

# Emissions Impact of Ships Anchored at Ports of Los Angeles and Long Beach

November 09, 2021

## Quantifying emissions impacts of congestion in container vessels near San Pedro Bay Ports in California.

- The San Pedro Bay Ports (SPBP), which include the Ports of Los Angeles and Long Beach, have been experiencing a substantial increase in cargo imports, resulting in significant congestion at terminals and in surrounding areas. This has led to emissions increases from freight-related sources which can negatively impact air quality especially in communities near ports.
- Congestion has led to an abnormally high number of container vessels at anchor, which use auxiliary engines continuously to provide power for shipboard functions. Additionally, increased cargo imports are expected to increase the activity of trucks and locomotives moving these containers in/out of the ports.
- According to the Marine Exchange of Southern California<sup>1</sup>, as of October 2021, there were as many as 79 container vessels (total of 109 vessels) at anchor near the SPBP.

**Figure 1. Container Vessels at Anchor in October 2021 near the SPBP<sup>2</sup>**



- In the first three quarters of 2021 (January through September 2021), the SPBP saw an average increase of 20 percent in cargo movement (twenty-foot equivalent units – TEU) compared to the same time in 2019 prior to the COVID-19 pandemic (see Table 1 below). This significant increase in cargo movement, combined with supply chain disruptions caused by the COVID-19 pandemic, are the main reasons for the increased congestions at these ports.

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<sup>1</sup> <https://mxsocal.org/>

<sup>2</sup> Courtesy of MXSOCAL: <https://twitter.com/MXSOCAL/status/1451679088565837825/photo/1>

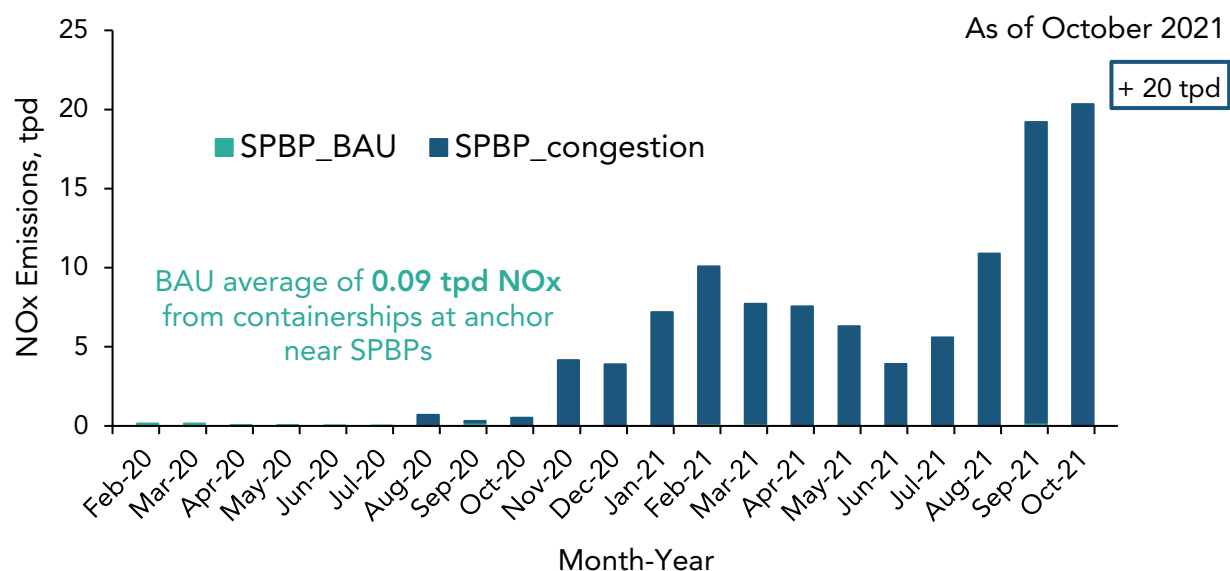
**Table 1. San Pedro Bay Ports Calendar Year to Date TEU Trends (2019-2021)**

Ports	Jan – Sept 2019	Jan – Sept 2020	Jan – Sept 2021	Percent increase since <u>2019</u>
Port of Los Angeles	7,091,776*	6,463,735	8,176,917	15%*
Port of Long Beach	5,678,367	5,707,305	7,094,849	25%

\*Revised on December 10, 2021 to correct error in Port of Los Angeles TEU totals.

- According to CARB estimates, as of **October 2021**, the increased congestion has resulted in overall containership emissions increases of **20 tons per day (tpd) of oxides of nitrogen (NOx) and 0.5 tpd of particulate matter (PM)** in the South Coast Air Basin relative to average pre-pandemic baseline levels.
- To put these numbers into context, this increase in NOx emissions from containerships at anchor is equivalent to almost 20 percent of the additional 108 tpd NOx reductions needed to attain the 80 ppb ozone standard in the South Coast Air Basin by 2023. The increase in NOx emissions is roughly equivalent to the total emissions from 5.8 million passenger cars in South Coast. Additionally, the increased diesel PM emissions is comparable to the exhaust PM emissions from almost 100,000 Class 8 diesel trucks.
- The following two figures illustrate estimated NOx and PM emissions associated with anchored container vessels at the SPBP. Emissions increased sharply beginning in November 2020 and peaked initially in February 2021. Despite short term relief between March and July 2021, the congestion has again spiked to record levels in October 2021 at the SPBP.

**Figure 2. NOx Emissions from Anchored Containerships at the San Pedro Bay Ports**



**Figure 3. PM Emissions from Anchored Containerships at the San Pedro Bay Ports**

