



## Session 3



# Heavy-Duty Introduction

August 19, 2010

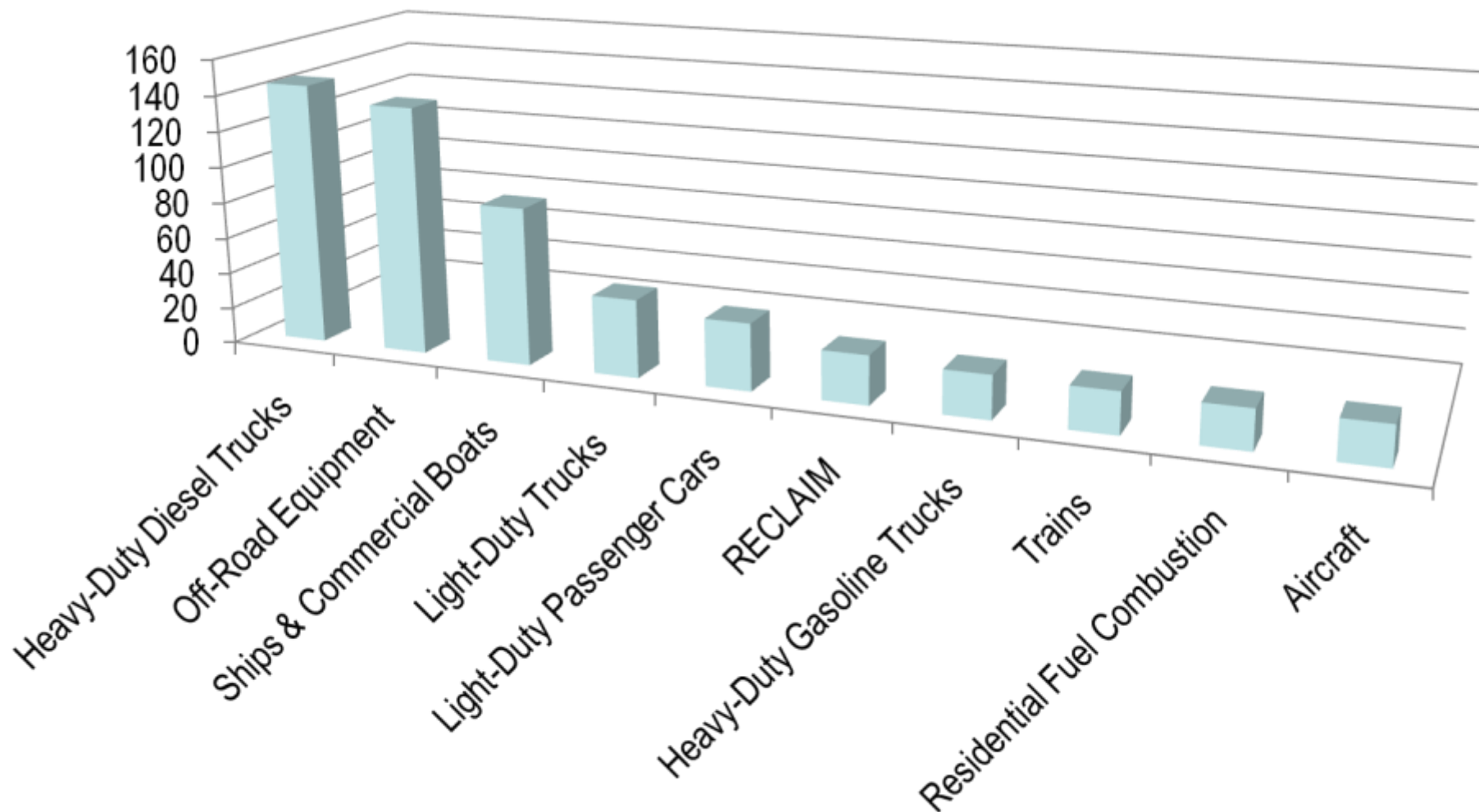


