



EPA DIESEL EMISSION REDUCTION PROJECTS June 2024

From transportation to energy generation, the diesel engine powers almost every sector of the American economy. Due to improved EPA diesel engine regulations and emissions standards over the past few decades, engines currently coming off the manufacturing line are now sixty times cleaner¹ than before. However, despite these tighter standards for new engines, the nearly eight million legacy diesel engines already in use continue to emit large amounts of PM_{2.5}² and NO_x.³ These air pollutants contribute to serious public health problems like asthma, lung disease, and various other cardiac and respiratory illnesses, which result in thousands of premature deaths, millions of lost workdays, and numerous other negative health impacts every year in the United States.

EPA's decades-long effort to reduce criteria pollutants, air toxics, and other harmful emissions from diesel fuel used in transportation has resulted in significant health and environmental benefits while advancing technology and minimizing cost. These benefits are a result of several programs that address diesel emissions and protect public health and air quality, including the Diesel Emissions Reduction Act (DERA) program. DERA enables EPA to offer funding to accelerate the upgrade and turnover of legacy diesel fleets and is the only Federal government program dedicated to addressing legacy engines. The DERA program generally targets older, dirtier diesel engines that lack modern emission control systems to be upgraded with new technologies, such as vehicle and/or engine replacements with new diesel, alternative fuel, and zero emission engines or idle reduction technologies.

Why are Diesel Emissions a Concern?

DERA projects awarded from fiscal years 2008 to 2018 are estimated to reduce 5,307,100 tons of carbon dioxide (CO₂) over the lifetime of the affected engines. In addition, these projects saved over 500 million gallons of diesel through the implementation of idle reduction and fuel-efficient technologies. DERA projects can also provide immediate black carbon (BC) reductions by reducing PM emissions from the legacy diesel fleet. Black carbon is emitted by older diesel engines and is a key component of fine particulate matter (PM) air pollution. Roughly 7% of PM emissions from older diesel engines in the U.S. consist of BC. Black carbon also contributes to climate change by absorbing light and heating the atmosphere, which exacerbates global warming. Aside from the adverse environmental effects, BC can also cause poor health and premature death. Therefore, reducing transportation-related PM emissions is critical to reducing black carbon, the associated adverse health impacts, and finally the rate of warming occurring globally. DERA projects have reduced a total of 16,800 tons of PM over the lifetime of the projects.

What are the Benefits?

DERA grants have funded projects that provide immediate and lasting health and environmental benefits. More than 73,700 engines in vehicles, vessels, locomotives, or other pieces of equipment were replaced or retrofitted with DERA funds during fiscal years 2008 to 2018. DERA projects during these years are estimated to reduce nearly 491,000 tons of NO_x (a precursor to secondarily-formed PM_{2.5}) and 16,800 tons of PM over the lifetime of the affected engines. EPA estimates that the total lifetime value of PM-related health benefits attributed to these reduced emissions range from \$8 billion to \$8.6 billion and account for approximately 850 fewer premature deaths over this same period. These

diesel emission reduction projects are also estimated to reduce 19,000 tons of hydrocarbon (HC) and 65,600 tons of carbon monoxide (CO) over the lifetime of the affected engines.

Who we are:

The American Lung Association: ALA has been involved in multi-state and multi-organization partnerships sharing a common goal in reducing legacy vehicle/vessel diesel emissions by serving in a leadership role with USEPA Region 5 Midwest Clean Diesel Initiative and the DERA program. With more than 40 years combined direct project management and environmental experience, ALA has been awarded 21 ARRA, DERA and Clean School Bus grants in excess of \$31.4 million, in addition to other state, federal and private environmental grants. ALA has also been involved with projects using Volkswagen settlement dollars. ALA's past and current DERA/ARRA projects include 130 fleets with 1,648 vehicles and 975,082 tons of lifetime emission reductions.

The Illinois Alliance for Clean Transportation: Chicago Area Clean Cities, which became the Illinois Alliance for Clean Transportation in 2022, was founded on May 13, 1994. It was the 5th Clean Cities coalition to launch under the U.S. Department of Energy's (DOE) Clean Cities program and DOE currently has more than 75 Clean Cities coalitions throughout the US. Since receiving official Clean Cities designation from DOE, IACT partners and members have collaborated to meet challenges and transform transportation across the State of Illinois. Partner work has included, but is not limited, to alternative fuel programs, alternative technology projects, diesel emissions reductions projects, DERA support related advocacy efforts, support and development of community and individual anti-idling efforts.

Current Project:

Waste Management has the largest network of recycling facilities, transfer stations and landfills in the industry. The 18 on-road diesel refuse haulers in this project will be replaced with low-NOx CNG vehicles and is responsible for the collection of residential and commercial municipal solid waste, single-stream recycling and horticultural waste, which is disposed of in one of the assigned transfers, recycling and/or landfill sites. WM's 18 refuse haulers operate 100% of the time within Cook and Kane Counties, IL. This project will reduce the 730 tons of lifetime emissions and save 65,274 gallons of diesel fuel.

G&W's subsidiary lines extend over 1,258 miles throughout IL, IN, and OH and encompass 15 transloading facilities along their routes. G&W's line-haul locomotives transport a wide variety of goods, including: agricultural products, cement, chemicals, feed meals, biodiesel, machinery, wind tower components, fertilizers, paper, steel, coal, plastic, shingles, ethanol, and lumber. In this project G&W will install 35 APU's for 35 line-haul locomotives. The locomotives in this project travel mainly in Tazewell County, but include Ford, Iroquois, McLean, Peoria and Woodford counties. The locomotives will utilize approved idle-reduction technologies to achieve maximum emission benefits. The proposed idle-reduction technologies utilize very small amounts of fuel to circulate fluids throughout the locomotive rather than relying on idling to accomplish the same goal. However, the proposed idle reduction technologies also have the potential to operate using an electric shore connection to minimize fuel consumption even more, making them unique hybrid alternatives to locomotive idling. The project in Illinois will reduce 3,124 tons of lifetime emissions and save 245,154 gallons of diesel fuel.

In addition to the emissions reductions calculated above, occupational exposure studies have shown reliable data to document cause and effect concerns. Locomotive operators and truck drivers operate diesel vehicles for 7-8 hours a day, and workers in maintenance and fueling are continually exposed to diesel emissions. In addition to environmental and health benefits to the public from reduction in diesel emissions provided by this project, there is also an added benefit to these operators and workers who drive and maintain these vehicles. Though there is currently no known metric to measure this impact, the quantification environmental and health benefits should be expanded to include occupational benefits associated with alternative fuel and vehicle technologies.