

# Development of a Drayage Truck Chassis Dynamometer Test Cycle

## Technology Manufacturer

Not applicable

## Co-Participants

Port of Long Beach, Port of Los Angeles, TIAX, LLC

## Background

In early 2011, the Port of Long Beach and Port of Los Angeles released a report authored by TIAX, LLC that characterized the duty cycle of on-road, Class 8 drayage trucks at the Ports. The report included statistics based on over 1,000 truck trips collected over a four-week period in late 2010. Based on these statistics, TIAX, LLC identified five modes of operation and an “average” trip associated with each mode. The statistics and trip data from this earlier work provided important information on the real-world operation of drayage trucks in the South Coast Air Basin.

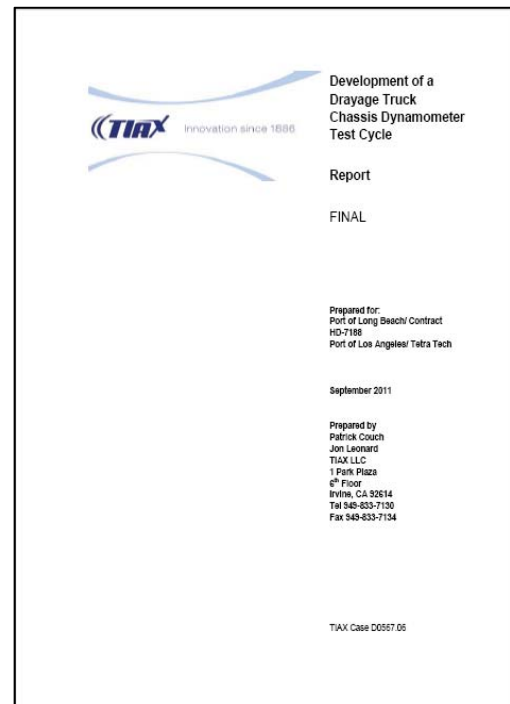
## Project Objective

As a follow-up to the earlier “Heavy-Duty Drayage Truck Duty-Cycle Characterization” project, this study encompassed the development of a detailed driving schedule suitable for use when testing heavy-duty vehicles on a chassis dynamometer that is based on the modes of operation and trip data previously identified in the earlier study.

## Results

The Port of Long Beach and Port of Los Angeles initiated this project to fulfill the need for drayage truck operational profiles that the Ports are uniquely positioned to support. The Ports contracted with Tetra Tech and their subcontractor TIAX, LLC, an internationally recognized expert in the field of duty-cycle characterization and development. The Ports funded the study to support future TAP and outside agency efforts to evaluate technologies that reduce emissions from heavy-duty trucks.

The chassis dynamometer test cycle was developed to provide the Port of Long Beach and Port of Los Angeles with a tool to compare the emissions performance from various drayage truck technologies. While this cycle was developed using actual in-use vehicle data and methods similar to those used to develop the widely used heavy heavy-duty diesel duty truck (HHDDT) test cycle used by test labs nationwide, this new drayage truck cycle has not yet benefitted from validation on a chassis dynamometer.



The final report is available in the public domain for all interested parties to utilize. The final report can be accessed at the Ports' Clean Air Action Plan website.

The SCAQMD is emissions testing several heavy-duty vehicles, including diesel and liquefied natural gas drayage trucks, as part of their HDV In-Use Emissions Testing Program. The Ports provided the test cycle developed in this project for use in SCAQMD's multi-vehicle testing program. The drayage truck cycle will be used to assess drayage truck emissions and will also be used to compare the results of the drayage truck test cycle to other existing cycles.

### **Benefits**

The successful completion of this study resulted in a test cycle that reflects typical port drayage truck operation. Use of this cycle in emission testing programs and engine/vehicle system design projects will help ensure that emission reduction efforts of agencies and technology developers will result in information or products that are relevant to port operation or can meet rigorous port duty cycles.

### **Project Costs**

The Ports shared the cost of this study. The Port of Long Beach contributed \$12,000 and the Port of Los Angeles contributed \$11,466.

