Connecticut Department of Energy and Environmental Protection

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Southwest Connecticut Attainment Demonstration

Staff Draft

6/8/17

Kathleen Knight
SIPRAC, DEEP

Attainment Demonstration

What is an attainment demonstration?

1. *A Clean Air Act Requirement.*
2. *A set of analyses, budgets, strategies and contingency plans which "demonstrate" that an area currently measuring air quality above the standard will measure (or "attain") levels below the standard by the given deadline.*

When is it required?

When an ozone nonattainment area is classified as moderate severity or higher.

(CAA § 182(b) and 40 CFR 51 subpart AA)

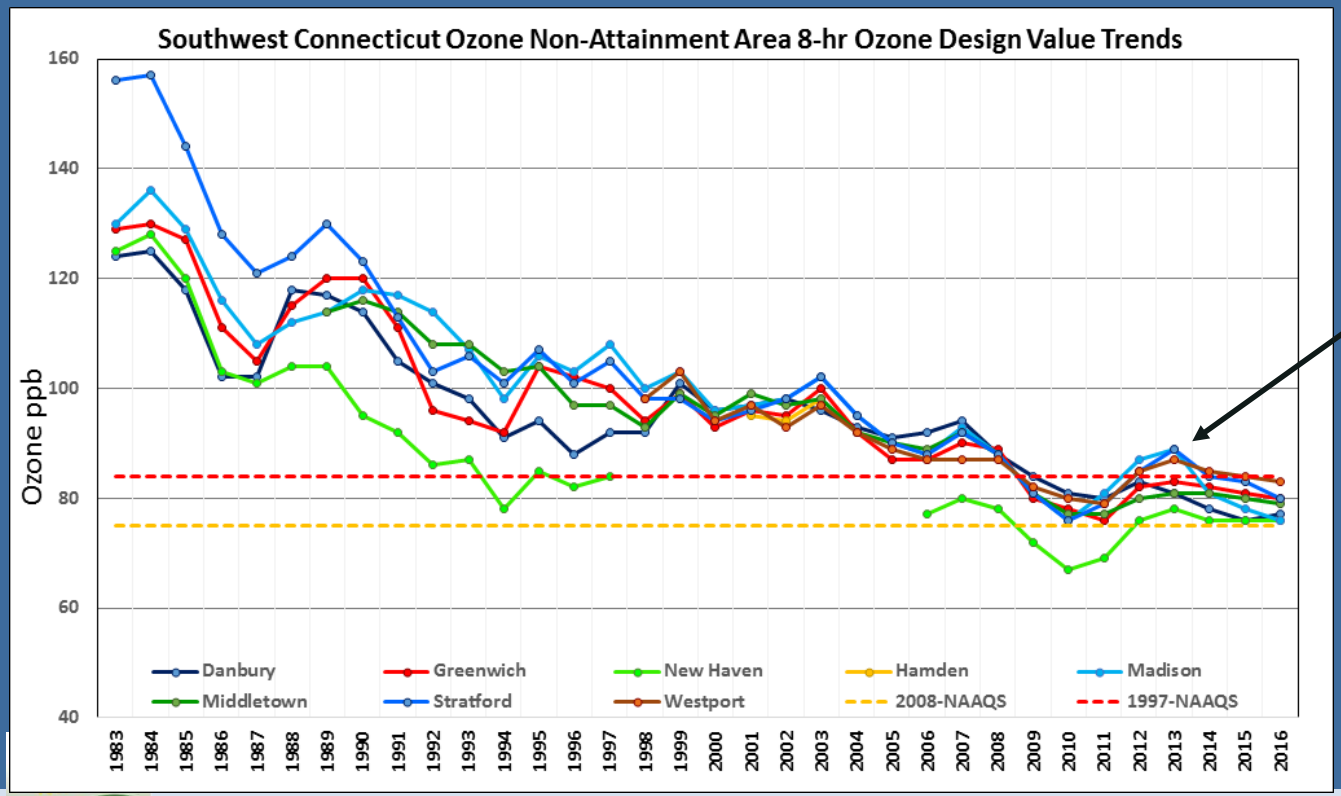
Specific to Connecticut–

On June 3, 2016 the two nonattainment areas were reclassified from marginal to moderate. In the ruling, EPA also set an attainment deadline of July 20, 2018 and an attainment demonstration deadline of January 1, 2017.

