



Meeting the New Ozone Standard: Challenges & Opportunities

Anna Garcia

July 17, 2008

Topics

- OTC Background
- NAAQS Background
- Air Quality Challenges
 - Regional transport of pollutants
 - Climate and air quality interaction
 - New ozone standard
- Opportunities for Energy Efficiency & Clean Energy

OTC Background



- OTC was created under the Clean Air Act Amendments of 1990 and has been coordinating regional planning and control measure development
- States submitted plans (SIPs) for 2005 attainment with the 1-hour standard that actually worked !!!
- SIPs for attaining the new, tougher ozone standard by 2010 are finalized and submitted
- OTC is beginning work on regional strategies for the new ozone standard

NAAQS Background

- The Clean Air Act Amendments of 1990 requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to human health and the environment
 - Primary standards set limits to protect public health
 - Secondary standards set limits to protect public welfare
- EPA has set NAAQS for 6 criteria pollutants: carbon monoxide, lead, nitrogen dioxide, PM10, PM 2.5, ozone and sulfur dioxide
- EPA is required to review the NAAQS at 5-year intervals and revise them as may be appropriate
 - Must consider the recommendations of an independent review committee, the Clean Air Scientific Advisory Committee (CASAC)
 - EPA must explain any differences between the proposed/final NAAQS and the CASAC recommendation in its rulemaking

New and Newer NAAQS & Other Requirements

- 1997 8-hr ozone NAAQS = 0.084 ppm
- 1997 Annual PM 2.5 NAAQS = 15 $\mu\text{g}/\text{m}^3$
- 2006 24-hr PM 2.5 NAAQS = 35 $\mu\text{g}/\text{m}^3$
- 2006 24-hr PM 10 NAAQS = 150 $\mu\text{g}/\text{m}^3$
- 2008 8-hr ozone NAAQS = 0.075 ppm
- Secondary standards for ozone and PM are the same as the primary standards

Control Programs for 2010 Ozone Attainment

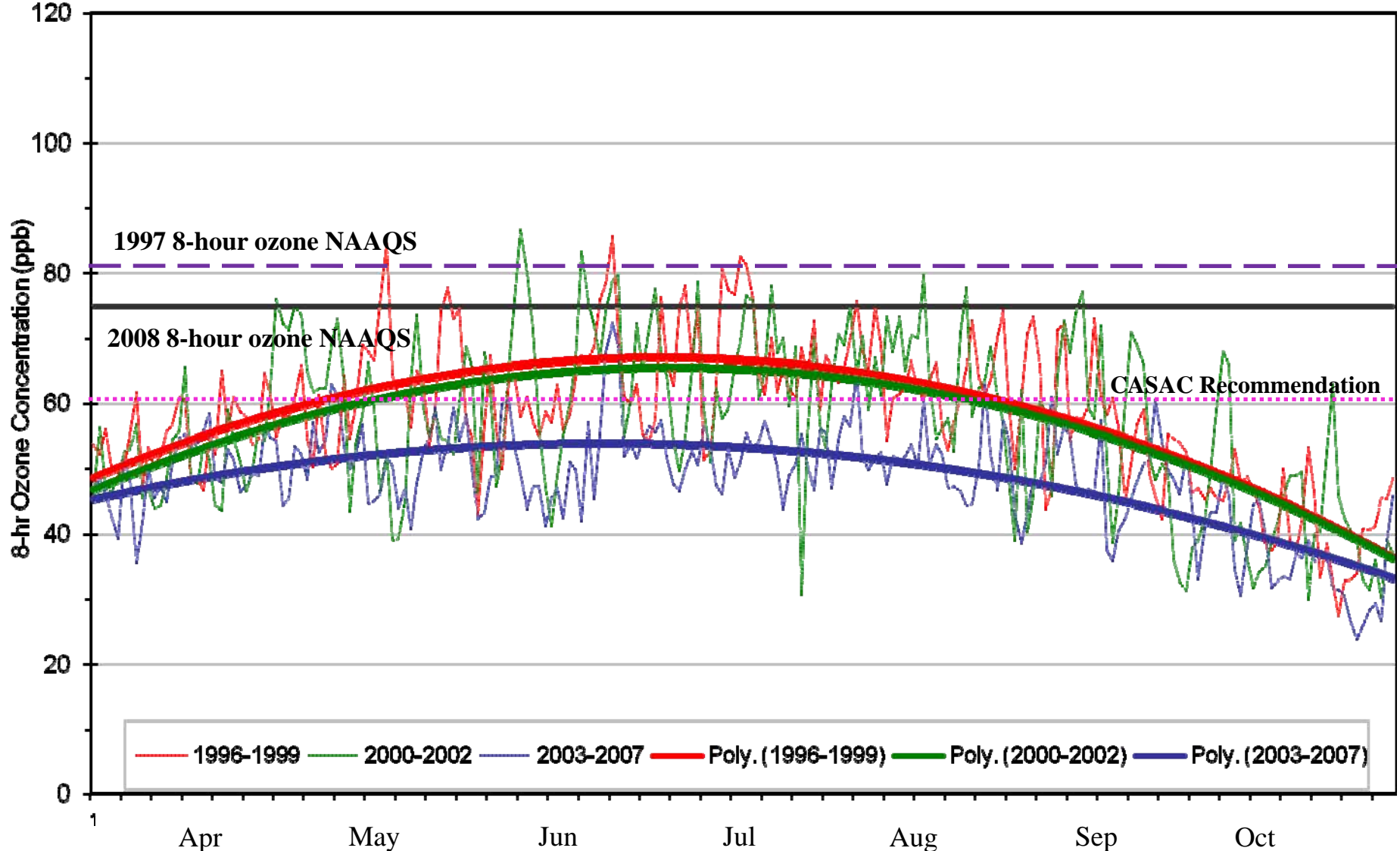
- Old and new control programs both contribute considerably towards 2010 attainment
- Older programs - “On The Books” or “On The Way”
 - State and federal mobile source controls, earlier NO_x controls at EGUs, NO_x and VOC RACT, earlier efforts on consumer products, coatings, gas cans, other area sources, etc., etc., etc.
- More recent programs
 - State Multi-P EGU control programs and CAIR
 - 2nd, sometimes 3rd ratcheting down of consumer products, coatings and gas can controls
 - Industrial, commercial and institutional (ICI) boilers, asphalt, cement and glass manufacturing
 - Paving and other amended VOC rules.
 - Non-traditional efforts like the High Electricity Demand Day (HEDD) Program and voluntary local efforts

