

PM2.5 SIP OVERVIEW

1997 NAAQS



SIPRAC Meeting
July 10, 2008

CURRENT SIP SCHEDULE

(2008)

- SIP due to EPA April 5
- Publish Notice July 17-18th
- Public Hearing August 21st
(10:00 am, Ensign Room, 79 Elm Street, Hartford)
- Final SIP to EPA early September

WHAT IS PM2.5?

- Particulate matter with diameter less than 2.5 micrometers
- Primary PM2.5 : black carbon, crustal, plus condensables
- Secondary PM2.5: SO_4 , NO_3 , OC
- Local sources: motor vehicles, woodstoves, residential oil furnaces ...
- Regional transported PM2.5: mostly secondary from coal-burning power plants

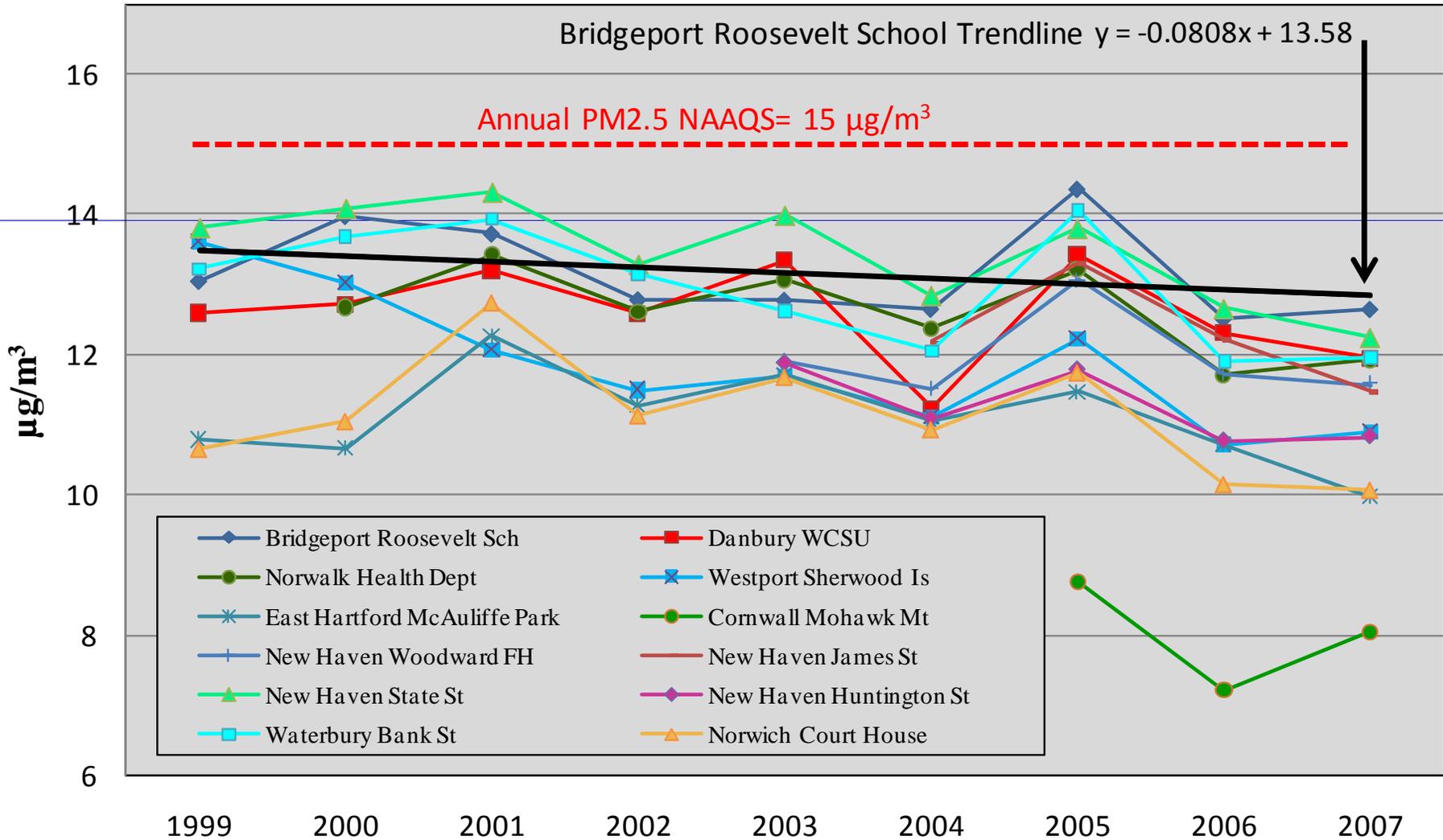
1997 PM_{2.5} NAAQS

USEPA, July 18, 1997

- Annual standard :
15 $\mu\text{g}/\text{m}^3$ (arithmetic mean, 3-yr avg)
- Daily (24-hour) standard:
65 $\mu\text{g}/\text{m}^3$ (98th percentile form; 3-yr avg)
note: revised 2006 NAAQS is 35 $\mu\text{g}/\text{m}^3$

AIR QUALITY TRENDS

PM_{2.5} Annual Concentrations



