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2009 Emissions Inventory

Long Beach City Council
Tidelands & Harbor Committee
August 4, 2010

Meeting goals

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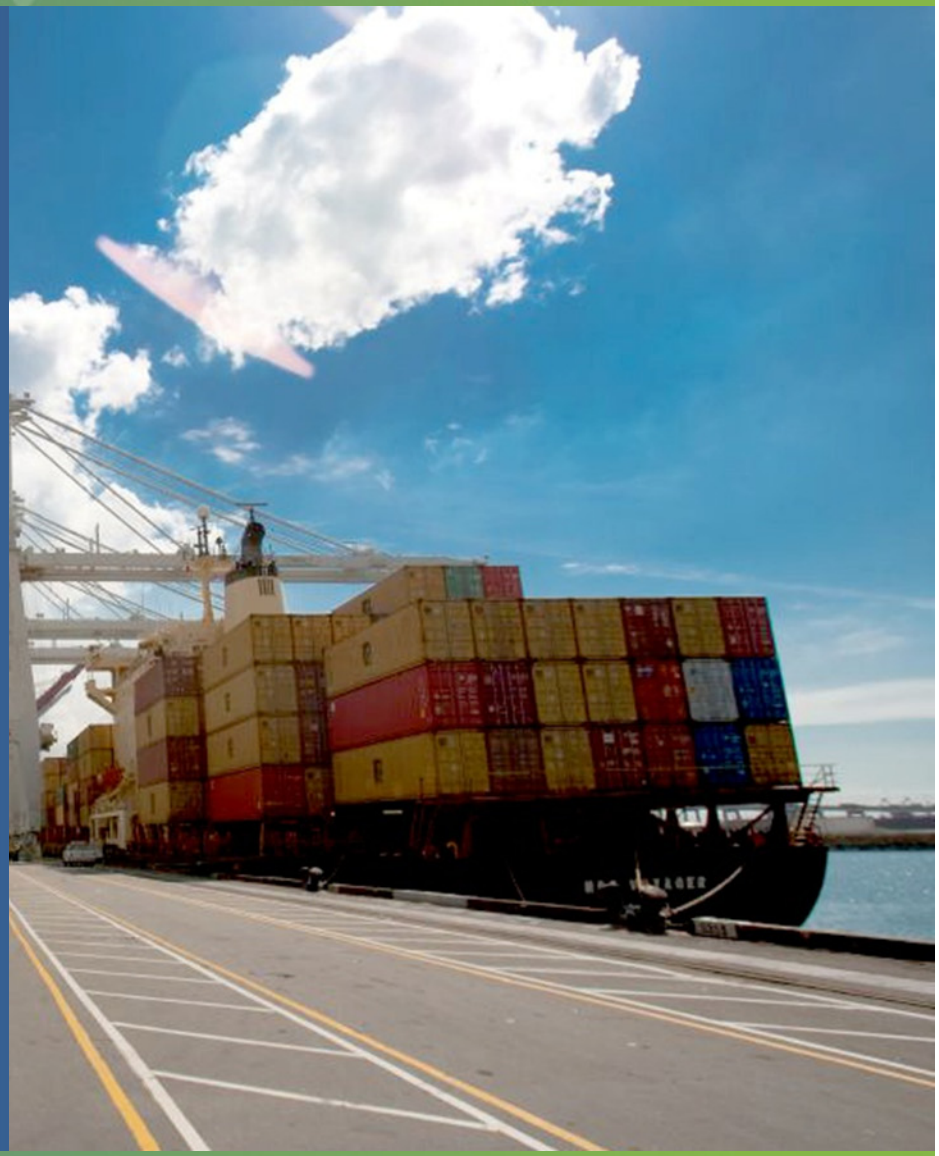
In 2009: On track to meet or exceed new draft CAAP standards for 2014

Significantly improving air quality



Strategies working

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- CAAP initiatives greatly reduced air pollution
- Slowdown in trade cut business activities and boosted reduction of emissions

Economic environment

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- Global economic downturn
- Our container shipments fell 24% compared to 2005
- Resulting in fewer ships, trucks, trains…

For example

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While TEUs fell 24%...

Overall ship calls fell only 15%

Container ship calls declined 15%

TEUs per call dropped only 11%

CAAP Initiatives

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- Green Flag Vessel Speed Reduction
- Vessel Fuel Incentive Program
- Shore Power
- Clean Trucks Program
- First hybrid tugboat

Sources of Port emissions

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- Vessels account for about 65% of Diesel Particulate Matter
- Trucks 15% of DPM
- Tugs, harbor craft 10%
- Locomotives, cargo-handling equipment 10%

Reduced vessel emissions

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- CARB Marine Fuel Regulation
- Main and auxiliary engines, auxiliary boilers switched to cleaner, low-sulfur fuel
- Within 24 nautical miles of coastline

Reduced vessel emissions

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Diesel PM down 47%

Nitrogen Oxide down 19%

Sulfur Oxide down 45%

Carbon Monoxide down 11%

Hydrocarbons down 9%

Reduced truck emissions

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Newer trucks: 6.9 years in 2009 vs. 11.2 years in 2005

64% reduction in truck idling hours

32% decrease for truck vehicles miles traveled

Reduced truck emissions

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- Diesel PM down 73%
- Nitrogen Oxide down 53%
- Sulfur Oxide down 92%
- Carbon Monoxide down 64%
- Hydrocarbons down 63%

Increased on-dock rail

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- On-dock rail shipments increased to 24% in 2009
- In 2005, 16% of cargo shipments moved by on-dock rail

