, AB 205 requires the CEC to develop and manage two additional components of the Strategic Reserve – the Distributed Electricity Backup Assets Program and the Demand Side Grid Support Program.[28] The former is intended to incentivize the construction of cleaner[29]

[27] California Legislature. 2022. Bill Text - Assembly Bill 205. Sacramento, CA: California Legislative Information.
[28] California Legislature. 2022. Bill Text – Assembly Bill 205. Sacramento, CA: California Legislative Information.
[29] Cleaner and more efficient distributed energy assets such as energy storage and fuel cells technologies.

and more efficient distributed energy assets that would serve as on-call emergency supply or load reduction for the state's electrical grid during extreme events, while the latter is intended to incentivize dispatchable customer load reduction and backup generation operation as on-call emergency supply and load reduction for the state's electrical grid during extreme events. AB 205 also requires the CEC develop the Long Duration Energy Storage Program,[30] which is not part of the Strategic Reserve, to provide financial incentives for projects that have power ratings of at least one MW and are capable of reaching a target of at least 8 hours of continuous discharge of electricity. This program is intended to deploy innovative energy storage systems to the electrical grid for the purposes of providing critical capacity and grid services.

CPUC

The CPUC regulates privately owned electric companies in addition to other entities. The CPUC's Integrated Resource Planning (IRP) process periodically evaluates generation resources in the CAISO system.[31] The IRP process was implemented based on the legislative requirements of Senate Bill 350,[32] and serves as a successor to the CPUC's Long-Term Procurement Plan (LTPP). The LTPP proceeding evaluated generation resources in the CAISO system every two years, most recently in 2015. The intent of this proceeding was to evaluate whether existing and projected resources were sufficient to meet future demand, and to authorize procurement of additional resources in the event that existing and projected resources were found insufficient. Retirement schedules for OTC power plants were incorporated into this analysis and updated according to progress towards or changes in retirement deadlines. In addition to system-wide analyses, the LTPP also evaluated capacity requirements in localized, high-demand areas.

[30] California State Legislature. 2022. Bill Text – Assembly Bill 205. Sacramento, CA: California Legislative Information.
[31] California Public Utilities Commission (CPUC). 2016. Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements, R.16-02-007. San Francisco, CA: CPUC. The combined IRP-LTPP proceeding is R.16-02-007.
[32] California State Legislature. 2015. Bill Text – Senate Bill No. 350. Sacramento, CA: California Legislative Information.

Tables 5 through 8 show the different authorizations and approvals of electric capacity procurement for the southern California area. The different tracks reflect the separate procurement authorizations under the CPUC's most recent full LTPP proceeding, R.12-03-014.[33] Track 1 procurement stems from D.13-02-015,[34] which outlined requirements in the West Los Angeles Basin and Big Creek/Ventura local reliability areas. Track 4 procurement stems from D.14-03-004,[35] which outlined additional requirements in the West Los Angeles Basin and San Diego/Imperial Valley local reliability areas in response to the retirement of the SONGS. The use of the term "track" in this context is different from the two tracks for compliance with the OTC Policy.

Table 5: Southern California Edison Current Authorizations

Resource Type	Track 1 LCR[36] (West LA Basin) MW	Track 1 LCR (Big Creek/ Ventura) MW	Additional Track 4 Authorization (West LA Basin) MW	Total Authorization MW	Approved Applications MW
Preferred Resources[37] & Energy Storage (Minimum)	200	--	400	600	565[38]
Gas-fired Generation (Minimum)	1,000	--	--	1,000	1,000

[33] California Public Utilities Commission (CPUC). 2012. Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans. San Francisco, CA: CPUC.
[34] California Public Utilities Commission (CPUC). 2013. Decision Authorizing Long-Term Procurement for Local Capacity Requirements, D.13-02-015. San Francisco, CA: CPUC.
[35] California Public Utilities Commission (CPUC). 2014. Decision Authorizing Long-Term Procurement for Local Capacity Requirements due to Permanent Retirement of the San Onofre Nuclear Generations Stations, D.14-03-004. San Francisco, CA: CPUC.
[36] Local Capacity Requirement (LCR)
[37] Preferred resources are those used for energy efficiency, demand response, renewable resources, and distributed generation. Preferred resources are described in the 2005 State Energy Action Plan II.
[38] Includes roughly 27 MW of storage capacity authorized by Resolution E-4804 to alleviate constraints in Southern California due to the Aliso Canyon gas storage facility outage.

Resource Type	Track 1 LCR[36] (West LA Basin) MW	Track 1 LCR (Big Creek/ Ventura) MW	Additional Track 4 Authorization (West LA Basin) MW	Total Authorization MW	Approved Applications MW
Optional: Preferred Resources/ Storage	Up to 400	--	--	Up to 400	0
Optional: Any Resource	200	--	100 to 300	300 to 500	382
Required: Any Resource	--	215 (minimum) to 290	--	215 (minimum) to 290	207[39]
Total	1,400 to 1,800	215 to 290	500 to 700	2,115 to 2,790	2,154

Table 6: Southern California Edison Approved Applications[40]

Resource Type	Location	Capacity MW	Status
Demand Response	Big Creek/Ventura	14	Approved[41]
Demand Response	West LA Basin	5	Approved
Distributed Generation	Big Creek/Ventura	6	Approved
Distributed Solar Generation	Johanna/Santiago	12	Approved
Distributed Solar Generation	West LA Basin	28	Approved
Energy Efficiency	Big Creek/Ventura	6	Approved
Energy Efficiency	Johanna/Santiago	23	Approved

[39] Includes the 100 MW Strata Saticoy storage project approved in D.19-12-055 and 95 MW of storage and demand response resources (with the option for an additional 20 MW from one storage resource) approved in Resolution E-5033, which replaced the 262 MW Puente Power Project that was approved in D.16-05-050 and subsequently cancelled.
[40] For additional details, see Southern California Edison application A.14-11-012, A.14-11-016, A.15-12-013, A.16-11-002, and Resolutions E-4804 and E-5033.
[41] Approved status indicates that the project has been approved, or that a portion of the capacity (MW) of the associated facility may be operational.

Resource Type	Location	Capacity MW	Status
Energy Efficiency	West LA Basin	101	Approved
Energy Storage	Big Creek/Ventura	186	Approved
Energy Storage	Johanna/Santiago	153	Approved
Energy Storage	Long Beach	100	Operational
Energy Storage	West LA Basin	138	Approved
Combined Cycle Gas Turbine	Alamitos	640	Operational
Combined Cycle Gas Turbine	Huntington Beach	644	Operational
Gas Combustion Turbine	Stanton	98	Operational

Table 7: San Diego Gas & Electric Current Authorizations

Resource Type	D.13-03-029/ D.14-02-016 MW	Additional Track 4 Authorization MW	Total Authorization MW	Pending & Approved Applications MW
Preferred Resources & Energy Storage	--	200 (Minimum)	300	144.5[42]
Optional: Any Resource	300 (Pio Pico, CA)	300 to 600	600 to 900	800
Total	300	500 to 800	800 to 1,100	944.5

[42] Includes roughly 38 MW of storage capacity authorized by Resolution E-4798 to alleviate constraints in Southern California due to the Aliso Canyon gas storage facility outage.

