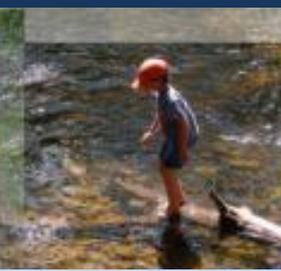




# Connecticut Department of Energy and Environmental Protection



Connecticut Department of  
**ENERGY &  
ENVIRONMENTAL  
PROTECTION**

# Update on Designation Recommendation for the 2012 PM<sub>2.5</sub> NAAQS

November 14, 2013  
Peter Babich  
SIPRAC



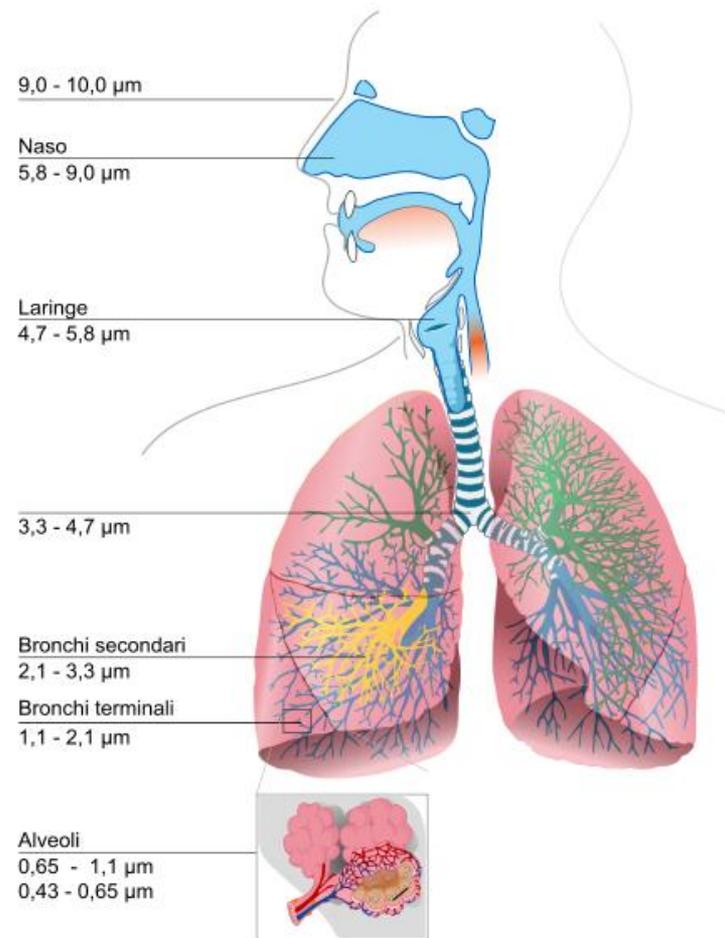
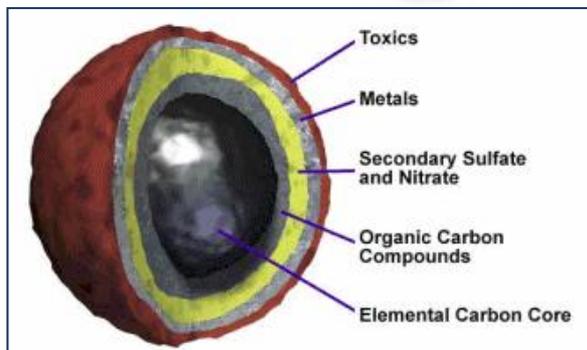
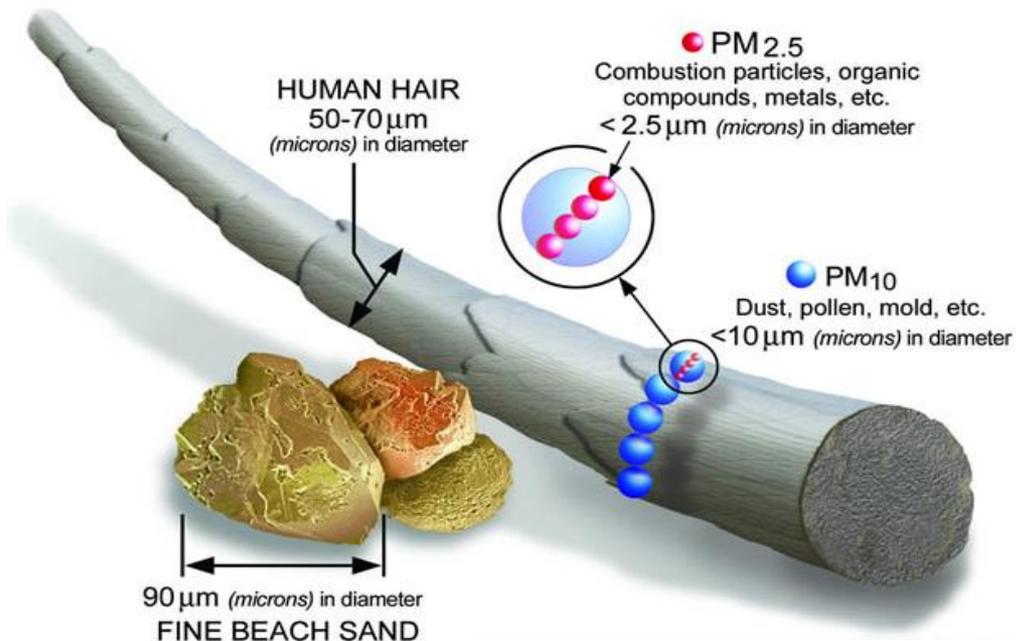
Connecticut Department of Energy and Environmental Protection

# 2012 PM<sub>2.5</sub> NAAQS

- On December 14, 2012 the U.S. Environmental Protection Agency (EPA) strengthened the nation's air quality standards for fine particle pollution by revising the primary annual PM<sub>2.5</sub> standard to 12 µg/m<sup>3</sup> and retaining the 24-hour fine particle standard of 35 µg/m<sup>3</sup>.
- By December 14, 2013, states are required to make recommendations for areas to be designated for attainment or nonattainment.
- By August 2014, EPA will respond to states' initial recommendations for attainment and nonattainment areas. States then will have the opportunity to comment on any modifications to their recommendations, and to provide new information and analyses to EPA if appropriate.
- By December 2014, EPA makes final designations; those designations would likely become effective in early 2015 (60 days after the designations are published in the Federal Register). If necessary, States will have until 2018 to submit implementation plans.



