Date of Hearing: April 22, 2019

ASSEMBLY COMMITTEE ON TRANSPORTATION
Jim Frazier, Chair
AB 753 (Eduardo Garcia) – As Amended April 11, 2019

SUBJECT: Alternative and Renewable Fuel and Vehicle Technology Program: fuels: fueling infrastructure

SUMMARY: Requires the Air Resources Board (ARB) and the California Energy Commission (CEC) to allocate specified percentages of moneys from the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) and Low Carbon Transportation investments (which come from cap and trade funds) to provide incentives for the production, fueling infrastructure, research and development of specified fuels. Specifically, **this bill:**

1) Requires ARB, beginning in the 2019–20 fiscal year and each fiscal year thereafter, to allocate funding appropriated in the annual Budget Act for Low Carbon Transportation investments to the following projects based on the following percentages:

    a) Seven and one-half percent for the production of low-carbon fuels;

    b) Seven and one-half percent for the installation of stand-alone alternative and renewable fueling infrastructure; and

    c) Seven and one-half percent for the research, development, and production of innovative and emerging fuels.

2) Requires CEC to allocate ARFVTP monies for the following projects based on the following percentages:

    a) Seven and one-half percent for the production of alternative and renewable low-carbon fuels in the state;

    b) Seven and one-half percent for the development of stand-alone alternative and renewable fuel infrastructure, fueling stations, and equipment that are not tied to vehicle acquisition; and

    c) Seven and one-half percent for the research, development, and production of innovative and emerging fuels.

3) Requires that priority be given to projects that demonstrate a minimum of three of the following:

    a) Maximize local workforce and economic benefits;

    b) Provide multiple environmental and public health benefits cobenefits, including reducing emissions of methane, criteria pollutants, or toxic air contaminants;

    c) Leverage additional public or private funding;

    d) Utilize feedstocks derived from in-state sourced waste streams; and

e) Distribute innovative and emerging fuel capable of achieving cost-effective reductions in GHG emissions and criteria air pollutants on a dollar-per-metric-ton basis when considering fuel production, vehicle acquisition, and fueling infrastructure costs.

4) Defines "innovative and emerging fuel" as a transportation fuel that meets all of the following:

   a) The quantity of consumption in the state per calendar year of the renewable fuel is not expected to exceed the energy equivalent of 30 million gallons of petroleum-based fuel;

   b) The carbon intensity of the renewable fuel complies with the Low Carbon Fuel Standard (LCFS) and is capable of meeting a carbon intensity value at least 60% lower than the petroleum-based fuel baseline carbon intensity value;

   c) The renewable fuel production technology is at technology-readiness level (TRL) 6, or greater, as defined in the federal Department of Energy's Technology Readiness Assessment Guide; and

   d) The renewable fuel produces lower levels of emissions of criteria air pollutants than petroleum-based fuels when being used.

5) States legislative findings and declarations relating to low-carbon fuels.

EXISTING LAW:

1) Requires ARB, pursuant to California Global Warming Solutions Act of 2006 [AB 32 (Núñez), Chapter 488, Statutes of 2006], to adopt a statewide greenhouse gas (GHG) emissions limit equivalent to 1990 levels by 2020 and adopt regulations to achieve maximum technologically feasible and cost-effective GHG emission reductions. AB 32 authorizes ARB to permit the use of market-based compliance mechanisms to comply with GHG reduction regulations (cap and trade).

2) Requires ARB to ensure that statewide GHG emissions are reduced to at least 40% below 1990 levels by 2030.

3) Establishes the Greenhouse Gas Reduction Fund (GGRF) in the State Treasury, requires all moneys, except for fines and penalties, collected pursuant to cap and trade be deposited in the fund and requires the Department of Finance, in consultation with ARB and any other relevant state agency, to develop, as specified, an investment plan for the moneys deposited in the GGRF, and makes the GGRF funds available for appropriation by the Legislature.

4) Establishes the ARFVTP, administered by CEC, to provide grants and other financial incentives to accelerate the development and deployment of clean, efficient, low carbon alternative fuels and technologies without adopting any one preferred fuel or technology type.

