# Air Quality and Related Health Research: Particulates and Co-Pollutants

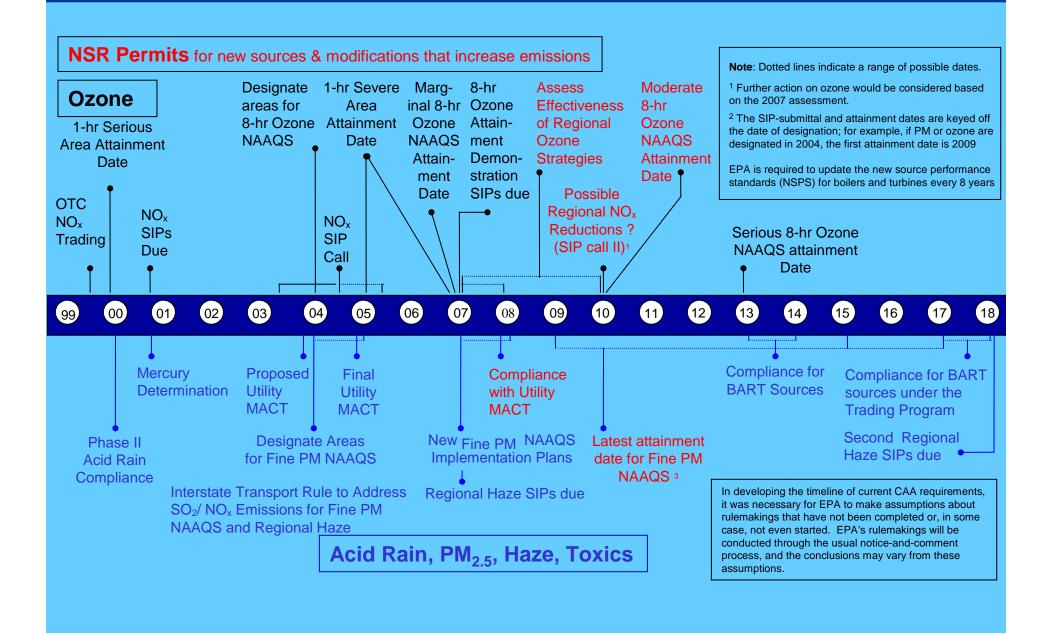
#### **EMEP Project Activity and Road Map**





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#### The Clean Air Act's Requirements



## Where are we going?

- Increase understanding of primary and secondary pollutants related to electricity generation,
- Identify effective strategies for mitigating the impacts of energy production and use, and
- Develop and deploy mitigation technology.



## What do we need to do to get there?

- Aerosol characterization
- Source characterization and apportionment
- Modeling and analysis of ozone and PM2.5
- Health effects studies related to PM2.5
- R&D of pollution monitoring and control technologies

## Aerosol Characterization



NY Supersite (SUNY Albany)



Acidic Organic Aerosols in NYC (Rutgers)



UFP Monitoring in Rochester (Clarkson U.)

#### Source Characterization

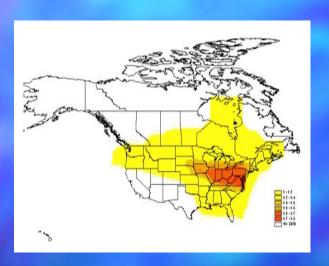


Fine/Ultrafine Particulate Emissions Profiles (GE-EER)

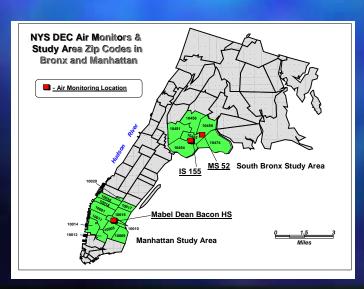


Formation and
Transformation of Particles in
Motor Engine Exhaust (SUNY
Albany)

# Source Apportionment



New York State (Clarkson U.)
New York City (NYU, NYSDOH)





# Ozone and co-pollutants

- Assessing the Effects of Transboundary Pollution on New York's Air Quality (SUNY Albany)
- Modeling and Analysis of Ozone and Fine Particulate
   Matter in the Northeastern United States (SUNY Albany)



#### Health-Effects Studies

- Fine Particulate Constituents and Acute Asthma in Urban Areas (NYSDOH)
- Clinical Studies of Exposure to UFPs (University of Rochester)

 Health & Source Apportionment Workshop (NYU)

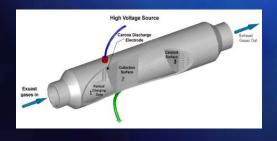




# R&D of pollution monitoring and control technologies







- R&P SES
- R&P Differential Monitor
- Turbulent Mixing CNC
- Portable Emissions Monitor for Hydrocarbons
- Fuel Sulfur Monitor
- Electric Aerosol Sizer
- Regenerative Particulate Trap for Diesel Exhaust

## Mitigation: PM and Precursors



Clean Air School Bus



**CHP** 



Low S heating oil



Ferry Emission Reduction



**Truck Stop Electrification** 

# Air Quality Studies: Future Directions

- Data analysis and interpretation ongoing
- Continue to support strategic health studies and monitoring
- Keep an eye on multi-pollutant interactions
- PM Assessment in NYS?
- Get more PM and PM precursor (NOx, SOx, Organics) control technology into the market