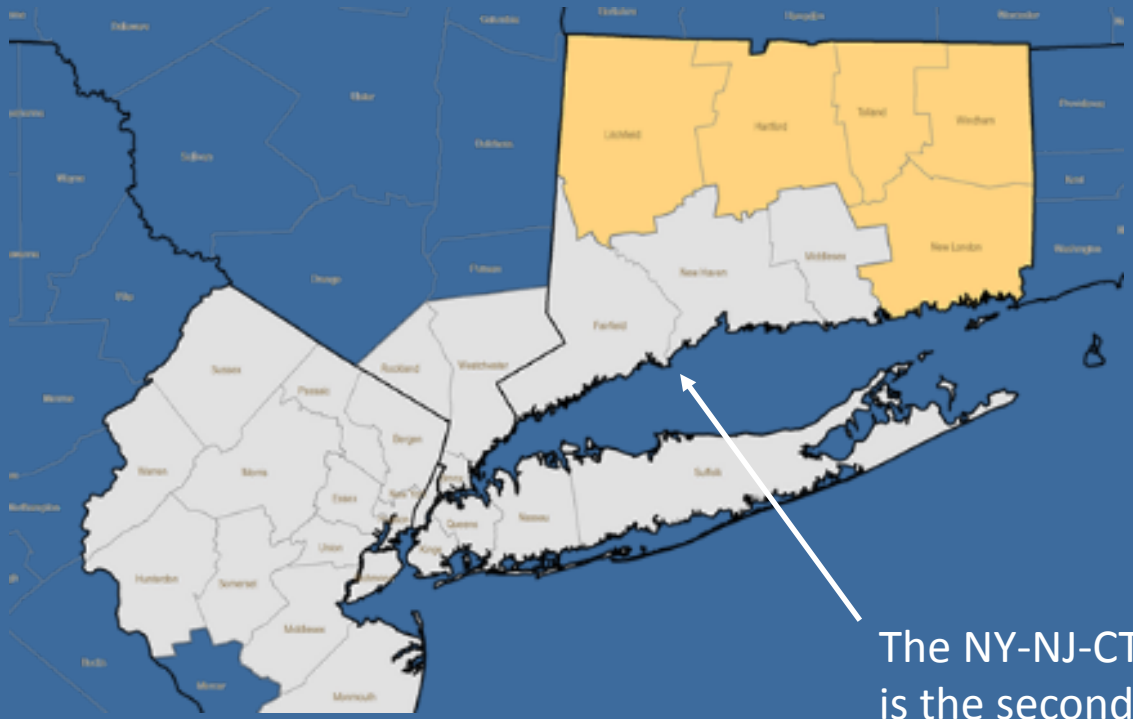
SIP Call for 1997 Standard

Additionally the Southwest area is required to address a SIP call for the 1997 standard.

(This was also finalized in the same action which bumped the Connecticut nonattainment areas up to moderate, 81 FR 26697)



This action was taken bc our Clean Data Determination (CDD) was revoked due to these violations of the 1997 standard.



The NY-NJ-CT Attainment Demonstration is the second of two. It covers the 3 counties to the Southwest: Middlesex, New Haven and Fairfield.

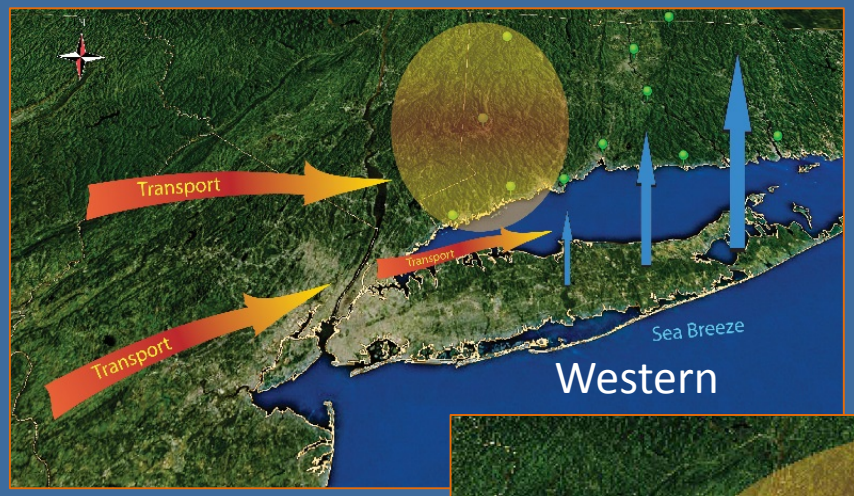
The first, Greater Connecticut, was noticed and submitted this past January.

