



SACOG Board of Directors

May 11, 2006

Alternative Emission Reduction Calculation for Vocational Trucks under the Sacramento Emergency Clean Air and Transportation (SECAT) Program

Issue: Should the SECAT program allow credit for extra emissions from certain vocational trucks that run the engine to power equipment used on the truck while the truck is not driving?

Recommendation: The Air Quality Committee recommends that the SACOG Board of Directors approve an alternative emission reduction calculation for vocational trucks under the SECAT program as outlined below.

Committee Action/Discussion: For almost all SECAT projects, the emission reductions associated with Fleet Modernization, new vehicle purchases, engine retrofits, and other projects are based on per mile emission factors derived from the EMFAC model. The California Air Resources Board developed the EMFAC model using test data from sample heavy-duty diesel trucks running a standard test representing typical vehicle duty cycles. The total emissions over the entire driving test are divided by the total miles traveled to determine the per mile emission factors used in the model.

There are certain vocations of trucks where the engine is being used to power equipment used on the truck while the truck is stationary. These can include water trucks, cement mixer trucks, mobile cranes, and other vocations that use the engine to run auxiliary or power take-off (PTO) equipment. Since the engine load during PTO is similar to the loads encountered during normal drive cycles, the emissions from auxiliary or PTO operation are currently underestimated when analyzing potential SECAT projects using only annual mileage.

To account for and claim these surplus on-road emission reductions, staff recommends that the SECAT program use an alternative emission reduction calculation for vocational trucks based on the duty cycles found in the EMFAC model. The EMFAC model uses six (6) test cycles to determine heavy-duty emissions – idle, creep, transient, cruise, high-speed cruise, and Urban Dynamometer Driving Schedule. The test cycle takes 90.4 minutes to complete with a total simulated distance of 42.12 miles. Current emission factors take the total emissions over all six cycles and divide that value by the total simulated distance to determine per mile emission factors.

Since the EMFAC model predicts vehicle emissions over the entire test cycle, staff estimates that a ratio of 28 miles per hour of engine PTO operation accurately describes the emissions associated with vocational trucks. This methodology will be used in specific vehicle vocations as determined by staff. Projects using PTO calculations will be contracted for hours of operation instead of annual mileage and will require a separate hour meter to document engine operation. This methodology will help the SECAT program fund more projects and increase the total emission reductions in the Sacramento region.

Approved by:

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