Source Category:	**Commercial Marine Vessels**
SCC Code:	**2280002100 Marine Vessels, Commercial – Diesel – port emissions** **2280002200 Marine Vessels, Commercial – Diesel – underway emissions** **2280003100 Marine Vessels, Commercial – Residual – port emissions 2280002010 Commercial Marine Vessels - Diesel** **2280003200 Marine Vessels, Commercial – Residual – underway emissions**
Pollutants of Concern:	**PM10, PM2.5, VOC, NOx, CO, SOx, 22 HAPs**

How is the PM National Emission Inventory developed for this category?

Current Methodology (see also the link to the NEI Methodology Description):

Diesel powered vessels:

- National emissions/activity forward/back cast to appropriate year based on EPA background document for diesel CMV.
- National emissions split into port and underway components. 75% assumed to be port emissions, 25% assumed to be underway emissions.
- PM10 assumed equal to PM from background document and PM2.5 assumed equal to 0.92*PM10

Residual or steam-powered vessels:

- National activity data used is national residual oil sales of vessel-bunkered fuel.
- National emissions split into port and underway components. 75% assumed to be underway emissions, 25% assumed to be port emissions
- PM emission factors for steam-powered vessels:
  PM10: 25.8 lbs/10^3 gallons
  PM2.5: 23.7 lbs/10^3 gallons (0.92 * PM10)

County allocation:

- County allocation of national port diesel and steam-powered engine emissions distributed to the top 150 ports in US based on the amount of freight handled.
- County underway emissions were allocated by applying county-specific waterway activity factors to the national emissions. Using GIS software, county borders were overlaid with U.S. waterway network to determine waterway length in each county. Each county was assigned a weighting factor by summing the product of

the waterway length (miles) and the waterway-cargo traffic (tons) for each segment of the waterway, and then dividing the county portion by the national total.

Current Variables/Assumptions Used:

- National fuel use data used for all vessel types.
- Assumptions for in-port and underway fractions for different types of vessels.
- National value for ratio of PM2.5/PM10.
- County port allocation to 150 largest ports.

Uncertainties / Shortcomings of Current Methods:

- National activity data used rather than State/local/tribal.
- National estimate for mix of operations used rather than location specific value.

How can State, Local, and Tribal agencies improve upon this methodology?

- Review emission estimates to ensure that they are representative.
- Develop county-level allocation based on reasonable data (GIS-based ton miles and waterway mileage data). [*State Department of Transportation, Port Authority*]
- Obtain more representative activity estimates at the local or State-level including data on fuel consumption, categories of vessels, number of vessels in each category, and the number of hours at each time-in-mode (cruising, reduced speed, maneuvering, and hotelling). [*State Department of Transportation, Port Authority*]
- Allocate port emissions within counties (to ports other than 150 largest).

Where can I find Additional Information and Guidance?

EPA Contact: Laurel M Driver
Emission Factor and Inventory Group
U.S. Environmental Protection Agency
D205-01
USEPA Mailroom
Research Triangle Park, NC 27711
Telephone: 919 541-2859
E-mail: driver.laurel@epa.gov

Additional Information on Emissions from Commercial	http://www.epa.gov/otaq/marine.htm or

Marine Sources	http://www.epa.gov/otaq/nonrdmdl.htm#otherref
Mobile Source Emission Inventory Guidance Document	http://www.epa.gov/otaq/invntory/r92009.pdf
NEI Methodology Description	http://www.epa.gov/ttn/chief/net/index.html#doc