

April 28, 2026

Via Electronic Mail

Los Angeles Department of Water and Power
Corporate Environmental Affairs Environmental Planning and Assessment
Attn: Jazmin Martin
111 N. Hope Street, Room 1044
Los Angeles, CA 90012
Email: Scattergood_CEQA@ladwp.com

Los Angeles City Council
Los Angeles City Hall
Attn: Michael Espinosa
200 N Spring Street
Los Angeles, CA 90012
Email: michael.espinosa@lacity.org

RE: Additional Evidence Letter for Scattergood Generating Station Units 1 and 2 Green Hydrogen-Ready Modernization Project (SCH No. 2023050366) | Board of Commissioners Los Angeles Department of Water and Power Resolution No. 026071 | Council file No. 25-1360

To Los Angeles Department of Water and Power & Los Angeles City Council:

Appellant Communities for a Better Environment (“CBE”) timely submits this Additional evidence letter (“Letter”) to the Los Angeles City Council (“Council”) regarding the appeal of the Los Angeles Department of Water and Power’s (“Appellee”) Environmental Impact Report (“EIR”) certification for the Scattergood Generating Station Units 1 and 2 Green Hydrogen-Ready Modernization Project (“Project”). LAMC § 197.01(G).

This Letter provides additional evidence for the Council’s consideration in its upcoming Scattergood EIR certification appeal hearing. The appeal, which is Council file item number 25-1360, was previously scheduled for March 25, 2026, but was removed from the Council agenda on March 20 and has not been rescheduled. CBE urges the Council to carefully consider the attached supplemental information and grant the appeal.

Attachments A-G support Appellants' contention that the EIR’s analysis is legally inadequate. Cal. Code Regs. tit. 14 § 15151. Attachments A-E predate the issuance of the Final EIR in October 2025 and should have been, but were not, taken into account by the Appellee in their EIR analysis. We are, accordingly, providing these documents to the Council now for consideration on appeal. Moreover, Attachments F and G post-date the issuance of the Final EIR and present evidence that neither Appellee nor the Council has had the opportunity to consider in their EIR review, but should consider relevant to understanding the Project’s impacts. Cal. Pub. Res. Code § 21167.6.

While Appellants urge the Council to consider all legal deficiencies forming the basis for this appeal, piecemealing and deficient cumulative impacts analysis are independent grounds to deny an EIR's certification. *Kings Cty. Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 720 (1990). A cumulative impact analysis must consider any related project that is reasonably foreseeable. *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 47 Cal. 3d 376, 296-98 (1988). Briefly put, the attachments provide additional evidence that, contrary to CEQA, the Project implicates related projects and infrastructure development that are not disclosed or discussed in the EIR under the Council's review. These related projects include but are not limited to: 1) retrofitting other in-basin power plants to combust hydrogen and 2) building infrastructure to produce, transport, and store hydrogen.

Attachment A and B each provide evidence that the Appellee intends to retrofit its other in-basin power plants, namely, Harbor, Haynes, and Valley, to also combust hydrogen. Appellee's former General Manager, Martin Adams, made multiple public statements regarding the agency's intention. Attachment A, an article published May 19, 2021, reports that Adams stated "[w]e have four in-basin power plants that currently run on natural gas, and we know that if we want to have a clean energy future, not only do we need this energy, but we need to convert it to a different fuel source" and "that LADWP now plans to build a new power plant capable of running on a natural gas-hydrogen mix on the Scattergood site, followed by conversions at the other three plants."¹ Later, in Attachment B, another article published on October 26, 2023, reports that Adams stated "...we have large arteries coming out of Scattergood, Harbor, Haynes and Valley generating plants. Those first few on the coast all need work. You also have Valley Generation which is in an underserved community. This is a golden opportunity to say we're going to keep these plants and we're also going to go green, which means we can't burn natural gas. Our solution is to go to hydrogen."² CBE notes that, as explained in its appeal, the Project, and subsequent projects at Harbor, Haynes, and Valley, will burn methane gas. The generating unit constructed pursuant to the Project may not burn hydrogen for years to come, if ever.

Attachment C is a Request for Information (RFI) issued by Appellee on August 5, 2021, to collect information on retrofitting all four in-basin power plants.³ In its RFI, the agency states: "This RFI is issued with the intent to survey the industry, to obtain information on the types of

¹ Tom DiChristopher, *Los Angeles Aims to Be Nation's 1st Green Hydrogen Hub* at p. 4, S&P Glob. Mkt. Intel. (May 19, 2021), <https://www.spglobal.com/market-intelligence/en/news-insights/articles/2021/5/los-angeles-aims-to-be-nation-s-1st-green-hydrogen-hub-64376930#:~:text=LADWP%20General%20Manager%20and%20Chief,would%20retire%20the%20Scattergood%20C%20Haynes&text=The%20LADWP%20anticipates%20being%20one,for%20green%20hydrogen%20C%20Adams%20added.>

² *LADWP's Marty Adams on Sustainability Goals, Promise of Hydrogen, & Career Highlights* at p. 2, VerdeXchange (Oct. 26, 2023), <https://archive.verdexchange.org/news/ladwp%E2%80%99s-marty-adams-sustainability-goals-promise-hydrogen-career-highlights>

³ Los Angeles Dep't of Water & Power, *Green Hydrogen Request for Information (RFI 8.5.21-POWER-SAL)* (Aug. 5, 2021), https://www.ammoniaenergy.org/wp-content/uploads/2021/09/Green_Hydrogen_RFI_-_8.5.21-Power-SAL.pdf

solutions and capabilities available with respect to pathways for green hydrogen-based electricity generation...”⁴ The agency clarifies that even though “pure-hydrogen-based generation would not be a mature technology until after 2030... LADWP is certainly interested in developing the capabilities for in-basin, hydrogen-based electricity generation before 2030.”⁵ Throughout the RFI, Appellee analyzes the planned hydrogen capacity for all four in-basin plants, including Scattergood, Haynes, Harbor, and Valley.⁶ Appellee also models how hydrogen retrofits can provide “approximately 1,200 MW to 2,600 MW... to supplement the loss of OTC capacity by 2030.”⁷ As demonstrated in Attachment E, the Scattergood Project provides only a fraction of this projected need. The document also states that it “anticipates to issue an RFP/RFPs using information gathered from responses to this RFI,” further evidencing the agency’s intent to pursue hydrogen development at each plant.⁸

Attachment D is an Energy and Environment Committee Report from February 3, 2023 requiring Appellee to report to the Council on matters related to basin-wide hydrogen development as part of the Project.⁹ The Council requires that “prior to” reaching agreements, Appellee must report three crucial impacts missing from the EIR. These are how Appellee will 1) “incorporate hydrogen leak prevention, mitigation, and monitoring throughout the production, transportation, storage, and combustion system,” 2) “solely utilize hydrogen that is produced using new, dedicated renewable energy resources or excess renewable energy resources,” and 3) “not rely on local potable water supplies and not impair LADWP’s goal of eliminating all water imports.”¹⁰ Not only has Appellee not adequately reported on these impacts to the Council, but Appellee wholly ignores these impacts in its EIR. Crucially, Appellee has been aware of the need to plan for and disclose these impacts, at least, since the issuance of this report, yet still claims these impacts are unforeseeable.

Attachment E is Table 2-8 from the Strategic Long-Term Resource Plan (SLTRP) issued in December 2022, documenting the projected hydrogen gas combustion at each in-basin power plant.¹¹ The SLTRP is LADWP’s own planning document, which commits the city to pursuing hydrogen gas conversion at the in-basin power plants. This table is consistent with Attachment C and other statements by Appellee that the hydrogen capacity at Scattergood is not sufficient to meet the city’s and Appellee’s own zero-carbon electricity commitments. Hydrogen capacity at

⁴ *Id.* at 1

⁵ *Id.* at 4

⁶ See *id.* at 5

⁷ *Id.* at 3

⁸ *Id.* at 15

⁹ City of Los Angeles City Council Energy and Environment Committee, *Report on Scattergood Generating Station Green Hydrogen Project & Alternatives* (Council File No. 23-0039) (Feb. 3, 2023), https://cityclerk.lacity.org/online/docs/2023/23-0039_rpt_ee_2-3-23s.pdf

¹⁰ *Id.* at 1

¹¹ Los Angeles Dep’t of Water & Power, *2022 Power Strategic Long-Term Resource Plan* at pp. 2-59 (Aug. 2023), https://www.ladwp.com/sites/default/files/2023-08/2022%20LADWP%20Power%20Strategic%20Long-Term%20Resource%20Plan_0.pdf

Haynes, Harbor, and Valley would necessarily have to be built to ensure the city's firm capacity is not dependent on natural gas.

Attachment F is a SoCalGas Angeles Link Webinar slideshow presented on July 20, 2022, regarding supplying hydrogen to the LA basin.¹² This attachment depicts how Appellee depends on the Angeles Link hydrogen supply infrastructure to replace natural gas combustion at its power plants, in part, due to the retiring Aliso Canyon.¹³ Again, all four in-basin power plants are assumed to receive and combust hydrogen.¹⁴ Ten potential hydrogen supply routes are displayed, showing extensive planning and review.¹⁵ Since this document was published, study of the Angeles Link Project advanced considerably in California Public Utilities Commission proceedings A.22-02-007¹⁶ and A.24-12-011.¹⁷¹⁸ The City of Los Angeles and SoCalGas are each members of the Alliance for Renewable Clean Hydrogen Energy Systems, working together to bring a hydrogen hub to California.¹⁹ Accordingly, because hydrogen supply infrastructure is an interdependent element that is necessarily implicated by Scattergood's modernization, Appellee is required to treat it as a reasonably foreseeable project in its EIR but does not, despite ample available evidence.

Attachment G is a Proposed Decision Denying Southern California Gas Company's Request for Cost Recovery from Ratepayers for Phase 2 Activities for Angeles Link Project. The Proposed Decision, released on Friday, March 20, 2026, if adopted, denies SoCalGas \$266 million to advance their Angeles Link hydrogen pipeline project. As of April 25, 2026, Proposed Decision is set to be voted on by the Public Utilities Commission on April 30, 2026.

Attachment H is the "Draft 2026 Report of the Statewide Advisory Committee on Cooling Water Intake Structures" from March 20, 2026, which provides further corroboration that Appellee plans to combust hydrogen at the Haynes and Harbor power plants.²⁰ The report explains that after the city committed to "procure 100 percent zero-carbon electricity by 2025,"

¹² SoCalGas, *Shaping the Future: Informational webinar on Angeles Link* (July 20, 2022)

¹³ *Id.* at Attach. A, p. 5

¹⁴ *Id.* at Attach. A, p. 12

¹⁵ *Id.* at Attach. A, pp. 17-18

¹⁶ California Public Utilities Commission, Application of Southern California Gas Company (U 904 G) for Authority to Establish a Memorandum Account for the Angeles Link Project, https://apps.cpuc.ca.gov/apex/f?p=401:56:::RP,57,RIR:P5_PROCEEDING_SELECT:A2202007 (electronic docket for Application 22-02-007, last accessed Mar. 24, 2026).

¹⁷ California Public Utilities Commission, In The Matter of the Application of Southern California Gas Company (U 904 G) for Authorization to Implement Revenue Requirement for Costs to Enable Commencement of Phase 2 Activities for Angeles Link, https://apps.cpuc.ca.gov/apex/f?p=401:56:::RP,57,RIR:P5_PROCEEDING_SELECT:A2412011 (electronic docket for Application 24-12-011, last accessed Mar. 24, 2026).

¹⁸ SoCalGas, Angeles Link Phase 1 Demand Study Final Report – December 2024, 10 (Dec. 2024), <https://www.socalgas.com/sites/default/files/alproject/Angeles-Link-Phase-1-Final-Demand-Study.pdf>.

¹⁹ ARCHESH2, Network, <https://archesh2.org/network/> (last accessed Mar. 24, 2026).

²⁰ State Water Resources Control Board, *Draft 2026 Report of the Statewide Advisory Committee on Cooling Water Intake Structures* (Mar. 20, 2026), https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/saccwis/docs/2026/saccwis-26dfrpt.pdf

the Appellee developed new timelines for its coastal power plants to transition to hydrogen gas.²¹ The report cites to Appellee's intention to convert Haynes and Harbor to combust hydrogen and discusses efforts to continue monitoring this transition after the Scattergood Project is completed such that all power plants comply with water intake regulations by 2029.²²

In conclusion, this Letter demonstrates that the other planned hydrogen retrofits and hydrogen infrastructure are probable future projects because the agency intends, anticipates, and plans to conduct them as a consequence of the Scattergood EIR. As such, because the Project under review is meant to be the first step toward the Appellee's planned basin wide hydrogen transition, its failure to disclose and analyze future related and foreseeable projects renders the EIR inadequate under the law. Notably, this is Appellee's legal obligation even if it does not believe that these impacts will harm the environment. Cal. Code Regs. tit. 14 § 15130 (agency must provide "its basis for concluding that the incremental effect is not cumulatively considerable").

Appellants appreciate the opportunity to submit additional documents for the Council's consideration. We look forward to the upcoming public hearing and discussing the issues raised on appeal.

Sincerely,

/s/ Nareg Kuyumjian

Nareg Kuyumjian
Frank G. Wells Environmental Law Clinic
UCLA School of Law
385 Charles E. Young Drive

/s/ Ian Bertrando

Ian Bertrando
Frank G. Wells Environmental Law Clinic
UCLA School of Law
385 Charles E. Young Drive

Supervised by Cara Horowitz, UCLA Frank G. Wells Environmental Law Clinic

.....

On Behalf of Communities for a Better Environment

²¹ *Id.* at 30-31

²² *Id.* at 38

*Appellant to Scattergood Generating Station Units 1 and 2 Green Hydrogen-Ready
Modernization Project (SCH No. 2023050366) | Board of Commissioners Los Angeles
Department of Water and Power Resolution No. 026071 | Council file No. 25-1360*

Attachments enclosed

Attachment A

S&P Global

19 MAY, 2021

Los Angeles aims to be nation's 1st green hydrogen hub

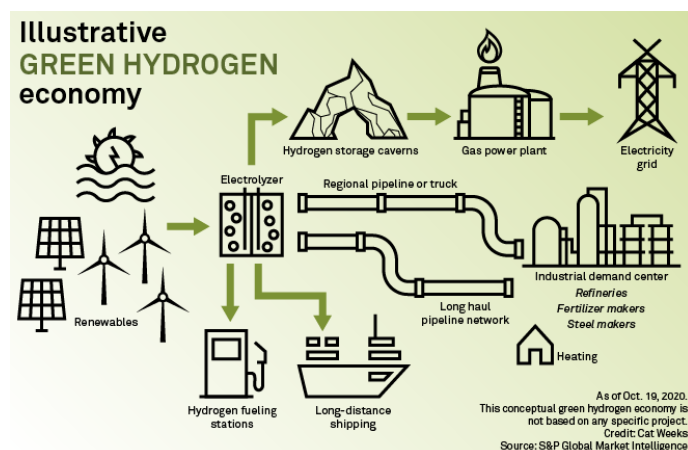
By Tom DiChristopher

A diverse group of stakeholders outlined plans to develop the nation's first green hydrogen hub in Los Angeles with a goal of driving down the fuel's cost premium over natural gas.

At the root of the endeavor, HyDeal LA,

are plans to convert four Los Angeles-area gas-fired power plants to run on hydrogen, which would create a large source of demand for the zero-carbon fuel. This demand could serve as a foundation to scale up the supply chain, including a proposal to deploy green hydrogen production equipment, while project partners attract other off-takers eager to decarbonize their businesses.

The project would address green hydrogen's chicken-or-egg issue, in which there is too little demand to spur investment in the supply chain and yet such development is critical to reducing costs and increasing demand. Green hydrogen is typically processed by splitting water into hydrogen and oxygen in electrolyzers, using renewable electric power as an energy source. The HyDeal LA project would aim to cut green hydrogen's cost to \$1.50 per kilogram by 2030, a price target shared by other global hydrogen stakeholders.



In the longer term, the project would establish LA as one of several emerging leaders in the global hydrogen market, Janice Lin, founder and president of the Green Hydrogen Coalition, said during a May 18 webinar. In Lin's vision, the program would expand hydrogen use from power generation to LA's industrial and transportation sectors. It would lead to green ammonia production to decarbonize California's maritime industry and agricultural sector. Ultimately, it could enable the first U.S. hydrogen fuel cell plane flights and green hydrogen exports to the Asia-Pacific region, Lin said.

The Green Hydrogen Coalition developed the HyDeal platform to launch regional systems for green hydrogen throughout the U.S.

LA's hydrogen ambitions start with power generation

As the first project, HyDeal LA will see the Green Hydrogen Coalition once again partner with the Los Angeles Department of Water and Power California, or LADWP. The pair's first project is converting Utah's coal-fired Intermountain power plant into a combined-cycle gas turbine facility, which will provide power to the LADWP's service territory. The plan is to run the facility on a roughly 30% hydrogen mix

at startup, with plans to eventually operate it entirely on hydrogen.

HyDeal will follow that model and in doing so will give a second life to several gas-fired plants scheduled for closure, starting with the LADWP's Scattergood plant, according to LADWP General Manager and Chief Engineer Martin Adams. In 2019, LA announced it would retire the Scattergood, Haynes and Harbor CC gas-fired plants between 2024 and 2029, citing a state requirement to stop using seawater to cool power plants.

The closures raised questions about how to replace the power generation in the LA Basin. "We have four in-basin power plants that currently run on natural gas, and we know that if we want to have a clean energy future, not only do we need this energy, but we need to convert it to a different fuel source," Adams said.

The LADWP now plans to build a new power plant capable of running on a natural gas-hydrogen mix on the Scattergood site, followed by conversions at the other three plants, Adams said. The LADWP anticipates being one of the area's largest anchor customers for green hydrogen, Adams added. Adams expects LA to both import the fuel and produce it within

city limits.

Building out the supply chain

Another lead partner, 174 Power Global Corp., plans to develop and build utility-scale solar power plants to power electrolyzers. To keep green hydrogen costs low, operators need to run electrolyzers as much as possible to recoup their capital costs, Mitsubishi Power Americas Inc. President and CEO Paul Browning noted. That means producers will likely dedicate some renewable power strictly to running electrolyzers at first, with a goal of running them on excess renewable power later, Browning said.

Mitsubishi Power is providing the turbines for the Intermountain power project. Browning said the plan is to demonstrate the capability to run the turbines on 100% hydrogen in the next few years. It will take another few years to commercialize the technology, the executive added.

"When you're developing a new technology, it's always hard to predict exactly when it's going to be ready because we're still in the process of developing it," Browning said. "But it's something that we're working on for this decade."

Hydrogen's ability to essentially store renewable power in gas form is critical to the LADWP, Adams said. The department recently determined it would need thousands of megawatts of in-basin storage to achieve 100% renewable energy, Adams noted.

As for transporting green hydrogen, Southern California Gas Co. and its gas utility peers have pitched demonstration projects to state regulators to determine how much hydrogen their existing pipeline networks can accommodate, company President Maryam Brown said. While gas distributors would seek to leverage existing infrastructure where possible to minimize costs, there is also an opportunity to invest in systems purpose-built to carry hydrogen, Brown said.

However, stakeholders should avoid making "bad near-term investments" in unnecessary new pipelines or retrofitting lines that are far from demand centers, warned Rachel Fakhry, senior policy analyst at the Natural Resources Defense Council and a HyDeal adviser.

Attachment B

VXCanada (<https://vimeo.com/vxcanada>)

VERDEXCHANGE

C O N F E R E N C E

(/)

LADWP's Marty Adams On Sustainability Goals, Promise Of Hydrogen, & Career Highlights

Submitted on October 26, 2023 – 1pm
Issue: Summer 2023 (/issue/summer-2023)



Southern California experienced in 2023 a mix of extreme weather events - tropical storms, heat waves, record snow. Clearly, the new normal is unpredictability, meaning that nothing is guaranteed and there is no time to rest easy when it comes to delivering water and power to America's second largest city. In this exclusive interview with **VX News**, **Marty Adams**, the General Manager & Chief Engineer of the **Los Angeles Department of Water & Power**, with his retirement on the horizon, reflects on his decades-long career in the public agency, including his efforts to pioneer the national hydrogen energy revolution, as well as developing new strategies for water recycling and stormwater capture.

When you participated in [VerdeXchange](https://www.verdexchange.org/) (<https://www.verdexchange.org/>) 2023 this past May, you shared, "When I look at all of LA City's sustainability goals, about 75 percent of them fall on LADWP to do differently from what we've been doing in the past." Having spent nearly 4 decades with the department – elaborate on LADWP's central mission and evolving, daily policy and execution challenges.

Marty Adams: When I made that comment, I was talking about how we're dealing with our water and power supplies that have allowed this city to grow from a dusty little town to the second largest city in the country. It's about being able to provide enough water for the city and increase power resources because, as we know, everything plugs in now. It was about that mix of resources and what changes need to happen. I joked that you see the water engineers who have developed large imported water systems driving back toward Los Angeles on the freeway passing the power engineers on their way out of town looking to develop clean energy projects.

"The concept of energy independence and us being able to control our destiny and being able to create a clean fuel and have control of that whole supply chain is tremendously important... We're recognizing that we can't live with what we did 20 years ago. We need to catch up with some of those decisions." – Marty Adams, General Manager & Chief Engineer of LADWP

That is because water is coming home. We reached out with the LA Aqueduct and we were the driving force behind the Colorado River aqueduct and the formation of the Metropolitan Water District. Now, on the water side, we're looking at that next source, and we believe the next big source is here at home with recycled water, stormwater capture, and improved groundwater use. So, we find ourselves coming back to our roots in LA.

At the same time, while water is trying to go sustainable and trying to have less impact on areas that we import from, power's big ticket items are going to be out of town. There's not enough rooftop solar, no matter what we do, locally. There's not enough battery storage, no matter what we do, locally. When we are talking about utility-scale projects, we need to go out of town with large solar farms, large wind farms, and maybe more geothermal.

Power already has a footprint in six states, but we're increasing that footprint with very large projects of a different nature. It's a real change from fossil fuel plants in town to large-scale renewable projects out of town. That's the change. It is the power resource mix where we see the dynamic changing so much from what it was when I started 40 years ago.

VX2025 Save The Date

18th Annual VerdeXchange VX2025 Marketmakers' Conference
April 6-April 9, 2025, At The Omni Hotel In DTLA

VX2025: Where Clean & Green Tech Marketmakers Meet to Accelerate Implementation of the New Energy Economy

For 18 years VerdeXchange has gathered accomplished clean, green, and blue tech entrepreneurs, energy & water companies, advanced vehicle manufacturers, software & hardware developers, public policymakers as well as: procurers, innovative financiers, and environmental stewards "under-one-roof" to assess what's in-market, about to be in-market, and what's needed in market to propel the global, multi-trillion dollar *verde* economy.

April 6– April 9, 2025

VX2024 Highlights

05:31

VX2024 Conference Program Guide



During your tenure leading DWP you pivoted the Department's InterMountain Power Project to hydrogen. Elaborate on your reasoning, what LADWP's decision galvanized both domestically and globally, and the promise of a Hydrogen Economy.

Hydrogen is, to me, the fuel of the future, unless there's something else that exists that no one's thought of yet. From what we know, I think it's going to be the silver bullet that's going to get us to where we want to go. The challenge of hydrogen, of course, is going to be the whole new delivery system that doesn't exist yet and trying to create a hydrogen economy at a large enough scale to drive the cost down so that we're not bearing the burden of the high cost.

We were at a board meeting—I don't remember what year it was—and we had a lot going on with the Intermountain Power Project (<https://www.ipautah.com/ipp-renewed/>). We had plans to go to hydrogen, and we had a hydrogen study going on, but it was underplayed a little bit. I said, "This is what we're doing," and I didn't want to hear the word "proposed," or "thinking about," or "want to do" any more with regard to the project.

We, at that point, locked in that it was no longer a goal of ours, it was going to be a reality to have a 30 percent hydrogen blend when the Intermountain Power Project came on with new units in 2025. That's a couple years from now, and that will happen. The units will be able to handle the hydrogen. The hydrogen generation is being constructed and hydrogen storage is being drilled for in the salt dome.

When we did that, it had a ripple effect. I had calls from all over the country, and the world, looking at LA building that 840 megawatt power plant with the idea it was going to eventually be 100 percent hydrogen, as soon as the units could be refurbished to do it.

I think us putting our flag in the ground galvanized a lot of things for others. There was some talk back east of hydrogen plants and there were projects being developed overseas, too. It also helped galvanize the turbine manufacturers to say that this was the way the world needed to go. We needed to get to 100 percent hydrogen.

We then played off that with our Scattergood project. Scattergood has the cooling units that, by law, have to come offline, so we have to rebuild a whole new power plant. Our NREL study (<https://www.nrel.gov/analysis/los-angeles-100-percent-renewable-study.html>) proved that we need local generation at the scale that we have now. We have a fantastic power system that works very well, based on where we have power generation coming into the city currently. That means we have large arteries coming out of Scattergood, Harbor, Haynes and Valley generating plants. Those first few on the coast all need work. You also have Valley Generation which is in an underserved community.

This is a golden opportunity to say we're going to keep these plants and we're also going to go green, which means we can't burn natural gas. Our solution is to go to hydrogen.

People are going along with us on this journey, based on our initial momentum. We've done a lot of work on the hydrogen economy, including the ARCHES (<https://archesh2.org/>) program, which is pushing for a hydrogen hub for Southern California. The governor is not only strongly behind hydrogen and the hydrogen hub, but he also recently doubled down about needing hydrogen (<https://www.gov.ca.gov/2023/08/08/governor-newsom-announces-new-strategy-to-develop-a-hydrogen-economy-of-the-future/>). He said, this is a fuel of the future. This is fuel that'll get us to being green.

Even if you say we can't afford our green energy goals, take the green part out. The concept of energy independence and us being able to control our destiny and being able to create a clean fuel and have control of that whole supply chain is tremendously important. Nationally, that's now recognized back in DC. I think we were the first ones that were brave enough to say that this is what we're doing. Now, we have a huge upswell of support.

The key for us is saying, "I don't want to produce hydrogen, I don't want to deliver hydrogen and I don't want to store hydrogen if I can avoid it; I want to use hydrogen and I want to buy it cheap." For that to happen, we need to support the entire hydrogen economy forming up around us.

In regards to your plans and goals, the market scaling impacts of LADWP's confidence in Hydrogen is certainly confirmed by the participants in VerdeXchange's VX2023 energy, sustainable and clean-tech conference (<https://www.verdexchange.org/speakers/VX2023>).

I will tell you, we were in a meeting with the DOE and the ARCHES group. We had a whole day of sessions with them briefing on our proposal and answering questions. They said we were probably ahead of them and everybody else on this stuff. At about three that afternoon, the governor popped on the screen to say how important this was for California and the country.

What we need is the willpower of people to recognize that we've got to get it over the hump. We've got to join forces to make enough of an economy to drive the price down.

Solar is cheap, but solar used to be expensive. You had to do all sorts of rebates for rooftop solar for anybody to do it. Now, there's no rebates because the prices have come down. It has its own drivers. We need to have that happen with hydrogen. We just need to do it artificially to speed it up, and then we'll be in great shape.

