Assessing Port Emissions

May 7, 2014

Overview

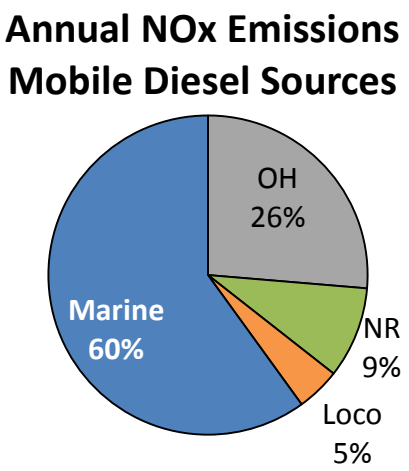
- Why Ports? Why Now?
- Introduction to EPA Ports Initiative
- EPA Ports Assessment
- Next Steps

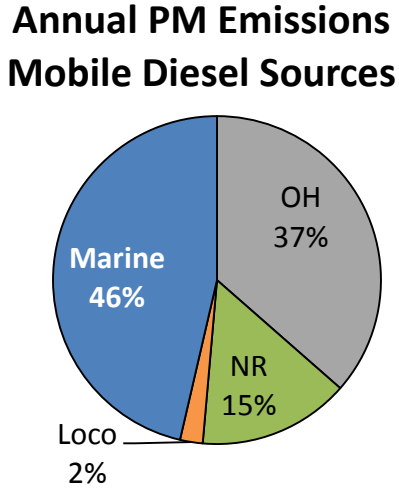
Why Ports, Why Now?

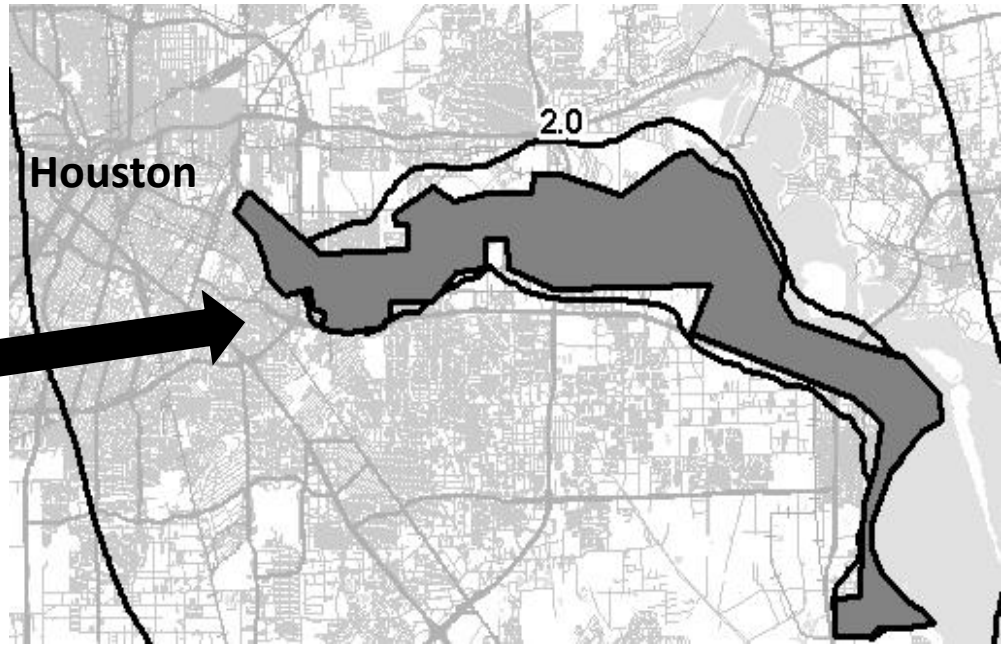
- Ports are the main gateway for U.S. trade and are critical to the economies of many cities and regions
- In recent years, growing emphasis on globalization of trade and transportation infrastructure needed to support
- It is important to consider what this growth means for the environment
- EPA has worked with ports in the past through a number of efforts, but additional work is needed

Port of Houston

- Ozone
  - 8-Hour Ozone Nonattainment Area
  - 60% of Annual NOx Mobile Diesel Emissions from Marine Sources
- Particulate Matter
  - $PM_{2.5}$ Design Value is 12.4 ug/m^3
  - 23,402: Population exposed to Harbor Emissions above 2.0 µg/m^3

