**WEST COAST COLLABORATIVE**
A public-private partnership to reduce diesel emissions

The goal of the Collaborative is to leverage significant federal funds to reduce emissions from the most polluting diesel sources in the most affected communities. The Collaborative seeks to significantly improve air quality and public health by targeting the highest polluting engines with the most cost effective control strategies.

# Energy Impacts of Diesel

U.S. companies and organizations use nearly seven million trucks and 20,000 long haul locomotives to transport over nine billion tons of goods, worth nearly $7 trillion dollars, each year. While invaluable to the economy, moving freight accounts for 20 percent of all energy consumed in the transportation sector. Trucks carry about 66 percent of all freight shipped in the US, while rail carries about 16 percent. Together, truck and rail transport consume over 35 billion gallons of diesel fuel each year.[1]

## Saving Energy Through Idle Reduction Measures

While burning fuel is necessary to move goods efficiently by trucks and rail, fuel is often wasted due to inefficient practices such as unnecessary idling. Wasted fuel translates into wasted money for freight transport companies and increased emissions released into the environment. Idle reduction technologies and policies are effective ways to reduce fuel consumption and save energy. Annually, over 1 billion gallons of diesel fuel are consumed needlessly through truck and locomotive idling, and idling engines emit 11 million tons of carbon dioxide, 200,000 tons of nitrogen oxides, and 5,000 tons of particulate matter. In addition, engine idling leads to increased engine maintenance costs and shortened engine life.[2]

Some examples of idle reduction technologies for trucks include:

- Direct-fired heaters – stand-alone units capable of providing heat to vehicles in cold weather
- Automatic engine idle devices – technology that shuts off engines when they are not being used, while still providing needed air conditioning or heating for driver comfort
- Auxiliary power units (APUs) – small electric generators that provide power for air conditioning or heating while the main engine is turned off
- Truck stop electrification (TSE) and Shore Power TSE – systems that provide on the ground (on shore) sources of electricity so that truckers do not need to idle their engines. The latter option provides an electric hook-up for modified trucks to "plug in" their heaters or air conditioners, while the former provides an external source of heating, air conditioning, or other electric powered amenities that can be delivered to truckers via their passenger side window.

Many states such as California have also adopted idle reduction policies that prohibit the idling of trucks queued outside of port gates in residential areas or those parked on residential streets.

## Examples of Energy Conserving Projects

In addition to the fuel wasted through unnecessary idling, reliance on foreign sources of petroleum fuels is a threat to energy security. Luckily, safer, cleaner alternatives to petroleum diesel are now available on the market at affordable costs to consumers. Among these alternatives are biodiesel and natural gas.

Pure biodiesel is a biodegradable, renewable resource, based on soybean or other oil crops. Biodiesel has the best energy balance of any liquid fuel. Every unit of energy needed to produce biodiesel results in 3.24 units of fuel energy. In contrast, petroleum diesel yields 0.83 units of fuel energy for each unit of fossil energy consumed, meaning that diesel requires more energy to produce than is generated by the diesel fuel.[3]

Biodiesel engines are currently used in school and transit buses, recycling and waste disposal trucks, heavy-duty freight hauling and delivery trucks, construction equipment, and marine boats and tugs. Its use reduces harmful tailpipe emissions, including significantly lower emissions of carbon monoxide, hydrocarbons and particulate matter (PM) compared to petroleum diesel fuel.[4]

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[1] Environmental Protection Agency, Smartway Transport Partnership, http://www.epa.gov/smartway/swintro.htm

[2] EPA, Smartway Transport Partnership, http://www.epa.gov/smartway/idling.htm

[3] "Why Biodiesel?" Pacific Biodiesel website, http://www.biodiesel.com/why_biodiesel.htm.

[4] Ibid.

Replacing petroleum diesel with biodiesel reduces carbon monoxide emissions by 21 percent, total hydrocarbons by 47 percent and PM by 31 percent. Emissions also contain far lower levels of the toxic contaminants and carcinogens typically associated with diesel fuel, like sulfur dioxide ($SO_2$) emissions.

Liquefied Natural Gas (LNG) is currently used in heavy trucks, agricultural and construction vehicles and locomotive engines. LNG is also superior to diesel in its energy efficiency and emissions. One unit of LNG produces 1.7 units of fuel energy compared to 0.83 units of fuel energy for petroleum diesel. LNG fuel has, on average, 30-40 percent less nitrogen oxide ($NO_x$) emissions and 60 percent less PM emissions than petroleum diesel.[5]

## Examples of Energy Conserving Projects

Idle reduction strategies and alternative fuels are being successfully promoted by the West Coast Collaborative in the industries that use petroleum diesel, making our nation more self-sufficient, improving energy efficiency and cleaning our air. Some recent examples of West Coast Collaborative projects include:

***Fields to Fuel San Joaquin Valley Biodiesel Project***

EPA has selected Sustainable Conservation to receive a $100,000 grant to test the effectiveness of a new fuel additive in reducing $NO_x$ emissions from biodiesel use in America's most productive agriculture region, the San Joaquin Valley. This project creates a local market for biodiesel fuel while it encourages cleaner air through its use. For example, if all farm equipment in the San Joaquin Valley switched from petrodiesel to biodiesel blend, the region could experience reduced carbon monoxide emissions of about 2,000 tons per year and reduced particulate matter emissions of about 600 tons per year.[6]

***Oregon's On-Board Shore Power Idle-Reduction Rebate Program***

EPA has selected the Oregon On-Board Shore Power Truck Idle Reduction Rebate Program for a $100,000 grant to install retrofit technologies on 60-100 trucks placed in Oregon that travel along the I-5 Corridor of Oregon, Washington and California. The program plans to leverage other projects aimed at developing on ground infrastructure for idle reduction technologies. With 60 trucks converted, the program expects to reduce $NO_x$ by 80 tons, PM by 2.4 tons, and $CO_2$ by 5,640 tons over a five-year period.

## About the Collaborative

The West Coast Collaborative (Collaborative) is an ambitious partnership between leaders from federal, state, and local government, the private sector, and environmental groups in California, Arizona, Oregon, Idaho, Washington, Alaska, Canada and Mexico committed to reducing diesel emissions along the West Coast. Part of the National Clean Diesel Campaign, the Collaborative's members create, support and implement diesel emissions reductions projects that are regional in scope, leverage funds from a variety of sources, achieve measurable emissions reductions, and build momentum for future diesel emissions mitigation efforts.

For more information about the West Coast Collaborative, please visit our website at http://www.westcoastcollaborative.org.

[5] Gladstein, Neandross and Associates, LLC estimate.

[6] This is a comparison of pure petrodiesel to a B20 blend (20% biodiesel and 80% petrodiesel).