**Dipankar Sarkar**

**Technology Advancement Office**

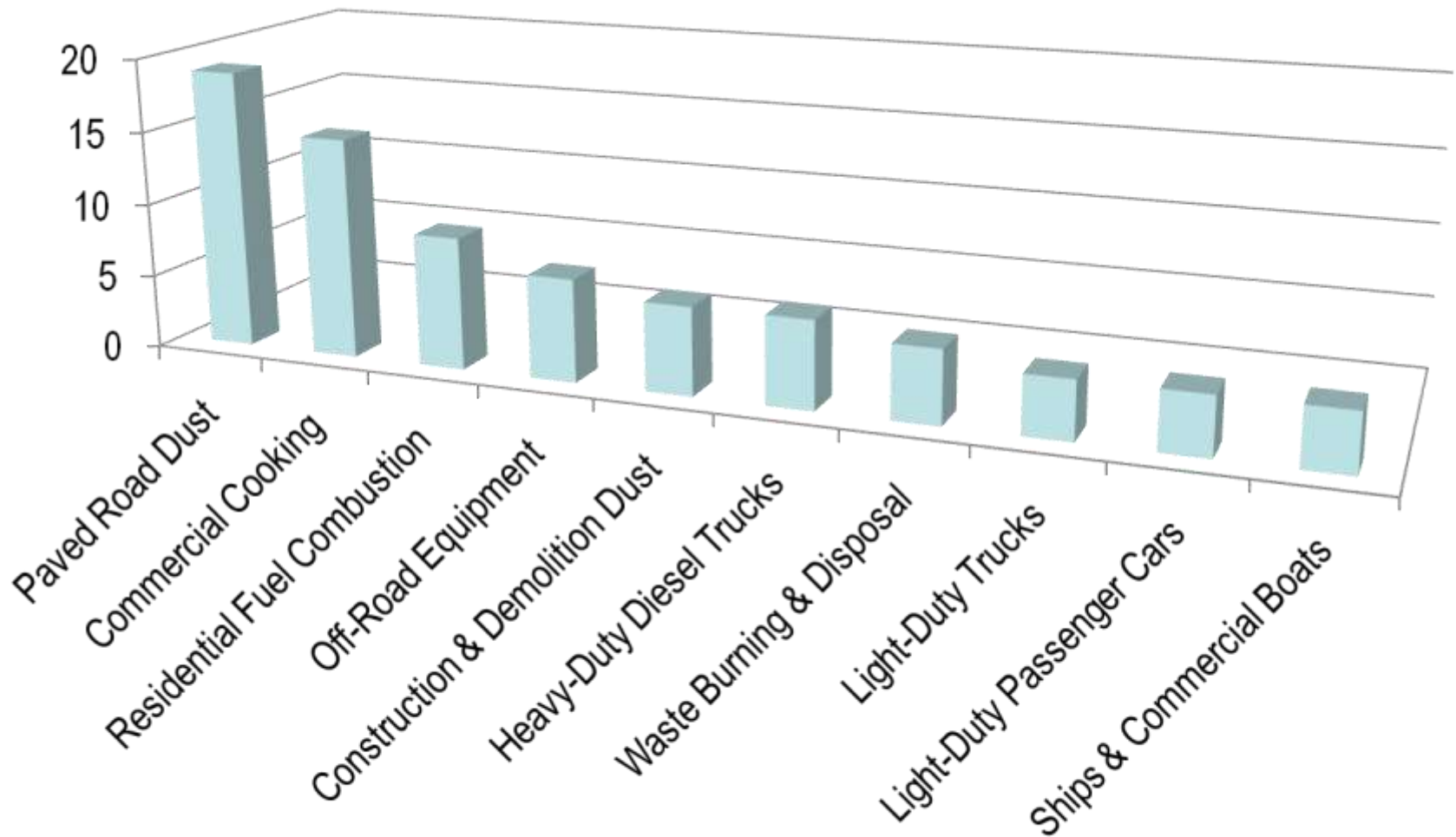
# NOx Emissions (2014)