How do California state regulatory policy decisions impact LADWP policies and practices; and vice versa.

Flipbook by

Publish for free

VX2024 Sponsors

PLATINUM

(<https://www.sce.com/>)(<https://cleanpoweralliance.org/>)(<https://cadizinc.com/>)(<http://www.nedo.go.jp/english/>)(<http://www.socalgas.com/>)(<http://www.la.us.emb-japan.go.jp/>)(<http://www.gouv.qc.ca/portail/quebec/pgs/commurlang=en>)THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA(<http://www.mwdh2o.com/>)(<http://www.jetro.go.jp/>)

Looking at the CPUC or the California Energy Commission, there are stronger ties than what we'd like to admit sometimes but, generally, we're not regulated by the agencies in the traditional sense. However, there are certain things that I think are really important for all of us. There's the whole issue of net metering and getting the correct price signal sent for the use of renewable energy.

We've realized that the world's changed. Energy was really valuable in the middle of the day, and now that energy is almost worthless. Now, it's valuable when the sun goes down and everybody goes home and needs electricity to live their lives. We're recognizing that we can't live with what we did 20 years ago. We need to catch up with some of those decisions.

I think there are also things that the state is not currently in alignment with us over. I think we need to look at liability in wildfires. Not that power agencies should be excluded from wildfire liability, but our inverse condemnation laws are kind of backwards right now. Us and Alabama are the only two states that have strict liability, which means if you contributed a little bit, you bought the whole farm. If a raccoon goes up and puts his feet across two wires and falls to the ground on fire, we can be responsible for that.

I always say, when we have an idea about how policy and practices should move forward, to remember that we are a public agency. Our only goal is to be reliable as well as the lowest cost for our customers, most of whom cannot afford expensive rates. Generally speaking, if we truly believe something's a good idea, it's probably a good idea for most people. One of the most important things is that we have no motivation other than to do the best job for our customers. I always hope that our influence is heard for those things that we think are good changes for the future and things that we think are not such good ideas. It is my hope that state officials really listen to that when they're forming statewide policies.

Pivoting to water, which is where you spent most of your career at DWP, elaborate on the department's efforts to assure a more resilient, less import dependent water supply for Los Angeles.

The biggest thing we have to get people to understand is that every drop of water has been around a lot of times. There is no new water... it's all just part of an endless natural recycling system. Now, we are trying to take that water cycle and short circuit the tail end of it. We're trying to get out of the part where it goes to the ocean and evaporates and hopefully comes back as rain or snow somewhere where we are able to capture and transport it. Instead, since we already have so much water in our possession, how do we maximize use of that water rather than letting it flow to the ocean?

That involves a few things. One of them is stormwater capture. We have done a lot of it since the 1940s and 50s. We have major stormwater capture facilities built in the Valley, but at the same time, there's a lot of water that's missed in the capture systems that we have historically relied on. If you look at the LA River during Tropical Storm Hilary, it was roaring. If we could grab that water, we would be done for a year. How much of it can we grab that we're not grabbing now?

The ever shrinking LA Times, when reporting on water, asserts we're failing

(<https://www.latimes.com/california/story/2023-01-06/why-cant-we-capture-all-this-storm-water>). **Your response?**

We're not failing. We actually are now catching about twice the amount of water that we've caught historically. There's a lot more we could catch, but honestly, if we caught every drop of water, we'd then have to figure out how to get it out of the ground and how to treat it and put it into the drinking water system. So there is some happy medium that gets us to the optimal place for capture and local production.

Besides the Measure W projects (<https://safecleanwaterla.org/>), we've had other projects that we worked with other agencies on. We've formed a partnership with LA County Public Works to work on our Tujunga Spreading Grounds (<https://dpw.lacounty.gov/wrd/Projects/TujungaSG/index.cfm>) to double capacity. We're also working on the Pacoima Spreading Grounds (<https://dpw.lacounty.gov/wrd/Projects/PacoimaSG/index.cfm>) together. We've worked with them on getting silt out of their upstream dams and debris basins so they can hold more water. There are a lot of things actively going on which are resulting in real water being captured.

That said, a lot of water still flows downstream to the ocean. The problem is it takes space to capture water, and I don't see us bulldozing a block or more of the city just to create more spreading grounds. So that means we are stuck with a lot of small projects as a solution, and Measure W addresses a lot of those. They are different kinds of projects than what we've done in the past, but accepting these smaller projects is a critical piece of moving forward: we have so much water that lands here that we currently do not catch, how much more can we capture and make use of?

The other thing is that recycled water has traditionally been water for irrigation. It's not treated to drinking water standards. The whole concept of the joint project with LA County Sanitation and Metropolitan down at the Carson Plant, as well as the project with DWP and LA Sanitation at the Hyperion Plant (https://www.lacitysan.org/san/faces/home/portal/s-lsh-wwd/s-lsh-wwd-cw/s-lsh-wwd-cw-rw/s-lsh-wwd-cw-rw-h2035?_afLoop=10076277680539549&_afWindowMode=0&_afWindowId=null&_adf.ctrl-state=171kfvdru2_1#%2540%2540%253F_afWindowId%253Dnull%2526_afLoop%253D10076277680539549%2526_afWindowMode%253D0%2526_adf.ctrl-state%253D171kfvdru2_5), is to treat the wastewater to a drinking or near-drinking water standard. Nearly half of our water demand could be recovered and cleaned up to eventually become part of our domestic water supply - again shortcutting the last part of the water cycle and its unpredictability. Then, there's a direct impact on needing to import less water and a whole new level of resiliency that we don't currently have.

TOYOTA

(<https://www.toyota.com/usa/operations>)

SILVER



(<https://www.portoflosangeles.org/>)



Port of
LONG BEACH
THE PORT OF CHOICE

(<https://polb.com/>)



Public Works
LOS ANGELES COUNTY

(<http://dpw.lacounty.gov/>)



(<https://isd.lacounty.gov/>)



Los Angeles
Department of
Water & Power

(<https://www.ladwpnews.com/category/news/>)

Canada

(https://www.international.gc.ca/country-pays/us-eu/los_angeles.aspx?lang=eng)



Stantec

(<https://www.stantec.com/en>)

ARUP

(<https://www.arup.com/>)

It won't be cheap, but we know the technology is there to clean up the water. The challenge is how to deliver it and how to move it. Whether you're building electrical conduit or pipelines, the linear infrastructure is the biggest cost. We're looking at what we need to do to get the water to different parts of town. Could we tie our project and Metropolitan's together? The only way to make it work is to take a little bit more of a regional approach. Otherwise, you can't spread the costs across a broad base to reduce the unit price.

We also need to look at underutilized pipelines. There may be a number of underutilized pipelines or now out-of-service pipelines that we could take advantage of. Again, every time you're not digging in the soil, you're saving a lot of money. We're going to have to be smart in order to make this plan of local water resilience and sustainability affordable.

With your recent announcement that you will be retiring in early 2024, what career accomplishments deserve greater public attention?

On the power side, championing the topic of hydrogen has been a big thing, as was making sure that our power infrastructure plans were supported. Lastly, it's been a long and difficult effort trying to get ourselves to where we need to be in terms of field staffing. It's still a work in progress on the power side, but trying to turn the corner on this very challenging issue of workforce availability is something that I feel very good about where we're going.

On the water side, I remember when we decided to take the major open reservoirs out of service in response to changes in water quality regulations. We spent probably a decade and a half working on the solutions. At one point in time, I went around and spoke to each of our water districts about what we were going to do in terms of taking our major reservoirs out of service. It sounded like heresy, but I understood it could physically and hydraulically be accomplished. We literally redesigned and changed the way water moves around the city. And, we created and completed a plan to bring the city into compliance with the new water quality regulations on time.

I am also thrilled to see the groundwater system being built now in the San Fernando Valley. It's probably the largest of its kind in the world. I was part of much of the original planning and negotiations, and I'm really happy to see things that I dreamt of actually being built and being put in service. There are so many other things: using shade-balls to resolve a water quality nightmare, operating the water system during the 1994 earthquake... The list of proud moments goes on.

Overall, I've been a big champion of our people and the work they do. I am not afraid to toot our horn that we have some of the lowest power rates in the state, highly competitive water rates, and tremendous reliability. We do a really good job at what we do. One of the parts of this job is being the cheerleader for this team and touting our success. This department has done a tremendous job and we have a lot of challenges ahead, but based on our track record, I feel really good about them.

Lastly, assuming you place a letter for your successor in your desk drawer, what's it likely to say?

Someone is going to be here because they've earned it. They will have instincts and knowledge of what needs to be done. I think that you know when something's right. If something doesn't seem right, I think you've got to not be afraid to check it out. So, I would say, be yourself and rely on your experience and instincts to guide you. Deep experience is becoming in short supply amongst utility leaders, as it is in so many fields.

The other thing is to be brave. We don't want to be bleeding edge, but you want to be brave enough to lead us well beyond where we are now as an agency. A lot of people rely on us to lead both in the industry and in the city. That responsibility is something that we can't take lightly. We need to be in a leadership role to help educate and inform people about what needs to be done. We need to be seen as a trusted agency to turn to and get answers from.

Something that I've been working hard to incorporate into our DNA is the belief that the city owns a water and power agency for a reason, but it's not just to deliver water and power. It is to be part of the city family and make the city a better place. A lot of our equity initiatives and things we're doing with the communities within LA are really trying to help the city as a whole, besides just flipping the switch and turning the tap on. It will be really important to remember that we're here as a public agency. We make the city a better place, in addition to what we do, and that's a critical thing that we can't forget.

Tags:

LADWP (/tags/ladwp), Marty Adams (/tags/marty-adams), Water (/tags/water), Power (/tags/power), hydrogen (/tags/hydrogen)

JH2F

(<https://www.jetro.go.jp/usa/japan-hydrogen-forum/>)



(<http://www.willdan.com/new/index.aspx>)



(<https://www.airproducts.com/>)

BRONZE



(<https://usgbc-la.org/>)



(<https://eridirect.com/>)



(<https://laedc.org/>)



(<http://www.aqmd.gov/>)



(<https://www.metro.net/>)



(<http://laedc.org/wtc/>)

(<https://einow.org/>)



(<https://rwisynthetics.com/>)



(<https://about.bnef.com/>)



(<https://la.uli.org/>)



(<https://www.jfe-steel.co.jp/en/>)

Discover VX News

(<http://verdexchange.org/news>)

(<http://verdexchange.org/news>)

verde xchange news

ACCESS TO INNOVATIONS AND DEVELOPMENTS IN THE GREEN ECONOMY - VX2023 SPECIAL

MWD GM ADEL
HAGEKHALIL ON THE
COLORADO RIVER'S
PLACE IN SOUTHERN
CALIFORNIA'S WATER



demand for imported supplies from the Colorado River and State Water Project and elaborate on the opportunities to increase local supplies.

As recently as this past December, national and local media were reporting of warnings that Lake Mead could fall to 'dead pool' levels by 2025. Please further elaborate on the present challenges that Met and the region face with respect to the impacts of projected future water shortage.

Adel Hagegehall: We all know climate change is real. The new normal is upon us. We're seeing hotter, drier days. About half of Southern California water supplies are imported from the Colorado River and from Northern California via the State Water Project. The snowpack from the Rockies and the Sierra Nevada is no longer serving as its natural storage we've come to depend on. Even with normal precipitation levels, we're seeing very low amounts of runoff into the rivers and the reservoirs. Unprecedented conditions require unprecedented actions...

100%

ASSEMBLY TRANSPORTATION CHAIR LAURA FRIEDMAN ON CHALLENGES OF DECARBONIZING TRANSPORTATION IN CALIFORNIA



LAURA FRIEDMAN

Assemblymember Friedman, as the Chair of Assembly Transportation, how, if at all, have the legislature's investment decisions in transportation changed under your watch?

Laura Friedman: I was very excited to see CAPTI and to see those priority changes spelled out so

FUNDING SOUTHERN CALIFORNIA'S ENERGY TRANSITION WITH DOE LOAN PROGRAM OFFICE'S JIGAR SHAH



100

Amab Pal: We have IRS, we have Build Back Better, we have the CHIPS act. We have both a structure to be able to subsidize clean energy and an incentive mandate to rebuild as much as that back here in the United States. How can the federal government, both the Loan Program Office and in general, really help Southern California Edison and the State meet some of these challenges?

100%

VX
2023
April 30 - May 3 Los Angeles
VERDEXCHANGE

(continued on page 14)

INSIDE:
pg 2-3 NEWS &
pg 4 DAVID HO
pg 5 MARY NIC
pg 6 JOHN SHE

NOTES pg 7 GENE SEROKA
RICHSCILD pg 8 BEN PORRITT
HOLS pg 9 DAVID JACOT
GERIAN pg 10 SAMANTHA BRICKE
pg 11 ROSS ZELEN

pg 12 JAKE LEVINE
pg 13 MATT HORTON
pg 16 A.G. KAWAMURA

Be A Fan

Be our fan on Facebook (<https://www.facebook.com/verdexchange/>).
Get the latest updates and Facebook-only posts.

[ARTICLES \(/news\)](#) – Read our recent and past articles
[CONTACT \(/contact\)](#)

About Us

VERDEXCHANGE commits to: 1) connecting the *green dots* to spur growth of the green economy and the use of clean energy while reducing greenhouse gas pollution; 2) offering commercial entrepreneurs, global investors, environmental stewards, and public officials information and a marketplace for continually learning of innovations, opportunities, and public policies that are driving the trillion dollar global energy and climate change marketplace; and 3) spurring growth of the green economy.

VerdeXchange News | The Bloc | 700 South Flower Street, Suite 575 | Los Angeles, CA 90017

Telephone: (213) 623-3801 | Facsimile: (213) 623-9207

VerdeXchange News (ISSN 1082-1171/USPS 012-619) is published quarterly by the VerdeXchange Institute.

The VerdeXchange Institute is a 501(c)(3) project of Community Partners. © VerdeXchange Institute, 2007

Attachment C

RFI

Request For Information



City of Los Angeles
Department of Water & Power

**For
Green Hydrogen Pathways for Supporting
100% Renewable Energy**

RFI Number: 8.5.21-Power-SAL

Release Date: 8/5/2021

Responses Due: 10/7/2021



REQUEST FOR INFORMATION (RFI) 8.5.21-POWER-SAL

CITY OF LOS ANGELES GREEN HYDROGEN PATHWAYS FOR SUPPORTING 100% RENEWABLE ENERGY

1. INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) is requesting information from interested parties experienced in the planning, design, and deployment of hydrogen and/or hydrogen infrastructure. Specifically, LADWP is interested in technologies related to four main areas of hydrogen: production, transportation, storage, and electricity generation, all of which are to support the future electricity-generating needs of the City of Los Angeles. LADWP is also seeking information on best practices and technologies in regards to hydrogen that advances LADWP's commitment to safety and environmental stewardship. Information gathered from this Request for Information (RFI) will assist LADWP in its continued development of clean-energy strategies, programs, and investments.

In March 2021, LADWP released the findings of a three-and-a-half-year-long study with the United States National Renewable Energy Laboratory demonstrating that a 100% renewable grid is achievable, affordable, and reliable for Los Angeles. The study showed that green hydrogen may serve an important role in supporting the integration of significant renewable energy capacity within the LA Basin ("in-basin"). Through this RFI, LADWP seeks to better understand the opportunities and challenges associated with green hydrogen in meeting its clean energy future objectives. Specifically, LADWP's objectives are to:

1. Maintain resource adequacy that supplies reliable electricity to the City of Los Angeles at a competitive rate;
2. Provide a carbon-free alternative to the predominantly fossil fuel-based electricity generation in the LADWP service territory;
3. Reduce LADWP's carbon footprint;
4. Enhance operational system reliability, resilience and cost-efficiency;
5. Utilize LADWP's existing in-basin infrastructure to the extent possible to help reduce the initial capital expenditures;
6. Provide economic opportunities and job creation, while prioritizing existing workforce safety, retention, training, and development.

This RFI is issued with the intent to survey the industry, to obtain information on the types of solutions and capabilities available with respect to pathways for green hydrogen-based electricity generation that are commercially available or under development, and to solicit additional guidance, input, new ideas, and best practices which may be used in the preparation of a Request for Proposal (RFP).

To fully comprehend the information contained within a response to this RFI, LADWP may request further clarification in the form of verbal communication by telephone, written communication, electronic communication, a presentation, an interview, and/or a site visit at no cost to LADWP.

Responses should include information and recommendations of best practices for the development of LADWP's capabilities and pathways for in-basin green hydrogen-based electricity generation. All responses should be concise and focused on one or more of the technologies of interest. LADWP will use the information generated as a result of this RFI to develop a green hydrogen roadmap that is in the best interest of the City of Los Angeles. This RFI shall not be construed as an RFP or an obligation on the part of LADWP. In addition, LADWP does not intend to award a contract on the basis of this request or otherwise pay for the requested information, but may utilize any or all of the provided information in determining potential green hydrogen-related opportunities for future bid or RFP considerations.

2. BACKGROUND

This section provides information on the Los Angeles 100% Renewable Energy Study¹ for context on LADWP's potential needs for hydrogen-based electricity generation and the approximate quantities of hydrogen required. This section also describes LADWP's recently announced goal to be 100% carbon-free by 2035, LADWP's expectations on the potential hydrogen production methods, and the technologies of interest in regards to hydrogen.

A. LA100 STUDY

As LADWP retires up to 1,661 megawatts (MW) of once-through cooling (OTC) units by the end of 2029, LADWP has identified a need to build additional long-duration capacity within the Los Angeles Basin to avoid widespread blackouts during transmission outages due to wildfires, transmission line maintenance and upgrades, and other contingencies. In partnership with the National Renewable Energy Laboratory (NREL), the Los Angeles 100% Renewable Energy Study ("LA100" or "LA100 study") identified investment pathways that would allow the City of Los Angeles to achieve a 100%-renewable-energy portfolio no later than 2045.

One of NREL's findings is that for LADWP to maintain a reliable power supply, its generation fleet needs an appreciable amount of firm capacity, also referred to as dispatchable capacity. NREL defined firm-capacity resources as generation resources whose capacity credits (i.e., dependable capacity ratings) remain constant, regardless of customers' demand patterns and the particular mix of technologies deployed on the grid. Firm-capacity resources can generate electricity on demand for uninterrupted periods of days to weeks. Although all the LA100 scenarios deploy a substantial amount of wind and solar energy, these resources are variable and thus have a diminishing incremental capacity credit at higher levels of deployment. It is therefore cost-prohibitive to achieve 100% renewable energy using variable resources alone. Beyond cost considerations, NREL's analysis of renewable firm-capacity resources was also motivated by the need to address resource adequacy

¹ Cochran, Jaquelin, and Paul Denholm, eds. 2021. The Los Angeles 100% Renewable Energy Study. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-79444. <https://maps.nrel.gov/la100/>.

during critical transmission outages, which cut off substantial portions of the city's access to wind and solar energy outside the LA Basin.

NREL's capacity expansion model utilized in the LA100 study selects the least-cost, best-fit resources to meet capacity needs. Hydrogen combustion turbines (CTs), renewable CTs², and hydrogen fuel cells were identified as potential technology options that could serve the in-basin capacity needs. For the purposes of this RFI, the capacity and generation estimates from renewable CTs are effectively considered to be hydrogen-based.

NREL assumed that before 2045, hydrogen-based long-duration storage will use zero- or low-variable-cost generation to self-produce hydrogen fuel, which is then converted to ammonia and stored in tanks near the generation facility. NREL assumed that by 2045, a renewable-hydrogen market will have emerged, allowing LADWP to purchase hydrogen from the market. The ammonia is assumed to be cracked to yield hydrogen, which is then used as fuel by CTs or fuel cells. NREL assumed that pure-hydrogen-based generation would not be a mature technology until 2030 and thus prohibited hydrogen CTs and fuel cells from the LA100 scenarios before this year, with the exception of phased-in hydrogen fuel at Intermountain Power Project (IPP). In NREL's LA100 scenarios, all the firm-capacity resources aside from geothermal plants are used infrequently, when customer load is high and while wind and solar output are low.

NREL identified the need for approximately 1,200 MW to 2,600 MW (depending on the load and scenario studied) of firm capacity to supplement the loss of OTC capacity by 2030. A need of approximately 1,700 to 4,300 MW is required by 2045. This RFI is meant to better understand the current and future capabilities of the broader hydrogen industry, and from there LADWP seeks to identify the role of hydrogen in achieving new in-basin dispatchable capacity.

Firms responding to this RFI need not be limited to the assumptions made in the LA100 study; rather, this information is meant to provide context on LADWP's projected need for in-basin hydrogen capacity.

B. 100% CARBON-FREE BY 2035

On April 19, 2021, after the completion of the LA100 study, Mayor Eric Garcetti announced in the State of the City address that LADWP would adopt the goal to be 100% carbon-free by 2035. Mayor Garcetti also announced that LADWP would provide an energy mix that is 80% renewable and 97% carbon-free by 2030, and that the units at Scattergood Generating Station would transition to run on green hydrogen. To achieve green-hydrogen-based electricity generation at Scattergood prior to 2030, LADWP has provided additional estimates for the hydrogen capacity needs of Scattergood, supplementing NREL's data in the following subsection. These estimates are separate from the results of the LA100 study and are a product of internal preliminary analysis at LADWP.

² NREL defines "renewable CTs" as renewably fueled combustion turbines that are assumed to use a market-purchased renewable fuel, including but not limited to, biodiesel, biogas, ethanol, synthetic natural gas, and hydrogen.

C. PROJECTED HYDROGEN NEEDS

This section summarizes NREL’s findings regarding LADWP’s projected hydrogen-based generation needs within the LA Basin. The estimates presented in this RFI are in the form of ranges that are reflective of the results from all nine LA100 modeling scenarios, each of which is based on assumptions that reflect uncertainty about the future. The hydrogen capacity identified for each scenario is thus heavily informed by these assumptions. These projected needs are subject to change, as LADWP refines its strategic plan toward achieving its goals of providing clean, reliable, low-cost electricity to the City of Los Angeles. Significantly more hydrogen fuel may be needed to sufficiently address outage conditions resulting from various contingencies.

Table 1 displays NREL’s estimates for capacity of hydrogen-fueled CTs across the study’s modeling years and for each in-basin generating station. In-basin hydrogen-based generation capacity is absent in 2025 and 2030. This is a result of NREL’s assumption that pure-hydrogen-based generation would not be a mature technology until after 2030. LADWP is certainly interested in developing the capabilities for in-basin, hydrogen-based electricity generation before 2030, so long as the associated technologies mature, and hydrogen is available. LADWP encourages respondents to comment on whether or not their suggested solutions could be available earlier than 2030.

Table 2 shows NREL’s estimates for hydrogen-related electricity generation across the study’s modeling years and for each in-basin generating station.

Table 1. Estimated Hydrogen-Based Capacity

Generating Station	MW of Capacity			
	2025 and 2030	2035	2040	2045
Harbor Generating Station	–	257–543	543–548	548–902
Haynes Generating Station	–	762–1,488	831–1,448	831–1,552
Scattergood Generating Station ³	0–616	188–616	188–616	188–616
Valley Generating Station	–	891–1,331	891–1,331	1,331–1,391
Total In-Basin	–	2,099–3,550	2,454–3,612	2,898–4,091

³ The estimated MW capacities for 2025 and 2030, and the upper bounds for 2035, 2040, and 2045 are a result of internal analysis at LADWP and are separate from the results of the LA100 study. The estimated generation and fuel needs at Scattergood for 2025 and 2030 are to be determined.

Table 2. Estimated Hydrogen-Based Generation (Annual)

Generating Station	MWh of Generation ⁴			
	2025 and 2030	2035	2040	2045
Harbor Generating Station	–	4,950–34,623	16,999–498,133	19,336–363,065
Haynes Generating Station	–	6,645–9,815	32,009–53,254	28,180–351,080
Scattergood Generating Station	TBD	0–12,226	1,077–3,537	0–58,367
Valley Generating Station	–	0–12,304	38,720–87,354	4,346–38,796
Total In-Basin	–	11,595–68,968	88,805–642,278	51,862–811,308

Table 3 shows NREL’s estimates for the annual quantities of hydrogen needed in metric tonnes across the study’s modeling years and for each in-basin generating station. These quantities were calculated based on an assumed heat rate of 9.50 MMBtu/MWh for hydrogen-fueled CTs. The assumptions made for each of the scenarios, as well as any other modeling results, may be obtained directly from the LA100 study.

Table 4 provides the corresponding quantities of ammonia calculated directly from the estimated hydrogen quantities presented in Table 3.

Table 3. Estimated Hydrogen Quantities (Annual)

Generating Station	Quantities of Hydrogen (tonnes) ⁵			
	2025 and 2030	2035	2040	2045
Harbor Generating Station	–	414–2,894	1,421–7,302	1,616–30,348
Haynes Generating Station	–	555–820	2,676–4,451	2,356–29,347
Scattergood Generating Station	TBD	0–1,022	296–1,824	0–4,879
Valley Generating Station	–	0–1,028	91–3,237	363–3,243
Total In-Basin	–	969–5,765	4,482–16,814	4,335–67,817

⁴ Significantly more hydrogen-based generation may be needed to sufficiently address outage conditions resulting from various contingencies.

⁵ NREL assumed a heat rate of 9.50 MMBtu/MWh.

Table 4. Corresponding Ammonia Quantities (Annual)

Generating Station	Quantities of Ammonia (tonnes)			
	2025 and 2030	2035	2040	2045
Harbor Generating Station	–	2,317–16,207	7,957–40,891	9,051–169,952
Haynes Generating Station	–	3,111–4,595	14,983–24,928	13,191–164,341
Scattergood Generating Station	TBD	0–5,723	1,656–10,213	0–27,322
Valley Generating Station	–	0–5,759	504–18,125	2,034–18,160
Total In-Basin	–	5,428–32,284	25,101 –94,157	24,277–379,775

Appendix A provides a list of LADWP’s in-basin generating stations along with each of the generating units’ capacities.

D. DESIRED HYDROGEN PRODUCTION METHODS

LADWP’s objective is to source and utilize green, environmentally sustainable hydrogen for the purpose of electricity generation. LADWP will consider all potential pathways to demonstrate green hydrogen as a viable energy carrier at scale and for the purpose of developing the in-house expertise necessary to operate and maintain hydrogen infrastructure for hydrogen-based electricity generation.

E. TECHNOLOGIES OF INTEREST

LADWP has identified four primary areas of technological interest that may be needed for the utilization of hydrogen as a fuel for electricity generation to serve the City of Los Angeles. These areas of interest are: (1) hydrogen production, (2) hydrogen transportation, (3) hydrogen storage, and (4) electricity generation, collectively referred to as “Technologies of Interest.” LADWP seeks information on the Technologies of Interest, as well as best practices that advances LADWP’s commitment to safety and environmental stewardship in a hydrogen energy economy. LADWP understands that it may not have captured all potential technologies, and most importantly, LADWP invites firms to respond to this RFI if it believes the technology suggested will assist LADWP with achieving its goal of sourcing in-basin hydrogen needs for electricity generation, regardless of the technology’s capacity or size.

