



PORT HOUSTON™

Regional Air Quality Planning Advisory Committee

Port Houston:

# Air Quality Initiatives

1/27/2022

Ken Gathright  
kgathright@porthouston.com  
713.670.2690





# PORT COMMISSION



Ric Campo  
Chairman



Dean E. Corgey  
Commissioner



Clyde Fitzgerald  
Commissioner



Stephen H. DonCarlos  
Commissioner



Roy D. Mease  
Commissioner



Wendy Montoya Cloonan  
Commissioner



Cheryl D. Creuzot  
Commissioner



## WHO WE ARE

We manage eight public terminals — including two container facilities we operate and six others for which we're the landlord

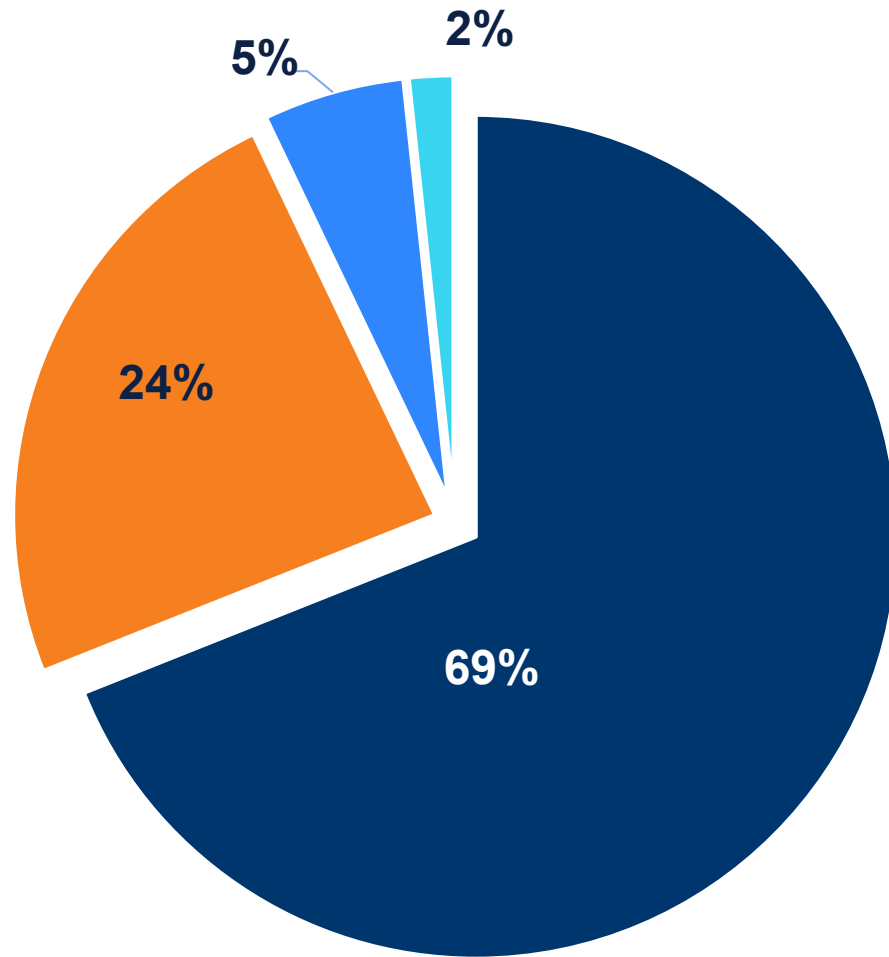
As the advocate and a strategic leader of the Houston Ship Channel, we support the more than 200 facilities and the neighboring communities along it by working with the federal government

We facilitate vital commerce through the port that helps keep the local and state economy moving





