

**DOCKET**

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# South Coast AQMD

## Air Quality Challenges and Electric Drive

September 9, 2009



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Science and Technology Advancement

# State of the Air 2009

AMERICAN LUNG ASSOCIATION. LungUSA.org / 1-800-LUNGUSA

## Most Polluted U.S. Cities by Ozone

Ozone | [Year-Round Particle Pollution](#) | [Short-Term Particle Pollution](#)

Click on a city below to learn more about its ranking



[#1 Los Angeles](#)

[#2 Bakersfield](#)

[#3 Visalia](#)

[#4 Fresno](#)

[#5 Houston](#)

[#6 Sacramento](#)

[#7 Dallas-Fort](#)

[Worth](#)

[#8 Charlotte](#)

[#9 Phoenix](#)

[#10 El Centro](#)

[#11 Hanford](#)

[#12 Las Vegas](#)

[#13 San Diego](#)

[#14](#)

# State of the Air 2009

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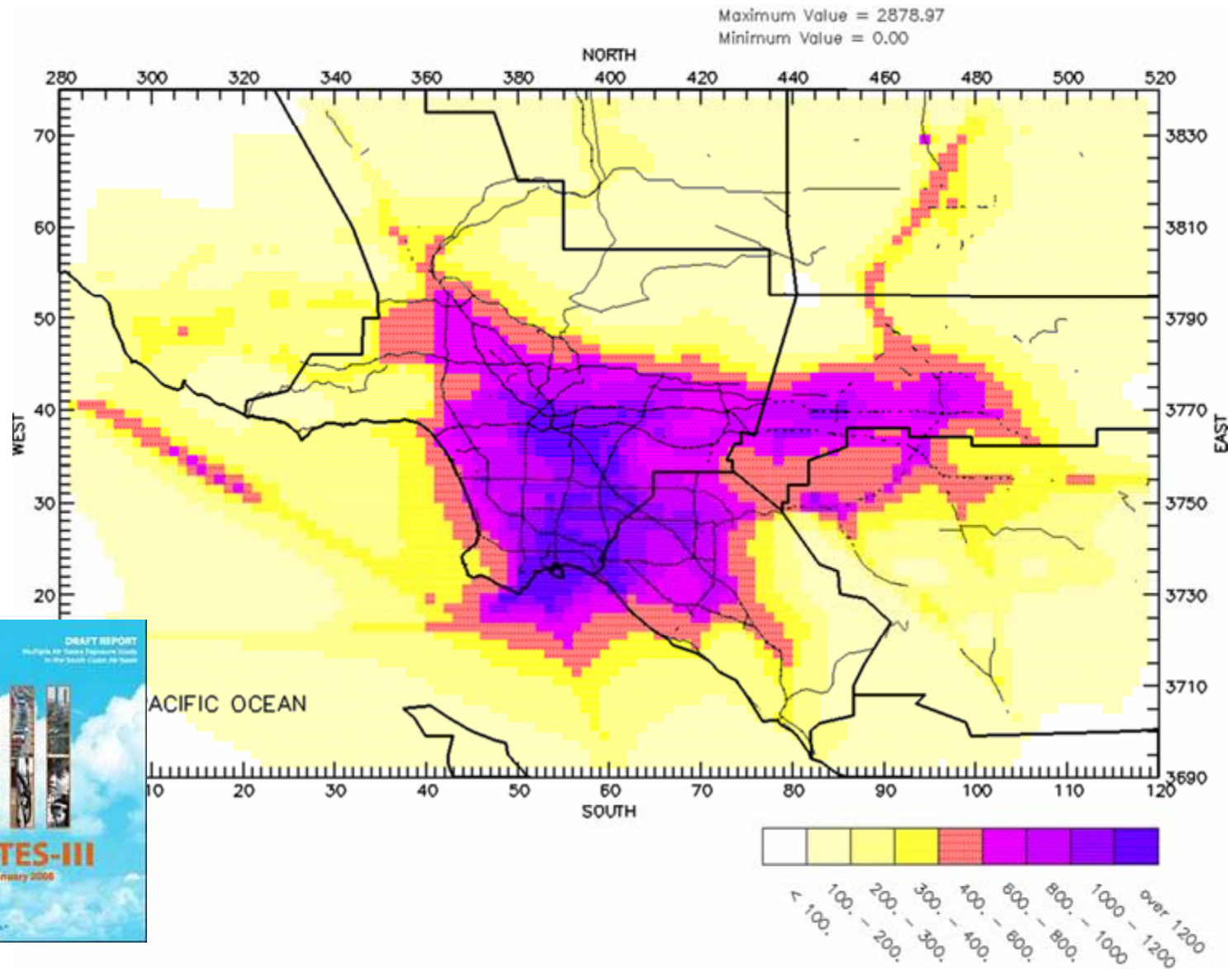
## Most Polluted U.S. Cities By Year Round Particle Pollution

[Ozone](#) | [Year-Round Particle Pollution](#) | [Short-Term Particle Pollution](#)