Air Quality Challenges for States

- Regional Transport
 - Ozone is still a regional issue
 - Critical need for more aggressive controls to reduce transport under new standard
- Intersection between climate change and ozone: dealing with the “climate penalty”
 - Means having to do more to get to same amount of air quality improvement as compared to past
- New NAAQS for Ozone
 - How & where to get more emissions reductions in the OTR
 - States’ ability to address some source sectors, e.g., mobile, very limited

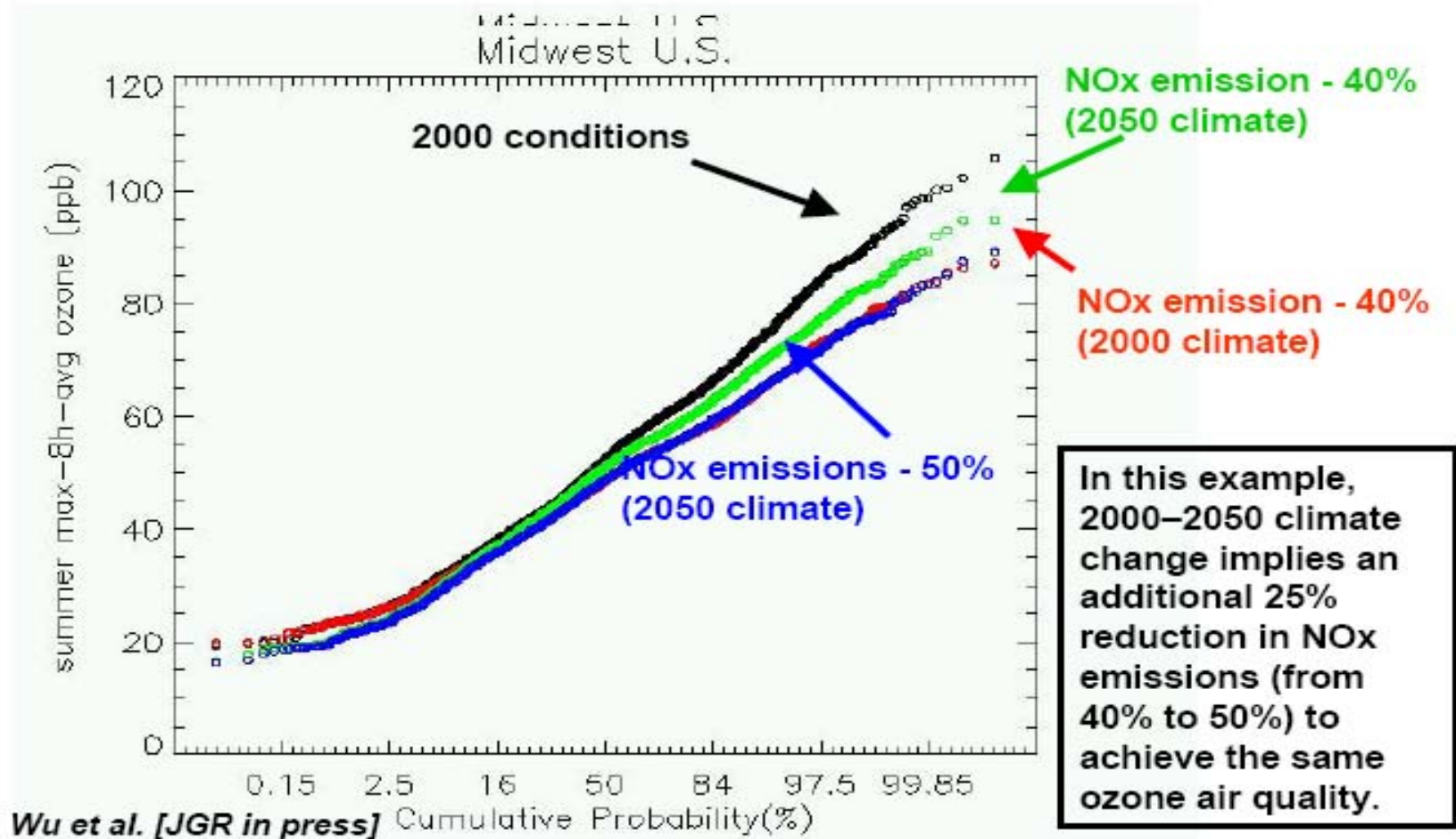
Elevated Reservoir Effect from Transport (1996-2007)

Average of Daily Peak 8-hour Ozone by Period (Methodist Hill, PA - 420550001)



Temperature and Air Quality

CLIMATE CHANGE PENALTY: MEETING A GIVEN AIR QUALITY GOAL WILL REQUIRE GREATER EMISSION REDUCTIONS IN FUTURE CLIMATE



New National Ozone Standard

- Recent studies show significant health impacts at lower ambient concentrations of ozone
- EPA strengthened the 8-hour primary ozone standard to 0.075 ppm (previously 0.08 ppm)
- Secondary standard same as primary
- Will effect many new locations
 - Presents new challenges in new areas
 - Requires another round of attainment planning

