



O CED
Office of Clean Energy Demonstrations

REGIONAL CLEAN HYDROGEN HUBS PROGRAM CALIFORNIA HYDROGEN HUB (ARCHES)



AWARDEE FACT SHEET

CALIFORNIA HYDROGEN HUB (ARCHES)

The Regional Clean Hydrogen Hubs (H2Hubs) Program, managed by the U.S. Department of Energy's (DOE) Office of Clean Energy Demonstrations (OCED), aims to create networks of hydrogen producers, consumers, and local connective infrastructure to accelerate the use of hydrogen as a clean energy carrier that can deliver or store tremendous amounts of energy.

Funded through the Bipartisan Infrastructure Law, OCED selected seven H2Hubs to begin award negotiations for up to \$7 billion, the largest investment in clean manufacturing and jobs in American history. Following negotiations, in July 2024, OCED awarded the California Hydrogen Hub—led by the Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES)—with \$30 million for the first tranche of funding out of the total project federal cost share of up to \$1.2 billion to begin Phase 1 of the project plan. ARCHES is determining final siting for project locations across California.

Project At a Glance – Phase 1

Total OCED Cost Share Amount:

Up to \$1.2 billion

Phase 1 OCED Award Amount:

\$30 million*

Phase 1 Total Project Amount:

\$186 million**

Phase 1 Scope of Work:

Planning and development activities

Phase 1 Timeline:

Up to 18 months

Recipient:

Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES)

Project Locations:

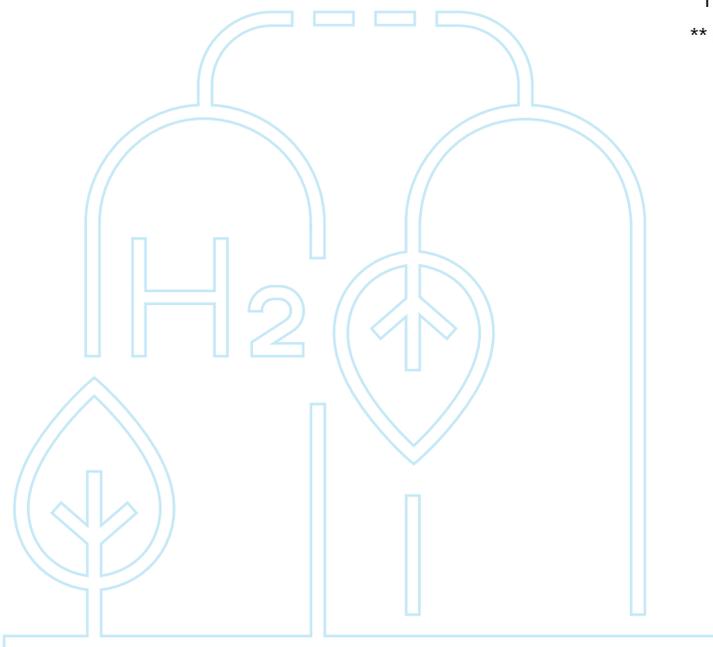
Across California, including at the Ports of Los Angeles, Long Beach, and Oakland; major power plants in Northern and Southern California; Lancaster, CA; and on the reservation of the Rincon Band of Luiseño Indians

Project Start Date:

July 2024

* Represents OCED's cost share for the initial project phase. Additional funding for this project is subject to future award negotiations at the end of each project phase.

** Represents the total project cost for the initial project phase.



ABOUT THIS PROJECT

Project Description at the Hub-level:

OCED is working with ARCHES to build the California Hydrogen Hub, a network of clean hydrogen production sites that incorporates multiple facilities at California ports, with the ultimate goal of decarbonizing public transportation, heavy duty trucking, and port operations by 2 million metric tons per year—roughly the equivalent to annual emissions of 445,000 gasoline-powered cars. The expansion of hydrogen fuel cell vehicles in heavy-duty transportation aims to not only drive improvements in air quality along high pollution interstate transportation corridors but also to facilitate greater connectivity and expansion of a clean West Coast freight network that links to the Pacific Northwest Hydrogen Hub. The hydrogen produced by the California Hydrogen Hub aims to power:

- 3 large ports with 200+ pieces of cargo-handling equipment
- 5,000+ fuel-cell-electric trucks
- 1,000+ fuel-cell-electric buses
- 1 marine vessel
- Turbines and stationary fuel cells

The Hub also plans to develop associated infrastructure for hydrogen transport and use including liquefaction, 60 heavy-duty fueling stations, and approximately 165 miles of open-access pipelines.

