

Modeling Committee Update

OTC Committee and Stakeholder Meeting

April 23rd, 2015
Washington, DC



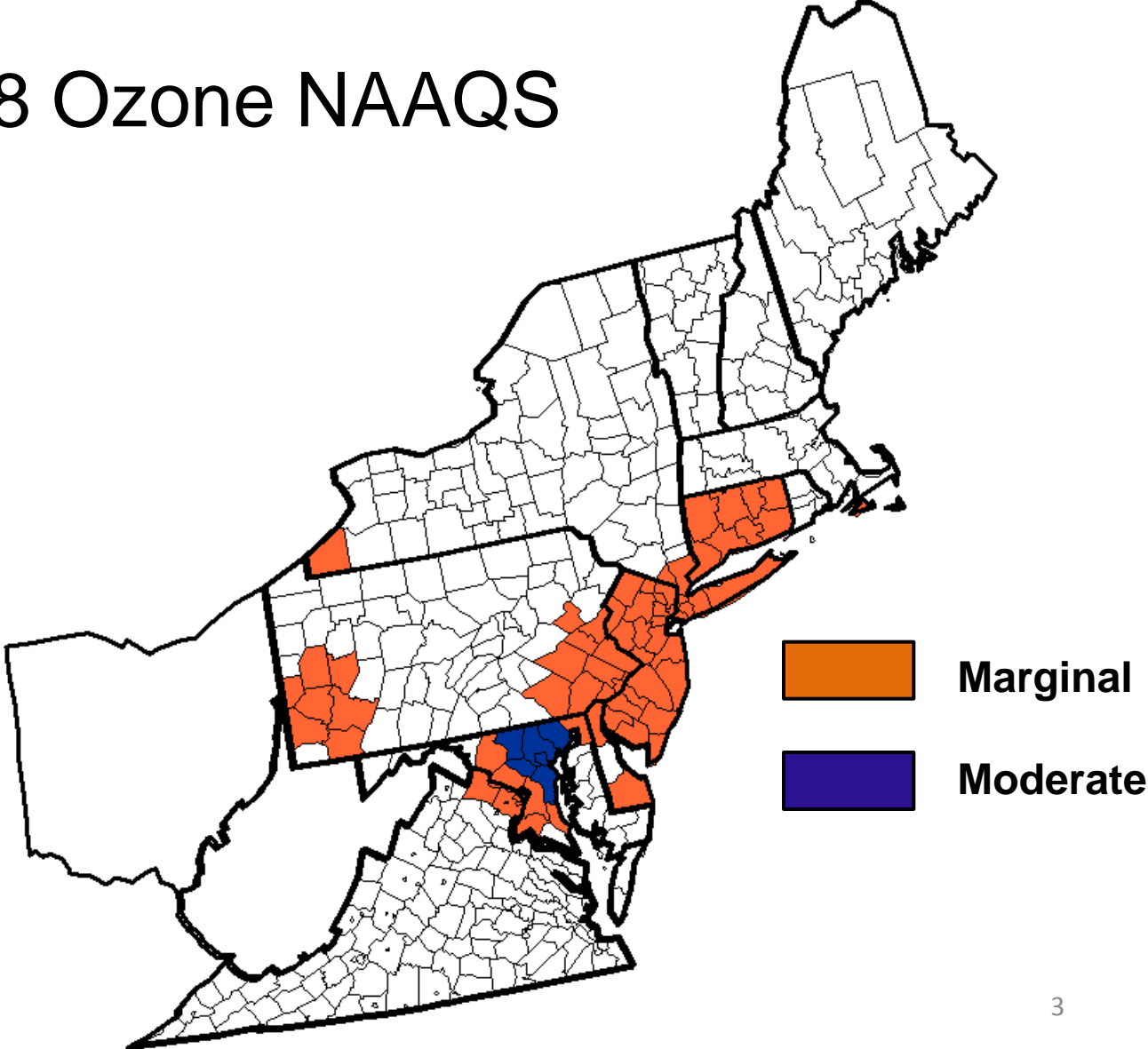
OZONE TRANSPORT COMMISSION

Overview

1. Ozone Designations
2. Photochemical Modeling Update
 - a) Development Plan and Schedule
 - b) Emission Inventory
3. Maryland Modeling Research

