



THE PORT OF LOS ANGELES OCCUPIES
4,300 ACRES OF LAND ALONG 43 MILES
OF WATERFRONT. THE PORT OF LOS
ANGELES IS THE LARGEST PORT IN THE
U.S. AND 13TH LARGEST WORLDWIDE.
THE PORT OF LONG BEACH IS THE
SECOND BUSIEST PORT IN THE COUNTRY
AND USES 3,200 ACRES OF LAND AND
CONTAINS 10 PIERS AND 80 SHIP DOCKS.

ports

THE LOS ANGELES AREA IS SERVED BY the seaports of Los Angeles, Long Beach, and Hueneme (in Ventura County). The SPB ports handle 80% of California's and over 30% of the nation's containerized trade.⁷⁴ The majority of trade is international. More than 81% of sea shipments are foreign imports. The SPB port complex is by far the largest in the nation and the fifth largest in the world.⁷⁵

After cargo arrives at the SPB ports, it is transferred to its final destination by truck or rail. Half of container cargo travels by rail—21% is loaded onto rail cars at the dock and 20% is trucked to local railyards. Transporting goods by rail minimizes truck trips and reduces the number of trucks, which lowers emissions and increases safety in the region.

The region's goods movement system is more productive with efficient railyards.⁷⁶

Port of Los Angeles

The Port of Los Angeles uses 4,300 acres of land along 43 miles of waterfront. It is the largest port in the U.S. and 13th largest worldwide. The port handled 8.3 million containers in 2007. The port handled \$240 billion in cargo and 1.2 million cruise ship passengers in 2006. Businesses at the port employ 22,800 workers in trucking, warehousing, shipping, and other non-cargo jobs.⁷⁷

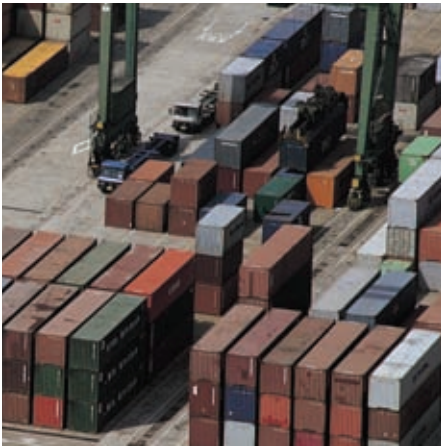


Each year 2,700 ships come to the Port of Los Angeles. This includes 80 shipping lines and 15 cruise lines.⁷⁸ The port has 27 major cargo terminals, including eight container terminals that handle bulk cargo. Most bulk cargo includes furniture, apparel, toys, electronic products, and automobile parts.

There are 71 cranes at these eight terminals. Seven of the terminals have on-dock rail (direct ship to rail car) facilities. An additional on-dock railyard will be constructed in 2009.⁷⁹ Railyards help to reduce truck trips to and from the port. The port is served by the Pacific Harbor Line, a small dispatching railroad.

Port of Long Beach

The Port of Long Beach, adjacent to the Port of Los Angeles, occupies 3,200 acres of land and contains 10 piers and 80 ship docks. The port handles over \$140 billion in cargo and 7.3 million containers. It is the second busiest port in the country. Businesses at the port employ 29,800 in terminal operations, cargo, packing, retail, and other areas.⁸⁰



The port's terminals handle container and bulk shipments; many import finished goods and export raw and recycled materials. The top imports include electronics, plastics, furniture, and clothing, while the top exports include waste paper, chemicals, scrap metal, and plastic.

The port has seven major container terminals that operate 73 cranes. Five of the terminals have on-dock rail facilities. Like the Port of Los Angeles, the Port of Long Beach is also connected to both UP and BNSF railroads via the Alameda Corridor, and is served by the Pacific Harbor Line.

AIR QUALITY

Air Quality Impacts

Marine port activities create air pollution, which impacts the region and local communities. Diesel engine-powered ocean-going ships, harbor craft, cargo handling equipment, trucks, and locomotives produce pollution. Ports are one of the biggest sources of diesel pollution in California. It is a top priority for the ARB and region governments to reduce diesel pollution at the ports, in surrounding communities, and throughout California.

The SPB ports generated 21% of diesel pollution emissions in the South Coast Air Basin, producing 2,236 tons of diesel pollution in 2006.⁸¹ Table 7-1 shows the sources of SPB ports' diesel emissions.

TABLE 7-1 DIESEL PARTICULATE MATTER (DPM) EMISSIONS FROM THE SPB PORTS IN 2006

Source Type	Port of Los Angeles		Port of Long Beach		Both Ports	
	tons/yr	percent	tons/yr	percent	tons/yr	percent
Ocean Going Vessels	546	49%	670	60%	1,216	54%
Harbor Craft	52	5%	47	4%	99	4%
Cargo Handling Equipment	51	5%	40	4%	91	4%
Locomotives	72	6%	47	4%	119	5%
Heavy-Duty Vehicles	404	36%	307	28%	711	32%
Total	1,125	100%	1,111	100%	2,236	100%

Source: Port of Los Angeles. 2008. 2006 Air Emissions Inventory. July; Port of Long Beach. 2008. 2006 Air Emissions Inventory. June.