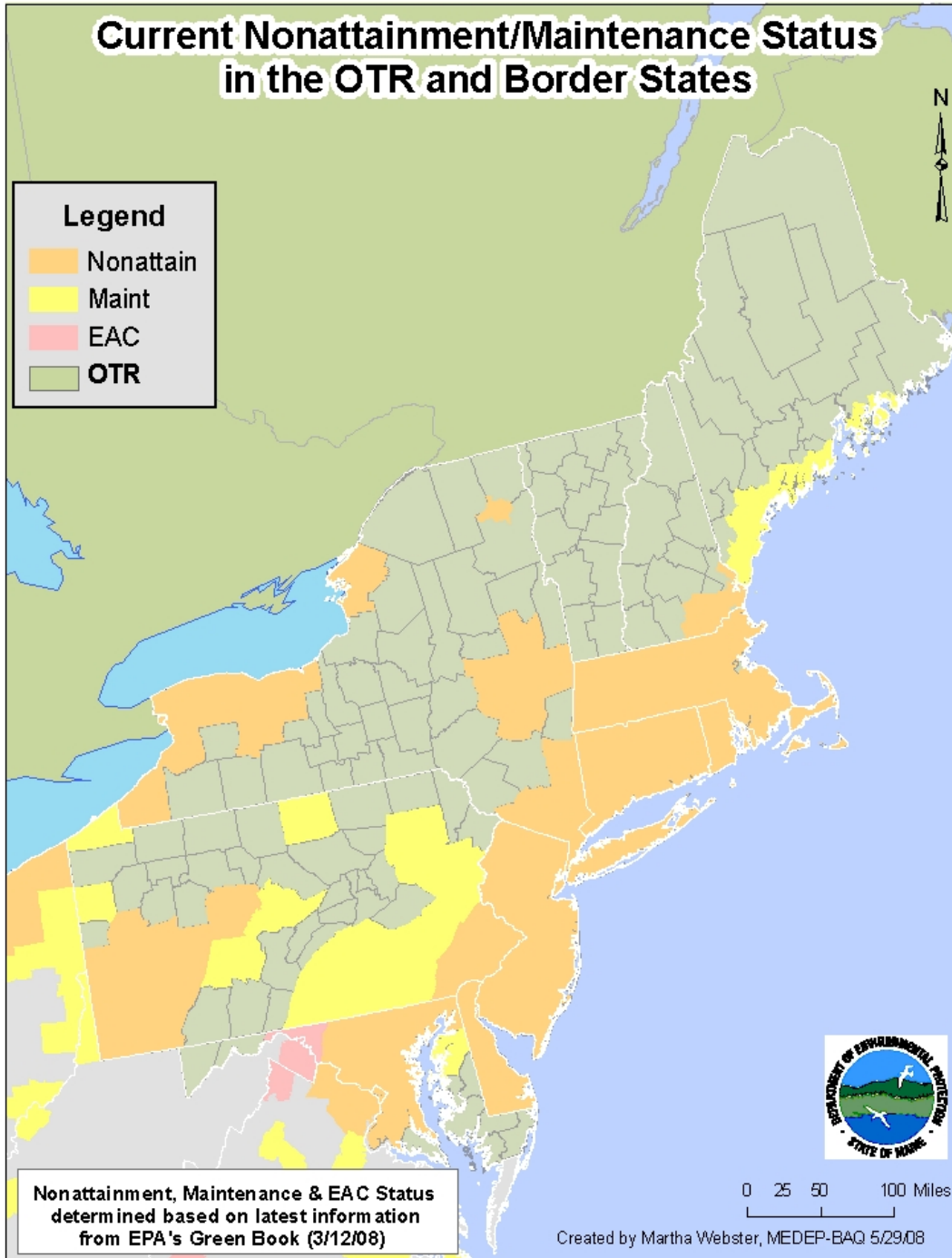
CASAC Recommendation

- Scientists advised EPA set ozone NAAQS at a level between 0.060 – 0.070 ppm
- Many OTC states pushed for the ozone NAAQS to be set in accordance with the CASAC recommendation
- EPA's decision foregoes substantial health benefits
 - A recent study co-funded by OTC and NESCAUM show between \$300 M - \$1.4 B in potential health benefits from a 0.070 ppm ozone NAAQS

Current Nonattainment/Maintenance Status in the OTR and Border States

Legend

- Nonattain
- Maint
- EAC
- OTR



Nonattainment, Maintenance & EAC Status
determined based on latest information
from EPA's Green Book (3/12/08)

Created by Martha Webster, MEDEP-BAQ 5/29/08

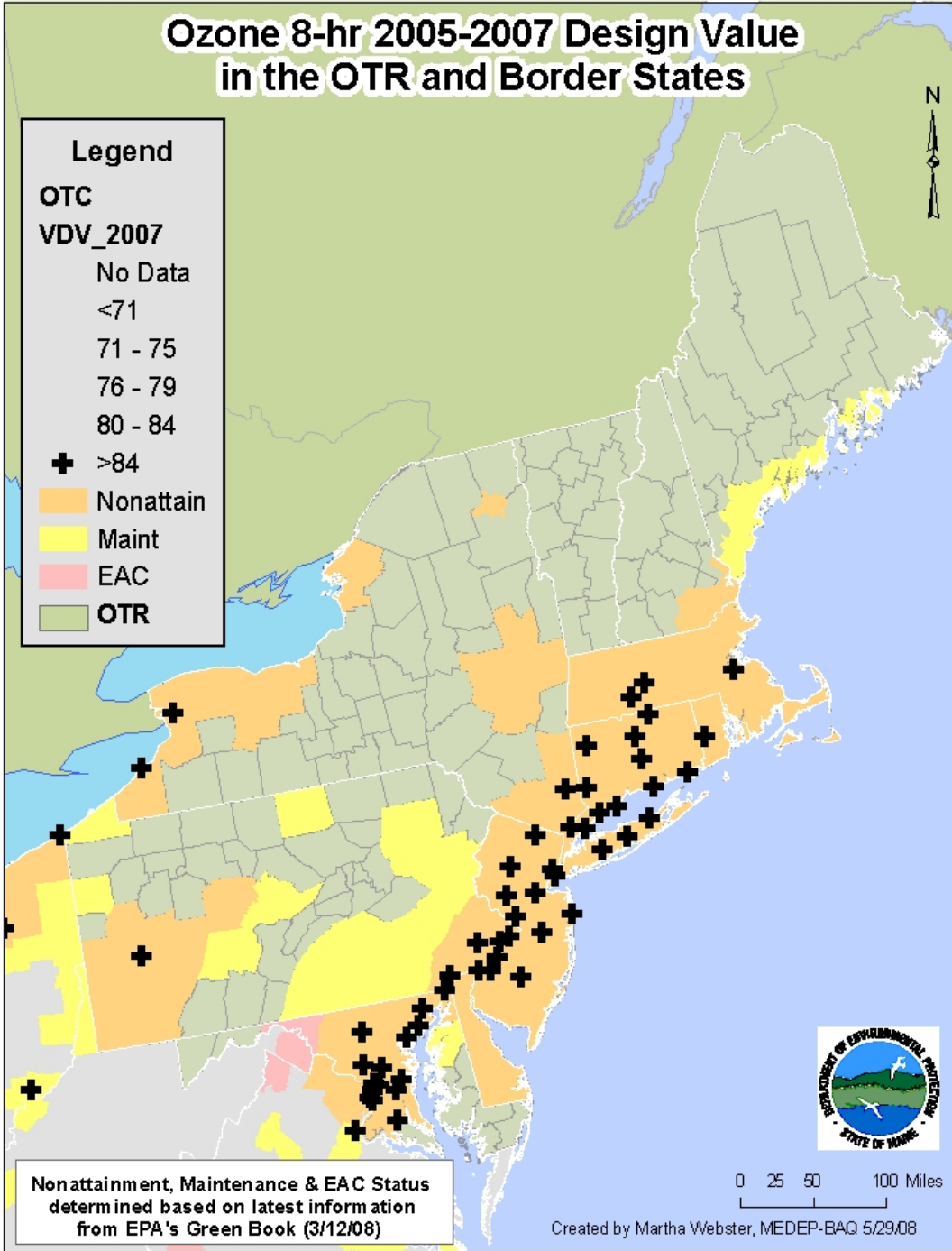
Ozone 8-hr 2005-2007 Design Value in the OTR and Border States