Table 8: San Diego Gas & Electric Approved Applications[43]

Resource Type	Location	Capacity in MW	Status
Demand Response	San Diego/Imperial Valley	4.5	Operational
Energy Efficiency	San Diego/Imperial Valley	19	Approved[44]
Energy Storage	San Diego/Imperial Valley	121	Approved
Gas Combustion Turbine	Carlsbad (Encina site)	500	Operational
Gas Turbine	Pio Pico	300	Operational

The Alamitos AFC and Huntington Beach Petition to Amend (PTA) Certifications were approved on April 12, 2017, and the projects reached commercial operation in February 2020. The Stanton Energy Reliability Center is one of the projects selected by Southern California Edison (SCE) to meet the Western Los Angeles Basin local capacity requirements and reached commercial operation in July 2020. The Redondo Beach AFC was withdrawn by AES on April 7, 2020, and on June 3, 2020, the CEC's presiding member terminated the proceeding for the Redondo Beach AFC. The NRG Puente Power Project AFC was withdrawn by NRG on December 7, 2018, and will now be replaced with a suite of alternatives.[45] On December 11, 2018, the CEC's presiding member terminated the proceeding for the NRG Puente Power Project AFC.[46] Following

[43] For additional details on approved projects, see San Diego Gas & Electric application A.14-07-009, A.16-03-014, A.17-04-017, and Resolution E-4798.
[44] Approved status indicates that the project has been approved, or that a portion of the capacity (MW) of the associated facility may be operational.
[45] The Puente Power Project was a replacement project for the Mandalay Power Plant. The suite of alternatives includes transmission upgrades, additional energy efficiency, demand response, and battery storage.
[46] California Independent System Operator (CAISO). 2019. 2018-2019 Transmission Plan. Folsom, CA: CAISO.

solicitations by SCE to replace the Puente Power Project, the CPUC approved 195 MW of storage and demand response capacity in D.19-12-055 and Resolution E-5033.[47, 48]

CPUC Incremental Capacity Procurement Pursuant to D.19-11-016

On November 7, 2019, the CPUC adopted D.19-11-016[49] directing procurement of 3,300 MW from load serving entities under the CPUC's jurisdiction by August 2023, to enhance system-wide electric reliability. D.19-11-016 requires 1,650 MW of the required procurement to be online by August 1, 2021; 2,475 MW to be online by August 1, 2022; and the full 3,300 MW to be online by August 1, 2023. These requirements only apply to CPUC-jurisdictional load serving entities, which represent approximately 90 percent of the load served in the CAISO. These entities conducted solicitations for replacement capacity in 2019 and 2020, and contracts for the investor-owned utilities' portion of these resources were approved in 2020 and 2021 (the other load serving entities are not required to have contracts approved by the CPUC).[50] In D.20-12-044, the CPUC established milestones and reporting deadlines of February 1 and August 1 annually for 2021 through 2023 for each procurement tranche.[51] Since then, the CPUC has periodically provided procurement progress based on load-serving entities' filings.[52]

[47] California Public Utilities Commission (CPUC). 2019. Decision Regarding Southern California Edison Company 2018 Local Capacity Requirements Request for Proposals for Moorpark Sub-Area Pursuant to Decision 13-02-015, D.19-12-055. San Francisco, CA: CPUC.
[48] California Public Utilities Commission (CPUC). 2019. Resolution E-5033. San Francisco, CA: CPUC.
[49] California Public Utilities Commission (CPUC). 2019. Decision Requiring Electric System Reliability Procurement for 2021-2023, D.19-11-016. San Francisco, CA: CPUC.
[50] California Public Utilities Commission (CPUC). Years 2020-2021. Resolutions. San Francisco, CA: CPUC. See Resolutions on the CPUC's website as follows: E-5100, E-5101, E-5117, E-5139, E-5140, and E-5142.
[51] California Public Utilities Commission (CPUC). 2020. Decision Establishing Process for Backstop Procurement Required by Decision 19-11-016, D.20-12-044. San Francisco, CA: CPUC.
[52] The CPUC provides presentations on the status of D.19-11-016's procurement order on CPUC's IRP Procurement Track Website. The most recent update provides a status update on procurement compliance based on load-serving entities' February 1, 2021 filings.

CPUC Incremental Capacity Procurement Pursuant to D.21-06-035

On June 24, 2021, the CPUC adopted D.21-06-035 to address mid-term reliability needs pertaining to the planned retirement of Diablo Canyon and several OTC power plants.[53] This decision directed CPUC-jurisdictional load serving entities to procure 11,500 MW of new capacity to come online between 2023 and 2026, in addition to the 3,300 MW ordered in 2019 in D.19-11-016.

This procurement order requires that 2,500 of the 11,500 MW must be from zero-emission resources. Additionally, 2,000 MW must be long lead-time resources, with at least 1,000 MW of long-duration storage and 1,000 MW of firm capacity.[54] The firm capacity must have zero on-site emissions or qualify under the renewables portfolio standard eligibility requirements, and it must have at least an 80 percent capacity factor.

Incremental Capacity Procurement Monitoring

The CPUC is monitoring procurement under both D.19-11-016 and D.21-06-035. Between the two procurement orders, 14,800 MW of capacity is ordered to come online as follows (shown cumulatively):

- 1,650 MW by August 1, 2021;
- 2,475 MW by August 1, 2022;
- 5,300 MW by August 1, 2023;
- 11,300 MW by August 1, 2024;
- 12,800 MW by June 1, 2025, and;
- 14,800 MW by June 1, 2026.

Between July 2020 and July 2022, roughly 4,000 MW of NQC came online. Most of the new capacity was intended to fulfill load serving entities' responsibility to procure resources under D.19-11-016 and D.21-06-035, i.e., the "2,475 MW by August 1, 2022"

[53] California Public Utilities Commission (CPUC). 2021. Decision Requiring Procurement to Address Mid-Term Reliability (2023-2026), D.21-06-035. San Francisco, CA: CPUC.

[54] Long-duration storage must be able to deliver at maximum capacity for at least eight hours from a single source.

target; however, some of the new resources materialized because of CPUC orders in effect prior to D.19-11-016. Based on current contracting efforts and reporting through July 2022 by CPUC-jurisdictional load serving entities, the total amount of new resources online between July 2020 and August 1, 2023, could be as high as 7,000 MW NQC, which exceeds the CPUC's cumulative procurement target to be online by August 1, 2023, where some resources may count towards prior orders. However, as detailed below, the energy agencies have identified significant barriers associated with supply chain issues, transmission interconnection concerns, and permitting hurdles that could prolong the remaining procurement ordered through 2026 via D.19-11-016 and D.21-06-035. These developmental delays could account for up to 3,600 MW of the 10,000 MW shortfall identified in summer 2025.