## Top 10 Categories (tpd)

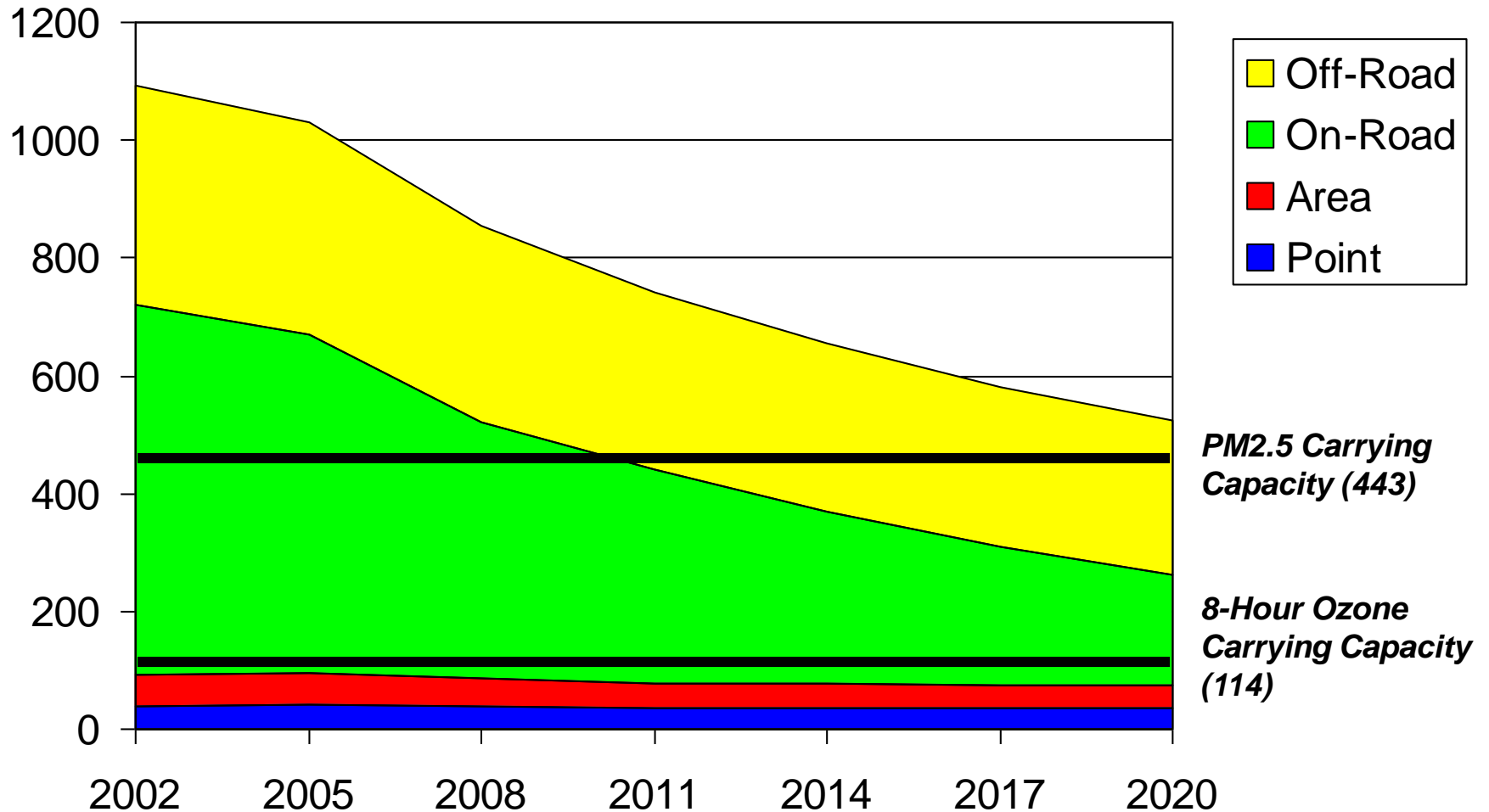


# PM2.5 Emissions (2014)

## Top 10 Categories (tpd)



# NOx Emissions Trend by Source Category



# Heavy-Duty Emission Controls

- NO<sub>x</sub>: EGR, SCR
- PM: DPF, Alternative Fuels
- All: Hybrid (Electric/Hydraulic), Electric Vehicles, Fuel Cells

# In-Use Emissions Monitoring

- In-Use Emissions Testing/Monitoring
  - Remote Sensing
    - HEROS Program
      - Identify High Emitting Vehicles by Remote Sensing
      - Repair or Scrap Vehicles
    - Heavy-Duty Vehicles
      - Port of Los Angeles (AQMD Funding)
      - Weigh Station on 91 Freeway (NREL Funding)
    - Locomotives
  - Proposed Study for Heavy-Duty Vehicles Using OBD Systems

# Presentations

- Randall Pasek: Off-Road
- Adewale Oshinuga: Natural Gas Engines
- Joe Impullitti: Electric Trucks
- Lori Berard: In-Use Emissions