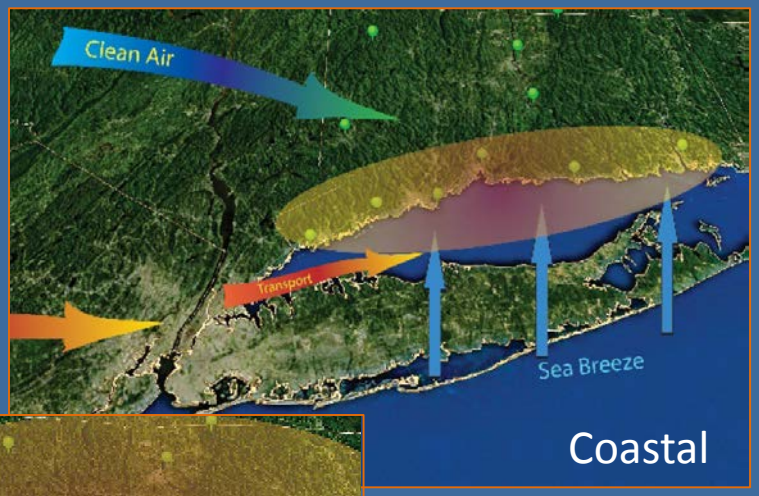
The Required Elements

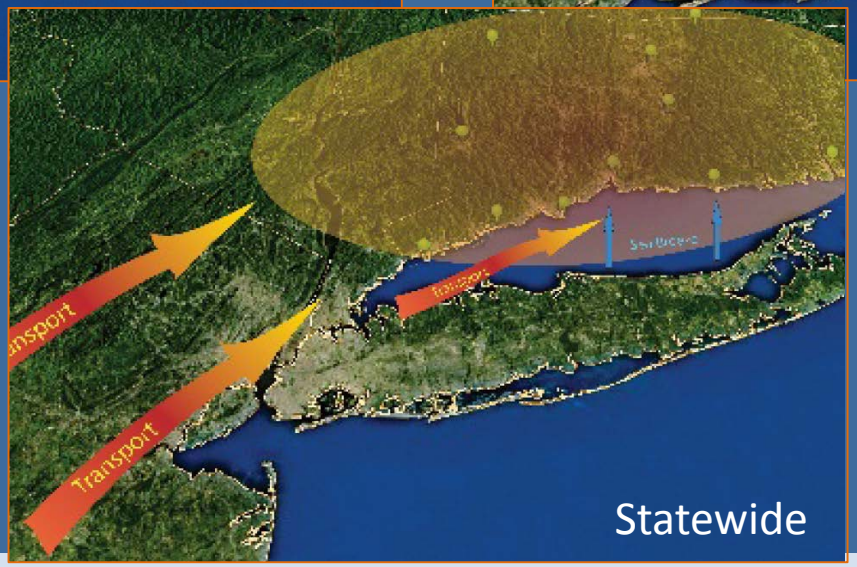
- Conceptual Model– A description/analysis of the problem.
- Base and Future Year Inventories *(2011 and 2017)*
- Reasonable Further Progress Goals and Demonstration *(15% Emissions Reduction by 2017)*
- Reasonably Available Control Technology/Reasonably Available Control Measure (RACT/RACM) Analysis
- Photochemical Modeling Demonstration
- Transportation Conformity -> Motor Vehicle Budgets
- Contingency Plans (*Additional 3% emissions reductions required if an area fails to meet RFP goals* ***or*** *if an area fails to attain)*

The Conceptual Model

Three Types of Southwest Connecticut Exceedances:

