

A Path Through Ports to Zero Emissions

A NEW STUDY SHOWS HOW PROPANE MAKES IT POSSIBLE FOR PORTS TO INCREASE BOTH ENVIRONMENTAL AND ECONOMIC SUSTAINABILITY.

The environmental impact of fossil fuels, and the strategies most effective for reducing harmful emissions, is one of the most challenging issues facing American businesses today. With internal and external pressure to reduce pollution without sacrificing profitability, many industries are exploring options for moving away from diesel fuel and employing cleaner, alternative energy sources.

Recently, our nation's ports have been central to this exploration, as traditionally high-emission environments, due to year-round operation of a wide variety of diesel-fueled vehicles and heavy machinery. The need to efficiently handle large capacity loads without downtime and loss of productivity make ports an ideal venue for measuring the impact of diesel-fueled port tractors against their propane-fueled counterparts – with a new study confirming that propane offers ports a way to reduce both emissions and overall costs.



By adopting propane-based, near-zero emission technologies such as yard tractors, ports can reduce criteria pollutants more rapidly and more cost-effectively, without compromising on port workflow.





The Study

PERC contracted Energy Environmental Analytics (E2A) to evaluate and compare emissions performance of a diesel and a propane yard tractor, at the Port of Newark Container Terminal (PNCT), while they were engaged in normal revenue service. The diesel tractor has a Model Year (MY) 2014 engine certified to EPA Tier 4 Interim standards. The propane tractor has a MY2022 engine which has the CARB ultra-low NOx (0.02 g/bhp-hr) on-road technology for this off-road application.

The Future

Because terminal tractors have usages beyond ports, including warehousing and railroads, propane has the potential to reduce emissions throughout a range of industries. Propane terminal tractors are eligible for port funding through MARAD, Off-road DERA grants from the EPA, and local grant opportunities including some air districts in California. PERC is well positioned to support agencies and allied industries applying for these grants.

The Results

PROPANE VS. DIESEL EMISSIONS



NO_x

99%

LESS

total cycle-averaged idle and brake specific rates.

The yard tractor demonstrated **near-zero** emissions under real-world operating conditions.

PM

0

(NEAR ZERO)
measured rate results

CO₂

14%

LESS

lifecycle CO₂ emissions

THC

51%

LESS

urban operation

NO_x = NITROGEN OXIDES

PM = PARTICULATE MATTER

CO₂ = CARBON DIOXIDE

THC = TOTAL HYDROCARBONS

FOR MORE INFORMATION

Scan the code for a complete summary of the study data or visit Propane.com/Research-Development to learn more.



THE PROPANE EDUCATION & RESEARCH COUNCIL was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.

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