



SmartWaySM Transport

Overview of Environmental Strategies

Truck and rail transportation provide a cost-effective means to transport much of America's freight. There are simple actions that can be taken to make ground freight more efficient and cleaner for the environment. The following technologies and strategies can help reduce fuel consumption and emissions from freight trucks.

Idle Reduction

Several technologies and practices can be used to assist drivers in reducing truck idling.

- Reducing or eliminating prolonged idling of long-haul trucks can save up to 2,000 gallons of fuel per truck each year, reduce pollution emissions, and lower engine maintenance costs.
- The use of one of several idle control technologies such as auxiliary power units (APU) and truck stop electrification (TSE) that provide heat, air conditioning, and electrical power can minimize fuel consumption.

Improved Aerodynamics

In recent years, manufacturers have focused considerable attention on improving truck tractor aerodynamics and have therefore achieved significant gains in fuel efficiency.

- Using a streamlined profile tractor with aerodynamic devices (roof fairing, cab extenders, and side fairings) can reduce fuel consumption by at least 600 gallons and eliminate over six metric tons of carbon dioxide (CO₂) emissions per year compared to a typical classic profile tractor.
- Trailers can be improved through aerodynamics, simply by reducing the tractor-trailer gap, securing loose tarpaulins, and on flatbed trailers, arranging cargo to keep the outline of the total load as low and smooth as possible.

Improved Freight Logistics

Improved freight logistics can minimize inefficient trucking operations, saving fuel and increasing profits for trucking companies. Logistics strategies include load matching, more efficient routing and scheduling of vehicles, and improved receiving policies.

- Better load matching, which ensures full trucks, improves the efficiency of trucking operations, allowing carriers to carry the same amount of freight with fewer vehicle miles of travel. Not only does this help profitability, but it reduces fuel use and emissions.
- Trucking companies can make use of routing and scheduling software to structure more efficient truck routes.
- Changes to loading dock and receiving policies, such as allowing for early truck arrivals, lets trucking companies more productively utilize their vehicle fleets, thereby saving fuel and increasing profitability.
- For a long-haul carrier that operates 15 percent of miles without a load, reducing empty mileage by just one percent can save nearly 200 gallons of fuel and eliminate nearly two metric tons of greenhouse gas emissions per truck each year.

Automatic Tire Inflation Systems

Automatic tire inflation systems monitor and continually adjust the level of pressurized air to tires, maintaining proper tire pressure even when the truck is moving.

- Automatic tire inflation systems typically extend tire life by 10 percent.
- Installing an automatic tire inflation system on the truck drive and trailer axles can save nearly \$300 per year in tire replacement costs and tire pressure inspection time.
- Automatic tire inflation systems will reduce fuel consumption by at least 90 gallons per year for a typical combination truck, resulting in annual cost savings of at least \$135 and the elimination of nearly one metric ton of greenhouse gas emissions.



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Wide-base Tires

Wide-base tires on new production trucks reduce rolling resistance, improve fuel economy, and offer substantial fuel cost savings.

- Wide-base tires can improve fuel economy by at least 2.7 percent compared to equivalent dual tires.
- By using wide-base tires, a typical long-haul truck can save over 400 gallons of fuel per year, resulting in cost savings of over \$600, and reduce emissions of CO₂ (the most common greenhouse gas) by more than four metric tons annually.
- A single wide-base tire costs about the same as two equivalent dual tires, and a single wide-rim wheel costs less than two standard wheels. If wide-base tires and wheels are installed on a new truck, the initial cost savings alone is more than \$1,000.

Driver Training

Driving practices can have a large impact on truck fuel economy. Well-trained drivers can reduce fuel consumption by applying simple techniques such as use of cruise control, coasting whenever possible, limiting use of cab accessories, smooth and gradual acceleration, progressive shifting (up shifting at the lowest rpm possible), reducing maximum freeway speeds, and limiting truck idling and stops.

- Most fleets can improve their fuel economy by at least five percent through driver training, saving more than \$1,000 in fuel costs and eliminating nearly eight metric tons of greenhouse gas emissions per truck each year.
- For a typical long-haul truck, the annual savings in fuel costs could recover the initial cost of driver training within two years.

Low-Viscosity Lubricants

Low-viscosity lubricants reduce friction losses in a truck's drive train and its engine, saving fuel and reducing emissions.

- Synthetic transmission and axle lubricants improve fuel economy by at least 0.5 percent in the summer and two percent in the winter (when mineral lubricants experience higher viscosity). Replacing all-mineral transmission lubricants with synthetic products saves fuel with little or no additional cost.

- The combined effect of low-viscosity synthetic engine oils and drive train lubricants can improve fuel economy by at least three percent, saving nearly 500 gallons of fuel and eliminating five metric tons of greenhouse gas emissions per year for a typical freight truck.

Reducing Highway Speed

Truck fuel economy drops significantly as speeds rise above 55 mph. By limiting highway speeds, trucks can save fuel, reduce emissions, and prolong engine life.

- For a typical long-haul truck, reducing highway-driving speed from 70 mph to 65 mph could save nearly \$1,500 in fuel costs and eliminate over nine metric tons of greenhouse gas emissions each year.
- Because engine life is directly related to the amount of fuel burned, reducing driving speed can save on engine repair costs.
- Maximum truck driving speeds can be limited through electronic engine controls, driver-training programs, or incentive programs that reward drivers for staying within set limits. Nearly all new truck engines in use today are electronically controlled and the cost of changing the maximum speed setting on these engines is negligible.

Weight Reduction

Using components made of aluminum or other lightweight materials can reduce the empty truck weight, known as the "tare weight," thereby saving fuel.

- Truck tractors can reduce weight by using components such as cast aluminum alloy wheels and aluminum axle hubs. The potential for weight savings is even greater in the truck trailer, using lightweight components such as aluminum roof posts, upright posts, and floor joists.
- A typical truck can eliminate as much as 3,000 pounds using lightweight components. This weight reduction saves nearly 300 gallons of fuel and reduces greenhouse gas emissions by three metric tons per truck annually.