CAA REQUIREMENTS

$PM_{2.5}$ designation date April 5, 2005

Attainment date is April 5, 2010

- Controls: Implementation of all RACM as expeditiously as practicable (including RACT)
- Modeling: SIPs must contain air quality modeling to predict the effects of emission reductions on ambient air quality

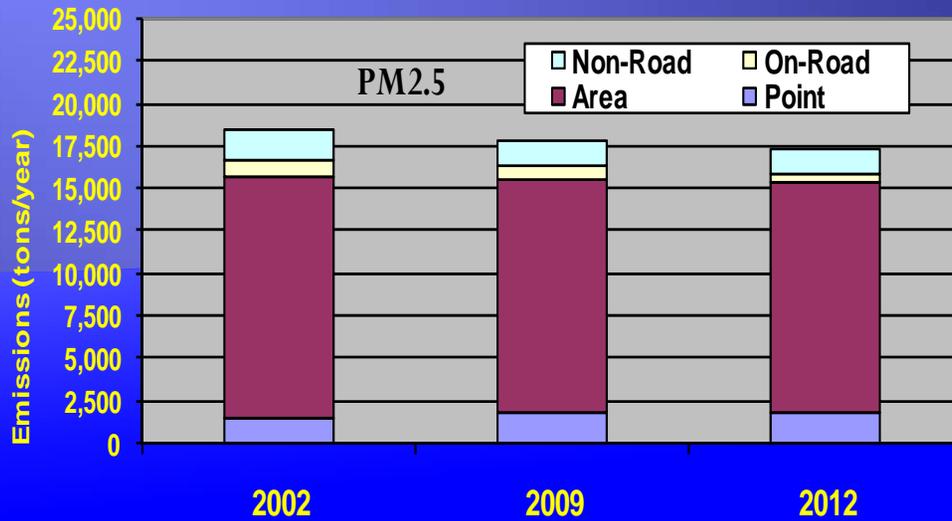
PRE-2002 CONTROLS

Control of Open Burning	Federal Tier 0 and Tier 1 Vehicles
New Source Review	Federal LEV
Control of PM and Visible Emissions	Federal On-board Refueling
Control of Sulfur Emissions from Fuel Burning Equipment	Reformulated Gasoline - Phase II
Control of NOx Emissions from Fuel Burning Equipment	Federal Enhanced I/M Program
CT's Enhanced I/M Program	Federal Non-Road Engine Standards
Gasoline Stage I, Stage II Vapor Recovery	CAA Title IV Acid Rain Program
CT LEV (Low Emission Vehicles)	EPA Wood Stove Certification Program
Municipal Waste Combustors (Phase 1)	

