

Congestion Mitigation and Air Quality Improvement (CMAQ) Program



U.S. Department of Transportation
Federal Highway Administration



Idle Reduction Techniques

Truck drivers idle their engines for a variety of reasons. For long-haul trucks, drivers must have 10 hours off duty after driving 11 hours. Surveys have found that 70 to 80 percent of truck drivers say the need for heating or air conditioning is the main reason they idle their trucks during their 10 hours off duty. They also cite the need to operate on-board electrical appliances, such as a television or refrigerator, and to ensure the engine block, fuel, and oil remain warm.

Truck and rail transport in the United States consumes about 35 billion gallons of diesel fuel each year, which produces carbon dioxide (CO₂), nitrogen oxides (NO_x) and particulate matter (PM). Truck idling consumes almost 1 billion gallons of diesel fuel annually and emits an estimated 11 million tons of CO₂, 180,000 tons of NO_x, and 5,000 tons of PM.

To reduce long-duration truck idling, there are many techniques, which can be divided into three categories: (1) behavioral change induced by education and incentives, (2) State or local anti-idling laws, and (3) idle reduction technology. The term “idle reduction technology” refers to devices that allow engine operators to refrain from long-duration idling of the main propulsion engine by using an alternative source of power.

There are several technologies to reduce truck idling, including direct-fired heaters, auxiliary power units (APUs), automatic engine idling systems, truck stop electrification (TSE), advanced truck stop electrification (ATSE). TSE as it relates to the trucking industry is commonly referred to as shore power. Trucks equipped with electrical converter plugin features are able to power on-board equipment that provides heat, air conditioning, and other amenities without needing

to run the main engines. ATSE systems consist of stationary overhead structures at each parking space using window units to deliver electricity, heat and air conditioning, Internet, local telephone service, satellite television, movies on demand, and computer-based interactive driver training to the cab of the truck.

Projects to control extended idling could be eligible for CMAQ funding and could be carried out under the CMAQ public-private partnership provisions. A 20 percent funding match is required, but State officials are encouraged to seek a larger match than required by law.



Examples of Successful Idling Reduction Projects

Beaumont TX: The South East Texas Regional Planning Commission provided \$5.2 million of CMAQ funds to install 532 ATSE units to stop diesel engine idling at four sites in the Beaumont Port Arthur ozone non-attainment area. A private firm contributed \$2.6 million.

- *Estimated emission reductions: 29 kg/day CO, 39 kg/day NO_x, 1.3 kg/day PM, and 3.6 kg/day VOC*

Knoxville, TN: The Knoxville Regional Transportation Planning Organization used \$1 million in CMAQ funds to install 100 ATSE units to stop diesel engine idling at the Petro Stopping Center along I-40/I-75.

- *Estimated emission reductions: 25 kg/day CO, 60 kg/day NO_x, 1.6 kg/day PM, and 3 kg/day VOC*

Long-haul trucks emit a significant amount of air pollutants. Technologies to reduce truck idling can help.

Photo: FHWA



For more information, please contact:

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