3. INFORMATION REQUESTED

This section contains the information requested from your firm for commercially available and under-development technologies that may assist LADWP in achieving hydrogen-based electricity generation. Proposed technologies and methods from your firm will be collectively referred to as the “Suggested Solution.”

The first subsection contains general requested information regarding all Suggested Solutions. The following subsections contain specific questions regarding each Technology of Interest. The final subsection describes the information requested specifically related to safety and environmental stewardship.

LADWP requests that your firm provide the requested information from one or more of the subsections as applicable, based on the Suggested Solution's involved technologies, methods, and scope.

A. GENERAL

Please provide answers and/or information to satisfy the following questions related to the production, transportation, storage, electricity generation, safety, and/or environmental stewardship that may be used in supporting the future electricity generation needs of the City of Los Angeles.

The requested information for all Suggested Solutions is as follows:

1. Provide the specific Technologies of Interest area(s) that your Suggested Solution addresses.
2. Provide a general overview of your Suggested Solution.
3. Provide a summary of how your Suggested Solution meets the objective(s) of this RFI.
4. Identify key advantages and features of your Suggested Solution.
5. Describe the process and the approach used to arrive at the Suggested Solution.
6. Describe the approach for forming the collaborative team that consists of various areas of expertise, including utilization of other firms and partnerships, that will be needed for developing the Suggested Solution.
7. Provide general project information as applicable, such as involved technologies, necessary partnerships, required resources, location, footprint, size (MW), existing/upgrade/new, and/or connection/delivery points.
8. Provide the anticipated environmental impacts and requirements for a full end-to-end lifecycle of the Suggested Solution, including but not limited to, greenhouse gas (GHG) emissions, NOx emissions, permitting, and other notable environmental impacts.
9. Provide information on the availability and/or level of development of your Suggested Solution.
10. Describe how resources under your Suggested Solution may be used or combined with other technologies or solutions.
11. Provide and describe any other new and emerging technologies that may be considered as potential Suggested Solutions as part of this RFI.
12. Provide a brief history of the technologies involved in your Suggested Solution, including but not limited to, previous applications, where it has been in use, how long it has been in use, etc.
13. Describe the nature and results of implementation at other locations (i.e., schedules, financing, costs, performance, length of service to date, measured results, project failures, lessons learned, etc.).
14. Describe the anticipated reliability of the Suggested Solution.

15. Does your Suggested Solution include the capability to supply hydrogen to one or more of LADWP's generating stations? If so, which one(s)?
16. Describe how the Suggested Solution could be incorporated into LADWP's facilities or operations.
17. Does your Suggested Solution require the addition and/or upgrade of infrastructure? If so, what upgrades would be required?
18. Provide information on potential funding opportunities from governmental entities or non-governmental entities for which the Suggested Solution would qualify.
19. Identify what regulatory requirements, permits, and/or related considerations are needed to implement the Suggested Solution.
20. Identify what operating considerations are necessary for the Suggested Solution to perform appropriately.
21. Describe the expected lifecycle of the Suggested Solution, including what steps are necessary at the end of life (i.e., replacement, renovation, upgrade, disposals, mitigations, etc.) and the associated costs.
22. Provide a timeline for project development to implement the Suggested Solution. If the Suggested Solution uses technologies not yet commercially available, provide a best-guess date or timeframe when such technologies will become commercially available.
23. Describe to what extent the performance of the Suggested Solution may be guaranteed.
24. Provide information on the expected effect of hydrogen embrittlement on your Suggested Solution and any countermeasures taken or recommended.
25. Provide information on how climate change and extreme weather events may or may not impact the Suggested Solution and the approaches and methodologies to combat such events (e.g., weatherization).
26. Provide all recommended safety procedures and hazard/risk assessments, including but not limited to, those related to fire, earthquake, accidental release, and catastrophic failure for the Suggested Solution.
27. Which raw materials may introduce supply chain risks that can affect commercial viability or continuity of service for your Suggested Solution?
28. Identify any other issues or considerations (e.g., new fire codes, other regulations, enhanced training, organization impacts, etc.) not otherwise covered that can assist LADWP in developing the requirements for the implementation of the Suggested Solution.
29. Describe the expected maintenance procedures required to keep the assets in operation until the end of life of the Suggested Solution, including inspections, regular maintenance, consumables, component replacement, major overhauls, etc., and the estimated operations and maintenance costs.
30. Provide information on established guidelines and/or procedures for conducting testing and commissioning.
31. Provide recommendations on potential partnerships and incentives that will help grow and leverage clean-energy jobs and the training of associated skilled personnel.

32. Provide information on your firm's proposed business relationship with LADWP as it relates to the Suggested Solution.
33. The following information requested pertains to labor and workforce development:
 - i. What is the expected number of personnel required to operate your Suggested Solution?
 - ii. Provide what type of training credentials, apprenticeship, and workforce development are needed to install, operate, and maintain the Suggested Solution.
 - iii. Provide a listing and description of the various job titles/classifications and qualifications for the installation, operation, and maintenance of the Suggested Solution.
 - iv. What engineering and specialist skill sets are recommended to effectively maintain and operate your Suggested Solution.
34. Provide a statement of understanding that LADWP would be able to contact your firm for additional information to further investigate the response to the RFI at no cost to LADWP.

B. HYDROGEN PRODUCTION

Please provide answers and/or information to satisfy the following questions related to hydrogen production technologies that may be used in supporting the future electricity generation needs of the City of Los Angeles. These hydrogen production technologies include, but are not limited to, electrolysis, green ammonia production, ammonia cracking, pyrolysis, and steam methane reforming (SMR) with carbon capture. LADWP may consider the temporary use of hydrogen produced via established methods for the purposes of pilot project(s) or for demonstration(s) provided that there is a pathway to the utilization of green hydrogen.

The requested information for hydrogen production is as follows:

1. Provide information on the processes used to produce hydrogen for your Suggested Solution.
2. Provide information on the needed feedstocks of your Suggested Solution.
3. What amount of hydrogen, measured in metric tonnes, is provided by your Suggested Solution?
4. What level of hydrogen purity is the Suggested Solution able to provide? Are there any non-hydrogen chemical constituents that are expected to be delivered along with the hydrogen?
5. Provide information on the balance of plant requirements for the scale and scope of your Suggested Solution.
6. Would your Suggested Solution experience losses? If so, provide information on the rate of expected losses and methods for mitigation.
7. If applicable, what are the expected GHG emissions of your Suggested Solution?
8. If applicable, what measures and/or technologies does your Suggested Solution utilize to eliminate or minimize GHG emissions?

9. Describe a cursory end-to-end lifecycle environmental impact analysis of the Suggested Solution.
10. Provide information about your Suggested Solution's ability to respond to fluctuations in power often associated with power sourced from variable energy resources.
11. If your Suggested Solution requires process heating or cooling, what source of energy (resistive heating, heat storage, waste steam heat, hydrogen combustion, etc.) is recommended?
12. If your Suggested Solution will utilize carbon capture and sequestration (CCS), please describe the type of carbon capture technology recommended and the end use of the captured carbon.
13. Provide information on the software used by your firm to model hydrogen production.
14. The following information requested pertains specifically to ammonia cracking technologies:
 - i. Provide information on your firm's suggested ammonia cracking technology.
 - ii. Provide information on balance of plant requirements for your firm's ammonia cracking technology.
 - iii. Provide information on the heat source and GHG emissions associated with the ammonia cracking process.
 - iv. Provide information on the expected ammonia slip rate and any available mitigation measures in your Suggested Solution.
 - v. Provide information on the expected efficiency of your Suggested Solution's ammonia cracking technology.

C. HYDROGEN TRANSPORTATION

Please provide answers and/or information to satisfy the following questions related to hydrogen transportation technologies and methods that may be used in supporting the future electricity generation needs of the City of Los Angeles. These hydrogen transportation technologies and methods include, but are not limited to, pipelines, railways, trucks, ships, and barges.

The requested information for hydrogen transportation is as follows:

1. Provide information on the method of transportation used in your Suggested Solution.
2. Hydrogen is currently transported using numerous forms to increase hydrogen density, which include but are not limited to, compressed gas, green ammonia, liquified hydrogen, or other hydrides. Please specify which form(s) of hydrogen would be transported in your Suggested Solution.
3. What experience does your firm have in the transportation of hydrogen, ammonia, gas products, and/or fuels?
4. What measures would be taken to eliminate, minimize, or mitigate GHG emissions in your Suggested Solution?
5. What quantities of hydrogen are expected to be delivered by your Suggested Solution?

6. How many deliveries per day, week, and/or month would be expected in providing LADWP with the projected hydrogen or ammonia quantities through your Suggested Solution?
7. What safety measures and precautions would be taken to minimize safety risks associated with transportation?
8. What limitations, if any, are inherent in your Suggested Solution?
9. What assumptions have been made in relation to travel route, length of trip, and means of travel?
10. If using maritime means, what is the assumed port of origin and assumed port of destination for your Suggested Solution?
11. If using pipelines, specify the existing pipeline network to be used or the proposed routing of future pipelines to be constructed or repurposed.
12. Does your Suggested Solution experience losses during transportation? Will on-route delays result in losses? How will these losses be mitigated and/or addressed?

D. HYDROGEN STORAGE

Please provide answers and/or information to satisfy the following questions related to hydrogen storage technologies and methods that may be used in supporting the future electricity generation needs of the City of Los Angeles. These hydrogen storage technologies and methods include, but are not limited to, hydrogen stored as ammonia, compressed gas hydrogen storage, liquid phase hydrogen storage, and hydrogen stored as hydrides. Hydrogen storage infrastructure may include, but are not limited to, above-ground tanks, underground tanks, geologic storage, line packing, refrigerated storage, and maritime barge storage.

The requested information for hydrogen storage is as follows:

1. Provide information on the method of storage for your Suggested Solution.
2. Provide information on the technologies and/or methods used in your Suggested Solution.
3. What hydrogen storage infrastructure would be required in your Suggested Solution?
4. Where would your Suggested Solution be located? Would it be co-located at one of LADWP's existing facilities? If so, which LADWP facility?
5. What are the operating temperatures and pressures for your Suggested Solution?
6. What are the energy requirements for your Suggested Solution?
7. Would your Suggested Solution require utility services? If so, what would be required?
8. Would your Suggested Solution experience hydrogen losses over time? If so, provide information on the rate of expected losses and methods for mitigation.
9. Describe any experience your firm has with similar applications using the techniques and technologies in your Suggested Solution.
10. Provide information on the software used by your firm to model hydrogen storage.
11. What permitting and safety measures and precautions would be taken to minimize safety risks associated with the storage of hydrogen fuel?

12. Provide information on the periodic testing required for the safe operation of your Suggesting Solution.
13. Provide information on the scalability of your Suggested Solution.

E. ELECTRICITY GENERATION

Please provide answers and/or information to satisfy the following questions related to hydrogen-based electricity generation technologies and methods that may be used in supporting the future generation needs of the City of Los Angeles. These hydrogen-based electricity generation technologies include, but are not limited to, hydrogen retrofits of existing natural-gas-based combustion turbines, hydrogen-fueled combustion turbines in both simple cycle and combined cycle configurations, fuel cells, and ammonia/hydrogen co-fuel combustors.

The requested information for hydrogen-based electricity generation is as follows:

1. Provide information on the technologies and methods of electricity generation in your Suggested Solution.
2. What are the operational characteristics, as applicable, of your Suggested Solution? Information may include, but is not limited to:
 - i. maximum net output
 - ii. minimum net output
 - iii. ramp rates
 - iv. heat rates
 - v. efficiencies
 - vi. emissions
 - vii. ancillary services
3. If your Suggested Solution includes the retrofit of CT combustors, provide a list of compatible CT models. Will your Suggested Solution be compatible with existing CTs in LADWP's generation fleet?
4. What are the external dimensions of retrofit combustors? What considerations must be taken for installation clearance in regards to the existing CTs and surrounding structures?
5. What is the maximum and minimum amount of hydrogen, in volume percent, that can be utilized in your Suggested Solution? If the maximum is not 100%, does your Suggested Solution have a development plan to achieve 100% hydrogen combustion?
6. Does your Suggested Solution require a co-fuel or dilutant? If so, which co-fuels or dilutants are required?
7. For Suggested Solutions pertaining to CTs, what is the expected heat rate for the hydrogen-capable CT? How has this heat rate been determined?
8. For Suggested Solution pertaining to CTs, what are the expected NO_x emissions, given in parts per million (ppm), at the CT exhaust? What are the major permitting requirements associated with hydrogen-based electricity generation?
9. Does your Suggested Solution require water or steam injection for NO_x control? If so, what injection rates are required?

10. Provide information on any needed changes to existing infrastructure to include, but not limited to, fuel system sizing, fuel system materials, fuel compressors, fuel blending equipment, water/steam injection infrastructure, and NOx abatement.
11. What are the cooling requirements for your Suggested Solution? What cooling methods are recommended?
12. Provide information on established guidelines and/or procedures for conducting testing and commissioning.
13. Provide information on black start capabilities of the Suggested Solution.
14. The following information requested pertains to fuel cell technologies:
 - i. Provide information as to the availability and annual production rate of fuel cells for your Suggested Solution.
 - ii. Provide information about the chemistry in your Suggested Solution's fuel cells.
 - iii. Provide information on the operational characteristics for your Suggested Solution's fuel cells, including rated net power, DC voltage range, and current.
 - iv. Provide information on the reversibility of your Suggested Solution's fuel cells, including the time required to switch between electricity-generating mode and hydrogen-production mode.
 - v. What is the expected operational life span of the fuel cells? What factors and/or best practices can improve operational life span?
 - vi. Provide information on how safety by design will be implemented.
 - vii. Provide information on the required subsystems and how they will be integrated (e.g., air subsystems, cooling subsystems).
 - viii. Provide information on required fuel supply and flow rate? What are the fuel composition requirements?
 - ix. Provide information on the scalability of your Suggested Solution.
 - x. Provide information on the cooling requirements to include required coolant volume and chemical composition.

F. SAFETY AND ENVIRONMENTAL STEWARDSHIP

The safety of the people of Los Angeles, LADWP employees, and all communities surrounding the LADWP generating facilities are of paramount importance to LADWP. With the understanding that other industry sectors have over 100 years of experience with the industrial use of ammonia and hydrogen, LADWP requests information regarding technologies, best practices, and lessons learned in the areas of hydrogen and ammonia safety. These hydrogen-centered safety technologies and topics include, but are not limited to, gas detection, flame detection, personal protective equipment (PPE), best practices, and lessons learned. Given LADWP's core commitment toward environmental stewardship, LADWP also seeks information on technologies and methods to continue this commitment as it moves toward novel, hydrogen-based methods of electricity generation. Collectively speaking, these technologies may be used to safely and responsibly operate hydrogen-related infrastructure to support the future electrical generation needs of the City of Los Angeles.

The requested information regarding safety and environmental stewardship is as follows:

1. Provide information about hydrogen and/or ammonia gas detection technology.
2. Provide information on hydrogen and/or ammonia leak detection technology.
3. Provide information on hydrogen fire and flame detection technology.
4. Provide information on methods and materials used to contain ammonia spillage and emergency response.
5. Provide information on PPE related to hydrogen and/or ammonia.
6. Provide information on fire detection and fire suppression systems.
7. Provide information on your firm's best practices and lessons learned as relates to personnel, equipment, safety by design, and environmental safety.
8. Provide information on catalyst technologies or other DeNO_x technologies. Generally speaking, LADWP's permits allow for 2.5 ppm NO_x for its simple cycle units and 2.0 ppm NO_x for its combined cycle units.⁶
9. Provide information on the safety codes and standards for hydrogen and ammonia.
10. Provide information on continuous monitoring applications and shutdown procedures.
11. Describe how the Suggested Solution would assist LADWP in meeting its objectives to provide benefits to its residents located in disadvantaged communities and with low-to-moderate incomes through direct employment and economic development?

4. CONCLUSION

Ultimately, LADWP believes this RFI is a step toward achieving its clean-energy goals and maintaining a reliable and resilient power system, all while providing cost-competitive rates to its customers. LADWP remains committed to helping accelerate the advent of a decarbonized, clean-energy future and looks forward to reviewing responses to this RFI.

⁶ Stated limits are without consideration of LADWP's participation in the South Coast Air Quality Management District's (SCAQMD) Regional Clean Air Incentives Market (RECLAIM) Program.

5. INFORMATION AND INSTRUCTIONS

SCHEDULE OF EVENTS AND CONTACT INFORMATION

Release of RFI	August 5, 2021
Respondents' Questions Due	August 26, 2021
LADWP Response to Written Questions	September 2, 2021
Deadline for Submitting RFI Responses	October 7, 2021

All questions or concerns related to this RFI should be submitted via electronic mail to Shaun Larsuel, Utility Buyer, at SCS3Purchasing@ladwp.com by the date and time prescribed herein. The LADWP's responses to questions will be posted on the Los Angeles Business Assistance Virtual Network (LABAVN), found at <https://labavn.org>. It is the responsibility of respondents to check LABAVN periodically for responses to questions.

USE OF INFORMATION

Participation in this RFI is optional and not required in order to respond to any subsequent procurement LADWP may take. The RFI is not a competitive solicitation method. Except as otherwise set forth herein, neither LADWP nor the interested party responding has any obligation under the RFI. LADWP anticipates to issue an RFP/RFPs using information gathered from responses to this RFI. Interested parties are encouraged to submit responses to all or part of the RFI even if they do not have a current intention to respond to any future requests. Respondents are specifically requested not to submit any type of price proposal other than high-level cost estimates for budget purposes.

All documents submitted in response to the RFI will become a matter of public record and shall be thereupon considered public records. If a respondent believes that any portion of its response is exempt from public disclosure, such portion shall be clearly marked "Trade Secret," "Confidential," or "Proprietary." By submitting information with portions marked in this manner, the respondent represents that it has a good faith belief that such material is exempt from disclosure under the California Public Records Act, California Government Code §§ 6250, et. seq.

GENERAL INFORMATION AND INSTRUCTIONS

Companies responding to this RFI shall designate a single contact within that company for receipt of all subsequent information regarding this RFI. If subsequent bidding opportunities are issued, LADWP is under no obligation to advise any vendor responding to this RFI.

LADWP employs the City of Los Angeles – Business Assistance Virtual Network (LABAVN) website for posting its bidding opportunities. Vendors are advised to monitor the LABAVN website for such opportunities. Entities or individuals interested in such opportunities need to register on the LABAVN website. Registration is free and enables the registered entity or individual to gain access to certain information, services and/or materials maintained on LABAVN at no charge. Registration may be accomplished at: <https://labavn.org>.

CONTACT INFORMATION

Please provide your contact information including a brief company profile, and the name, phone number, and email of the key contact person(s).

RFI SUBMITTAL INSTRUCTIONS

RFI responses will only be accepted electronically via the Ivalua web portal found at <https://suppliers-ladwp.ivalua.app/>. Vendors already registered on LADWP's Ivalua submittal portal can log into their account and navigate directly to the solicitation using the RFI number. Vendors that are not currently registered will need to complete the free registration. Registration instructions and a Vendor User Guide that includes instruction on how to submit an electronic response can be found on the Ivalua website. Responses submitted via electronic mail (email), facsimile, or hardcopy will not be accepted.

APPENDIX A: LADWP ELECTRICITY-GENERATING UNITS

Table A. LADWP In-Basin Generation Fleet

GENERATING STATION Address	UNIT NO.	MANUFACTURER	UNIT MODEL CT: Combustion Turbine ST: Steam Turbine †: Combined Cycle	NET MAXIMUM UNIT CAPACITY (MW)	NET MAXIMUM PLANT CAPACITY (MW)
Harbor Generating Station 161 N. Island Ave. Wilmington, CA 90744	1	General Electric	7EA / CT [†]	73.0	443.0
	2	General Electric	7EA / CT [†]	73.0	
	5	Westinghouse	ST [†]	60.0	
	10	General Electric	LM6000 / CT	47.4	
	11	General Electric	LM6000 / CT	47.4	
	12	General Electric	LM6000 / CT	47.4	
	13	General Electric	LM6000 / CT	47.4	
	14	General Electric	LM6000 / CT	47.4	
Haynes Generating Station 6801 E. 2nd St. Long Beach, CA 90803	1	Brown Boveri	ST	222.0	1,614.2
	2	Brown Boveri	ST	222.0	
	8	General Electric	D11 / ST [†]	250.0	
	9	General Electric	7FA / CT [†]	162.5	
	10	General Electric	7FA / CT [†]	162.5	
	11	General Electric	LMS100 / CT	99.2	
	12	General Electric	LMS100 / CT	99.2	
	13	General Electric	LMS100 / CT	99.2	
	14	General Electric	LMS100 / CT	99.2	
	15	General Electric	LMS100 / CT	99.2	
	16	General Electric	LMS100 / CT	99.2	
Scattergood Generating Station 12700 Vista Del Mar Playa del Rey, CA 90293	1	General Electric	F2 / ST	105.0	778.2
	2	General Electric	F2 / ST	156.2	
	4	General Electric	7FA / CT [†]	206.0	
	5	General Electric	A-14 / ST [†]	107.0	
	6	General Electric	LMS100 / CT	102.0	
	7	General Electric	LMS100 / CT	102.0	
Valley Generating Station 11801 Sheldon St. Sun Valley, CA 91352	5	General Electric	LM6000 / CT	43.0	576.0
	6	General Electric	7FA / CT [†]	162.0	
	7	General Electric	7FA / CT [†]	162.0	
	8	General Electric	D11 / ST [†]	209.0	

Attachment D

ENERGY AND ENVIRONMENT COMMITTEE REPORT relative to an overview of the Scattergood Generating Station Green Hydrogen project; potential alternatives to the project; public health and safety impacts; public engagement process for the project; **role of green hydrogen at large in the City's transition to 100% renewable energy; and related matters.**

Recommendations for Council action, as initiated by Motion (Yaroslavsky – Park – Raman):

1. DIRECT the Los Angeles Department of Water and Power (LADWP) to report to the City Council with details of the project on a semi-annual or more frequent basis as requested, including immediately prior to:
 - a. Releasing a Request for Proposal or other similar solicitation for the design and construction of the Scattergood Units 1 and 2 Green Hydrogen Ready Modernization Project.
 - b. Any contracts to the Board of Water and Power Commissioners for this project. Such reports shall include at a minimum how the project will operate consistent with the Council direction in Council File (CF) No. 21-0352, CF No. 22-0255, and the following:
 - i. Result in no increase of any criteria pollutant emissions (nitrogen oxides, carbon monoxide, etc.) over any time period (i.e., 1-hour, 8-hour etc.) relative to the emission limits established by Best Available Control Technology for a similar natural gas fired combustion turbine with the goal of minimizing or eliminating these emissions to the maximum extent feasible.
 - ii. Not create new significant public health and safety risks resulting from catastrophic failures of systems to produce, store, transport, and use green hydrogen in this project.
 - iii. **Incorporate hydrogen leak prevention, mitigation, and monitoring throughout the production, transportation, storage, and combustion system and estimate the hydrogen leakage rates of the project from the point of fuel production through delivery and combustion and the local air pollution and greenhouse gas impacts of that leakage.**
 - iv. **Solely utilize hydrogen that is produced using new, dedicated renewable energy resources or excess renewable energy resources.**
 - v. **Not rely on local potable water supplies and not impair LADWP's goal of eliminating all water imports.**

2. DIRECT LADWP to conduct a new or updated assessment of non-combustion alternatives to the project, including the use of green-hydrogen powered fuel cells, high levels of energy storage, large-scale multi-day demand response programs, new and upgraded transmission lines to import higher levels of renewable energy, and others that considers the public health benefits, safety risks, and costs and benefits, and REPORT to the Council on the results of this analysis within six months.
3. DIRECT LADWP to directly engage, using equitable engagement principles, communities, Neighborhood Councils, and Community-Based Organizations along any hydrogen pipeline or transportation routes and adjacent to in-basin gas-fired power plants on the impacts of hydrogen production, storage, transport, and combustion, including but not limited to air quality, climate change, and public health and safety.

Fiscal Impact Statement: Neither the City Administrative Officer nor the Chief Legislative Analyst has completed a financial analysis of this report.

Community Impact Statement: None submitted.

Summary:

On February 3, 2023, your Committee considered Motion (Yaroslavsky – Park – Raman) relative to an overview of the Scattergood Generating Station Green Hydrogen project; potential alternatives to the project; public health and safety impacts; public engagement process for the project; **role of green hydrogen at large in the City's transition to 100% renewable energy; and related matters.** The Motion attached to the Council file includes some background on the matter.

After providing an opportunity for public comment, the Committee moved to approve the recommendations reflected above, as amended. This matter is now forwarded to the Council for its consideration.

Respectfully Submitted,

ENERGY AND ENVIRONMENT COMMITTEE



<u>MEMBER</u>	<u>VOTE</u>
YAROSLAVSKY:	YES
MCOSKER:	YES
RAMAN:	YES
BLUMENFIELD:	ABSENT
HERNANDEZ:	ABSENT

Attachment E

The green hydrogen-fueled capacity requirements for each in-basin generating station are provided in the **Table 2-8** below. Effectively, these are the carbon-free capacity requirements for each facility to ensure system reliability and resilience. With the exception of the planned phase-in of green hydrogen fuel at Intermountain Power Project, new hydrogen-fueled combustion turbines were not allowed prior to 2030. The findings from this scenario are particularly relevant because this achieves 100% carbon-free energy by 2035. This means that, by 2035, all natural gas-fueled generation would be either replaced or modified to run completely on a renewable fuel.

Table 2-8. *Expected in-basin hydrogen-fueled capacity (MW).*

Year	2030	2035
Harbor	0	257
Haynes	0	762
Scattergood	346	688
Valley	0	398
Total	346	2105

Attachment F

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



FILED

09/30/22

04:59 PM

A2202007

Application of SOUTHERN CALIFORNIA
GAS COMPANY (U 904 G) for Authority to
Establish a Memorandum Account for the
Angeles Link Project

Application 22-02-007
(Filed February 17, 2022)

**SOUTHERN CALIFORNIA GAS COMPANY (U904G)
RESPONSES TO SEPTEMBER 22, 2022 ADMINISTRATIVE LAW JUDGE EMAIL
RULING DIRECTING APPLICANT TO ADDRESS QUESTIONS**

MELISSA HOVSEPIAN
Attorney for
SOUTHERN CALIFORNIA GAS COMPANY
555 West Fifth Street, GT-14E7
Los Angeles, CA 90013
Telephone: (213) 244-3978
Facsimile: (213) 629-9620
E-mail: mhovsepian@socalgas.com

JENNIFER K. ROY
Attorney for
SOUTHERN CALIFORNIA GAS COMPANY
LATHAM & WATKINS LLP
12670 High Bluff Drive
San Diego, CA 92130
Telephone: (619) 523-5400
Facsimile: (619) 523-5450
E-mail: jennifer.roy@lw.com

CHARLES C. READ
Attorney for
SOUTHERN CALIFORNIA GAS COMPANY
CHARLES C. READ LAW, P.C.
199 S. Los Robles Ave., Suite 535
Pasadena, CA 91101
Telephone: (626) 578-5700
E-mail: charles.read@charlesreadlaw.com

September 30, 2022

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of SOUTHERN CALIFORNIA
GAS COMPANY (U 904 G) for Authority to
Establish a Memorandum Account for the
Angeles Link Project

Application 22-02-007
(Filed February 17, 2022)

**SOUTHERN CALIFORNIA GAS COMPANY’S
RESPONSES TO SEPTEMBER 22, 2022 ADMINISTRATIVE LAW JUDGE EMAIL
RULING DIRECTING APPLICANT TO ADDRESS QUESTIONS**

Applicant Southern California Gas Company (“SoCalGas” or “Company”) hereby submits its responses to the questions posed in Administrative Law Judge Elaine Lau’s September 22, 2022 Email Ruling Directing SoCalGas to Address Questions (the “Email Ruling”) related to SoCalGas’s Application for Authority to Establish a Memorandum Account (“Memo Account”) for the Angeles Link Project (“Application”). In addition, per Judge Lau’s request in the Email Ruling, the slides that SoCalGas presented during a July 20, 2022 informational webinar regarding the Angeles Link Project (“Angeles Link” or the “Project”) are attached hereto as Attachment A.

