

Support for Funding the Diesel Emissions Reduction Act (DERA)

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About 20 years ago the International Agency for Research on Cancer (IARC) concluded that diesel particulate is probably carcinogenic to humans. Seven years ago IARC changed their designation for diesel exhaust as a whole from “probable” to a “known human carcinogen”. The Clean Air Trust (“Diesel and Health in America: The Lingering Threat,” February 2005) estimated that 21,000 people die prematurely every year in the US from health problems related to diesel exhaust. Consider that diesel engines are the main powertrain for doing work and are used in close proximity to people, we should desire that all diesel exhaust emissions be reduced as much as is practical. However, there are some problems in doing this, namely, the owner of the engine bought a legal engine, and despite that this engine will last 20 years, it will operate with none of the advance emission control equipment being installed on new engines today. One pre-2007 engine emits the same particulate pollution as about 20 of today’s clean engines. Engine owners are being motivated to clean up their engines, but the cost is maybe \$9000 each, and this added cost wasn’t contemplated when the engine was purchased.

In 2008 the Diesel Emissions Reduction Act (DERA) started as a very effective measure to clean up these in-use engines. By providing funding, motivated owners can clean up these dirty engines without damaging their business plans. And the owners are motivated, as the program is over-subscribed: Only about 1 in 35 applicants gets a rebate under DERA, and only 1 in 7 gets a grant (EPA’s third DERA report to Congress, 2016). For each federal dollar invested in the program, others invest \$3 more. EPA estimates that this one federal dollar delivers \$5 to \$21 in societal health benefits. And, the technology is available. There are upwards of 15 different verified technologies that have been employed, including clean fuels like biodiesel, aerodynamic resistance reductions for trucks, and the most effective of all – diesel-exhaust particulate filters (DPFs) that reduce the fine particle emissions to levels lower than that in city air. As such, the DERA program is an amazing success – It provides seed money to clean up diesel exhaust using a wide range of verified technology without breaking the owner’s wallet; and it delivers up to a \$21 return to society for every federal dollar invested. The federal government has invested an average of \$40M per year in DERA in the last seven years. Obviously, this is a good, practical, and popular way for the federal government to invest in the health of the nation, and the program ought to be funded with an increase.

I want to briefly shift my discussion to updating the committee on the latest trends on diesel NOx (nitrogen oxide) emissions reductions. The NOx emissions from diesel engines pose a number of health concerns. Once in the atmosphere, they react with volatile hydrocarbons in the presence of sunlight to form ozone, the major component in smog. Ozone is a reactive and corrosive gas that contributes to many respiratory problems. Ozone is particularly harmful to

children and the elderly. To our collective credit, 85% of regions in the US are meeting the EPA's new maximum allowable 8-hour ambient air ozone standard of 70 ppb. However, there are 51 areas in 22 states and the District of Columbia not meeting the new standard. California has a particularly stubborn ozone problem, so they are developing truck tailpipe emissions standards that will drop NOx emissions by another 90%. Last year the EPA agreed to join with California to develop a national tailpipe emissions standard. This time around, the government has the engine industry support for cost-effective and practical NOx reductions. The NOx emissions that are mainly targeted are those generated under low load conditions when the exhaust catalyst is not hot enough to fully function. Eliminating these emissions is not an easy task, but the technology is becoming available and will have a minimum impact on the operation and fuel consumption of the vehicle. The latest emissions numbers for a modern engine using prototype emissions equipment show these engines to be essentially non-polluting under urban driving conditions, and in many cases, the NOx level is lower than in ambient air. With NOx emissions this low, one European truck will pollute as much as about 20 of these clean trucks, so Europe, China, and the rest of the world will ultimately move in this direction, utilizing US technology.

As battery electric cars and trucks enter the market, the emissions benchmark for internal combustion engines will get tighter. The federal government can have a major role in helping current diesel owners clean up their engines and improve their image; and in making sure that new diesel engines are as clean as is practical, as they will still be operating 20 years from now. It is simply amazing how far we have come under government initiatives and private industry innovation to making both legacy and new diesel engines virtually nonpolluting – a clean as practical.