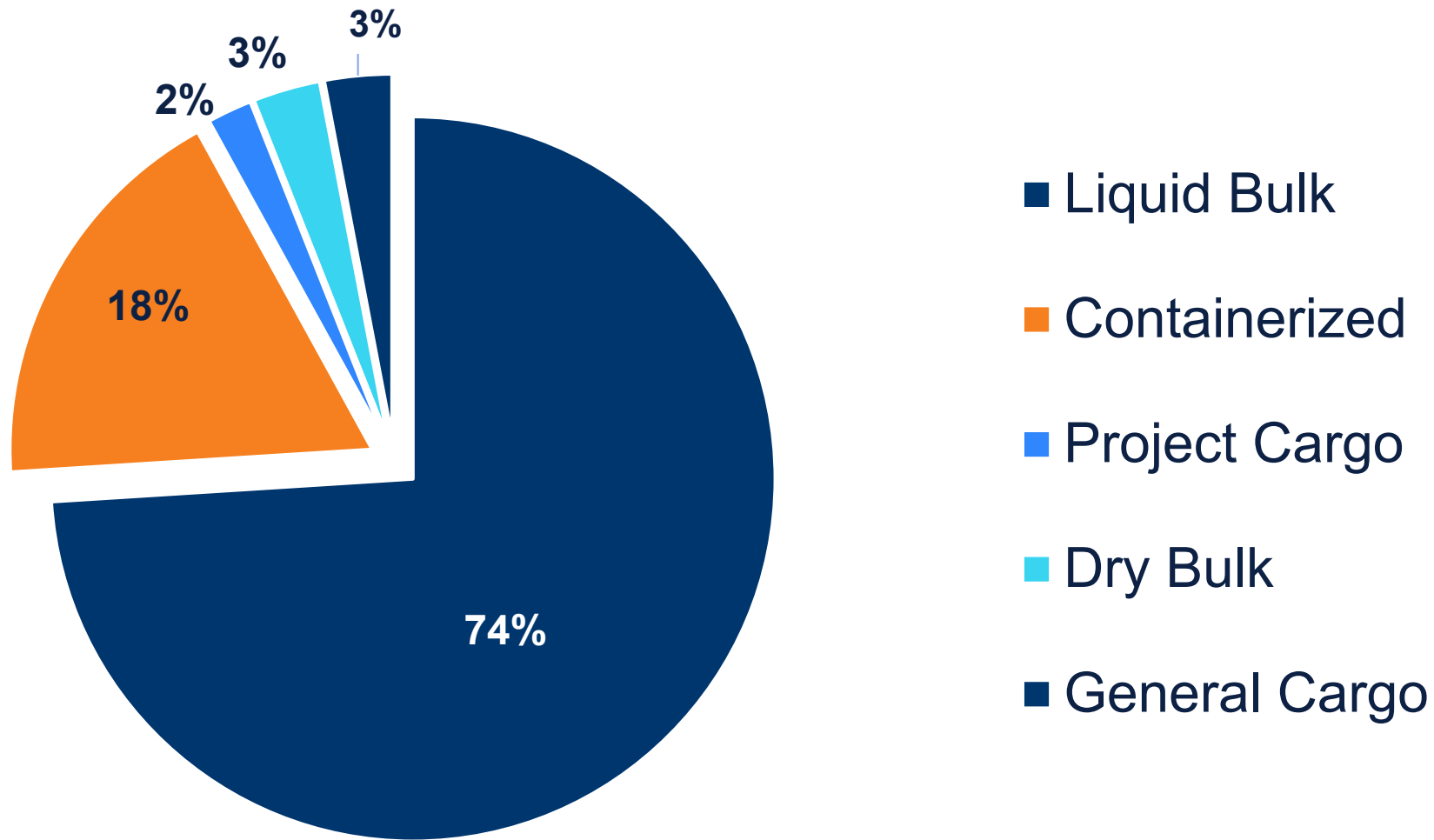
# PORT HOUSTON - CARGO SECTORS 2020



- Containerized
- Bulk Cargo
- Gen. Cargo (Steel)
- Gen. Cargo: (Other)



# HOUSTON SHIP CHANNEL COMPLEX – CARGO SECTORS 2020





# WHO IS SHIPPING? CONTAINERIZED FREIGHT: JAN – DEC 2020

TOP 10 PORT HOUSTON IMPORTERS	TEU	TOP 10 PORT HOUSTON EXPORTERS	TEU
Walmart	17,407	ExxonMobil	46,858
Red Bull North America	13,306	Dow	19,737
Ikea	9,823	Montachem International	18,914
Room To Go	9,043	Vinmar	17,910
Anheuser Busch	7,443	Shintech Inc.	16,861
Vestas	6,760	Muehlstein International	15,381
Heineken	6,615	Sasol Chemical	14,856
Tramontina USA	6,418	Olam Cotton	10,908
Samsung	5,000	Allenberg Cotton	9,134
Igloo Products	4,391	World Food Programme	8,997

Source: Journal of Commerce (PIERS), PHA Market Development  
 Note: Totals DO NOT include empty containers; Excludes companies not listed in PIERS, e.g., WALMART



