

# Modeling Committee Update

## OTC Committee Meeting

September 12<sup>th</sup>, 2013

Washington, DC



**OZONE**  
TRANSPORT  
COMMISSION

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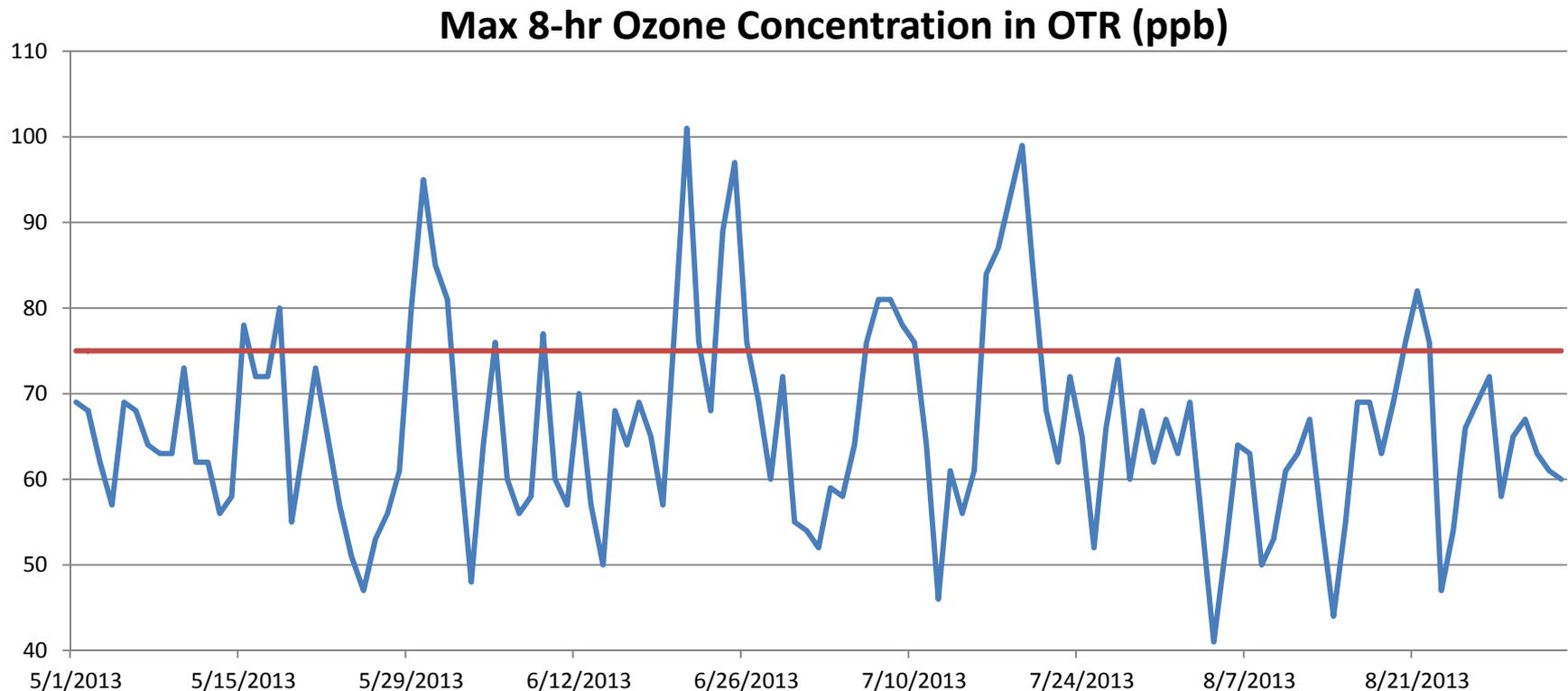
# Overview

