

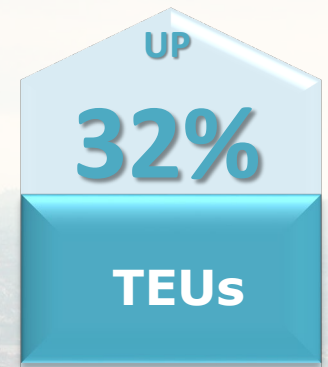
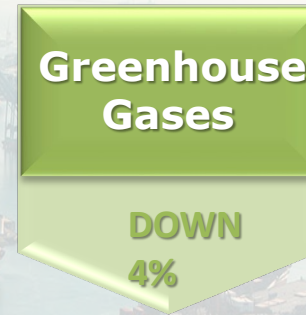
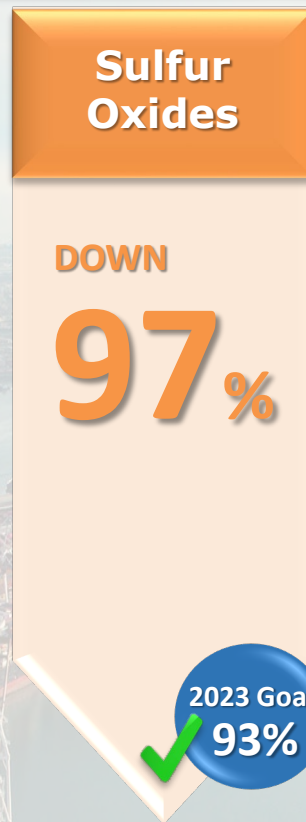
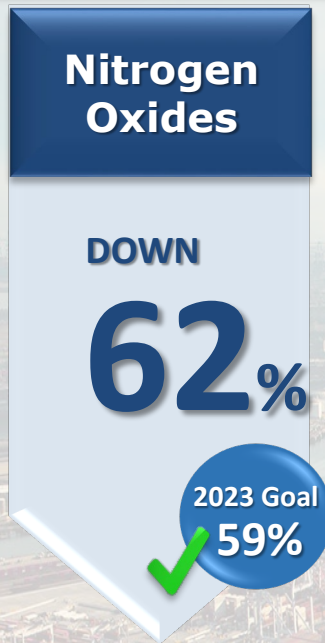
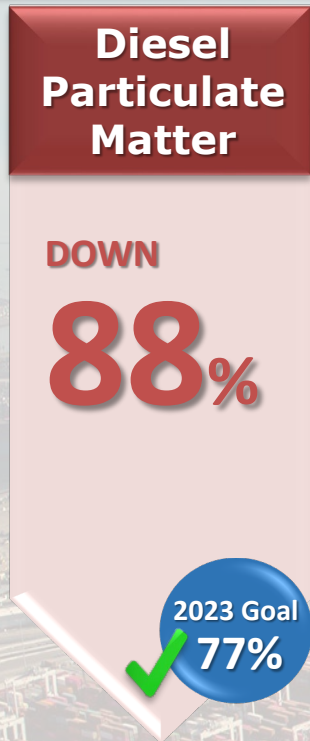
2022 Inventory of Air Emissions



Chris Cannon
Environmental Management Division

September 7, 2022

Emissions Comparison (2005-2022)



2022 – Overview

- New container vessel queueing system proved successful in reducing emissions to pre-cargo surge levels
- Emissions dropped back to pre-cargo surge levels even though cargo volumes were the second highest in Port history (9.9 million TEUs)
- Supply chain challenges continued in 2022 with high level stakeholder engagement which highlighted the need to improve cargo velocity and efficiencies

Emissions Inventory Background



- CAAP based program
- Annual activity-based
 - 2001, 2005 – 2022
- Source categories
 - ships • harbor craft • cargo handling equipment • trucks • locomotives
- Pollutants
 - PM • PM₁₀ • PM_{2.5} • DPM • NO_x • SO_x • HC • CO
- Greenhouse gases
 - CO₂ • CH₄ • N₂O • CO₂e