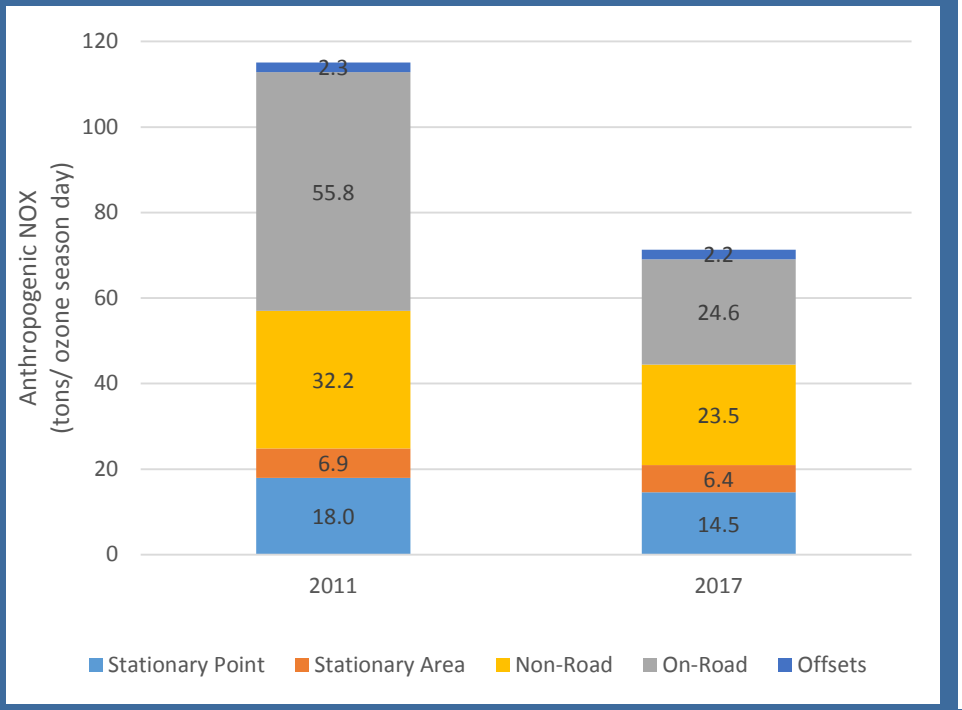


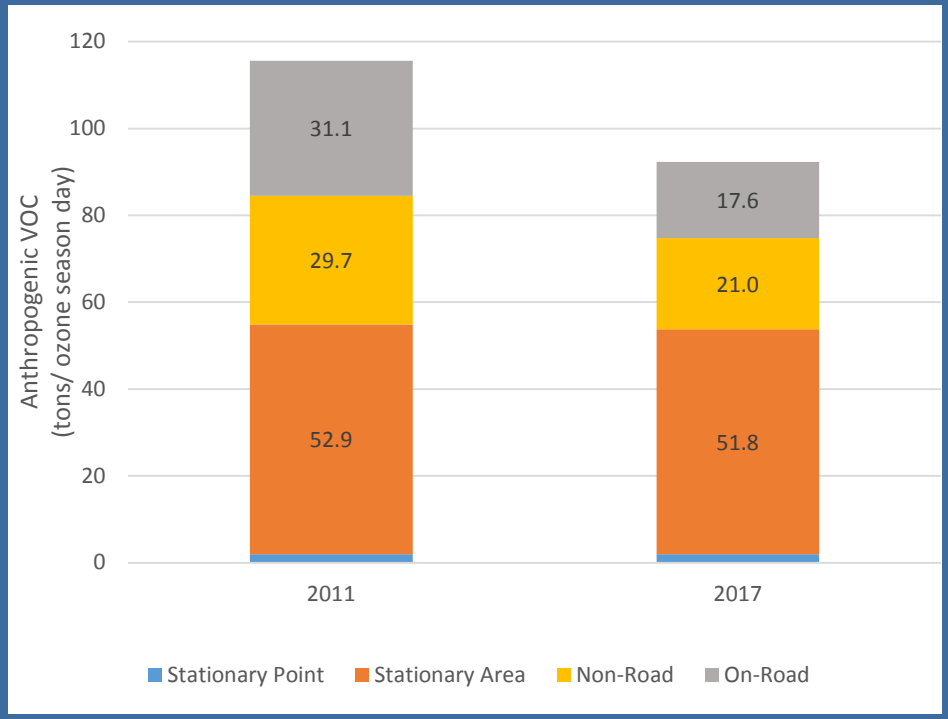




Base and Future Year

Emissions for the Southwest CT Area will have large reductions between 2011 and 2017. These reductions are driven primarily by the mobile sector.





In excess of the required RFP (15%), thus the RFP requirement is fulfilled..
Excess will be used to cover the contingency requirements

Motor Vehicle Emissions Budgets

Southwest Connecticut Budgets

Pollutant	Southwest Connecticut MVEB (tons per summer day)	
	2009*	2017
VOC	27.4	17.6
NOx	54.6	24.6

*These values were the last set of budgets established for the 1997 standard.

Strategies and Controls in the modeling.

On-Road:

- Tier 1 Vehicle Standards
- Reformulated Gasoline
- On-Board Vapor Refueling
- National Low Emission Vehicle Program
- Tier 2 MV Controls/30 ppm Sulfur Gasoline
- Heavy-Duty Diesel Vehicle Controls and Fuels
- CT OBD-II Enhance I/M Program
- 2007 High Motorcycle Emissions standards
- CT LEV2
- CT LEV3
- Tier 3 Vehicle Standards/10 ppm Sulfur Gasoline

Non-Road:

- Compression Ignition Diesel Engines Tier 1-4
- Spark Ignition Engines
  - Phase I SI Engines <25HP
  - Phase II Non- Handheld SI Engines
  - Phase II Handheld SI Engines
  - Gasoline SI Marine Engines
  - Large Spark Engines
  - Rec. Land Based Spark Engines
- Marine Diesel
  - APPS
  - Commercial Marine Vehicles
  - Recreational Equipment
  - Marine Diesel Engines
  - Spark engines
- Locomotives
  - New and Remanufactured Locomotives
  - Non-Road Diesel Fuel
  - Aircraft 1-3

Stationary and Area:

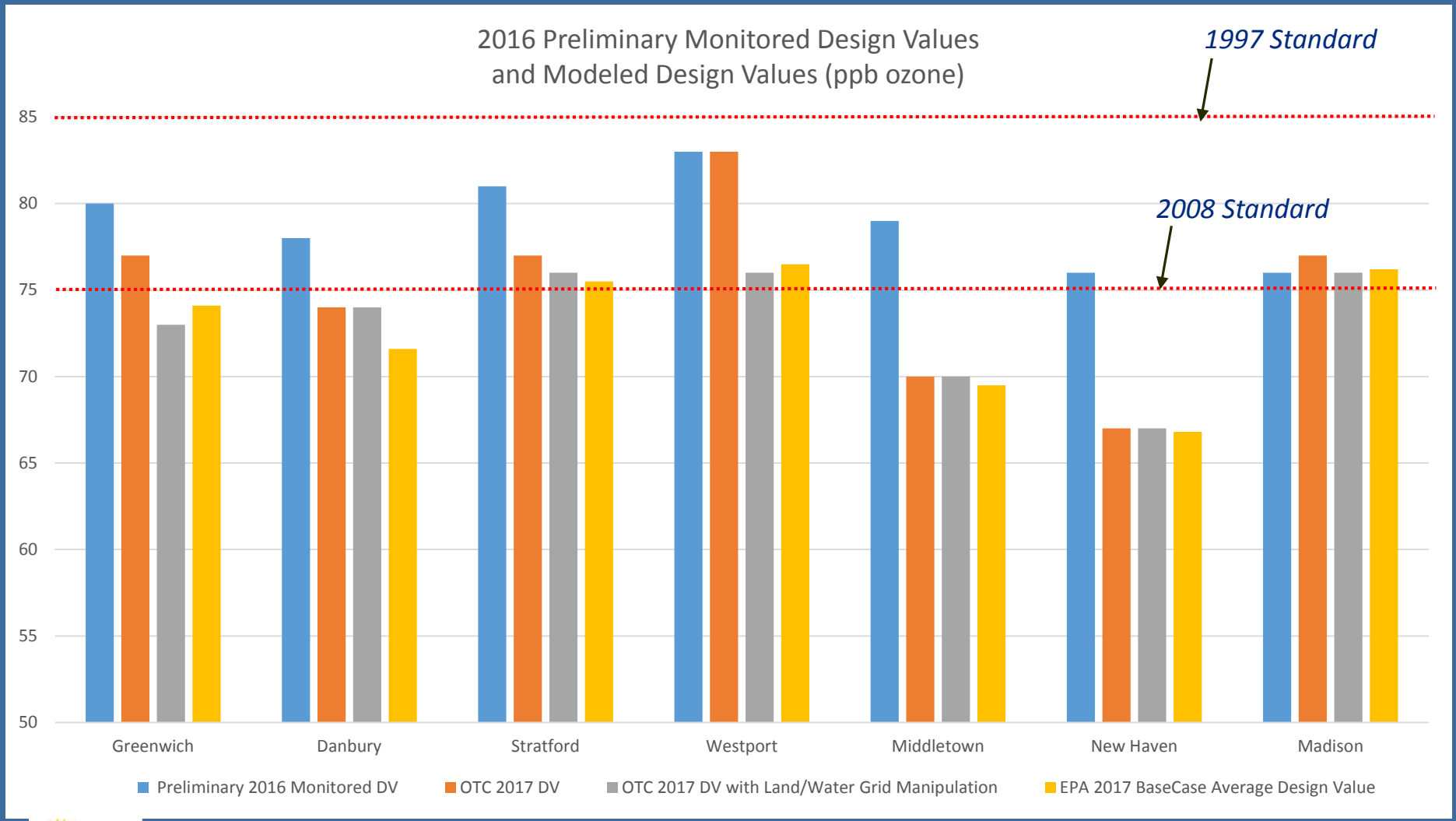
- CSAPR (Upwind areas- Does not apply to CT)
- RICE NESHAP
- ICI Boilers and Process Heater MACT
- Mercury and Air Toxics Standards
- Portable Fuel Container Rule
- Metal Furniture Coating
- Paper Film and Foil Coating
- Flexible Package Printing
- Offset Lithographic and Letter Press Printing
- Large Appliance Coating
- Industrial Solvent Cleaning
- Spray application equipment cleaning
- Misc Metal and Plastics Parts Coating
- Pleasure Craft Coating
- Above ground Storage Tanks
- Stage I
- Sulfur Limits for heating oil

Additional Strategies/Controls…

- Municipal Waste Combustor (MWC) Revisions
- Architectural Coatings Update
- Control of NOx from major sources (22e and 22f)
- Electric Vehicle Memorandum of Understanding
- Consumer Products Update
- CSAPR Update from upwind states
- CSAPR Full Remedy/Complete Good Neighbor SIPs

..not accounted for in the modeling but needed.

Modeling Indicates Nonattainment



The Monitoring: Does it Support the Modeling?

For the Southwest Connecticut Area the analyses indicated that it is:

- Unlikely the area will meet the 2008 NAAQS
- But likely the area will meet the 1997 NAAQS

As of May 19th we already exceeded this

Monitor Site	2011 4th-High Ozone Value (ppb)	2012 4th-High Ozone Value (ppb)	2013 4th-High Ozone Value (ppb)	2014 4th-High Ozone Value (ppb)	2015 4th-High Ozone Value (ppb)	2016 4th-High Ozone Value* (ppb)	Max 2017 4th-High Ozone Value That Produces a Compliant 2017 Design Value for the 2008 Standard (ppb)	Max 2017 4th-High Ozone Value That Produces a Compliant 2017 Design Value for the 1997 Standard (ppb)
Greenwich	81	88	82	78	84	79	64	91
Danbury	83	84	76	74	79	81	67	94
Stratford	87	90	90	74	86	83	58	85
Westport	87	89	86	81	87	81	59	86
Middletown	80	81	82	80	78	80	69	96
New Haven	80	81	75	72	81	75	71	98
Madison	92	90	85	69	81	80	66	93

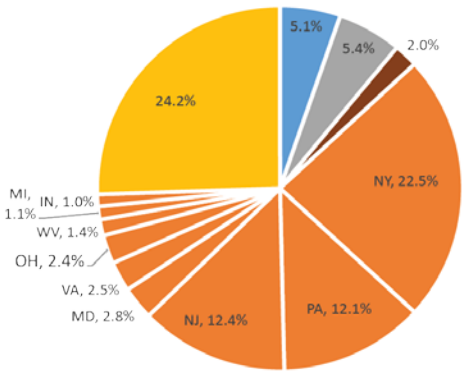
In short yes; both monitoring and modeling indicate same attainment status for each standard.

