Renewable Natural Gas Trucks

What is this measure?

This measure would fund the replacement of a traditional heavy-duty truck with a compressed natural gas (CNG) truck, to be operated using renewable natural gas (RNG). Heavy-duty trucks that use traditional diesel or CNG as their primary fuel can be replaced with CNG trucks that operate solely on RNG.

Why would someone do this as mitigation?

Heavy-duty trucks are used locally and regionally to transport a variety of materials, including conveyance of raw materials and waste and distribution of finished products. Switching from a heavy-duty diesel truck to a CNG truck can result in air quality and human health benefits by reducing local and regional emissions of toxic and criteria pollutants. When those CNG trucks are operated on a renewable form of CNG, called RNG, the carbon intensity of the fuel is greatly reduced, resulting in a significant reduction in GHG emissions from these transportation activities. The beneficial impacts from switching to a RNG truck are equivalent to the difference in well-to-wheels emissions from operating the truck vs. the well-to-wheels emissions from operating a conventional diesel truck that would have provided the same functionality.

Some operators may provide local or regional transportation services using traditional diesel trucks (for example, crude haul trucks or trucks used to transport other raw or finished materials). If those transportation operators are incentivized to replace their diesel trucks with CNG trucks, and operate them using 100% RNG, the GHG emissions from their transportation activities are greatly reduced. Some transportation operators (such as local waste hauling companies) already own and operate CNG trucks, and the GHG emissions from their fleet can be greatly reduced if they are incentivized to operate those trucks on 100% RNG. The District is not aware of any local sources of RNG available for use as a transportation fuel. However, RNG transportation fuel is available for purchase through a variety of suppliers,[1] and different sources of RNG have varying carbon intensities.[2]

How would you implement this measure?

Implementing Agency

Existing District grant programs (such as the Lower Emission School Bus Program or the District's Carl Moyer Program) could be used as a model for implementing this measure, and the District could be the agency to implement the measure. Under existing grant programs the District works with operators to identify equipment to be replaced and then enters into agreements to provide funding for a portion of the cost of the new equipment.

Enforceability

Generally, agreements to fund lower-emitting equipment commit the grantee to maintaining and operating the equipment for a specific period of time. In this case, the agreement would also need to include requirements on the type of fuel used, and specify the assumed carbon intensity of that fuel. District grant agreements also require the grantee to maintain records and make them available upon

[1] The Southern California Gas Company website provides a list of suppliers here: www.socalgas.com/1443740737192/biogas-supplier-list.pdf.

[2] The CARB Low Carbon Fuel Standard (LCFS) website provides carbon intensities for different suppliers of RNG at www.arb.ca.gov/fuels/lcfs/fuelpathways/pathwaytable.htm.

request. Old vehicles/equipment that are replaced are permanently removed from service. Typically a hole is drilled in the engine block to render it unusable.

Interaction with Existing Programs

The District has previously used pass-through funding to help operators purchase CNG trucks and buses utilized in Santa Barbara County. The District is not currently offering any monetary incentives to heavy-duty on-road truck operators.

The California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project[3] (HVIP) offers point-of-sale incentives for clean trucks and buses. Currently, there are battery electric transit buses and battery electric school buses that qualify for vouchers under the HVIP program. The vouchers are not sufficient to cover the cost difference between a new diesel bus and a battery electric bus, so funds from this measure could be used to close the gap.

How would you quantify the benefits?

For this measure, the GHG benefits would be calculated as the difference between operating a heavy-duty truck fueled with RNG and operating a traditional heavy-duty diesel truck, using the *Greenhouse Gas Quantification Methodology for Air Resources Board Low Carbon Transportation Program Consumer-Based Heavy-Duty Projects*[4]. This methodology provides well-to-wheel emission factors for traditional diesel trucks, CNG trucks, and RNG trucks. The methodology also provides annual vehicle miles traveled assumptions; however, more specific annual VMT assumptions should be considered, based on the proposal being considered. The carbon intensities for each specific source of RNG can be found on the CARB LCFS website.

Currently, emission factors have not been finalized to quantify the criteria pollutant co-benefits. Until EMFAC is updated with criteria pollutant emission factors, any projects that propose these vehicles would have to estimate criteria pollutant emissions based on manufacturer's estimates or by some other method.

Questions for Discussion

This measure came about as a result of information submitted during and after the workshops, so no questions were developed for the measure ahead of the workshop. However, a few questions are provided below for consideration if an agency, project proponent, or project developer were to propose this measure as GHG mitigation:

- Are any local transportation operators willing to commit to converting some or all of their heavy-duty fleet to be CNG trucks, and operating them on 100% RNG?
- Which local transportation operators have duty cycles or routes that are appropriate for this technology?
- Is there adequate fueling infrastructure available, or should the measure also include incentives for installing the necessary fueling infrastructure?
- Should the measure be targeted toward replacements, or toward fleet expansion, or both?

[3] www.californiahvip.org/
[4] www.arb.ca.gov/cc/capandtrade/auctionproceeds/arb_cbhd_finalqm_16-17.pdf

Input Received

Comments Made at Workshops

Opportunities:

- Materials regarding renewable natural gas and its use as a transportation fuel were submitted at the workshop; those materials have been posted on the District's website[5].
- Although not focused specifically on RNG trucks, several comments on the other mobile source incentive measures also apply to this measure:
    - Incentives should by paired with infrastructure improvements (in this case, CNG fueling infrastructure).
    - Require that vehicles be scrapped to avoid them being sold elsewhere.
    - Include fleets in the incentive program.
- Would like to see a measure that looks at reducing the impacts of crude haul trucks, through electric vehicles or other low-emission vehicle technology; it makes sense to have the mitigation closely linked to the project.
- Would like to see a renewable gas project that provides a local fuel source to get CNG buses to run on biofuel (RNG).

Comments Submitted in Writing

Southern California Gas Company (SoCalGas, a Sempra Energy Utility) submitted a letter on October 15, 2017. [6] The full letter is available at the District's website; following is a summary of the points in the letter related to this RNG Truck measure.

- RNG comes from organic sources that originally removed CO2 from the atmosphere, and is considered to be a carbon neutral fuel.
- Replacing fossil CNG with RNG not only reduces GHGs associated with energy use, but also reduces methane release from organic sources, which account for over 80% of California's methane emissions.
- Suggest including options for projects that produce RNG and give credit to those who commit to purchase and use RNG.
- Request that the District include a measure that looks at incentivizing ultra-low NOx CNG trucks using RNG fuel. A "near-zero" (NOx) natural gas truck is being deployed throughout the state in refuse trucks, transit and school buses, and medium-duty applications; a larger engine truck will be commercially available soon.

Additional District Discussion

- This measure summary was developed after the workshops, based on information provided as comments and additional research done by District staff.
- A methodology for quantifying the GHG emission reductions was added to the District's GHG mitigation spreadsheet, based on the CARB methodology.[7]

[5] See additional information submitted regarding renewable natural gas at www.ourair.org/ghgmitigation-sbc/.
[6] See SoCalGas letter at www.ourair.org/ghgmitigation-sbc/.
[7] See spreadsheet at https://www.ourair.org/ghgmitigation-sbc/.