In response to these delays, as well as an Emergency Proclamation issued by Governor Newsom on July 30, 2021,[55] the energy agencies and the Governor's Office of Business and Economic Development created a joint task force to track the development of new energy projects. The Tracking Energy Development (TED) Task Force identified three broad issues that may create delays in developing new generation resources and in bringing them online: supply chain delays, interconnection and transmission issues, and permitting issues. The TED Task Force has worked to understand the impact of various issues affecting many or all energy development projects, and it has also sought to intervene on a project specific basis as appropriate and when warranted.

Supply chain disruptions, many of which are related to the coronavirus disease 2019 (COVID-19) pandemic, are significant issues threatening energy project development in California. The COVID-19 pandemic has caused or been associated with manufacturing slow-downs and shut-downs, as well as shipping delays that have impacted nearly all energy development projects in California.

Supply chain related disruptions have impacted solar and storage development projects in particular. Storage, almost entirely involving lithium battery technologies, accounts for about 80 contracts totaling 4,700 MW of NQC that were initially scheduled to come online

[55] Office of the Governor. 2021. Proclamation of a State of Emergency. Sacramento, CA: Office of Governor Gavin Newsom.

between 2022 and 2023. However, China's zero-COVID-19 approach and the consequent shut-down of battery manufacturing in the country has delayed project development timelines in California and may continue to affect many projects involving storage in the coming year. Both solar and storage projects have also been delayed because of international shipping disruptions, increased congestion at ports, and shipping cost increases.

These supply chain issues were further compounded by an ongoing U.S. Department of Commerce investigation into a solar tariff circumvention complaint. The announcement of this investigation immediately threatened solar project development in California in the spring of 2022. Although many of the 2022 solar projects already had equipment in-country or installed, the investigation threatened to derail over 4,500 MW of solar and hybrid solar and storage projects slated to come online in late 2022 or 2023. The CPUC estimates that the state's load serving entities have over 70 solar and hybrid solar and storage projects scheduled to be online in 2022 and 2023, that may be impacted by the Department of Commerce investigation.

The Biden Administration provided a temporary reprieve to this issue when it announced in June 2022 that it will not impose tariffs on imports of solar power equipment for the next two years. However, many projects have lost key development and timeline momentum and may continue to be delayed. Furthermore, after the two-year reprieve expires, there could be future impacts to the solar industry depending on the Department of Commerce's findings. Preliminary findings to the Department of Commerce's investigation may be announced by November 28, 2022, with additional findings in April 2023.

A second set of issues that presents a risk to energy project development in the medium term are concerns regarding interconnection and transmission development to support new projects. Interconnection is a project-specific process that requires intensive construction and engineering coordination between project developers and utilities. As many projects have experienced development delays due to contracting uncertainty or supply chain issues, interconnection timelines and processes can also be delayed. The

interconnection of new generation facilities to the grid can be a lengthy process involving interconnection studies, agreements, and ultimately facilities construction.

While many projects are being interconnected, the energy agencies are tracking issues and working with utilities to streamline their interconnection processes to reduce bottlenecks in the interconnection queue.[56] However, interconnection processes have nonetheless been strained by the unprecedented number of new generation projects and the amount of generation and storage that load serving entities are being asked to procure. Consequently, the ability of the interconnection queue process to keep pace with project development is a concern.

Finally, the TED Task Force identified concerns regarding delays that new generation and storage projects may face in acquiring permits from local jurisdictions. For example, some delays are related to fire suppression requirements. Since much of the planned storage capacity is relatively new, some counties have requested additional requirements or additional time to review fire plans.

The three issues identified by the TED Task Force are creating considerable uncertainty, and in combination they are expected to affect the pace of new resource development and electrical reliability in California for many years.

CAISO

The CAISO provides open and non-discriminatory access to the bulk of the state's wholesale transmission grid, supported by a competitive energy market and comprehensive infrastructure planning efforts. In addition to its work supporting the CPUC LTPP and now the IRP proceeding, the CAISO has expanded its transmission planning process to explore transmission alternatives for improving reliability in the local capacity areas affected by the retirements of OTC units. The CAISO approved several transmission upgrades and additions in its 2013-2014 transmission planning process to help address Local Capacity Requirement issues associated with the compliance

56 California Public Utilities Commission (CPUC). 2022. CPUC President Alice Reynold's letters to SCE, SDG&E, and PG&E sent on March 11, 2022. San Francisco, CA: CPUC.

schedule under the OTC Policy and the closure of SONGS.[57] The timing of the CAISO-approved transmission projects and CPUC projects, as well as authorized procurement levels for SCE and San Diego Gas & Electric (SDG&E), facilitated attainment of the compliance schedule of the OTC Policy for OTC power plants within the CAISO's BAA during that time.

The CAISO's analysis of the 2018-2019 Transmission Plan indicated that the authorized resources and previously approved transmission projects were working together to meet the reliability needs in the Los Angeles Basin and San Diego areas within the CAISO footprint.[58,59] However, due to the delay of the Carlsbad Energy Center Project, the CAISO conducted a 2018 summer reliability study to assess risk to the Los Angeles Basin and San Diego-Imperial Valley local reliability areas. The assessment culminated in the Encina Power Station 2018 Reliability Study.[60] This study was completed at the end of 2016 and was the basis for amending the OTC Policy to defer the compliance date for Encina Power Station Units 2, 3, 4, and 5 by one year to December 31, 2018.

Table 9 provides a summary of the reliability transmission projects approved by the CAISO Board of Governors in the 2012-2013, 2013-2014, 2014-2015, 2015-2016, and 2016-2017 Transmission Plans[61] to address electrical reliability concerns related to the retirement of SONGS and OTC power plants in the Los Angeles Basin and San Diego local areas. The target in-service date and responsible Participating Transmission Owner (PTO) are also identified in Table 9.

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[57] California Independent System Operator (CAISO). 2014. 2013-2014 Transmission Plan. Folsom, CA: CAISO.
[58] California Independent system Operator (CAISO). 2019. 2018-2019 Transmission Plan. Folsom, CA: CAISO.
[59] The analysis was further validated in subsequent plans.
[60] State Water Resources Control Board (SWRCB). 2017. Report of the SACCWIS – Encina Power Station 2018 Reliability Study. Sacramento, CA: SWRCB.
[61] California Independent System Operator (CAISO). Years 2013-2017. Annual Transmission Plans. Folsom, CA: CAISO. Transmission plans are found on the CAISO's website as follows: 2012-2013 Transmission Plan; 2013-2014 Transmission Plan; 2014-2015 Transmission Plan; 2015-2016 Transmission Plan; 2016-2017 Transmission Plan.