Emissions Inventory Background



- Annually coordinated with & peer-reviewed by

- EPA



- CARB



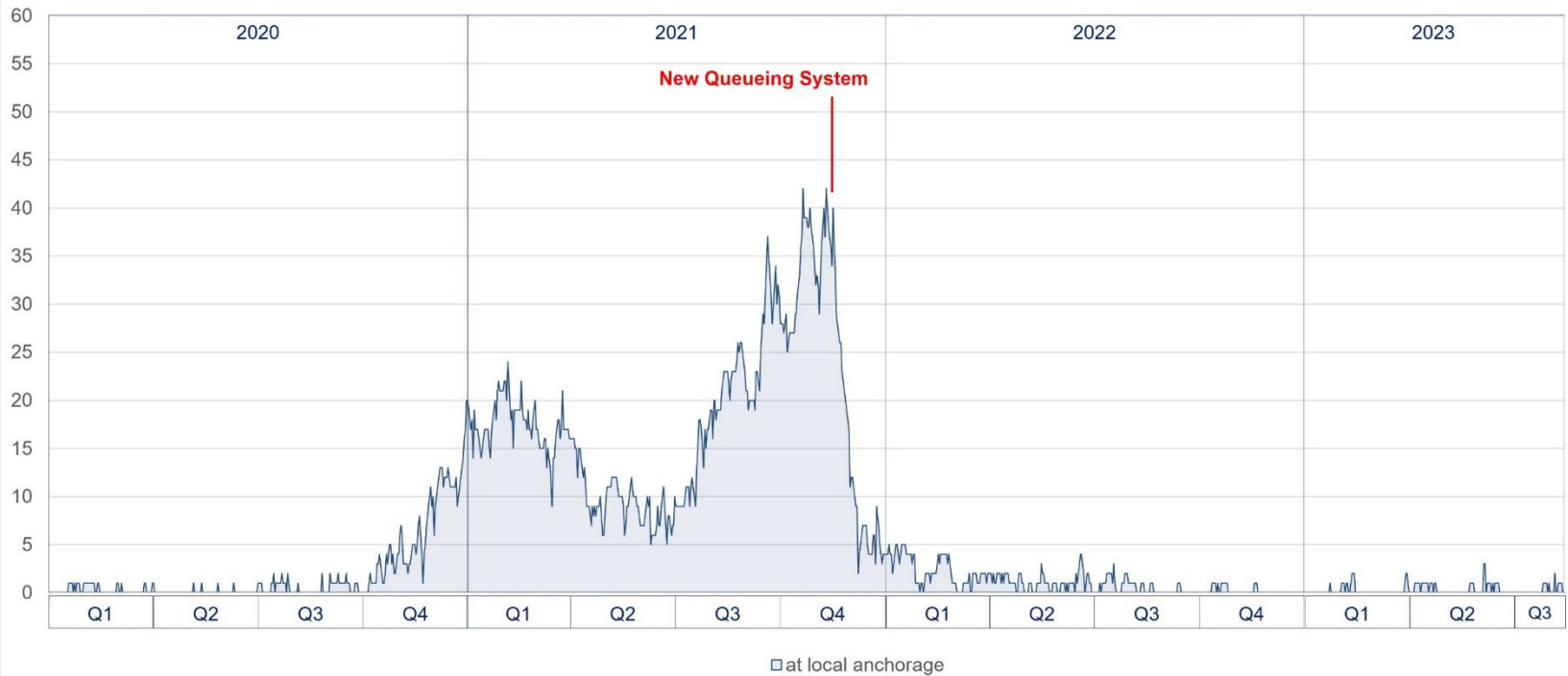
CALIFORNIA