# Why Particles Matter



# What are the Public Health Impacts of PM<sub>2.5</sub>?

- PM<sub>2.5</sub> emitted directly and formed secondarily in atmosphere (SO<sub>x</sub>, NO<sub>x</sub>, organics)
  - e.g., EGU, industrial, mobile sources, home heating
- PM<sub>2.5</sub> can penetrate deep into sensitive lung tissue
- Most at-risk individuals: heart/lung disease, elderly, children, pregnant women, diabetics
- Contributes to increased hospitalization, cardio vascular (e.g., clogged arteries) & respiratory ailments (e.g., bronchitis, asthma), heart attacks, strokes, premature death



# What are the Revised NAAQS?

- Prompted by CAA section 109(d) 5-year review cycle & Court-ordered deadline
- Annual PM<sub>2.5</sub> NAAQS lowered to 12 µg/m<sup>3</sup> (from 15 µg/m<sup>3</sup>)
  - No changes to 24-hr PM<sub>2.5</sub> or PM<sub>10</sub> primary & secondary NAAQS
  - PM<sub>2.5</sub> NAAQS within ranges advised by CASAC
  - EPA estimates annual US health benefits of \$4 to \$9 billion, with costs of \$53 to \$350 million.

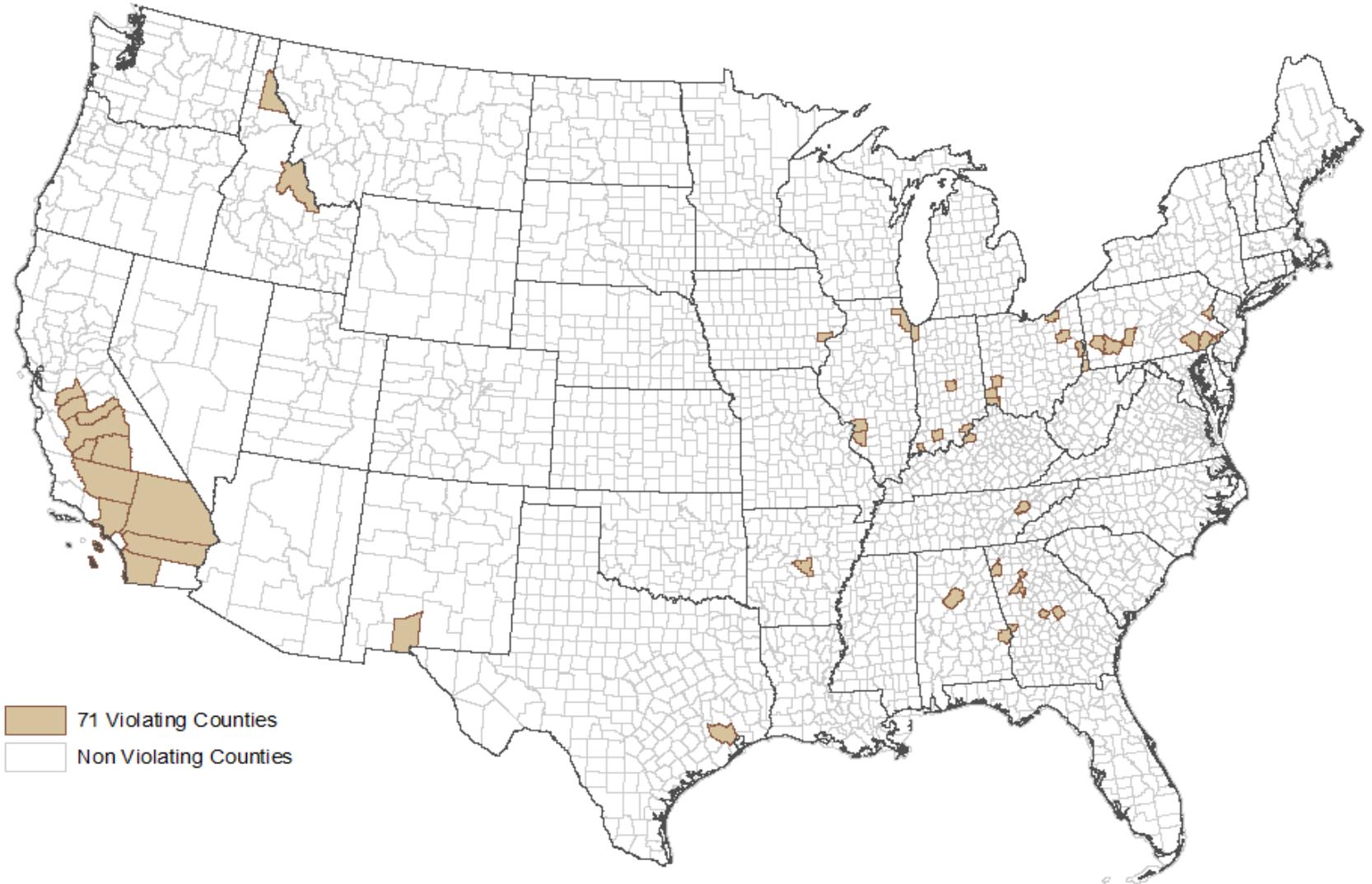


# What is the Implementation Schedule?

- Attainment/Nonattainment Designations to be finalized early 2015 (based on 2011-13 data)
- Attainment Deadline of 2020
  - Control strategy plans due early 2018 for NA areas
- Required Near-Road Monitoring
  - CBSA population  $\geq$  2.5 million: Jan 1, 2015 (none in CT)
  - CBSA population  $\geq$  1 million: Jan 1, 2017 (Hartford)
  - Data won't be available for initial 2015 designations



