



**TUNLEY
ENVIRONMENTAL**



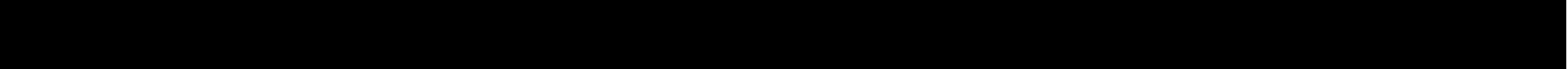
Port of Detroit Decarbonization and Air Quality Improvement

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The Detroit/Wayne County Port Authority

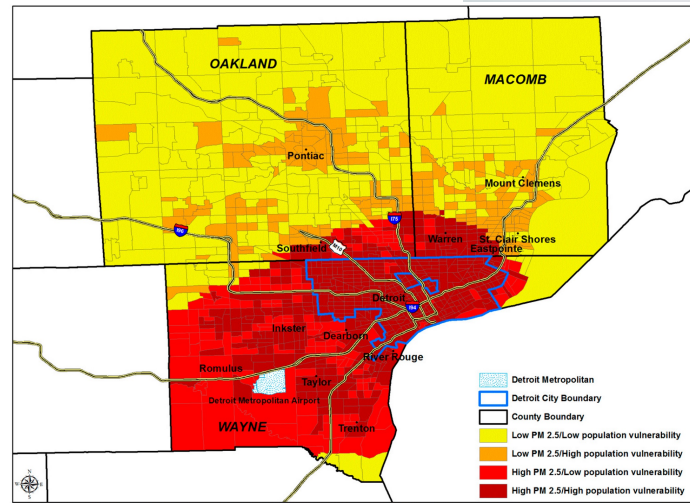
- Government entity funded by City, County and State
- Promotes the movement of cargo on the water to support our local economy
- Promotes maritime jobs and economic development
- Develop port terminals and infrastructure
- Cruise ship champion
- Environmental stewardship of the waterways





Project Motivation

- Reduce Carbon Emissions
- Maritime's Responsibility for climate change
- Improve Air Quality
- Leverage Funding Opportunities for Port Improvements
- Enhance Reputation of Port Community
- Economic Development



PM2.5 is drawn from 2011 NATA estimates of PM 2.5 concentrations. Population vulnerability includes percent below the national poverty line, percent renters, percent population of color, median house value (reverse coded), percent > age 24 with < high school completion, percent children < 5, percent adults 65+, and linguistic isolation.





Port of Detroit Characteristics

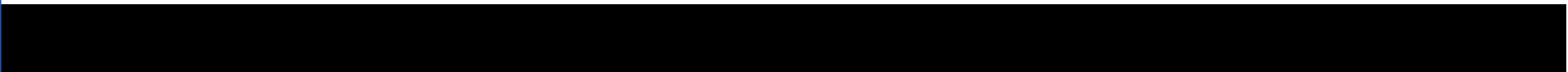
- Collection of Private Terminals (18)
- 8 million tons annually (declining)
 - Bulk (coal, iron ore, cement, gravel)
 - Liquid, Steel, Heavy Equipment
- Aging infrastructure
- Heavily industrialized
- International border (two bridges)
- Logistics hub (trucks & rail)

