

# New York City: Air quality improvements and strategies

AirQualityAsia/US-Asia Institute High Level  
Strategy Session

World Bank Spring Meeting

April 18<sup>th</sup>, 2018

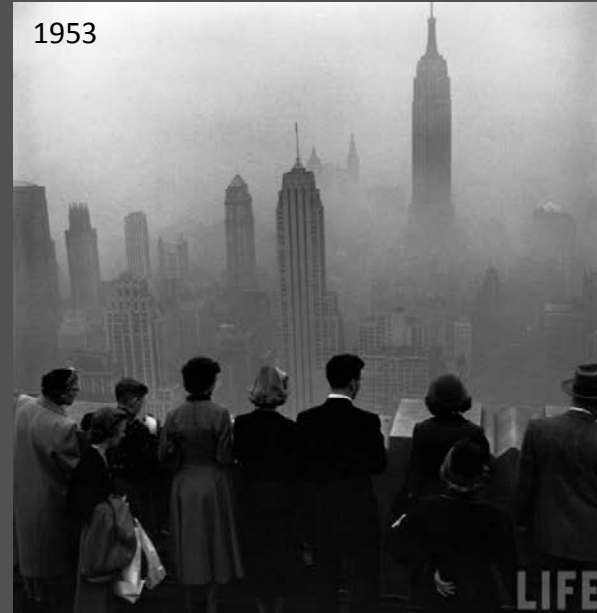
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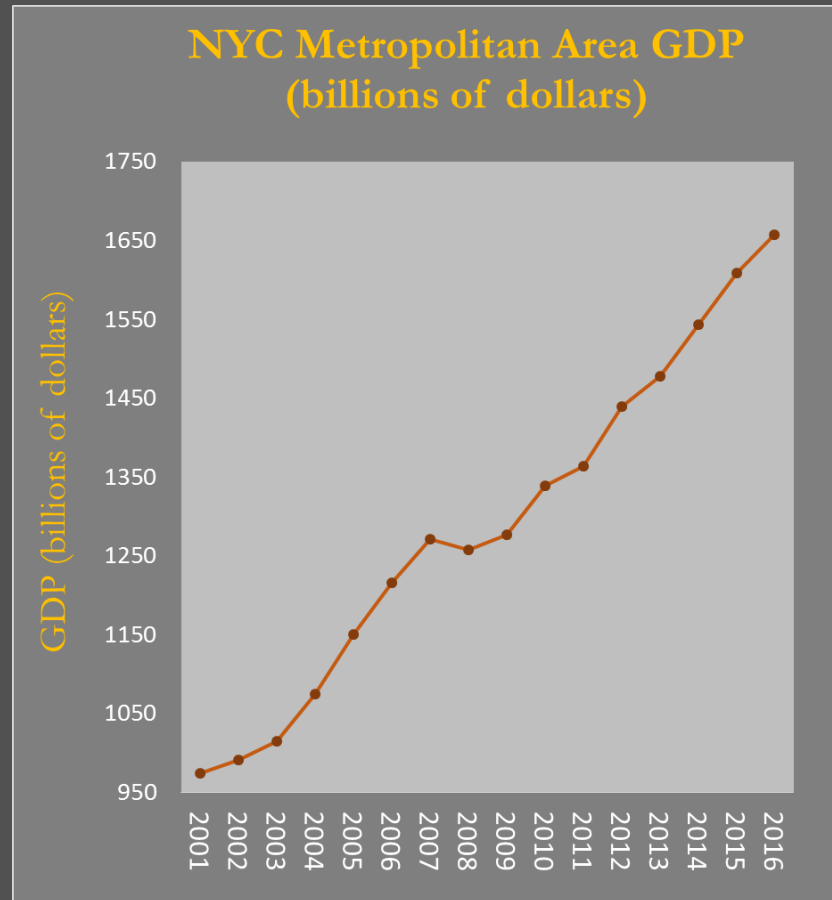
# Historic Perspective

- 1953: Six day air pollution episode kills estimated 260 people
- 1963: Two week episode kills an estimated 300-400 people
- November 1966: 200 deaths attributed to air pollution episode
- Federal/Local Regulation
  - Clean Air Act of 1963
  - Air Quality Act of 1967
  - Clean Air Act of 1970
  - US EPA Established 1970
  - NYC Air Pollution Control Code 1975