Attainment Depends on Complete Good Neighbor SIPs

EPA's Final CSAPR Update Modeling for the 2008 Ozone NAAQS

Connecticut Contribution | ≥ 0.75 ppb Contributing States | <0.75 ppb Contributing States | Bio and Fire | Initial and Boundary Conditions

Westport

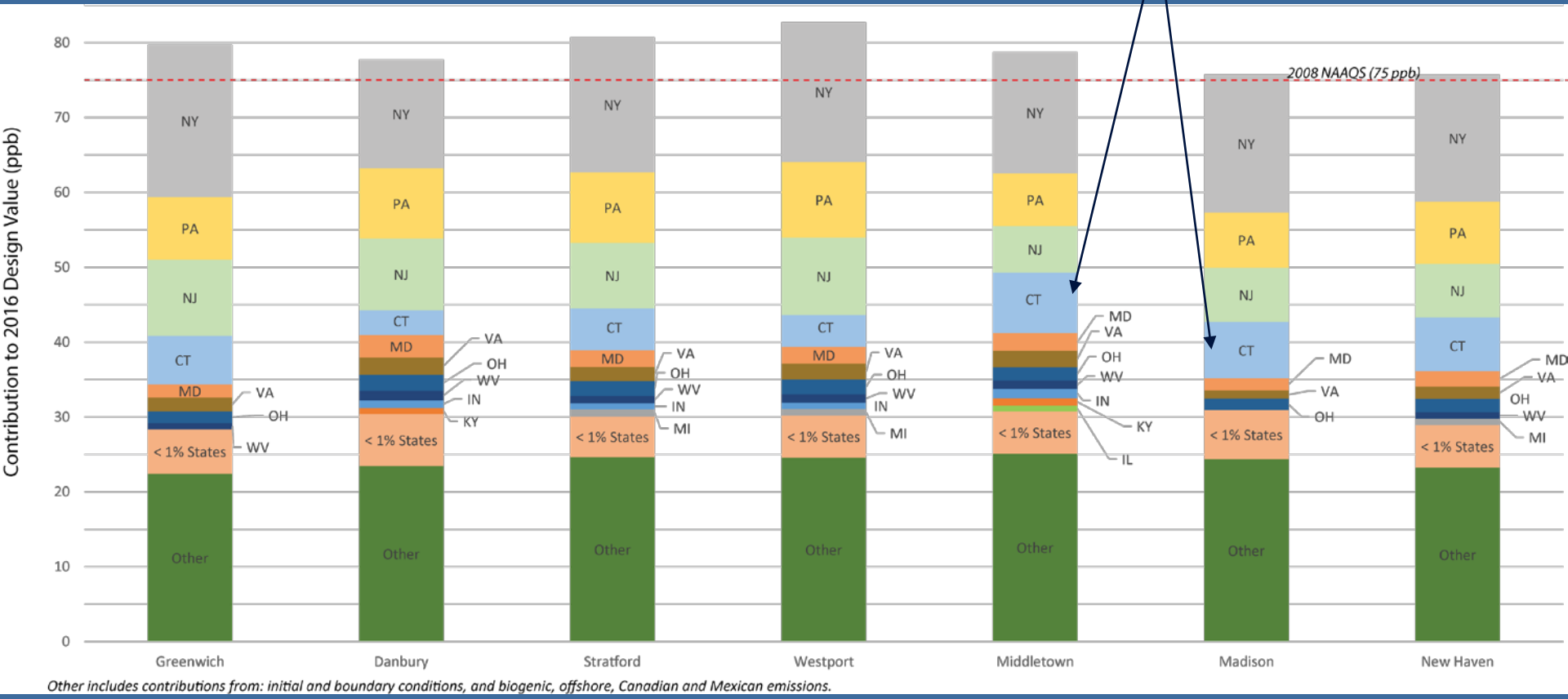


Contributions applied to the 2016 Design Value (ppb)						
Preliminary 2016 Design Value	Connecticut Contribution	≥0.75 ppb State's Contribution	<0.75 ppb State's Contribution	Bio and Fires	Initial and Boundary Conditions*	Remaining Design Value if CT shut off ***every*** source
83	4.2	48.3	5.6	4.5	20.1	78.8

**Initial and Boundary Conditions also includes Mexico, Canadian and Offshore Contributions*

In-State Reductions May Be Necessary

CT sources play a bigger role in inland and eastern sites….