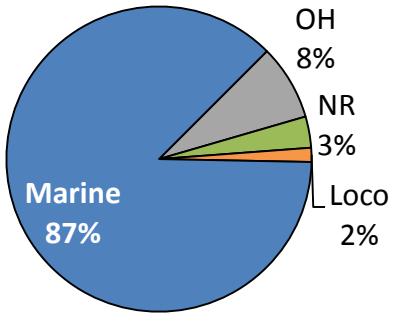




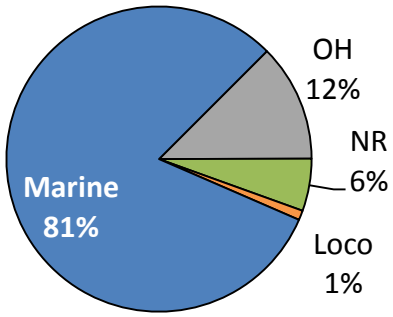


Ports of South Louisiana

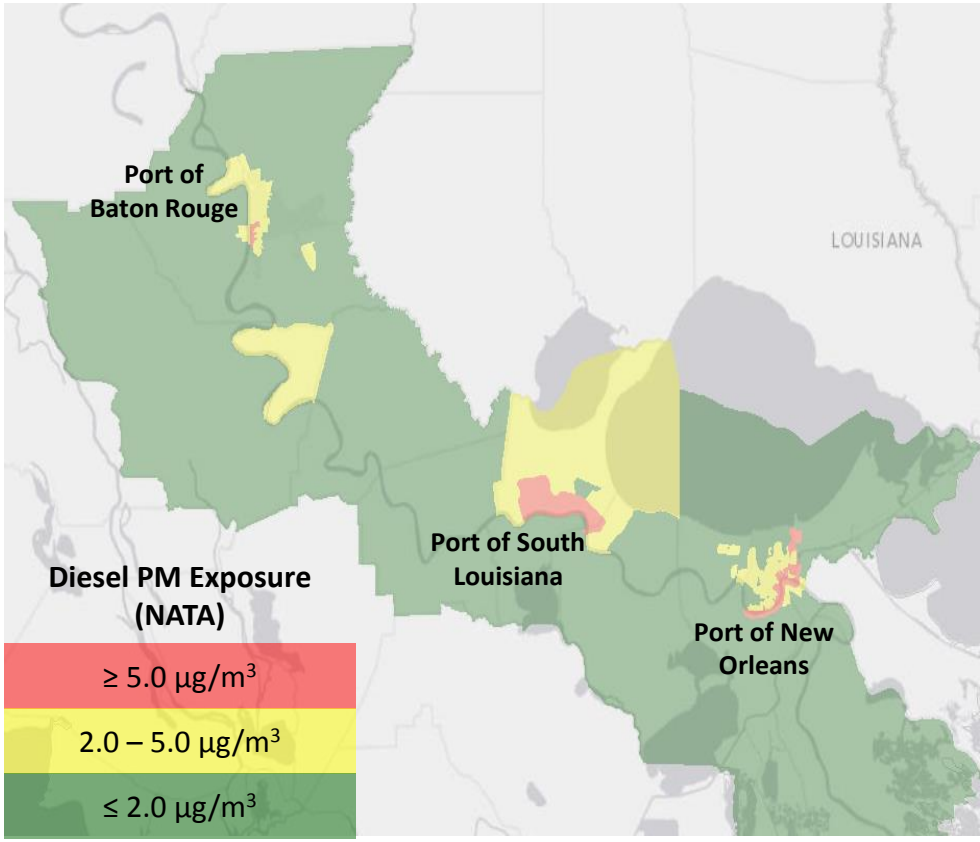
Annual NOx Emissions
Mobile Diesel Sources



Annual PM Emissions
Mobile Diesel Sources



- Ozone
  - Baton Rouge: Nonattainment
  - New Orleans: Attainment
- Particulate Matter
  - All Areas: Attainment
  - 143,652: Population exposed to Harbor Emissions above 2.0 µg/m^3
    - 9% of all parish's population
    - 22% of parish's around Port of South Louisiana

