

BOARD MEETING DATE: August 7, 2026

AGENDA NO. 7

PROPOSAL: Execute Contract to Demonstrate Modular Hydrogen Vehicle Refueling Station

SYNOPSIS Hydrogen refueling technology continues to need improvements to reduce boil-off gas losses, increase hydrogen dispensing capacity, and improve reliability. Clear Skies Hydrogen Corporation (CSH2) will develop and demonstrate a modular, deployable hydrogen vehicle refueling station at SunLine Transit Agency using an advanced cryogenic pump technology. This action is to execute a contract with CSH2, in an amount not to exceed \$700,000 from the Clean Fuels Program Fund (31).

COMMITTEE: Technology, June 26, 2026; Recommended for Approval

RECOMMENDED ACTION:

Authorize the Chair, or on the Chair's behalf, the Executive Officer, to execute a contract with Clear Skies Hydrogen Corporation (CSH2). to demonstrate a full-scale commercial modular Hydrogen refueling station in an amount not to exceed \$700,000 from the Clean Fuels Program Fund (31).

Wayne Natri
Executive Officer

AK:MW:VP:MH

Background

Hydrogen boil-off is one of the primary technical and economic barriers to scaling liquid hydrogen refueling infrastructure. Because liquid hydrogen must be stored at cryogenic temperatures, even small amounts of environmental heat leakage can cause a portion of the fuel to evaporate into gas, resulting in continuous losses during storage, transport, and station operation. Industry reports indicate that boil-off losses at hydrogen refueling stations can range from roughly 10 to 50 percent, significantly increasing fuel costs and reducing station profitability. Reducing boil-off through measures such as

improved insulation, zero boil off storage systems, advanced cryogenic pumps, and pre-cooling strategies can improve the economic viability of hydrogen. Lower boil off losses, will improve fuel utilization, reduce emissions associated with hydrogen leakage, and support more reliable long-distance transport and storage. These improvements are critical to expanding a commercially sustainable hydrogen refueling network.

CSH2 will demonstrate a modular hydrogen vehicle refueling station designed for flexible deployment, streamlined permitting and reduced construction timelines. The modular platform is enabled by a proprietary cryopump designed to reduce liquid hydrogen boil-off losses through integrated thermal management features and a direct fill architecture, eliminating costly equipment from station design. Together, these innovations address two primary cost drivers limiting hydrogen adoption at scale, high boil-off gas losses and excessive capital expenditure.

Proposal

CSH2 proposes to demonstrate a modular refueling system at SunLine Transit Agency (SunLine) in Thousand Palms, California. The demonstration will seek to validate the system's ability to reduce boil off gas losses through a structured partnership with the University of California, Irvine (UCI), while demonstrating fueling rates, reliability and maintenance metrics, such as repair labor hours and wear rates, critical for commercial readiness and technology advancement. CSH2 is requesting \$700,000 from South Coast AQMD to deploy, commission, and demonstrate the unit, as well as to contract with UCI for performance modeling, data analysis, and verification.

CSH2 will lead the primary project activities. UCI will lead performance modeling data analysis and verification. SunLine will provide the demonstration site, support permitting and setup activities, and supply buses and drivers for refueling operations. Hyundai Motor Company (Hyundai) will support the demonstration by providing at least two XCIENT Fuel Cell electric trucks and driver labor. Air Liquide USA LLC will provide the hydrogen fuel supply.

Sole Source Justification

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified. This request for a sole source award is made under provision B.2.d.: Other circumstances which, in the determination of the Executive Officer, require such a waiver in the best interest of South Coast AQMD. Specifically, these circumstances are B.2.d.(1): Project involving cost-sharing by multiple sponsors. The proposed projects will include in-kind contributions and cost-share by CSH2, SunLine, Hyundai, and Air Liquide.

Benefits to South Coast AQMD

Projects to support the development and demonstration of zero-emission vehicle technologies and supporting infrastructure are included in the Technology Advancement Office Clean Fuels Program 2026 Plan Update under the category Zero Emission Infrastructure category under “Develop and Demonstrate Hydrogen Production and Fueling Stations.” This project will develop a modular hydrogen refueling station designed to reduce boil-off losses and capital cost, thereby supporting the advancement of hydrogen fuel cell electric trucks and transit buses. Implementation of the project is consistent with the 2022 AQMP, which relies on zero-emission technologies to achieve NAAQS for ozone and PM2.5. By reducing boil-off gas losses and station development costs, the modular hydrogen refueling station addresses two critical barriers to expanding a commercially sustainable hydrogen refueling network.

Resource Impacts

The total cost for the proposed project is \$2,958,000, of which South Coast AQMD’s proposed contribution will not exceed \$700,000 from the Clean Fuels Program Fund (31), as summarized below.

Proposed Zero Emission Demonstration Project Costs

Source	Funding Amount	% of Total Project Cost
Clear Skies Hydrogen Corporation and Partners*	\$2,258,000	76
South Coast AQMD (<i>requested</i>)	\$700,000	24
Total	\$2,958,000	100

*Cash and in-kind contribution from CSH2, Sunline, Hyundai, and Air Liquide

Sufficient funds are available in the Clean Fuels Program Fund (31) for this proposed project. The Clean Fuels Program Fund (31) is established as a special revenue fund resulting from the state mandated Clean Fuels Program. The Clean Fuels Program, under Health and Safety Code Sections 40448.5 and 40512 and Vehicle Code Section 9250.11, establishes mechanisms to collect revenues from mobile sources to support projects to increase the utilization of clean fuels, including the development of the necessary advanced enabling technologies. Funds collected from motor vehicles are restricted, by statute, to be used for projects and program activities related to mobile sources that support the objectives of the Clean Fuels Program.