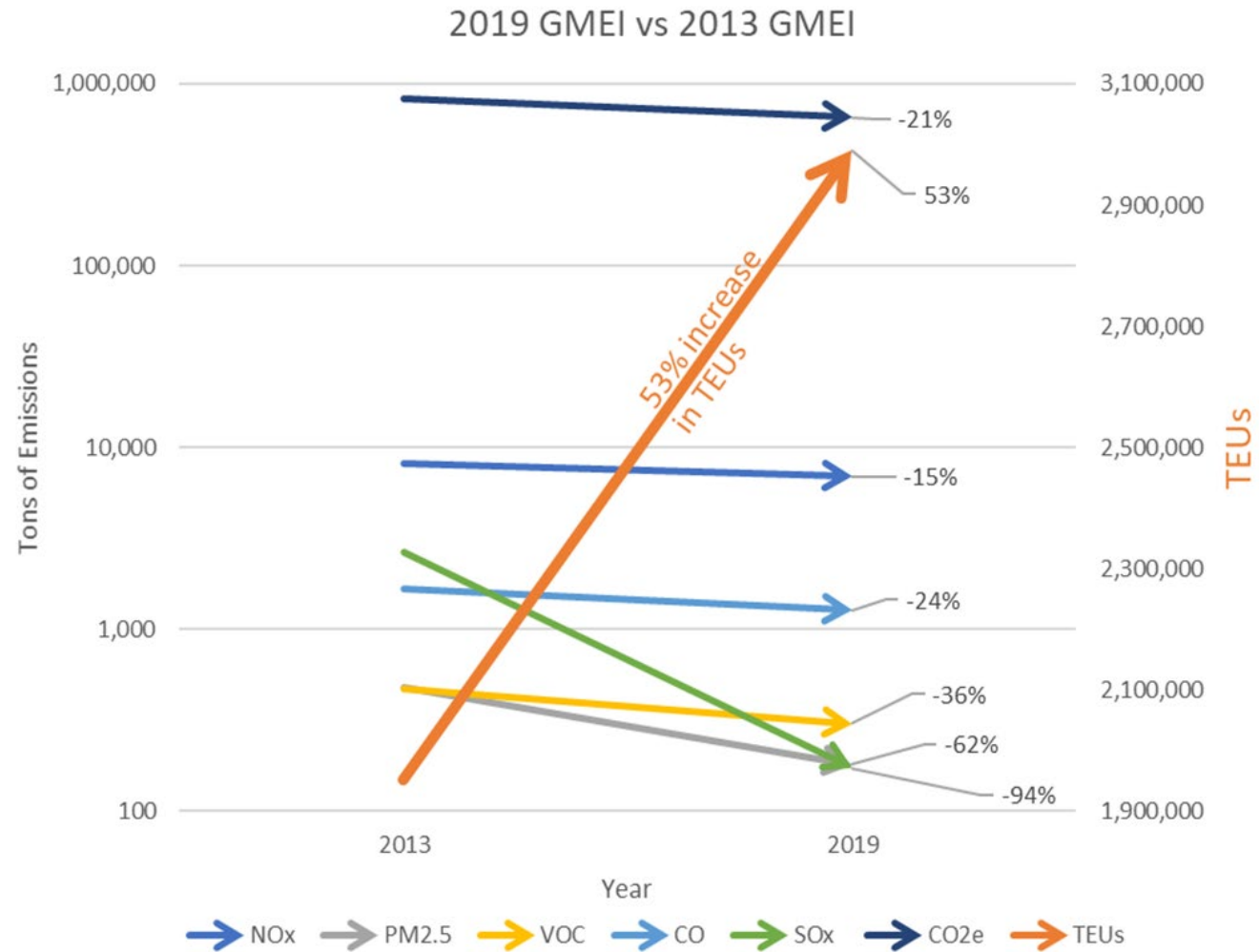
## 2019 Goods Movement Emission Inventory (GMEI)

- Estimates air emissions related to goods movement that occurs at Port Houston terminals
- Ocean Going Vessels, Harbor Craft, Rail, Truck, Cargo Handling Equipment
- Used to measure improvements and inform decisions for Clean Air Strategy Plan.

	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	VOC	CO	SO <sub>x</sub>	CO <sub>2e</sub>
	tons	tons	tons	tons	tons	tons	tonnes
Ocean-going vessels	4,120	69	63	132	348	171.3	259,134
Commerical harbor vessels	496	12	12	12	113	0.4	39,805
Cargo handling equipment	370	29	28	39	169	0.3	72,121
Locomotives	587	16	16	27	153	0.6	53,329
Heavy-duty vehicles	1,369	68	63	95	490	0.9	229,929
<b>Total</b>	<b>6,942</b>	<b>194</b>	<b>181</b>	<b>304</b>	<b>1,272</b>	<b>173</b>	<b>654,318</b>