AIR RESOURCES BOARD

- South Coast AQMD



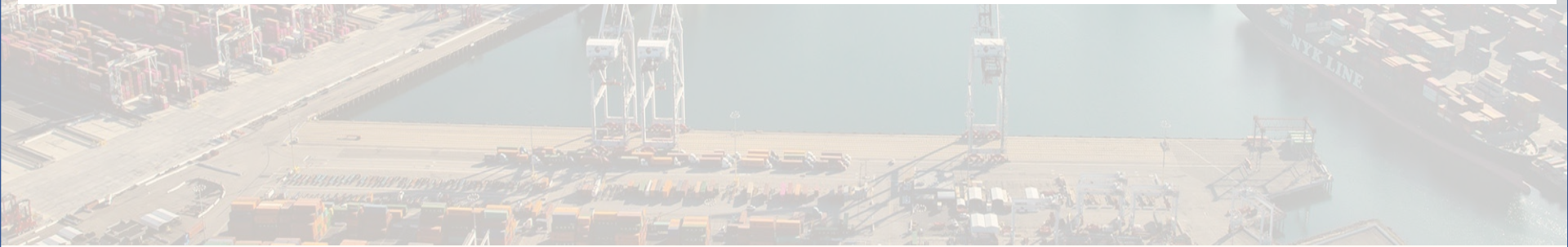
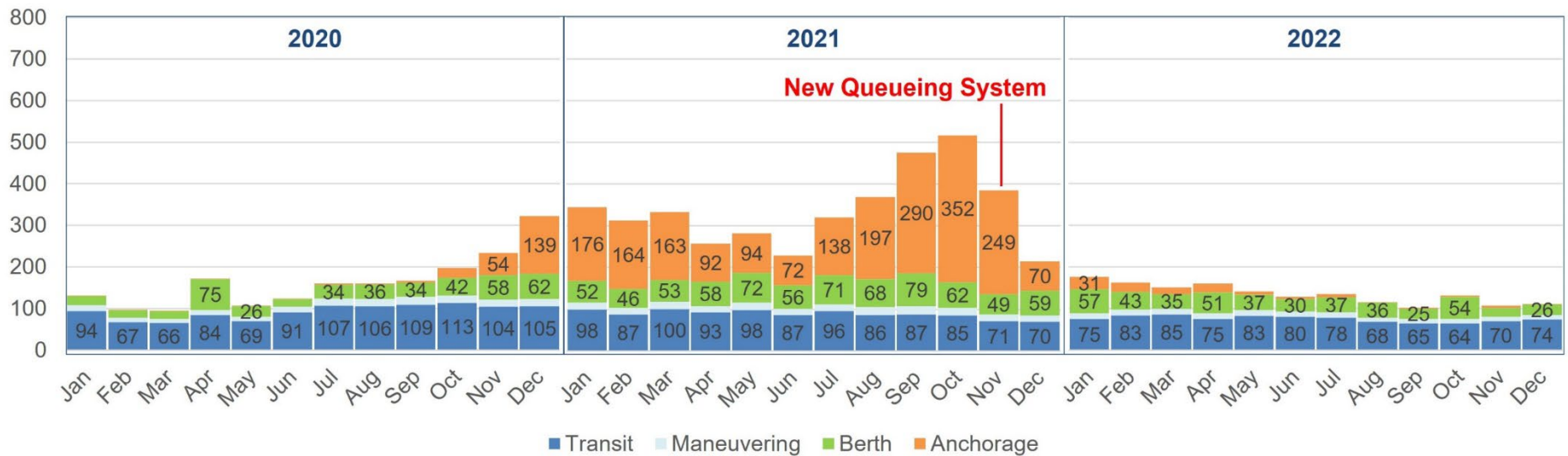
POLA-related Container Anchorages (2020-2023)