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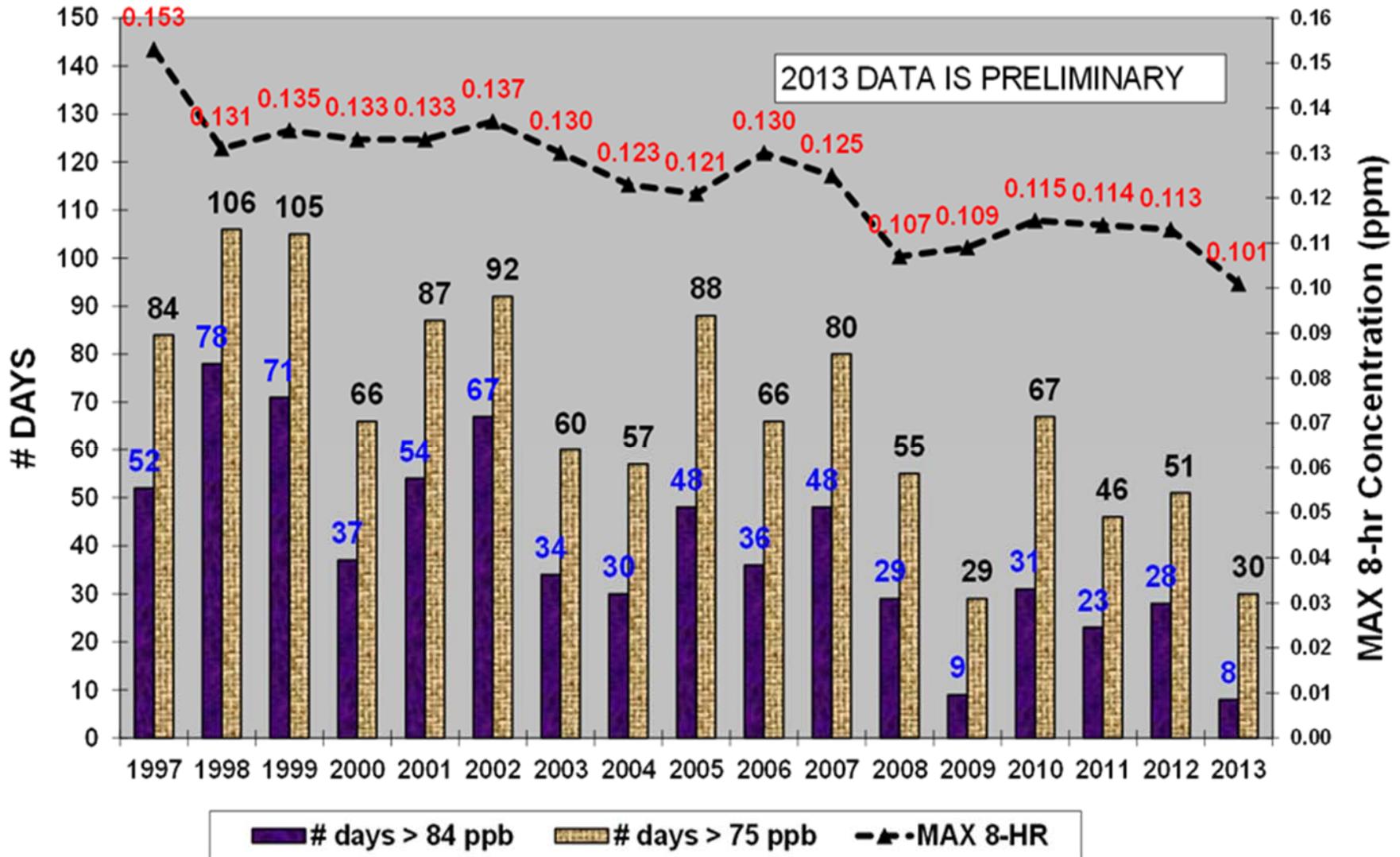
1. 2013 Ozone Season
2. Inter-Regional Technical Coordination
3. Level 3 Screening Runs
4. Emission Inventory Update

# 2013 OTR Ozone Season Review

- Much of the summer was cool and rainy
- Higher Ozone concentrations in the Northern OTR