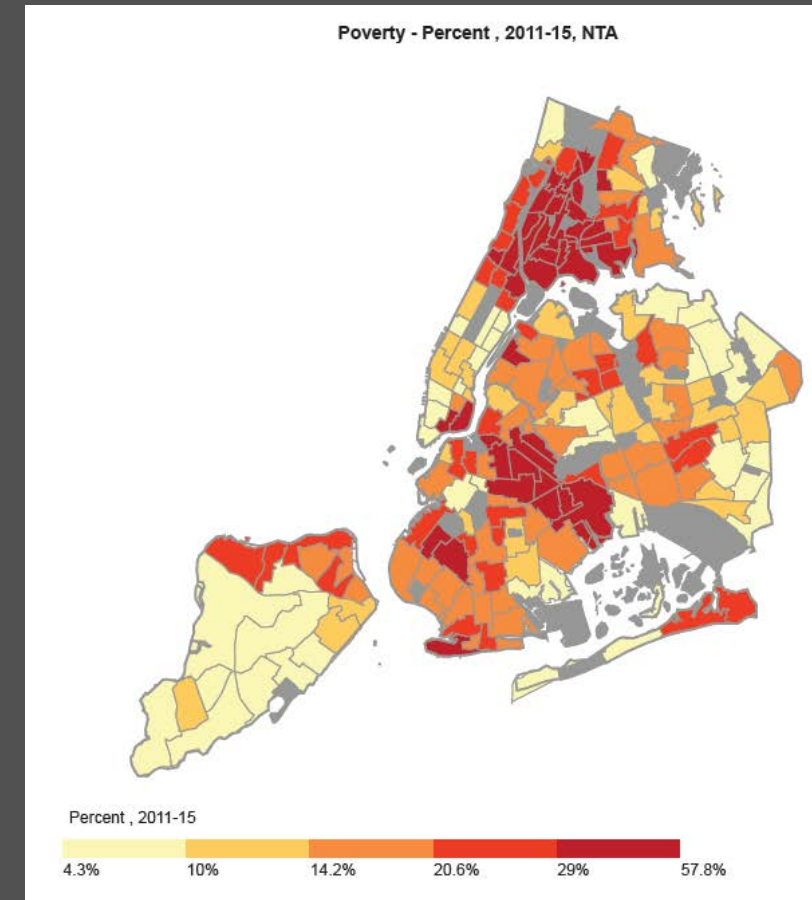


# NYC Today

- Population of 8,550,405
- GDP of 1.66 trillion in 2016
  - Largest of US metropolitan areas
- Diverse city of neighborhoods
  - 5 boroughs, 59 Community Districts
  - Over 200 languages spoken
- Wide disparities in socioeconomic status and baseline health



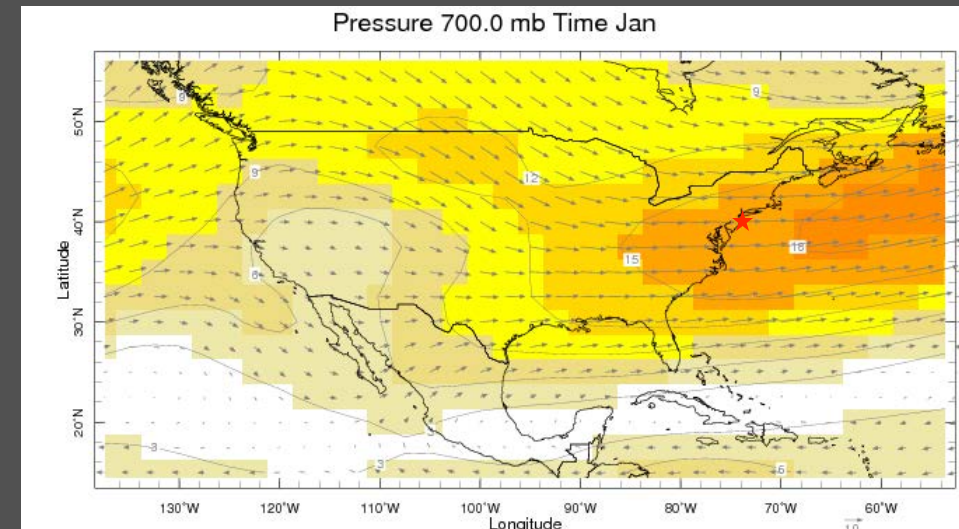
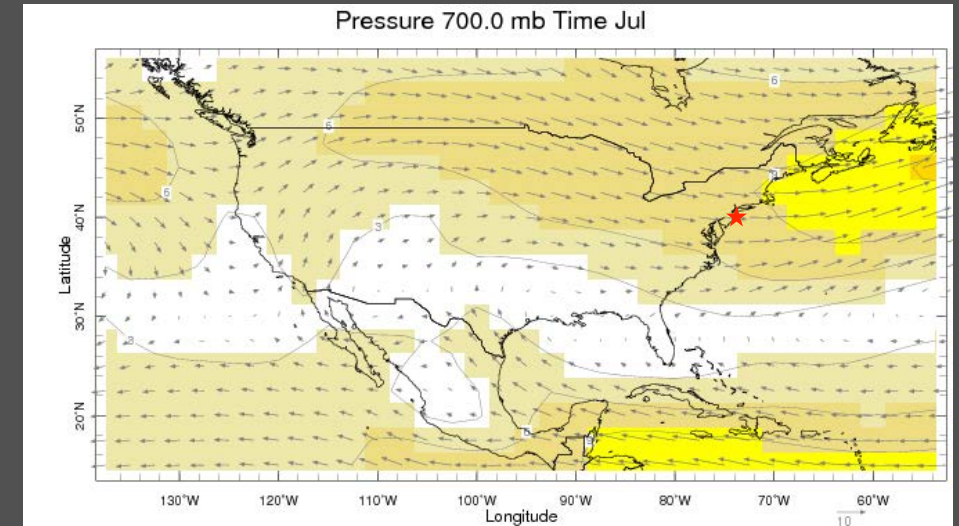
Source: US Bureau of Economic Analysis



