

Environmental Fleet Management and Optimization



Overview

Trucks, both long haul and local delivery, have been identified as a priority target for state and federal regulators. Although this is generally seen as a burden for the industry, it also creates opportunities for fleet operators to respond more quickly and efficiently than their competition. Rule making for the trucking industry tends to focus on three areas: safety, emissions, and efficiency. E2 ManageTech, Inc. (E2) brings its management and technical expertise to bear on these new challenges of emission reduction, enhanced safety/security, technology advancement, and regulatory compliance. In all cases, E2 brings its experience with federal and state regulations, vehicle technology, and program implementation to craft solutions that meet client needs with a priority given to efficiency, transparency, and cost effectiveness.

Safety

Safety regulations are nothing new for the trucking industry as they have been on the books for decades. Recently, regulators have been making ever more stringent rules and increasing their monitoring of these rules. The rules tend to fall in two main categories: drivers and equipment. For drivers, the rules focus on training/certification and controlling operating hours/fatigue. For equipment, the regulations focus on maintenance and inspection. Failure to meet these requirements can mean a reduction in safety ratings, increased insurance rates, loss of customers and, in extreme cases, loss of operating license.

In this rule-heavy environment, data management becomes the key for fleet operators to ensure they are complying with regulations and to reduce costs associated with mandated reporting. A variety of off-the-shelf and semi-custom recording and reporting tools exist for fleets to monitor their safety data. These systems can significantly reduce the time and effort necessary to meet the regulatory reporting requirements. An additional benefit of such information management systems is that they can quickly identify if a scheduled maintenance check or inspection has not happened or has not been recorded. These red flags can help fleet operators avoid embarrassing and costly oversights in their otherwise robust safety programs. E2 built its reputation on designing and implementing data management information systems and continues to help its clients implement data solutions that save time, reduce mistakes, and aid reporting.

Emissions

Current truck emission rules focus on criteria pollutants and, specifically particulate matter (PM) and oxides of nitrogen (NOx). The 2010 U.S. Environmental Protection Agency (EPA) emission standard for heavy duty truck engines is the first to aggressively mandate a reduction in NOx. Engine manufacturers

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have responded to the challenge by developing post-combustion treatment systems that reduce NOx in the exhaust through the injection of diesel exhaust fluid (DEF), more commonly referred to as urea. Although effective at reducing NOx, DEF-based systems require the vehicle to carry an additional storage tank for the DEF and the fleet operator must now deal with the added cost and logistics of purchasing the fluid.

Although diesel remains the most prevalent technology/fuel for most truck fleets, alternatives now exist to meet the most recent emission standards. Compressed natural gas (CNG) has become a relatively common fuel for local delivery and service fleets. Many transit authorities and waste management fleets have transitioned to CNG with much success. Liquid natural gas (LNG) has also begun to gain acceptance for some applications where operating range is an issue. Both CNG and LNG benefit from the relatively clean characteristics of natural gas and, therefore, do not require the use of DEF. Other engine technologies exist and are slowly coming to market in small demonstration studies. These include diesel-electric hybrids, natural gas-electric hybrids, fully electric, and hydrogen. Ultimately, the decision of which engine/fuel technology to use is based on each fleet's unique service profile and operating goals. E2 staff has worked closely with its clients to assess the viability of emerging alternative fuel technologies and products for heavy duty trucks. This work has included assessments of cost, operating advantages, limitations, reliability and availability of alternative fuel products including LNG, CNG, liquid petroleum gas (LPG), biodiesel, and fully electric.

Efficiency

A new series of greenhouse gas (GHG)-based legislation is on the horizon (and in some states/regions already here). Because GHG emissions are directly linked to fuel consumption, these rules are in essence fuel-efficiency regulations. The purchase of fuel represents a critical expense for fleet operators and can be the difference between operating profits and losses. Therefore, fleets that meet or exceed the efficiency goals mandated by the new GHG rules can expect to see significant reductions in their equipment operating expenses.

Equipment replacement and modification can achieve some of the necessary efficiency goals. These generally include alterations to the chassis to reduce drag. An additional step is to use in-cab monitoring to ensure the equipment is operated in an efficient, consistent manner. E2 has helped its client purchase, deploy/install, and maintain Global Positioning System (GPS)-based, Automatic Vehicle Locators (AVLs) on their trucks. GPS data can be used to assess individual truck or fleet-wide operating parameters and can be used to identify 'out of bounds' operation. GPS data can form the foundation upon which fleet operators make informed decisions about routes, driver safety, and customer service. Ultimately, this information will lead to more streamlined, efficient operation and reduced fuel costs and GHG emissions.

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Firms that are out in front of their industry will likely be able to capitalize on their GHG reductions in the form of valuable market credits.

E2 developed a Truck Activity Reporting System (TARS) to closely track truck activity at port terminals and other logistic centers. The system is currently in use at the Port of Long Beach (Port) and has been providing high-resolution data about the largest drayage truck fleet in the country. The TARS solution can report a wide variety of truck fleet parameters, including:

- Age distribution
- Fuel type
- Frequency of service
- Emission/GHG Reductions

Activity reporting is crucial for operators to have a clear understanding of the operating parameters of their fleet. In the Port application, TARS has allowed the Port to make informed decisions about their landmark Clean Truck Program and to track the success of program over time. The Port is able to use this data to make funding and planning decisions as it moves forward with its aggressive truck replacement program to clean the region's air. E2's air quality engineers, armed with data from TARS, can calculate and report emission reductions, including GHGs.

Conclusion

Trucking will continue to be an indispensable component of the goods movement industry. As the industry likes to say, "If you got it, a truck brought it." Although new regulations will create challenges for the industry in coming years, proactive fleet operators can make use of available and proven technology and solutions to meet the new rules and outpace their competition.