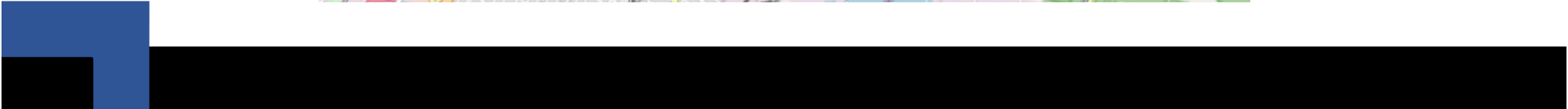
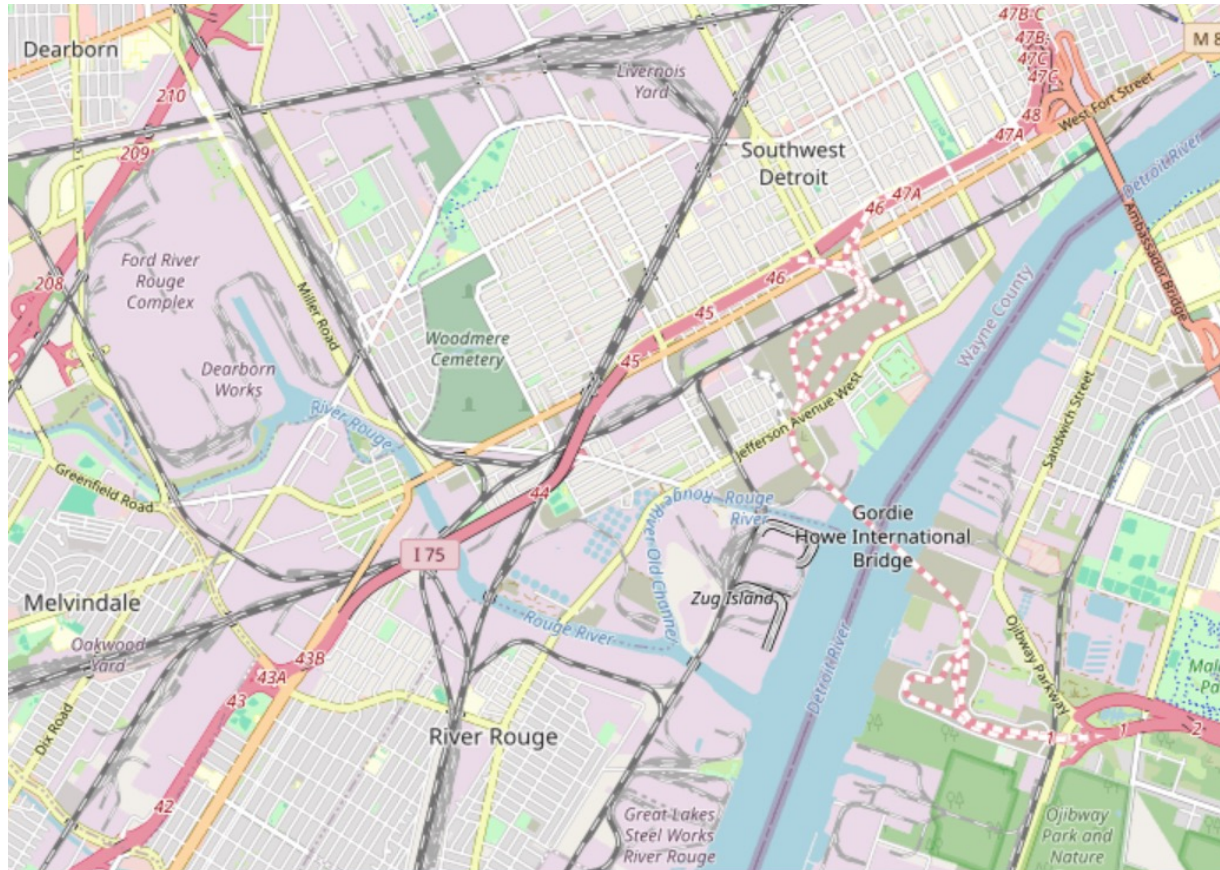




Port of Detroit Characteristics

- Mainly private terminals (18)
- 8 million tons annually (declining)
 - Bulk (coal, iron ore, cement, gravel)
 - Liquid, Steel, Heavy Equipment
- Heavily industrialized
 - Steel plant
 - Mining
 - Petroleum refinery
- Logistics hub (trucks & rail)
- International border (two bridges)
- Transitioning Terminal Uses
 - 1,000 acres w/deep water access - vacant
 - Recreational Use
- Over 25,000 residents w/in 5 miles
- Protected Wetlands
- Environmental cleanup needs