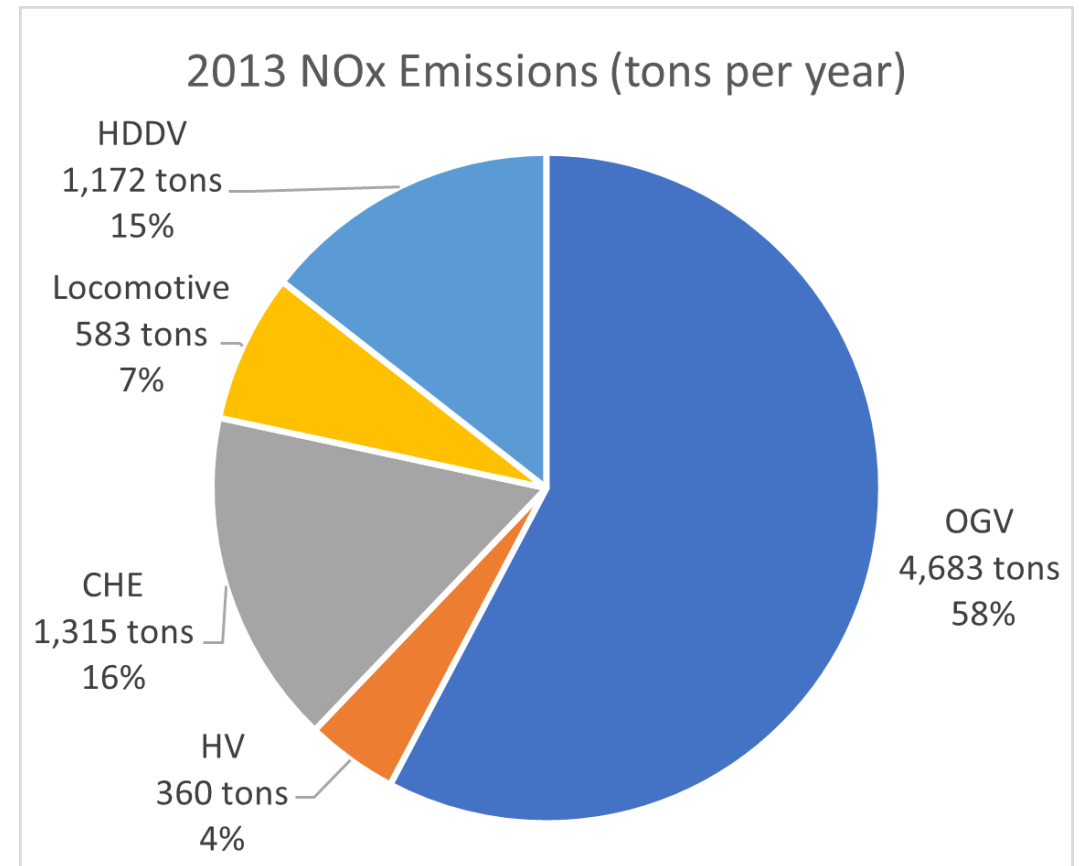
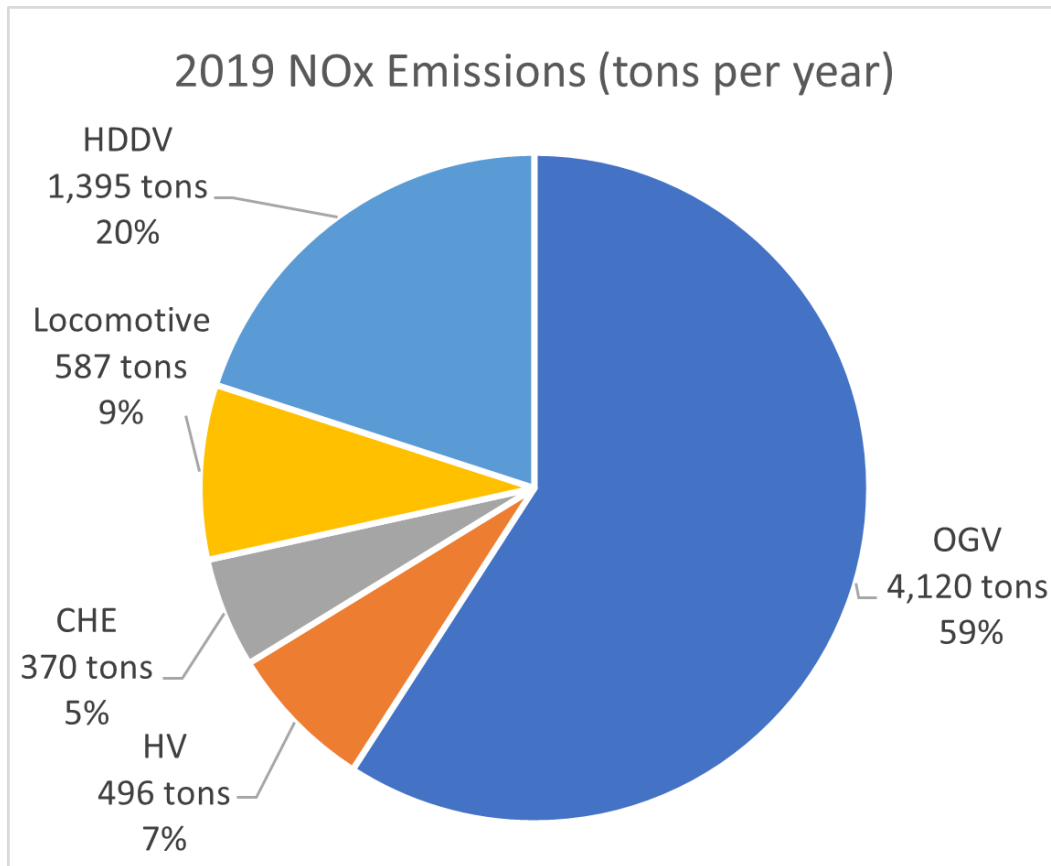
# 2019 GMEI vs 2013 GMEI