*Counties Violating the 2012 Annual PM<sub>2.5</sub> Design Value (12ug/m<sup>3</sup>)*



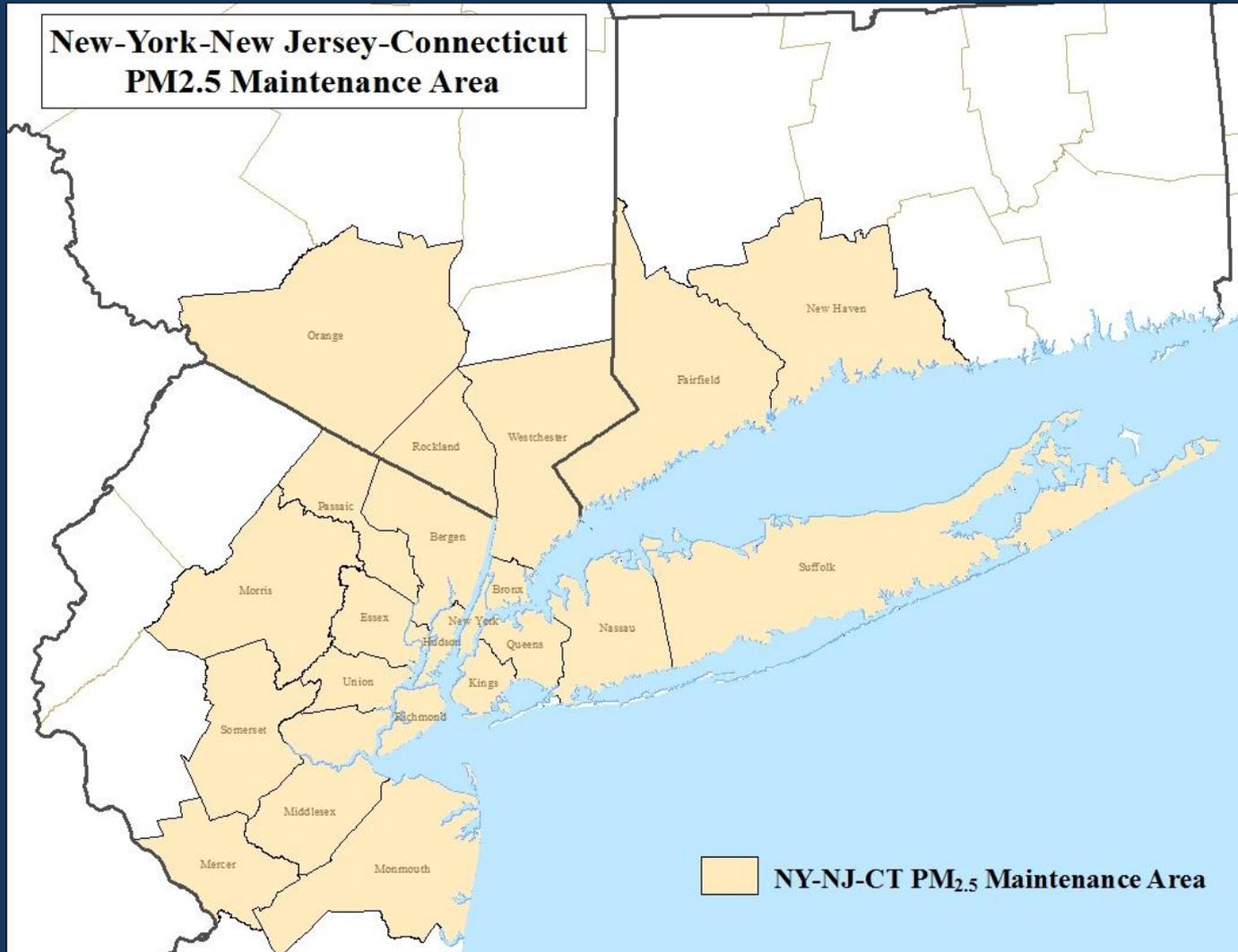
*Not Shown on Map Hawaii County, Hawaii Design Value also Violates the Annual Standard.*

# PM<sub>2.5</sub> Redesignation

- On June 22, 2012, DEEP formally submitted to the EPA, the final PM<sub>2.5</sub> redesignation request and maintenance plan State Implementation Plan (SIP) for Connecticut's portion of the NY-NJ-CT annual and 24-hour PM<sub>2.5</sub> nonattainment areas.
- On December 31, 2012, the EPA determined that the NY–NJ–CT PM<sub>2.5</sub> nonattainment area had attained the 2006 24-hour PM<sub>2.5</sub> NAAQS.
- On July 19, 2013 EPA proposed to approve the State of Connecticut's June 22, 2012 request to redesignate the Connecticut portion of the NY-NJ-CT PM<sub>2.5</sub> area (i.e., New Haven and Fairfield Counties) from nonattainment to attainment for the 1997 annual NAAQS, as well as for the 2006 24-hour PM<sub>2.5</sub> NAAQS.
- On September 24, 2013, EPA published a notice in the Federal Register, approving the redesignation request.