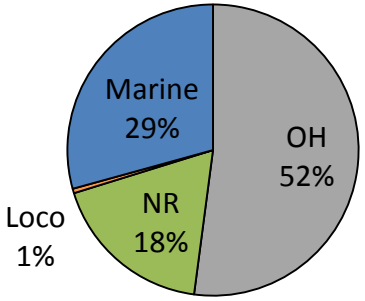


Ports of South Florida

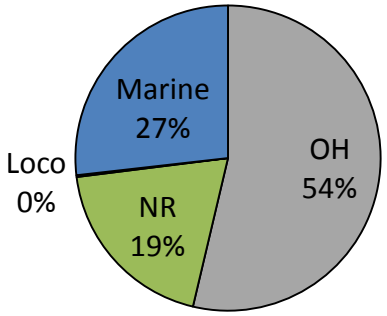
Port Everglades and Port of Miami

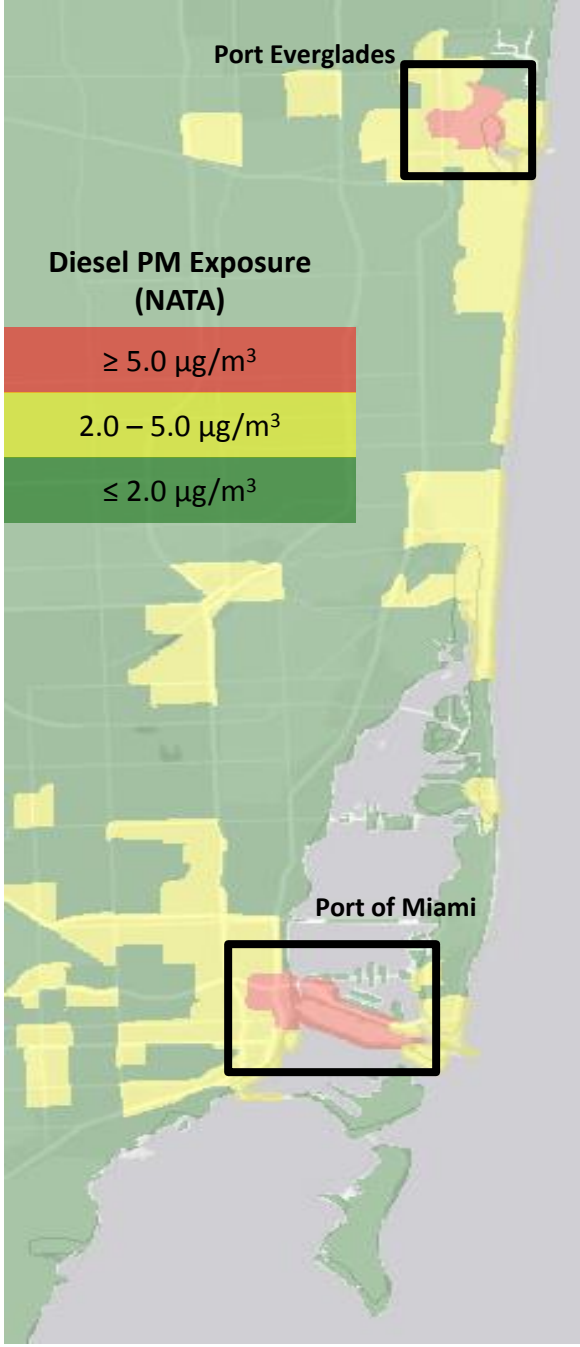
- Particulate Matter
  - PM Attainment
  - Potential PM Near-Roadway Issues
    - 70,591: Population exposed to Harbor Emissions above 2.0 µg/m³
    - 2% of counties' population

Annual NOx Emissions Mobile Diesel Sources



Annual PM Emissions Mobile Diesel Sources





Vision for EPA Ports Initiative

- To develop and implement an environmentally sustainable port strategy that identifies opportunities and finds solutions to help build a more sustainable ports system, one that creates healthy air quality for communities and reduces climate risk while supporting our economy and jobs.