Ships are the largest source of diesel pollution at the SPB ports. Ships, or ocean-going vessels (OGVs), produced 54% of the SPB ports' diesel emissions in 2006. Ocean-going vessels include container ships, tanker ships, bulk carriers, automobile carriers, general cargo ships, roll-on roll-off ships, and cruise ships. Container ships generate most of ship diesel pollution (62%), followed by tankers (13%) and cruise ships (11%). Diesel pollution comes from ship forward motion, engines, and smaller sources. Ship diesel emissions are shown in Table 7-2 on the following page.

Freight trucks are the second largest source of emissions at the SPB ports, accounting for 32% of diesel emissions in 2006. The remaining source types, harbor craft, cargo handling equipment, and locomotives, together account for 13% of diesel emissions.

Commercial harbor craft, cargo-handling equipment, and locomotives also produce diesel pollution. Commercial harbor craft, including tugboats, ferries, small excursion craft, supply vessels, dredges, and service boats, help move large ships and provide supplies to the SPB ports. Commercial harbor craft includes: tugboats, ferries, small excursion craft, supply vessels, dredges, and service boats. Harbor craft tend to run on smaller diesel engines than larger ships. Tugboats produce over 50% of diesel pollution

TABLE 7-2 DPM EMISSIONS FROM OCEAN-GOING VESSELS AT THE SPB PORTS IN 2006						
Vessel Type	Port of Los Angeles		Port of Long Beach		Both Ports	
	tons/yr	percent	tons/yr	percent	tons/yr	percent
Bulk Vessel	33	6%	53	8%	86	7%
Container Ship	345	63%	404	60%	749	62%
Cruise Ship	82	15%	51	8%	133	11%
Tanker	57	10%	98	15%	155	13%
Other	30	5%	64	10%	94	8%
Total	547	100%	670	100%	1,217	100%

Source: Port of Los Angeles. 2008. 2006 Air Emissions Inventory. July; Port of Long Beach. 2008. 2006 Air Emissions Inventory. June.

from commercial harbor craft. Cargo-handling equipment moves containers and bulk shipments. Cargo-handling equipment includes yard tractors, cranes, forklifts, and picks. Construction equipment may include tractors, loaders, dozers, excavators, and backhoes. Yard tractors are the most common type of handling equipment. Yard tractors produce 60% of cargo-handling equipment emissions.⁸²

A study of emissions exposure conducted by ARB indicates that cancer risk is elevated more than 15 miles from the SPB ports due to diesel pollution.⁷¹ Near the port boundaries, potential cancer risk exceeded 500 chances per million people. Potential cancer risk decreases with distance from the ports. Emissions from the ports also cause other health effects including premature death, asthma attacks, work loss days, and minor restricted activity days. Estimated health cases each year include:

- 120 premature deaths
- 750 asthma attacks
- 6,600 days of work lost for individuals aging from 18 to 65
- 35,000 minor restricted activity days for individuals ages 18 to 65

Other studies also show that the areas surrounding the SPB ports are affected by port pollution. An EPA study showed that diesel pollution from the SPB ports was found in an area approximately 12 times the size of the Port of Long Beach. Similarly, diesel pollution was found in an area approximately 9 times the size of the Port of Los Angeles.⁸³

Air Quality Improvement

Air quality improvement strategies include:

- Vessel speed reduction
- Shore power/cold ironing
- Cleaner marine vessel fuels



The SPB ports have adopted the Clean Air Action Plan to reduce port pollution. The plan includes goals, emission reductions, and funding needs through 2011.⁸⁴ It includes 12 measures to control emissions from all major emission sources at the SPB ports. The plan includes the SPB ports' Clean Truck Program, which includes a ban on older trucks from entering the ports because older trucks tend to have higher emission levels. A fee placed on containers will fund the replacement and retrofit of these trucks. The plan could reduce the SPB ports' diesel emissions by more than 50%.

The SPB ports' voluntary vessel speed reduction (VSR) program limits ship speeds to 12 knots when 24 miles from the coastline to reduce ship pollution. In 2009, the ports will increase this to 40 nautical miles from the coastline.

Pollution from ship engines in the port can be eliminated using shore power/cold ironing strategies. Instead of running an engine, ships are electrically powered from the terminal. To work effectively, this strategy requires improvements to both terminals and ships.

Switching to cleaner marine vessel fuels with lower sulfur content also reduces diesel pollution. Most ships use residual oil bunker fuel, which has high sulfur content. ARB will require the use of lower sulfur fuel when ships are near the



port in July 2009 (within 20 miles). The Port of Long Beach offers incentives for ocean-going vessels to use the cleaner fuel sooner than the ARB requirements go into effect. Extending that requirement to a larger area or requiring the use of low sulfur fuel could further reduce pollution. Barriers to carrying out these strategies include fuel costs, methods to enforce rules, particularly among foreign carriers, and legal challenges.

NOISE

Noise Impacts

Noise impacts from port operations occur on-site as well as on nearby roads and rail lines. Often, the noise impacts from on-road operations and rail lines are greater than those from port property since truck and rail traffic tend to be closer to residential areas that are sensitive to noise.