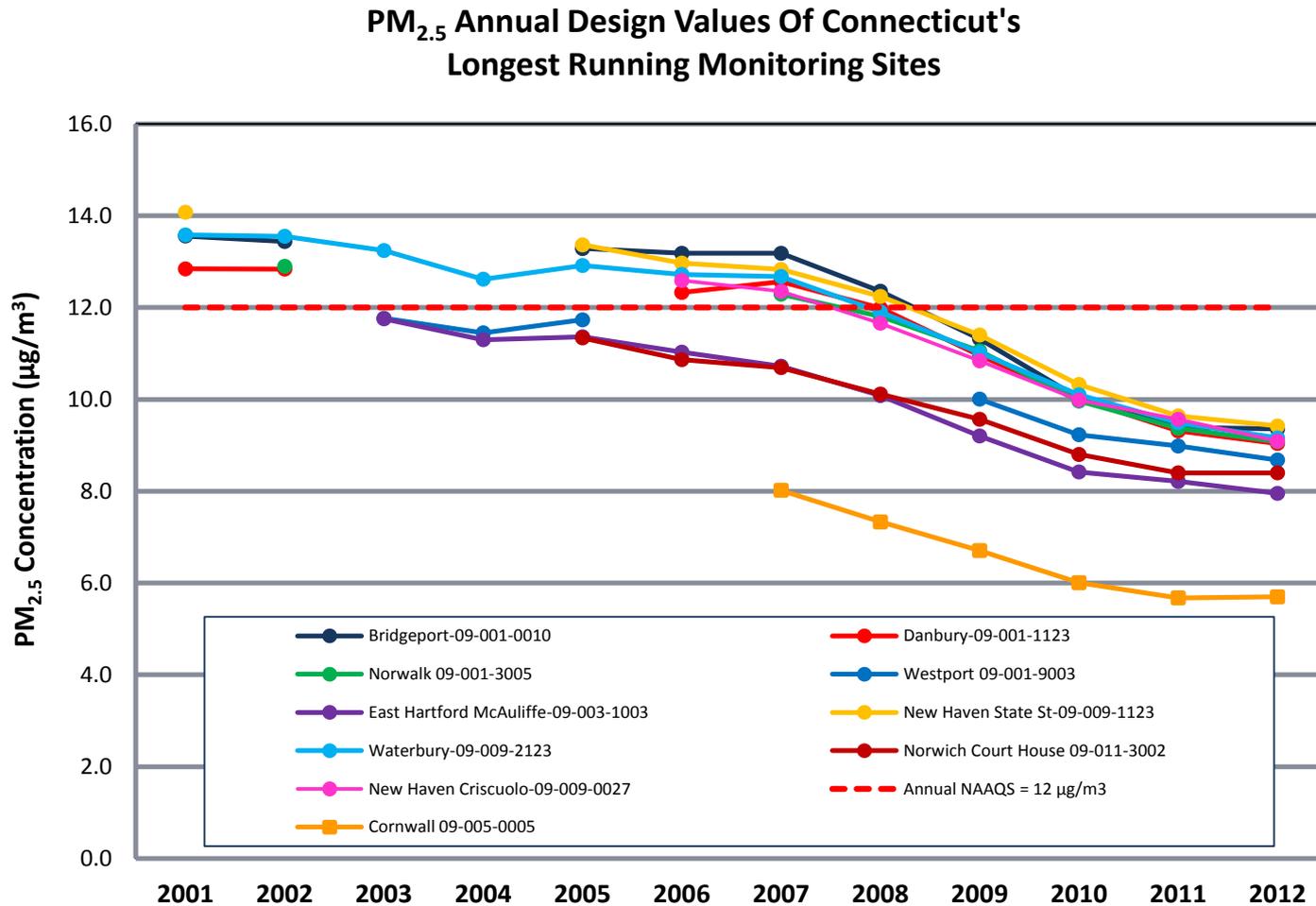


# PM<sub>2.5</sub> Redesignation

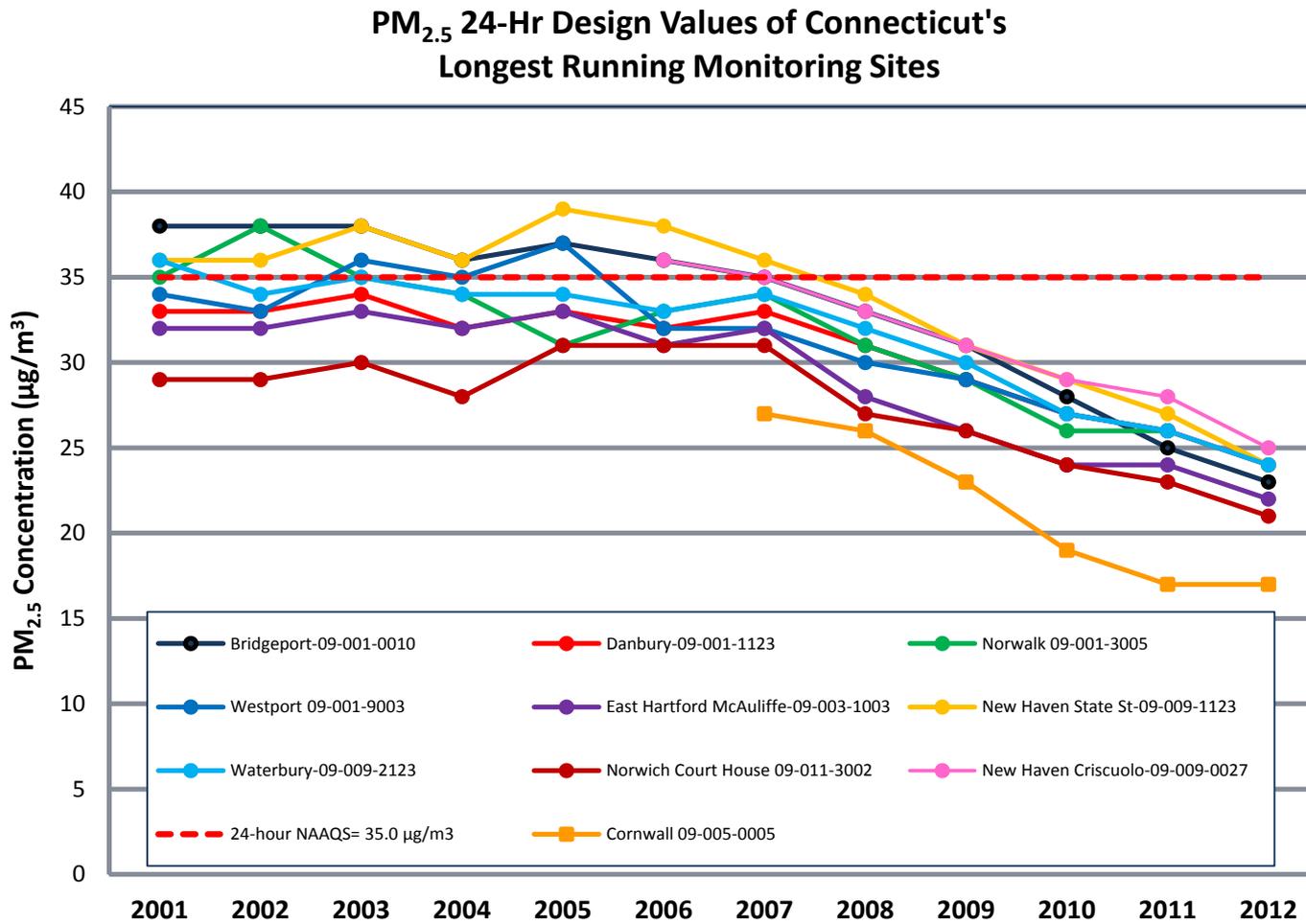


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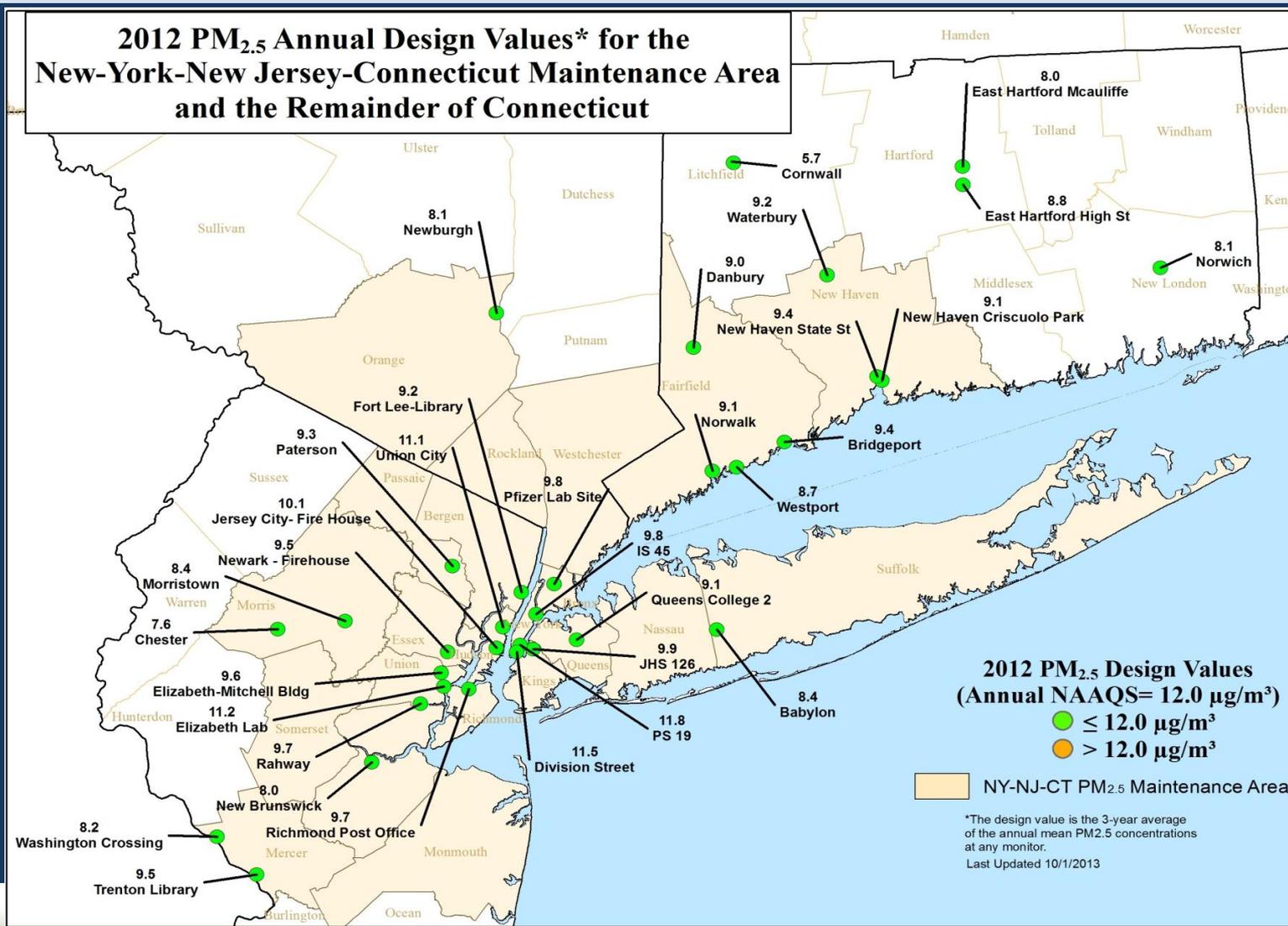