Holcim/LaFarge Cement

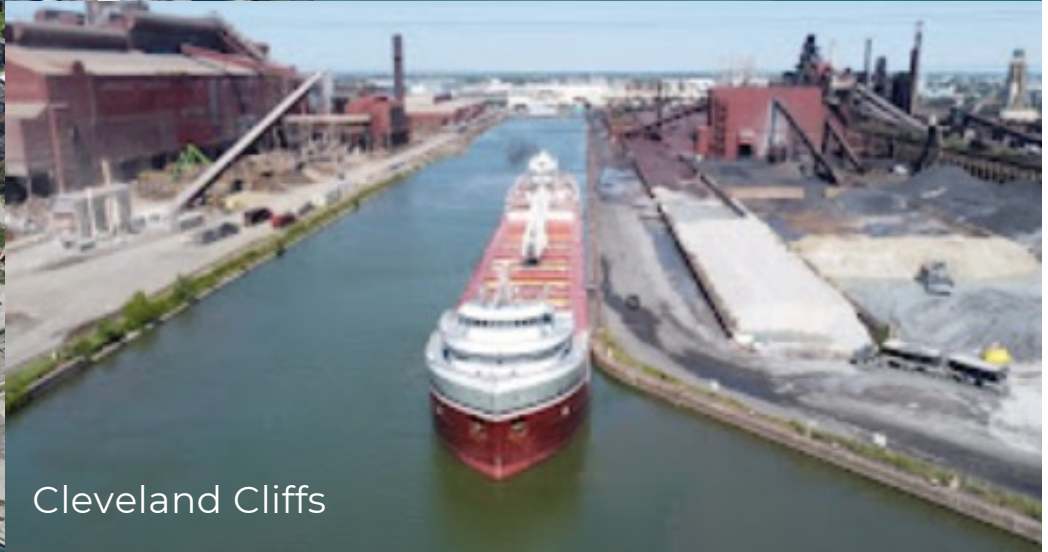


Short Cut
Canal 21

DTE Zug Island



Waterfront Petroleum



Cleveland Cliffs



Port Authority Challenges

- No access to terminal data
- No leases with terminal owners
- No regulatory power over private terminals
- Terminal Distrust of Government and Internal Competitiveness
- General Distrust of Climate Change

Keys to Success

- Terminal Leadership
- Communication and Persistence
- Business case for decarbonizing
- Access to grant funding
- Community support



Community Engagement – Essential

- Southwest Detroit Environmental Vision
 - 20+ history of fighting for clean air
- Michigan Clean Cities Coalition
 - Expertise in air quality and emission reduction
- The Original Citizens of Southwest Detroit
- Listen! Listen! Listen!
- Empathy
- Grants require it
- long before the NOFO