Based on % of residents living below the federal poverty level, source: ACS

# Pollution varies by place and time

- Distant and regional sources contribute to citywide levels
  - ~35%-45% of annual NYC  $PM_{2.5}$  levels due to transported sulfates (*Ito 2004*)
- Local sources cause place-to-place differences in the city (eg. Traffic, buildings)
- Improvement requires multiple levels of government
  - Federal/State: Regional and local sources
  - NYC: Address local sources under control





# Air Quality Management Jurisdictions

- US Environmental Protection Agency
  - Sets National Ambient Air Quality Standards
  - Issues emissions standards, national regulations
- New York State Department of Environmental Conservation
  - Develop and enforce state implementation plans
  - Monitor air quality (in coordination with EPA)
- New York City
  - Department of Environmental Protection
    - Regulates and enforces the NYC Air Code
  - Mayor's Office
    - Develops and implements sustainability and climate plans
  - Department of Health
    - Air quality monitoring, policy evaluation, health impact assessment



# NYC Sustainability Planning

- PlaNYC (2007), OneNYC (2015)
  - Include ambitious sustainability and equity strategies
  - Air quality goal: Cleanest air of any large US City
  - Reduce inequities in exposures
  - Reduce emissions from local sources
- 80x50
  - Deep carbon reductions in buildings, energy, transportation and waste
  - Align investments to achieve other benefits