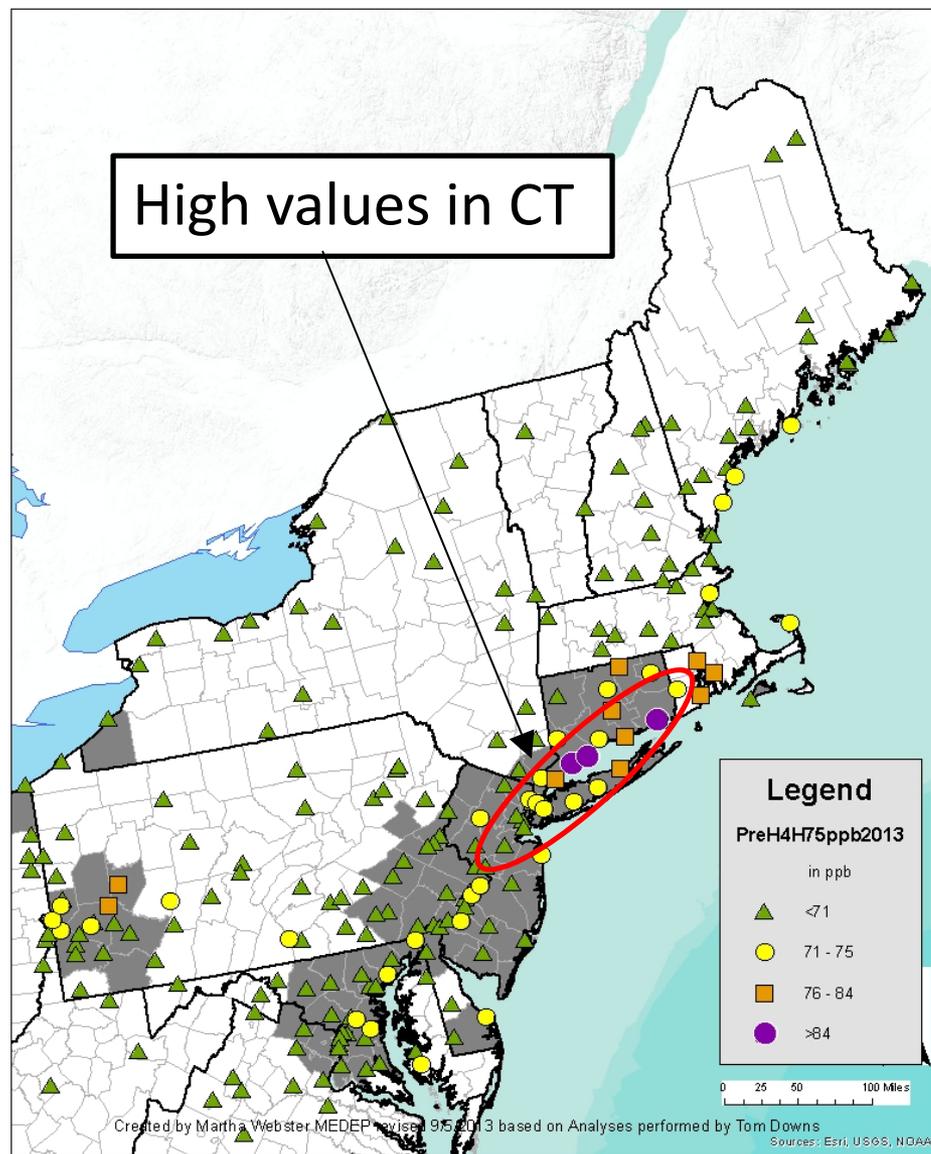
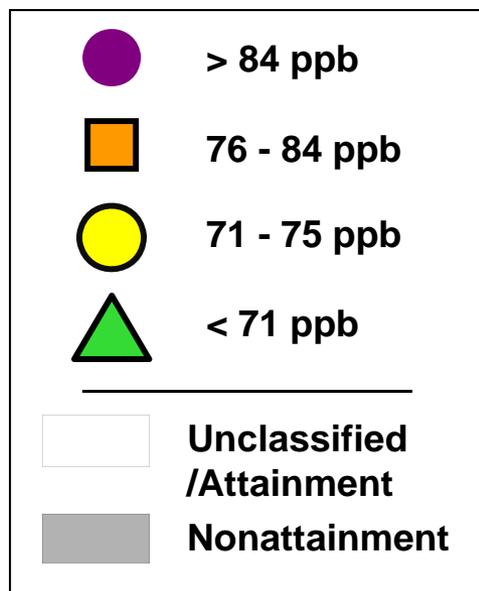