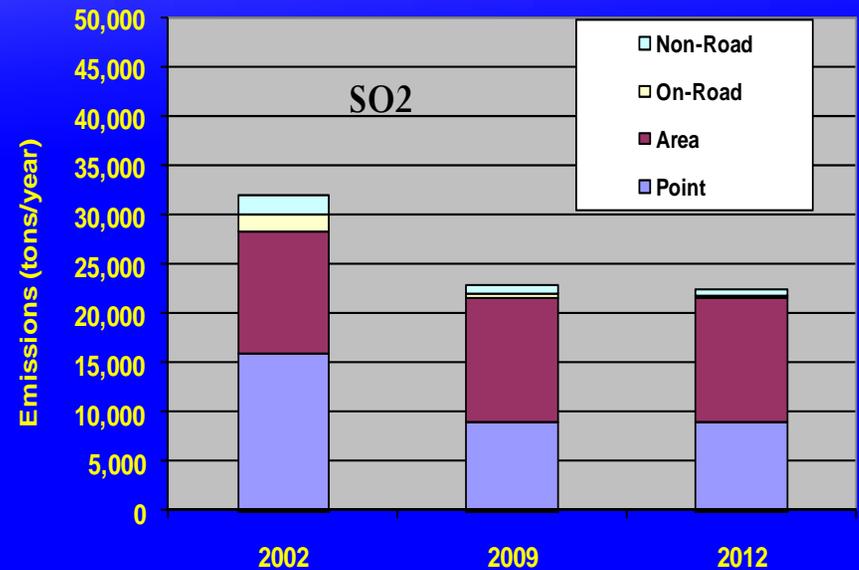
POST-2002 CONTROLS

Federal Tier 2 Motor Vehicles/Low Sulfur Gasoline	VOC Reductions from Metal Cleaning
Federal On-board Refueling Vapor Recovery	Proposed NO _x Reductions from ICI Boilers
Federal Heavy-Duty Diesel Engine Standards and Fuels	The Post-2002 Nitrogen Oxides (NO _x) Budget Program
Federal 2007 Highway Rule	CAIR NO _x Ozone Season Trading Program
Federal Highway Motorcycle Standards	CT's Enhanced I/M Program
Federal Non-Road Engine Standards	Gas Stations P-V Vent and Increased Stage I Testing
Federal CAIR for SO ₂	Heavy-Duty Diesel Engines
Outdoor Wood Burning Furnace Restrictions	CT's (CA LEV2)
General Permit for Distributed Generation Resource	Municipal Waste Combustors (Phase 2)
NSR Permit Rule Revisions	Consumer Products VOC
Particulate Matter /Visible Emissions revisions	AIM Coatings VOC
SO ₂ and NO _x limits for Power Plants /Large Sources	Portable Fuel Container Spillage Control
Proposed Restrictions on Asphalt Paving Operations	Proposed VOC Reductions from Adhesives and Sealants

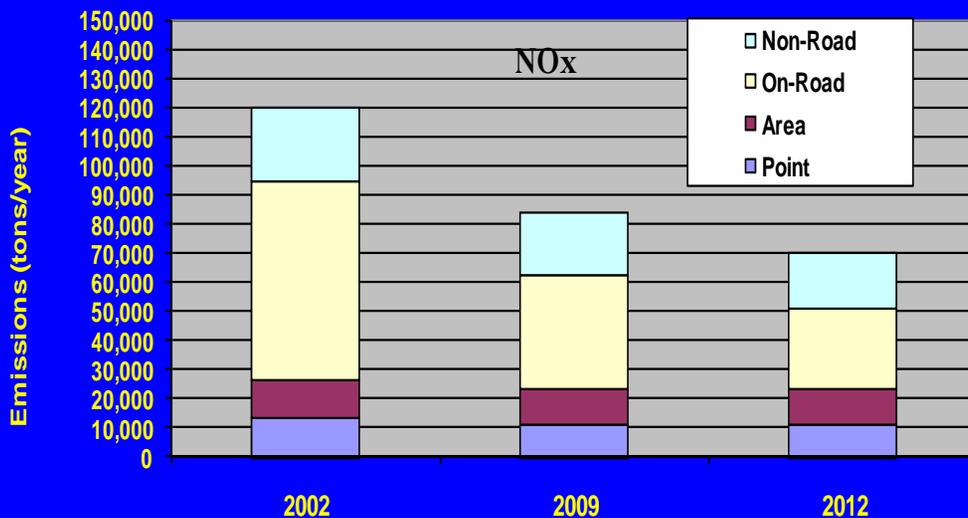
MANE-VU PM_{2.5} Emissions Projections for Connecticut (2002-2012)