Table 9: In-Service Dates for CAISO Board Approved Transmission Projects

	Transmission Projects	PTO Service Territory	Target In-Service Dates
1	Talega Synchronous Condensers (2x225 Megavolt, Ampere, Reactive, or MVAR)	SDG&E	In-Service (8/7/2015)
2	San Luis Rey Synchronous Condensers (2x225 MVAR)	SDG&E	In-Service (12/29/2017)
3	Imperial Valley Phase Shifting Transformers (2x400 MVAR)	SDG&E	In-Service (5/1/2017)
4	Sycamore – Peñasquitos 230kV Line	SDG&E	In-Service (8/29/2018)
5	San Onofre Synchronous Condensers (1x225 MVAR)	SDG&E	In-Service (10/16/2018)
6	Miguel VAR Support (450 MVAR)	SDG&E	In-Service (4/28/2017)
7	Santiago Synchronous Condensers (3x81 MVAR)	SCE	In-Service (12/8/2017)
8	Mesa Loop-In Project and South of Mesa 230kV Line Upgrades	SCE	In-Service (5/31/2022)
9	Extension of Huntington Beach Unit 3 Synchronous Condenser (140 MVAR)	SCE	Reliability-Must-Run contract extended and expired on 12/31/2017[62]

Mesa Loop-In Substation Project

The Mesa Loop-In Substation Project rebuilt and upgraded SCE transmission infrastructure in the Western Los Angeles Basin. For background, SCE filed an application for a Permit to Construct (PTC) the Mesa Loop-In Substation Project with the CPUC on March 13, 2015. On February 9, 2017, SCE received the PTC from the CPUC. SCE received the first Notice to Proceed from the CPUC on September 27, 2017, and the second Notice to Proceed for the remaining scope of work (remaining substation, satellite

[62] The contract for the synchronous condensers expired on Dec. 31, 2017, and they are no longer operating.

substation work, and telecom scope of work) on November 15, 2017. Construction of the project commenced on October 2, 2017.

One of the primary and final components of the project involves the construction of a 500 kilovolt (kV) substation that is intended to replace a previous and smaller 220 kV substation. This project was completed as of May 31, 2022. Therefore, none of the OTC extension recommended in this report are associated with the Mesa Loop-In Substation Project.

VII. Review of Generating Facility Compliance Dates

This section focuses on Alamitos, Huntington Beach, Ormond Beach, Redondo Beach, and Scattergood. These five OTC power plants are addressed in detail because of their relation to the proposed alternatives and recommendations addressed in this report.

Ormond Beach

Ormond Beach consists of two steam boiler units using OTC with a combined capacity of 1,491 MW. An October 9, 2014, a settlement agreement between the State Water Board and NRG, the owner and operator of Ormond Beach, determined Track 1 compliance with the OTC Policy to be infeasible. NRG confirmed its intent to retire the facility by its OTC Policy compliance date in its implementation plan update sent to the State Water Board on January 19, 2018. On February 28, 2018, NRG notified the CPUC of its intention to shut down and retire Ormond Beach by October 1, 2018.

However, on September 28, 2018, NRG sent a letter to the CAISO to withdraw the earlier shutdown notice to meet local area reliability needs in 2019 pursuant to CPUC D. 18-06-030.[63] The CAISO's 2019 Local Capacity Technical Analysis Final Report (released on May 15, 2018) identified that at least one Ormond Beach unit was needed to

[63] California Public Utilities Commission (CPUC). 2018. Decision Adopting Local Capacity Obligations for 2019 and Refining the Resource Adequacy Program, D.18-06-030. San Francisco, CA: CPUC.

meet local capacity requirements,[64] and this need could not be addressed with other alternatives in time to meet the 2019 calendar year. As a result, CPUC D.18-06-030 required SCE to attempt to sign a contract with NRG for power from Ormond Beach for 2019 and 2020 to meet local capacity requirements. SCE filed an Advice Letter with the CPUC on September 4, 2018, seeking approval of a contract with NRG for power from Ormond Beach Unit 2 from January 1, 2019, through November 30, 2019; this contract was approved by the CPUC on September 26, 2018. On November 5, 2018, SCE filed another Advice Letter seeking approval of a contract with Ormond Beach Unit 2 from December 1, 2019, through December 31, 2020. This contract was approved by the CPUC on March 28, 2019, in Resolution E-4986.[65]

Based on the CPUC's decision D.19-11-016, the SACCWIS published a final report on January 23, 2020, recommending an extension of Ormond Beach's compliance date by three years.[66] On August 27, 2020, the CPUC issued Resolution E-5099,[67] which approved a contract with SCE for Ormond Beach Units 1 and 2 through 2023; this contract is currently still in effect and allows Ormond Beach to provide resource adequacy capacity to SCE through the effective period of the contract. On September 1, 2020, the State Water Board amended the OTC Policy, which extended the compliance date for Ormond Beach Units 1 and 2 until December 31, 2023. The National Pollutant Discharge Elimination System (NPDES) permit for this facility was amended to reflect this change, effective January 1, 2021.

[64] California Independent System Operator (CAISO). 2018. 2019 Local Capacity Technical Analysis Final Report and Study Results. Folsom, CA: CAISO.
[65] California Public Utilities Commission (CPUC). 2019. Resolution E-4986. San Francisco, CA: CPUC.
[66] Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS). 2020. Final Recommended Compliance Date Extensions for Alamitos, Huntington Beach, Ormond Beach, and Redondo Beach Generating Stations. Sacramento, CA: SWRCB.
[67] California Public Utilities Commission (CPUC). Resolution E-5099. San Francisco, CA: CPUC.

At this time, the SACCWIS recommends an OTC Policy compliance date extension for the Ormond Beach Units 1 and 2 for three years, through December 31, 2026, to address system-wide grid reliability needs as described above.

Huntington Beach

Huntington Beach consists of four units. Huntington Beach Units 3 and 4 retired on October 31, 2012, and were converted to synchronous condensers to provide voltage support in 2013. The synchronous condensers ceased the use of OTC and permanently retired in September 2018. Unit 1 ceased the use of OTC and retired on December 31, 2019. Unit 2 uses OTC and has a capacity of 226 MW.

The Huntington Beach PTA was approved by the CEC on April 12, 2017. AES, the owner and operator of Huntington Beach, submitted an application for a 939 MW combined-cycle gas turbine (CCGT) power plant, which was approved by the CEC on October 29, 2014. Subsequently, AES was selected for a Power Purchase Agreement (PPA) for a 644 MW power plant by SCE for the Huntington Beach facility, with different equipment configurations than had been approved by the CEC. At its November 19, 2015 meeting, the CPUC approved SCE's procurement selection of the Huntington Beach repowering project for the Western Los Angeles Basin local capacity needs per D.15-11-041.[68] On September 14, 2015, AES submitted a PTA for an 844 MW power plant, comprised of a 644MW CCGT in phase 1 and a 200 MW Single Cycle Gas Turbine (SCGT) in phase 2. The CEC approved the revised project on April 12, 2017.