The questions set forth in the Email Ruling concern potential offtakers of green hydrogen supplied by the Project, demand for green hydrogen in the Los Angeles Basin, and Project planning and design. It is critical to note that the Project is currently in the earliest conceptual stages, and as such, many details regarding these and other issues will be developed during Phase 1 activities.¹ SoCalGas has committed to share the planning and technical information developed during Phase 1 with the California Public Utilities Commission (the “Commission”),

¹ See, e.g., Application, pp. 23-25; SoCalGas Opening Brief, Att. A, pp. A-1 to A-2.

the Planning Advisory Group, and relevant stakeholders.² Accordingly, the responses below are based on SoCalGas's existing customer data and initial research and assumptions regarding hydrogen fuel-switching capabilities, which is subject to further refinement and confirmation during Phase 1.

Question 1: In its Opening Brief, SoCalGas describes that existing natural gas ratepayers that are in hard-to-electrify sector[s], such as industrial and process heating, heavy duty transportation, and dispatchable power can potentially switch to clean hydrogen gas as a cleaner energy alternative and to reduce the natural gas demand served by Aliso Canyon. Please confirm whether these ratepayers that SoCalGas described above are its non-Core ratepayers. If not, please clarify who are the existing ratepayers that can potentially use clean hydrogen as a substitute for natural gas.

Response: Supplying green hydrogen as a clean fuel could directly benefit both existing and potential future ratepayers. Existing ratepayers that are in hard-to-electrify sectors identified thus far would fall under Electric Generation (end-use is 100% noncore), Commercial (end-use is 21% noncore and 79% core), Industrial (end-use is 87% noncore and 13% core), and natural gas vehicle ("NGV") (end-use is 100% core) categories, as well as the non-residential portion of SoCalGas's Wholesale category (for example, local municipalities and other gas companies served by SoCalGas).³

Heavy-duty transportation, not currently served by a gas utility (e.g., those not covered by the NGV category above), is anticipated to comprise a large segment of the future green

² SoCalGas Opening Brief, pp. 54-56; SoCalGas Reply Brief, pp. 48-50.

³ See California Gas and Electric Utilities, *2022 California Gas Report*, available at https://www.socalgas.com/sites/default/files/Joint_Utility_Biennial_Comprehensive_California_Gas_Report_2022.pdf. The terms electric generation, commercial, industrial, and wholesale have the same meaning as ascribed in the 2022 California Gas Report.

hydrogen market and could likely be core service. Additionally, an indirect substitution of natural gas by green hydrogen could occur due to the reduction of production of fuels for which natural gas acts as a feedstock, such as diesel. Thus, a wide variety of customers and non-customers could benefit from Angeles Link given the clean air benefits (criteria pollutants) and greenhouse gas (“GHG”) reductions the green hydrogen transportation system is expected to provide.

Question 2: If the Angeles Link project constructed a clean hydrogen gas system for service in the Los Angeles Basin area, approximately what percentage of SoCalGas’s existing non-Core ratepayers can potentially take service of the clean hydrogen gas as a substitute for natural gas? If SoCalGas cannot provide a concise estimate, can SoCalGas estimate whether these ratepayers who may potentially use clean hydrogen as a substitute for natural gas constitute a majority (more than 50%), minority (less than 50%), or half (at around 50%) the share of current non-Core ratepayers? If so, please provide the approximate share.

Response: Based upon information currently available, we currently estimate that approximately 50% or more of SoCalGas’s current retail noncore customers could potentially take service of green hydrogen gas as a substitute for natural gas.⁴ There is also some number of larger core industrial process customers, core NGV, end-users currently served by Wholesale customers of SoCalGas, and non-utility served heavy-duty transportation entities, for whom

⁴ The estimates in response to Questions 2 and 3 are based on an assumption that 25% of current noncore Commercial customers, 50% of current noncore Industrial customers, and 75% of existing Electric Generation customers are eligible to convert to hydrogen fuel, based on SoCalGas’s customer data and current understanding of hydrogen conversion capabilities and existing technology availability. This estimate does not take into account all sectors that could be capable of conversion (including those in the core and Wholesale categories), and the ultimate percentage of customers that are eligible to convert to hydrogen fuel could be higher than estimated.

green hydrogen may present a clean fuel alternative. The actual number of customers that may ultimately take service from Angeles Link will be influenced by many factors, including routing, technical advancements, national, state, and local policy considerations, time, and cost. Further analysis of green hydrogen demand and initial and subsequent end users will be conducted as part of Phase 1 Pre-Engineering and Design activities.⁵

Question 3: Hypothetically, if all eligible non-Core ratepayers switch their service from natural gas to clean hydrogen gas, approximately what percent of its non-Core sales would switch over from natural gas to clean hydrogen gas? If SoCalGas cannot provide a concise estimate, can SoCalGas estimate whether these constitute a majority (more than 50%), minority (less than 50%), or half (at around 50%) the share of current non-Core sales? If so, please provide the approximate share.

Response: Based upon information currently available, we currently estimate that more than 50% of SoCalGas's current retail noncore sales (i.e., deliveries) could potentially be substituted by the service of green hydrogen gas. There is also some number of larger core industrial process customers, core NGV, end-users currently served by Wholesale customers of SoCalGas, and non-utility served heavy-duty transportation entities, for whom green hydrogen may present a clean fuel alternative. The actual current noncore sales that may ultimately take service from Angeles Link will be influenced by many factors, including routing, technical advancements, national, state, and local policy considerations, time, and cost. Further analysis of green hydrogen demand and initial and subsequent end users is to be conducted as part of Phase 1 Pre-Engineering and Design activities.⁶

⁵ Application, p. 23.

⁶ *Ibid.*

Question 4: In its Reply Brief, SoCalGas states it is planning to assess “phased systems and shorter pipelines closer to and within the Los Angeles Basin.” Can SoCalGas describe and provide details on the “phased systems and shorter pipelines closer to and within the Los Angeles Basin” mentioned in its Reply Brief?

Response: To advance a reliable and liquid market for supply that in turn can develop a deeply decarbonized clean fuels network for the State, it is important that potential hydrogen transport system configurations take into account how to best optimize permitting, construction, and cost reductions in scoping production and offtake potential for the long-term planning horizon in 2030 and beyond.

SoCalGas intends to further assess phased development opportunities for the Project during Phase 1 activities, in consultation with relevant stakeholders and the Planning Advisory Group, and will report to the Commission on such analyses, including cost of hydrogen considerations.⁷ As a potential example of Project phasing, SoCalGas may initially construct the Project pipeline system as an initial phase, and later add compression to the system in subsequent phases to allow for additional green hydrogen transportation capacity. Similarly, SoCalGas may, in subsequent Project phases, construct additional laterals to the Project pipeline backbone system, connecting the system to additional renewable energy resources capable of producing green hydrogen for delivery to the Los Angeles Basin. This approach, to scope and plan for the deeply decarbonized end-state in mind for California, is consistent with the Department of Energy’s recently released National Clean Hydrogen Strategy and Roadmap which emphasizes

⁷ Application, pp. 23-25, 29-30; SoCalGas Opening Brief, p. 55; *id.*, Att. A, pp. A-1 to A-2; SoCalGas Reply Brief, p. 47.

the importance of “matching the scaleup of clean hydrogen supplies with a concomitant and growing regional demand.”⁸

Respectfully submitted,

By: /s/ Melissa Hovsepian

Melissa Hovsepian

Assistant General Counsel - Regulatory

SOUTHERN CALIFORNIA GAS COMPANY

555 West Fifth Street, GT-14E7

Los Angeles, CA 90013

Telephone: (213) 244-3978

Facsimile: (213) 629-9620

E-mail: mhovsepian@socalgas.com

September 30, 2022

⁸ U.S. Department of Energy, National Clean Hydrogen Strategy and Roadmap (Sep. 2022), p. 64, available at: <https://www.hydrogen.energy.gov/pdfs/clean-hydrogen-strategy-roadmap.pdf>.

ATTACHMENT A

SLIDES PRESENTED DURING JULY 20, 2022 SOCALGAS ANGELES LINK

WEBINAR

July 2022



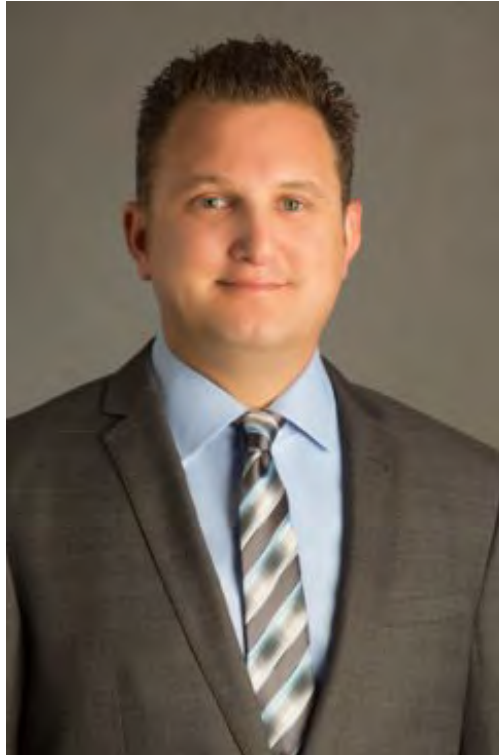
Shaping the Future:

Informational webinar on Angeles Link

Today's Speakers



Yuri Freedman
Senior Director
Clean Energy Innovations



Devin Zornizer
Vice President
Construction



Armando Infanzon
Director
Clean Energy Innovations

How to Use Teams Live

- » Attendees are invited to view the webinar via the web browser app or the mobile app
- » Q&A feature will be open, questions may be submitted with your name displayed or anonymously
- » Presentation will be available on our website following webinar



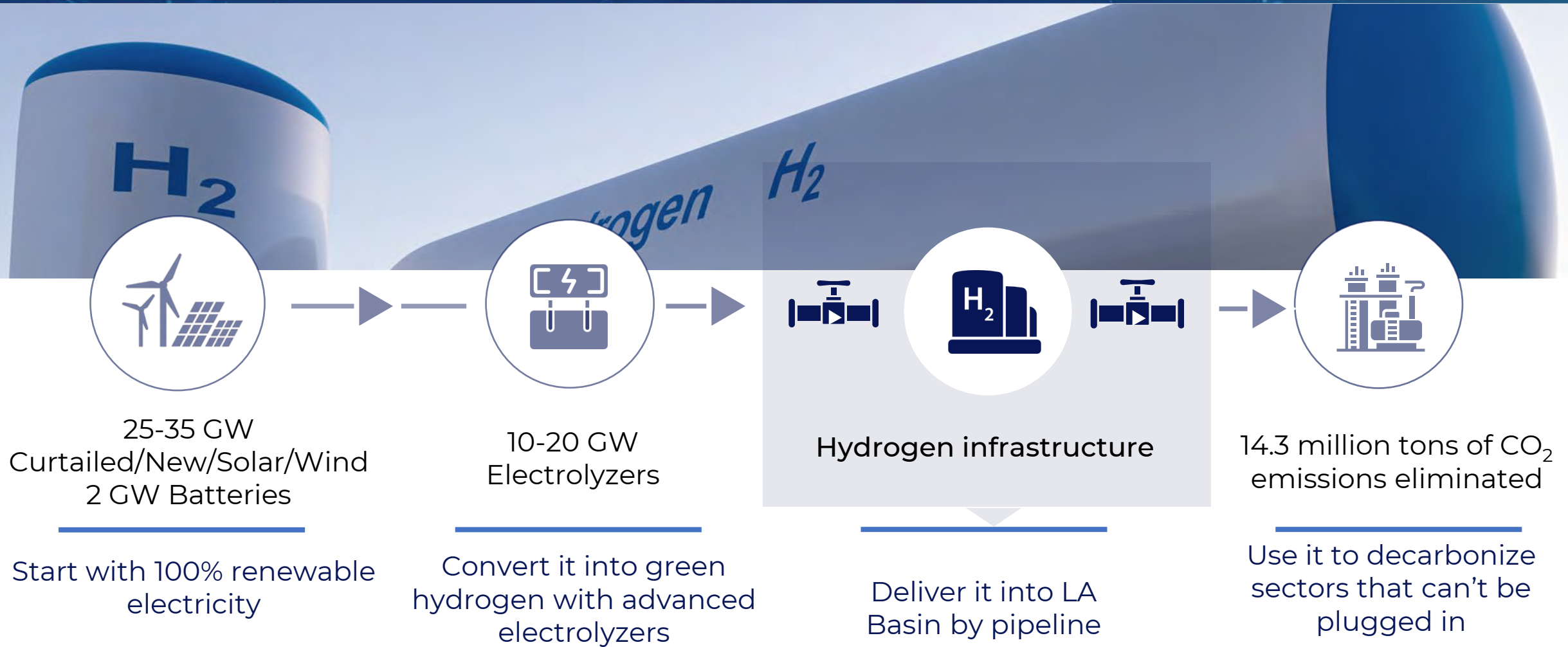
Agenda



- » Angeles Link Overview
- » Description of the Pre-Feasibility Study
- » Next Steps
- » Questions & Answer

Angeles Link Overview

How Could It Work?



SHAPING THE FUTURE:

Basic Principles Angeles Link Supports



Advancing wider climate, clean air goals core to project rationale



Focused on hard-to-electrify sectors (not homes or passenger cars)



Stakeholders' views solicited and interests considered each and every step of the way



Help to facilitate retirement of Aliso Canyon

SHAPING THE FUTURE:

PRE-FEASIBILITY STUDY AND PROPOSED PROJECT PHASES



Technical Analyses &
Reports/Pre-Feasibility
Study

Angeles Link project planning is divided into three phases:



Phase 1
Pre-Engineering,
Design, Environmental
Review



Phase 2
Identify Preferred
Option, Refine Design
& Environmental
Review



Phase 3
Develop Certification of
Public Convenience and
Necessity Application,
CEQA Analysis

Continuous Stakeholder Engagement

Technical Analyses and Reports

- » Multiple analyses, reports and several appendices being used to inform Angeles Link development are available on the Angeles Link website
- » Collectively, the reports present evidence that a green hydrogen infrastructure project is conceptually feasible
- » The information we're sharing includes the technical pre-feasibility study of a green hydrogen infrastructure project like Angeles Link and identifies potential issues that need further study and review
- » We'll be describing the overarching pre-feasibility study



Pre-Feasibility Study

- » The key objective of the pre-feasibility study was two-fold:
 - Assess high-level constructability of green hydrogen project under various scenarios
 - Identify critical factors determining project feasibility for deeper analysis
- » Results of the study indicate that a project with parameters envisioned in the Angeles Link development process can be constructed
- » Critical factors determining project feasibility such as:
 - Future demand for green hydrogen
 - Aspects of green hydrogen production
 - Siting and permitting of pipeline and facilities
 - Potential storage options
- » Those key factors will be subject to in-depth analysis in Phase 1 of the Angeles Link

Important Considerations

» Safety is Foundational

- Compliance with state and federal requirements
- Adherence to industry design and construction principles associated with these types of facilities

» Technical

- Pipeline Siting & Rights-of-Way
- Permitting

» Resources

- Water

» Environmental

- GHGs
- Air Quality
- Leakage

» Stakeholder Engagement

- Environmental Justice
- Disadvantaged Communities

Conceptual Green Hydrogen Demand Scenarios

» Conceptual demand scenarios were developed for key end-use sectors:

- Power generation
- Ports
- Heavy duty transportation
- LA refineries
- Industrial load

Conceptual Green Hydrogen Demand Scenarios

Power Generation

- » Assumptions for demand for green hydrogen in LA metropolitan area from power generation assets:
 - LADWP power plants: Scattergood, Haynes, Harbor, Valley
 - Other power plants in LA basin
- » The analysis accounted for daily variation in delivery rates as well as seasonal fluctuations in power demand

Conceptual Green Hydrogen Demand Scenarios

Transportation

- 
- A close-up photograph of a Toyota FCHV (Fuel Cell Hybrid Vehicle) engine. The engine cover is silver with a blue checkered pattern and the Toyota logo. A yellow and blue sticker on the cover reads "FCHV 100V". The engine is surrounded by various hoses and components.
- » Green hydrogen replaces petroleum-based fuels in transportation
 - » Heavy duty transportation is the leading demand driver
 - » Additional potential ground transportation demand:
 - Light and medium duty vehicles
 - Operating equipment (forklift, tractor, other)
 - School buses
 - Rail

Conceptual Green Hydrogen Demand Scenarios

Industrial

» Opportunities for green hydrogen – it can replace:

- Gray hydrogen currently used in industrial processes
- Natural gas consumption in the industrial sector as an energy source

» Industrial sectors with potential demand for green hydrogen:

- Refineries
- Cement plants
- Steel
- Chemical plants
- Other

Conceptual Green Hydrogen Production Scenarios

- » Pre-feasibility study evaluated availability of land and water resources needed for siting of renewable power production facilities and operation of electrolyzers
- » All scenarios assume co-located utility-scale solar PV only
- » Scenarios assume battery systems are deployed alongside solar to optimize renewable energy use
- » While the project focuses on developing a green hydrogen transport system, further analysis of production potential can help inform routing analysis

Conceptual Green Hydrogen Infrastructure Systems

- » Transmission & Distribution pipelines connect green hydrogen production centers to demand centers and storage
- » Compressors and pipeline system to accommodate the average flow rate during peak production hours
- » Pipeline systems sized for higher flow rates and volume needed at certain times of day or during specific seasons (hot weather events)

Conceptual Green Hydrogen Infrastructure Alternatives 1-5

Alternative 1



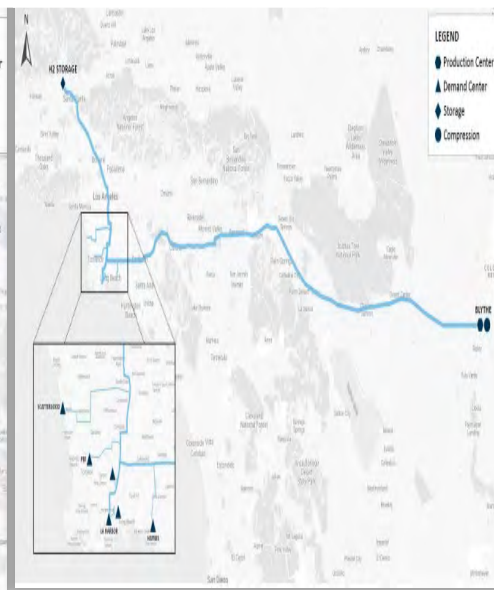
Alternative 2



Alternative 3



Alternative 4



Alternative 5



- » Pre-feasibility study reviewed a broad range of potential routing scenario options
- » These scenarios, in consultation with stakeholders, may inform development of potential route(s) for Angeles Link

Conceptual Green Hydrogen Infrastructure Alternatives 6-10

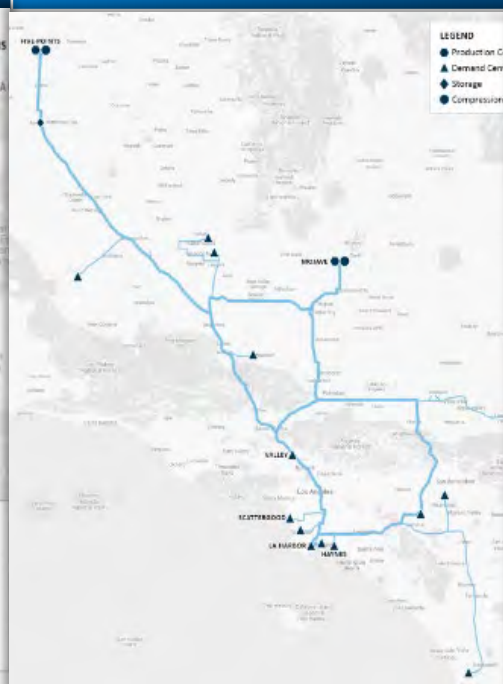
Alternative 6



Alternative 7



Alternative 8



Alternative 9



Alternative 10



- » Pre-feasibility study reviewed a broad range of potential routing scenario options
- » These scenarios, in consultation with stakeholders, may inform development of potential route(s) for Angeles Link

Conceptual Green Hydrogen Systems - Storage

- » Assumes green hydrogen is compressed at the rate produced
- » Assumes some green hydrogen immediately moved to satisfy demand, while some stored during off-peak renewable hours, using
 - Excess Pipeline Capacity
 - Underground Storage (salt caverns, abandoned oil/gas reservoirs)
 - Above Ground Storage (pressurized gas, liquid hydrogen)
- » Hydrogen storage is used to:
 - Manage variation in daily green hydrogen production rate
 - Account for seasonal variation in production rates and demand rates
 - Provide backup supply during system disruption (100% backup rate if possible) or lower production rates
- » While the project focuses on developing a green hydrogen transport system, further analysis of storage potential can help inform routing analysis

Next Steps – Angeles Link Phase 1 Technical Activities



20

Please type any questions into the Q&A.

SHAPING THE FUTURE:

How to Stay Engaged



Visit socalgas.com/angeleslink for more information or scan this QR code



Sign up for our email newsletter at socalgas.com/angeleslink



Attachment G



STATE OF CALIFORNIA

GAVIN NEWSOM, Governor

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

FILED

03/20/26

04:00 PM

A2412011

March 20, 2026

Agenda ID #24102
Ratesetting

TO PARTIES OF RECORD IN APPLICATION 24-12-011:

This is the proposed decision of Administrative Law Judge Joanna Perez-Green. Until and unless the Commission hears the item and votes to approve it, the proposed decision has no legal effect. This item may be heard, at the earliest, at the Commission's April 30, 2026 Business Meeting. To confirm when the item will be heard, please see the Business Meeting agenda, which is posted on the Commission's website 10 days before each Business Meeting.

Parties to the proceeding may file comments on the proposed decision as provided in Rule 14.3 of the Commission's Rules of Practice and Procedure (Rules).

The Commission may hold a Ratesetting Deliberative Meeting to consider this item in closed session in advance of the Business Meeting at which the item will be heard. In such event, notice of the Ratesetting Deliberative Meeting will appear in the Daily Calendar, which is posted on the Commission's website. If a Ratesetting Deliberative Meeting is scheduled, *ex parte* communications are prohibited pursuant to Rule 8.2(c)(4).

/s/ MICHELLE COOKE
Michelle Cooke
Chief Administrative Law Judge

MLC:nd3
Attachment

Decision PROPOSED DECISION OF ALJ PEREZ-GREEN (Mailed 3/20/2026)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In The Matter of the Application of
Southern California Gas Company
(U904G) for Authorization to
Implement Revenue Requirement for
Costs to Enable Commencement of
Phase 2 Activities for Angeles Link.

Application 24-12-011

**DECISION DENYING SOUTHERN CALIFORNIA GAS COMPANY'S
REQUEST FOR COST RECOVERY FROM RATEPAYERS
FOR PHASE 2 ACTIVITIES FOR ANGELES LINK PROJECT**

TABLE OF CONTENTS

Title	Page
DECISION DENYING SOUTHERN CALIFORNIA GAS COMPANY'S REQUEST FOR COST RECOVERY FROM RATEPAYERS FOR PHASE 2 ACTIVITIES FOR ANGELES LINK PROJECT	1
Summary	2
1. Background	2
1.1. Submission Date	5
2. Issues Before the Commission.....	5
3. Order of Review of Applications	6
4. Reasonableness of Cost Recovery from Ratepayers.....	7
5. Jurisdiction	14
5.1. Project Treatment as a Pipeline Under Pub. Util. Code Section 227 and Pipeline Corporation Under Pub. Util. Code Section 228	14
5.2. Project Treatment as a Gas Plant Under Pub. Util. Code Section 221 and Gas Plant Corporation Under Pub. Util. Code Section 222	16
6. Summary of Public Comment	18
7. Procedural Matters.....	19
8. Comments on Proposed Decision.....	19
9. Assignment of Proceeding	19
Findings of Fact.....	19
Conclusions of Law	20
ORDER	20

**DECISION DENYING SOUTHERN CALIFORNIA GAS COMPANY'S
REQUEST FOR COST RECOVERY FROM RATEPAYERS
FOR PHASE 2 ACTIVITIES FOR ANGELES LINK PROJECT**

Summary

This decision denies the application of Southern California Gas Company requesting \$266 million of cost recovery from natural gas ratepayers for Phase 2 Activities related to the Angeles Link Project.

This proceeding is closed.

1. Background

On February 17, 2022, Southern California Gas Company (SoCalGas) filed Application (A.) 22-02-007 (Phase 1 Application) requesting the authority to establish a memorandum account to record the costs of planning a potential project, the Angeles Link Project (Project). SoCalGas proposes to build dedicated hydrogen pipelines, including transmission pipelines, to deliver renewable hydrogen gas¹ into the Los Angeles Basin to support hydrogen end users. SoCalGas stated that this Project could advance the State's clean energy policy objectives of decarbonization and clean air goals by bringing renewable hydrogen to the Los Angeles Basin as an energy source for "hard-to-electrify" industries, electric generation, and heavy-duty transportation sector and as a potential substitute for natural gas supplied by Aliso Canyon. SoCalGas outlines the following phases of the Project, which did not include construction: Phase 1 — feasibility study, Phase 2 — front end engineering and design (FEED) study, and Phase 3 — Certificate of Public Convenience and Necessity (CPCN). The Angeles Link Project Phase 1 Demand Study indicates that the Project could

¹ Renewable hydrogen gas for the Project is hydrogen gas, not blended with natural gas.

supply hydrogen for power generation, industrial uses and transportation applications,² but does not identify specific ratepayers.

On December 20, 2022, the Commission authorized SoCalGas to establish the Angeles Link Memorandum Account (Memo Account) to record Phase 1 Activities costs in Decision (D.) 22-12-055. D.22-12-055 provided multiple minimum compliance requirements if SoCalGas were to seek recovery for Phase 1 Activities and continue to Phase 2. D.22-12-055 authorized cost recording only “if the Project is restricted to only transport hydrogen that does not use any fossil fuel in its production process.”³ In D.22-12-055, the Commission determined that it was premature to address jurisdiction. D.22-12-055 required SoCalGas to join other entities that were members of the Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) in support of the State of California’s application for the federal funding provided through the Infrastructure Investment and Jobs Act (IIJA) prior to receiving authority to record any Phase 2 costs.