Reduced rail emissions

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- Diesel PM down 50%
- Nitrogen Oxide down 44%
- Sulfur Oxide down 93%
- Carbon Monoxide down 33%
- Hydrocarbons d

Cargo-Handling Equipment

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- CARB regulation
- Newer equipment or level 3 retrofit
- More equipment with cleaner, on-road engines

Reduced equipment emissions

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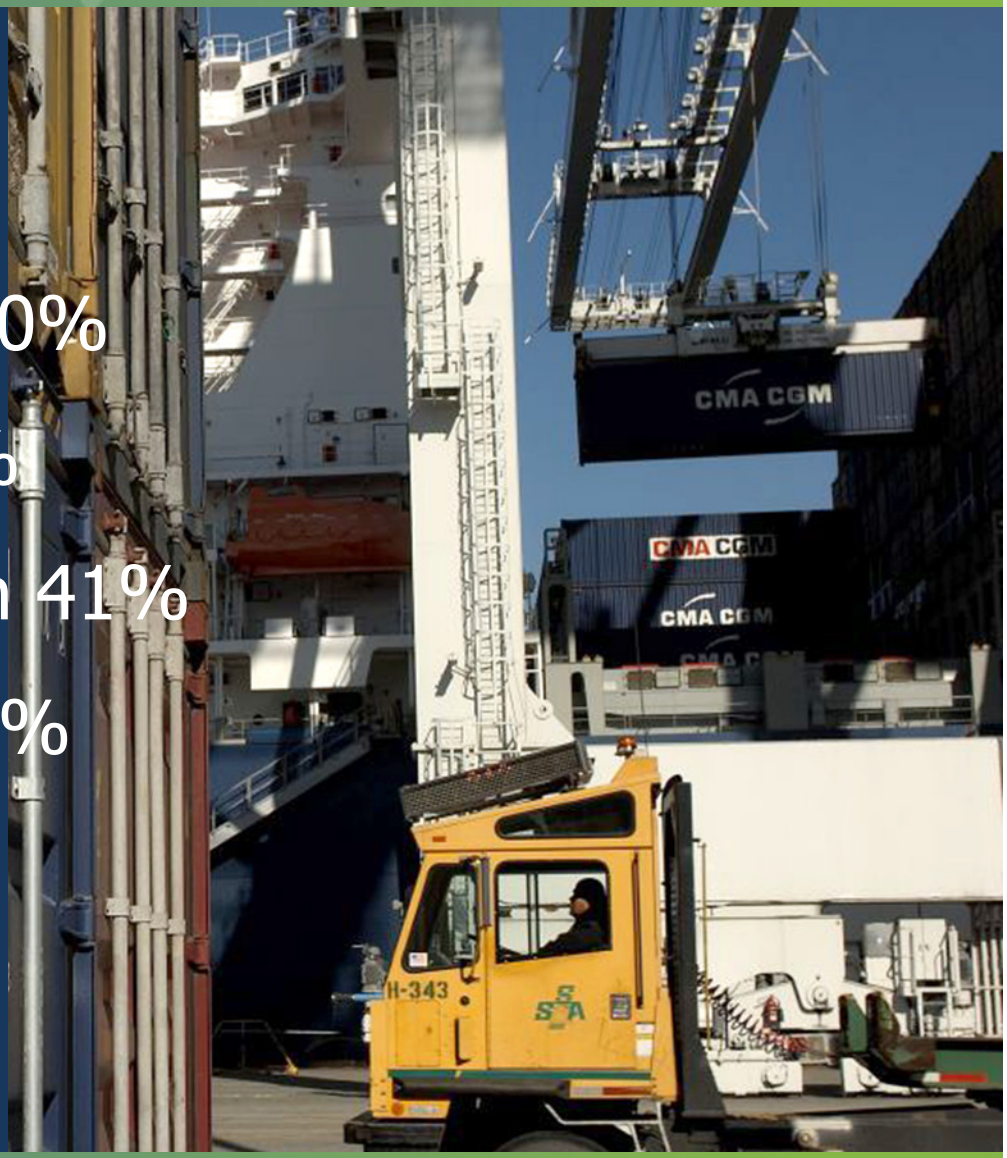
- Diesel PM down 50%
- Nitrogen Oxide down 50%
- Sulfur Oxide down 92%
- Carbon Monoxide down 41%
- Hydrocarbons down 65%



Mixed tug emissions

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- Diesel PM no change
- Nitrogen Oxide down 6%
- Sulfur Oxide down 88%
- Carbon Monoxide up 9%
- Hydrocarbons up 7%

Greenhouse gas reductions

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Greenhouse gas emissions (as CO_2e) declined 22%

All emissions reduced

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Diesel PM down 52%
(Proposed 2014 standard: -72%)

Nitrogen Oxide down 35% (22%)

Sulfur Oxide down 46% (93%)

Carbon Monoxide down 43%

Hydrocarbons down 38%

Looking ahead

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- Clean Air Action Plan
  - Clean Trucks Program
  - Green Flag Vessel Speed Reduction
  - Technology Advancement Program
- Green Leases
- CARB Regulations
  - Cargo-Handling Equipment
  - Harbor Craft
  - Ocean-Going Vessels

Summary

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- Diesel particulate matter down 52%
- Smog-forming emissions down 40%
- Cargo decline boosted emission reductions
- On track to meet or exceed draft CAAP standard to reduce diesel particulate matter 72% by 2014