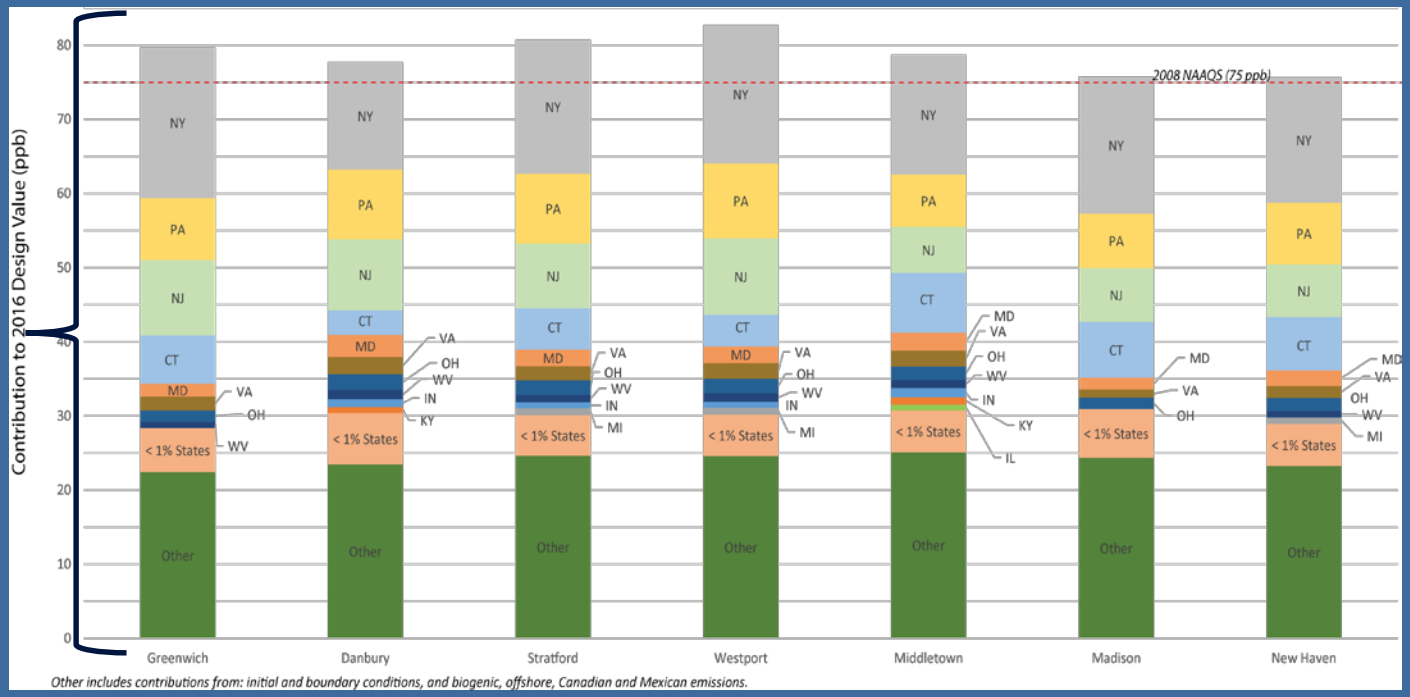
Other includes contributions from: initial and boundary conditions, and biogenic, offshore, Canadian and Mexican emissions.

Remember: CT also has to address the 2015 Standard.

Contributions

Connecticut has analyzed the available contribution modeling to assess a better way to address transport.

How do we shrink this?



What if scenarios

Scenario 1 – applying the 1% threshold to nonattainment monitors

Table 9-5. Scenario 1
Impacts from significantly contributing upwind states are reduced to the EPA-defined 1% significance level

	Southwest CT Monitor (ppb)						
Contributor	**Westport**	**Greenwich**	**Danbury**	**Stratford**	**Middletown**	**Madison**	**New Haven**
NY	0.75	0.75	0.75	0.75	0.75	0.75	0.75
NJ	0.75	0.75	0.75	0.75	0.75	0.75	0.75
PA	0.75	0.75	0.75	0.75	0.75	0.75	0.75
CT	4.22	6.52	3.33	5.56	8.03	7.53	7.16
MD	0.75	0.75	0.75	0.75	0.75	0.75	0.75
VA	0.75	0.75	0.75	0.75	0.75	0.75	0.75
OH	0.75	0.75	0.75	0.75	0.75	0.75	0.75
WV	0.75	0.75	0.75	0.75	0.75	NA	0.75
MI	0.75	NA	NA	0.75	NA	NA	NA
IN	0.75	NA	0.75	0.75	0.75	NA	NA
KY	NA	NA	0.75	NA	0.75	NA	NA
IL	NA	NA	NA	NA	0.75	NA	NA
<0.75 ppb	5.6	5.89	7.77	5.46	6.4	6.57	6.55
Other	24.58	22.44	23.46	24.64	25.12	24.37	23.22
Resulting DV	**41**	**40**	**41**	**42**	**47**	**42**	**42**

Notes:
1) If a state's contribution is "NA", it is not significant for that monitor and its contributions are included in the <0.75ppb category.
2) "Other" includes Initial/Boundary Conditions, Biogenics, Off-shore Marine, Canada/Mexico, and Fires.

Reductions are to contributions not to emissions.

What if scenarios

Scenario 2 – applying the 25% reduction to top three contributors

Table 9-6. Scenario 2
25% reduction in contributions from NY, NJ and PA

	Southwest CT Monitor (ppb)						
Contributor	**Westport**	**Greenwich**	**Danbury**	**Stratford**	**Middletown**	**Madison**	**New Haven**
NY	14.01	15.23	10.9	13.53	12.15	13.84	12.71
NJ	7.75	7.6	7.17	6.55	4.67	5.44	5.34
PA	7.55	6.3	7.02	7.06	5.27	5.51	6.22
CT	4.22	6.52	3.33	5.56	8.03	7.53	7.16
MD	2.3	1.74	3.02	2.26	2.44	1.6	2.09
VA	2.08	1.86	2.26	1.9	2.16	1.11	1.64
OH	1.99	1.53	2.18	1.96	1.78	1.52	1.79
WV	1.13	0.89	1.25	1.01	1.11	NA	0.86
MI	0.91	NA	NA	0.92	NA	NA	NA
IN	0.82	NA	1.02	0.8	1.23	NA	NA
KY	NA	NA	0.81	NA	1	NA	NA
IL	NA	NA	NA	NA	0.77	NA	NA
<0.75 ppb	5.6	5.89	7.77	5.46	6.4	6.57	6.55
Other	24.58	22.44	23.46	24.64	25.12	24.37	23.22
Resulting DV	**68**	**70**	**63**	**67**	**66**	**62**	**62**

Notes:
1) If a state's contribution is “NA”, it is not significant for that monitor and its contributions are included in the <0.75ppb category.
2) “Other” includes Initial/Boundary Conditions, Biogenics, Off-shore Marine, Canada/Mexico, and Fires.

