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Port of Long Beach Zero-Emissions Terminal Equipment Transition Project

Publications

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Abstract

This report presents the results of the Port of Long Beach (Port) Zero-Emissions Terminal Equipment Transition Project (Project), whereby the Port led one of the nation's largest developments of medium- and heavy-duty (MHD) advanced technology vehicle demonstrations for Port operations.

The Port—in partnership with SSA Marine, Long Beach Container Terminal (LBCT), International Transportation Service (ITS), Total Transportation Services, Inc. (TTSI), multiple technology vendors, the International Brotherhood of Electric Workers (IBEW), and Long Beach City College (LBCC)—was awarded \$9.755 million from the CEC under GFO-16-604 entitled “Sustainable Freight Transportation Projects” for one of the nation's largest demonstration and deployment projects for zero-emissions cargo-handling equipment (CHE).

The principal goal of the Project was to demonstrate various zero-emission cargo-handling equipment (CHE) at three container terminals. The second goal was to understand what it would take to transition four trucks running on natural gas to plug-in hybrid electric trucks capable of zero-emission operations. The third goal was to reduce greenhouse gas (GHG) and criteria air pollutant emissions, establishing workforce-training programs, and conduct outreach on the benefits of zero-emission Port technologies to other California ports, members of disadvantaged communities (DAC) and the public.

This Project sought to design, build, and demonstrate battery-electric yard tractors, grid-tied electric rubber-tired gantry (eRTG) cranes, and plug-in hybrid electric drayage trucks (PHET) powered by liquified natural gas (LNG). In a collaboration with the LBCC and the IBEW, the Project included an analysis performed on CHEs to project the workforce demand needed to support the transition to zero-emissions technology.

This Project also presents a comprehensive report of lessons learned for zero-emission design, build and demonstration that may improve zero-emission technologies soon. In the past six years alone, there has been increased participation of new technology vendors as well as crucial original equipment manufacturers (OEMs), and more interest from terminal operators looking to turnover their diesel fleets prior to any regulatory action on the horizon. It is with hope that these collaborations will support the continued advancement and eventual commercialization of zero-emission technologies for port operations.

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