On December 20, 2024, SoCalGas filed A.24-12-011 (Phase 2 Application) requesting authorization to implement revenue requirement for costs to enable the commencement of Phase 2 Activities of the Project. SoCalGas proposes Phase 2 Activities include the completion of a 30% FEED study and further

² “The Demand Study has identified both existing and future SoCalGas ratepayers who would be potential end-users of Angeles Link. Existing ratepayers include power generation facilities, industrial customers such as metal fabrication shops, food and beverage manufacturing/processing facilities, stone/glass/cement facilities, pulp and paper, chemicals, mobility customers such as bus fleet operators and other heavy-duty vehicle operators that take service from SoCalGas [clean natural gas] CNG stations, and refineries, among others. Future potential ratepayers, who are not currently served by SoCalGas and could benefit from Angeles Link, include non-utility served heavy-duty vehicle operators, commercial harbor craft operators, ocean-going vessel operators, and locomotive operators.” Demand Study at page 18.

³ D.22-12-055 Finding of Fact (FOF) 36 at 66.

stakeholder engagement from Phase 1 Activities. SoCalGas requests authority to establish a two-way balancing account and for the Commission to implement a revenue requirement based on forecasted cost requirements of \$266 million for Phase 2 Activities. In the Phase 2 Application, SoCalGas noted that it declined IIJA funding for ARCHES. In the Phase 1 Activities High-Level Economics Analysis and Cost Effectiveness Study (Cost Effectiveness Study), SoCalGas estimates that the Project would be cost effective for certain end uses including “long-haul transportation, retrofitted gas-fueled generation facilities, and certain industrial end uses” and carbon capture and sequestration.⁴

By January 23, 2025, responses and protests were filed by Air Products and Chemicals, Inc. (Air Products); California Environmental Justice Alliance and Sierra Club (jointly CEJA/Sierra Club); California Hydrogen Business Council (CHBC); City of Long Beach (Port of Long Beach); Coalition of California Utility Employees and California State Pipe Trades Council (jointly CUE/CSPTC); Environmental Defense Fund (EDF); Green Hydrogen Coalition (GHC); Indicated Shippers; the Public Advocates Office at the California Public Utilities Commission (Cal Advocates); Southern California Generation Coalition (SCGC); and Utility Consumers’ Action Network (UCAN). On January 29, 2025, Indicated Shippers filed an amended protest to the Phase 2 Application.

On February 13, 2025, motions for party status were granted for Utility Workers of America, Local 483 (UWUA Local 483), the Port of Los Angeles (Port of LA), the California Manufacturers & Technology Association (CMTA), and The Utility Reform Network (TURN).⁵

⁴ Phase 2 Application at 41.

⁵ Motions for party status were filed by UWUA Local 483 on January 16, 2025, Port of Los Angeles on January 21, 2025, CMTA on January 29, 2025, and TURN on February 12, 2024.

On February 3, 2025, SoCalGas filed a reply to the responses and protests to the Phase 2 Application.

A prehearing conference was held on March 14, 2025.

On June 12, 2025, SoCalGas filed A.25-06-011 (Phase 1 Compliance Application) requesting authorization to recover costs recorded in its Angeles Link Memorandum Account for Phase 1 Activities.

On July 31, 2025, the Commission issued a scoping memo and ruling (Scoping Memo) bifurcating the Phase 2 proceeding to first consider threshold questions of law and policy in Phase 2A before considering Phase 2B.

On August 25, 2025, an ALJ ruling granting party status to First Public Hydrogen Authority (First Public H2) and Foothill Transit.

On September 3, 2025, opening briefs were filed by Air Products, Cal Advocates, CEJA/Sierra Club, CHBC, CSPTC, EDF, First Public H2, GHC, Indicated Shippers, SCGC, SoCalGas, TURN, UCAN, and UWUA Local 483.

On October 17, 2025, reply briefs were filed by Air Products, Cal Advocates, CEJA/Sierra Club, CHBC, CSPTC, EDF, GHC, Indicated Shippers, SCGC, SoCalGas, TURN, and UCAN.

1.1. Submission Date

This matter was submitted on October 17, 2025, upon filing of reply briefs.

2. Issues Before the Commission

The Scoping Memo bifurcated the Phase 2 proceeding to first consider threshold issues of law and policy in Phase 2A before considering whether Phase 2B is needed. Based on this decision's resolution of Phase 2A threshold issues, the issues of Phase 2B need not be addressed, and it is reasonable to close this proceeding.

The Phase 2A threshold issues, which are limited to matters of law and policy, to be determined or otherwise considered in this decision are:

1. Should the Commission consider the SoCalGas Phase 2 Application before reviewing the SoCalGas Phase 1 Compliance Application?
2. Should the Project be treated as a pipeline as defined by Public Utilities Code (Pub. Util. Code) Section 227? If so, should SoCalGas be treated as a pipeline corporation with consideration to Pub. Util. Code Section 228?
3. Should the Project be treated as a gas plant as defined by Pub. Util. Code Section 221? If so, should SoCalGas be treated as a gas plant corporation with consideration to Pub. Util. Code Section 222?
4. Is it reasonable for ratepayers, or a subset of ratepayers, to be responsible for the costs of Phase 2 Activities, as a matter of law and policy?
5. Does the Commission have jurisdiction over the Project?

3. Order of Review of Applications

Air Products, Cal Advocates, CEJA/Sierra Club, EDF, Indicated Shippers, TURN, and UCAN support the application review of Phase 2A before Phase 1 Compliance. The rationale is based on the interrelated and relevant issues in both proceedings. Additionally, parties argue that Phase 1 Compliance Application must happen before Phase 2B to ensure compliance with D.22-12-055 for Phase 1 Activities that will influence Phase 2 Activities.

Parties that prefer a review of the Phase 1 Compliance Application first included CHBC, GHC, SoCalGas, and UWUA Local 483. These parties support the approach that the applications could run concurrently without delay. SoCalGas indicated that the phases are independent. No party argues that it is necessary for the Commission to first review the Phase 1 Compliance Application before addressing Phase 2A threshold issues in the Phase 2 Application.

We agree with Air Products, Cal Advocates, CEJA/Sierra Club, EDF, Indicated Shippers, TURN, and UCAN that the Commission can address Phase 2A before the Phase 1 Compliance Application. We note that D.22-12-055 requires that the Phase 1 studies get a proper review⁶ as they would impact the need for and scope of Phase 2 Activities. We find that it is reasonable to review the Phase 2A threshold issues in the Phase 2 Application before the Commission resolves the Phase 1 Compliance Application.

4. Reasonableness of Cost Recovery from Ratepayers

SoCalGas requests authorization to implement a revenue requirement from all of its current natural gas ratepayers in a two-way balancing account for Phase 2 Activities. SoCalGas proposes that the timing for authorization of the request is appropriate based on their determination that Phase 1 Activities have been completed. SoCalGas states that investor-owned utilities may recover reasonable expenditures to serve the public.⁷ In its application, the utility argued that it would be reasonable to immediately recover costs from all its ratepayers for potential and indirect societal benefits of the Project. SoCalGas intends “to transport hydrogen gas to consumers who wish to utilize clean renewable hydrogen in their operations as a substitute for natural gas or other fuels – including power generation, industrial uses, heavy-duty transportation, transit agencies” among other possibilities.⁸

The parties supporting cost recovery from all or a portion of ratepayers for the cost of Phase 2 Activities include GHC, CHBC, CSPTC, SCGC, and UWUA

⁶ D.22-12-055 Conclusion of Law 39 at 72.

⁷ SoCalGas Opening Brief at 20.

⁸ SoCalGas Opening Brief at 21, see also footnote 2 (describing potential future end users of hydrogen delivered by Angeles Link).

Local 483. Air Products, Cal Advocates, CEJA/Sierra Club, EDF, First Public H2, Indicated Shippers, TURN, and UCAN oppose cost recovery from ratepayers for this application.

While parties generally agree about the possibility of indirect societal benefits of hydrogen such as reduced greenhouse gas emissions, improved air quality and consequent health benefits, and workforce transition, party positions differed on the direct benefits to ratepayers that could be provided by the Project and/or Phase 2 Activities. SoCalGas, CHBC, CSPTC, GHC, SCGC, and UWUA Local 483 attribute many potential indirect societal benefits to the Project.

GHC and UWUA Local 483 argue that the Phase 2 Activities would directly benefit Californians with workforce transition.⁹ In briefs, Air Products, Cal Advocates, CEJA/Sierra Club, First Public H2, TURN, and UCAN reject that the Project will directly benefit SoCalGas natural gas ratepayers.¹⁰ TURN states “core residential or commercial customers will obtain no direct benefits from the hydrogen pipeline.”¹¹ Cal Advocates notes that SoCalGas fails to identify specific customers who would directly benefit from the Project.¹² CEJA/Sierra Club concur that SoCalGas does not identify ratepayers that would justify cost recovery.¹³

Parties disagreed on whether to allow cost recovery for Phase 2 Activities. SoCalGas supports cost recovery as a matter of standard utility practice of taking

⁹ GHC Reply Brief at 5-6 and UWUA Local 483 Opening Brief at 4.

¹⁰ Opening briefs of Air Products at 20-21, Cal Advocates at 9, CEJA/Sierra Club at 2, First Public H2 at 13, TURN at 23, and UCAN at 10.

¹¹ TURN Opening Brief at 23.

¹² Cal Advocates Opening Brief at 9.

¹³ CEJA/Sierra Club Opening Brief at 9.

on “business, financial, and regulatory risks in their service of the public for the long term.”¹⁴ In briefs, SoCalGas and supporting parties argue that the societal benefits justify cost recovery. GHC and CSPTC state that indirect benefits are sufficient to authorize recovery.¹⁵ Air Products, Cal Advocates, CEJA/Sierra Club, TURN, and UCAN disagree that the potential indirect benefits are sufficient for cost recovery.¹⁶ Furthermore, Air Products, Cal Advocates, CEJA/Sierra Club, EDF, First Public H2, Indicated Shippers, TURN, and UCAN note that D.22-12-055 requires SoCalGas to identify direct benefits to the ratepayers from whom the project’s costs could be recovered.¹⁷ Many parties note that if a hydrogen pipeline were paid for by natural gas ratepayers, it would not provide direct benefits and would lead to cross subsidization.¹⁸

Air Products, Cal Advocates, CEJA/Sierra Club, EDF, First Public H2, Indicated Shippers, TURN, and UCAN argue that cost recovery from ratepayers is unreasonable based on principles of cost causation and direction provided in D.22-12-055.¹⁹ EDF doubts the potential Project benefits to ratepayers would

¹⁴ SoCalGas Opening Brief at 20.

¹⁵ Reply briefs of CSPTC at 20 and GHC at 5.

¹⁶ Air Products Opening Brief at 21, Cal Advocates Reply Brief at 7, CEJA/Sierra Club Opening Brief at 21, EDF Opening Brief at 10-11, TURN Opening Brief at 12-15, and UCAN at Reply Brief at 7.

¹⁷ D.22-12-055 OP 6(e).

¹⁸ Opening briefs of Air Products at 21, Cal Advocates at 9-10, CEJA/Sierra Club, and TURN at 6-7.

¹⁹ Opening briefs of Air Products at 18, Cal Advocates at 7-8, CEJA/Sierra Club at 12-17, EDF at 9, First Public H2 at 13-14, Indicated Shippers at 23, and TURN at 12; and UCAN Reply Brief at 7.

support cost allocation.²⁰ These parties contend that the Project will not provide direct benefits to SoCalGas' natural gas customers.

SoCalGas and CSPTC claim that the Commission has broad authority over and has approved project and programs that did not align strictly with cost causation principles based on broad societal benefits.²¹ In opening briefs, TURN argues that the scenarios in which the Commission has allocated costs broadly among different customer classes or different load serving entities — and arguably has departed from cost causation principles — have “addressed programs or costs whose underlying goal was to provide utility gas or electric service by constructing or financing new central (renewable or zero carbon) or distributed generation resources, financing projects associated with electric demand reductions, or connecting customers to the existing grid.” Furthermore, TURN identifies three general categories in which they fall into: (1) projects or programs required by the legislature, (2) the allocation of costs among competing electricity commodity service providers reflecting the system-wide reliability benefits provided by generation or demand response resources, and (3) for small/pilot projects that would not significantly impact rates.²² TURN argues the Phase 2 Application is not consistent with these precedents.

Cal Advocates, CEJA/Sierra Club, EDF, and TURN express concern over the Project's impacts on affordable rates.²³ EDF indicates that without certainty of the Project providing ratepayer benefit, approving funding of the Project would

²⁰ EDF Opening Brief at 10.

²¹ SoCalGas Phase 2 Application at 92 and CSPTC Reply Brief at 20.

²² TURN Opening Brief at 16-17.

²³ Opening briefs of Cal Advocates at 2-3, CEJA/Sierra Club at 13, EDF at 10, and TURN at 6.

not support affordability.²⁴ TURN recommends that the Commission uphold affordable rates in compliance with cost allocation principles in Pub. Util. Code Section 739.6.²⁵ EDF notes that broad statewide benefits of cost and climate-effective decarbonization pathways are based on SoCalGas' analysis provided and recommends that the analysis be done by the Commission before considering cost allocation across all of the utility's ratepayers.²⁶

Cal Advocates and CEJA/Sierra Club are concerned that the Project, which is in the planning stage, may not be constructed nor dedicated to public use.²⁷ TURN recommends that if the Commission were to consider cost allocation to ratepayers, it should direct the utility to record costs in a memorandum account for "future cost recovery when the project is used and useful."²⁸

SoCalGas argues that the proposed revenue requirement would improve affordable rates by avoiding interest payments among other things.²⁹ TURN disagrees that this will be a net benefit to ratepayers "as compared to a memorandum account for subsequent reasonableness review."³⁰

We determine that it is not reasonable for SoCalGas to recover the cost of Phase 2 Activities from its natural gas ratepayers.

First, we agree with Cal Advocates, CEJA/Sierra Club, and TURN that the Project remains in the planning stage, and may not be constructed nor dedicated

²⁴ EDF Opening Brief at 10.

²⁵ TURN Opening Brief at 13.

²⁶ EDF Opening Brief at 11.

²⁷ Opening briefs of Cal Advocates at 11 and CEJA/Sierra Club at 18.

²⁸ TURN Opening Brief at 3.

²⁹ Phase 2 Application at 91.

³⁰ TURN Opening Brief at 8.

to public use. We also observe that projected cost for Phase 2 Activities increased significantly from \$92 million to \$266 million between the filing of the Phase 1 Application and the Phase 2 Application. With large increases in the projected costs of the studies alone, we share the concerns of Cal Advocates, CEJA/Sierra Club, EDF and TURN about the Project's costs and impact on affordable rates. The initial projected costs were significant enough in the Phase 1 Application that the Commission directed the SoCalGas to apply for IIJA funding with the intention of offsetting the financial impact of the Project on ratepayers.³¹ While SoCalGas ultimately declined federal funding because the additional cost of complying with regulations accompanying those federal funds would not be in the ratepayers' interest,³² it also means that there are no federal funds to offset the proposed project.

Given these uncertainties, we find that it is not reasonable to approve cost recovery from ratepayers for the Phase 2 Activities before the Project is constructed, dedicated to public use, and demonstrated to be used and useful to ratepayers.

Second, we also agree with parties including Cal Advocates, CEJA/Sierra Club, and TURN that SoCalGas has not clearly identified ratepayers that would directly benefit from the Project to justify approval of cost recovery in the Phase 2 Application. It is undisputed that the Project would not serve hydrogen to the vast majority of SoCalGas ratepayers, and would not connect to SoCalGas's existing natural gas distribution system. We find that requiring ratepayers to bear costs for the Project would be inconsistent with the cost causation principles

³¹ D.22-12-055 FOF 11 at 63.

³² Phase 2 Application at 32.

articulated in the D.22-12-055 and other precedent recognizing that in general “ratepayers are required to bear only the reasonable costs of those projects which provide direct and ongoing benefits.”³³

For the Phase 1 Activities, in D.22-12-055, the Commission has already determined that “under the cost causation principle, rate recovery from all ratepayers would not be appropriate... only the set of ratepayers who can potentially take service of clean renewable hydrogen from the Project are likely to benefit from the Angeles Link Memo Account.”³⁴ The Commission required tracking in a memorandum account and for SoCalGas to file an application if the utility were to seek cost recovery so that the Commission could review Phase 1 Activities compliance and reasonableness of costs for ratepayers. The Commission indicated similar expectations for tracking costs in the same memorandum account for Phase 2 Activities.³⁵ Additionally, “The commission shall establish rates using cost allocation principles that fairly and reasonably assign to different customer classes the costs of providing service to those customer classes, consistent with the policies of affordability...”³⁶

We agree that the Commission has authority to approve projects and programs that do not strictly align with cost-causation principles and that we have done so under certain circumstances, in our discretion. We agree with TURN that deviating from cost-causation principles is not warranted for this Project and therefore decline to allocate costs broadly for the Project’s Phase 2 Activities.

³³ D.84-09-089 at 71-72.

³⁴ D.22-12-055 at 22.

³⁵ D.22-12-055 at 52.

³⁶ Pub. Util. Code Section 739.6.

We therefore deny cost recovery for Phase 2 Activities from ratepayers.

5. Jurisdiction

We find that it is premature to make a determination on jurisdiction for this application based on the sections below.

5.1. Project Treatment as a Pipeline Under Pub. Util. Code Section 227 and Pipeline Corporation Under Pub. Util. Code Section 228

Parties generally do not support the treatment of the Project as a pipeline as defined by Pub. Util. Code Section 227 nor the utility as a pipeline corporation under Pub. Util. Code Section 228 for varying reasons.

Most parties³⁷ agree that addressing whether the definition in Pub. Util. Code Section 227 of “fluid substances” that pass through pipelines applies to hydrogen gas would be contested. SoCalGas, CSPTC, First Public H2, Indicated Shippers, and SCGC state that the Angeles Link Project should not be treated as a pipeline because, as proposed, the Project would transport hydrogen gas, not liquified hydrogen which would not qualify as a fluid substance under Pub. Util. Code Section 227.³⁸ Air Products and Indicated Shippers argue that Commission jurisdiction over pipelines has been limited to crude oil and other fossil fuels.³⁹ UCAN argue that fluid substance may include hydrogen.⁴⁰ CEJA/Sierra Club

³⁷ Opening briefs of Air Products, CSPTC, EDF, First Public H2, Indicated Shippers, SCGC, SoCalGas, and UCAN.

³⁸ Opening briefs of SoCalGas at 10, CSPTC at 9, First Public H2 at 7, Indicated Shippers at 9, and SCGC at 2.

³⁹ Opening briefs of Air Products at 9 and Indicated Shippers at 9.

⁴⁰ UCAN Reply Brief at 5.

argue that the interpretation of fluid substances might include gaseous fluids,⁴¹ and that without dedicated utility the matter is premature.⁴²

Air Products, First Public H2, and Indicated Shippers argue that treating the Project as a pipeline would not align with the intent of the legislature and Commission.⁴³ Indicated Shippers and EDF suggests that the Commission could exert its authority over the pipelines which would be followed by legal appeals.⁴⁴ If the Commission were to consider its authority over hydrogen pipelines and pipeline corporations, EDF, First Public H2, GHC, Indicated Shippers, and UCAN recommend that it be done through a rulemaking, not this application. First Public H2 and GHC propose that the Commission narrowly determine jurisdiction over the Phase 2 Activities in this application rather than the entire Project.⁴⁵

Some parties argue that determining jurisdiction is premature until the pipeline is constructed, used and useful, and dedicated to public use.⁴⁶ Cal Advocates and CEJA/Sierra Club⁴⁷ reference the Richfield case in which the Supreme Court addressed the statutory definition of pipelines to apply only to utilities that have dedicated their property public use.⁴⁸ TURN and CEJA/Sierra

⁴¹ CEJA/Sierra Club Opening Brief at 7-8.

⁴² CEJA/Sierra Club Reply Brief at 6.

⁴³ Opening briefs of Air Products at 11, First Public H2 at 7, and Indicated Shippers at 10.

⁴⁴ EDF Reply Brief at 7 and Indicated Shippers Opening Brief at 16.

⁴⁵ First Public H2 Opening Brief at 4 and GHC Reply Brief at 7.

⁴⁶ Opening briefs of CEJA/Sierra Club at 9-10, 26 and TURN at 8.

⁴⁷ Cal Advocates Reply Brief at 13-14 and CEJA/Sierra Club Opening Brief at 9-10, 26-27.

⁴⁸ *Richfield Oil Corp. v. Public Utilities Com.*, 54 Cal. 2d 419, 431 (1960).

Club note that the Project is currently in the planning stages and therefore neither used and useful nor dedicated.⁴⁹

We agree that we need not reach the question of whether the Project is subject to the Commissions pipeline jurisdiction. Notably, SoCalGas does not seek to develop the Project as a “pipe line” as defined by Pub. Util. Code Section 227, in the capacity of a “pipeline corporation” as defined by Pub. Util. Code Section 228.⁵⁰ We agree with Cal Advocates, CEJA/Sierra Club, and TURN that the Project is in the planning stages and may not become operational, used and useful, and dedicated to public use.

We disagree that it is reasonable to assert authority narrowly over Phase 2 Activities. Parties are interested in approving this phase of the Project so that costs may be recovered from ratepayers, the reasonableness of which is denied in the previous section.

Because we are not approving cost recovery, it is unnecessary to determine whether the Project would fall within the Commission’s pipeline jurisdiction. We therefore find that it is premature to determine whether the project under Pub. Util. Code Section 227 and Section 228 at this time.

**5.2. Project Treatment as a Gas Plant
Under Pub. Util. Code Section 221 and
Gas Plant Corporation Under
Pub. Util. Code Section 222**

SoCalGas, CSPTC, SCGC, and UWUA Local 483 support the treatment of the Project as a gas plant and SoCalGas as a gas plant corporation. Air Products,

⁴⁹ CEJA/Sierra Club Opening Brief at 10 and TURN Reply Brief at 8.

⁵⁰ This is somewhat analogous to the situation in *Richfield*, wherein the Court declined to determine whether the reference to “fluid” in Pub. Util. Code Section 227 encompasses gas.

Cal Advocates, CEJA/Sierra Club, EDF, First Public H2, and Indicated Shippers generally oppose such treatment of the Project.

Party interpretation of the application of Pub. Util. Code Section 221 and Section 222 to hydrogen differ. CSPTC and SoCalGas support hydrogen being included broadly under Pub. Util. Code Section 221 as “gas, natural or manufactured”⁵¹ and “gas use for light, heat or power.”⁵² Air Products, First Public H2, Indicated Shippers disagree that hydrogen is included as a gas under Pub. Util. Code Section 221 and raise further doubt over the historical context.⁵³

SoCalGas proposes that the Project be treated as a gas plant as the utility intends to transport hydrogen gas⁵⁴ and that it may operate as a gas plant corporation. SoCalGas, CSPTC, SCGC, UWUA Local 483 state that the Project may function as a gas plant and the utility under Pub. Util. Code Section 221 and Section 222 dependent on Commission authority.⁵⁵ EDF believes the Commission may exert authority over the Project as a gas plant based on statute.⁵⁶

SoCalGas indicates that once a CPCN is filed and authorized by the Commission, the Project may be considered as a gas plant. As noted above, Air Products, First Public H2, and Indicated Shippers contest whether the hydrogen would qualify under the statutory definition of a gas plant under Pub. Util. Code Section 221. CEJA/Sierra Club argue that a CPCN serves as an intention for a future gas plant but is not enough for consideration as a would be a constructed

⁵¹ Opening briefs of CSPTC at 9 and SoCalGas at 11.

⁵² Opening briefs of CSPTC at 9 and SoCalGas at 13-14.

⁵³ Opening briefs of Air Products at 14-17, First Public H2 at 8, and Indicated Shippers at 12-13.

⁵⁴ SoCalGas Opening Brief at 10.

⁵⁵ Opening briefs of SoCalGas, CSPTC, SCGC, and UWUA Local 483.

⁵⁶ EDF Opening Brief at 8.

project.⁵⁷ Air Products, Cal Advocates, CEJA/Sierra Club, Indicated Shippers, and UCAN counter that the project must be beyond the planning phase and used and useful before it can be treated as a gas plant.⁵⁸ CEJA/Sierra Club offer that the Project could be treated as a gas plant if built.⁵⁹

In its Application, SoCalGas states that the Project will be dedicated to public use.⁶⁰ Cal Advocates and CEJA/Sierra Club state that intention to dedicate to public use does not comply with the dedication principle.⁶¹ CEJA/Sierra Club indicate a project may be considered compliant to the dedication principle when a project is operational and held out to public use.⁶²

We agree with parties that the project must be constructed, used and useful and dedicated to public use before being considered as a gas plant. Because we are not approving cost recovery, it is unnecessary to determine whether the Project would fall within the Commission's gas plant jurisdiction. We therefore find that it is premature to determine whether the project under Pub. Util. Code Section 221 and Section 222 at this time.

6. Summary of Public Comment

Rule 1.18 of the Commission's Rules of Practice and Procedure (Rules) allows any member of the public to submit written comment in any Commission proceeding using the "Public Comment" tab of the online Docket Card for that proceeding on the Commission's website. Rule 1.18(b) requires that relevant

⁵⁷ CEJA/Sierra Club Opening Brief at 19.

⁵⁸ Opening briefs of Air Products at 19-20, Cal Advocates at 11, CEJA/Sierra Club at 26, Indicated Shippers at 26; and UCAN Reply Brief at 6.

⁵⁹ CEJA/Sierra Club Opening Brief at 11.

⁶⁰ Phase 2 Application at 3.

⁶¹ Cal Advocates Opening Brief at 13 and CEJA/Sierra Club Reply Brief at 21.

⁶² CEJA/Sierra Club Opening Brief at 11.

written comment submitted in a proceeding be summarized in the final decision issued in that proceeding.

Approximately 15 public comments were submitted using the Public Comment tab of the online Docket Card for this proceeding on the Commission's website. The comments oppose this application for the following reasons: increased/unaffordable rates, cost causation principles, and safety concerns about hydrogen pipelines.

7. Procedural Matters

This decision affirms all rulings made by the Administrative Law Judge (ALJ) and assigned Commissioner in this proceeding. All motions not ruled on are deemed denied.

8. Comments on Proposed Decision

The proposed decision of ALJ Perez-Green in this matter was mailed to the parties in accordance with Pub. Util. Code Section 311 and comments were allowed under Rule 14.3. Comments were filed on _____, and reply comments were filed on _____ by _____.

9. Assignment of Proceeding

Commissioner John Reynolds is the assigned Commissioner and Joanna Perez-Green is the assigned ALJ in this proceeding.

Findings of Fact

1. SoCalGas did not accept IIJA funding for the development of the Project.
2. The projected cost of Phase 2 Activities has increased from \$92 million to \$266 million since SoCalGas initially proposed the Project.
3. SoCalGas did not sufficiently identify its natural gas ratepayers that might receive direct benefits as end users for the Project as required in D.22-12-055.
4. The Project is not constructed, used and useful, or dedicated to the public.

