SmartWay
U.S. Environmental Protection Agency

Idle Reduction

A Glance at Clean Freight Strategies

ENERGY & FUEL SAVINGS

2400 Idling Hours

Gallons Saved: 1440 gallons

CO_2 Savings: 14.6 metric tons

Fuel Cost Savings: $5,472

1600 Idling Hours

Gallons Saved: 960 gallons

CO_2 Savings 9.7 metric tons

Fuel Cost Savings: $3,648

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 over 900 gallons of fuel each year. Saving this much fuel annually would effectively remove 9 metric tons of carbon dioxide, reduce nitrogen oxide and particulate matter emissions, save $3,600 in fuel costs, and lower engine maintenance costs for the truck.

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 to avoid trouble with cold starts
- generate electrical power for appliances

Studies by EPA and others suggest that long-haul combination trucks often idle overnight between 5 and 8 hours per day, over 300 days per year. Typical combination trucks consume about 0.8 gallons of diesel fuel during each hour of idling, using between 900 and 1,400 gallons of fuel each year per truck.

Today's diesel engines do not need to idle for long periods of time before and after driving. Using a heavy-duty truck engine to power cab amenities is inefficient. It consumes fuel unnecessarily, increases fuel costs, and generates emissions that contribute to climate change and air pollution. 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 Shutdown 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. Drivers can also program the system to shutdown after a specified period of idling time.
- Direct Fired Heaters are small, lightweight, and efficient fuel-fired devices mounted in the cab of a truck. The direct fired heater provides heat for driver comfort in the cab. This technology does not include any air conditioning capabilities.
- Truck Stop Electrification allows trucks to use electrical power from an external source. At properly equipped locations, drivers can shut off the main truck engine 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 appropriate internal wiring, inverter system, and HVAC system to take advantage of truck stop electrification.

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SmartWay®
U.S. Environmental Protection Agency

Idle Reduction

A Glance at Clean Freight Strategies *Continued*

ENERGY & FUEL SAVINGS

600 Idling Hours

Gallons Saved: 360 gallons

CO_2 Savings: 3.6 metric tons

Fuel Cost Savings: $1,368

- 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, 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 a 100-Volt AC outlet.

Savings and Benefits

The amount of idling varies widely among trucks by season, type of operation, and driver practices. A typical long-haul combination truck can idle between 1,600 and 2,400 hours per year, which would use about 900 and 1,400 gallons of fuel, respectively. Saving fuel annually through idle reduction by installing an APU would remove about 9 to 14 metric tons of carbon dioxide, reduce nitrogen oxide and particulate matter emissions, save between $3,600 and $5,500 in fuel costs, and lower engine maintenance costs. A short-haul truck can save 360 gallons per year, saving $1,300 when using an idle reduction technology. 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.

NEXT STEPS

1 **Truck fleets can examine engine-operating records to determine the percent of time spent idling to determine potential fuel and cost-saving benefits.**

2 **Truck fleets can determine the idle reduction method that best fits their fleets.**

3 **Truck fleets can also check the availability of truck stop electrification facilities along frequent routes.**