# Ozone Trend Days 1997-2013 (OTR)



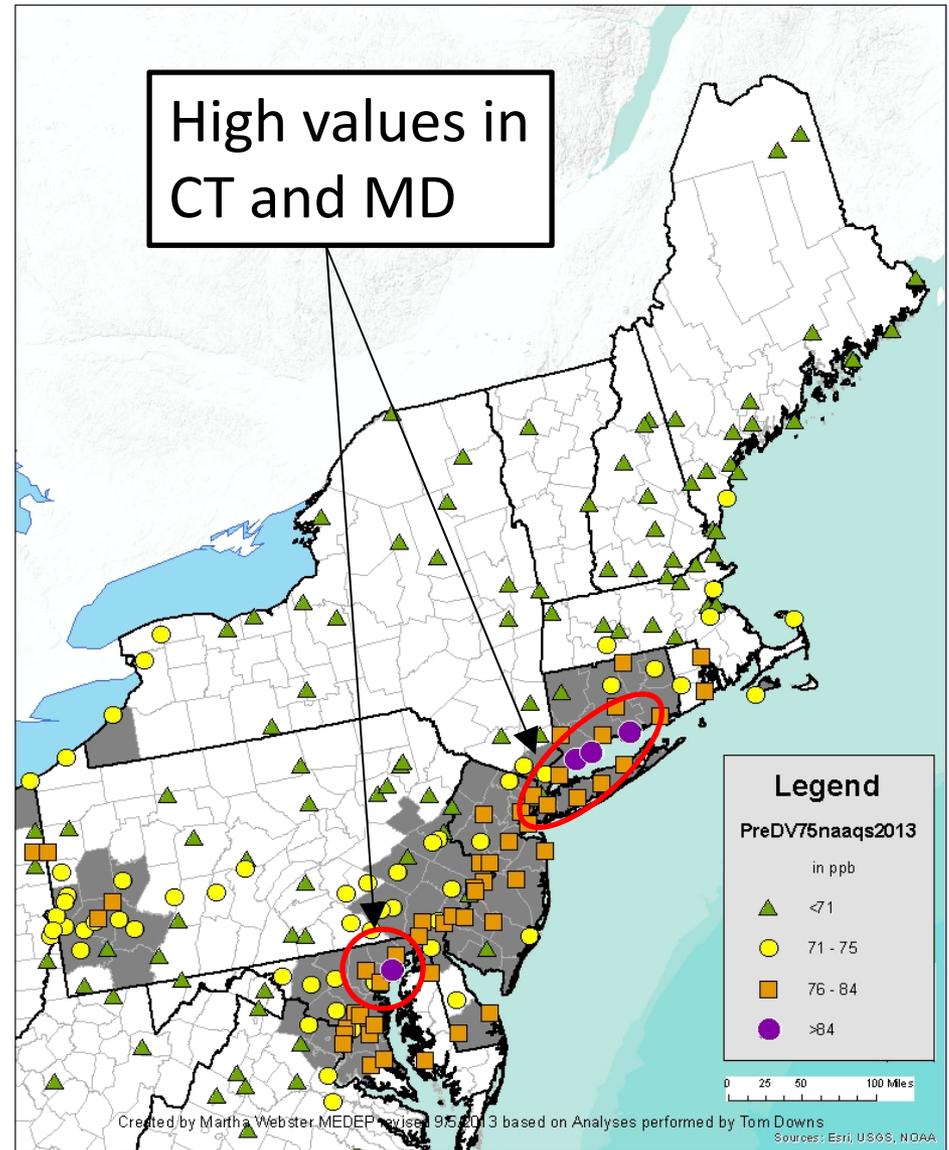
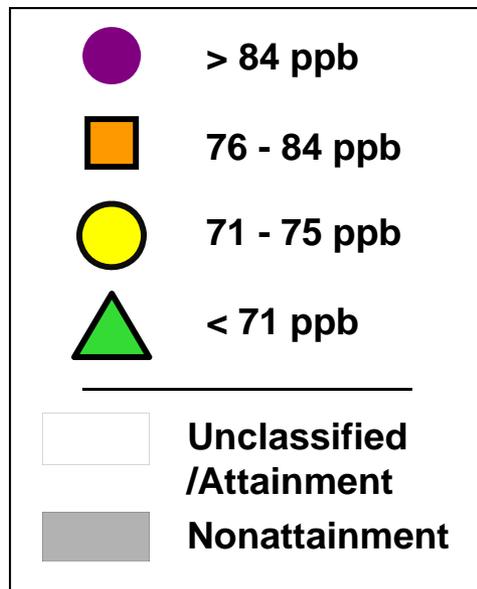
# Preliminary 2013 Ozone 4<sup>th</sup> 8-hr Highest Value