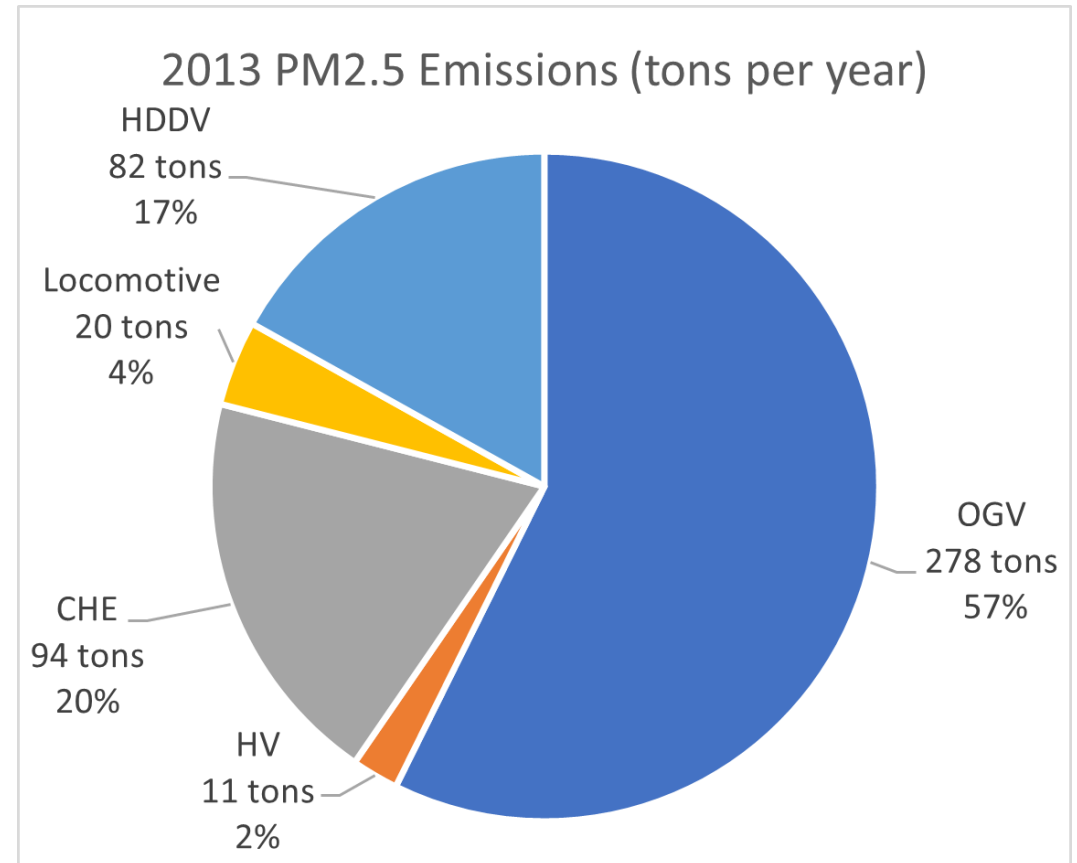
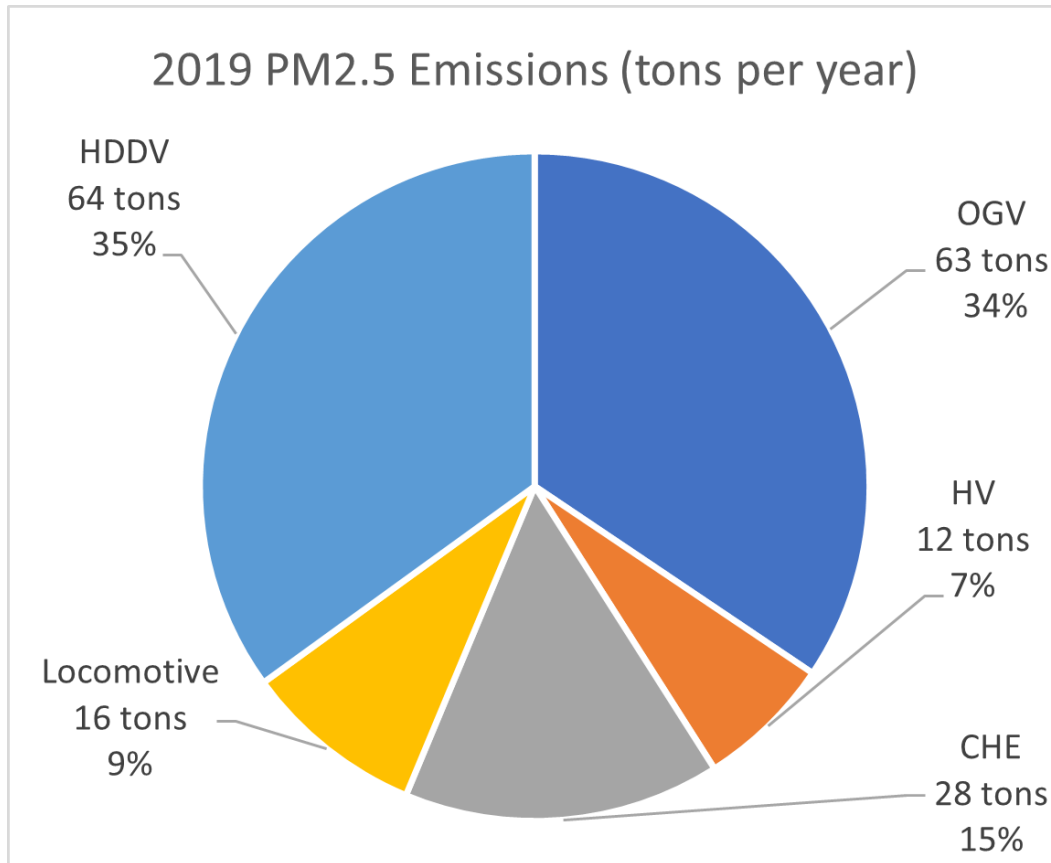