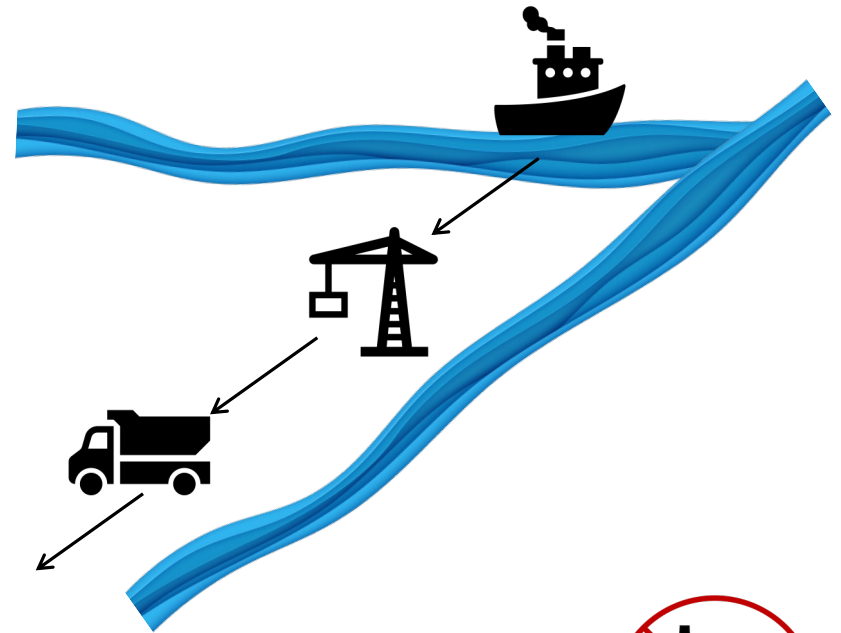
Michigan
Clean Cities





Emissions Boundary

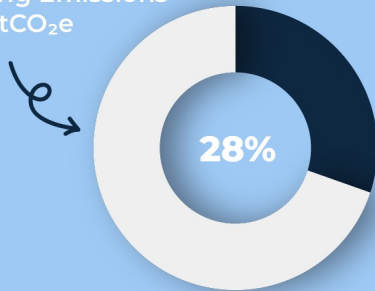
- In Scope Emissions, Port-Activity:
 - **Shipping:** Fuel usage along the Detroit River and River Rouge or while docked
 - **Goods Handling:** Equipment required to move goods on/off ships and into onward transportation
 - **Drayage:** Truck or rail movement of goods within Wayne County
- Out of Scope Emissions:
 - **Industrial Activity:** Processing or further use of goods received on-site.



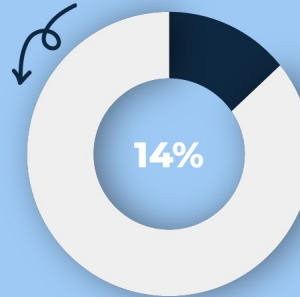


The overall emissions for the Port of Detroit region were found to be 30,296 tons of carbon dioxide equivalents.

