National Center for Sustainable Transportation

TRAINING RESOURCE

Advancing Seaport Environmental Sustainability: Case Studies from the San Pedro Bay Ports Clean Air Action Plan

Deanna Matsumoto, Caitlin Mace, Tyler Reeb, and Thomas O'Brien
California State University, Long Beach

July 2022

Background

The Port of Los Angeles and Port of Long Beach, together referred to as the San Pedro Bay Port Complex, are an important source of regional economic activity in southern California. However, the port complex is also the single largest fixed source of air pollution in the region. The South Coast Air Quality Management District is designated as an "extreme" nonattainment region under federal air quality standards, largely due to heavy-duty trucks that move containers throughout the port complex and to intermodal railyards and warehousing facilities. The health and environmental impacts of port activities disproportionately affect communities near the ports.

In response to pressure from regulatory agencies and local communities, the two ports developed a Clean Air Action Plan in 2006. The plan, subsequently revised in 2010 and 2017, includes a complicated mix of incentives, voluntary measures, tariff charges, technology demonstrations and assessments, lease requirements, public sector funding, and mitigation requirements. It was the first port air quality program to include quantitative emission reduction targets.

Intended Audience

Researchers from California State University, Long Beach developed a series of case studies examining the ports' Clean Air Action Plan programs to improve regional air quality. These case studies are designed for policy makers and students in supply chain, public policy, environmental studies, and other disciplines where port and logistics operations are of interest.

Material Overview

The research team assembled three case studies of programs implemented under the Clean Air Action Plan: the Technology Advancement Program, voluntary Vessel Speed Reduction programs, and the Clean Trucks Program. An additional case study featured a proposed private-sector infrastructure project: the Southern California International Gateway project. Each case study describes the program, stakeholders involved, barriers to implementation, and outcomes. These cases highlight the institutional challenges the ports face while working with a multitude of stakeholders and regulatory bodies to address both environmental sustainability and economic competitiveness. They also help to illustrate examples of unintended consequences of freight-related environmental measures.

Vessel Speed Reduction Programs

One of the case studies included in the white paper highlights the implementation of voluntary vessel speed reduction programs at the port complex. The large, diesel-powered engines of ocean-going vessels are a significant source of air pollution. Voluntary vessel speed reduction programs were established at both ports in 2001 to encourage ships to reduce speeds to 12 knots within 20 nautical miles of the ports to reduce pollution. The case study discusses the background of these programs, their success in achieving their goals, stakeholder concerns about longer travel times, and how these programs might be improved in the future.

Figure 1. An illustration of battery-electric trucks that will become more common in the San Pedro Bay Port Complex under the Clean Trucks Program

The case studies will give students in particular the opportunity to identify key stakeholders and sources of influence and learn about appropriate terminology and collaborative strategies to reach emission objectives. They will help students understand how significant changes in environmental quality can be achieved through a combination of incentives, subsidies, and mandates, and the role that various stakeholders play in the design and implementation of these programs. The cases are appropriate for upper level high school classes as well as undergraduate and graduate level programs as illustrations of environmental policy complexity and examples of industry-led environmental measures. The cases and an accompanying video which poses study guide questions lend themselves to team-based analyses of policy measures. They can also be used as models for studies of similar environmental policies and programs.

More Information

This training resource brief is drawn from "Environmental Plans and Freight Movement at the San Pedro Bay Ports: A Quick Strike Analysis," a white paper from the National Center for Sustainable Transportation, authored by Deanna Matsumoto, Caitlin Mace, Tyler Reeb, and Thomas O'Brien of California State University, Long Beach. The full paper, along with a video, can be found on the NCST website at https://ncst.ucdavis.edu/project/freight-and-environmental-policy-case-studies-and-videos.

For more information about the material described in this brief, contact Thomas O'Brien at thomas.obrien@csulb.edu.

The National Center for Sustainable Transportation is a consortium of leading universities committed to advancing an environmentally sustainable transportation system through cutting-edge research, direct policy engagement, and education of our future leaders. Consortium members: University of California, Davis; University of California, Riverside; University of Southern California; California State University, Long Beach; Georgia Institute of Technology; and the University of Vermont.

Visit us at ncst.ucdavis.edu

Follow us:

DOI: 10.7922/G2BP014H