# 2019 GMEI vs 2013 GMEI - NOx





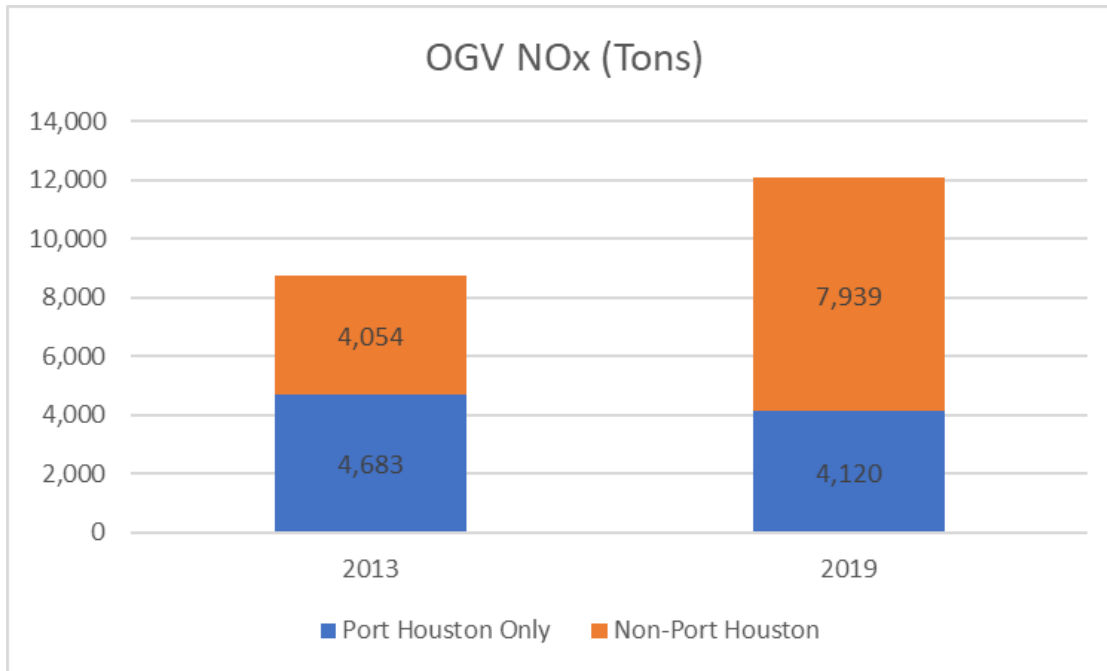
# 2019 GMEI vs 2013 GMEI – PM2.5





# OGV EMISSIONS

- Although GMEI is for Port Houston only, OGV and Harbor Craft emissions were estimated for all of HSC (public and private).



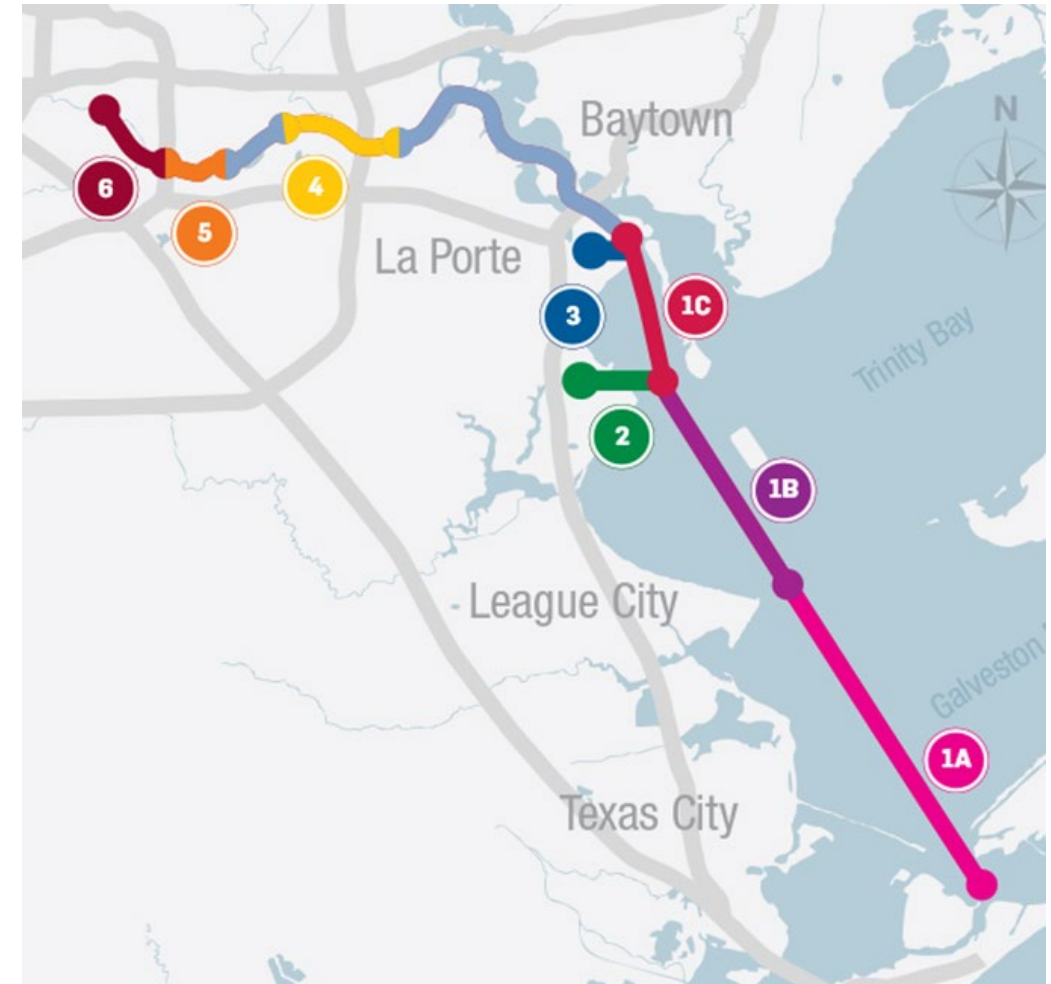
## Why the difference?