MANE-VU SO₂ Emission Estimates for Connecticut 2002-2012 Beyond-On- the-Way (BOTW) Controls

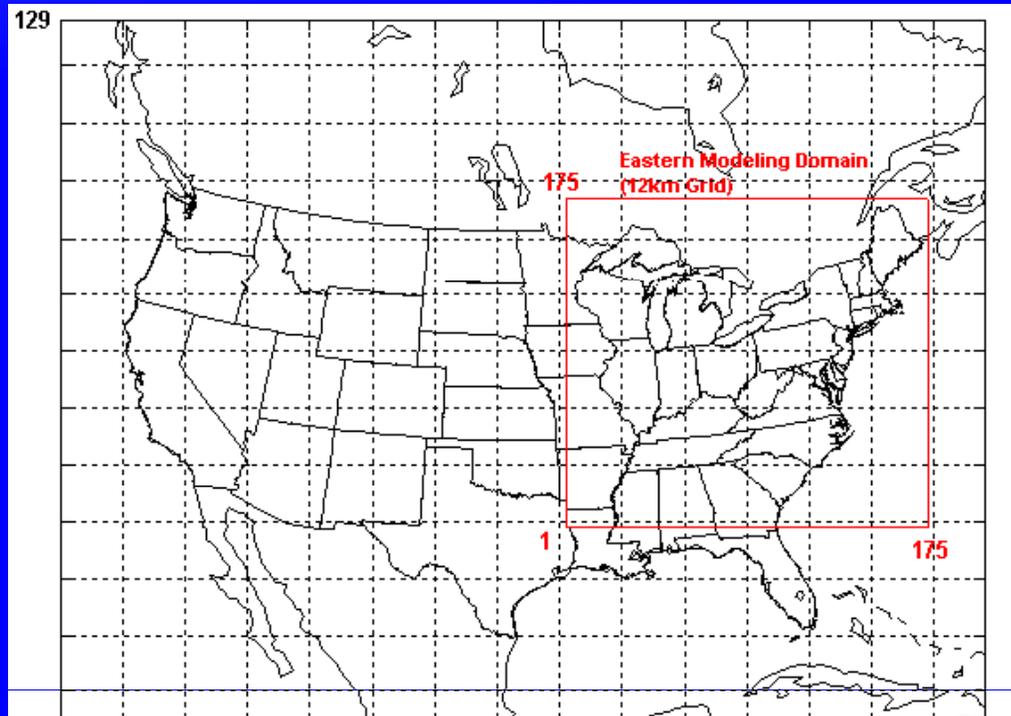


MANE-VU NO_x Emission Estimates for Connecticut 2002-2012 Beyond-On-the-Way (BOTW) Controls



MODELING PROCEDURES

EPA suggests photochemical grid modeling supplemented with weight-of-evidence (WOE) to demonstrate attainment of the PM_{2.5} NAAQS