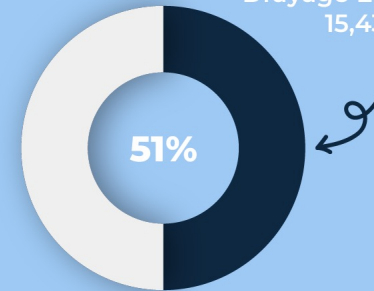
Shipping Emissions
8,425 tCO₂e



Goods Handling
Emissions 4,145 tCO₂e



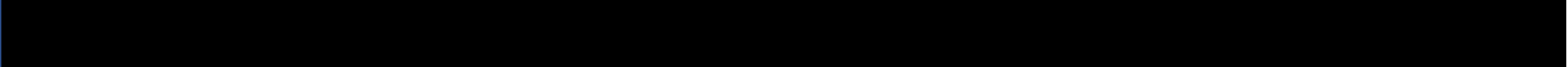
Drayage Emissions
15,430 tCO₂e



7%

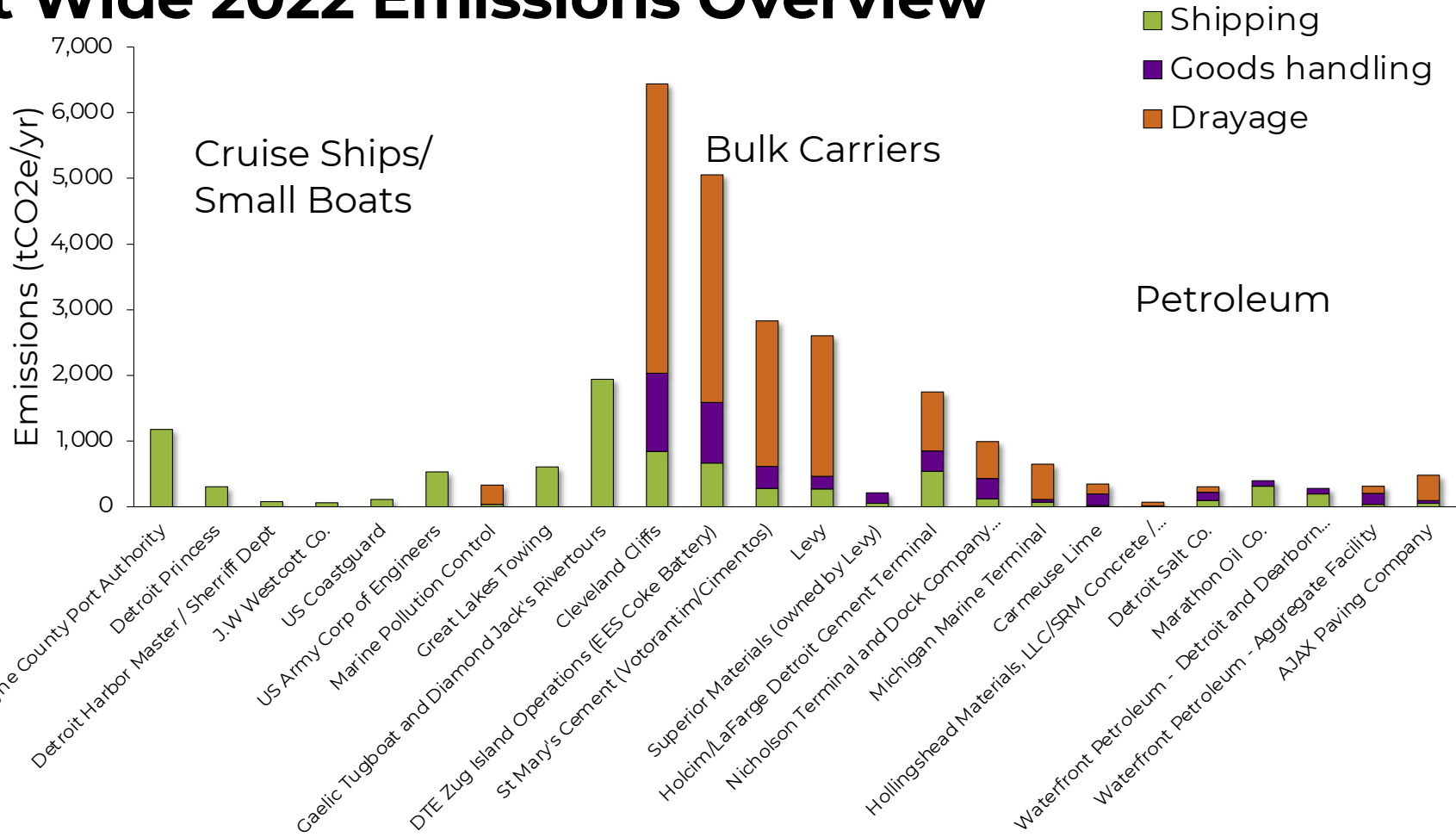
Administration of port facilities 2,268 tCO₂e

The total volume of carbon dioxide emitted due to port activities in Detroit is equivalent to **44 Ford Fields filled with CO₂**