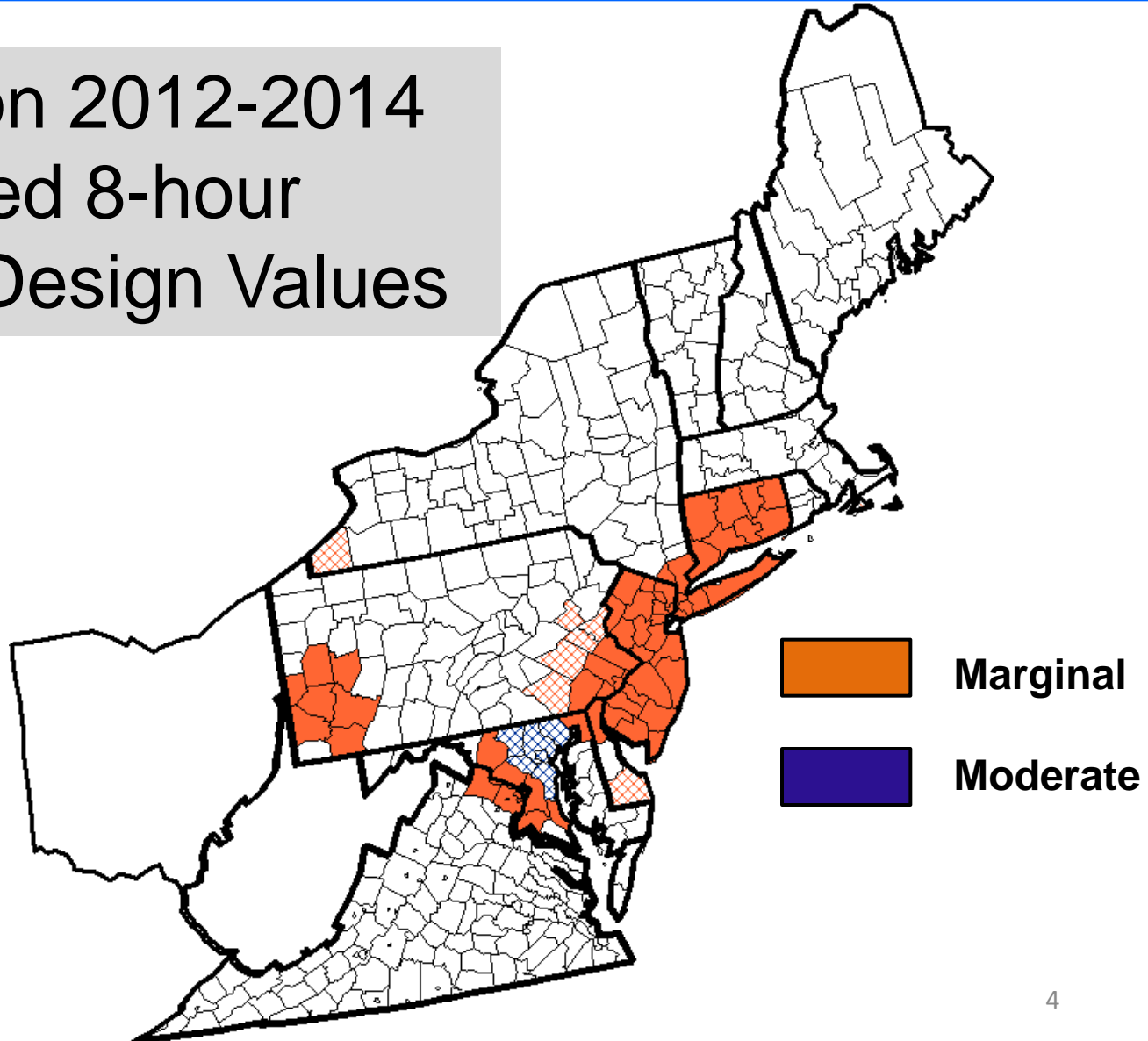
Currently Designated Nonattainment

2008 Ozone NAAQS



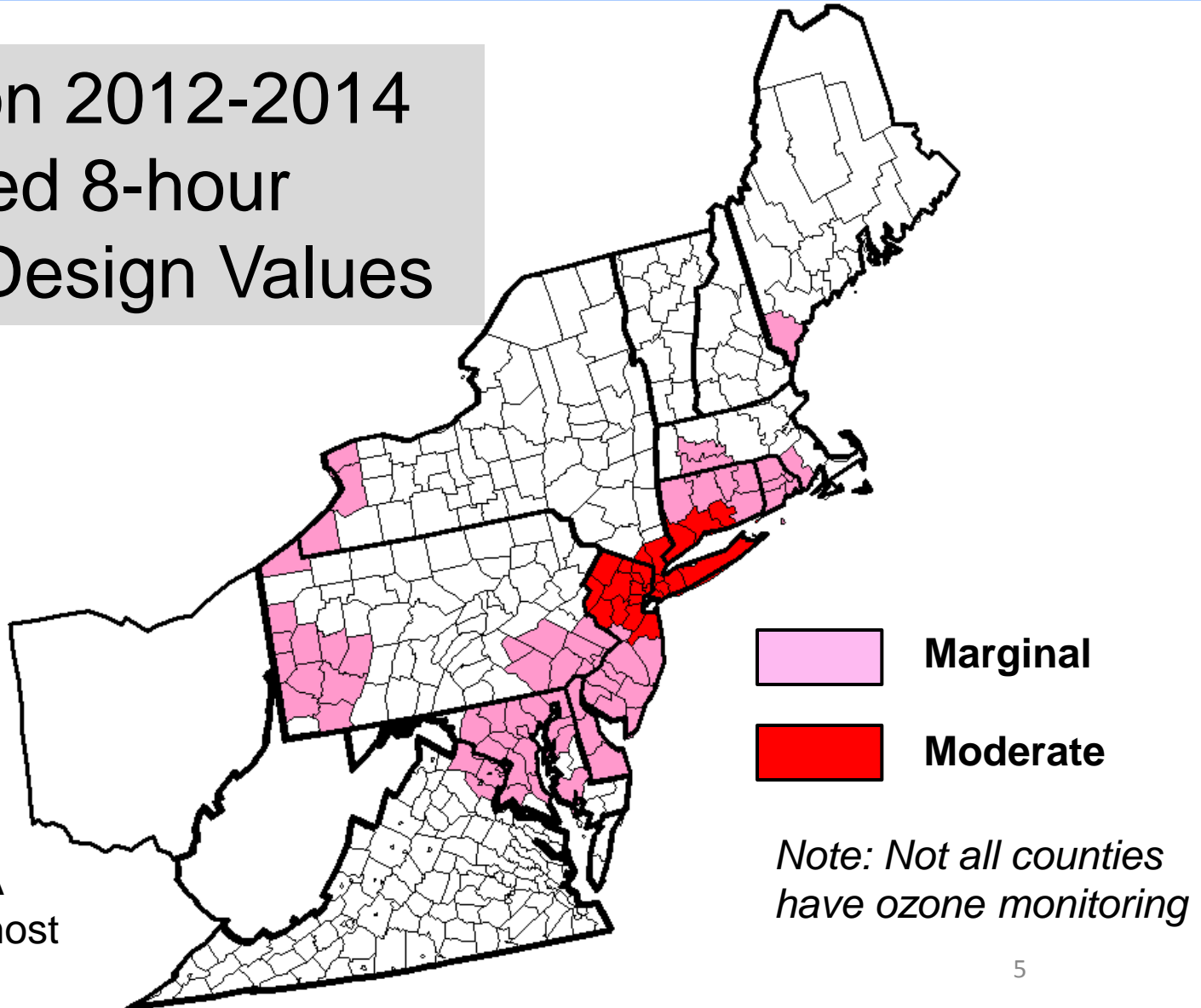
Designated Areas Not Yet Attaining

Based on 2012-2014