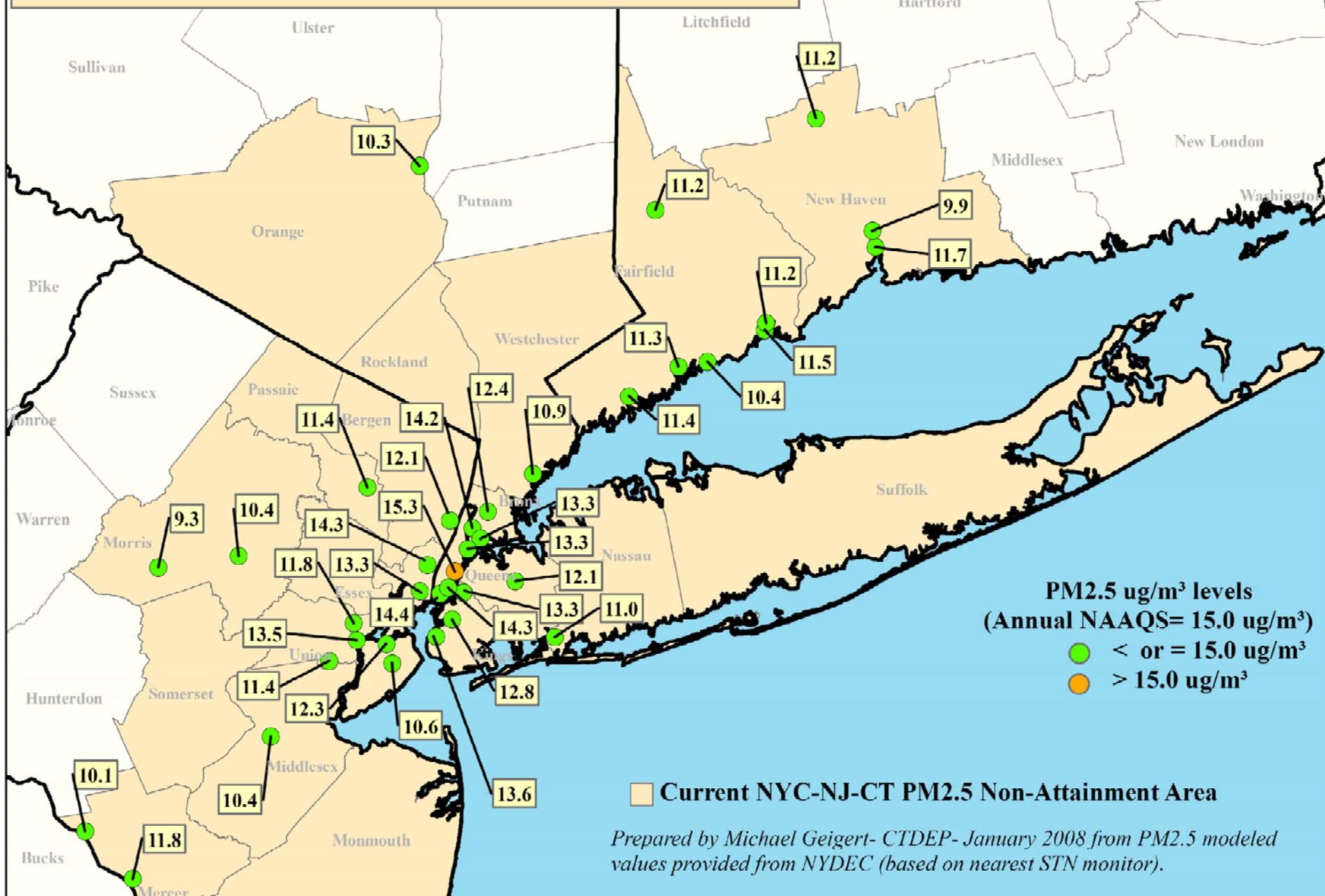


Domain covers the Northeast region, including the Northeastern, Central and Southeastern United States as well as Southeastern Canada (12km grid).

MODELING PROCEDURES

CMAQ Model	
MM5 Meteorology	Emission Controls for 2009
CMAQ Chemistry Module	Source Growth to 2009
Hourly Emissions	Changes in Economic Activity
Hourly Meteorology	SMAT (Speciated Modeled Attainment Test)
Hourly Chemistry	$PM_{2.5} + SO_4 + NO_3 + NH_4 + OM$ + crustal
MANE-VU Inventory 2002	RRF between 2002-2009
MANE-VU projections to 2009	Supplemental "Weight of