# PM<sub>2.5</sub> Annual Design Values



# PM<sub>2.5</sub> 24-hr Design Values



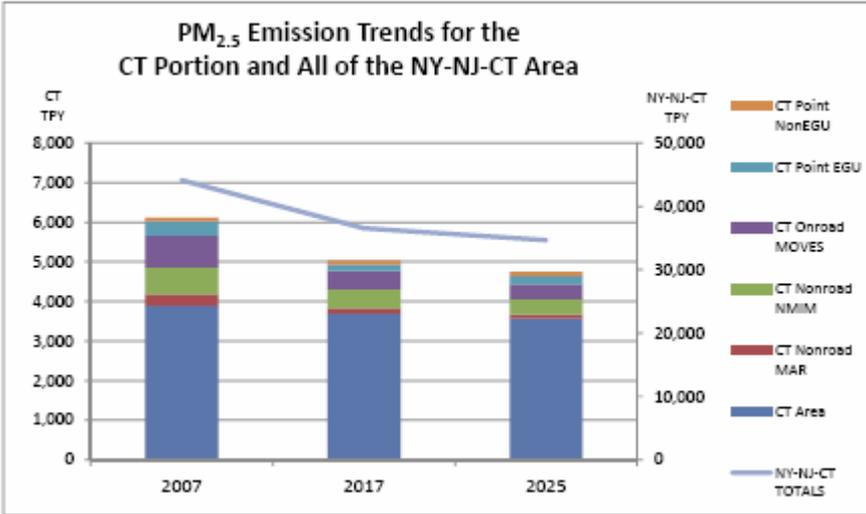
# PM<sub>2.5</sub> Annual Design Values for NY-NJ-CT