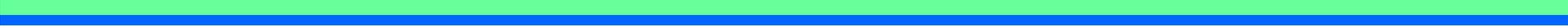
4<sup>th</sup> high concentration for 2013



# Preliminary 2013 Ozone Design Values

3-Year average of the 4<sup>th</sup> high concentration for 2011, 2012, 2013





# **Inter-Regional Technical Coordination**

# Inter-Regional Technical Coordination

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- Planning and Building of the  
    “Next Modeling Platform”
- Coordination with other regions, states, and EPA
  - Sharing ideas and data
  - Analysis of data
- Goals
  - Commonality of modeling data where ever possible
    - Modeling domain
    - Meteorology
    - Emission inventories

# Inter-Regional General Agreements

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2011 to be meteorological  
and emission inventory  
base year

Tentative projection years  
include 2018, 2020, and  
2028

WRF will be the model of  
choice for meteorological  
modeling

Tentative agreement on  
approximate modeling  
domain



# **Level 3 Screening Runs**

# OTC 2007 Platform Screening Modeling Schedule

Level 1 Screening  
(2007 Inventory & 2020 Control Scenario Using Proxies)

- Completed

Level 2 Screening  
(2007 Inventory & 2020 Control Scenario Using Proxies)

- Completed

Level 3A Screening  
(Near Complete 2020 Inventory + Variable Boundary Conditions)

- Completed

Level 3B Screening  
(Complete 2020 Inventory/Interpolated 2018 Inventory)

- For Fall 2013

SIP Quality

- For SIP submission deadline TBD

# Level 3B Modeling Runs

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## 1. Updated 2020 Base Case

- ERTAC EGU Emissions
  - Replacing OTC+VA, LADCO, and CENSARA emissions with ERTAC results
  - In the OTR+VA there is drop annual  $\text{NO}_x$  from 247,000 to 203,000 tons (~30,000 tons)
- Oil & Gas Estimate
- ICI Boiler Projections

## 2. 2018 Base Case

- ERTAC EGU Emissions
- Oil & Gas Estimate
- Interpolation for Other Sectors (Including ICI Boilers)



# **Emission Inventory Update**

# ICI Boiler Emissions Adjustments

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- Significant changes in the ICI sector from
  - Pressures of compliance with boiler MACT
  - Low costs of natural gas
- According to a study from the August 2013 CIBO meeting, a significant number of units are:
  - Retrofitting existing boilers with natural gas burners
  - Replacing boilers with new natural gas units

# ICI Boiler Emissions Adjustments

- In a study presented by Marshall:

	Percent of Units with Cost Effective Conversion	
	Burner Retrofit	Boiler Replacement
<b>All Units</b>	<b>94</b>	<b>75</b>
Coal Units	75	63
Residual Oil Units	97	85
Distillate Oil Units	100	91

*Source: Amy Marshall, URS Corporation, 2013*

# ICI Boiler Emissions Adjustments

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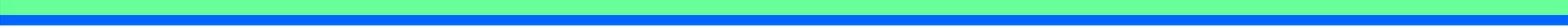
- Modeling Committee plans to use this study to better project 2020 base case ICI emissions
- Applying AP42 emission factors for fuel use before and after any applicable conversions, adjustment factors can be calculated
- Adjustment factors were generated by SCC code for use within the OTR
- Across the board adjustment factors were calculated for the LADCO, SESARM, and CENSARA regions based on their ICI unit population