Port Wide 2022 Emissions Overview



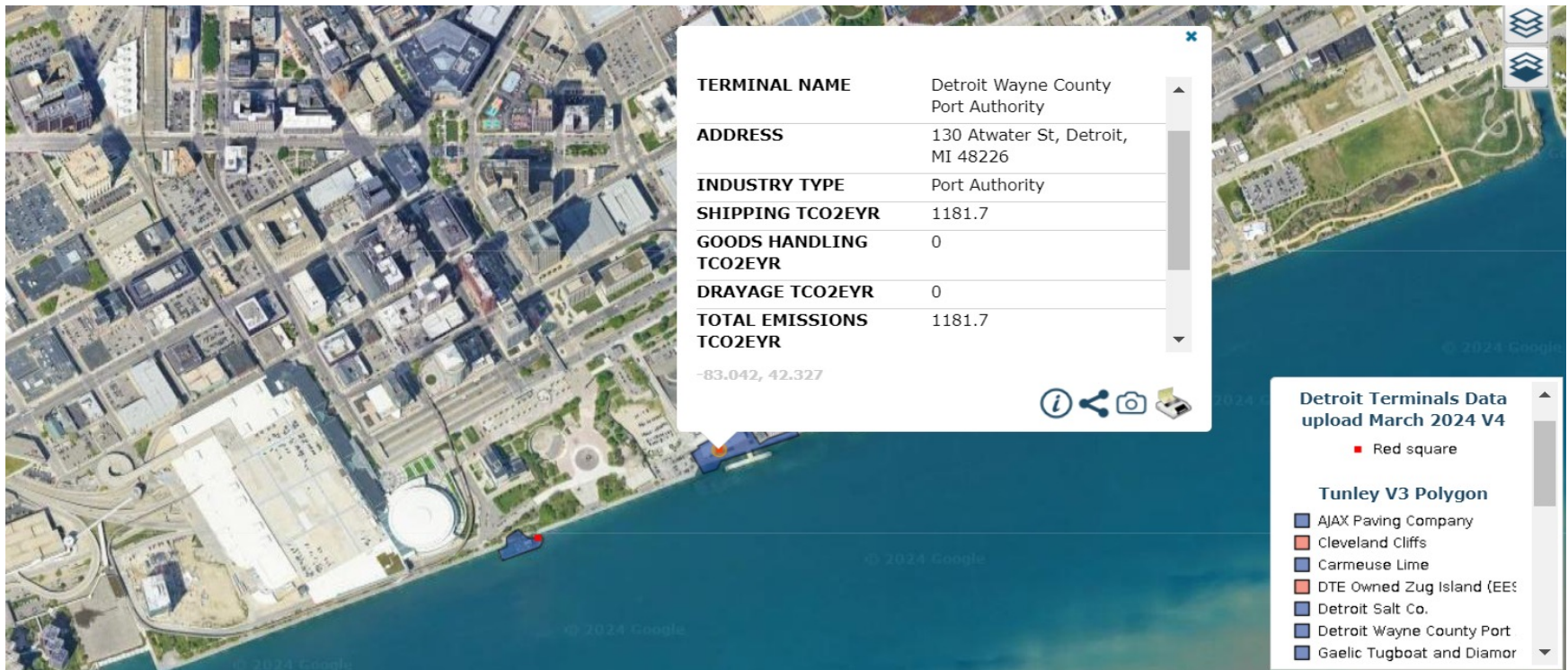


Interactive Maps: Port of Detroit Region





Interactive Maps: Individual Terminals





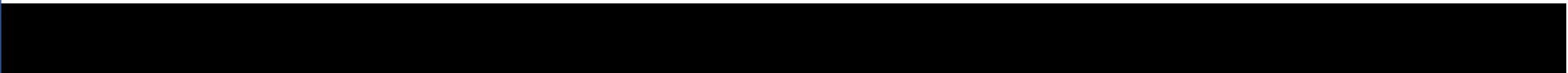
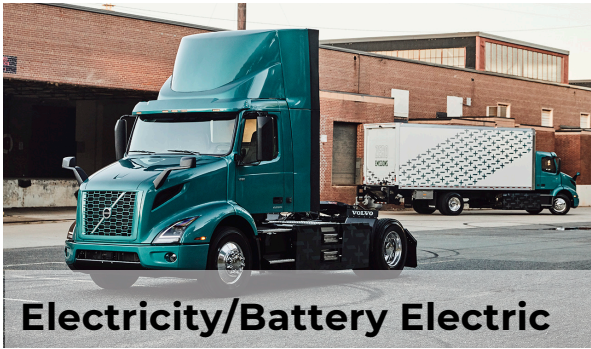
Decarbonization Strategies

- Biodiesel across all activities
- Electrification & Renewable Energy
- Green Hydrogen
- Green Methanol