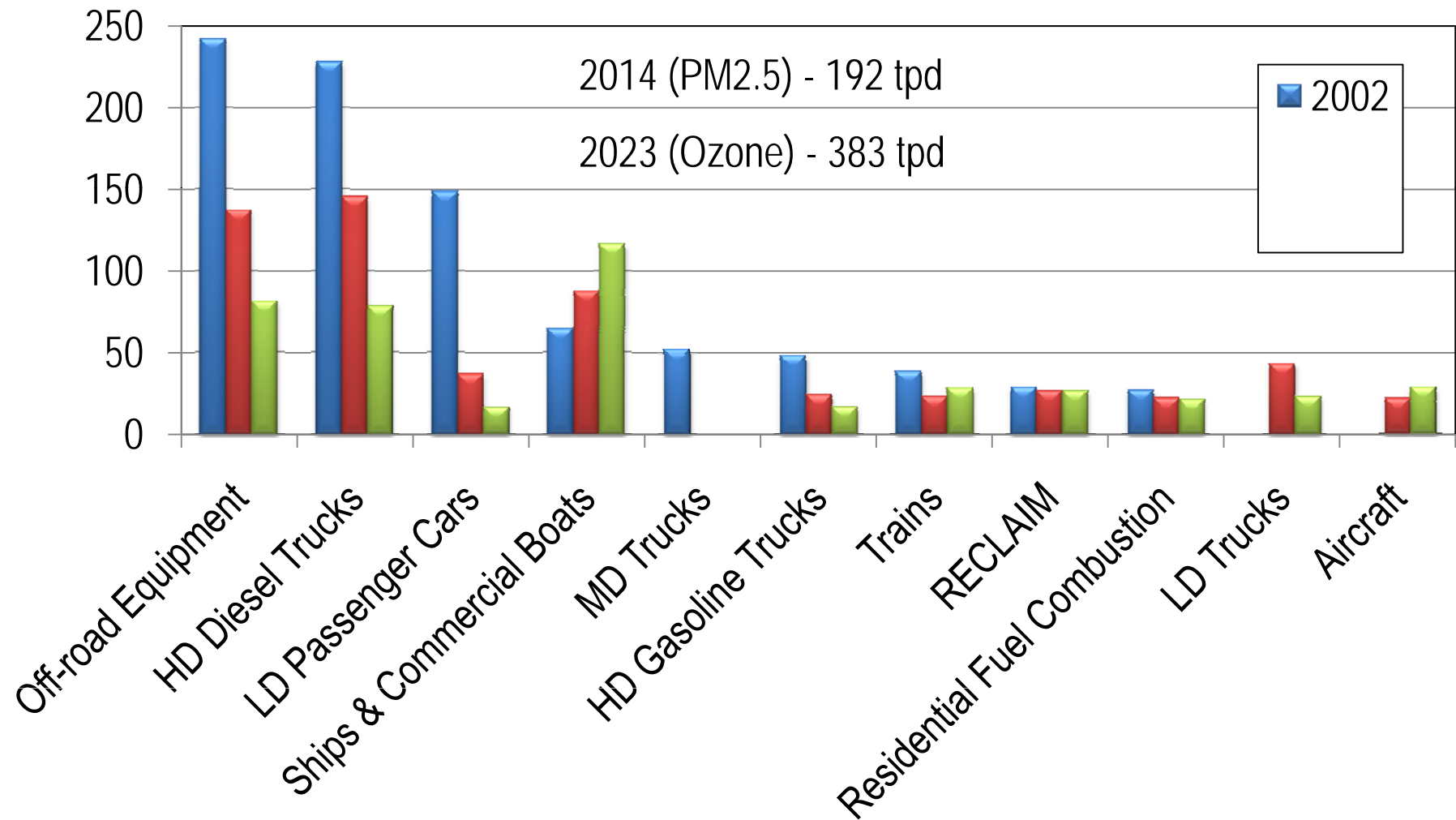
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# Estimated Cancer Risk



# NOx by Category





# AQMD Technology Portfolio

- Near-term to longer-term
- "Planting many seeds"
- Developing "Pathways"



Fuel Cells & Electric



Renewables



Clean Transit



Plug-ins



Heavy-Duty  
Natural Gas



CNG

# Plug-in Light-Duty Vehicles

- Conversions
  - EnergyCS and Hymotion
  - Quantum
- Push OEMs
  - Toyota
  - GM
  - Ford
  - Nissan
  - Mitsubishi



# Medium and Heavy-Duty Technologies

- Plug-in Sprinter Delivery Van
- Plug-in Boom Truck
- Plug-in Delivery Truck
- Significant emissions and fuel economy benefits possible





# Transportation Electrification

- SCAQMD only government agency to win award
- National effort with partners: EPRI and Eaton
- Cofunding by DOE and CEC
- \$45M DOE, \$5M CEC and remaining \$40M from Eaton and utility/fleet participants