# ICI Boiler Emissions Adjustments

- Application of ICI emission adjustments produce the following 2020 base case emission changes to the OTC modeling domain

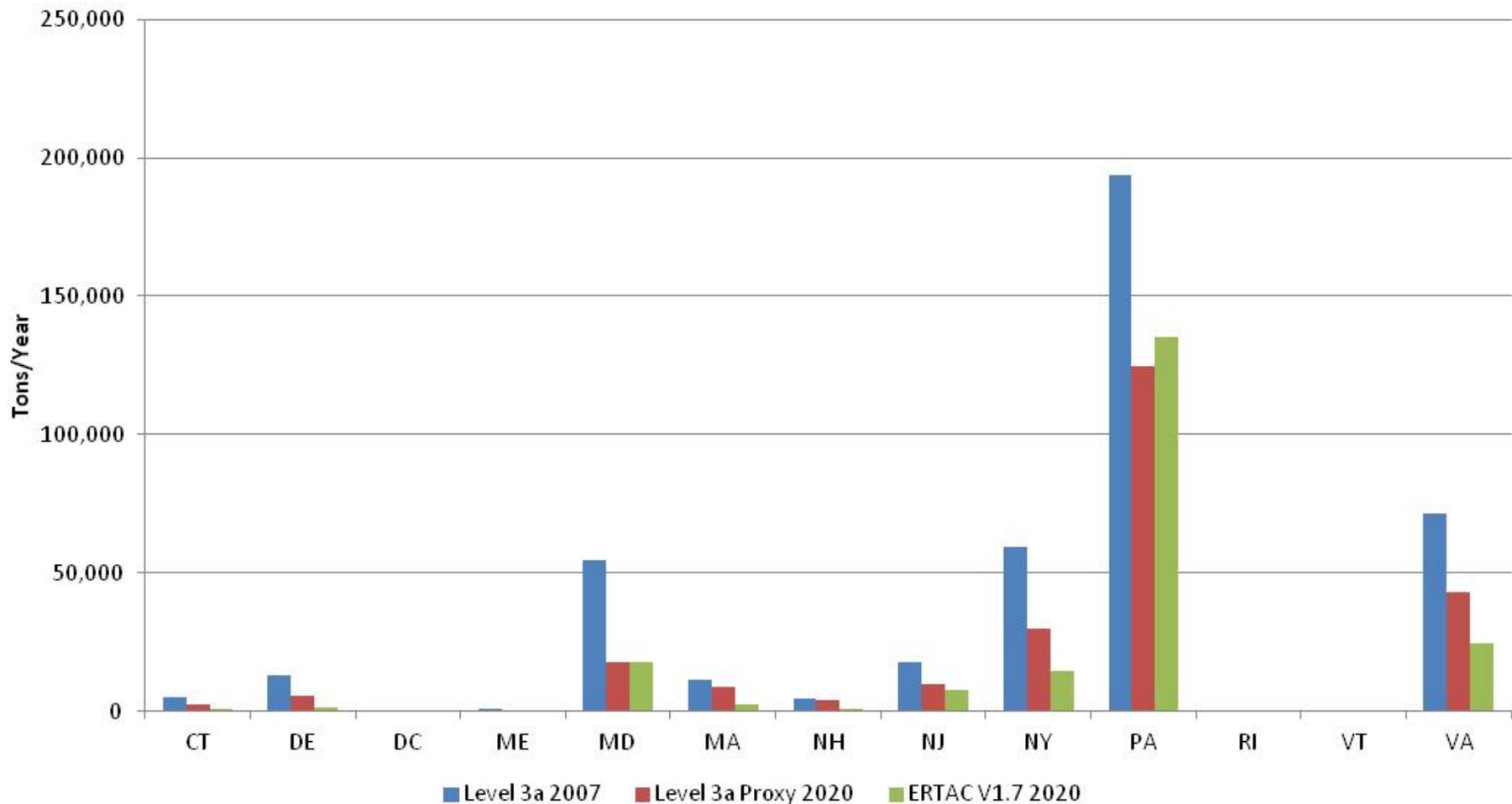
## Percent Reduction (%)