2009 Modeled PM_{2.5} Annual Design Values for the Current CT-NY-NJ non-Attainment Area



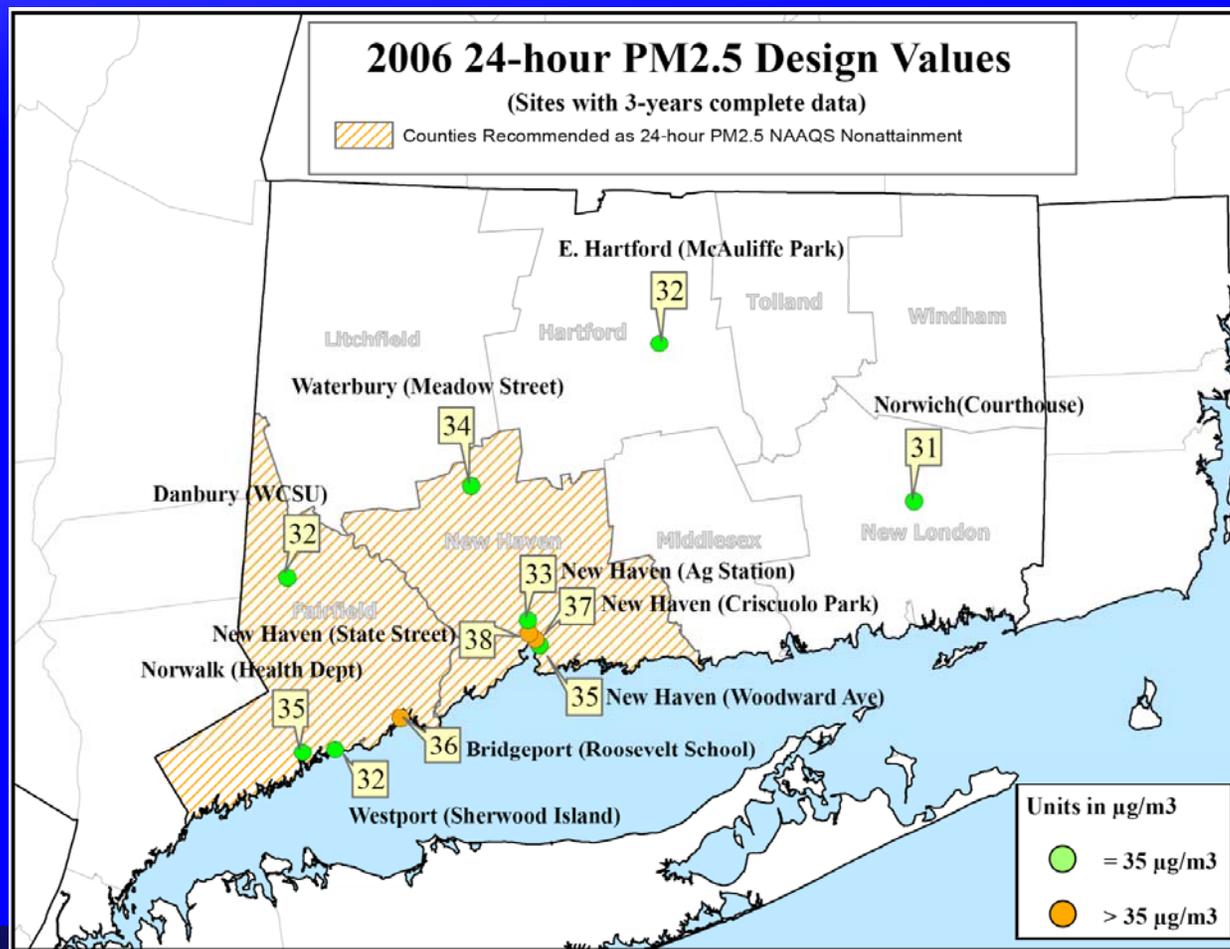
CONCLUSIONS

- CMAQ results for 2009 indicate continued PM_{2.5} attainment at all CT monitors
- CMAQ modeling projects that all monitors in the NY/NJ area will be attaining within weight of evidence range for by 2009 (i.e., less than 15.5 $\mu\text{g}/\text{m}^3$)
- WOE corroborates area-wide attainment in 2009