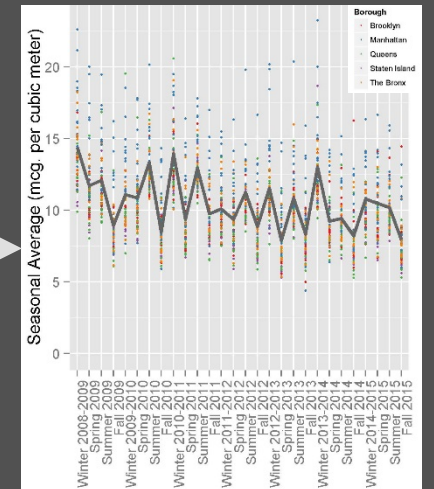
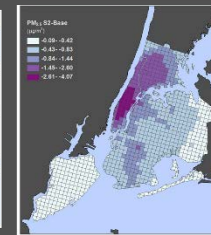
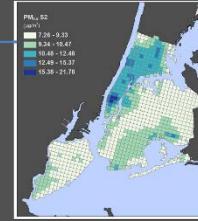
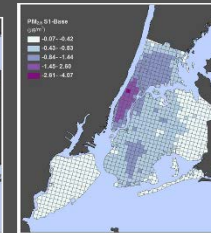
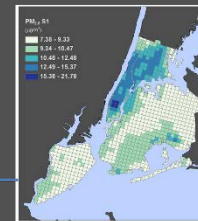
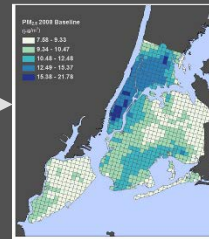
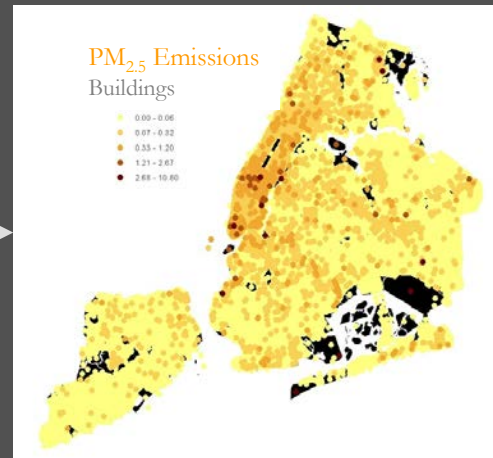
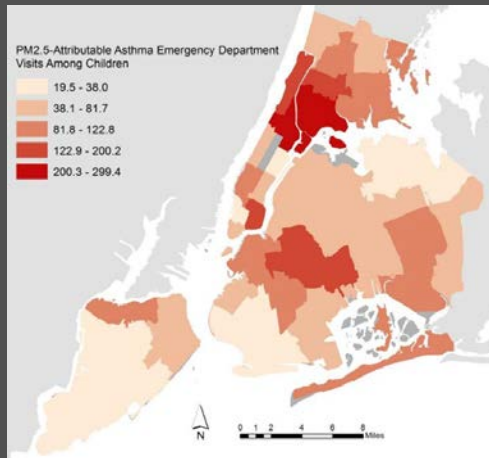
# Quantitative Health and Policy Evaluations

Health Burden Analysis

Emissions Analysis

Integrated air quality and health modeling  
(source attribution)