	ICI Unit Emissions	Total Emissions
NO <sub>x</sub>	52	2.3
SO <sub>2</sub>	76	13.8
Direct PM <sub>2.5</sub>	82	3.5



# **More on Emission Inventories**

# EGU Emissions Comparison - NO<sub>x</sub> Proxy versus ERTAC EGU (OTR & VA)

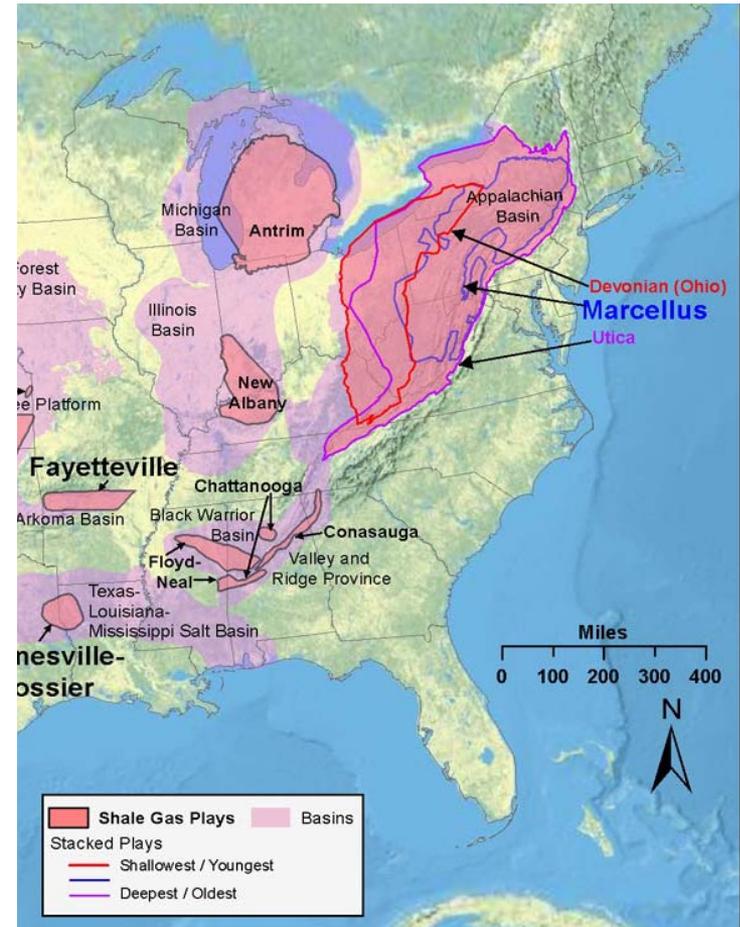


# Preparation of Oil & Gas Emissions for the 2011 NEI

New EPA Oil & Gas Tool  
MARAMA worked with  
WV, MD, PA, NY & OH  
to adapt the tool

States submitted O&G  
emissions estimates of  
to USEPA in April 2013

Expect first draft of NEI  
2011 for O & G sector at  
the end of September



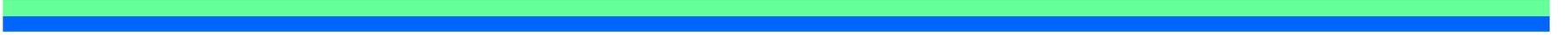
# Marcellus Shale Oil & Gas Development & Production

2007 - Assume no activity & therefore no emissions

2020 – PA, WV and NY calculated emissions prepared for NEI 2011 added to 2020

**State Prepared Oil & Gas Inventory Submitted to USEPA for the 2011 Inventory**

	CO	NOX	VOC	SO2	PM10	PM2_5
State	[tons/yr]	[tons/yr]	[tons/yr]	[tons/yr]	[tons/yr]	[tons/yr]
New York	747	605	8,205	95	17	17
Pennsylvania	34,198	40,563	18,607	1,952	1,581	1,507
West Virginia	34,355	30,207	42,593	2,643	1,102	1,101
<b>Total</b>	<b>69,300</b>	<b>71,375</b>	<b>69,405</b>	<b>4,690</b>	<b>2,701</b>	<b>2,625</b>



# Questions

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