Legend

OTC
VDV_2007

- No Data
- <71
- 71 - 75
- 76 - 79
- 80 - 84
- + >84

Nonattain (Orange)
Maint (Yellow)
EAC (Pink)
OTR (Green)



Nonattainment, Maintenance & EAC Status
determined based on latest information
from EPA's Green Book (3/12/08)



0 25 50 100 Miles

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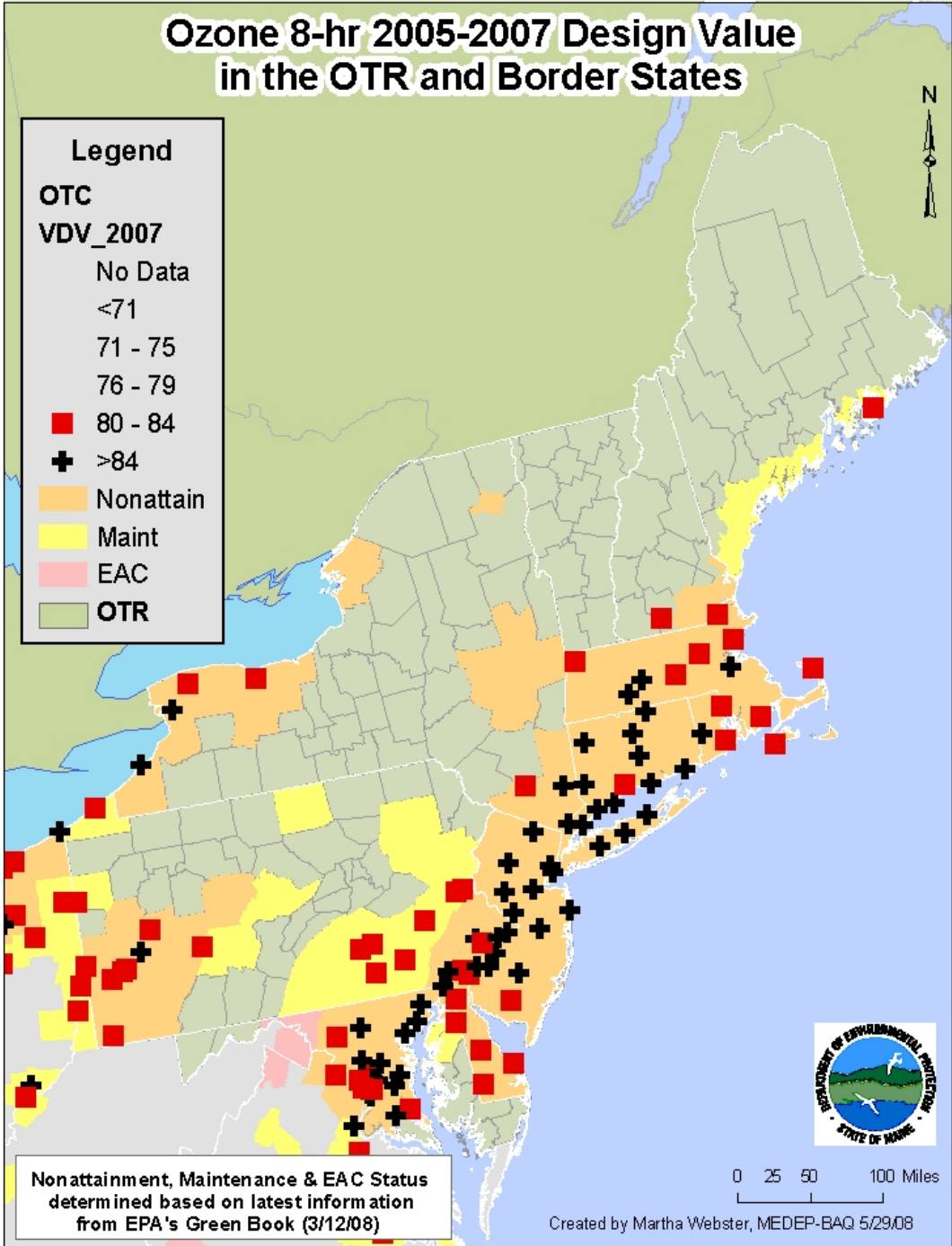
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VDV_2007

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Nonattain
Maint
EAC
OTR



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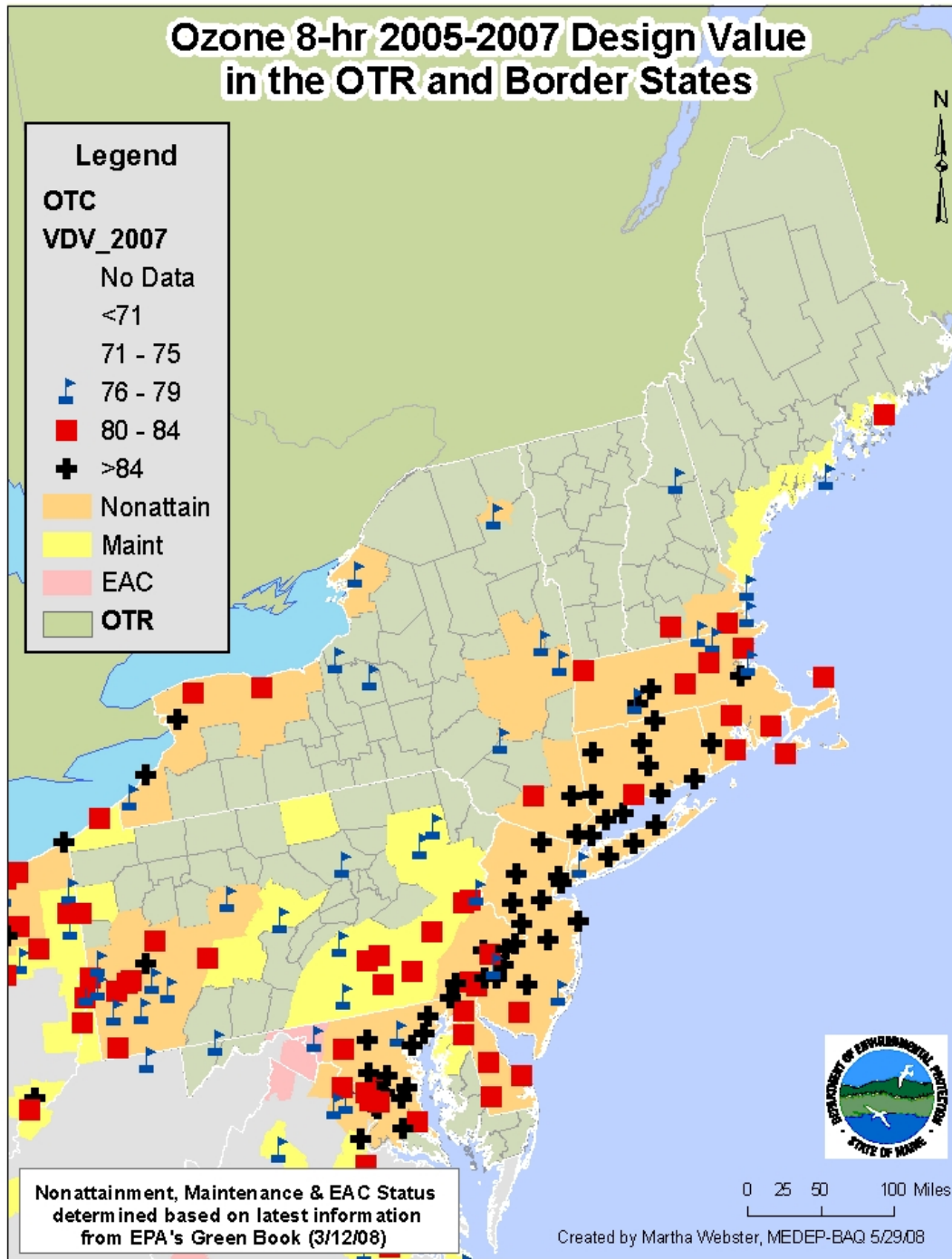
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Nonattain

