Congestion Mitigation and Air Quality Improvement (CMAQ) Program

U.S. Department of Transportation
Federal Highway Administration

Photos: FHWA

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 computers, microwaves or refrigerators, and to ensure the engine block, fuel, and oil remain warm. Some trucks must also maintain power to refrigeration units during this off-duty period.

Truck, rail and marine transport in the United States consumes over 35 billion gallons of diesel fuel each year, which produces emissions of nitrogen oxides (NO_x), particulate matter (PM) and carbon dioxide (CO_2). Truck idling consumes almost 1 billion gallons of diesel fuel annually and emits an estimated 180,000 tons of NO_x, 5,000 tons of PM and 11 million tons of CO_2.

A number of techniques reducing long-duration truck idling can be divided into three major categories: (1) behavioral change induced by education and incentives, (2) State or local anti-idling laws, and (3) idle reduction technologies. The term “idle reduction technologies” refers to devices that allow long-haul truckers to refrain from long-duration idling of the main propulsion engine by using an alternative source of power.

Several technologies reduce truck idling, including direct-fired heaters, auxiliary power units (APUs), advanced truck stop electrification (ATSE) and supplementary power sources. ATSE as it relates to the trucking industry is commonly referred to as shore power. Trucks equipped with electrical converter plugin features can power on-board equipment that provides heat, air conditioning, and other amenities without needing to run the main engines. ATSE systems may also consist of stationary overhead structures at each parking space using window units to deliver electricity, heat and air conditioning to the cab of the truck.

Idle reduction projects are eligible for CMAQ funding and are often administered under the CMAQ public-private partnership provisions. The standard 80/20 funding ratio is a minimum requirement, however State officials are encouraged to seek a larger local match.

Photo: IdleAire

Examples of Successful Idling Reduction Projects

Beaumont TX: The Southeast 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 carbon monoxide (CO), 39 kg/day NO_x, 1.3 kg/day PM, and 3.6 kg/day volatile organic compound (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:
U.S. Department of Transportation Federal Highway Administration
Office of Natural Environment
1200 New Jersey Avenue, S.E., Washington, D.C. 20590
202-366-4053
http://www.fhwa.dot.gov/environment/air_quality/cmaq/