The impact of the California Hydrogen Hub is amplified by the state of California's strong policy and regulatory support for hydrogen and, potentially, production and use incentives.



In July 2024, OCED awarded ARCHES with \$30 million for the first tranche of funding (out of the total project federal cost share of \$1.2 billion) to begin Phase 1, which is expected to last up to 18 months and includes planning, design, and community and labor engagement activities. During this time period, each H2Hub technology provider will be responsible for the planning and development of their respective facilities, while all Hub collaborators will contribute to community benefits activities.

OCED will provide project management oversight of the California Hydrogen Hub by evaluating the status and quality of implementation at each phase of the project, including community benefits. Through its phased approach to project management, OCED will review and evaluate the Hub's progress, including community benefits, which impact OCED's decision to continue to provide federal funding and allow a project to progress to the following phase.

DOE will comply with the National Environmental Policy Act, which will include public involvement. Projects will also require California Environmental Quality Act compliance, which also includes public involvement.

PROJECT SITES



ARCHES is determining potential siting and facility options across California, with selected sites (projects) including:

1

PRODUCTION PROJECT

This project envisions more than 10 sites throughout California, with most in the Central Valley, enabling the production of hundreds of metric tons per day (MTPD) of clean hydrogen. The majority of this clean hydrogen will be produced with renewable electricity, and some will be produced from biogenic sources. The production of clean hydrogen with renewable energy into the ARCHES hydrogen marketplace aims to enable various end uses and applications—such as heavy-duty transportation—that currently contribute to significant statewide emissions.

2

POWER PROJECT

This project plans to generate clean power at two major power plants and other stationary distributed locations throughout the state, including the Los Angeles Scattergood plant and Lodi Energy Center. This project will initially have hydrogen (at increasing percentages) blending with natural gas at the combined-cycle power plants before transitioning to 100 percent clean hydrogen. The use of clean hydrogen for power generation significantly reduces carbon dioxide (CO₂), methane, particulates, and other harmful emissions.

3

TRANSPORTATION PROJECT

This project consists of more than 60 hydrogen fueling stations that will serve more than 5,000 Class 6-8 trucks and 1,000 fuel cell electric buses. The Hub has developed partnerships with more than 13 regional transit agencies (starting with AC Transit, Foothill Transit, Fresno Transit, Gold Coast Transit, Livermore Amador Valley Transit, North County Transit District, Omnitrans, Orange County, Riverside, Santa Cruz, SamTrans, San Joaquin, and Sunline) and plans to roll out sites across the state in conjunction with fleets and clean hydrogen production over time. The elimination of diesel-fueled trucks drives the majority of California H2Hub health benefits, especially in key corridors from ports to inland warehouses.

PROJECT SITES

ARCHES is determining potential siting and facility options across California, with selected sites (projects) including:



4

PORTS OF LONG BEACH, LOS ANGELES, AND OAKLAND

As key end-use facilities, the Ports of Long Beach, Los Angeles, and Oakland seek to replace existing diesel-powered cargo-handling equipment with hydrogen fuel cell equivalents at marine terminals at the Port of Long Beach and associated fueling infrastructure. Specific marine terminals within each port where hydrogen fuel cell cargo-handling equipment will be deployed are still to be determined. The deployment of hydrogen fuel cell electric cargo-handling equipment and drayage trucks contributes to improving air quality for surrounding communities by reducing nitrogen oxides and diesel particulate matter at the ports.

5

SCRIPPS MARINE VESSEL

This first-of-its-kind hydrogen-powered marine research vessel will operate cleanly and quietly, enabling better research of underwater areas. The 140-foot, 300 gross tonnage, 50-person research vessel plans to use liquid hydrogen and existing technology to replace tens of thousands of gallons of diesel fuel per year and convert 75 percent of its emissions to be fossil free, avoiding significant CO₂ emissions per year. Based at Scripps Institute of Oceanography in San Diego and Point Loma Harbor, this project aims to showcase a path forward for smaller water and harbor craft, which typically have large emission impacts.