Monitored 8-hour
Ozone Design Values



Potential Nonattainment – 70ppb NAAQS

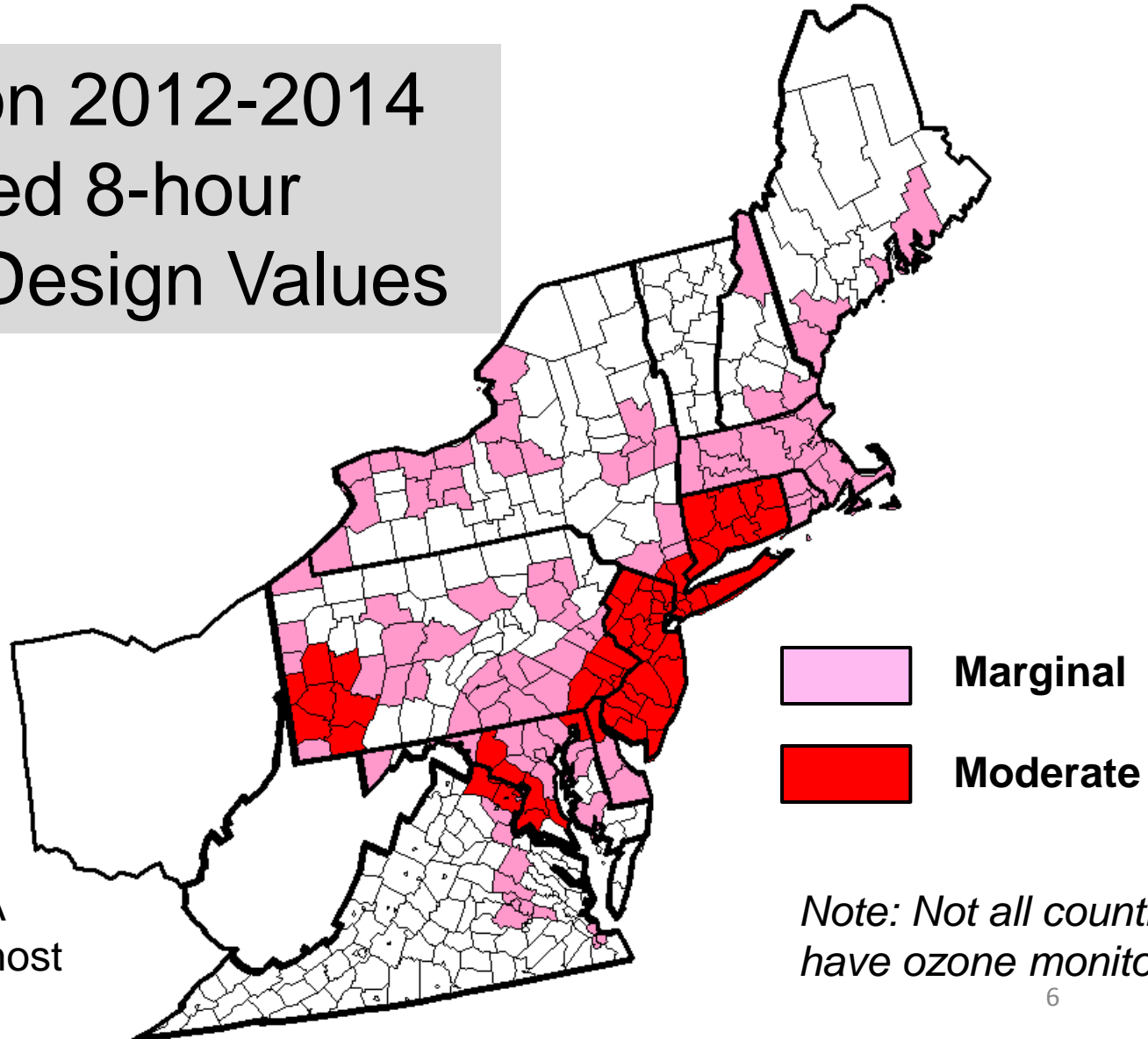
Based on 2012-2014
Monitored 8-hour
Ozone Design Values