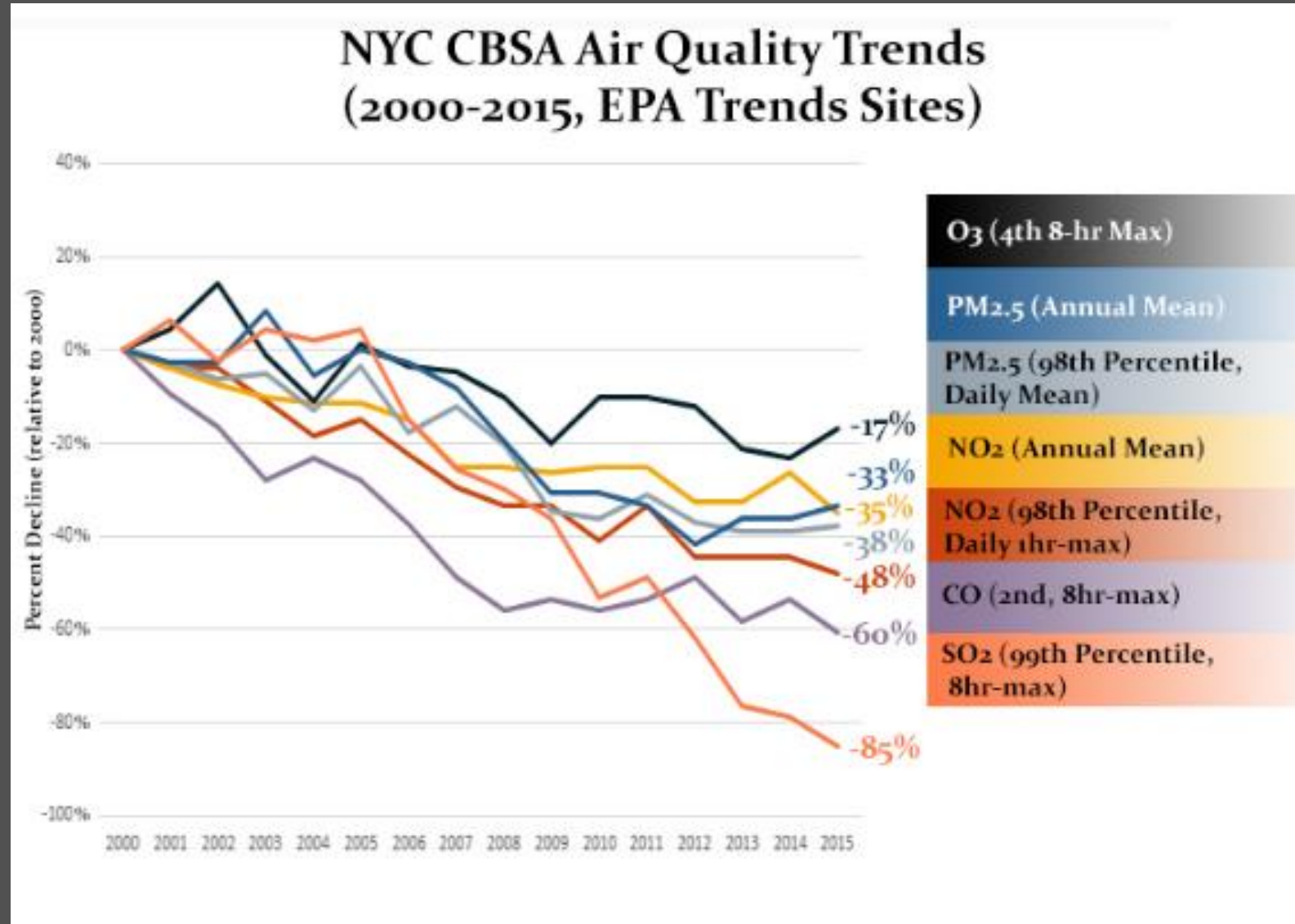
Ongoing air quality monitoring



Public Engagement

# Improving Air Quality – Metropolitan Area

- NYC MSA – In attainment of federal pollution standards for all but ozone
- Health effects are observed at levels below clean air standards.
- Hot spots remain in the city