Key Elements of Ports Initiative

- **Data & Tools** – Be a source of credible environmental data and tools to assess criteria and climate emissions, drive good local decision-making, and inform national policy

- **Incentives** – Building upon HQ and Regional expertise with SmartWay, DERA, ports, and stakeholder relationships to develop a national ports incentive program

- **Federal Coordination** – Look for opportunities to engage all EPA offices and federal partners on ports

Why Conduct a Ports Assessment Now?

- Existing emissions and exposure data is useful, but additional work will improve our understanding
- Additional information from port assessment can:
  - Assess criteria and GHG emissions, and $PM_{2.5}$ population exposure, in nonattainment and maintenance areas
  - Evaluate impact of emission reduction strategies
  - Assess environmental impact of port growth, e.g., the expansion of Panama Canal
  - Develop a recommended methodology for ports and stakeholders to conduct their own emission assessments

Previous Assessments We Reviewed

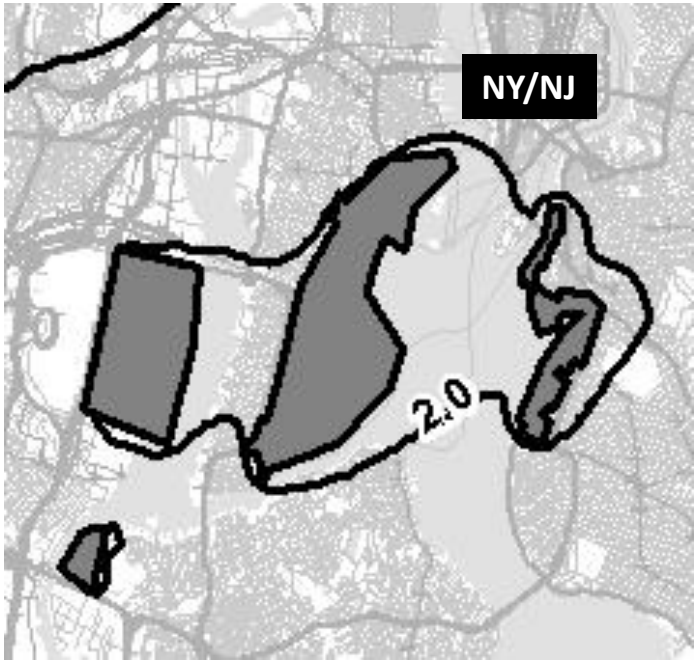
- San Pedro Bay Clean Ports Action Plan (LA and Long Beach)
- CARB *Diesel PM Exposure Assessment Study for the Ports of Los Angeles and Long Beach*
- 12 existing State Emission Inventories (partial and complete), and national criteria and GHG inventories
  - Beaumont/Port Arthur --Long Beach
  - Charleston --New York/New Jersey
  - Corpus Christi --Norfolk
  - Houston/Galveston --Oakland
  - Great Lakes Ports --Puget Sound
  - Los Angeles --San Diego
- 2008 OTAQ Port Study and ECA Analysis
- National Criteria and GHG Inventories

2008 OTAQ Port Study*

- Approximated emission inventories for 45 ports
  - Trucks, locomotives, cargo handling equipment, harbor craft and marine vessels
- Used AERMOD to calculate 3-year average spatial distribution of diesel $PM_{2.5}$ concentrations
- Estimated populations affected by each port

	NY/NJ	National
Population Exposed (PM2.5 >2.0ug/m^3)	178,400	636,000
Minority	59%	31%
Income <$10,000	15%	10%

*Published in docket for Locomotive Marine Rule and in American Journal of Public Health



Port Assessment Scenarios

- Baseline port emissions for $PM_{2.5}$, NO_x, CO_2 and BC
  - 2011: based on actual port activity in 2011
  - 2020, 2030 and 2050 (CO_2 only): based on expected fleet turnover rates
- Implementation of best available technologies and operational strategies
- Health impacts
  - Population exposed to $PM_{2.5}$ at 0.2 and 2.0 ug/m^3
  - Monetized health benefits
- Other consideration for scenarios
  - Maximize cost-effective strategies
  - Impact of Panama Canal widening

Next Steps

- Build on Ports Initiative efforts to date by engaging MSTRS and stakeholders to reduce criteria and climate emissions at ports
- Develop EPA Port Assessment, and provide MSTRS with updates on future progress
- Continue port-related Federal coordination work