5. Because the renewable hydrogen Project is in the planning stage, there is uncertainty about the Project's costs, construction, how the Project will develop, and delivery of benefits to SoCalGas natural gas ratepayers.

Conclusions of Law

1. It is reasonable to deny SoCalGas' request to implement a revenue requirement for the cost of Phase 2 Activities.
2. It is reasonable to close this proceeding.

O R D E R

IT IS ORDERED that:

1. Southern California Gas Company's request to implement revenue requirement for costs of the Phase 2 Activities for the Angeles Link Project is denied.
2. Application 24-12-011 is closed.

This order is effective today.

Dated _____, at San Francisco, California.

Attachment H

Draft 2026 Report of the Statewide Advisory Committee on Cooling Water Intake Structures

March 20, 2026



Table of Contents

I.	Introduction.....	4
II.	SACCWIS Role and Process	4
III.	Status of Compliance and Once-Through Cooling Water Use	6
	Once-Through Cooling Water Use	11
IV.	Electricity Supply Strategic Reliability Reserve Program Power Plant Capacity	12
V.	Grid Resource Planning and Procurement Status.....	13
	Resource Planning and Responsibility	14
	Past Reliability Transmission Projects.....	16
	CPUC Procurement Orders and Associated Capacity Status.....	17
	CPUC Incremental Capacity Procurement Projections.....	27
	A Changing Grid and Regulatory Responses	29
	Senate Bill 846 Reliability Reporting.....	30
	LADWP BAA and OTC Replacement Milestones	30
	LADWP BAA and OTC Replacement Milestone Updates.....	36
VI.	Regulatory Considerations and Permitting	38
	Water Quality.....	38
	Air Quality	44
VII.	Conclusions.....	44
VIII.	APPENDIX A: AVERAGE ANNUAL FLOW RATE DATA FOR ONCE-THROUGH COOLING FACILITIES	51

Acronyms and Abbreviations

AC	After Construction
Air District	Air Pollution Control District
Alamitos	Alamitos Generating Station
BAA	Balancing Authority Area
CAISO	California Independent System Operator
CARB	California Air Resources Board
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CO	Construction
CPUC	California Public Utilities Commission
Central Coast Regional Water Board	Central Coast Regional Water Quality Control Board
Diablo Canyon	Diablo Canyon Nuclear Power Plant
DWR	California Department of Water Resources
ESSRRP	Electricity Supply Strategic Reliability Reserve Program
GIE	Gas-Insulated Equipment
Harbor	Harbor Generating Station
Haynes	Haynes Generating Station
Huntington Beach	Huntington Beach Generating Station
IRP	Integrated Resource Planning
LADWP	Los Angeles Department of Water and Power
LCR	Local Capacity Requirement
Los Angeles Regional Water Board	Los Angeles Regional Water Quality Control Board
LSE	Load Serving Entity
MGD	Million Gallons per Day
MVAR	Mega Volt, Ampere, Reactive

MW	Megawatt
NO _x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NQC	Net Qualifying Capacity
NTC	Notice to Comply
Ormond Beach	Ormond Beach Generating Station
OTC	Once-Through Cooling
PC	Pre-Construction
PTO	Participating Transmission Owner
Redondo Beach	Redondo Beach Generating Station
RFP	Request for Proposals
ROWD	Report of Waste Discharge
S1	Semester 1
S2	Semester 2
Santa Ana Regional Water Board	Santa Ana Regional Water Quality Control Board
SACCWIS	Statewide Advisory Committee on Cooling Water Intake Structures
South Coast AQMD	South Coast Air Quality Management District
SED	Substitute Environmental Document
Scattergood	Scattergood Generating Station
SCE	Southern California Edison
SDG&E	San Diego Gas & Electric
SONGS	San Onofre Nuclear Generating Station
State Water Board	State Water Resources Control Board
TSO	Time Schedule Order
VCAPCD	Ventura County Air Pollution Control District
2010 Final SED	2010 Final Substitute Environmental Document

I. Introduction

The Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS) has prepared this report for the State Water Resources Control Board (State Water Board) to summarize the State of California's current electrical grid reliability needs. The State Water Board, when adopting 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, impaneled the SACCWIS to advise the State Water Board on OTC Policy¹ implementation.

Since 2010, the OTC Policy has reduced marine and estuarine water intake and use by electricity generators in California and lessened entrainment and impingement mortality of marine life. The SACCWIS is committed to realizing full and final 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.

Since the adoption of the OTC Policy, 12 of the 19 power plants to which it applied have achieved full final compliance. Seven OTC power plants continue to operate and have fulfilled their interim compliance requirements to date. The latest final compliance date listed in the OTC Policy is currently October 31, 2030.

The concluding findings of this SACCWIS report do not recommend any changes to the OTC Policy final compliance schedules for associated generating facilities, largely due to the development of significant supply-side resources. The agencies of the SACCWIS continue to closely monitor grid reliability needs throughout the state. Load Serving Entity (LSE) procurement activity, primarily for supply resources, is still ongoing to meet California Public Utilities Commission (CPUC) procurement orders, and the CPUC continues to monitor progress towards meeting these orders. Some existing contracts will be delayed, and other contracts will be added, consistent with the cycle of energy project development. Significant progress is being made to deploy new, clean energy generation.

¹ State Water Resources Control Board (State Water Board). 2023. [Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling](#) (Once-Through Cooling or OTC Policy). Sacramento, CA: State Water Board.

However, the grid remains susceptible to a combination of risks including development delays of new supply resources coming online to meet procurement orders, and extreme events such as west-wide heat waves and coincident wildfires. Unforeseen project development risks and extreme events drive the need for additional capacity to maintain grid reliability. The CPUC, California Energy Commission (CEC), and California Independent System Operator (CAISO) continue to monitor statewide supply, reliability, and resource development, while providing forward grid reliability assessments in quarterly reports pursuant to Senate Bill 846.² The SACCWIS does not recommend any changes to the OTC Policy final compliance schedules.

II. SACCWIS Role and Process

The SACCWIS includes representatives from the CEC, CPUC, California Coastal Commission, State Lands Commission, California Air Resources Board (CARB), CAISO, and State Water Board. The State Water Board impaneled the SACCWIS to advise on OTC Policy implementation. The SACCWIS provides recommendations to the State Water Board to ensure that the OTC Policy final compliance schedule accounts for California's electricity supply reliability, including local areas, statewide grid reliability, and permitting constraints. OTC Policy Section 3.B(4) provides that the SACCWIS will report to the State Water Board with recommendations on any need for modifications to the compliance schedule each year starting in 2012 and at least through 2026. The SACCWIS may convene beyond 2026, as needed or requested by a SACCWIS member agency, to address grid reliability concerns impacting existing power plants.

The OTC Policy indicates that the State Water Board shall consider the SACCWIS' recommendations and, if appropriate, consider modifications to the OTC Policy. The State Water Board shall afford significant weight to a unanimous recommendation from the

² California State Legislature. 2022. [Sen. Bill No. 846](#), approved by Governor Gavin Newsom on September 2, 2022 (2021-2022 Reg. Sess.) (hereinafter Senate Bill 846.) Sacramento, CA: California Legislative Information. Senate Bill 846 mandated that the California Energy Commission and CPUC develop quarterly joint agency reliability planning assessments. The joint agency assessments can be found on the [California Energy Commission's Joint Agency Reliability Planning Assessment: SB 846 Secondary Quarterly Report Website](#).

SACCWIS energy agencies to modify the implementation schedule based on grid reliability.

The SACCWIS is committed to realizing full and final OTC Policy compliance within the coming years, while maintaining the reliability of California's electric system and meeting the state's environmental and energy goals. Furthermore, 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. Status of Compliance and Once-Through Cooling Water Use

Since the OTC Policy was adopted in 2010, the majority of OTC generating units have retired, repowered, or come into final compliance. The closure of the San Onofre Nuclear Generating Station (SONGS) resulted in a significant reduction in ocean water use for power plant cooling. Table 1 shows the power plants in the CAISO and Los Angeles Department of Water and Power (LADWP) Balancing Authority Areas (BAA) that have achieved final compliance, several of which did so well before their mandated final compliance deadlines.

Table 1: Gas-Fired OTC Facility Compliance Achievement

Facility & Units	Maximum Output (Megawatt or MW)	OTC Policy Scheduled Compliance Date	Actual Final 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 ³
Contra Costa 6, 7	674	Dec. 31, 2017	Retired Apr. 30, 2013 ⁴
San Onofre 2, 3	2,246	Dec. 31, 2022	Retired June 7, 2013 ⁵
Haynes 5, 6	535	Dec. 31, 2013	Retired June 13, 2013 ⁶
El Segundo 3	335	Dec. 31, 2015	Retired July 27, 2013 ⁷
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
Redondo Beach 7	493	Dec. 31, 2020	Retired Oct. 1, 2019

³ Huntington Beach Generating Station Units 3 and 4 were converted to synchronous condensers in 2013. Once-through cooling water was used in a limited capacity until September 30, 2018.

⁴ Although NRG Energy retired Contra Costa Generating Station Units 6 and 7, the Marsh Landing Generating Station was constructed immediately next to the retired facility. The Marsh Landing Generating Station is a non-once-through cooling generating facility.

⁵ San Onofre Nuclear Generating Station Units 2 and 3 were officially retired June 7, 2013, but they ceased power generation on Jan. 31, 2012.

⁶ The Los Angeles Department of Water and Power retired Haynes Generating Station Units 5 and 6 and replaced them with Haynes Generating Station Units 11 through 16, which do not use once-through cooling technology.

⁷ NRG Energy retired El Segundo Generating Station Unit 3 and replaced it with El Segundo Generating Station Units 5 through 8, which do not use once-through cooling technology.

Facility & Units	Maximum Output (Megawatt or MW)	OTC Policy Scheduled Compliance Date	Actual Final Compliance Date
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 ⁸
Redondo Beach 5, 6, 8	834	Dec. 31, 2023	Retired Dec. 31, 2023
Total Capacity (MW)	13,819	--	--

Table 2 reflects the final compliance plans for the remaining gas-fired power generating units that use ocean or estuarine water for cooling purposes. Table 3 presents recent performance of the gas-fired OTC units as a percentage 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. A negative value indicates that the unit's onsite electricity use (parasitic load) exceeded the electricity generated and delivered to the grid, which typically occurs during periods of minimal or no operation. 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.

⁸ Dynegy Moss Landing Power Plant complied with Once-Through Cooling Policy Track 2. The 2025 SACCWIS Report incorrectly stated that Moss Landing Power Plant Units 1 and 2 were decommissioned. These units are still operational under Track 2 and use OTC water.

Table 2: OTC Compliance Plans for Remaining Gas-Fired Units

Facilities and Units	Maximum Output (MW)	OTC Policy Scheduled Final Compliance Date	Owner Proposed Compliance Method
Alamitos 3, 4, 5 ⁹	1,141	Dec. 31, 2026	Plans to comply by Dec. 31, 2026
Harbor 5	75	Dec. 31, 2029	Plans to comply by Dec. 31, 2029
Haynes 1, 2	460	Dec. 31, 2029	Plans to comply by Dec. 31, 2029
Haynes 8	264	Dec. 31, 2029	Plans to comply by Dec. 31, 2029
Huntington Beach 2	227	Dec. 31, 2026	Plans to comply by Dec. 31, 2026
Ormond Beach 1, 2	1,491	Dec. 31, 2026	Plans to comply by Dec. 31, 2026
Scattergood 1, 2	326	Dec. 31, 2029	Plans to comply by Dec. 31, 2029
Total Capacity (MW)	3,984	--	--

⁹ The Time Schedule Order (TSO) associated with Alamitos Generating Stations' National Pollutant Discharge Elimination System (NPDES) permit expired on December 31, 2025. As such, maximum generation from the Alamitos Generating Station may be reduced to meet the requirements of the NPDES permit such as high outfall water temperature restrictions, especially between May and October 2026.

Table 3: Recent Performance of OTC Gas-Fired Generating Units

CAISO Balancing Authority Area Facilities and Units	OTC Policy Scheduled Final Compliance Date	Maximum Output (MW)	Annual Capacity Factors (Percent)						
			2019	2020	2021	2022	2023	2024	2025 (Jan-Sep)
Alamitos 3	Dec. 31, 2026	327	5.58	6.46	5.58	9.37	8.56	0.37	0.35
Alamitos 4	Dec. 31, 2026	334	5.59	4.50	6.37	8.96	7.46	0.24	0.23
Alamitos 5	Dec. 31, 2026	480	1.24	5.42	4.63	2.55	3.34	0.25	0.42
Huntington Beach 2	Dec. 31, 2026	227	4.12	5.69	4.46	5.64	8.89	0.30	0.40
Ormond Beach 1	Dec. 31, 2026	741	0.55	4.98	2.00	1.44	0.98	0.28	0.20
Ormond Beach 2	Dec. 31, 2026	750	1.63	5.26	4.04	2.86	2.65	0.27	0.15
LADWP Balancing Authority Area Facilities and Units									
Harbor 5	Dec. 31, 2029	75	3.40	0.39	2.59	3.60	4.66	7.85	3.47
Haynes 1	Dec. 31, 2029	230	4.05	5.13	1.70	4.71	14.36	6.05	-0.15 ¹⁰
Haynes 2	Dec. 31, 2029	230	1.18	3.92	1.76	3.33	-0.16	-0.19	0.66
Haynes 8	Dec. 31, 2029	264	39.22	48.89	34.62	31.30	30.13	36.17	26.62
Scattergood 1	Dec. 31, 2029	163	3.62	3.15	2.84	2.75	2.12	3.36	0.51
Scattergood 2	Dec. 31, 2029	163	6.62	10.36	1.87	0.78	1.67	5.66	5.47

Source: California Energy Commission, [Quarterly Fuel and Energy Report](#).

¹⁰ The negative net output reflects more onsite consumption (also known as parasitic load) than generation output to the grid.

Once-Through Cooling Water Use

Figure 1 illustrates OTC power plant fleet ocean and estuarine water flow rates over time. The uppermost solid green line shows the OTC Policy final compliance schedule as originally adopted in 2010, while the solid blue line shows the current OTC Policy compliance schedule as last amended in 2023 and accounts for OTC owner and operator compliance decisions. While most OTC owners and operators opted to retire their OTC units, which qualifies as Track 1 compliance, Moss Landing Power Plant opted to comply with Track 2, which allows limited use of OTC water and explains why the solid green and blue lines approach but do not reach zero in 2031.

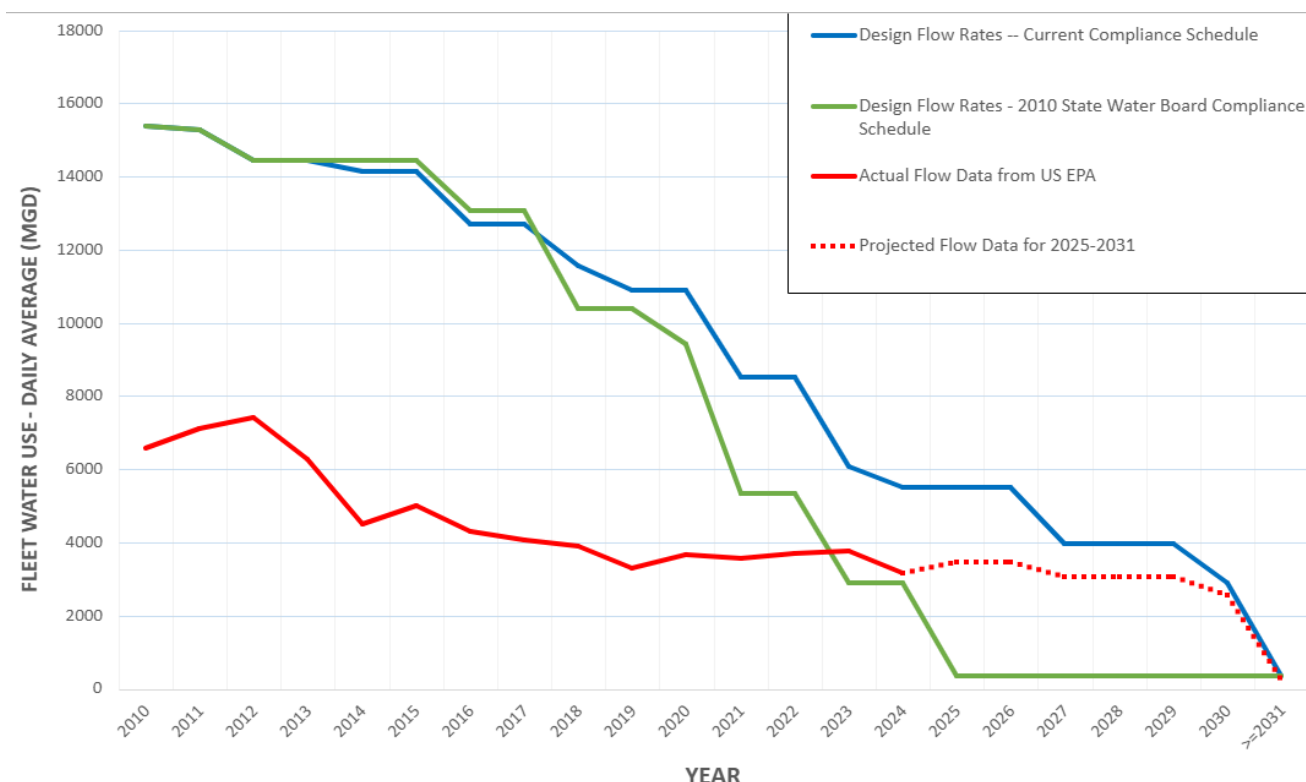
The solid red line shows actual flow rates from the OTC power plant fleet. See Appendix A for flow rate data. The dashed red line shows projected flow rates for 2025 through 2031. Projections are based on the average of the previous three years of actual flow rate data.

The solid red line is below the blue line because fossil-fueled OTC power plants have generally operated with annual capacity factors below design flow rates. Accelerated environmental benefits compared to the original final compliance schedule are due to SONGS and several other OTC power plants retiring before their OTC final compliance dates.

Projected OTC flow rates (dashed red line) and actual flow data (solid red line) from 2023 through 2030 exceed the original OTC Policy final compliance schedule adopted in 2010 (solid green line). However, projected OTC flow rates are still within the most current OTC Policy final compliance schedule. Additionally, projected flow rates from 2025 to 2030 exceed the green line from 2025 to 2030 mainly due to the legislative extension of Diablo Canyon Nuclear Power Plant's (Diablo Canyon) OTC Policy final compliance date through 2030 via Senate Bill 846. Diablo Canyon is the largest operational OTC facility by volume of daily OTC usage.

Owners and operators are required to offset impingement and entrainment impacts associated with continued operations by participating in the OTC Policy interim mitigation program, as determined in Resolution No. 2015-0057 and Resolution No. 2024-0014.^{11, 12}

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



Source: CEC and State Water Board Staff. Last updated November 2025

IV. Electricity Supply Strategic Reliability Reserve Program Power Plant Capacity

On June 30, 2022, Governor Gavin Newsom signed Assembly Bill 205 into law, which established a Strategic Reliability Reserve.¹³ The Strategic Reliability Reserve consists of three programs, including the Electricity Supply Strategic Reliability Reserve Program

¹¹ State Water Resources Control Board. 2015. [Resolution No. 2015-0057](#). Sacramento, CA: State Water Resources Control Board.

¹² State Water Resources Control Board. 2024. [Resolution No. 2024-0014](#). Sacramento, CA: State Water Resources Control Board.

¹³ California State Legislature. 2022. [Assembly Bill No. 205](#), approved by Governor Gavin Newsom on June 30, 2022 (2021-2022 Re. Sess.) (hereinafter Assembly Bill 205.) Sacramento, CA: California Legislative Information.

(ESSRRP). The ESSRP is intended to bolster system reliability while California procures clean energy resources, including extending the operations of power plants previously scheduled for retirement. Assembly Bill 205 acknowledged that existing generation assets, such as some OTC power plants, would be required to maintain reliability during extreme or simultaneously occurring extreme events as California transitions to a clean energy economy. By intent, the ESSRRP OTC power plants are only called upon to support grid operations during extreme events, thereby limiting the use of OTC water and limiting total annual air pollutants and greenhouse gas emissions.

After the ESSRRP was created and the SACCWIS recommended to extend the OTC Policy final compliance dates for Alamitos, Huntington Beach, and Ormond Beach generating stations (Alamitos, Huntington Beach, and Ormond Beach, respectively), the State Water Board adopted an OTC Policy amendment on August 15, 2023, which extended the final compliance deadlines of the three power plants to December 31, 2026,¹⁴ contingent upon participation in the ESSRRP. Alamitos, Huntington Beach, and Ormond Beach entered ESSRRP service beginning January 1, 2024.

The CAISO may access ESSRRP OTC power plant units in the CAISO BAA according to processes specified in CAISO Operating Procedure 4420.¹⁵ The CAISO operated through periods of prolonged heat and wildfire threats in early July and September 2024, which posed potential risks to grid reliability. Additionally, prolonged heat forecasted in other balancing areas across the Western United States introduced risks that California's access to imported energy would be limited. The CAISO instructed ESSRRP OTC Units to start up and remain on standby to support grid reliability in three separate instances during summer 2024. The CAISO did not instruct ESSRRP OTC Units to start up for reliability needs in 2025.

The limited use of the ESSRRP OTC power plants demonstrates that the CAISO only dispatches OTC units sparingly when extreme or emergency conditions are forecasted.

¹⁴ State Water Resources Control Board. 2023. [Resolution No. 2023-0025](#). Sacramento, CA: State Water Resources Control Board.

¹⁵ California Independent System Operator. 2024. [Operating Procedure 4420](#). Folsom, CA: California Independent System Operator.

Capacity factors listed in Table 3 above reflect the limited use in 2024 and no use in 2025 for reliability needs.

V. Grid Resource Planning and Procurement Status

This section describes information pertaining to the State of California's electrical grid, focusing on updates on transmission projects and procurement through 2028. This information relates to OTC Policy implementation because of the OTC power plants' overlay with and impact on statewide grid reliability.

Resource Planning and Responsibility

This section summarizes the roles of the CPUC, CAISO, and CEC in maintaining California's electrical grid reliability.

The CPUC is the agency responsible for developing resource portfolios that the CAISO studies for future transmission needs and setting electricity resource planning targets for LSEs in its jurisdiction. The mechanism through which this planning occurs is called the Integrated Resource Planning (IRP) process. The CPUC established the IRP process to meet Senate Bill 350 legislative requirements, and to serve as a successor to the CPUC's Long-Term Procurement Planning process established in 2002 after the California Energy Crisis.^{16, 17} The IRP process is intended to develop a diverse and balanced resource portfolio that simultaneously maximizes zero-carbon energy integration to reach California's greenhouse gas reduction and renewable energy targets while minimizing costs and maintaining reliability.¹⁸ To achieve these goals, the CPUC regularly evaluates whether existing and projected resources are sufficient to meet future demand. CPUC then uses this analysis to provide procurement and policy guidance. This information is

¹⁶ California State Legislature. 2015. [Senate Bill No. 350](#), approved by Governor Gavin Newsom on October 7, 2015 (2015-2016 Reg. Sess.) Sacramento, CA: California Legislative Information.

¹⁷ United States Energy Information Administration. [Subsequent Events – California's Energy Crisis](#). Washington D.C.: United States Energy Information Administration.

¹⁸ The combined Integrated Resource Plan-Long Term Procurement Plan proceeding is R.20-05-003. See: California Public Utilities Commission. 2020. [Ruling 20-05-003](#). San Francisco, CA: California Public Utilities Commission.

significant to OTC Policy compliance deadlines because OTC power plant retirement schedules are included in the IRP planning process and analysis, which accounts for progress towards compliance.

The CAISO manages the flow of electricity across high-voltage, long-distance power lines, operates a competitive wholesale energy market, and oversees transmission planning in California's largest balancing authority area. Below is an outline of the general planning and implementation process:

- CPUC adopts IRP planning targets that reflect OTC Policy final compliance deadlines.
- CPUC then sends its generation and storage portfolio to the CAISO to inform authorization of new transmission projects or upgrades to interconnect new generation resources to the electrical grid via the Transmission Planning Process.
- The collective IRP-Transmission Planning Process is open for public and interested party feedback in the fall annually.
- CPUC transmits its generation portfolio findings to CAISO by February annually.

The CEC is the state's primary energy policy and planning agency. The CEC established the California Energy Demand forecast, which is the foundation for energy planning in the state, in consultation with the CPUC, CAISO, and CARB. The CEC provides regular reliability assessments to provide situational awareness to the Governor's Office, Legislature, and the public. It also provides technical support during emergencies impacting the electrical grid by coordinating energy resources, managing power disruptions, ensuring continuity of energy services, and collaborating with utility and relevant agencies to resolve energy-related challenges during disasters. Additionally, the CEC maintains the Demand Side Grid Support and Distributed Electricity Backup Assets programs to provide emergency capacity during grid emergencies. The CEC is also the lead agency for licensing fossil fuel power plants of 50 megawatt (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, 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. Assembly Bill 205, signed into state law on June 30, 2022, gave the CEC additional authority to establish a new limited term Opt-in Certification program for applications submitted by June 30, 2029, from non-fossil fuel power plants, energy storage facilities, and other related facilities, such as solar photovoltaic or wind facilities of 50 MW and larger.

Past Reliability Transmission Projects

The following table 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 to address reliability concerns related to the retirement of SONGS and Los Angeles Basin and San Diego local areas' OTC power plants.¹⁹ Table 4 identifies the in-service dates and responsible Participating Transmission Owners (PTO).

Table 4: 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)	San Diego Gas and Electric (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 230 kilovolt 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)

¹⁹ Previous Transmission Plans can be found on the [California Independent System Operator's Transmission Plans and Studies Library](#).

	Transmission Projects	PTO Service Territory	Target In-Service Dates
7	Santiago Synchronous Condensers (3x81 MVAR)	Southern California Edison (SCE)	In-Service (12/8/2017)
8	Mesa Loop-In Project and South of Mesa 230 kilovolt 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 ²⁰

CPUC Procurement Orders and Associated Capacity Status

LSEs subject to CPUC jurisdiction (all of which participate in the CAISO system) are required to procure resources based on CPUC's IRP proceeding decisions. Some of the following projects and resources have provided new capacity that replaced need for OTC capacity already offline or projected to go offline. The following sections contain past and recent procurement orders, procurement milestones, monitoring, and projections for incremental capacity procurement associated with the IRP proceeding²¹ in response to a request made by State Water Board members at the August 15, 2023 State Water Board meeting.

Incremental Capacity Procurement and Procurement Monitoring for CPUC Decisions (D.) 13-02-015 and D.14-03-004

This section summarizes information for two prior and separate procurement orders, Decision (D.) 13-02-015 and D.14-03-004 that stem from a CPUC planning proceeding, Rulemaking (R.) 12-03-014²² because some of the associated new capacity replaced OTC capacity that is now offline.