- Port Houston – Even though TEUs increased by 53%, vessel calls decreased by 3%
- Non-Port Houston – 27% increase in vessel calls
  - Oil export ban repealed in 2015
  - Tankers are the predominant vessel (80%)
  - Tankers have high auxiliary boiler loads at berth while discharging



# PROJECT 11

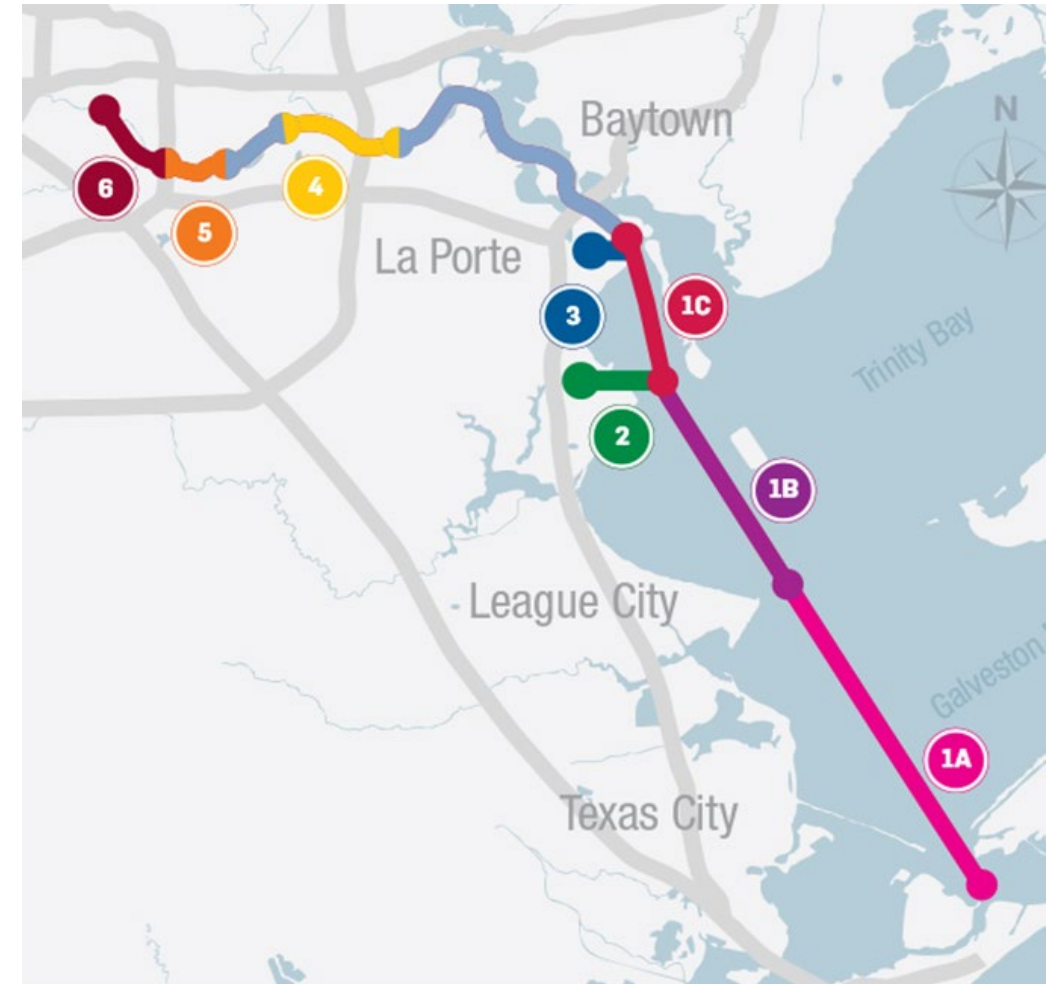
- Project 11 will widen the channel in the lower segments in Galveston Bay and deepen the upstream segments
- But why is it needed?
  - HSC has more vessel transits than NY, LA, and LB combined.
  - Growth in size of vessels
  - Growth in exports, imports, domestic manufacturing, and energy products
  - Bigger, wider vessels and narrow channel is not safe