5) Requires CEC to allocate $20 million annually to fund hydrogen fueling stations, not to exceed 20 percent of the moneys appropriated to the ARFVTP until there are at least 100 publicly available hydrogen-fueling stations in operation in California.

6) Defines "full fuel-cycle assessment" or "life-cycle assessment" to mean evaluating and comparing the full environmental and health impacts of each step in the life cycle of a fuel, including, but not limited to, all of the following: feedstock production, cultivation, extraction, transport, and storage; fuel production, distribution, transport, and storage and vehicle operation, including refueling, combustion or conversion, and evaporation.

FISCAL EFFECT: Unknown

COMMENTS: AB 118 (Núñez) Chapter 750, Statutes of 2007, established the ARFVTP, which is administered by CEC, and provides funding for development and deployment of alternative and renewable fuels and advanced transportation technologies to reduce GHG emissions and help attain the state's climate change goals. Eligible projects include, for example, development, improvement, and production of alternative and renewable low-carbon fuels; improvement of light-, medium-, and heavy-duty vehicle technologies; and expansion of infrastructure connected with existing fleets, public transit, and transportation corridors. Alternative and renewable low-carbon fuels include electricity, ethanol, dimethyl ether (DME), renewable diesel, natural gas, hydrogen, and biomethane, among others, and certain feedstocks. CEC, through the ARFVTP, helps transform California's fuel and vehicle types by developing and deploying technology and alternative and renewable fuels in the marketplace, without adopting any one preferred fuel or technology type.

The ARFVTP is funded at about $100 million annually. Although CEC has flexibility to fund eligible projects, existing law requires CEC to allocate $20 million annually, not to exceed 20% of the moneys appropriated, to hydrogen fueling stations until there are at least 100 publicly available stations in operation in California. As part of the ARFVTP, CEC prepares and adopts an annual investment plan that identifies the funding priorities for the coming fiscal year. CEC develops this investment plan by incorporating input from stakeholders and the ARFVTP Advisory Committee, and by analyzing the best project opportunities for funding.

Now in its eleventh year, the ARFVTP has provided more than $791 million to more than 600 agreements. ARFVTP funds various alternative fuels –ARFVTP funding (in millions) by fuel type as of December 1, 2018 has been:

- $275.6 for electric,
- $162.2 for hydrogen,
- $119 for natural gas,
- $72.3 for biodiesel,
- $61.3 for biomethane,
- $46.2 for ethanol,
- $46.5 for multiple fuel/other
- $6 for propane

In general, CEC awards these agreements based on four program categories. As of December 1, 2018, CEC has awarded 21% for Alternative Fuel Production, 35% for Alternative Fuel Infrastructure, 31% for Alternative Fuel and Advanced Technology Vehicles and 13% for Related Needs and Opportunities (such as, manufacturing, workforce training, and regional planning).

This bill requires the CEC to allocate a total of 22.5% of ARFVTP funding to specified purposes, specifically: 7.5% for the production of alternative and renewable low-carbon fuels in the state; 7.5% for the development of stand-alone alternative and renewable fuel infrastructure, fueling

stations, and equipment; and 7.5% for the research, development, and production of innovative and emerging fuels, as defined.

Additionally, this bill requires ARB to set aside 22.5%, for specified fuels and technologies, from Low Carbon Transportation investments (which come from cap and trade funds). Funding from cap and trade supports programs and projects that facilitate in-state GHG emissions reductions and delivers major economic, environmental, and public health benefits for Californians, including meaningful benefits to the most disadvantaged communities, low-income communities, and low-income households. As of November 30, 2018, cumulative appropriations for GGRF investments have been approximately $9.3 billion of which $1.72 billion have gone to the Low Carbon Transportation Program. ARB's Low Carbon Transportation Program is designed to accelerate the transition to advanced technology for both the light-duty and heavy-duty transportation sector. Programs funded through the Low Carbon Transportation Program include, but are not limited to, the Clean Vehicle Rebate Program (provides rebates of up $7,000 for the purchase of light duty clean vehicles) and the deployment of heavy-duty technologies. Most of this funding has been allocated to vehicle acquisition programs.