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Legend

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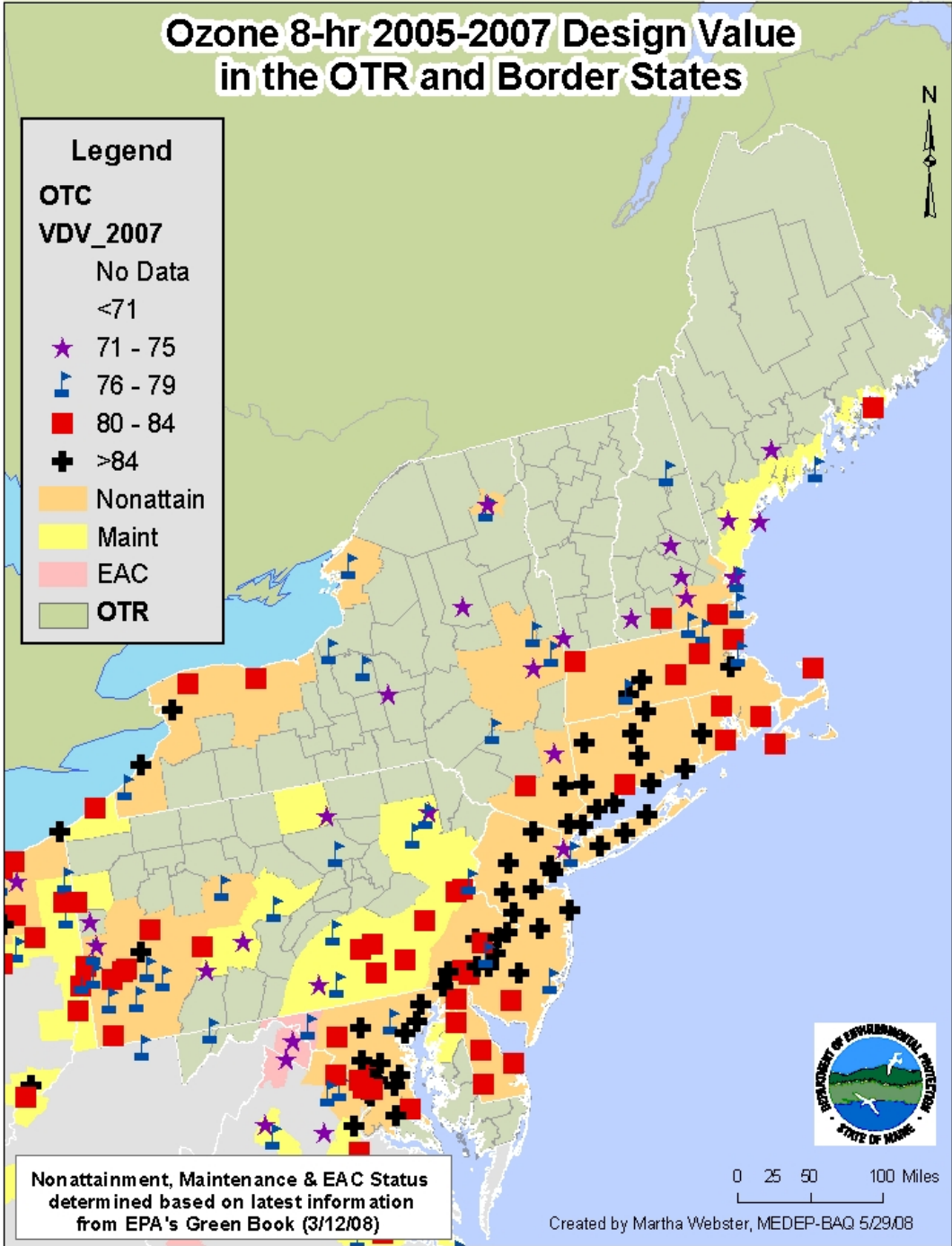
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Nonattain