# PM<sub>2.5</sub> Emissions Reductions (2007-2025)

Particulate Matter (PM <sub>2.5</sub> -PRI) V3.3				2007	2017	2025	2007 to 2025	2007 to 2025
				Annual	Annual	Annual	Change	Change
State	FIPS	County	SECTOR	(tons)	(tons)	(tons)	(tons)	(Percent)
CT	09001	Fairfield	AREA	1,991.5	1,892.3	1,827.5	-163.9	-8%
			NONROAD MAR	119.9	61.7	45.0	-74.8	-62%
			NONROAD NMIM	403.0	292.5	244.1	-158.9	-39%
			ONROAD MOVES	404.4	238.0	192.7	-211.7	-52%
			POINT EGU	283.5	79.4	131.5	-152.0	-54%
			POINT NONEGU	44.7	47.3	49.6	4.9	11%
			<b>TOTALS</b>	<b>3,247.0</b>	<b>2,611.2</b>	<b>2,490.4</b>	<b>-756.5</b>	<b>-23%</b>
			AREA	1,900.3	1,804.9	1,746.3	-153.9	-8%
			NONROAD MAR	168.5	73.0	51.6	-117.0	-69%
			NONROAD NMIM	279.1	181.7	136.8	-142.3	-51%
			ONROAD MOVES	389.6	229.4	186.2	-203.4	-52%
			POINT EGU	88.1	84.4	83.8	-4.2	-5%
CT	09009	New Haven	POINT NONEGU	40.4	44.5	46.6	6.2	15%
		<b>New Haven Total</b>		<b>2,866.0</b>	<b>2,417.9</b>	<b>2,251.3</b>	<b>-614.7</b>	<b>-21%</b>
		<b>Total CT Portion of NY-NJ-CT Area</b>		<b>6,113.0</b>	<b>5,029.1</b>	<b>4,741.7</b>	<b>-1,371.2</b>	<b>-22%</b>

Figure E-4 Projected PM<sub>2.5</sub> Emissions for the CT Portion and All of the NY-NJ-CT Area\*



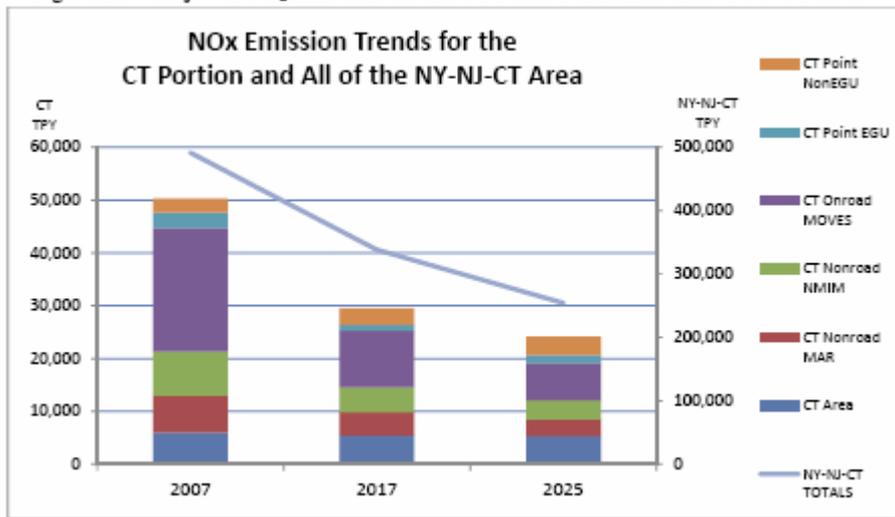
\* Emission estimates for NY and NJ are preliminary and are subject to change by each state in their PM<sub>2.5</sub> redesignation SIP submittals.



# NO<sub>x</sub> Emissions Reductions (2007-2025)

Oxides of Nitrogen (NO <sub>x</sub> ) v3.3				2007 Annual (tons)	2017 Annual (tons)	2025 Annual (tons)	2007 to 2025 Change (tons)	2007 to 2025 Change (Percent)
State	FIPS	County	SECTOR					
CT	09001	Fairfield	AREA	3,088.8	2,771.3	2,740.1	-348.7	-11%
			NONROAD MAR	3,034.2	1,957.5	1,345.4	-1,688.8	-56%
			NONROAD NMIM	4,648.1	2,615.8	2,057.3	-2,590.8	-56%
			ONROAD MOVES	11,888.9	5,414.1	3,573.2	-8,315.7	-70%
			POINT EGU	2,268.5	741.7	1,108.2	-1,160.3	-51%
			POINT NONEGU	1,875.4	2,224.0	2,543.5	668.1	36%
			<b>TOTALS</b>	<b>26,804.0</b>	<b>15,724.4</b>	<b>13,367.8</b>	<b>-13,436.2</b>	<b>-50%</b>
			AREA	2,936.1	2,636.8	2,608.1	-328.0	-11%
			NONROAD MAR	3,945.9	2,487.0	1,736.2	-2,209.7	-56%
			NONROAD NMIM	3,688.1	2,076.6	1,603.9	-2,084.3	-57%
			ONROAD MOVES	11,502.7	5,293.9	3,540.1	-7,962.6	-69%
			POINT EGU	639.6	386.6	384.5	-255.0	-40%
CT	09009	New Haven	POINT NONEGU	822.7	896.0	951.6	128.9	16%
		<b>New Haven Total</b>		<b>23,535.1</b>	<b>13,776.9</b>	<b>10,824.4</b>	<b>-12,710.7</b>	<b>-54%</b>
		<b>Total CT Portion of NY-NJ-CT Area</b>		<b>50,339.1</b>	<b>29,501.3</b>	<b>24,192.2</b>	<b>-26,146.9</b>	<b>-52%</b>