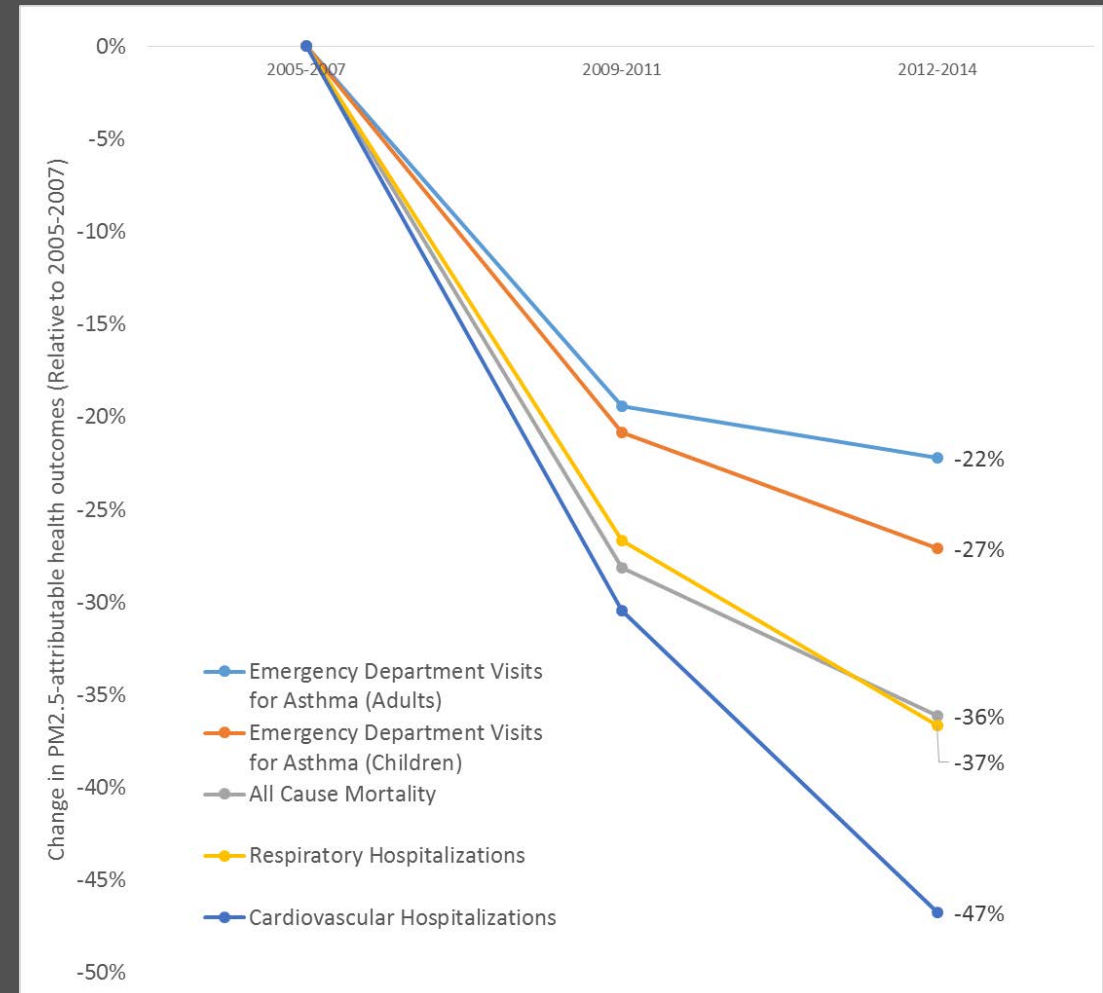




# Changing Public Health Burden of PM<sub>2.5</sub>

- **PM<sub>2.5</sub>:** Declining burden due to improving ambient levels
  - Contributes to 2,000-4,800 premature deaths and 5,800 ED visits and hospitalizations each year, (2012-2014)
- **Ozone:** Contributes to 400 premature deaths and 5,900 respiratory hospitalizations each year, (2012-2014)
  - Relatively stable since 2005-2007
- Higher share of burden in low SES communities, areas with higher underlying rates of disease

Change in Morbidity and Mortality due to PM<sub>2.5</sub>



# Ongoing and future strategies: Buildings

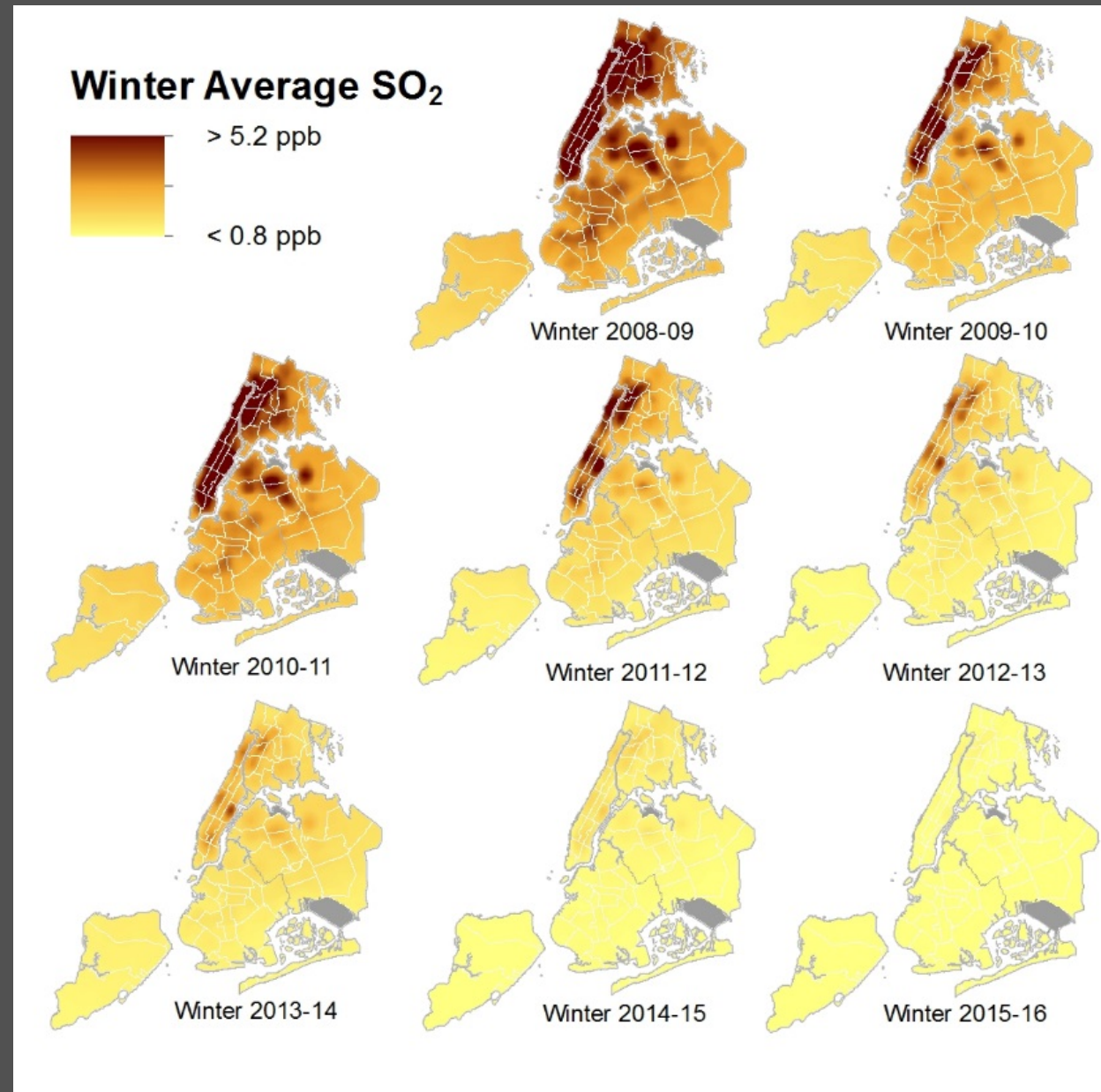
- Heating Fuels
  - Phase out of No. 4 and No. 6 heating oil
  - Desulfurization of No. 2 heating oil
- Energy Efficiency: Retrofit Accelerator
  - Free services to help with energy efficiency upgrades, boiler switching
  - Training, incentives, financing
- Commercial charbroiling emissions control
- Looking forward
  - Scale up deep energy retrofits to address heating systems, cooling systems, and transition away from fossil fuels
  - New buildings are built to the best energy performance standards
  - Fossil fuel efficiency mandates: 2030, buildings >25k sqft