Based on CBSA
Boundaries in most
cases

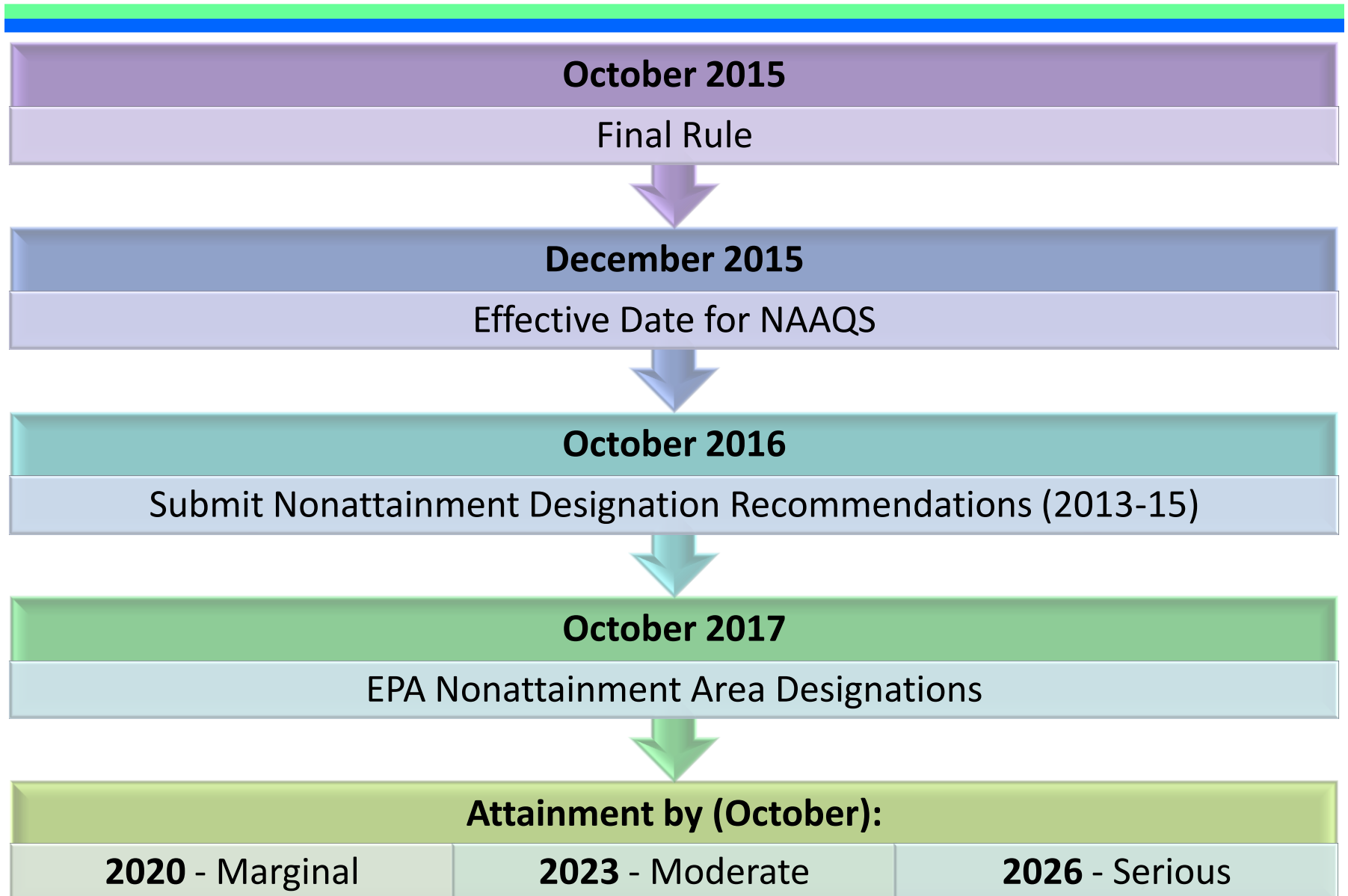
Potential Nonattainment – 65ppb NAAQS

Based on 2012-2014
Monitored 8-hour
Ozone Design Values



Based on CBSA
Boundaries in most
cases

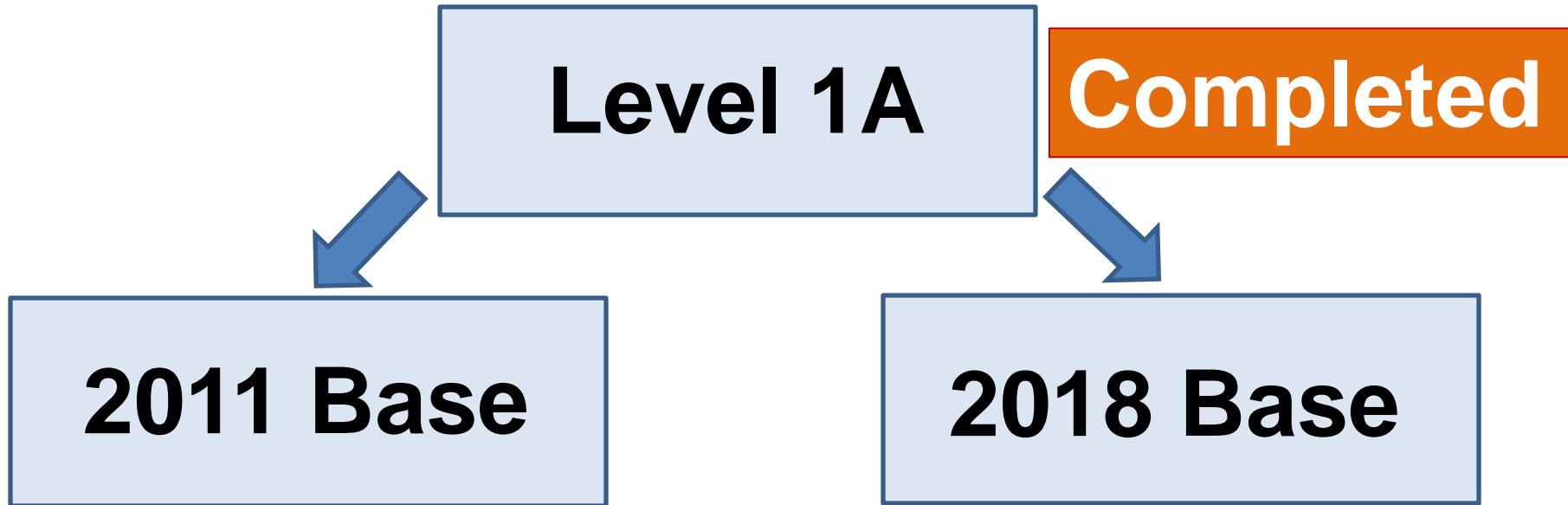
2015 Ozone NAAQS Timeline



Modeling Update

- Most work is now focused on new 2011 based modeling platform
 - EPA version 2 emissions (including mobile) being used
 - Replacing IPM with ERTAC EGU Emissions
- Emission inventories are being improved incrementally