²⁰ The contract for the synchronous condensers expired on December 31, 2017, and they are no longer operating.

²¹ The August 15, 2023 State Water Resources Control Board meeting can be found on the [State Water Resources Control Board's YouTube channel](#).

²² California Public Utilities Commission. 2012. [Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans](#) (R.12-03-014). San Francisco, CA: California Public Utilities Commission.

Tables 5 and 7 below show the different electric capacity procurement authorizations for the Southern California area, where the remaining gas-fired OTC power plants are located. The different tracks are separate procurement orders. Track 1 procurement stems from D.13-02-015, which outlined procurement requirements for capacity in the West Los Angeles Basin and Big Creek/Ventura local reliability areas.²³ Track 4 procurement stems from D.14-03-004, which outlined additional procurement requirements in the West Los Angeles Basin and San Diego/Imperial Valley local reliability areas in response to the retirement of SONGS.²⁴ Note that the use of the term “track” in this context is different from the two tracks for OTC Policy compliance. Tables 6 and 8 includes authorizations that resulted in Applications of Procurement reviewed and approved by the CPUC and the subsequent construction of resources that came online over the years.

²³ California Public Utilities Commission. 2013. [Decision Authorizing Long-Term Procurement for Local Capacity Requirements](#) (D.13-02-015). San Francisco, CA: California Public Utilities Commission.

²⁴ California Public Utilities Commission. 2014. [Decision Authorizing Long-Term Procurement for Local Capacity Requirements Due to Permanent Retirement of the San Onofre Nuclear Generating Stations](#) (D.14-03-004). San Francisco, CA: California Public Utilities Commission.

Table 5: Southern California Edison Authorizations from R.12-03-014

Resource Type	Track 1 LCR²⁵ (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 Resources²⁶ & Energy Storage (Minimum)	200	--	400	600	565 ²⁷
Gas-fired Generation (Minimum)	1,000	--	--	1,000	1,000
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 ²⁸
Total	1,400 to 1,800	215 to 290	500 to 700	2,115 to 2,790	2,154

²⁵ Local Capacity Requirement (LCR)

²⁶ 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. See: California Public Utilities Commission. 2005. [State Energy Action Plan II](#). San Francisco, CA: California Public Utilities Commission.

²⁷ Includes roughly 27 megawatts (MW) of storage capacity authorized by Resolution E-4804 to alleviate constraints in Southern California due to the Aliso Canyon Gas Storage Facility outage. See: California Public Utilities Commission. [Resolution E-4804](#). San Francisco, CA: California Public Utilities Commission.

²⁸ Includes the 100 MW from the 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. For additional details see California Public Utilities Commission (CPUC) decisions:

CPUC. 2019. [Decision 19-12-055](#). San Francisco, CA: CPUC.

CPUC. 2019. [Resolution E-5033](#). San Francisco, CA: CPUC.

CPUC. 2016. [Decision 16-05-050](#). San Francisco, CA: CPUC.

Table 6: Southern California Edison Approved Applications

Resource Type	Location	Capacity MW	Status
Demand Response	Big Creek/Ventura	14	Approved ²⁹
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
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
Total	--	2,154	--

²⁹ Approved status indicates that the project has been approved, or that a portion of the capacity (MW) of the associated facility may be operational.

Table 7: San Diego Gas & Electric Authorizations from R.12-03-014

Resource Type	D.13-03-029/ D.14-02-016 MW³⁰	Additional Track 4 Authorization MW	Total Authorization MW	Pending & Approved Applications MW
Preferred Resources & Energy Storage	--	200 (Minimum)	200	144.5 ³¹
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

Table 8: San Diego Gas & Electric Approved Applications

Resource Type	Location	Capacity in MW	Status
Demand Response	San Diego/Imperial Valley	4.5	Operational
Energy Efficiency	San Diego/Imperial Valley	19	Approved ³²
Energy Storage	San Diego/Imperial Valley	121	Approved
Gas Combustion Turbine	Carlsbad (Encina site)	500	Operational
Gas Turbine	Pio Pico	300	Operational
Total	--	944.5	--

³⁰ See California Public Utilities Commission (CPUC) Decisions: CPUC. 2012. [Decision Determining San Diego Gas & Electric Company's Local Capacity Requirement and Granting Partial Authority to Enter into Purchase Power Tolling Agreements](#) (D.12-03-029). San Francisco, CA: CPUC.

CPUC. 2014. [Decision Granting San Diego Gas & Electric Company Authority to Enter into a Purchase Power Tolling Agreement With Pio Pico Energy Center, LLC](#) (D.14-02-016). San Francisco, CA: CPUC.

³¹ 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. See: California Public Utilities Commission. 2016. [Resolution E-4798](#). San Francisco, CA: California Public Utilities Commission.

³² Approved status indicates that the project has been approved, or that a portion of the capacity (MW) of the associated facility may be operational.

Incremental Capacity Procurement and Procurement Monitoring for CPUC Decisions 19-11-016, 21-06-035, and 23-02-040

This section details more recent procurement orders under the CPUC's IRP process, including D.19-11-016, D.21-06-035, and D.23-02-040. These orders date to 2019 and are discussed separately from authorizations and procurement listed in the previous section. The Commission ordered procurement via these three orders in response to conditions that pose greater challenges to California's grid reliability compared to past IRP authorizations, including extreme weather events, wildfires, supply chain constraints, interconnection, and permitting concerns. Additional information on the status of capacity procurement associated with these recent IRP decisions can be found on the CPUC's website.³³

Table 9 summarizes when capacity associated with these three decisions is required to come online. Table 10 summarizes capacity that has come online since January 2020 by capacity type. Much of this capacity is a direct result of, and is intended to fulfill, the recent IRP procurement orders associated with D.19-11-016, D.21-06-035, and D.23-02-040, which are discussed in greater detail below. Notably, most of this capacity is renewable or considered zero-carbon. Cells with a zero value indicate that no resources of that row's type were added to the electrical grid serving CAISO for that column's year.

³³ Information on the status of procurement orders can be found on the California Public Utilities Commission's [IRP Procurement Track website](#). The most recent update provides a status update on procurement compliance based on load serving entities' filings.

**Table 9. New Resource Additions Serving CAISO Required Online From
CPUC D.19-11-016, D.21-06-035, and D.23-02-040:
August 1, 2021 – June 1, 2028 (Net Qualifying Capacity MW)**

Date	Cumulative Net Qualifying Capacity or NQC (MW) Required Online
August 1, 2021	1,650
August 1, 2022	2,475
August 1, 2023	5,300
August 1, 2024	11,300
June 1, 2025	12,800
June 1, 2026	14,800
June 1, 2027	16,800
June 1, 2028	18,800
Total	18,800

**Table 10. New Resource Additions Serving CAISO:
January 1, 2020 — December 31, 2025 (MW NQC)³⁴**

Technology Type	2020	2021	2022	2023	2024	2025	Total MW NQC³⁵	Number Projects
UTILITY-SCALE SOLAR	444	435	318	606	499	142	2,445	153
STORAGE	100	1,607	1,906	2,448	3,499	3,325	12,884	187
UTILITY-SCALE HYBRID (SOLAR + STORAGE)	0	15	569	243	331	316	1,473	30
WIND	3	65	80	33	63	6	249	23
GEOHERMAL	0	0	0	0	31	0	31	1
HYDRO	0	0	0	0	0	0	0	4
BIOMASS	0	0	0	0	0	0	0	5
BIOGAS	0	0	0	0	0	0	0	4
Subtotal Total New Senate Bill 100 Resources, IN-CAISO ³⁶	548	2,122	2,872	3,329	4,424	3,788	17,082	407

³⁴ Additional Information on New Resource Additions to the California Independent System Operator Balancing Authority Area can be found on the California Public Utilities Commission's [Tracking Energy Development website](#).

³⁵ Megawatts are reported in net qualifying capacity (NQC), which reflects each resource's reliability contribution rather than its nameplate capacity. Some new projects have not yet been assigned NQC values; therefore, totals are subject to change. Values in this table may differ from those in the 2025 SACCWIS report, as additional resources have since been assigned NQC values and updated Effective Load Carrying Capability (ELCC) calculations can result in changes to NQC values for existing resources.

³⁶ California State Legislature. 2018. [Sen. Bill No. 100](#), approved by Governor Gavin Newsom on September 10, 2018 (2017-2018 Reg. Sess.) (hereinafter Senate Bill 100.) Sacramento, CA: California Legislative Information. Senate Bill 100, also known as the 100 Percent Clean Energy Act of 2018, requires that by 2045, 100 percent of retail electricity sales and all electricity produced for state agencies come from renewable and zero-carbon resources.

Technology Type	2020	2021	2022	2023	2024	2025	Total MW NQC³⁵	Number Projects
NATURAL GAS, incl. Alamitos & Huntington Beach	1,448	15	11	0	12	11	1,498	19
Total New Resources, IN-CAISO	1,995	2,137	2,883	3,329	4,436	3,800	18,580	426
New Imports, Pseudo-Tie or Dynamically Scheduled	390	387	33	50	201	58	1,119	23
Total New Resources, including Imports	2,385	2,524	2,916	3,379	4,637	3,858	19,700	449

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

In November 2019, the CPUC adopted D.19-11-016 directing the procurement of 3,300 MW net qualifying capacity (NQC) from LSEs under the CPUC's jurisdiction by August 2023 to support system-wide electric reliability.³⁷ The CPUC also recommended that the State Water Board consider revising the OTC Policy to extend the final compliance dates for Alamitos Units 3, 4, and 5; Huntington Beach Unit 2; Redondo Beach Units 5, 6, and 8; and Ormond Beach Units 1 and 2. The SACCWIS supported and recommended extending the final compliance dates of these power plants in response to this information. On September 1, 2020, the State Water Board adopted an OTC Policy amendment to extend final compliance dates for the above units, several of which were further extended by the August 15, 2023 OTC Policy Amendment.

D.19-11-016 required 1,650 MW NQC of the required procurement to be online by August 2021; 2,475 MW NQC to be online by August 2022; and the full 3,300 MW NQC

³⁷ California Public Utilities Commission. 2019. [Decision Requiring Electric System Reliability Procurement for 2021-2023](#) (Decision 19-11-016). San Francisco, CA: California Public Utilities Commission.

to be online by August 2023. These requirements only apply to CPUC-jurisdictional LSEs, which represent approximately 90 percent of the load served in the CAISO. Affiliated LSEs conducted solicitations for replacement capacity in 2019 and 2020, and contracts for the investor-owned utilities' portion of these resources were approved by the CPUC in 2020 and 2021.³⁸ The other, non-investor-owned utility LSEs are not required to have contracts approved by the CPUC. In D.20-12-044, the CPUC established milestones and reporting deadlines of February 1 and August 1 annually for 2021-2023 for each procurement tranche.³⁹ Since then, the CPUC has periodically provided procurement progress based on LSEs' filings on its IRP Procurement Track website, which is referenced in a prior footnote. Cumulatively, LSEs surpassed the 3,300 MW NQC obligation required under D.19-11-016.

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

The CPUC adopted D.21-06-035 in June 2021, which directed CPUC-jurisdictional LSEs to procure 11,500 MW NQC of clean reliability resources to come online between August 2023 and June 2026, in addition to the 3,300 MW NQC ordered in 2019⁴⁰ to support mid-term reliability needs and the state meeting its greenhouse gas emission reduction goals.

This procurement order requires 11,500 MW NQC total in new resources, of which 2,500 MW NQC must be zero-emission resources that generate electricity, or generation resources paired with storage, to replace the capacity of Diablo Canyon. Additionally, 2,000 MW NQC must be long lead-time resources, as defined by the D.21-06-035

³⁸ See California Public Utilities (CPUC) Resolutions: CPUC. 2020. [Resolution E-5100](#). San Francisco, CA: CPUC. CPUC. 2020. [Resolution E-5101](#). San Francisco, CA: CPUC. CPUC. 2021. [Resolution E-5117](#). San Francisco, CA: CPUC. CPUC. 2021. [Resolution E-5139](#). San Francisco, CA: CPUC. CPUC. 2021. [Resolution E-5140](#). San Francisco, CA: CPUC. CPUC. 2021. [Resolution E-5142](#). San Francisco, CA: CPUC.

³⁹ California Public Utilities Commission. 2020. [Decision Establishing Process for Backstop Procurement Required by Decision 19-11-016](#) (D.20-12-044). San Francisco, CA: California Public Utilities Commission.

⁴⁰ California Public Utilities Commission. 2021. [Decision Requiring Procurement to Address Mid-Term Reliability \(2023-2026\)](#) (D.21-06-035). San Francisco, CA: California Public Utilities Commission

decision, with at least 1,000 MW of long-duration storage (able to deliver at maximum capacity for at least eight hours from a single resource) and 1,000 MW of firm capacity with zero on-site emissions or that qualifies under the renewables portfolio standard eligibility requirements and has at least an 80 percent capacity factor. Note that long lead-time resources are those that typically require greater amounts of time to procure due to a variety of associated factors, such as manufacturing times of components and equipment.

D.21-06-035 required that the total of the 11,500 MW come online as follows: 2,000 MW online by August 2023; 6,000 MW online by June 2024; 1,500 MW online by June 2025; and 2,000 MW online by June 2026.

CPUC Incremental Capacity Procurement Pursuant to D.23-02-040

In February 2023, the CPUC adopted D.23-02-040 directing CPUC-jurisdictional LSEs to procure 4,000 MW NQC of new capacity to come online by June 2026 and June 2027, in addition to the 11,500 MW NQC previously ordered in D.21-06-035.⁴¹ CPUC-jurisdictional LSEs are required to procure resources that have zero emissions or otherwise Renewable Portfolio Standard-eligible sources. D.23-02-040 also recognized the difficulties in procuring long lead-time resources by June 2026, as required by D.21-06-035, and extended those deadlines to June 2028. A subsequent order, D.24-02-047, provided additional options to extend those deadlines until June 2031 on a project-by-project basis. LSEs with signed contracts for long lead-time resources are permitted to file a request for extension for long lead-time online dates to no later than June 2031, if a good faith showing is made in a Tier 2 advice letter.⁴²

CPUC Incremental Capacity Procurement Monitoring for D.19-11-016, D.21-06-035, and D.23-02-040

The CPUC is monitoring procurement under the orders described above, including the recent IRP orders D.19-11-016, D.21-06-035, and D.23-02-040.

⁴¹ California Public Utilities Commission. 2023. [Decision 23-02-004](#). San Francisco, CA: California Public Utilities Commission.

⁴² California Public Utilities Commission. 2024. [Decision 24-02-047](#). San Francisco, CA: California Public Utilities Commission.

Between January 1, 2020, and October 31, 2025, over 18,000 MW of new NQC has come online to serve reliability.⁴³ The new resources represent over 29,000 MW Nameplate of new nameplate capacity, primarily solar and storage, with storage providing the majority of the reliability. These new resources are largely meeting the capacity requirements under the three recent CPUC IRP procurement orders for 2021-2025 described above. However, some of these 18,000 MW NQC (29,000 MW Nameplate) of new resources are not used for compliance towards IRP procurement orders since the resources were in development at the time of the issuance of the IRP procurement orders in 2019. In addition, a small number of resources are “energy-only” and do not receive a NQC capacity value for meeting peak demand or reliability requirements, and some resources may not be serving the CPUC orders if they are not under contract to a CPUC jurisdictional entity. When excluding such resources, the IRP compliance filings show that around 12,000 MW NQC of the new supply resources that have come online in this period are supporting LSE IRP order compliance. Much of the contracted capacity submitted for D.21-06-035 and D.23-02-040 compliance was for battery storage, solar, or hybrid resources. More comprehensive information about IRP procurement order compliance can be found in the CPUC Summary of Compliance.⁴⁴

LSEs also have contracts for several thousand more MWs of capacity to come online in the near future. Based on LSE contracts in place by October 2025, LSEs have contracted for over 14,000 MW NQC (20,000 MW nameplate) of new resources that are slated to come online by the end of 2028. There appears to be sufficient generation, transmission, and interconnection projects currently underway or in the project development process to meet the MW capacity requirements of the three recent CPUC procurement orders.

⁴³ California Public Utilities Commission (CPUC) October 2025 Resource Tracking Data can be downloaded from the CPUC’s website: <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/summer-2021-reliability/tracking-energy-development/resource-tracking-data-october-2025-release.pdf>.

⁴⁴ [CPUC IRP Procurement Track Page](#)

CPUC Incremental Capacity Procurement Projections

Although new capacity from previously listed procurement orders continues to come online, grid reliability must be carefully monitored in the coming years, particularly as several LSEs have encountered challenges and delays in meeting some mid-term reliability procurement order requirements, demand forecasts continue to change, and unexpected retirements remain a risk. Delays by an individual LSE meeting its CPUC IRP procurement order requirements do not necessarily indicate reliability issues, since there are dozens of LSEs and procurement actualization can vary in terms of time and MWs across entities.

As referenced above, the CPUC's D.23-02-004 recognizes these challenges by automatically extending long lead-time resource procurement deadlines established via D.21-06-035.

Even considering procurement challenges, the CAISO system has added over 18,000 MW of new NQC since 2020, as shown in Table 10 above. This record-setting level of new clean energy capacity additions have been primarily driven by three CPUC procurement orders referenced above. Based on LSE contracting trends, the rate of new generation and storage resources joining the CAISO system in coming years is expected to be of similar magnitude.

A Changing Grid and Regulatory Responses

California's electrical grid is rapidly transitioning to integrate a variety of clean energy resources that support meeting state greenhouse gas reduction goals and driven in part by statutory requirements, regulations, policy and other market forces. The state is aware that extreme events, such as heatwaves and wildfires, can possibly threaten grid reliability while these new resources are built out. In response, Assembly Bill 205 established the state's Strategic Reliability Reserve to bolster grid reliability in the interim, as referenced in Section IV of this report.

Under Assembly Bill 205, the CEC and the California Department of Water Resources (DWR) were authorized as administrators of complementary programs under the

Strategic Reliability Reserve to ensure a reliable and equitable transition to a clean energy future while California expands its clean generation fleet. Specifically, the CEC oversees the:

- Demand-Side Grid Support Program, a temporary emergency measure that creates incentives for utility customers to further reduce load and dispatch incremental backup generation with existing resources on an on-call basis, and the
- Distributed Electricity Backup Assets Program, which provides incentives for clean and efficient distributed energy resource construction.

The DWR's Statewide Energy Office manages the ESSRRP, which is authorized to develop, own, or contract for new emergency and temporary generation to provide incremental power during extreme events and extend the operations of existing resources that would have otherwise retired.

Senate Bill 846 Reliability Reporting

On September 2, 2022, Governor Gavin Newsom signed Senate Bill 846 into law, which extended the OTC Policy final compliance dates for Diablo Canyon's generating units, and required the CEC and the CPUC to provide quarterly joint Reliability Planning Assessments to the Legislature. These assessments must identify estimates for the electrical supply and demand balance for the forward five- and ten-year period under high-, medium-, and low-risk scenarios. CPUC and CEC staff continue to ensure Senate Bill 846 compliance and collaborate on these quarterly joint Reliability Planning Assessments to provide an important analysis of statewide grid reliability by comparing the procurement, generation, and transmission resources discussed in this SACCWIS report against the newest reliability forecasts available.

LADWP BAA and OTC Replacement Milestones

This section describes the LADWP BAA, which is separate from the CAISO BAA. The LADWP BAA spans two broad geographic regions: the Greater Los Angeles Metropolitan Region and the area encompassing the Owens Valley in Eastern California. The LADWP BAA contains three operational gas-fired OTC power plants: Harbor Generating Station

(Harbor), Haynes Generating Station (Haynes), and Scattergood Generating Station (Scattergood).

On February 12, 2019, Los Angeles Mayor Eric Garcetti introduced the Los Angeles Green New Deal, which included a provision that the LADWP will transition to 100 percent renewable energy by 2045 to help address climate change.⁴⁵ September 2021, the Los Angeles City Council adopted a motion to accelerate this timeline, which directed the LADWP to procure 100 percent zero-carbon electricity by 2035.⁴⁶

This direction disrupted the LADWP's previous plans to comply with the OTC Policy that included repowering the three OTC power plants within its BAA with non-OTC, fossil-fueled combined cycle generating turbines. As a result, the LADWP requested to extend the OTC Policy final compliance date for Scattergood from December 31, 2024, to December 31, 2029. At the September 30, 2022 SACCWIS meeting a majority committee supported the LADWP's request. On August 15, 2023, the State Water Board adopted the 2023 OTC Policy Amendment, which extended Scattergood's OTC Policy final compliance date as requested by the LADWP.

The LADWP provided information requested by the State Water Board for the 2023 OTC Policy Amendment, which indicated their intent to comply with the OTC Policy for Scattergood by transitioning to using recycled water for cooling purposes and their intent to construct hydrogen-capable generation capacity. Additionally, the LADWP's 2022 Long Term Strategic Long-Term Resource Plan indicates that the LADWP assumes hydrogen generating units will be constructed during the 2030s and 2040s at Harbor and Haynes.⁴⁷

The State Water Board adopted Resolution No. 2023-0025, directing the Executive Director to, as soon as feasible, issue an order pursuant to Water Code section 13383 requiring the LADWP to provide a written plan identifying semi-annual milestones necessary to attain OTC Policy final compliance for all three of its facilities by their

⁴⁵ Office of Los Angeles Mayor Eric Garcetti. 2019. [Los Angeles' Green New Deal Sustainable City Plan](#). Los Angeles, CA: Los Angeles Mayor's Office.

⁴⁶ City of Los Angeles. 2021. [Motion](#). Los Angeles, CA: City of Los Angeles.

⁴⁷ Los Angeles Department of Water and Power. 2022. [The 2022 Strategic Long-Term Resource Plan](#). Los Angeles, CA: Los Angeles Department of Water and Power.

compliance dates. This order also requires the LADWP to report information demonstrating progress towards attaining the milestones and compliance in writing at least by January 31 of each year and present the information in conjunction with the annual SACCWIS report at a publicly noticed State Water Board meeting. Following the 2024 SACCWIS annual report and consideration of the LADWP progress report, the State Water Board will consider whether an enforceable schedule in a National Pollutant Discharge Elimination System (NPDES) permit or an appropriate enforcement order is necessary to ensure continued progress by the LADWP to meet the December 31, 2029 compliance date.

The order was sent to the LADWP on February 6, 2024, and the LADWP responded with a letter on April 8, 2024, stating its semi-annual milestones. The State Water Board subsequently requested additional compliance milestone information for Harbor and Haynes, for which the LADWP indicated it would have additional responsive information to share at the 2025 SACCWIS annual meeting. The order also required the LADWP to submit a letter demonstrating progress towards attaining the milestones and final compliance by November 15, 2024, and by November 15 of each subsequent year until Scattergood, Harbor, and Haynes attain OTC Policy final compliance. The LADWP submitted letters on November 15, 2024, and November 17, 2025.

The LADWP's April 8, 2024 letter to the State Water Board's Executive Director, indicated three general project phases must be completed to eliminate OTC for its OTC power plants. These phases include pre-construction, construction, and post-construction activities. Pre-construction activities broadly consist of: planning and development, local ordinance planning and compliance, Board of Water and Power Commissioners' consideration and approval, California Environmental Quality Act and environmental permitting, equipment procurement, Request for Proposal (RFP) processing and contractor selection, noticing to proceed, and design. Construction activities include site preparation, environmental training, and build-out. Finally, post-construction activities include commissioning and work associated with operating and permitting.

The LADWP's November 17, 2025 letter to the State Water Board's Executive Director reporting on progress towards attaining milestones and OTC Policy final compliance, demonstrates some progress for Harbor, Haynes, and Scattergood, but also indicates delays for the Harbor and Haynes milestones previously provided in their November 15, 2024 letter. Here is a summary of what has changed from the November 2024 report submissions:

- Haynes Generating Station Unit 8: Pre-construction activities will continue through Semester 2 of 2026, delaying construction and post-construction activities by 1 semester.
- Haynes Generating Station Units 1 and 2: Pre-construction activities will continue through Semester 1 of 2027, delaying construction and post-construction activities by 1 semester.
- Harbor Generating Station Unit 5: Pre-construction activities will continue through Semester 2 of 2027, delaying construction by 2 semesters. As a result, construction would continue into Semester 2 of 2029 and post-construction activities and ceasing OTC operations would occur in late 2029.

Overall, the LADWP identified that post-construction would occur in Semester 2 of 2029 for all OTC units at these three power plants.

Table 11 illustrates when the LADWP anticipates initiating and completing each of these phases for each OTC replacement project as of 2024. Table 12 illustrates the updated milestones for each OTC replacement project as of the LADWP's November 2025 annual progress letter. Tables 11 and 12 include the following abbreviations: Semester 1 (S1) which includes January 1 through June 30 of a given year, Semester 2 (S2) which includes July 1 through December 31 of a given year, pre-construction activities (PC), construction activities (CO), and after-construction activities (AC). Red bolded text in Table 12 indicates changes to the semi-milestones from what was reported in the November 2024 progress letter.

**Table 11: 2024 OTC Policy Compliance Milestone Projections for
LADWP OTC Power Plants**

Facility and Units	2024 S1	2024 S2	2025 S1	2025 S2	2026 S1	2026 S2	2027 S1	2027 S2	2028 S1	2028 S2	2029 S1	2029 S2
Scattergood	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	CO	AC
Haynes Unit 8	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	AC	AC
Haynes Units 1 and 2	PC	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	AC
Harbor Unit 5	PC	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	AC

**Table 12: 2025 OTC Policy Compliance Milestone Projections for
LADWP OTC Power Plants**

Facility and Units	2024 S1	2024 S2	2025 S1	2025 S2	2026 S1	2026 S2	2027 S1	2027 S2	2028 S1	2028 S2	2029 S1	2029 S2
Scattergood	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	CO	AC
Haynes Unit 8	PC	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	AC
Haynes Units 1 and 2	PC	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	AC
Harbor Unit 5	PC	PC	PC	PC	PC	PC	CO	CO	CO	CO	CO	CO/AC

LADWP BAA and OTC Replacement Milestone Updates

The LADWP provided the State Water Board with three submissions containing information and updates on its progress towards attaining OTC Policy final compliance for each of its power plants. These updates were provided on April 8, 2024, November 15, 2024, and November 17, 2025. This section summarizes the LADWP's submissions.

Harbor: As of November 2025, the LADWP was in the planning phase for the Harbor Unit 5 Cooling System Retrofit Project. The LADWP is evaluating the Harbor Unit 5 Cooling System Retrofit project under California Environmental Quality Act and publicly released the Mitigated Negative Declaration on December 18, 2025. Additionally, the LADWP expected to submit a Coastal Development Permit application to the California Coastal Commission by the end of 2025; however, that application had not been received as of March 3, 2026.

Haynes: As of November 2025, the Haynes Unit 8 Recycled Water-Cooling System Retrofit Project Initial Study/Mitigated Negative Declaration was adopted on February 8, 2022. Additionally, Haynes Units 1 and 2 remain in the planning phase. The LADWP received a decision from the South Coast Air Quality Management District (South Coast AQMD) that the cooling tower is exempt from permitting requirements. The LADWP will advertise a RFP for a Progressive Design-Build contract by the end of 2025. The contracts for the recycled water pipeline construction and construction management were approved by the Long Beach Utilities Commission on November 6, 2025, with a targeted construction mobilization in January 2026. The LADWP continues to work with local sanitation districts for future sanitary sewer discharge options.

