SmartWay Transport Partnership
U.S. Environmental Protection Agency

A Glance at Clean Freight Strategies
Idle Reduction

Reducing unnecessary truck idling can save fuel, reduce greenhouse gas emissions, cut air pollution, and save money. A typical long-haul combination truck that eliminates unnecessary idling could save up to 1900 gallons of fuel each year. Saving this much fuel annually would remove 19 metric tons of carbon dioxide (a greenhouse gas), reduce NOx and PM emissions, save nearly $3,000 in fuel costs, and lower engine maintenance costs.

What is the challenge?

Many long-haul truck drivers idle their engines during rest periods to:

- provide heat or air conditioning for the sleeper compartment
- keep the engine warm during cold weather
- generate electrical power for appliances

Studies by EPA and others suggest that long-haul combination trucks often idle up to eight hours per day, over 300 days per year. Typical combination trucks consume 0.8 gallons of diesel fuel during each hour of idling, using as much as 1,900 gallons of fuel each year per truck.

Using a heavy-duty truck engine to power cab amenities is inefficient. It consumes fuel unnecessarily; increases fuel costs, and causes emissions that contribute to climate change and air pollution. Today's diesel engines do not need to idle for long periods of time before and after driving. Unnecessary engine idling also contributes to engine wear, which increases truck maintenance costs, and shortens engine life.

What is the solution?

Several technological options can assist drivers in reducing truck idling.

- Auxiliary power units (APUs) are mounted externally on the truck cab. An APU typically consists of a small combustion engine and generator combination that can provide power to the truck when the main engine is shut off. Electricity from an APU can be used to power heating, air conditioning, and electrical accessories for the cab and sleeper.
- Automatic engine idle systems start and stop the truck engine automatically to maintain a specified cab temperature, or to maintain minimum battery charge. Drivers typically activate the system in the evening and program a desired temperature range.
- Truck stop electrification allows trucks to use electrical power from an external source. At properly equipped truck stops, drivers can shut the main truck engine off and plug into an electrical outlet that provides power for heaters, air conditioners, marker lights, and other accessories. Trucks need to be equipped with the required internal wiring, inverter system, and HVAC system to take advantage of truck stop electrification.
- Advanced truck stop electrification also provides electricity from an external source, but doesn't require the truck to be equipped with special systems. Truck parking bays are installed with equipment that provides the cab with electrical power, and heating, cooling, and other amenities like telecommunication hook ups, through an external console that fits into the truck's window frame. The truck-side console has temperature controls, an air supply and return pipe, a credit card reader, keypad, and 100 VAC outlet.

The results are in . . .

The amount of idling varies widely among trucks by season, type of operation, and driver practices. A typical long haul combination truck could idle up to 2,400 hours per year, which would use over 1,900 gallons of fuel. Using an APU instead of idling the engine could reduce this fuel use by 75 percent and eliminate over $2,000 in fuel costs plus over $300 in engine maintenance costs each year. Truck stop electrification can potentially eliminate all engine idling. However, because the systems can be used only at stations outfitted with appropriate equipment, not all the potential savings can be obtained immediately. Additional truck stop electrification spaces are planned along major interstate corridors.

Next steps

Truck fleets should examine engine-operating records to determine the percent of time spent idling to determine potential fuel and cost-saving benefits. Truck fleets may also check the availability of truck stop electrification facilities along frequent routes.