Container ships, assist tugboats, cargo handling equipment, short-haul trucks, and switcher locomotives generate noise at ports. Particularly loud noises include “clanking” of containers when moved and truck horns. Loud noises from railways include locomotive engines, train horns, rail cars starts and stops, and rail car linking.⁸⁵ Industrial equipment also produces noise. Off-port noise sources include diesel trucks and trains.

Noise Impact Improvement

Most of the noise impacts from ports are from truck and rail activity, rather than on-site activity. Several strategies reduce noise impact from trucks, including:

- **Traffic planning**
- **Soundproofing** of affected dwellings
- Installation of **noise barriers**

Typical strategies provide noise shielding at affected areas. Measures include installation of noise barriers along affected properties and/or soundproofing of affected structures. Providing noise shielding along the railroad right-of-way is also possible. Noise barriers are effective when located close to the noise source or the affected area.

Local communities can reduce noise exposure from ports through traffic planning and/or land use policies. Such strategies and policies move truck traffic away from residents, reduce exposure to noise, or discourage new

development near truck routes. Traffic planning and land use policies typically focus on sensitive community services, such as schools and day care centers. Traffic planning and/or land use policies designate truck routes, to reduce truck traffic in neighborhoods. Reducing and enforcing truck speeds with strict speed limits may also reduce noise impacts.

Land use planning and policies can reduce train noise impacts as well. Such strategies and policies discourage new development near rail lines.

TABLE 7-3 CONTAINER TRUCK TRIPS AT INTERMODAL RAILYARDS ASSOCIATED WITH THE SPB PORTS (2007)

<i>Container Type</i>	<i>One-Way Trips</i>
Import	2,565,320
Export	431,314
Empty	2,782,894
All	5,779,528

Source: ARB 2007. Staff Report: Initial Statement of Reasons for Proposed Rulemaking—Proposed Regulation for Drayage Trucks, Appendix B: Emissions Estimation Methodology for On-Road Diesel-Fueled Heavy Duty Drayage Trucks at California's Ports and Intermodal Railyards.

TRAFFIC AND SAFETY

Traffic and Safety Impacts

Traffic impacts near the SPB ports are especially severe. The number of trucks and vehicles, the size of local roads, and the number of vehicles on regional freeways all contribute to congestion. I-710 and I-110 have the most port truck traffic because they link the SPB ports to major yards and east-west freeways. A traffic analysis conducted by the Port of Los Angeles determined that 16 nearby intersections operate in a congested state in the morning or evening. Average daily trips at the SPB ports exceed 49,500 truck trips and 34,000 auto trips.⁸⁶

"Drayage" trucks travel to and from ports and railyards. Drayage trucks account for nearly 6 million truck trips in the region (see Table 7-3). As the SPB port activity grows, so will the number of truck trips to and from the ports. The number of drayage truck trips is projected to increase 50% by year 2014.⁸⁷ Drayage trucks mostly move empty containers or empty truck frames to and from the ports. One study suggests that only 2% of empty containers are reloaded before returning to the SPB ports.⁸⁸

Traffic and Safety Improvement

The impacts of port truck traffic can be reduced using several strategies, such as shifting trips to off-peak times or using rail transportation. To shift trucks to off-peak times, the SPB ports participate in the PierPass program, which



offers incentives to trucks to operate at nights and on weekends.⁸⁹ Trucks must pay a fee if they visit the port during peak daytime hours. This program could be expanded by raising user fees or prolonging the hours fees are charged. However, an expanded program may result in higher noise and emissions impacts during evenings and weekends.

Truck trips can be further shifted from peak to off-peak times using a **scheduling or appointment system**. Under this system, truck traffic is tied to specific hours in the day. The Port of Los Angeles' "Terminal Gate Appointment System" streamlines truck arrivals and departures at certain terminals.⁹⁰ Scheduling systems

keep labor costs low compared to **extended hours of operation**.

Directly transferring cargo to rail at ports can reduce truck trips. This requires expanding the rail infrastructure. **On-dock rail** reduces the number of truck trips to rail stations. Currently, 21% of cargo at the SPB ports is transferred directly to rail at on-dock rail facilities. A proposed increase in on-dock rail would eliminate 30,000 daily truck trips by 2035.⁹¹

AESTHETICS

Aesthetic Impacts

Existing port facilities located along scenic shoreline can have large visual impacts on surrounding communities. However, impacts from new port terminals and facilities at existing facilities are relatively small as they do not tend to change the visual character of the port.

Since many ports operate day and night, spillover of lighting or glare frequently impacts surrounding areas. Due to the large size of the SPB ports, most spillover light falls on adjacent port property rather than on residential property. As a result, spillover lighting at the SPB ports is not a great concern.

Aesthetic Impact Improvement

Since the SPB ports encompass such a large area, many construction projects on port property are removed from residential areas. Thus, visual impacts from port projects can be small. Ports or local governments can choose strategies to reduce the visual impacts of port projects, including:

- Landscaping
- Barrier walls
- Lighting restrictions