Huntington Beach was awarded a PPA for 644 MW capacity with an initial date of May 1, 2020. This required the shutdown of one Huntington Beach unit prior to the OTC Policy compliance date due to limited interconnection capacity and to satisfy the SCAQMD rules for new emission sources. Huntington Beach Unit 1 complied with the OTC Policy on December 31, 2019, and the 644 MW CCGT began commercial operation

[68] California Public Utilities Commission (CPUC). 2015. Decision Approving, in part, Results of Southern California Edison Company Local Capacity Requirements Request for Offers for the Western LA Basin Pursuant to Decisions 13-02-015 and 14-03-004, D.15-11-041. San Francisco, CA: CPUC.

in February 2020. AES does not plan to retrofit any of the existing units with alternate cooling technologies to comply with Track 1 or use any operational or technical measures to comply with Track 2. AES confirmed that the PTC from the SCAQMD for the phase 2 SCGT has been canceled. As a result, any plans to move forward with that project would require submittal of a new application for a PTC to the SCAQMD and would be subject to New Source Review requirements and will require the Best Available Control Technology.

In its 2020-2021 transmission planning process reliability studies,[69] the CAISO modeled the new 644 MW Huntington Beach repowering to replace the Huntington Beach generating facility after 2020.

On September 1, 2020, the State Water Board amended the OTC Policy, which extended the compliance date for Huntington Beach Unit 2 until December 31, 2023. In its November 4, 2021 implementation plan update to the State Water Board, AES confirmed its intention to comply with the OTC Policy compliance dates for the Huntington Beach Unit 2. Furthermore, a PPA has been executed with a non-utility load serving entity that extended the operation of Huntington Beach Unit 2 through December 31, 2023. Units 1, 3, and 4 have shut down to enable the new CCGTs at Huntington Beach to be placed in service. The Huntington Beach Phase 1 CCGT completed construction and began commercial operations on February 4, 2020. The PTC from the SCAQMD for Phase 2, 200 MW simple cycle gas turbines has been canceled.

At this time, the SACCWIS recommends an OTC Policy compliance date extension for Huntington Beach Unit 2 for three years, through December 31, 2026, to address system-wide grid reliability needs as described above.

Alamitos

Alamitos consists of six units using OTC. The total capacity of these units is approximately 2,000 MW. In its November 4, 2021 implementation plan update to the State Water Board, AES confirmed its intention to comply with the OTC compliance dates

[69] California Independent System Operator (CAISO). 2021. 2020-2021 Transmission Plan. Folsom, CA: CAISO.

for the Alamitos units that use OTC through Track 1 by shutting down and permanently retiring these units.

On December 27, 2013, AES filed an AFC with the CEC to repower the facility with four 3-on-1 CCGTs with a net generating capacity of 1,936 MW. On October 26, 2015, AES submitted a Supplemental AFC, replacing the prior application, for a 1,040 MW power plant, comprised of a 640 MW CCGT in phase 1 and a 400 MW SCGT in phase 2. The CEC approved the project on April 12, 2017.

Alamitos was awarded a PPA for 640 MW of CCGT and 100 MW of energy storage capacity, and commercial operation began on June 1, 2020, and January 1, 2021, respectively. AES continues to pursue contracts and approvals for the additional 200 MW of storage. In its November 4, 2021 implementation plan update to the State Water Board, AES stated the PTC for the Phase 2 SCGT at Alamitos was canceled. As a result, any plans to move forward with that project would require submittal of a new application for PTC to the SCAQMD and would be subject to New Source Review requirements and will require the Best Available Control Technology.

Alamitos units 1, 2, and 6 retired on December 31, 2019, to provide emission offsets for the new 640 MW CCGT, which began commercial operations as of February 4, 2020. AES does not plan to retrofit any of the existing units with alternate cooling technologies to comply with Track 1 or use any operational or technical measures to comply with Track 2.

A resource adequacy contract has been executed with SCE that extended the operation of Alamitos Units 3, 4, and 5 through December 31, 2023. The contract received final approval from the CPUC on August 27, 2020.[70] On September 1, 2020, the OTC Policy was amended to continue the operations of Alamitos Units 3, 4, and 5 until December 31, 2023. The NPDES permit was amended and Time Schedule Order (TSO) approved to reflect this change, effective January 1, 2021. Additionally, the San Gabriel River Metals Total Maximum Daily Load was amended and a contract with SCE was

[70] The resource adequacy contracts for the Alamitos units received CPUC approval on September 28, 2017.

approved to allow for continued operation of Alamitos Units 3, 4, or 5 until their compliance date of December 31, 2023 (see Resolution E-5098).[71]

In its 2020-2021 transmission planning studies, the CAISO modeled the new 640 MW Alamitos Energy Center to replace generation from Alamitos OTC units after 2020.

At this time, the SACCWIS recommends an OTC Policy compliance date extension for the Alamitos Units 3, 4, and 5 for three years, through December 31, 2026, to address system-wide grid reliability needs as described above.

Redondo Beach

Redondo Beach consists of four units using OTC. The total capacity of these units is approximately 1,300 MW. In its November 4, 2021 implementation plan update to the State Water Board, AES reaffirmed its intent to comply with Track 1 of the OTC Policy and to shut down and permanently retire all units at Redondo Beach per the compliance dates included in the OTC Policy.

Unit 7 was shut down on September 30, 2019, in advance of the OTC Policy compliance date to accommodate the provision of the SCAQMD Rule 1304(a)(2) for offset exemptions for the new Huntington Beach CCGT. AES previously executed PPAs for Redondo Beach with 16 non-utility load serving entities for Units 5, 6 and 8 through December 31, 2021.

In 2013, AES proposed to repower Redondo Beach to comply with the OTC Policy. The proposed repowering project was a natural-gas fired, combined-cycle, air-cooled electrical generating facility with a net generating capacity of 496 MW. After AES proposed alternative land use of the site, the CEC suspended the application on September 2, 2014. A subsequent ballot initiative with the City of Redondo Beach to rezone the property to allow commercial and residential usage occurred on March 3, 2015. However, the voters of the City of Redondo Beach rejected the ballot initiative to

[71] California Public Utilities Commission (CPUC). 2020. Resolution E-5098. San Francisco, CA: CPUC.

redevelop the property, resulting in AES resuming permitting efforts to repower the facility.

On November 6, 2015, AES and the City of Redondo Beach 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 would remain in place until the applicant or another party made a motion to reopen the proceeding and the CEC granted the requested reopening. In early 2016, AES placed the Redondo Beach and its 51-acre site on the commercial real estate market. On August 12, 2016, AES and the City of Redondo Beach submitted a notice of agreement to continue the suspension until February 1, 2017. On March 30, 2020, AES closed on the sale of the Redondo Beach site, and AES withdrew the AFC on April 7, 2020.

On September 1, 2020, the OTC Policy was amended to continue the operations of Redondo Beach Units 5, 6, and 8 until December 31, 2021. This amendment was responsive to a recommendation of the SACCWIS to extend Redondo Beach's compliance date, as well as the compliance dates for Alamitos, Huntington Beach, and Ormond Beach, to bolster system-wide reliability while procurement ordered by D.19-11-016 came online. Redondo Beach's NPDES permit was subsequently amended and TSO approved, effective January 1, 2021.

