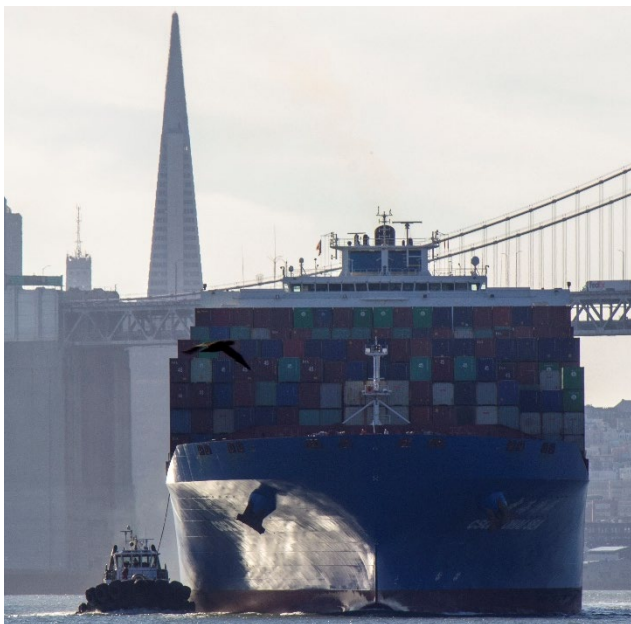


## Appendix H

# 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and Results

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October 9, 2019

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## 1. Summary and Background

This report covers the 2019 updates to the California Air Resources Board's (CARB) inventory for ocean-going vessels (OGV) that visit California's ports and marine terminals while operating at berth. The previous inventory was released in 2014, and the 2019 inventory updates include improvements to vessel visit data, emissions factors, information on vessel compliance with CARB's existing At Berth Regulation ("Existing Regulation"), and growth forecasts.<sup>1</sup> These updates were completed to support new regulatory development efforts, and provide data to support CARB staff's 2018 Health Risk Assessment (HRA) at specific California ports and marine terminal complexes (MTC).<sup>2,3</sup>

OGVs included in this inventory are defined as commercial vessels greater than 400 feet in length, with a carrying capacity of 10,000 gross tons, and are propelled by a diesel marine compression ignition engine with a displacement of greater than or equal to 30 liters per cylinder. These vessels are an important part of California's trade economy, but are also a significant source of pollution in areas near ports and MTCs. Specifically, the vessels' diesel auxiliary engines and boilers produce particulate matter (PM) and oxides of nitrogen (NOx), which is a precursor to secondary PM formation, both of which have a large impact in port communities and surrounding areas. The 2019 inventory update focused on updating emissions of PM and NOx for at berth activity in detail to support CARB staff's HRA at the Ports of Los Angeles and Long Beach (POLA and POLB) and the Richmond Port Complex. It does not cover emissions generated at anchorage or other modes of activity.

Major updates to methodology and data sources include:

- Updated data source for 2016 vessel visits and vessel information based on IHS-Markit data for California and South Coast Marine Exchange data for POLA and POLB
- Updated growth rates based on Freight Analysis Framework (FAF)<sup>4</sup> for most ports and MTCs, and Mercator<sup>5</sup> Report for POLA and POLB

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<sup>1</sup> 17 CCR § 93118.3. Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port, <https://ww3.arb.ca.gov/regact/2007/shorepwr07/93118-t17.pdf>.

<sup>2</sup> Marine Terminal Complexes (MTCs) are CARB-defined groups of independent marine terminals and/or smaller ports (public and/or private) that are located in close geographical proximity to each other. MTCs represent a group of regionalized emission sources that have an impact to the surrounding community.

<sup>3</sup> California Air Resources Board, Preliminary Health Analyses: Ocean-Going Vessels At Berth and At Anchor (November 5, 2018), <https://www.arb.ca.gov/ports/shorepower/meetings/11052018/prelimhealthanalyses.pdf>.

<sup>4</sup> The FAF growth forecast is a commodity-based forecast, forecasting total tonnage of various goods moved in or out of different regions of the State. FAF includes other modes of transportation (rail, air, trucking, etc.) but for this analysis, only water-based trade was considered.

<sup>5</sup> Mercator International LLC, Oxford Economics, San Pedro Bay Long-term Unconstrained Cargo Forecast, July 12 2016, pg 265, [http://acta.org/revenue\\_finance/March%20%202016%20Meeting%20Item%208.pdf](http://acta.org/revenue_finance/March%20%202016%20Meeting%20Item%208.pdf) (last accessed 9/12/2019).