Maint

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OTR



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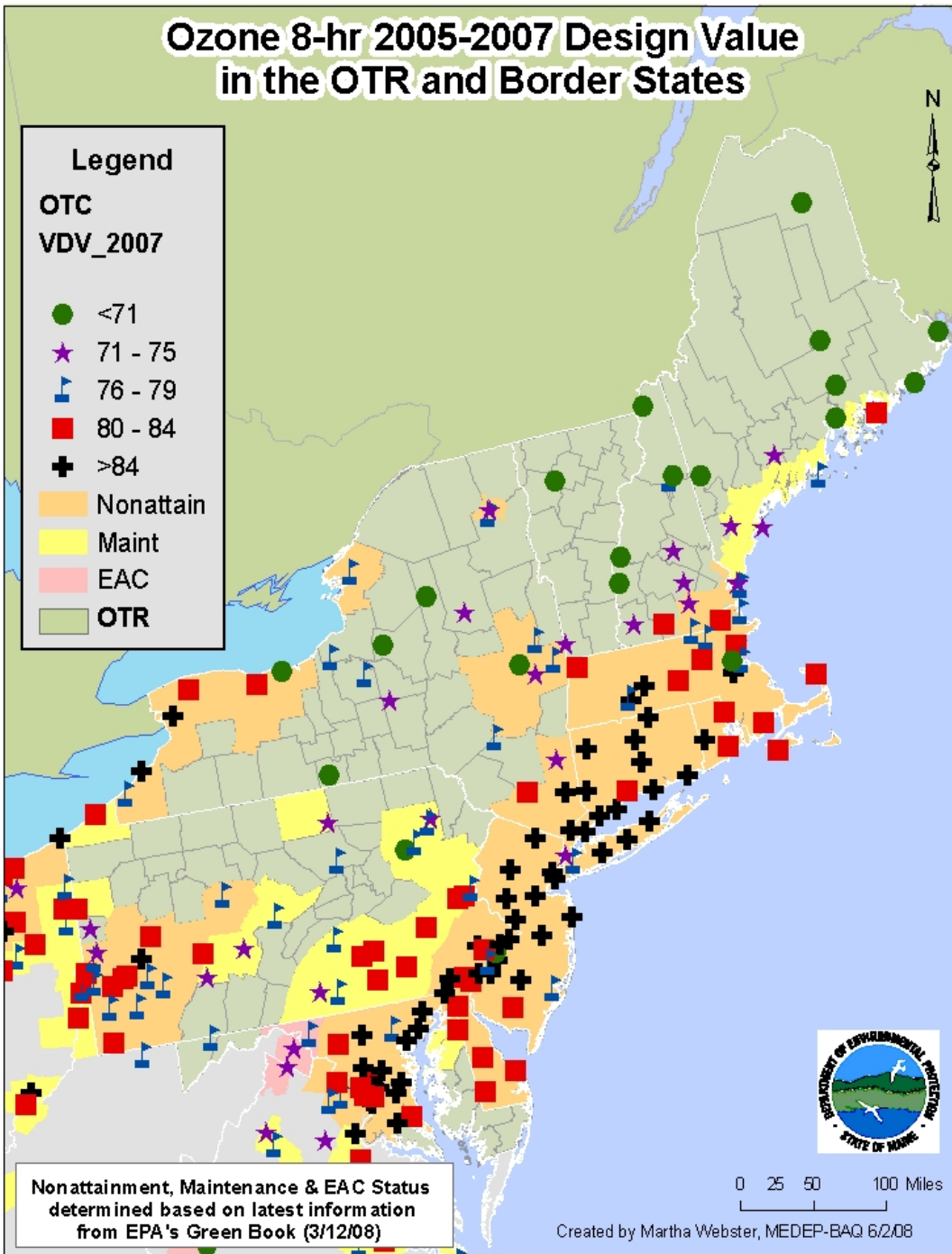
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Ozone 8-hr 2005-2007 Design Value in the OTR and Border States

Legend

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VDV_2007

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- Nonattain
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0 25 50 100 Miles

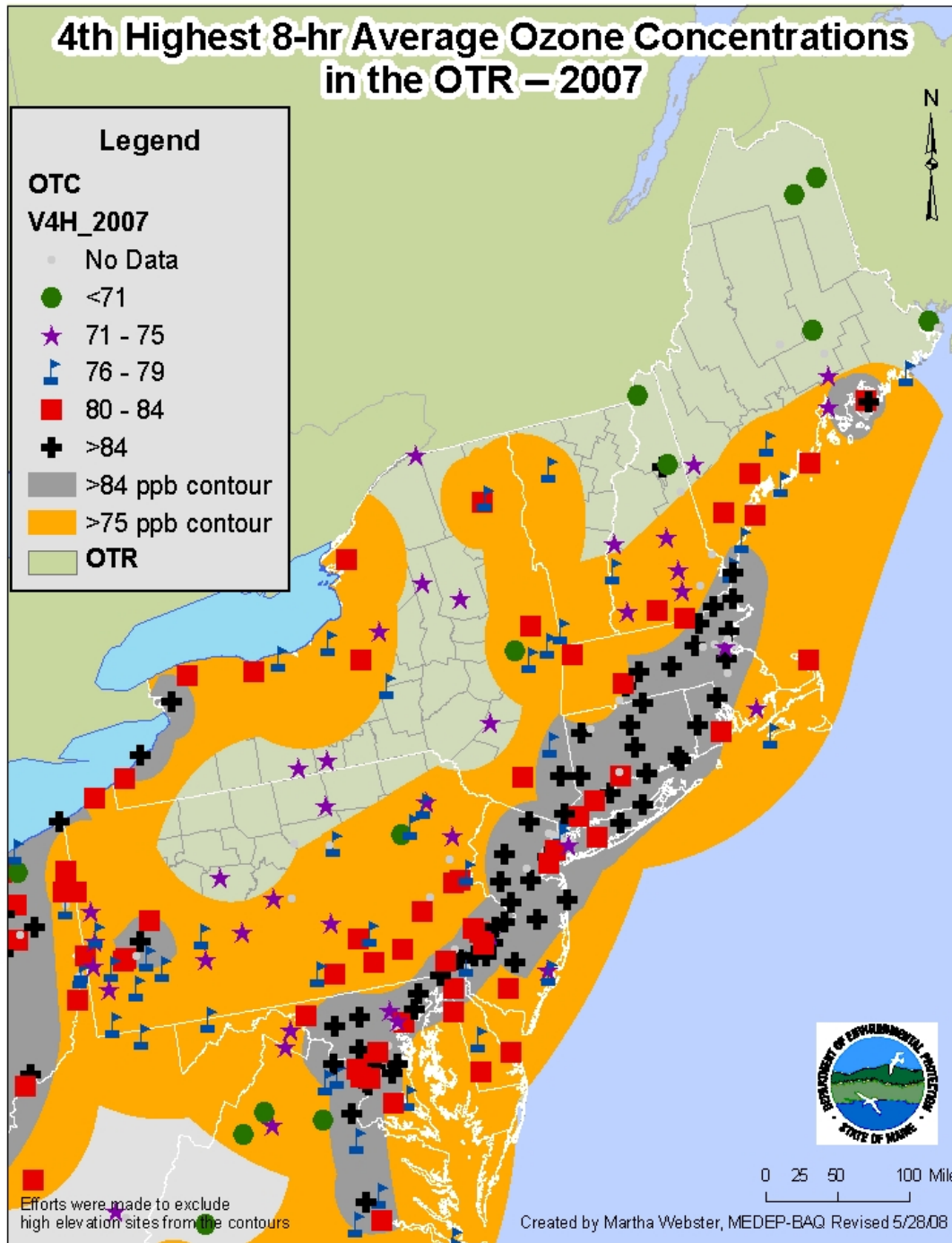
Created by Martha Webster, MEDEP-BAQ 6/2/08

4th Highest 8-hr Average Ozone Concentrations in the OTR – 2007

Legend

OTC
V4H_2007

- No Data
- <71
- 71 - 75
- 76 - 79
- 80 - 84
- >84
- >84 ppb contour
- >75 ppb contour
- OTR