Level 1A Screening - Testing



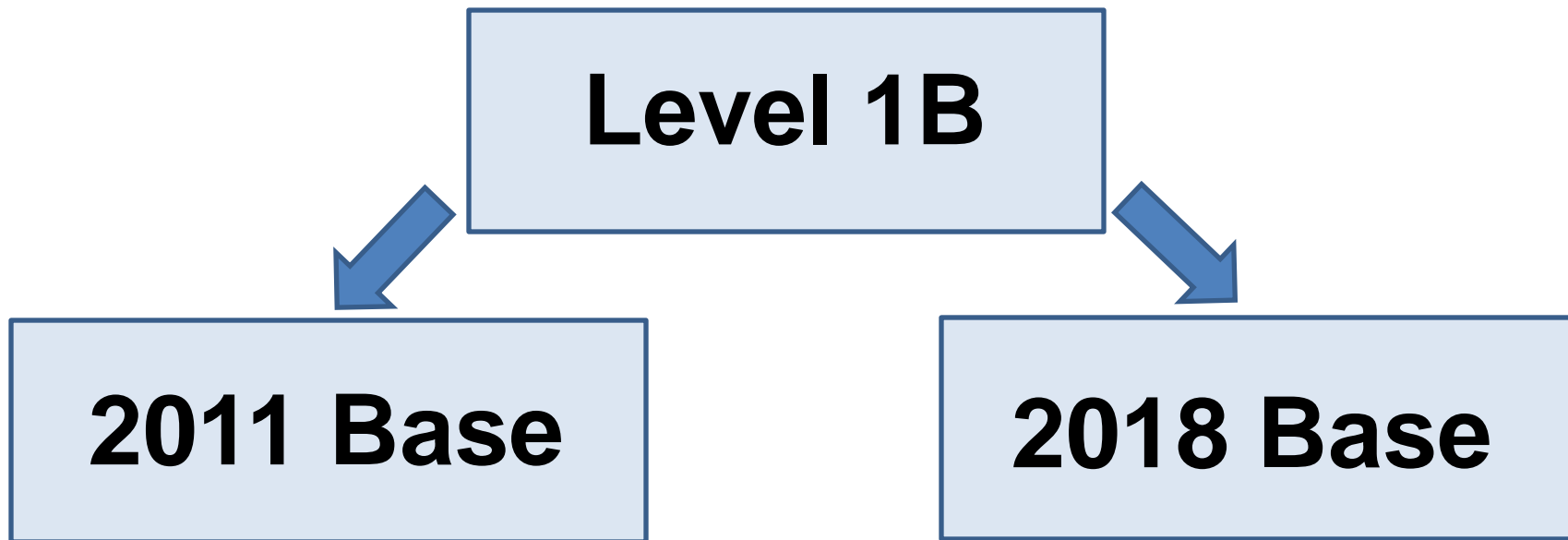
EPA 2011 V1 Emissions

- Canada 2006/08

EPA 2018 V1 Emissions

- Tier 3
- Fed and OTB Measures
- IPM V5.13
- Canada 2006/08

Level 1B Screening



MARAMA 2011 Alpha

- ERTAC 2.3 Smoothed
- EPA V2
- Canada 2010

MARAMA 2018 Alpha

- ERTAC 2.3
- OnRoad – EPA V2
- Other - EMF Grown EPA V2
- Tier 3
- Canada 2010

Level 1B Screening Runs

Level 1B

2011 Base

2018 Base

CAMx

25% NOx ↓

Also VOC TBD

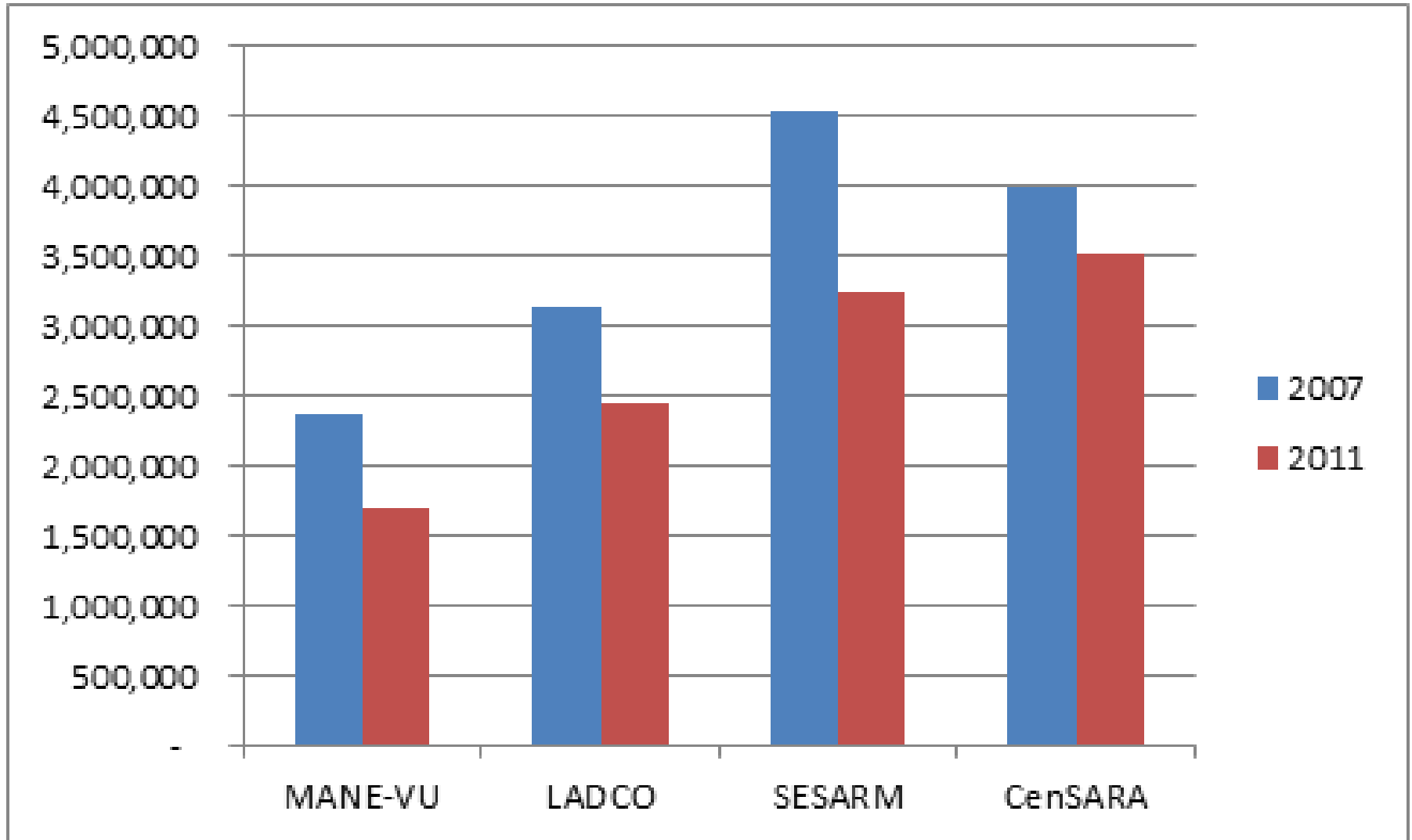
2028 Proxy

2011 Contribution
Assessment

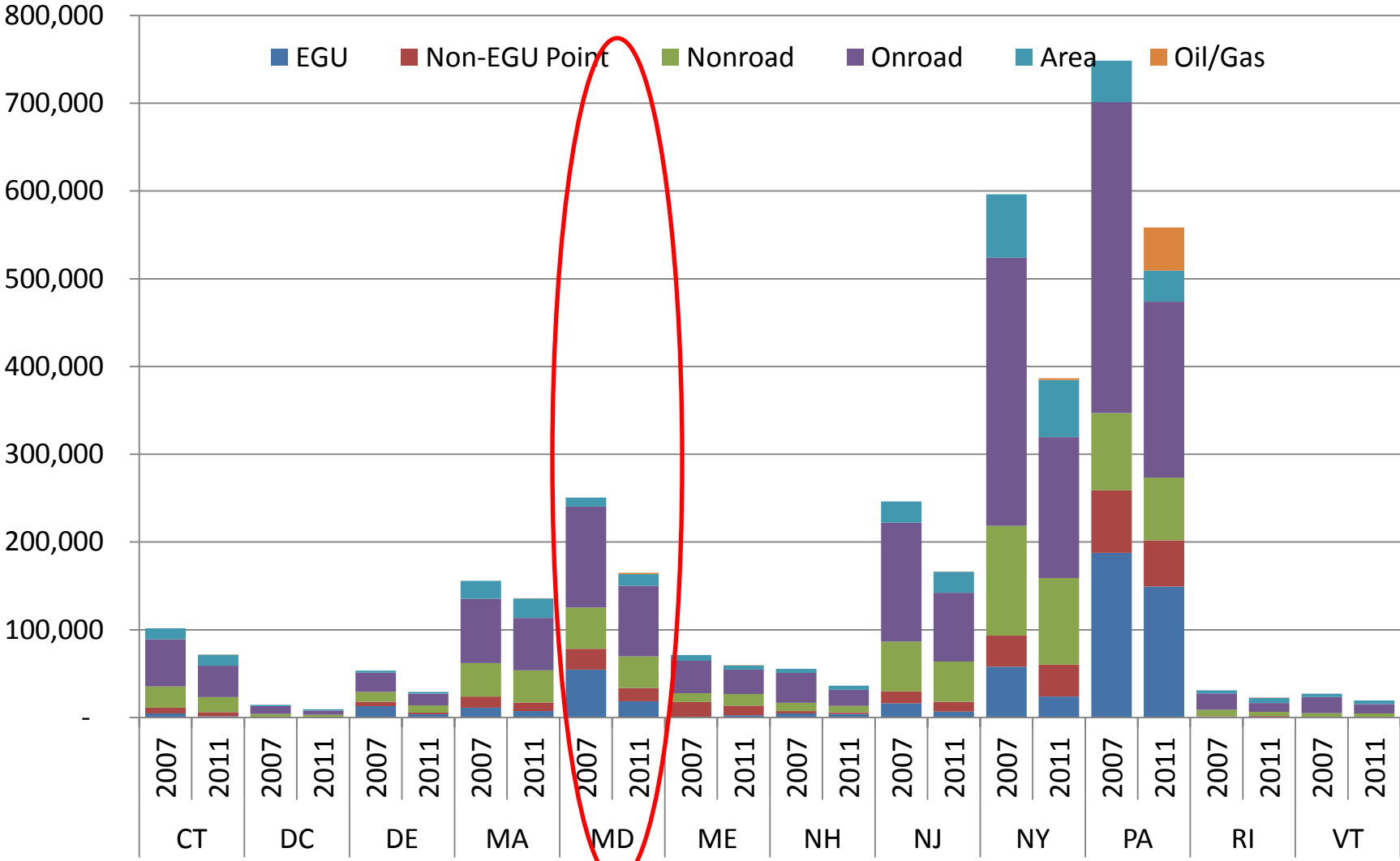
2015 NAAQS
Sensitivity

Mobile Sensitivity

Regional Base Case NOx Inventories



MANE-VU Base Case NOx Inventories



