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## I. Introduction

### A. Background

Marine diesel engines can be significant contributors to local ozone, carbon monoxide (CO), and particulate matter (PM) levels, particularly in commercial ports and along coastal areas.<sup>1,2</sup> This rule addresses these air pollution concerns by adopting national emission standards for the first time for marine diesel engines with per-cylinder displacement at or above 30 liters or more that are installed on vessels flagged or registered in the United States.<sup>3</sup> These engines, also known as Category 3 marine diesel engines, are very large marine engines used primarily for propulsion power on ocean-going vessels such as container ships, tankers, bulk carriers, and cruise ships. Category 3 marine diesel engines have not previously been regulated under our nonroad engine programs. This rule also adopts standards for marine diesel engines with per-cylinder displacement at or above 2.5 liters per cylinder but less than 30 liters per

<sup>1</sup> References to diesel-cycle engines, also referred to as "diesel engines" in this document are intended to cover a particular kind of engine technology, *i.e.*, compression-ignition combustion. Compression-ignition engines are typically operated on diesel fuel, though other fuels, such as compressed natural gas, may also be used. This contrasts with otto-cycle engines (also called spark-ignition or SI engines), which typically operate on gasoline. The requirements set out in this action apply only to compression-ignition engines.

<sup>2</sup> Ground-level ozone, the main ingredient in smog, is formed by complex chemical reactions of volatile organic compounds (VOC) and NO<sub>x</sub> in the presence of heat and sunlight. Hydrocarbons (HC) are a large subset of VOC, and to reduce mobile source VOC levels we set maximum emission standards for hydrocarbons. VOCs can also be part of the secondary formation of PM.