2020 - 17 Aug 2023 daily POLA container ship anchorage counts



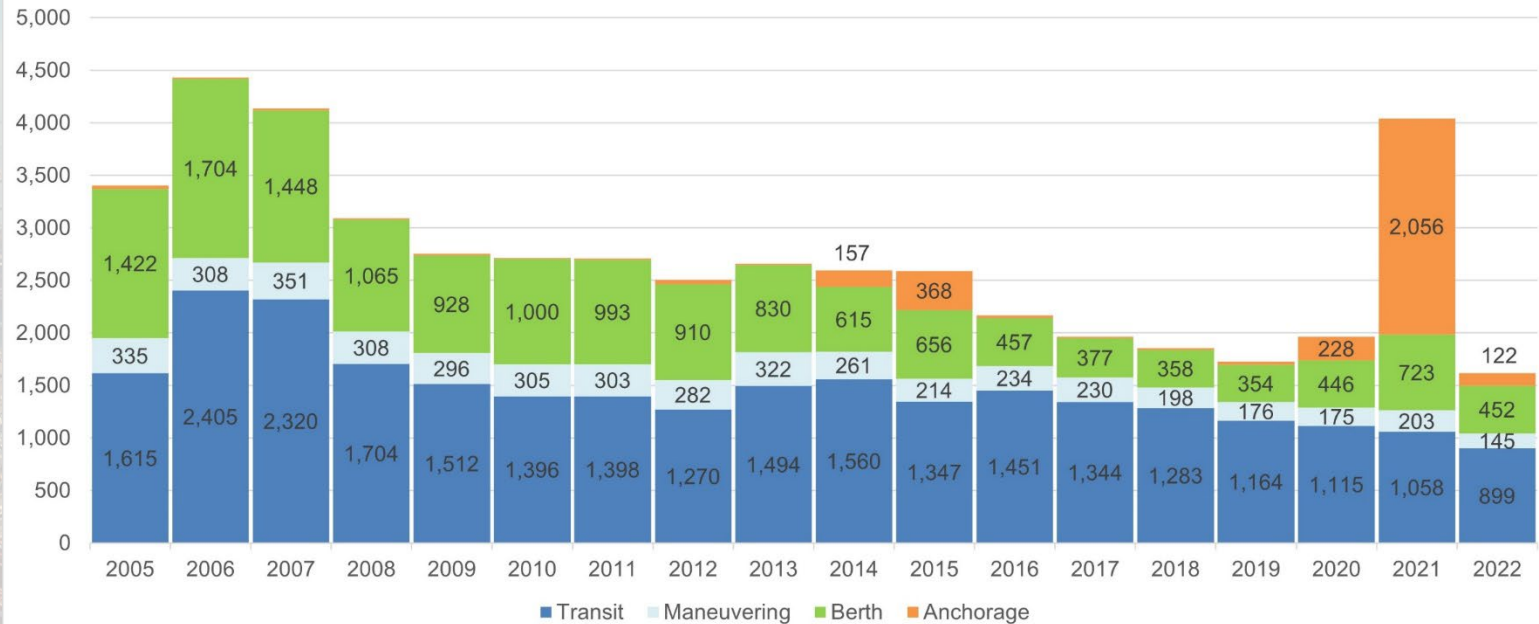
Monthly Container Ship NOx Emissions (2020-2022)

2020-22 POLA monthly container ship NOx emissions by mode, tons



Annual Container Ship NOx Emissions (2005-2022)

2005-2022 POLA Container Ship NOx Emissions by Mode, tons

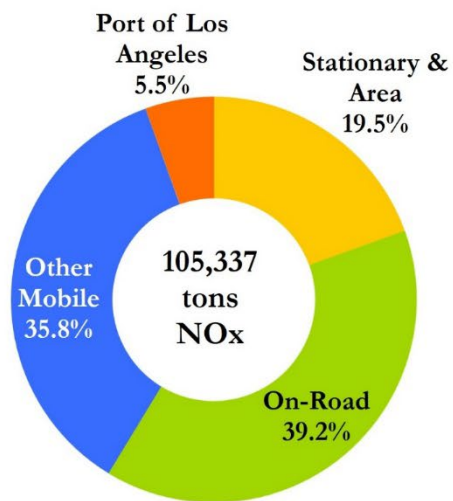


Year-to-Year Emissions Detail (2021-2022)