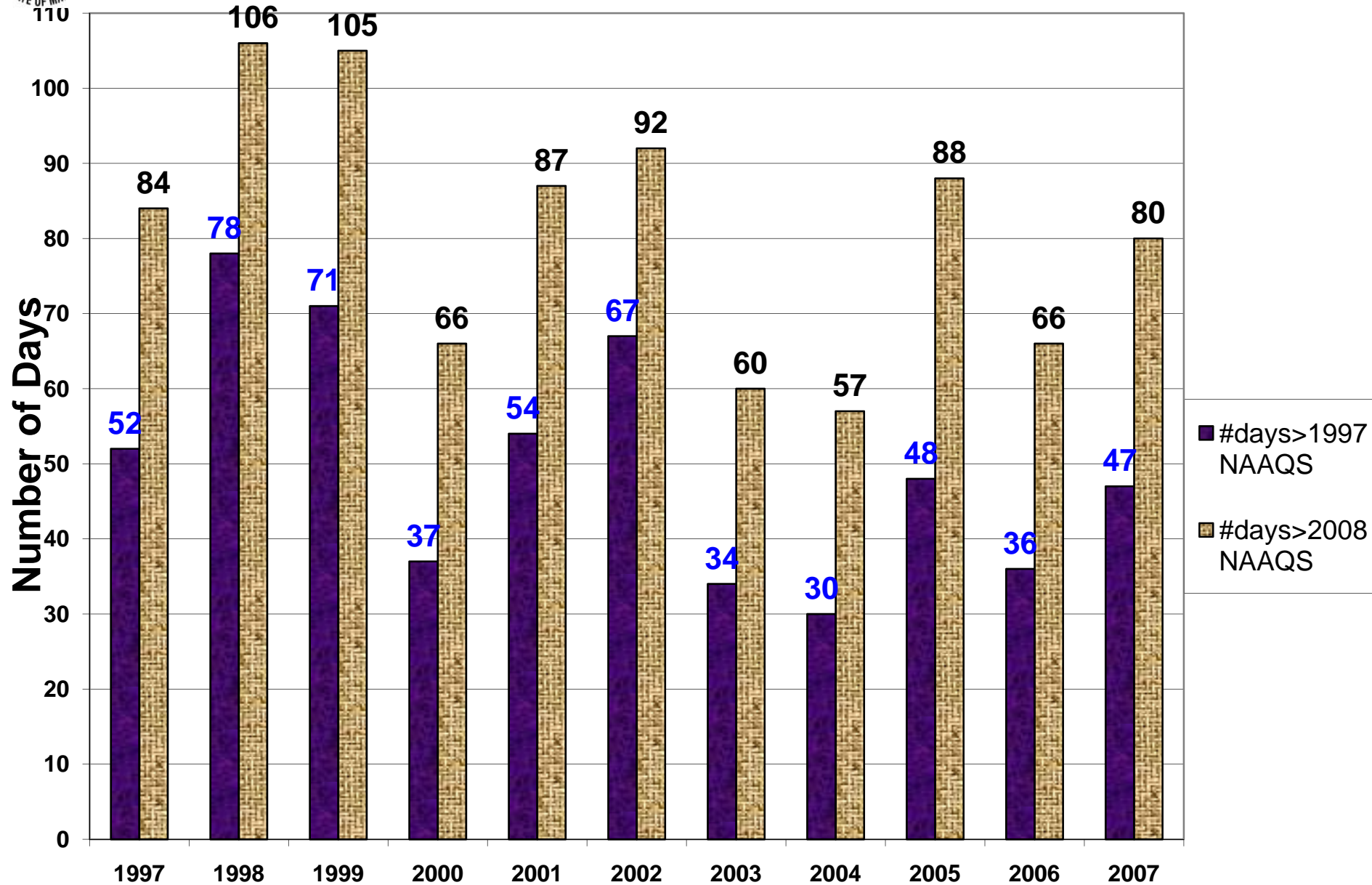


Efforts were made to exclude high elevation sites from the contours

Created by Martha Webster, MEDEP-BAQ Revised 5/28/08



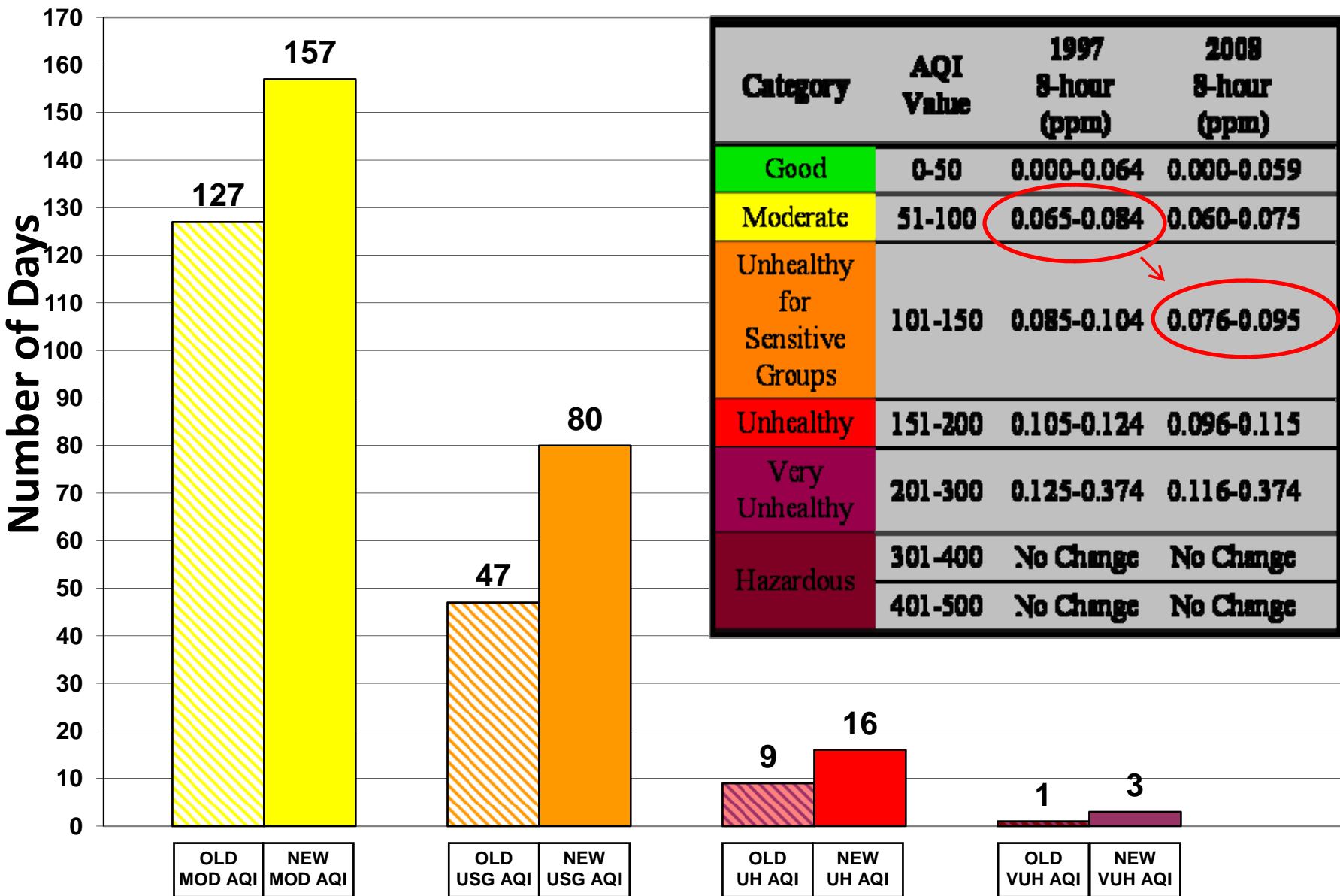
Annual Comparison of Days in the OTR Over 1997 & 2008 8-hour Ozone NAAQS