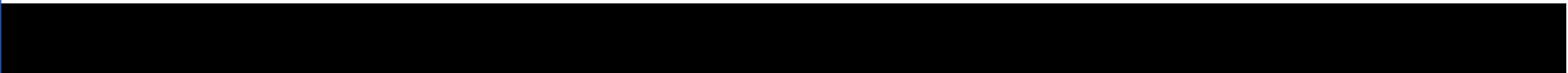
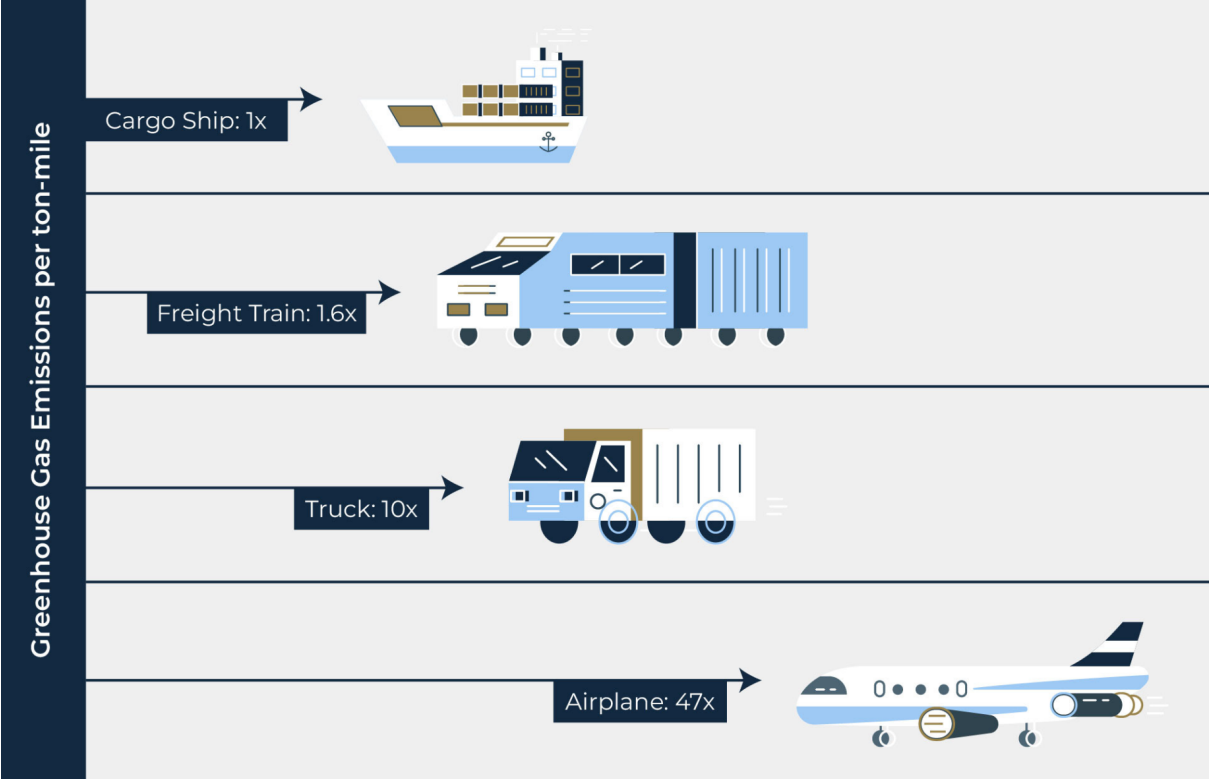


Emissions Reduction Strategies





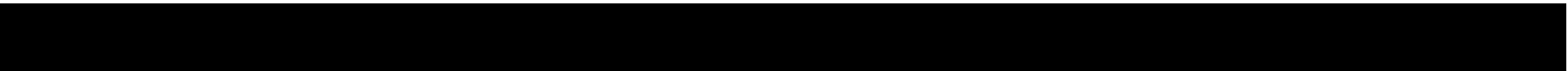
Emissions Reduction Strategies – Increased Use of Ports!





Strategies to Improve Air Quality Today

1. Participation in Green Marine Program
 - Best practices to reduce air pollution, noise, dust, etc.
 - Tarps on trucks, trucks washing, noise limits, PM reduction
 - Independent audit and certification
 - Continuous improvement required
2. Changing fuel sources reduce harmful pollutants
3. Improved air monitoring and community text alerts





Decarbonization Targets?

Shipping

- 2030 – 50% Biofuel/Electrification for smaller ships
- 2035 – 80% Biofuel/Electrification for smaller ships
- 2040 – 100% Biofuel/Alternative Fuel/Electric

Goods Handling

- 2030 – Biofuel usage in all compatible Equipment & 100% Renewable Electricity
- 2035 – Either electric or other zero emission technology

Drayage

- 2027 – 25% Biofuel Usage
- 2030 – 50% Biofuel or Hydrogen/Electric
- 2035 – Hydrogen or Electric Trucks, with remaining trucks on biofuels
- 2040 – 100% Zero Emission Vehicles (Electric or Hydrogen)

Additional Recommendations

- 2030 – 75% Of Goods arriving at Green Marine Terminals
- 2030 – 100% Renewable electricity for office buildings





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Port of Detroit Unveils Plan to Decarbonize Operations

April 22, 2024



The Detroit/Wayne County Port Authority on Monday revealed details of a program to slash carbon emissions to net zero by 2040 in an effort to improve air quality and the health of residents.