The LCFS is another tool designed to encourage the use of cleaner low-carbon fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions. The LCFS standards are expressed in terms of the "carbon intensity" (CI) of gasoline and diesel fuel and their respective substitutes. The LCFS is performance-based and fuel-neutral, allowing the market to determine how the carbon intensity of California's transportation fuels will be reduced. This program is based on the principle that each fuel has "lifecycle" GHG emissions that include CO2, N2O, and other GHG contributors. This lifecycle assessment examines the GHG emissions associated with the production, transportation, and use of a given fuel. The lifecycle assessment includes direct emissions associated with producing, transporting, and using the fuels, as well as significant indirect effects on GHG emissions, such as changes in land use for some biofuels. Subjecting this lifecycle GHG rating to a declining standard for the transportation fuel pool in California would result in a decrease in the total lifecycle GHG emissions from fuels used in the state.

In 2007, Governor Schwarzenegger issued Executive Order S-1-07, calling for a reduction of at least 10% in the CI of California's transportation fuels by 2020. The Order further directed ARB to consider initiating regulatory proceedings to establish and implement the LCFS. In response, ARB adopted the LCFS regulation in 2009, to be implemented beginning in 2010. To date, fuel suppliers have over-complied, predominantly by blending ethanol with gasoline, which is preferred in the near term because ethanol blending is required by the federal Renewable Fuel Standard and does not require significant changes in fueling and vehicle infrastructure. However, natural gas, biodiesel and electricity have also been used in significant amounts to comply with the LCFS.

This bill requires 7.5% of ARFVTP funds and 7.5% from Low Carbon Transportation investments to be allocated to "emerging and innovative fuels". This bill is targeting emerging and innovative fuels that have not achieved commercial viability. A few currently meet the definition in the bill. For example, DME is a synthetically produced alternative to diesel for use in specifically designed compressed ignition diesel engines. DME can be produced from biomass, methanol, and fossil fuels. According to the U.S. Department of Energy, DME has several properties that make it attractive for use in diesel engines. The energy efficiency and power ratings of DME and diesel engines are virtually the same. Because of its lack of carbon-

to-carbon bonds, using DME as an alternative to diesel can nearly eliminate particulate emissions; however, DME has half the energy density of diesel.

Renewable hydrogen can be produced from diverse domestic resources with the potential for near-zero GHG emissions. Once produced, hydrogen generates electrical power in a fuel cell, emitting only water vapor and warm air. It can be used in both the stationary and transportation energy sectors. Hydrogen's energy content by volume is low. This makes storing hydrogen a challenge, because it requires high pressures, low temperatures, or chemical processes to be stored compactly.

Propane is a cleaner-burning alternative fuel that's been used for decades to power light-, medium- and heavy-duty propane vehicles and in homes for heating, water heating, and cooking. Propane is generally sourced from petrochemicals that come from conventional oil reserves, so in its traditional form it isn't renewable. There is interest in using biomass or waste feedstocks to produce renewable propane.

Under this bill, only those renewable fuel production technologies that are at a TRL 6 or greater are eligible for funding under the exclusive "innovative and emerging fuel" 7.5% set aside. That scale ranges from 1 (lowest - Basic Research) to 9 (highest - system operational). A TRL of 6 equates to an engineering/pilot scale project to validate the system in a relevant environment, such as testing a prototype with real waste. TRL 7 and 8 includes full-scale system demonstrations and actual system completion. TRL 9 is full-scale system operation of the technology in its final form.

According to the author, "California leads the world by using our resources and policies to demonstrate to the world that ambitious climate action is technologically feasible and economically prosperous. Nowhere is that ingenuity needed more than in the transportation sector, which – despite ambitious climate targets and innovative programs – continues to persist as California's greatest source of emissions. There is inconsistent or inadequate funding available for fuel infrastructure and production, which has a particularly harmful impact on innovative and emerging fuels attempting to break into the market. This bill will address those funding challenges in a manner that encourages the creative, entrepreneurial spirit of businesses who are inventing new ways to help transition our state away from petroleum-based fuels and toward our ambitious climate targets."