2007 Air Quality Index Days

Comparison of the Number of Old vs. New AQI



Days Above the New Standard Have Already Occurred...

- Compiled preliminary data from ten OTC states on 8-hour daily maximum readings
- For the pre-ozone season week of April 17 to April 23, 2008, the region had:
 - 103 readings above the new 8-hr ozone standard of 0.075 ppm
 - 6 readings were above 0.090 ppm
 - Highest reading: 0.099 ppm

Co-benefit Opportunities from Energy Efficiency & Clean Energy

- Regional Greenhouse Gas Initiative
 - EE/RE investments by regulated sources
 - EE/RE investments from allowance auction proceeds
- State actions & programs in the Northeast & Mid-Atlantic
 - Reduced energy use from energy efficiency
 - Cleaner alternative energy resources
 - Renewable portfolio standards
 - Other strategies and programs

RGGI

- Regional Greenhouse Gas Initiative – a cooperative effort among 10 Northeast and Mid-Atlantic states to reduce carbon dioxide emissions
- States: CT, DE, ME, MD, MA, NH, NJ, NY, RI and VT
- Reductions via a regional CO₂ trading program
 - Sets a cap on total emissions in 10-state region from fossil-fuel fired electric generating units 25MW or larger
 - Allowances representing 1-ton of CO₂ are distributed, either through allocation to regulated sources, by auction, or some combination
 - At the end of each compliance period, regulated sources must have sufficient allowances to cover their emissions
 - Auction proceeds invested in energy efficiency and clean energy

Maine & Vermont

- Maine
 - Green Schools Project: ghg survey & audits, promote EE
 - PUC “Efficiency Maine” program: promotes EE in businesses & homes, provides incentive funding for improvements
 - PUC “Carbon Free Homes”: RECs for clean power
- Vermont
 - “Efficiency Vermont”: Non-profit organization providing statewide EE services - resulted in 56 M kWh of annual electric savings for VT households & businesses
 - RPS requiring renewable generation to equal incremental load growth between 2005 & 2012
 - VT Energy Efficiency & Affordability Act
 - VT Energy Independence & Economic Prosperity Act

Massachusetts

- MA Energy Bill
 - Least Cost Procurement – puts efficiency in competition with power generated to meet electricity needs at lowest cost
 - Renewable energy long term contracts pilot program - requires utilities to enter into 10-15 year contracts for RE
 - Energy code – integrates state building code with IEEC
 - Requires 25% of state's electric load be met through DSM & 20% through renewables/alternatives
 - Increases RPS on utilities and electricity suppliers by 1% per year, to a total of 15% in 2020 and 25% in 2030
 - Creates a new alternative energy portfolio standard
- State Revolving Fund EERE
 - Allows integration of EERE into new/upgraded wastewater and drinking water infrastructure projects

Connecticut

- Clean Energy Fund
 - Promotes, develops and invests in clean energy sources for sustainable energy
 - Completed 3.3 MW in projects, another 4.5 MW in progress
- Renewable Portfolio Standard
 - Requires 10% of retail load in 2008 from renewable sources
 - Increases to 14% in 2010
- High Electricity Demand Day Commitment
 - Reduce NOx emissions by 25% on HEDDs by the 2009 ozone season, or as soon as feasible, but no later than 2012
- Clean Car Incentive Program
 - Offers financial incentives (e.g., feebates) or disincentives (e.g., sales tax increase) based on vehicle's ghg emissions

District of Columbia

- Greening DC Building Code
 - Proposed new standards to incorporate ICC 2006 and ASHRAE 189.1
 - Push District buildings to 30% improved performance
- Green Building Act of 2006
 - Phases in green building in DC
 - Requires commercial buildings to be LEED certified
 - Creates Green Building Fund and Green Building Advisory Council

Maryland

- MD Clean Cars Act – adopts CA's stricter vehicle emission standards for GHG, NOx and VOC
- EmPower Maryland – goal of a 15% reduction in energy consumption by 2015
- MD Strategic Electricity Plan
- High Performance Buildings
- Renewable Portfolio Standards – increase to 20% by 2022
- Incentives for use of renewable energy choices

New Jersey

- 100% output based NOx allowance allocations under Clean Air Interstate Rule (CAIR)
- RPS climbs to 20% in the future
- Proposed Energy Master Plan (EMP) includes:
 - Maximizing energy conservation & efficiency to reduce consumption by 20% by 2020
 - Reducing peak demand for electricity by 5,700 MW by 2020
 - Meeting 22.5% of state's power needs from renewables
 - Developing new low carbon emitting, efficient power plants
 - Investing in innovative clean energy technologies and businesses

Pennsylvania

- Special Session House Bill 1
 - \$180 M for solar energy
 - \$165 M to encourage alternative energy projects
 - \$25 M for green buildings
 - \$25 M for wind and geothermal
 - \$150 M over 7 yrs for weatherization, conservation & alternative energy tax credits
- House Bill 1202
 - Requires every gallon of diesel use an increasing percentage of biodiesel as in-state production levels increase
 - New investments in biofuel producers

Conclusions

- Meeting the new ozone standard presents challenges...
 - Reducing regional transport of pollutants still key
 - Climate and air quality interaction will be a factor
 - Strategies to address climate change will have criteria pollutant impacts
- ...As well as opportunities
 - Co-benefits from energy efficiency and clean energy will be valuable
 - Coordination between state environmental, energy and transportation agencies is key