

CaFCP contracted with CALSTART in 2009¹ for a study to identify commercial fuel operators who would develop plans to build open-access hydrogen stations in the areas where the first FCEVs were to be sold. These were the same “cluster communities” identified in the 2009 Action Plan: Santa Monica, Irvine, Torrance, Newport Beach, and the San Francisco Bay Area.

The study team identified and analyzed five scenarios (or potential categories of operators): E85 operators, natural gas operators, big box retailers with gasoline stations, independent oil marketers, and miscellaneous teams (mainly transit properties).

Within the cluster communities, CALSTART identified 72 potential operators with a total of 135 sites and created seven station-building teams. By the end of the project, three teams said the hydrogen business model did not justify company investment. Four of the teams—three E85 operator and one independent oil marketer—stated that the concept of retail hydrogen stations met their companies' long-term visions and interests and expressed interest in applying for funding.

CALSTART's discussions with company representatives revealed insights into the concerns of the five types of potential operators.

E85 operators: These operators co-locate E85 fueling at existing gasoline stations (a separate fuel island is usually required). They explained that the station owners are very conservative and it is difficult to persuade them to invest in new, unfamiliar projects. They noted that as station owners saw the number of flex-fule vehicles increasing, they were more open to adding E85. The E85 operators did not see themselves convincing station operators to add hydrogen without knowing the timing and size of the FCEV market.

Natural gas operators: At least one natural gas supplier considered hydrogen to be viable, but not as a near-term option. Public utilities such as Sempra's SoCalGas and San Diego Gas & Electric cannot compete against private businesses and are, therefore, restricted to the types of projects that can be built their sites. Utilities have hosted CNG fueling stations and encountered space restrictions. Some natural gas operators expressed interest in providing fuel for transit fleets, following the CNG model with which they were familiar.

¹ Silver, Fred and David Kantor of CALSTART, Inc. *A Jumpstart for New Hydrogen Refueling Stations in California: Final Executive Report*. February 6, 2009.

Independent Oil Marketers

The big oil companies, such as Shell and Chevron, extract and refine gasoline. California's 13 refineries make 41 million gallons of gasoline and 11 million gallons of diesel every day.

Refined petroleum is sent to holding tanks where ethanol and brand-specific additives are added. Delivery trucks fill their tanks at “racks” near the holding tanks and then drive to a station to fill the station's underground storage tank.

Independent oil marketers are companies involved with more than one step after the refinery. The companies may blend fuel, operate racks, wholesale fuel to delivery companies, operate delivery companies, own stations, or operate stations that another company owns. Marketers may also operate real estate companies, convenience stores, or other businesses.

The independent marketer's business model is built on diversified risk and profit, whereas a station owner's business model is based on selling fuel or other products to fuel customers.

Please see [How Oil Gets From Below the Ground to Your Car](#) on the Energy Commission web site.



Big box retailers: Costco expressed some interest, but voiced concerns about spatial and traffic constraints due to parking lots that can be full and gas stations that can be four times as busy as standalone stations.

Independent oil operators: Generally, they had little interest in a market that had yet to develop. One retailer was willing to consider a project, but found the 30% cost share for government funding was too high and stated they would not invest without a viable market in existence or visibly approaching.

It was clear that to start the conversations about host sites for stations, all businesses needed:

- Estimates of the size and timing of the FCEV market. All of these companies cover operational costs and make profit by selling fuel. A station would very quickly need a base load of customers.
- A reduced footprint for the station through a combination of less equipment, smaller equipment, and reduced set-back distances.
- Reduced risk for investing in hydrogen stations for a developing market

CaFCP continued discussions with all four groups. Sempra's SoCalGas joined the California Fuel Cell Partnership and California Hydrogen Business Council. In 2016, SoCalGas opened a retail hydrogen station in Riverside. The big retail stores continue to repeat concerns about having sufficient space for hydrogen fueling equipment, but also need to see demand for hydrogen among their customers. E85 operators remained focused on biofuels and diesel replacements; including gaseous fuels is not in their immediate plans. Independent oil marketers were the most receptive and provided ongoing input to CaFCP members. The California Association of Independent Oil Marketers (CIOMA) participated in many planning sessions and supported the hydrogen station designation in AB 8.

Between 2010 and 2012, CaFCP members were working on the initial hydrogen station deployment plan, "the roadmap," that included research by UC Davis and UC Irvine about how and where people fuel their cars. It became clear that existing gas stations offered the best options for the first stations because:

- Gas stations are in convenient locations and open 24 hours a day. They are well lit at night, have convenience stores, and restrooms.
- Parking lots and driveways are designed for a constant flow of customers, and can accommodate a line of cars waiting for a dispenser.
- Gas stations are zoned for dispensing fuel and having fuel delivered by truck.
- Owners and operators are fuel agnostic. They will sell any fuel that customers want, as long as the owner/operator can make a profit.

CaFCP continues to work with independent oil marketers to develop equipment, practices, and processes that create an attractive business model that can be replicated across the U.S.