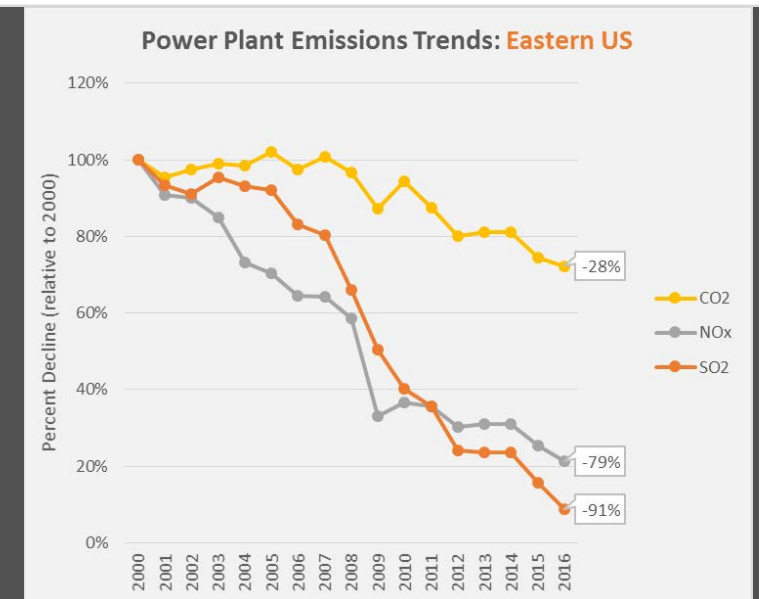
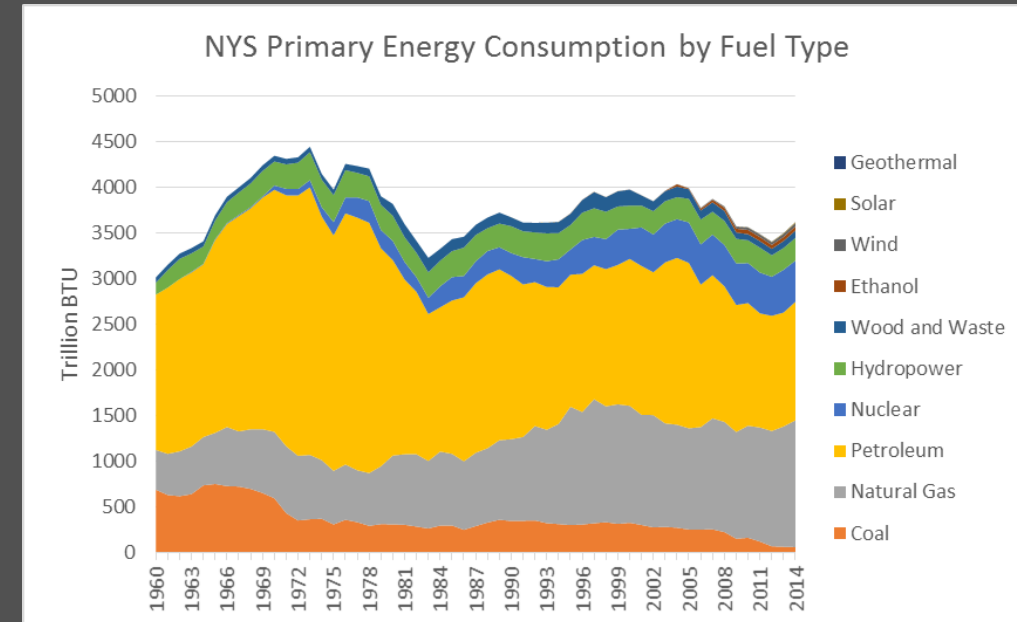
# SO<sub>2</sub> benefits due to heating oil programs