Following the 2020 amendment to the OTC Policy, the energy agencies indicated that another request for extending Redondo Beach's compliance date may be necessary, which the State Water Board recognized in Resolution No. 2020-0029. On October 19, 2021, the OTC Policy was amended to continue the operations of Redondo Beach Units 5, 6, and 8 until December 31, 2023, to reduce system-wide grid reliability concerns sparked by an August 2020 west-wide heatwave that led to rotating outages in the CAISO BAA.[72] This extreme event ultimately led to an analysis conducted by the CPUC, CAISO, and CEC identifying projected shortfalls in summer 2022 and critical

[72] Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS). 2021. Final 2021 Report of the SACCWIS. Sacramento, CA: SWRCB. See discussion of system-wide grid reliability concerns.

uncertainties associated with energy supply and demand that would warrant additional capacity in summer 2023.

The Los Angeles Regional Water Quality Control Board (Los Angeles Regional Water Board) administratively extended the facility's NPDES permit on April 29, 2021, to accommodate this extension. The Los Angeles Regional Water Board considered, but voted not to approve, the revised TSO for Redondo Beach on December 9, 2021. However, the owner and operator filed a petition to the State Water Board to request review of the Los Angeles Regional Water Board's failure to adopt a TSO. The State Water Board agreed to hear the petition and adopted the order on August 2, 2022.[73] Under the adopted order, the operators shall achieve full compliance with proposed effluent limitations for DDT and temperature from their discharges as soon as possible, but no later than December 31, 2023. Additionally, the operator shall make annual payments as abatement of the effects of the predicted exceedances for DDT and temperature effluent limitations.

On December 16, 2021, the CPUC approved two resource adequacy PPAs between SCE and Redondo Beach for Units 5 and 6 for the period of April 1, 2022, through December 31, 2022, to meet SCE's system, Los Angeles Basin local, and flexible resource adequacy requirements.[74]

Recognizing land use challenges that would be associated with continued operations of the power plant as described above, the SACCWIS does not recommend a change in compliance dates for Redondo Beach at this time.

Scattergood

At the time of adoption of the OTC Policy in 2010, Scattergood consisted of three units using OTC. In its July 2011 implementation plan update to the State Water Board, the LADWP requested changes to OTC Policy compliance dates for its power plants on a

[73] The program page for the Redondo Beach TSO petition can be found on the State Water Board's website.
[74] California Public Utilities Commission (CPUC). 2021. Resolution E-5173. San Francisco, CA: CPUC.

unit-by-unit basis rather than power plant-wide basis. The LADWP had also previously requested compliance date extensions, which were considered and supported by the SACCWIS in 2011. In 2012, the State Water Board adopted an OTC Policy amendment granting extensions to the LADWP's power plants to support local reliability.[75] This amendment changed Scattergood's compliance date from December 31, 2020, to December 31, 2024, for Units 1 and 2, and from December 31, 2020, to December 31, 2015, for Unit 3. Scattergood Unit 3 (497 MW) retired per the amended compliance schedule on December 31, 2015. The LADWP reported completion of the Unit 3 demolition project at the SACCWIS meeting on March 8, 2019.

In February 2022, the LADWP requested a compliance date extension for Units 1 and 2 (367 MW). The CAISO, CEC, CPUC, California State Lands Commission, CCC, and State Water Board support the LADWP's request to extend the OTC Policy compliance date of Scattergood Units 1 and 2 for five years, from December 31, 2024, to December 31, 2029, to support local system reliability. At this time, the CARB is abstaining from weighing-in on the request to extend the Scattergood compliance date.

VIII. Regulatory Requirements

The following section describes water quality and air quality regulatory requirements and procedures related to compliance date extensions for Alamitos, Huntington Beach, Ormond Beach, and Scattergood. These actions are separate and distinct from the contracting process for power plants. If the State Water Board approves OTC Policy compliance date extensions, contracting for power plants would occur separately and through other processes. The procurement process will identify the specific capacity needed to meet reliability requirements.

Water Quality

Following the SACCWIS' recommendation to extend the compliance date for Alamitos, Huntington Beach, and Ormond Beach, and the SACCWIS's support for the extension of

[75] State Water Resources Control Board (State Water Board). Resolution No. 2011-0033. Sacramento, CA: State Water Board.

the compliance date for Scattergood, the State Water Board would consider adopting an amendment to the OTC Policy to extend the corresponding compliance dates.

The most likely process would be for the State Water Board to consider the amendment in summer 2023 with sufficient time for the California Office of Administrative Law to review and approve the administrative record for the amendment prior to December 31, 2023.

An alternative process for Alamitos, Huntington Beach, and Ormond Beach is a suspension process that involves the CAISO sending letters to the SACCWIS, the State Water Board, the Los Angeles Regional Water Board, and the Santa Ana Regional Water Quality Control Board (Santa Ana Regional Water Board) notifying them that continued operation of the three OTC power plants is deemed necessary to maintain grid reliability beyond December 31, 2023, and requesting suspension of their compliance dates for more than 90 days per Section 2.B.(2)(b) of the OTC Policy. Executive directors of the CEC and CPUC would have ten days to submit letters stating any opposition to the requested suspensions. If there were no opposition from the other agencies of the SACCWIS, the State Water Board would be required to conduct a hearing during the 90-day suspension or within 90 days of receiving the notification to determine whether to suspend the compliance dates for more than 90 days. Per the OTC Policy, the State Water Board would afford significant weight to the recommendations of the CAISO. If suspended, the State Water Board would need to amend the OTC Policy on or before the end of the suspension periods granted by the State Water Board.

A similar alternative suspension process applies to Scattergood, in which the LADWP may provide written notification to the State Water Board, the Los Angeles Regional Water Board, and the SACCWIS requesting a suspension. Within 45 days of receiving this notification, the State Water Board would be required to conduct a hearing to determine whether to suspend the final compliance date. Per the OTC Policy, the State Water Board would be required to consult with the CAISO in considering whether to suspend the final compliance date.

Alamitos

On November 12, 2020, the Los Angeles Regional Water Board adopted Order R4-2020-0134, which renewed the waste discharge requirements and NPDES permit for Alamitos. Order R4-2020-0134 prescribes effluent limitations for the discharge of OTC water and low-volume wastes to the San Gabriel River Estuary and for the discharge of storm water to the Los Cerritos Channel Estuary.

The NPDES permit issued to Alamitos by the Los Angeles Regional Water Board will expire on December 31, 2025. The associated TSO, which sets interim limits for temperature, total residual chlorine, copper, nickel, Bis(2-ethylhexyl)phthalate, enterococcus, and total suspended solids, will expire on December 31, 2023. Pursuant to Section 13376 of the Water Code, the permittee may submit an application and complete Report of Waste Discharge to renew the permit at least 180 days prior to the expiration date of Order R4-2020-0134.

Once the TSO (R4-2020-0135) expires, the discharger may request another TSO extension; however, it would be limited to a time period not to exceed 10 years from the effective date of TSO R4-2015-0174, which was adopted by the Los Angeles Regional Water Board on September 10, 2015.