Scattergood: As of November 2025, the LADWP was engaged in pre-construction activities for the Scattergood Modernization Project, which includes replacing Units 1 and 2 with a combined-cycle generating system capable of operating on a fuel mixture of natural gas and hydrogen.

The LADWP provided the State Water Board with the following updates in its November 2025 submission:

- The LADWP held a Notice of Preparation public scoping meeting on June 6, 2023. All oral comments from the Notice of Preparation public meeting as well as written comments received were being addressed and considered in the draft Environmental Impact Report.
- The draft Environmental Impact Report was released for public review on October 31, 2024, for a 159-day review period ending April 7, 2025. The Final Environmental Impact Report was approved by the LADWP Board of Commissioners on October 28, 2025
- The air permit applications from three original equipment manufacturers for the combined-cycle generating system were submitted to South Coast AQMD in May 2024, August 2024, and October 2024, respectively.⁴⁸ The South Coast AQMD has completed their evaluation of the air permit applications and the next step involves South Coast AQMD's submittal of the permits to the U.S. EPA for review. The U.S. EPA's 45-day review and comment period will coincide with the public review/comment period, which typically lasts for 30 days. The South Coast AQMD will issue the final permit to LADWP after the comment period closes and the LADWP chooses the vendor.
- The application process for the Industrial Waste Permit for the sanitary sewer discharges from Scattergood is underway. All in-plant waste streams and stormwater will be directed to the Hyperion Treatment Plant located adjacent to Scattergood. An Industrial Waste Permit is expected to be issued in the fourth quarter of 2026.

The LADWP's initial April 2024 submission to the State Water Board indicated that the development of the RFPs for the design and build contractor was underway; the target release date for the RFPs was 4th Quarter 2024. The CEQA process began in 2023 and

⁴⁸ The Los Angeles Department of Water and Power (LADWP) submitted three different sets of applications for three different turbine manufacturers. As of November 2025, LADWP advised they will not be using one turbine vendor and the permit to construct applications associated with that vendor were cancelled. The South Coast Air Quality Management District will be issuing permits to construct for two manufacturers. The LADWP will decide which to install and cancel the other one.

the Final Environmental Impact Report was approved by the LADWP Board of Commissioners on October 28, 2025, and LADWP's RFP process was completed in November 2025

On November 17, 2025, the LADWP submitted information to the State Water Board that was consistent with the anticipated final compliance schedule for Scattergood.

On January 16, 2026, the LADWP indicated to State Water Board staff that meeting the December 31, 2029 OTC Policy compliance date would require receipt of new turbines by late 2026, that internal procurement requirements delayed contracting for those turbines, and that due to the delay, LADWP is currently scheduled to receive the turbines required for the energy transition in September 2029. The LADWP did not indicate any plans to modify the construction schedule to staff at that time.

The SACCWIS will continue to monitor the LADWP's progress towards attaining OTC Policy final compliance for Harbor, Haynes, and Scattergood.

VI. Regulatory Considerations and Permitting

The following section describes water quality and air quality regulatory requirements and procedures. Any extension or expansion of existing power plants that require development, as defined in the Coastal Act Section 30106, would require a California Coastal Commission or Local Coastal Program coastal development permit in addition to applicable water and air quality requirements. Further, several OTC power plants maintain leases with the California State Lands Commission that permit the usage of infrastructure necessary for operations (e.g., seawater intake structures) on state lands, and any changes to these facilities may require an application for a new lease. These actions are separate and distinct from the power plant contracting process.

Water Quality

The following section describes water quality related considerations for the operational OTC power plants.

Alamitos

Alamitos' OTC units in operation include Units 3, 4, and 5, and the power plant's OTC Policy final compliance date is December 31, 2026. On November 12, 2020, the Los Angeles Regional Water Quality Control Board (Los Angeles Regional Water Board) adopted Order R4-2020-0134, which renewed the waste discharge requirements and NPDES permit for Alamitos.⁴⁹ 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 stormwater to the Los Cerritos Channel Estuary. Alamitos is permitted to discharge 729 million gallons a day (MGD) of effluent, including OTC water. Its combined design flow for Units 3 through 6 is 1,066 MGD, as listed in the 2010 Final Substitute Environmental Document (2010 Final SED).⁵⁰ The operating flow is currently below the design flow capacity and reflected by the power plant's current permit limits, as Alamitos Unit 1, 2, and 6 were retired by December 31, 2020. Alamitos' cooling water intake structure is in a canal connected to the Los Cerritos Channel Estuary.

The Alamitos NPDES permit issued by the Los Angeles Regional Water Board expired on December 31, 2025. On November 16, 2023, the Los Angeles Regional Water Board renewed the associated Time Schedule Order (TSO).⁵¹ The TSO set interim effluent limitations for temperature, copper, and enterococcus through December 31, 2025. A Report of Waste Discharge (ROWD) application package for NPDES permit renewal was submitted to the Los Angeles Regional Water Board on July 2, 2025. The Los Angeles Regional Water Board accepted the ROWD package as complete on July 16, 2025. On July 23, 2025, the Los Angeles Regional Water Board provided comments to AES regarding their review of the Climate Change Plan, which was submitted with the ROWD application package as required by the NPDES permit for the facility. A revised Climate Change Plan was submitted to the Los Angeles Regional Water Board on October 22,

⁴⁹ Los Angeles Regional Water Quality Control Board. 2020. [Water Quality Order R4-2020-0134](#). Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

⁵⁰ State Water Resources Control Board. 2010. [Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling – Final Substitute Environmental Document](#). Sacramento, CA: State Water Resources Control Board.

⁵¹ Los Angeles Regional Water Quality Control Board. 2023. [Time Schedule Order R4-2023-0371](#). Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

2025. Order R4-2020-0134 remains in effect pending further Los Angeles Regional Water Board action.

Diablo Canyon

Diablo Canyon's OTC units in operation include Unit 1 and 2, and the power plant's OTC Policy final compliance date is October 31, 2030. On July 12, 1985, the Central Coast Regional Water Quality Control Board (Central Coast Regional Water Board) adopted NPDES permit No. CA0003751 for Diablo Canyon, which was renewed in 1990 via Order R3-1990-0009.⁵² Order R3-1990-0009 prescribes effluent limitations for the discharge of multiple sources of wastewater, including OTC water to Diablo Cove. Diablo Canyon is permitted to discharge 2,540 MGD of effluent, including OTC water. Its design flow is 2,528 MGD, as listed in the 2010 Final SED. Diablo Canyon's cooling water intake structure is in the power plant's intake cove.

The Central Coast Regional Water Board adopted Order R3-2026-0001 on February 26, 2026, which will not be effective until 50 days after the Central Coast Regional Water Board's approval date. Until then the previous order, Order R3-1990-0009, remains in effect.

Harbor

Harbor's OTC unit in operation is Unit 5, and the power plant's OTC Policy final compliance date is December 31, 2029. On February 27, 1995, the Los Angeles Regional Water Board adopted Order No. 95-027, which implemented waste discharge requirements and NPDES permit No. CA0000361 for Harbor.⁵³ The Los Angeles Regional Water Board renewed these requirements in 2003 via Order R4-2003-0101.⁵⁴ Order R4-2003-0101 prescribes effluent limitations for the discharge of OTC water and demineralizer regeneration wastewater into the Los Angeles Harbor's West Basin. Harbor

⁵² Central Coast Regional Water Quality Control Board. 1990. Order No. R3-1990-0009. San Luis Obispo, CA: Central Coast Regional Water Quality Control Board.

⁵³ Los Angeles Regional Water Quality Control Board. 1995. [Order No. 95-027](#). Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

⁵⁴ Los Angeles Regional Water Quality Control Board. 2003. [Order. No. R4-2003-0101](#). Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

is permitted to discharge 108 MGD of effluent, including OTC water. Its design flow is 108 MGD, as listed in the 2010 Final SED. Harbor's cooling water intake structure is located in the Los Angeles Harbor.

Order R4-2003-0101 remains in effect pending further Los Angeles Regional Water Board action. To date, the Los Angeles Regional Water Board has not issued a final NPDES permit to the LADWP. In September 2024, the LADWP submitted a letter to support the request of a TSO and compliance schedule. In September 2025, LADWP received a letter from the Los Angeles Regional Water Board noting that the LADWP did not include additional information or provide a schedule to achieve compliance with proposed effluent limitations for total residual chlorine and temperature. The LADWP is in the process of preparing a TSO, compliance schedule, or variance under Clean Water Act Section 303(g) for submittal to the Los Angeles Regional Water Board.

Haynes

Haynes' OTC units in operation include Unit 1, 2, and 8, and the power plant's OTC Policy final compliance date is December 31, 2029. In 2000, the Los Angeles Regional Water Board adopted Order No. 00-081, which implemented waste discharge requirements and NPDES permit No. CA0000353 for Haynes.⁵⁵ The Los Angeles Regional Water Board revised these requirements in 2004 via Order R4-2004-0089.⁵⁶ Order No. 00-081 prescribes effluent limitations for multiple discharges of wastewater, including OTC water into the San Gabriel River. Haynes is permitted to discharge 1,014 MGD of effluent, including OTC water. Its design flow is 968 MGD, as listed in the 2010 Final SED. The operating flow is currently below the design flow capacity, as Haynes Units 5 and 6 were retired by December 31, 2013. Haynes' cooling water intake structure is located in the Long Beach Marina.

⁵⁵ Los Angeles Regional Water Quality Control Board. 2000. Order No. 00-081. Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

⁵⁶ Los Angeles Regional Water Quality Control Board. 2004. [Order No. R4-2004-0089](#). Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

Order No. 00-081 remains in effect pending further Los Angeles Regional Water Board action. The LADWP continues to explore sewer discharge options with local sanitation districts, including Los Angeles County Sanitation District and Orange County Sanitation District. The LADWP also intends to maintain NPDES permit coverage for wastewater discharges as a backup option for when sewer discharge is not feasible/available.

The LADWP submitted an ROWD application package to the Los Angeles Regional Water Board to renew the Haynes NPDES permit. The LADWP will need to obtain a TSO or compliance schedule to meet new permit effluent limitations. In September 2025, the Los Angeles Regional Water Board noted that they will proceed with updates on the tentative Haynes NPDES permit and will consider a TSO, compliance schedule, or variance. The LADWP is in the process of preparing a TSO, compliance schedule, or variance under Clean Water Act Section 303(g) for submittal to the Los Angeles Regional Water Board.

Huntington Beach

Huntington Beach's OTC unit in operation includes Unit 2, and the power plant's OTC Policy final compliance date is December 31, 2026. On December 4, 2020, the Santa Ana Regional Water Quality Control Board (Santa Ana Regional Water Board) adopted Order R8-2020-0040, which renewed the waste discharge requirements and NPDES permit for Huntington Beach.⁵⁷ Order R8-2020-0040 prescribes effluent limitations for the discharge of multiple sources of wastewater, including OTC water to the Pacific Ocean. Huntington Beach is permitted to discharge 127 MGD of effluent, including OTC water. Its design flow is 514 MGD, as listed in the 2010 Final SED. The operating flow is currently below the design flow capacity and reflected by the power plant's current permit limits, as Huntington Beach Units 1, 3, and 4 were retired by December 31, 2020. Huntington Beach's cooling water intake structure is located in the Pacific Ocean.

The Huntington Beach NPDES permit issued by the Santa Ana Regional Water Board expired on December 31, 2025. An ROWD application package for the NPDES permit

⁵⁷ Santa Ana Regional Water Quality Control Board. 2020. [Order No. R8-2020-0040](#). Riverside, CA: Santa Ana Regional Water Quality Control Board.

renewal was submitted to the Santa Ana Regional Water Board on July 2, 2025. The application is still under review, and no further updates have been received. Order R8-2020-0040 remains in effect pending further action from the Santa Ana Regional Water Board.

Ormond Beach

Ormond Beach's OTC units in operation include Unit 1 and 2, and the power plant's OTC Policy final compliance date is December 31, 2026. 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.⁵⁸ Order R4-2020-0132 prescribes effluent limitations for the discharge of OTC water, low-volume wastes, and stormwater to the Pacific Ocean. Ormond Beach is permitted to discharge 688.2 MGD of effluent, including OTC water. Its design flow is 685 MGD, as listed in the 2010 Final SED. Ormond Beach's cooling water intake structure is in the Pacific Ocean.

The Ormond Beach NPDES permit issued by the Los Angeles Regional Water Board expired on December 31, 2025. Ormond Beach submitted a permit renewal ROWD application package for NPDES Permit CA0001198, Order No. R4-2020-0132 to the Los Angeles Regional Water Board on May 15, 2025, before the regulatory deadline. The Los Angeles Regional Water Board accepted the ROWD application package as completed on August 11, 2025. Order R4-2020-0132 remains in effect pending further Los Angeles Regional Water Board action.

Scattergood

Scattergood's OTC units in operation include Unit 1 and 2, and the power plant's OTC Policy final compliance date is December 31, 2029. 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.⁵⁹ Order R4-2016-0055

⁵⁸ Los Angeles Regional Water Quality Control Board. 2020. [Order No. R4-2020-0132](#). Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

⁵⁹ Los Angeles Regional Water Quality Control Board. 2016. [Order No. R4-2016-0055](#). Los Angeles, CA: Los Angeles Regional Water Quality Control Board.

prescribes effluent limitations for the discharge of OTC water, industrial process waters, and stormwater to the Pacific Ocean. Scattergood is permitted to discharge 226 MGD of effluent, including OTC water. Its design flow is 495 MGD, as listed in the 2010 Final SED. The operating flow is currently below the design flow capacity and reflected by the power plant's permit limits, as Scattergood Unit 3 was retired by December 31, 2015. Scattergood's cooling water intake structure is located in the Santa Monica Bay.

On March 18, 2021, the Los Angeles Regional Water Board administratively extended the Scattergood NPDES permit after receiving a complete ROWD application package from the LADWP. The Order R4-2016-0055 terms and conditions continue to be in full effect pending action on a new or revised permit by the Los Angeles Regional Water Board. LADWP submitted an ROWD application package to renew the Scattergood NPDES permit to the Los Angeles Regional Water Board. In September 2025, the Los Angeles Regional Water Board sent a letter to LADWP noting that they will proceed with updates on the tentative Scattergood NPDES permit. The Los Angeles Water Board expects to issue the permit in 2026.

Air Quality

Air Quality Regulatory Structure

The U.S. EPA, CARB, and California's 35 local air quality management and air pollution control districts (air districts) comprise a three-tiered system for addressing California air pollution. All power plants that operate in the state and produce emissions are permitted by air districts, which require scheduled monitoring and reporting from the operators to ensure compliance with applicable rules and regulations. 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 power plants. The South Coast AQMD is the air district whose jurisdiction covers all of Orange County and the non-desert regions of Los Angeles County, San Bernardino County and Riverside County, including the Coachella Valley. The Ventura County Air Pollution Control District (VCAPCD) jurisdiction encompasses Ventura County. The remaining operational non-nuclear OTC

units (those listed in Table 2 of this report) are all located within these two air districts. The following sections describe air-related regulatory considerations for those OTC units. Diablo Canyon is not included because it is a nuclear generation facility, and therefore the generating units do not directly emit air pollutants including greenhouse gases while operating.

Permitting and Compliance

Each operating OTC power plant has a current federal Clean Air Act Title V permit and can continue operating in accordance with its permit, subject to renewal requirements. The Huntington Beach Title V permit expires in 2027. The Harbor Title V permit was renewed in November 2024 and expires in 2029. Operation of Alamitos and Ormond Beach through 2026, and Scattergood and Haynes through 2029, requires that each facility apply to renew its Title V permit in accordance with air district permitting procedures and timelines, including any public notice requirements.⁶⁰ The South Coast AQMD received Title V permit renewal applications for Scattergood, Haynes, and Alamitos on the following respective dates: July 17, 2024; August 2, 2024; and October 22, 2024. These permit renewal applications are in various stages of review. Ormond Beach applied for a Title V permit renewal on March 1, 2023, and the application was subsequently deemed complete by VCAPCD on April 13, 2023. Ormond Beach is operating under an application shield until a new Title V permit is issued. The Title V reissuance permit was issued by VCAPCD on December 10, 2025. This renewed permit is valid through December 31, 2028. Title V permits may include conditions establishing air pollutant emission standards, limits on fuel consumption, visible emission standards, and other air program requirements.

⁶⁰ The current Title V permit expiration dates for the plants in the South Coast Air Quality Management District (South Coast AQMD) are: Alamitos Generating Station – April 21, 2025; Scattergood Generating Station – January 13, 2025; Harbor Generating Station – November 5, 2029; Haynes Generating Station – January 30, 2025; and Huntington Beach Generating Station – March 22, 2027. Submittal of a renewal application to SCAQMD between 180 days and 545 days prior to expiration of their Title V permit qualifies as an application shield to continue operating under the terms and conditions of the permit until it is renewed.

The OTC power plants are in compliance with applicable rules and regulations as of October 2025 based on information available to CARB, South Coast AQMD, and VCAPCD. This subsection covers Notices of Violation and Notices to Comply (NTCs) issued from August 30, 2024, to October 31, 2025. VCAPCD indicated that there are no Notices of Violation or NTCs for Ormond Beach issued during this timeframe. For the facilities in South Coast AQMD, the district issued a total of four Notices of Violation and two NTCs to Alamitos, Scattergood, and Haynes during this timeframe; in addition, CARB issued one Notice of Violation to the LADWP. Alamitos received one Notice of Violation related to the operation of its nitrogen oxides (NO_x) Continuous Emissions Monitoring System (CEMS) used in determining the emission rate from each source. Scattergood received one NTC related to recordkeeping, which was resolved within days by correcting a date on a required form. Haynes received three Notices of Violation and one NTC. One Notice of Violation was for inaccurate Quarterly Certification of Emissions in the 1st, 2nd, and 3rd quarters of 2024; one Notice of Violation was for failure to comply with the hourly NO_x emission limit for the 7th and 8th hours of September 28, 2024, and failure to inject ammonia at all times for combined-cycle gas turbine Unit 9; and one Notice of Violation was for failure to conduct daily CEMS calibration on March 12, 2023, for power generating boiler Unit 1.⁶¹ The NTC was related to an error applying missing data procedures for CEMS and submitting reports with inaccurate emissions. LADWP's Notice of Violation from CARB was issued for reporting errors in the 2020, 2021, and 2022 annual reports, submitted under the Regulation for Reducing Greenhouse Gas Emissions from Gas-Insulated Equipment (GIE Regulation). The GIE Regulation applies to GIE equipment owned by the LADWP and cannot be attributed to a specific facility. Alamitos' Notice of Violation is still pending; all other compliance actions have been resolved.⁶²

Rulemaking

VCAPCD does not anticipate future air district rule changes that would directly impact generation at Ormond Beach through its 2026 compliance date. Ormond Beach Power

⁶¹ Notice of Violation was issued on November 19, 2024, with the violation occurring on March 12, 2023.

⁶² Information is available through the [South Coast Air Quality Management District's Facility Information Detail \(F.I.N.D\) web tool](#).

intends to permanently shut down and retire Ormond Beach Units 1 and 2 per the final compliance date listed in the OTC Policy and does not plan to retrofit these existing units with alternate cooling technologies to comply with OTC Policy Track 1 or use operational or technical measures to comply with Track 2.

South Coast AQMD Rule 1135 and Rule 429.2 are the two key rules that apply to new and existing electric generating facilities in South Coast AQMD. Rule 1135 sets Best Available Retrofit Control Technology level emissions standards for NO_x. OTC power plants that plan to comply with the OTC Policy by retiring their OTC generating emissions units are exempt from the Best Available Retrofit Control Technology standards through their OTC Policy compliance dates, including approved extensions, but no later than December 31, 2029. This provision applies so long as the generating emissions units retain their NO_x and ammonia limits, startup, shutdown, and tuning requirements; and the units meet pollutant averaging times in the current permits; the units retire by their compliance dates established in Table 1 of Section 2(B) of the OTC Policy; and facilities provide proper notification to the South Coast AQMD of any extensions. However, owners or operators that remove the OTC system to comply with the OTC Policy, but continue operating the generating emissions units, will be expected to comply with Rule 1135 NO_x emission limits for boilers and gas turbines, or use the Rule 1135 (g)(1) exemption for combined-cycle gas turbines installed prior to November 2, 2018, which provides some additional flexibility on meeting the NO_x emission limit.

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 exempts OTC units that will be retired by the OTC Policy compliance date from certain provisions through December 31, 2029, including startup and shutdown duration limits, limits to the number of startups, and installing a temperature device. Therefore, any plan modifications that will keep an existing gas generating unit operational and instead achieve OTC Policy compliance through replacement with non-OTC alternate cooling technology, will no longer qualify for the Rule 429.2 exemption for OTC units scheduled for retirement.

Alamitos and Huntington Beach

AES intends to permanently shut down and retire Alamitos Units 3, 4, and 5 and Huntington Beach Unit 2 per the compliance dates listed in the OTC Policy and does not plan to retrofit these existing units with alternate cooling technologies to comply with OTC Policy Track 1 or use operational or technical measures to comply with Track 2. Therefore, these units qualify for the OTC exemptions in Rule 1135 and Rule 429.2.

Harbor

The LADWP plans to keep Harbor Unit 5 operational and replace the OTC system with alternate cooling technology, which is still in the planning phase. The natural gas-fueled combined-cycle turbines (Units 1 and 2) associated with Harbor Unit 5 had their combustors upgraded to dry low-NO_x burners and are also equipped with post-combustion selective catalytic reduction to comply with the Rule 1135 NO_x limit for combined-cycle units. The units are also in compliance with the startup/shutdown duration, fuel oil readiness testing, and NO_x control temperature measuring device requirements in Rule 429.2.

Haynes

Haynes Units 1 and 2 already comply with the NO_x emission limit for boilers in Rule 1135, as well as the startup/shutdown duration, fuel oil readiness testing, and NO_x control temperature measuring device requirements in Rule 429.2.

The LADWP plans to keep Haynes Unit 8 operational and replace the OTC system with a wet cooling system that utilizes reclaimed water. The natural gas-fueled combined-cycle turbines (Units 9 and 10) associated with Haynes Unit 8 are currently in compliance with the Rule 1135 NO_x limit for combined-cycle units. The units are also in compliance with Rule 429.2 startup/shutdown duration, fuel oil readiness testing, and NO_x control temperature measuring device requirements.

Scattergood

The LADWP plans to eliminate the use of OTC and repower Scattergood Units 1 and 2 with a new natural gas-capable and hydrogen-ready combined-cycle gas turbine. South

Coast AQMD completed their review of the permit-to-construct applications for the Scattergood Modernization Project and submitted the proposed modified Title V permit, which includes the project, to U.S. EPA on November 20, 2025, for 45-day review. Additionally, in accordance with South Coast AQMD rules, the project requires 30-day public comment period, and the facility is responsible for ensuring notification of the 30-day public review to all addresses within a quarter mile of the outer facility boundary. South Coast AQMD posted the public notice for the project to the Los Angeles Daily Journal newspaper on November 26, 2025.

Any future projects to modify existing emissions units or install new emissions units at the facilities will need to go through the appropriate permit application and review processes of the respective air district. This would include meeting applicable source-specific rule requirements in addition to New Source Review requirements, including Best Available Control Technology and emission offsets.

VII. Conclusions

The SACCWIS does not recommend any changes to the OTC Policy final compliance schedules for associated generating facilities. The agencies of the SACCWIS continue to assess reliability impacts to the electric grid, the progress of procurement and new generation development, and progress in meeting air quality and climate goals.

Energy procurement to meet CPUC procurement orders is ongoing, and the CPUC continues to monitor progress towards meeting these orders and changing grid conditions. Consistent with the cycle of energy project development, existing contracts may face delays, and some new contracts will be added. Significant progress has been made deploying new and clean generation. Additionally, the CPUC, CEC, and CAISO continue to monitor statewide resource development and reliability needs. The CPUC, CEC, and CAISO will continue to monitor procurement and progress of new resource development, and update grid reliability assessments in quarterly reports pursuant to Senate Bill 846. The SACCWIS may convene in future years, as needed or requested by a SACCWIS member agency, to advise the State Water Board on the implementation of

the OTC Policy compliance schedule and grid reliability concerns impacting existing power plants.

VIII. APPENDIX A:
AVERAGE ANNUAL FLOW RATE DATA FOR ONCE-THROUGH COOLING FACILITIES

	Average Annual Flow Rate in Million Gallons per Day (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
Huntington Beach Generating Station	202.9	242.6	238.5	178	169	159.6	134	134.2	114.5

	Average Annual Flow Rate in Million Gallons per Day (MGD)								
Power Plant Name	2010	2011	2012	2013	2014	2015	2016	2017	2018
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). Last updated November 2025.

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

	Average Annual Flow Rate (MGD)					
Power Plant Name	2019	2020	2021	2022	2023	2024
Humboldt Bay Power Plant Units 1&2	0	0	0	0	0	0
Potrero Power Plant	0	0	0	0	0	0
Contra Costa Generating Station	0	0	0	0	0	0
Pittsburg Power Plant	0	0	0	0	0	0
Moss Landing Power Plant	236.2	241.2	241.7	257.4	260.1	228.64
Diablo Canyon Nuclear Power Plant	2,067	2,282	2,212	2287.4	2313.83	2320.24
Morro Bay Power Plant	0	0	0	0	0	0
El Segundo Generating Station	0	0	0	0	0	0
Haynes Generating Station Units 1&2	398.7	467.0	472.0	390.3*	382.1	335.69
Scattergood Generating Station	98.1	124.0	92.0	99.1	80.1	79.82
Harbor Generating Station	48.1	45.0	49.0	49.3	51.6	49.66
Alamitos Generating Station	101.8	126.7	126.0	254.6*	270	50.94
Redondo Beach Generating Station	72.4	80.2	60.3	122.5*	146.3	0
Mandalay Generating Station	0	0	0	0	0	0
Ormond Beach Generating Station	146.9	227.5	250.6	180.2	180.5	54.16
Huntington Beach Generating Station	113.4	82.1	68.3	66**	71.6	31.25

	Average Annual Flow Rate (MGD)					
Power Plant Name	2019	2020	2021	2022	2023	2024
South Bay Power Plant	0	0	0	0	0	0
Encina Power Station	262.1	0	0	0	0	0
San Onofre Nuclear Generating Station	0	0	0	0	0	0
Total	3,545	3,814	3,572.6	3706.8	3,755.8	3,150.40

Source: U.S. EPA Flow Data, (Intergraded Compliance Information System [ICIS] Database). Last updated November 2025.

*The methodology to calculate total averages for Alamitos, Haynes, and Redondo Beach generating stations was adjusted for 2022 to reflect average annual flow rate more accurately by adding total monthly volumes from individual discharge points, rather than averaging across individual discharge points.

**Huntington Beach Generating Station's average annual flow rate was improperly entered as 60 million gallons per day (MGD) in 2022. The correct amount is 66 MGD and is reflected in the table.