- 95% reduction in wintertime average SO<sub>2</sub> levels in <10 years
- With targeted policies, large improvements can come in short amounts of time



# Ongoing and future strategies: Energy

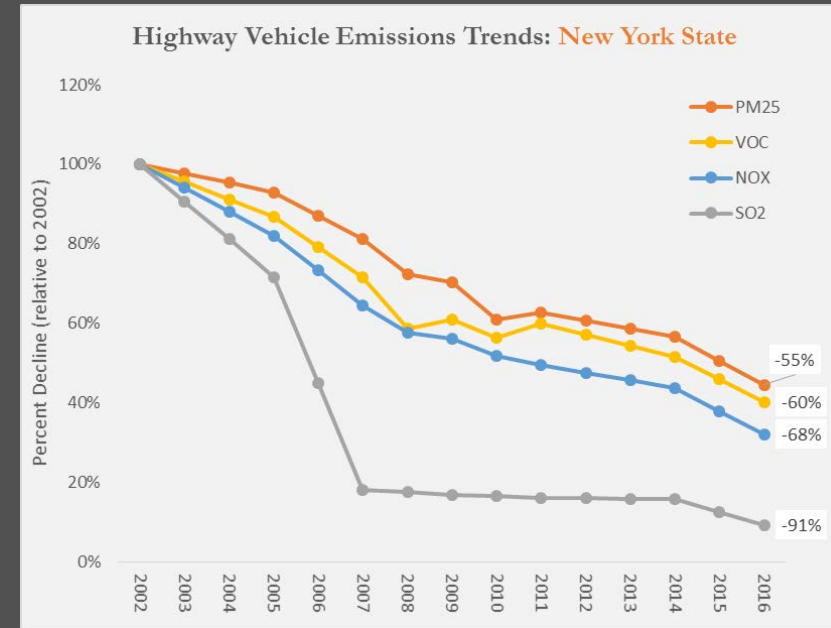
- Large reductions in power plant emissions to meet NAAQS, regional efforts
  - Federal trading programs (Acid Rain Program, CAIR, CSAPR)
  - Coal plant retirement (market and air quality standards)
  - Regional Greenhouse Gas Initiative
- Looking forward
  - NYS CES, 50% of NY Electricity from renewables by 2030
  - Investment in renewables and energy storage
  - Stricter efficiency and emissions requirements for in-city generation
  - >\$1B investment into city buildings





# Ongoing and future strategies: Traffic

- Federal programs have driven traffic pollution reduction
  - 2000, 2001: Passenger and heavy duty diesel efficiency requirements, cleaner gasoline and diesel
  - 2010: Light Duty Vehicle Greenhouse Gas Standards
  - Diesel Emissions Reduction Act
- Local action aims to go beyond federal action
  - Truck retrofit programs
  - Expand access to sustainable transit modes
    - Goal: 80% of trips by 2050
  - Encourage ZEV/NZEV adoption
    - 50 fast charging hubs by 2050







Thank you very much.

For more information about DOHMH Air Program, visit:  
<http://www.nyc.gov/health/nyccas>

For more on NYC's air quality and climate agenda, visit:  
<https://onenyc.cityofnewyork.us/>

To download air quality and other environmental health data visit:  
<http://www.nyc.gov/health/tracking>