

EXECUTIVE SUMMARY

Most of the products we buy today have at some point been transported by a heavy-duty truck—a critical part of our freight-transportation system. But this reliable service comes at a price. Nearly all modern heavy-duty trucks run on petroleum-based diesel fuel, and as with other forms of fossil-fueled transportation their tailpipe emissions contribute to poor local air quality and rising global temperatures. Meanwhile, the high costs of diesel and gasoline are busting the budgets of truckers and consumers alike.

A win-win solution is possible, however. The technologies that reduce global warming emissions from trucks also reduce fuel use and smog-forming pollutants while lowering truckers' operating costs. Considering only products that are commercially available today, tractor-trailers can be equipped with aerodynamic devices and high-performance tires and wheels yielding a greater-than-12-percent reduction in fuel consumption. For a typical long-range truck traveling over 100,000 miles per year, this would translate to an annual savings of 2,000 gallons of diesel fuel. The initial cost of the upgrades could be recovered by fuel savings in as short a time as one year, and over \$30,000 in net gain could be realized over the lifetime of the truck. Retrofitting existing tractor-trailers offers significant fuel and cost savings for all but the oldest and lowest-mileage trucks, while choosing the most efficient tractor-trailers when buying new allows for the greatest savings overall.

Improving truck efficiency is not only good for the bottom line but also can help California meet its global warming, air quality, and petroleum dependence goals. Installing available retrofit technology both on new and in-use trucks and trailers could reduce global warming pollution emissions by 17 million metric tons (MMT) of CO₂eq (carbon dioxide equivalent) by 2020—the same effect as taking 2.5 million cars off the road.¹

Compared with other regulatory strategies that California is considering in order to meet its global warming emissions-reduction targets, requiring cost-effective retrofits on trucks is one of the most power-

ful. (Only three other proposed strategies promise greater reductions.²) Moreover, 470 tons of smog-forming nitrogen oxides could be reduced nationwide by 2020, with 60 tons eliminated in California—which would help in attaining national air quality standards in the San Joaquin Valley and Los Angeles area, two of the country's most polluted areas. Implementing these basic truck-efficiency improvements would reduce diesel consumption in California by 5 percent over business as usual, or 200 million gallons annually, by 2020.

Some truck fleets have already invested in these cost-saving technologies. But the vast majority have not, as there continue to be barriers to their widespread adoption even in the face of rising fuel prices. One reason is that trucks go through many owners over their lifetimes; a current owner may choose not to invest in improving the truck's efficiency if it will be sold in a couple of years. Split ownership of tractors and trailers presents similar challenges. And the absence of standardized fuel-economy testing data for new trucks and retrofit components has slowed adoption as well.

These and other market barriers can be overcome through policies initiated by California lawmakers and regulators. Requiring the use of low-rolling-resistance tires on all heavy-duty trucks and trailers, the retrofitting of trailers with aerodynamic improvements, and fleets' use of the most efficient new trucks is just a start. California could further reduce emissions over the long term by creating new-truck performance-based standards on global warming pollution. Truck and trailer manufacturers could meet these standards, which currently do not exist, through numerous strategies that employ advances in engine technology, drivetrain efficiency, hybridization, aerodynamics, and rolling resistance.

Well-designed climate policies targeting both today's and tomorrow's trucks can help California meet its climate change and air quality goals, reduce the state's dependence on petroleum, save truckers money at the pump, and ease pressures to raise shipping costs.