Reductions are to contributions not to emissions.

What if scenarios

Scenario 3 – applying the Min% reduction to top three contributors

Table 9-7. Scenario 3
Minimum contribution reduction needed from NY, NJ and PA to attain the 2008 NAAQS

Resulting Reduction = 18%

	Southwest CT Monitor (ppb)						
Contributor	**Westport**	**Greenwich**	**Danbury**	**Stratford**	**Middletown**	**Madison**	**New Haven**
NY	15.32	16.65	11.92	14.8	13.28	15.13	13.89
NJ	8.47	8.3	7.83	7.16	5.11	5.95	5.84
PA	8.26	6.89	7.67	7.72	5.76	6.03	6.8
CT	4.22	6.52	3.33	5.56	8.03	7.53	7.16
MD	2.3	1.74	3.02	2.26	2.44	1.6	2.09
VA	2.08	1.86	2.26	1.9	2.16	1.11	1.64
OH	1.99	1.53	2.18	1.96	1.78	1.52	1.79
WV	1.13	0.89	1.25	1.01	1.11	NA	0.86
MI	0.91	NA	NA	0.92	NA	NA	NA
IN	0.82	NA	1.02	0.8	1.23	NA	NA
KY	NA	NA	0.81	NA	1	NA	NA
IL	NA	NA	NA	NA	0.77	NA	NA
<0.75 ppb	5.6	5.89	7.77	5.46	6.4	6.57	6.55
Other	24.58	22.44	23.46	24.64	25.12	24.37	23.22
Resulting DV	**75**	**72**	**72**	**74**	**74**	**69**	**69**

Notes:
1) If a state's contribution is "NA", it is not significant for that monitor and its contributions are included in the <0.75ppb category.
2) "Other" includes Initial/Boundary Conditions, Biogenics, Off-shore Marine, Canada/Mexico, and Fires.

Reductions are to contributions not to emissions.

What if scenarios

Scenario 4 – applying the min% reduction to all significant contributors

Table 9-8. Scenario 4
Minimum contribution reduction needed from significantly contributing upwind states to attain the 2008 NAAQS (with 0.75 ppb floor limit)
Resulting Reduction = 14%

	Southwest CT Monitor (ppb)						
Contributor	**Westport**	**Greenwich**	**Danbury**	**Stratford**	**Middletown**	**Madison**	**New Haven**
NY	16.07	17.46	12.50	15.52	13.93	15.87	14.57
NJ	8.88	8.71	8.22	7.51	5.36	6.24	6.13
PA	8.66	7.22	8.05	8.09	6.04	6.32	7.13
CT	4.22	6.52	3.33	5.56	8.03	7.53	7.16
MD	1.98	1.49	2.60	1.95	2.10	1.37	1.80
VA	1.79	1.60	1.94	1.63	1.86	0.95	1.41
OH	1.71	1.32	1.87	1.69	1.53	1.30	1.54
WV	0.97	0.76	1.08	0.87	0.96	NA	0.75
MI	0.78	NA	NA	0.79	NA	NA	NA
IN	0.75	NA	0.88	0.75	1.06	NA	NA
KY	NA	NA	0.75	NA	0.86	NA	NA
IL	NA	NA	NA	NA	0.75	NA	NA
<0.75 ppb	5.6	5.89	7.77	5.46	6.4	6.57	6.55
Other	24.58	22.44	23.46	24.64	25.12	24.37	23.22
Resulting DV	**75**	**73**	**72**	**74**	**73**	**70**	**70**

Notes:
1) If a state's contribution is "NA", it is not significant for that monitor and its contributions are included in the <0.75ppb category.
2) "Other" includes Initial/Boundary Conditions, Biogenics, Off-shore Marine, Canada/Mexico, and Fires.

sions.

Conclusion

1997 NAAQS

- We are demonstrating we are meeting the SIP Call requirements for the 1997 Standard with this SIP submittal.
- We are demonstrating monitored attainment beginning in 2015 (if Exceptional Event is accepted) and by 2017 with modeling.

2008 NAAQS

- We have implemented the necessary strategies and reductions to meet RFP and the associated MVEBs.
- We have the required modeling, inventories etc.
- Attainment is only possible with a full remedy for the 110(a)(2)(D) aka “Good Neighbor Provisions” . Therefore, we ask EPA to deliver these overdue and necessary reductions.

Notice for Comments and Hearing

Coming soon! To be posted at the link below:

http://www.ct.gov/deep/cwp/view.asp?a=2684&q=585816&deepNav_GID=1619

Comments will be sent to:

Mail to: Kate Knight

Air Bureau 5th Floor

79 Elm St Hartford, CT 06106-4064

Email to: Kathleen.Knight@ct.gov