Figure E-5 Projected NO<sub>x</sub> Emissions for the CT Portion and All of the NY-NJ-CT Area\*



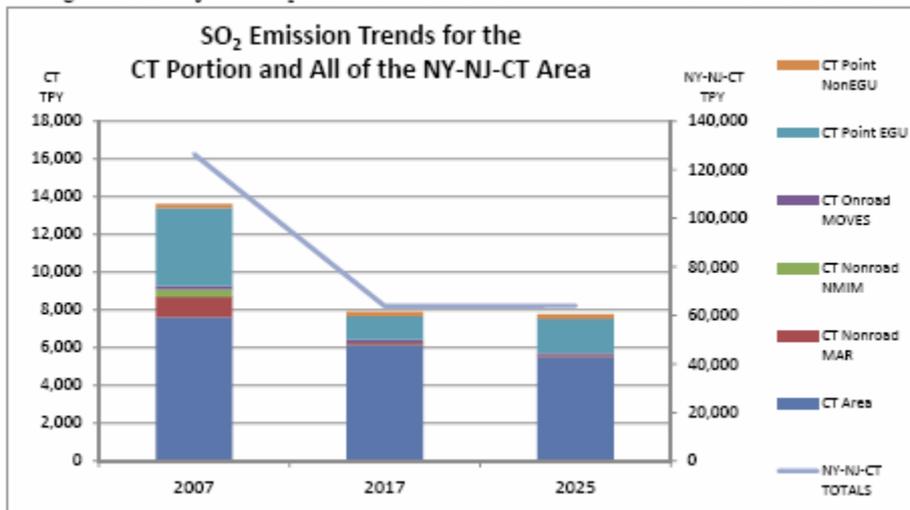
\* Emission estimates for NY and NJ are preliminary and are subject to change by each state in their PM<sub>2.5</sub> redesignation SIP submittals.



# SO<sub>2</sub> Emissions Reductions (2007-2025)

Sulfur Dioxide (SO <sub>2</sub> ) v3.3				2007 Annual (tons)	2017 Annual (tons)	2025 Annual (tons)	2007 to 2025 Change (tons)	2007 to 2025 Change (Percent)
State	FIPS	County	SECTOR					
CT	09001	Fairfield	AREA	3,917.3	3,157.5	2,835.2	-1,082.1	-28%
			NONROAD MAR	353.4	39.6	18.5	-334.9	-95%
			NONROAD NMIM	215.8	8.5	9.4	-206.4	-96%
			ONROAD MOVES	84.3	71.5	66.4	-17.9	-21%
			POINT EGU	3,311.2	849.4	1,421.3	-1,889.9	-57%
			POINT NONEGU	154.8	167.8	180.0	25.2	16%
				<b>8,036.7</b>	<b>4,294.2</b>	<b>4,530.8</b>	<b>-3,505.9</b>	<b>-44%</b>
			AREA	3,707.7	2,984.5	2,677.1	-1,030.6	-28%
			NONROAD MAR	727.4	85.1	35.7	-691.6	-95%
			NONROAD NMIM	174.1	6.9	7.6	-166.5	-96%
			ONROAD MOVES	91.8	79.7	74.7	-17.2	-19%
			POINT EGU	822.7	400.1	398.4	-424.3	-52%
			POINT NONEGU	55.6	58.5	59.5	3.9	7%
		<b>New Haven Total</b>		<b>5,579.2</b>	<b>3,614.8</b>	<b>3,252.9</b>	<b>-2,326.3</b>	<b>-42%</b>
		<b>Total CT Portion of NY-NJ-CT Area</b>		<b>13,615.9</b>	<b>7,909.0</b>	<b>7,783.7</b>	<b>-5,832.2</b>	<b>-43%</b>

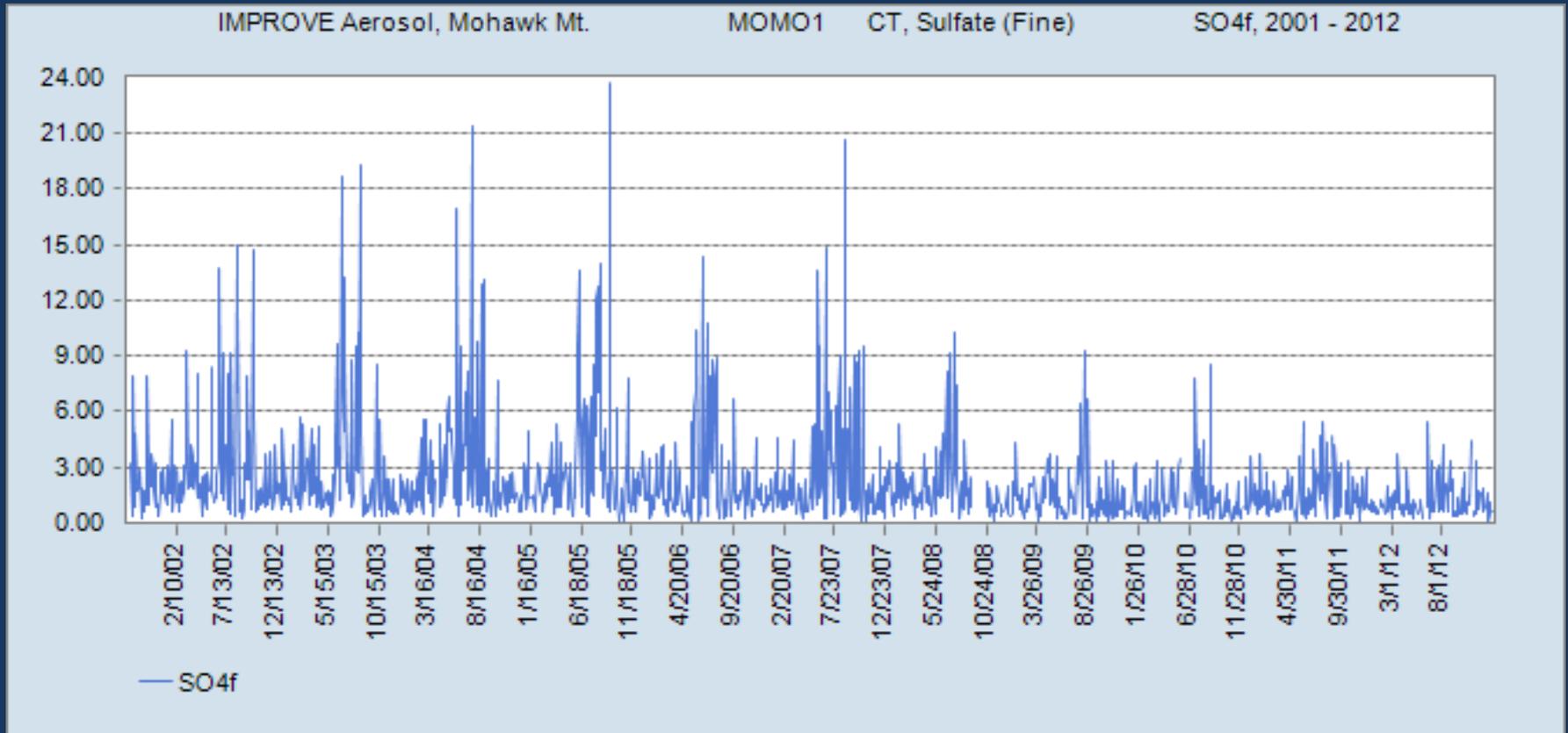
Figure E-6 Projected SO<sub>2</sub> Emissions for the CT Portion and All of the NY-NJ-CT Area\*