Writing in support, Oberon Fuels states, "By dedicating a percentage of funding received by the appropriate state agencies for low carbon transportation be set aside for innovative and emerging fuel development, as well as the necessary infrastructure to help facilitate the widespread utilization of these alternative fuels, this bill will help pave the way for ongoing technology development, which is necessary to achieve our ambitious emissions reductions targets and maintain California's recognized role as a leader in the development and deployment of innovative technology solutions to address our global challenges."

In opposition, Sierra Club writes, "In order for California to meet its energy and climate targets, we need to transition to zero-carbon resources. However, this bill will encourage investment in those low-carbon energy resources that are still causing damage to our environment. For example, hydrogen production can result in GHG emissions as well as other environmental impacts, especially when it is created from fracked gas, or methane gas, or made using electrolytic processes powered by fossil fuels."

Committee Comments: The current investments strategies for both the CEC's ARFVTP and ARB's Low Carbon Transportation Program are informed by stakeholder input and are developed based on the state's overall climate priorities. By setting aside funding for specified purposes, this bill may be limiting the ability for these state agencies to respond to market changes, advance the most cost-effective projects, and/or constraints them in the future to limited pots of monies. However, the author contends that the investment needed for alternative and innovative fuels are great and will continue to be needed to meet our ambitious climate goals.

It is also important to note that this bill is one of several bills this year that "carves out funds" for specified fuels, projects and technologies. For example, AB 1406 (O'Donnell) sets aside 10% of ARFVTP monies for alternative fuel and advanced technology vehicles and AB 1262 (O'Donnell) sets aside 15% of cap and trade funds to heavy-duty technology incentives. The legislature may need to consider how best to consolidate these efforts and still provide the state with "enough" flexibility.

Related Legislation: AB 1406 (O'Donnell) would require CEC to allocate at least 10% of the ARFVTP funding for alternative fuel and advanced technology vehicles. AB 1406 will be heard in this committee on April 22, 2019.

AB 1262 (O'Donnell) would continuously appropriate, beginning in the 2019-20 fiscal year, 15% of GGRF funds to ARB for the Clean Truck, Bus, and Off-Road Vehicle Equipment Technology program. AB 1262 will be heard by the Natural Resources Committee on April 22, 2019.

Previous legislation: AB 1697 (Bonilla), Chapter 446, Statutes of 2016, expanded the criteria for funding programs through the state's ARFVTP to include workforce training.

SB 32 (Pavley), Chapter 249, Statutes of 2016, required ARB to ensure that statewide GHG emissions are reduced at least 40% below 1990 levels by 2030.

SB 350 (de León), Chapter 547, Statutes of 2015, set GHG reduction targets to be achieved by 2030 through a variety of measures, including supporting electrification of the transportation system and established requirements of California Public Utilities Commission in adopting electric vehicle charging proposals from the investor owned utilities.

AB 8 (Perea), Chapter 401, Statutes of 2013, extended until January 1, 2024, the fees that support the ARFVTP.

AB 118 (Núñez), Chapter 750, Statutes of 2007, created the ARFVTP to provide funding measures to specified entities to develop and deploy technologies and alternative and renewable fuels in the marketplace to help attain the state's climate change policies.

AB 32 (Núñez), Chapter 488, Statutes of 2006, required ARB to develop a plan of how to reduce emissions to 1990 levels by the year 2020.

REGISTERED SUPPORT / OPPOSITION:

Support

Association of Global Automakers
CR&R Environmental Services
Golden Gate Zero Emission Marine
H2safe
Hitachi Zosen Inova
Itm Power
Johnson Matthey Fuel Cells
Loop Energy
Millennium Reign Energy
Nel Hydrogen
Oberon Fuels
Pdc Machines
Plug Power
Propel Fuels, Inc.
Red & White Fleet
Solar Wind Storage
Sunline Transit Agency
U.S. Hybrid
Vinjamuri Innovations
Winkelmann Flowform Technology

Opposition

California Advanced Biofuels Association (unless amended)
California Electric Transportation Coalition
Clean Energy (unless amended)
Pacific Ethanol (unless amended)
Sierra Club

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