Maritime Industry-related 2022-21 Emissions Comparison by Source Category

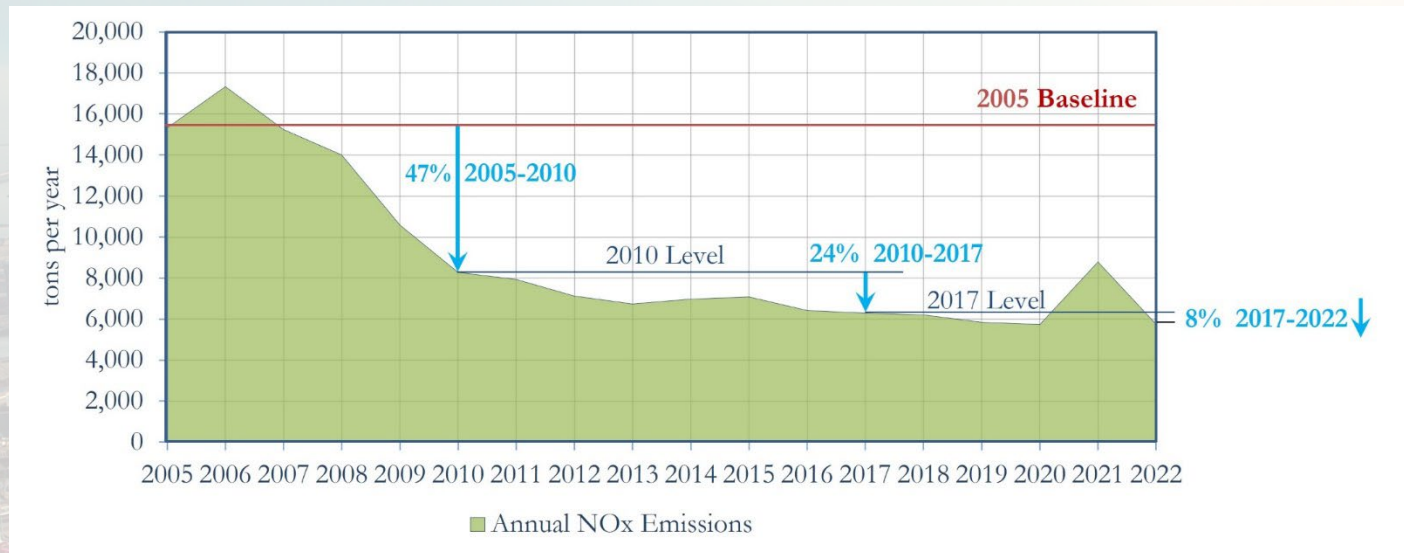
	PM ₁₀ tons	PM _{2.5} tons	DPM tons	NO _x tons	SO _x tons	CO tons	HC tons	CO _{2e} tonnes
2022								
Ocean-going vessels	66	60	43	3,369	129	360	143	271,236
Harbor craft	13	13	13	498	0	100	25	50,811
Cargo handling equipment	12	11	11	425	2	672	88	170,634
Locomotives	26	24	26	717	1	175	41	61,145
Heavy-duty vehicles	5	5	5	756	4	355	44	420,243
Total	123	113	98	5,765	136	1,662	341	974,069
2021								
Ocean-going vessels	127	117	83	5,956	248	605	255	504,842
Harbor craft	15	15	15	565	1	112	29	53,521
Cargo handling equipment	13	12	12	481	2	779	97	184,816
Locomotives	27	25	27	751	1	187	42	65,216
Heavy-duty vehicles	6	6	6	1,042	4	356	52	444,814
Total	189	174	143	8,796	256	2,039	475	1,253,207
Change between 2021 and 2022 (percent)								
Ocean-going vessels	-48%	-48%	-49%	-43%	-48%	-40%	-44%	-46%
Harbor craft	-13%	-12%	-13%	-12%	-5%	-11%	-12%	-5%
Cargo handling equipment	-8%	-8%	-8%	-12%	-7%	-14%	-9%	-8%
Locomotives	-3%	-3%	-3%	-5%	-6%	-6%	-3%	-6%
Heavy-duty vehicles	-18%	-17%	-17%	-27%	-6%	0%	-17%	-6%
Total	-35%	-35%	-31%	-34%	-47%	-19%	-28%	-22%

POLA Regional NOx Emissions Contribution (2022)



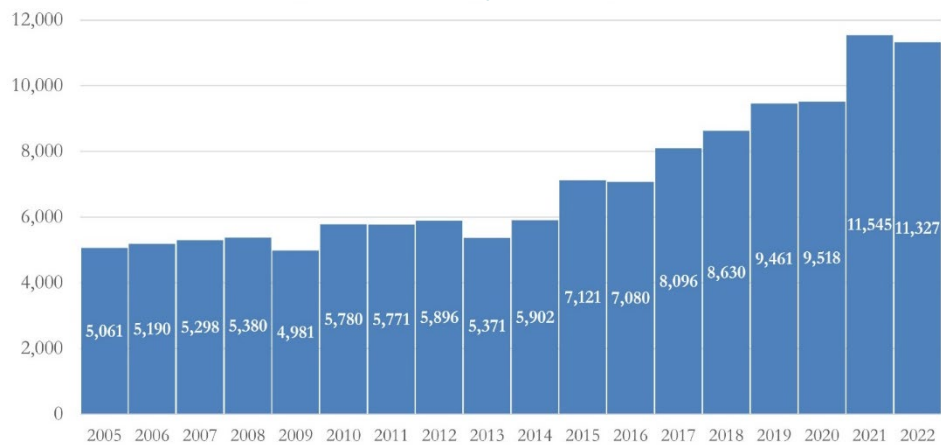
Port of Los Angeles Category	NO _x , tons	Contribution	
		% POLA	% SoCAB AQMP
Ocean-going vessels	3,369	58%	3.2%
Harbor craft	498	9%	0.5%
Cargo handling equipment	425	7%	0.4%
Locomotives	717	12%	0.7%
Heavy-duty vehicles	756	13%	0.7%
Total	5,765	100%	5.5%