\* Emission estimates for NY and NJ are preliminary and are subject to change by each state in their PM<sub>2.5</sub> redesignation SIP submittals.

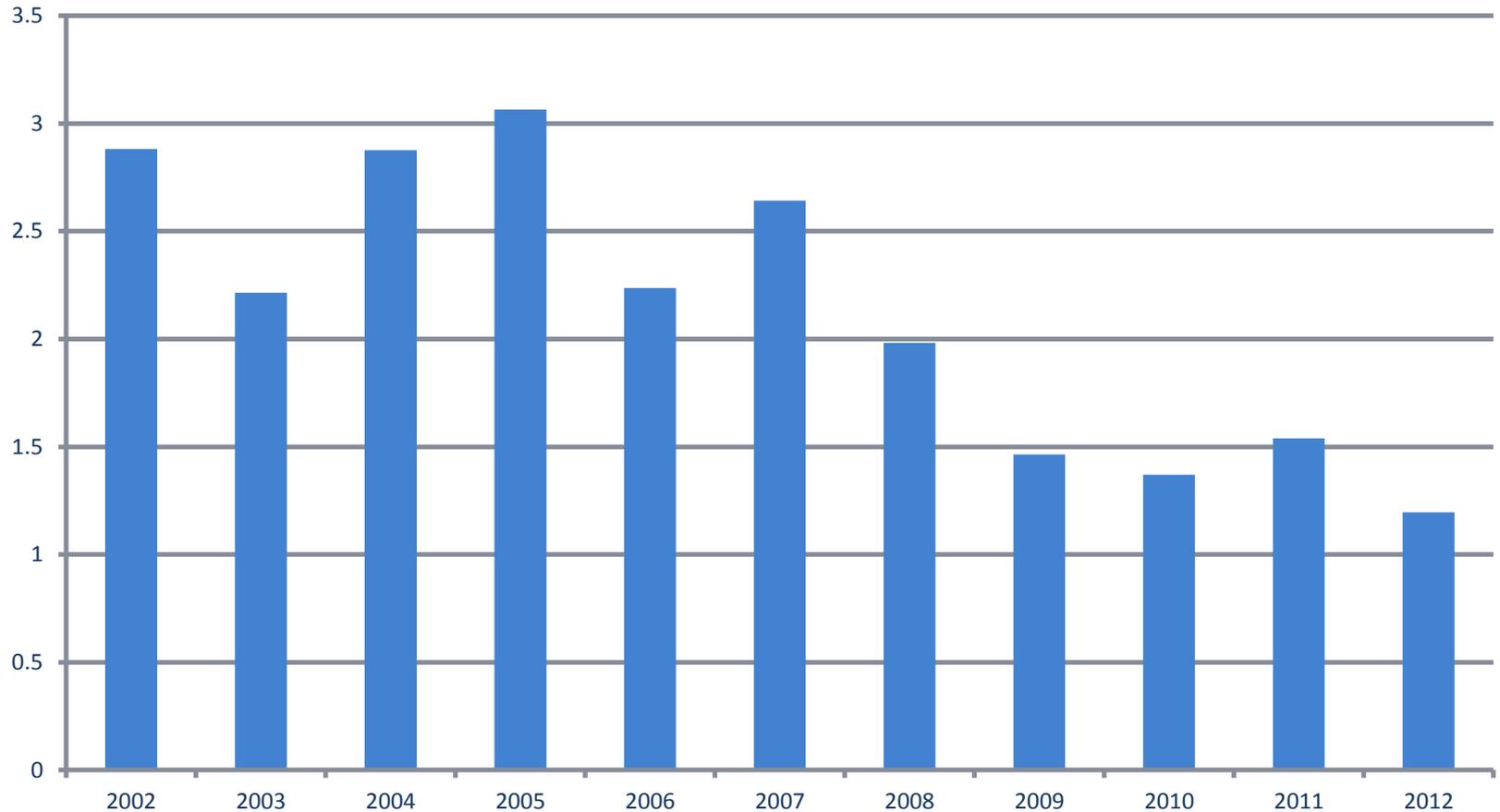


# PM<sub>2.5</sub> Sulfate at Mohawk Mountain



# PM<sub>2.5</sub> Sulfate at Mohawk Mountain

Mohawk Mt. IMPROVE Annual Average SO<sub>4</sub> in  $\mu\text{g}/\text{m}^3$





## Recommendation

By December 14, 2013, Connecticut will submit a designation recommendation of statewide attainment for the 2012 annual PM<sub>2.5</sub> standard.



# Questions?

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Connecticut Department of Energy and Environmental Protection