# PROJECT 11

- Segment 1A will begin in March
  - Dredger and Booster will have SCR installed to reduce NOx emissions
  - Emissions from dredging and related equipment will be 38% better than Tier 3.
- Segments 1B, 1C, and 2 will begin June/July
  - Has not been awarded yet but industry is aware of need for cleaner equipment.
- Air quality is improved because a wider, deeper safer channel results in fewer transits, shorter wait times, decreased turn-around distance, and allows for more two-way traffic





PORT HOUSTON™

# CURRENT AIR QUALITY INITIATIVES - ELECTRIFICATION

Electric Cars



Electric Yard Mule





# CURRENT AIR QUALITY INITIATIVES - ELECTRIFICATION



Hybrid RTGS





## CURRENT AIR QUALITY INITIATIVES - GRANTS

- Port Houston has been awarded \$8.2 million in DERA grant funds and \$2.2 million in TERP funds.
  - 147 replacements or repowers of yard mules, RTGs, drayage trucks, forklifts, tour boat
- Current/recent grant activity:
  - Awarded DERA grant for tug repower.
  - Awarded TERP SPRY grant for 10 yard mule replacements
  - Will be applying for TERP SPRY grant for 10 more yard mule replacements
- Near future grant activity?
  - Bipartisan Infrastructure bill grant programs
  - TERP/DERA for RTG hybrid retrofits







# CLEAN AIR STRATEGY PLAN (CASP)

- 2021 CASP update recently completed
- Outlines strategies for reducing emissions
- Goals by end of 2026:
  - Reduce NOx emissions by 4% from 2019 GMEI level
  - Reduce PM2.5 emissions by 9% from 2019 GMEI level
  - Reduce NOx emissions to 25% lower than 2007 GMEI level
  - Reduce PM2.5 emissions to 75% lower than 2007 GMEI level
- Implementing HDDV and CHE tactics under Strategy #1 for Port Houston operated terminals will be used to meet first two goals
- Implementing the tactics under Strategy #2 and Strategy #3 will be used to meet the last two goals



**PORT HOUSTON**  
THE INTERNATIONAL PORT OF TEXAS™

111 East Loop North, Houston, Texas 77029



PORT HOUSTON™

# CLEAN AIR STRATEGY PLAN (CASP)

## Strategy #1 — Upgrade Equipment and Technology to reduce emissions

Tactic 1 — Promote Heavy Duty Truck population to newest emissions standards and support new fuels and technology adoption for lower emissions drayage trucks

Tactic 2 — Replace Port Houston Owned Tier 0 and Tier 1 Cargo Handling Equipment with Tier 4

Tactic 3 — Encourage PTRA and Class 1 Railroads to replace and upgrade Locomotives

Tactic 4 — Support Harbor Vessel Tug and Tow operators to continue upgrading fleets



**PORT HOUSTON**  
THE INTERNATIONAL PORT OF TEXAS™

111 East Loop North, Houston, Texas 77029



PORT HOUSTON™

# CLEAN AIR STRATEGY PLAN (CASP)

## Strategy #2 — Implement Operational and Technological Efficiencies

Tactic 5 — Maintain industry leading truck turn times and minimal idling by improving terminal gate capacity, cargo position detection systems and truck entry and exit processing technologies

Tactic 6 — Explore opportunities to move container cargo increasingly to rail and other alternative transport modes / intelligent transportation systems

Tactic 7 — Coordinate Partnerships for At-Berth Ship Emissions Reductions

Tactic 8 — Optimize application of clean technology in dredging operations including Project 11

Tactic 9 — Reduce Emissions from Idling Vehicles



**PORT HOUSTON**  
THE INTERNATIONAL PORT OF TEXAS™

111 East Loop North, Houston, Texas 77029



PORT HOUSTON™

# CLEAN AIR STRATEGY PLAN (CASP)

## Strategy #3 — Promote partnering and collaborative alignment with stakeholders

Tactic 10 — Develop Grant Programs to Pursue State and Federal Funding to Reduce Mobile Source Emissions

Tactic 11 — Promote freight mobility projects which improve road and rail traffic conditions, and invest in related projects where connected to port properties

Tactic 12 — Support area-wide vessel scheduling optimization

Tactic 13 — Promote development of alternative fuel production and distribution infrastructure for vessels and trucks, and carbon capture and supporting infrastructure in the Port area



**PORT HOUSTON**  
THE INTERNATIONAL PORT OF TEXAS™

111 East Loop North, Houston, Texas 77029



PORT HOUSTON™

# CLEAN AIR STRATEGY PLAN (CASP)

## Strategy #3 — Promote partnering and collaborative alignment with stakeholders

Tactic 14 — Align emissions reduction goals with suppliers, operators and other parties' sustainability goals including partnerships and application of clean technology

Tactic 15 — Advocate for local, state and federal policies which support emissions reduction

Tactic 16 — Develop and Implement the Sustainability Action Plan



**PORT HOUSTON**  
THE INTERNATIONAL PORT OF TEXAS™

111 East Loop North, Houston, Texas 77029



PORT HOUSTON™

Port Houston:

**Thank  
You**