Huntington Beach

On December 4, 2020, the Santa Ana Regional Water Board adopted Order R8-2020-0040, which renewed the waste discharge requirements and NPDES permit for Huntington Beach. Order R8-2020-0040 prescribes effluent limitations for the discharge of OTC water, wastewater associated with bio-fouling control and heat treatment, boiler blowdown, condensate overboard, treated wastewater from retention basins, storm water runoff, and urban runoff to the Pacific Ocean.

The NPDES permit issued to Huntington Beach by the Santa Ana Regional Water Board will expire on December 31, 2025. Pursuant to Section 13376 of the Water Code, the permittee may submit an application and complete Report of Waste Discharge to renew the permit at least 180 days prior to the expiration date of Order R8-2020-0040.

Ormond Beach

On November 12, 2020, the Los Angeles Regional Water Board adopted Order R4-2020-0132, which renewed the waste discharge requirements and NPDES permit for Ormond Beach. Order R4-2020-0132 prescribes effluent limitations for the discharge of OTC water, low-volume wastes, and storm water to the Pacific Ocean.

The NPDES permit issued to Ormond Beach by the Los Angeles Regional Water Board will expire on December 31, 2025. Pursuant to Section 13376 of the Water Code, the permittee may submit an application and complete Report of Waste Discharge to renew the permit at least 180 days prior to the expiration date of Order R4-2020-0132.

Scattergood

On February 11, 2016, the Los Angeles Regional Water Board adopted Order R4-2016-0055, which renewed the waste discharge requirements and NPDES permit for Scattergood. Order R4-2016-0055 prescribes effluent limitations for the discharge of OTC water, industrial process waters, and storm water to the Pacific Ocean.

On March 18, 2021, the Los Angeles Regional Water Board administratively extended Scattergood's NPDES permit after receiving a complete Report of Waste Discharge from the LADWP. The terms and conditions of Order R4-2016-0055 continue to be in full effect pending action on a new/revised permit by the Los Angeles Regional Water Board.

Air Quality

CARB is part of a three-tiered system for cleaning up air pollution that includes the U.S. EPA and California's 35 local air quality management and air pollution control districts (air districts). The air districts, in coordination with U.S. EPA and CARB, develop regional air quality management plans for attaining and maintaining health-based ambient air quality standards. The air districts set and enforce emissions standards for local sources, including refineries, cement plants, gas stations, and power plants. The South Coast Air Quality Management District (SCAQMD) is the local air district whose jurisdiction covers large areas of Los Angeles, Orange, Riverside and San Bernardino counties, including the Coachella Valley. The Ventura County Air Pollution Control District's (VCAPCD)

jurisdiction encompasses Ventura County. Alamitos, Huntington Beach, Redondo Beach, and Scattergood generating stations are within the SCAQMD's jurisdiction, and Ormond Beach is located within VCAPCD's jurisdiction. CARB's role in the SACCWIS is to help identity air permitting constraints associated with implementation of the OTC Policy and in this role also coordinates with and seeks additional information from the air districts. This section discusses local air district permitting and rulemaking activity that could affect the operation of the OTC generating units.

Rulemaking

The SCAQMD is continuing to develop command-and-control rules to replace its local market-based pollutant trading Regional Clean Air Incentives Market (RECLAIM) program. This includes rules covering new and modified stationary source (New Source Review) and source-specific rules that apply to both new and existing equipment. All the OTC power plants within the SCAQMD's jurisdiction participate in RECLAIM.[76]

The SCAQMD Rule 1135 and Rule 429.2 are the two key rules that apply to existing electric generating facilities. Rule 1135 sets Best Available Retrofit Control Technology (BARCT) level emissions standards for oxides of nitrogen (NO_x).[77] OTC power plants that plan to comply with the OTC Policy by retiring their OTC generating units are exempt from the BARCT standards through their OTC Policy compliance dates, but no later than December 31, 2029. This provision applies as long as the generating units retain their NOx and ammonia limits, startup, shutdown, and tuning requirements; the units meet pollutant averaging times in the current permits; the units comply with their compliance dates established in Table 1 of Section 2(B) of the OTC Policy; and facilities provide proper notification to the SCAQMD of any extensions. However, owners or operators that remove the OTC system to comply with the OTC Policy, but continue operating the generating units, will be expected to comply with the Rule 1135 NO_x emission limits.

[76] Includes AES's Alamitos, Huntington Beach, and Redondo Beach, and LADWP's Harbor, Haynes, and Scattergood generating stations.
[77] NOx are a group of gases that form when nitrogen reacts with oxygen during combustion, especially at high temperatures. These compounds contribute to air pollution.

Rule 429.2 is a companion rule to Rule 1135 that establishes requirements for generating unit startup, shutdown, and malfunction events, along with monitoring, recordkeeping, and reporting requirements. Rule 429.2 also exempts OTC units that will retire by their corresponding OTC Policy compliance date from certain provisions through December 31, 2029, including startup and shutdown duration limits, limits to the number of scheduled startups, and installing a temperature device. Since Alamitos and Huntington Beach will comply with the OTC Policy by retiring their units, the facilities are eligible for the limited-term Rule 1135 and Rule 429.2 exemptions if they follow the provisions set forth in the rules.

New Source Review emission offset requirements for OTC power plants undergoing repower are satisfied through access to the SCAQMD's internal offset bank on a fee basis through provisions in Rules 1304 and 1304.1. Although RECLAIM program transition work is ongoing, the SCAQMD currently does not have plans to change the eligibility of these power plants' access to the internal offset bank; however, the New Source Review regulation is undergoing the amendment process and there may be changes to how offsets are calculated per guidance from U.S. EPA. These changes may impact the amount of offsets required for future projects involving replacement of OTC units with other equipment, but they should not impact the availability of those offsets.

CARB staff is working with the SCAQMD to evaluate any rulemaking, as well as related permitting, considerations that will apply to the Scattergood extension and will report back to State Water Board staff when that assessment is complete.

Permitting

Stationary source permitting in California is the shared responsibility of the CARB, the state's 35 air districts, and U.S. EPA Region 9. The CARB does not issue any preconstruction or operating permits for stationary sources but plays an oversight role over district permitting programs. In California, a new or modified stationary source that will emit air pollutants typically must meet certain

emission control requirements and obtain preconstruction and operating permits from the district where the source is located. The district prepares an engineering analysis and places conditions in the preconstruction permits to ensure compliance with the requirements of federal, State, and local air pollution regulations. Once construction is complete and compliance with preconstruction permit conditions is verified through testing and monitoring, an operating permit is issued. Title V is a federal Clean Air Act program, implemented by the states, designed to standardize operating permits and the permitting process for major sources of emissions.

Each facility under consideration for the proposed extensions has a valid Title V permit and can continue operating in accordance with its permit, including any future applicable federal, state, and local air regulatory requirements that are incorporated at a later date.[78] Operation through 2026 for Alamitos, Huntington Beach, and Ormond Beach, and through 2029 for Scattergood, will require that each facility apply to renew its Title V permit in accordance with air district permitting procedures and timelines, including any requirements for public notice.