Annual NOx Emissions (2005-2022)

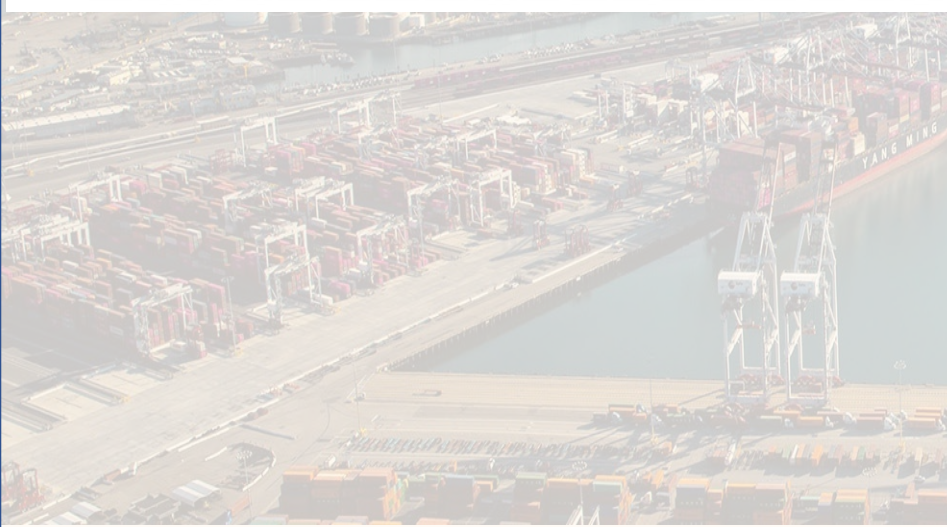
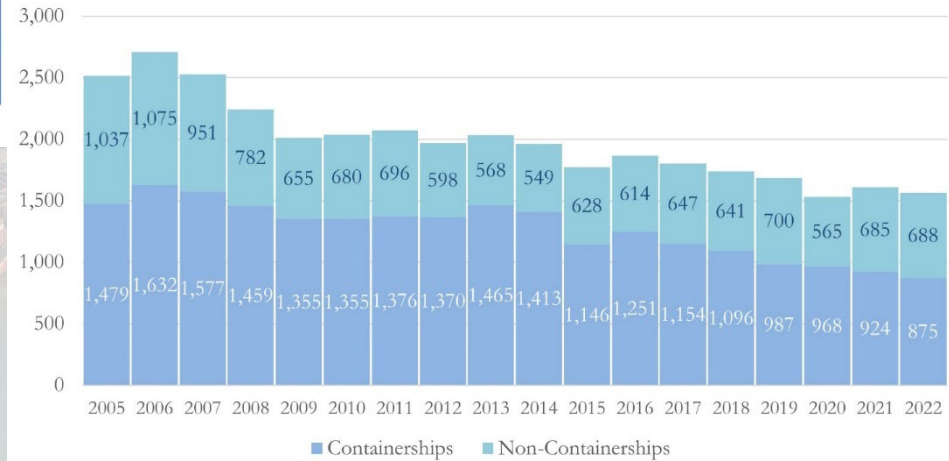


Container Ship Efficiency Trends

Container Ship Call Density per Arrival, TEUs/arrival



Container Ship Arrivals



Looking Ahead



- 2023 cargo volumes much lower so far (Q1 and Q2) – back to pre-COVID volumes – which will result in even lower emissions numbers
 - 2022 was a transition back to more traditional port operations & emissions levels
- Strong push needed to meet CAAP 2030 and 2035 goals as we continue to address local air quality impacts and fight climate change through ongoing deployment of zero emissions technologies and the cleanest ships/fuels through efforts related to the Green Shipping Corridors

Port of Los Angeles



Thank you