Working with technical experts from sustainability consultancy Tunley Environmental, and thanks to funding from the State of Michigan, it established that operations across the port region were responsible for 27,869 metric tons of carbon dioxide equivalent, and that urgent action was needed.

L-R: Mark Schrupp, executive director Port of Detroit, and Rob Woodroff, Tunley Environmental, speak at Ports of Future Conference in Houston April 2024 (Photo: Port of Detroit)

"The maritime industry is responsible for 3% of global emissions, and it's growing. We must work to convert from fossil fuels to zero emission power sources in our ships, port equipment and trucks by 2040 in order to avoid catastrophic effects of climate change. But we're not just concerned about 2040. The steps we're announcing today on Earth Day will have an immediate impact on air quality and will improve the lives of residents in our community," said Mark Schrupp, Port Authority executive director.



PORTS CARGO INFRASTRUCTURE TECHNOLOGY GREENPORTS REGULATORY

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The Detroit/Wayne County Port Authority Case Study

Tunley Environmental present releases a case study of the Detroit/Wayne County Port Authority

In the U.S. the Detroit/Wayne County Port Authority has taken a bold step in sustainability publishing their decarbonization and air quality improvement plan on Earth Day April 22nd. This initiative was made possible through funding from the State of Michigan and the efforts of Senator Stephanie Chang, who challenged the Port Authority to take action to reduce carbon emissions within the port region.

maritime activity from over 1,000 acres along the Detroit and Rouge Rivers. The project has involved a high engagement effort with those who live, work and travel through the port to hear the call to action for cleaner air, reduced sound vibrations, and the danger in neighborhood rivers caused by trucks that had cargo from the port enter the The ultimate goal is to transform the Port of Detroit into a model of sustainability and environmental responsibility for ports worldwide.

Key Highlights
• The Port of Detroit's commitment to

decarbonisation ENGINEERING

* The aim for all Ports of Detroit participants is to achieve Green House verification by 2030. * A call to action for community engagement and collaboration to ensure environmental justice and the health benefits of decarbonization for all residents.

Baseline Carbon Footprint
Tunley Environmental provided their expert technical consulting services to turn the project concept into reality. As with any environmental impact plan, the first step is to measure a reliable baseline carbon footprint that reflects the current state of emissions and serves as a reference point for future actions.

The Baseline Carbon Footprint for the Port of Detroit was meticulously calculated through a year-long engagement with terminal operators, tugboat companies, and other essential port support operations. This collaborative effort was crucial in moving beyond mere estimates to obtain accurate data, which revealed that total carbon emissions from port operations amounted to 27,869 metric tons of CO2 equivalent. Notably, storage services were identified as the largest contributors, accounting for 55% of the baseline emissions. Without the extensive engagement, the opportunity for targeted emission reductions would have been significantly missed, undermining the value of this comprehensive approach.

The report highlights the importance of this engagement and collaborative effort from the terminal operators, as it allowed for the development of personalized plans for each terminal to reduce their emissions. This level of detail and specificity in the Baseline Carbon Footprint is instrumental in identifying effective strategies for emission reduction. For instance, the use of biofuel could reduce emissions by up to 10% compared to traditional diesel, showcasing the potential for impactful change



Port authority in Detroit presents roadmap to decarbonizing operations

By Liz Levin and Jack Nissen | Published April 22, 2024 5:49pm EDT | Environment | FOX 2 Detroit |



BREAKING NEWS
Breaking news delivered fast
Email Address
Sign Up
By clicking Sign Up, I confirm that I have read and agree





Ongoing Work

- Low Carbon Port Committee
 - Terminal Operators
 - Quarterly Meetings
 - Measure Progress
 - Planning & Collaboration
- Decarbonization Plan Advisory Board
 - Residents, community leaders, business and religious
 - Semi-annual
 - Accountability
 - Continuous inclusion and engagement