# Electric Vehicles



# Electric Rail and Infrastructure

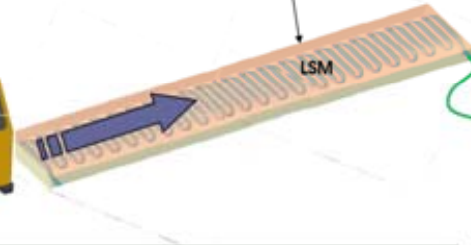
- Overhead catenary
- Battery-electric trucks
- Linear synchronous motors
- Maglev



## MagneTruck™ Operating Scenario

Electric vehicle uses onboard batteries while operating on conventional roadways

While operating on linear motor-retrofitted road (or elevated guideway) segment, power is supplied by road/guideway and batteries are simultaneously recharged

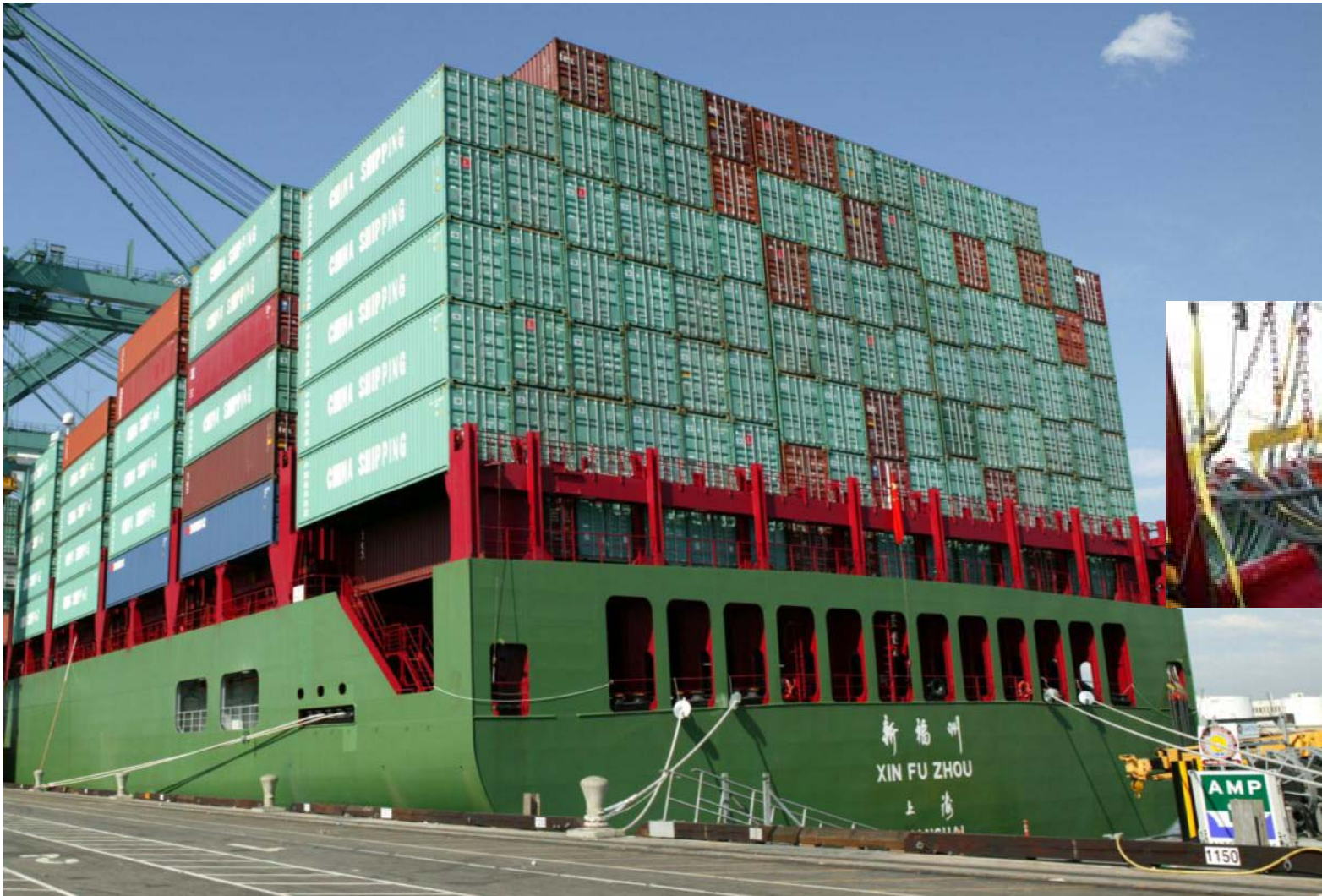


### Benefits

- Trucks operate in zero-emission mode 100% of time
- Eliminates need for heavy, expensive battery packs
- Vehicles are recharged "on the go" – do not need to be removed from service to recharge batteries



# Ship Electrification



# RDD&D Needs

- Pre- and early-commercial technologies
- Leverage off existing and successful programs
- Early deployments in areas of greatest need
- Innovation to other applications



# For More Information....

<http://www.aqmd.gov>