Land Use Considerations for Huntington Beach

In the early 2000s, Poseidon Water, LLC submitted a Coastal Development Permit (CDP) application to the City of Huntington Beach to remove infrastructure and construct a seawater desalination facility and water delivery pipeline on an out-of-service tank farm area on the property of the Huntington Beach facility, which is owned by AES. The City of Huntington Beach, which has jurisdiction of a Local Coastal Program, conducted two initial CEQA reviews – in 2003 and 2005 – that did not identify wetlands within the project site.

[78] The current Title V permits for Alamitos expire on April 21, 2025, and Ormond Beach on December 31, 2023. The Title V permit for Huntington Beach expired on April 28, 2021; however, the facility submitted a renewable application to the SCAQMD on October 22, 2020, which qualifies as an application shield to continue operating under the terms and conditions of the permit until it is renewed.

In 2009, a CCC staff ecologist visited the property and identified approximately 3.5 acres of wetland indicators within the project area. Despite providing evidence of the wetland indicators and requesting reconsideration of the wetland finding to the City of Huntington Beach during the development of the project's Draft Supplemental Environmental Impact Report, the Final Supplemental Environmental Impact Report asserted that the project site did not support wetlands. The Final Supplemental Environmental Impact Report was certified by the City of Huntington Beach in September 2010 and a CDP was subsequently issued to Poseidon Water.

However, the CDP was subsequently appealed, and the CCC found in November 2010 that additional on-site evaluation was needed to determine the full extent of the project site's wetlands. CCC staff ecologists accessed the project site in July 2012, and found that previous areas with wetland indicators had been disked, graded, drained, and all vegetation removed without an appropriate CDP.

In October 2014, the CCC issued a Notice of Violation to AES for unpermitted development activities that resulted in the disturbance and destruction of the approximately 3.5 acres of wetland habitat on site.[79] However, the CCC did not request additional enforcement actions at the time, as it was planned that mitigation for the lost wetland habitat would be provided in the prospective CDP for Poseidon Water, LLC's proposed desalination facility.

On May 12, 2022, the CCC considered and denied the proposed CDP for Poseidon Water, LLC's proposed desalination facility. CCC staff have indicated that they are in the process of determining potential next steps to address the violation and mitigation measures.

[79] California Coastal Commission (CCC). 2014. Coastal Act Violation V-7-13-002. San Francisco, CA: CCC.

IX. Conclusion

The SACCWIS recommends that the State Water Board extend the OTC Policy compliance dates of Alamitos, Huntington Beach, and Ormond Beach for three years, from December 31, 2023, to December 31, 2026, to support the Strategic Reserve and system-wide grid reliability. The SACCWIS also supports the LADWP's request to the State Water Board to extend the OTC Policy compliance date of Scattergood for five years, from December 31, 2024, to December 31, 2029, to support local system reliability as the LADWP transitions to a zero-carbon grid. These extensions would be responsive to concerns regarding grid reliability and would bolster the electrical power supply that is essential for the welfare of the residents of the State of California.

X. APPENDIX A

AVERAGE ANNUAL FLOW RATE DATA FOR ONCE-THROUGH COOLING FACILITIES

	Average Annual Flow Rate (MGD)								
Power Plant Name	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Humboldt Bay Power Plant Units 1&2	0	0	0	0	0	0	0	0	0
Potrero Power Plant	152	0	0	0	0	0	0	0	0
Contra Costa Generating Station	15.4	33	53	17	0	0	0	0	0
Pittsburg Power Plant	18.8	16.9	79	48.8	26	67	32	0.07	0
Moss Landing Power Plant	289.9	212.3	396.4	353.6	244.9	312.5	231	135.2	200.3
Diablo Canyon Nuclear Power Plant	2,347	2,368	2,277	2,311	2,242	2,360	2,372	2,286.4	2,338
Morro Bay Power Plant	21.5	41.7	50.2	22.7	0.2	0	0	0	0
El Segundo Generating Station	112.9	97	197	217	107	135	7	4.58	0
Haynes Generating Station Units 1&2	720	812	886	725	471	506	448	355.5	441
Scattergood Generating Station	276.4	299	296.8	272	244	311	151	109.8	108
Harbor Generating Station	45.5	44.0	47.3	46.8	49.6	49.1	47	50.07	46
Alamitos Generating Station	2.9	106	375	496	332	324	317	316.21	114.74*
Redondo Beach Generating Station	59	180	178	95	107	142	95	156.95	75.3*
Mandalay Generating Station	39.7	56	77	109	63	78	56	48.4	3
Ormond Beach Generating Station	12	18	71	133	68	98	60	86.6	117.9

	Average Annual Flow Rate (MGD)								
Power Plant Name	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Huntington Beach Generating Station	202.9	242.6	238.5	178	169	159.6	134	134.2	114.5
South Bay Power Plant	34.5	0	0	0	0	0	0	0	0
Encina Power Station	211.9	314.5	531.1	264.0	338.6	410.2	325	387.8	356.1
San Onofre Nuclear Generating Station	2,030	2,256	1,677	1,003	42	42	37	0	0
Total	**6,592.3**	**7,097**	**7,430.3**	**6,291.9**	**4,504.3**	**4,994.4**	**4,312**	**4,071.8**	**3,915.9**

Source: U.S. EPA Flow Data, (Intergraded Compliance Information System [ICIS] Database). Updated on February 16, 2022.

*Previous 2018 values for Alamitos and Redondo Beach Generating Stations were not calculated properly. These values have been updated and are now displayed correctly.

AVERAGE ANNUAL FLOW RATE DATA FOR ONCE-THROUGH COOLING FACILIITES (CONTINUED)

	Average Annual Flow Rate (MGD)		
Power Plant Name	**2019**	**2020**	**2021**
Humboldt Bay Power Plant Units 1&2	0	0	0
Potrero Power Plant	0	0	0
Contra Costa Generating Station	0	0	0
Pittsburg Power Plant	0	0	0
Moss Landing Power Plant	236.2	241.2	241.7
Diablo Canyon Nuclear Power Plant	2,067	2,282	2,212
Morro Bay Power Plant	0	0	0
El Segundo Generating Station	0	0	0
Haynes Generating Station Units 1&2	398.7	467.0	472.0
Scattergood Generating Station	98.1	124.0	92.0
Harbor Generating Station	48.1	45.0	49.0
Alamitos Generating Station	101.8	126.7	126.0
Redondo Beach Generating Station	72.4	80.2	60.3
Mandalay Generating Station	0	0	0
Ormond Beach Generating Station	146.9	227.5	250.6

	Average Annual Flow Rate (MGD)		
Power Plant Name	**2019**	**2020**	**2021**
Huntington Beach Generating Station	113.4	82.1	68.3
South Bay Power Plant	0	0	0
Encina Power Station	262.1	0	0
San Onofre Nuclear Generating Station	0	0	0
Total	**3,545**	**3,814**	**3,572.6**

Source: U.S. EPA Flow Data, (Intergraded Compliance Information System [ICIS] Database). Updated on February 16, 2022.