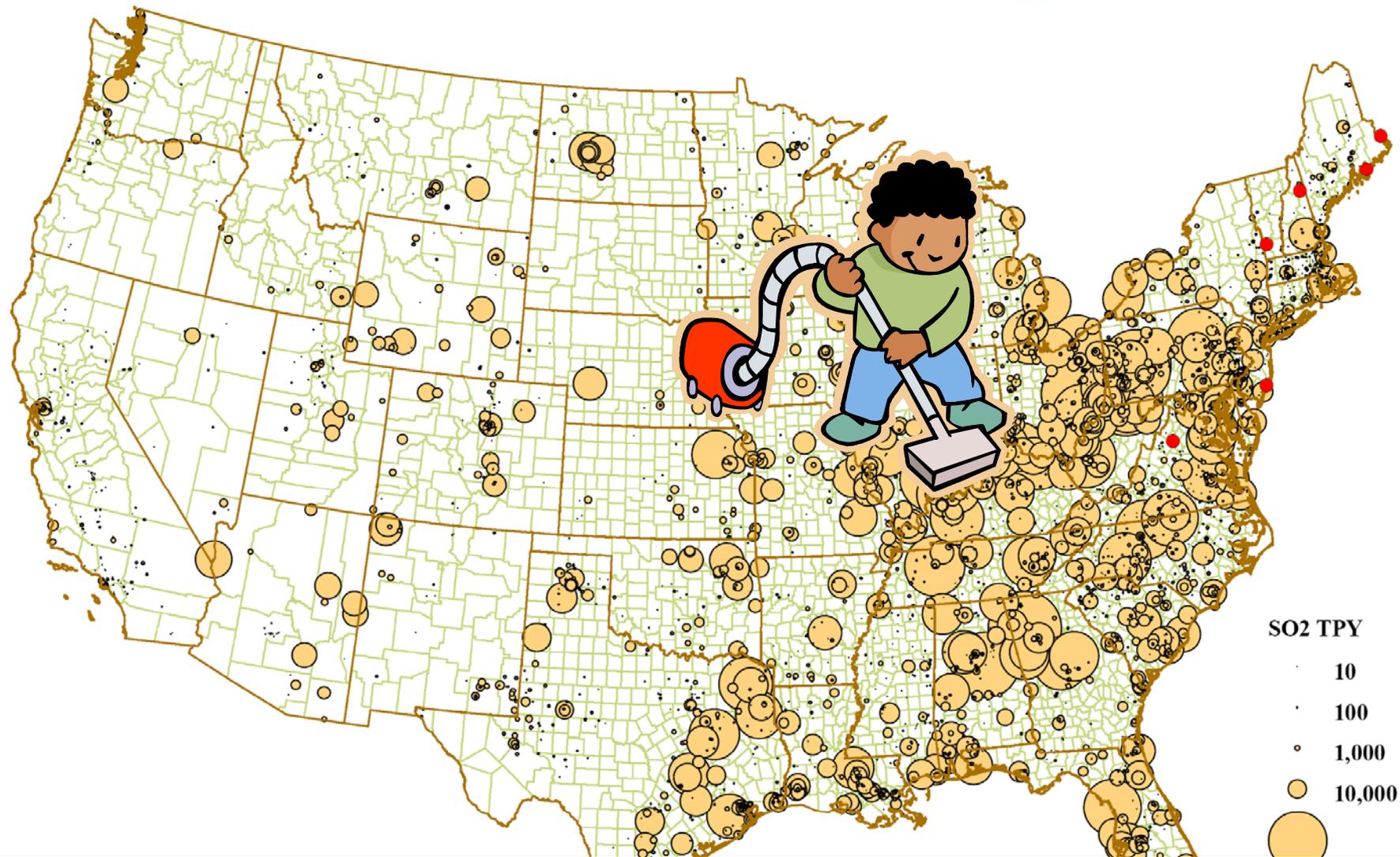
NEXT STEPS



- 2006 PM_{2.5} NAAQS (24-hour) Designations December 2008;
- SIPs due December 2011



2002 NEI v3 Point Source SO₂ Emissions (TPY) and MANE-VU Class I Areas ●



Need national policy to clean up all the sources

ACKNOWLEDGEMENTS

- DEP SIP Team: Paul Bodner, Michael Geigert, Merrily Gere, Anne Hulick, Kurt Keschull, Allison Ferraro, Dave Wackter
- DEP Staff: Anne Gobin, Monitoring Group, Emission Inventory Group
- NYDEC: Modeling Platform
- NJDEP: SIP Framework
- UMD: Meteorology
- NESCAUM: Conceptual Model, Processed Emissions
- MANE-VU: Emissions Inventory