COMMUNITY BENEFITS COMMITMENTS

Community benefits commitments are a key component of the California Hydrogen Hub, to be informed and developed in consultation with local communities and tribes, which aim to mitigate potential impacts of this Hub and maximize local community benefits. ARCHES has set strong commitments related to community and labor engagement, Investing in America's Workforce, Justice40, and Diversity, Equity, Inclusion, and Accessibility (DEIA). ARCHES has also outlined initial metrics to measure progress, which can be found in the Community Benefits Pathway, publicly available on the ARCHES website at www.ARCHES.org.

Through the project lifetime, the Hub plans to implement:

- Continued and enhanced transparency and public engagement through the Hub-level **Community Benefits Working Group**, which will provide information critical to enabling input on and understanding of impacts and benefits. This will include, at a minimum, proposed site locations as they are determined, potential environmental and health impacts including criteria pollutant emissions, planned mitigation measures (e.g., emission control technologies), and other information necessary to understand Hub and project-level impacts and benefits. This is a public group with no non-disclosure agreement (NDA) requirement.
- The **Community Benefits Auditing Team**, a group of third-party experts that will serve as an accountability mechanism for the Hub. This group will be charged with tracking and public dissemination of community benefits activities across the Hub through the Community Benefits scorecard approach outlined in the initial Community Benefits Pathway and will be composed of experts in various community benefits issues.
- **Local Community Working Groups and project and community liaisons** to ensure transparency and the opportunity for open community input and two-way engagement. Local community working groups will be provided with information critical to understanding project impacts and benefits without an NDA, including information on projected emissions and health impacts.
- Creating more than **200,000 new, quality jobs**, while establishing strong workforce development activities, and employment that fosters workplace DEIA.
- Robust **workforce commitments, including a public commitment to negotiate Project Labor Agreements (PLAs)** for all construction projects and a commitment to collaborate with local labor organizations and pursue ongoing labor engagement. PLAs will also include stipulations to ensure equitable access to employment for local workers and define the percentage of hours to be worked by apprentices and by union labor.
- **Robust Justice40 commitments**, which will include updates to the Justice40 Assessment and Implementation Strategy during each phase and sharing relevant information for impacted community input. ARCHES commits to robust evaluation and elimination or mitigation of all potential community impacts from hydrogen production, transport, storage, and utilization. Project benefits will include deep decarbonization and localized pollution reductions, as well as socioeconomic and workforce benefits.
- A **public data reporting platform to enhance transparency**. The platform will provide information about the projects including status updates, information about the Community Benefits Auditing Team, and engagement mechanisms and events. In later phases, the data reporting platform will include metrics related to community and labor engagement, quality jobs and workforce development, tribal impacts, DEIA, and Justice40 initiatives.
- Negotiating **Community Benefits Agreements or Community Benefits Plans** at the project level through local community engagement in cases where the communities desire such agreements. These negotiations will begin after the selection of project sites and will not require an NDA to participate.

More details on ARCHES' community benefits commitments can be found [here](#).

REGIONAL CLEAN HYDROGEN HUBS

Program Goals

The Regional Clean Hydrogen Hubs Program will establish H2Hubs across the nation and jumpstart a new clean energy economy in the United States. Funded by the Bipartisan Infrastructure Law, the H2Hubs will accelerate the commercial-scale deployment of clean hydrogen, helping to generate clean, dispatchable power, create a new form of energy storage, and decarbonize heavy industry and transportation. Together, the H2Hubs will kickstart a national network of clean hydrogen producers, consumers, and connective infrastructure while supporting the production, storage, delivery, and end-use of clean hydrogen. Clean hydrogen is a flexible energy carrier that can be produced from a diverse mix of domestic clean energy resources, including renewables, nuclear, and fossil resources with safe and responsible carbon capture. As the most abundant element in the universe, hydrogen has unique characteristics as an energy carrier that make it the best option to decarbonize energy-intensive heavy industry and support heavy-duty transportation. Matching the scale-up of clean hydrogen production to a growing regional demand is a key pathway to achieving large-scale, commercially viable hydrogen ecosystems. The H2Hubs will also help to enable the development of diverse, domestic clean energy pathways across multiple sectors of the economy and serve as a central driver in helping communities benefit from clean energy investments, good-paying jobs, and improved energy security.

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More Resources

DOE OCED H2Hubs Program Website:
energy.gov/OCED/H2Hubs

ARCHES Website:
www.arches.org