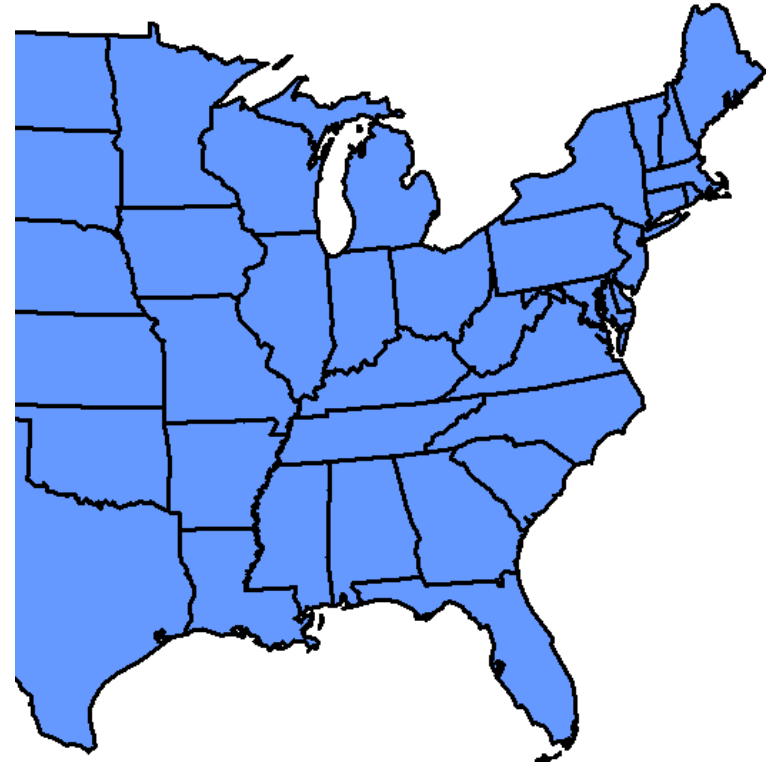
ERTAC EGU Emission Projection Progress

- ✓ Improved ERTAC model code
- ✓ 2018 ERTAC v2.3 projected from a 2011 base
- ✓ State and stakeholder review of results
 - April 2015 – ERTAC v2.4
 - Including Stakeholder Feedback
 - AEO 2015 Growth



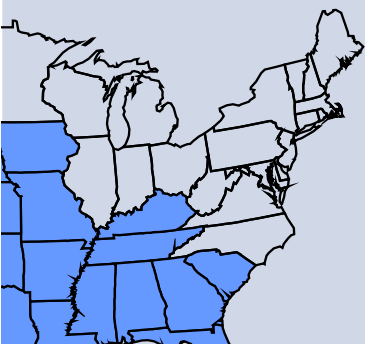
MARAMA 2011 ALPHA

Sector	2011 L1B Base
EGU	ERTAC 2.3 (Smoothed CEM)
Non-EGU Area MAR	EPA NEI V2
OnRoad NonRoad	EPA NEI V2
Natural	BEIS


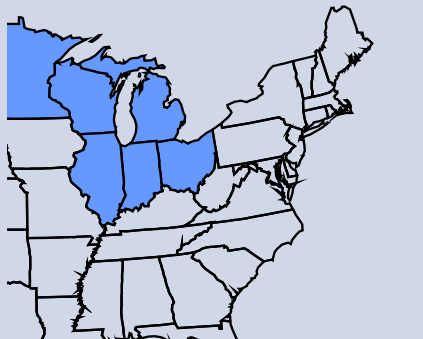
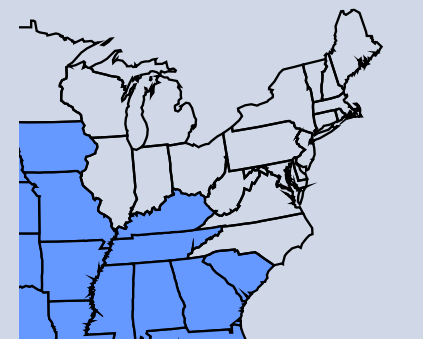
Full U.S. Domain Adjustments



MARAMA 2018 ALPHA

Sector	2018 Northeast	2018 Midwest	2018 Other
EGU	ERTAC 2.3	ERTAC 2.3	ERTAC 2.3
Non-EGU Point Area MAR	EMF Grown NEI V2	EMF Grown NEI V2 with V1 national growth rates and LADCO factors	EMF Grown NEI V2 with V1 national growth rates
OnRoad/NonRoad	NEI V2	NEI V2	NEI V2
Natural	BEIS	BEIS	BEIS
Region			

MARAMA 2025/28 ALPHA

Sector	2025/28 Northeast	2025/28 Midwest	2025/28 Other
EGU	ERTAC 2.3	ERTAC 2.3	ERTAC 2.3
Non-EGU Point Area MAR	EMF Grown NEI V2	EMF Grown NEI V2 with V1 national growth rates and LADCO factors	EMF Grown NEI V2 with V1 national growth rates
OnRoad/NonRoad	NEI V1 or wait for V2	NEI V1 or wait for V2	NEI V1 or wait for V2
Natural	BEIS	BEIS	BEIS
Region			

Planned MARAMA Beta Inventory

- Upgrade to **ERTAC 2.4**
 - Include state banked emissions
- Re-project future year to **2017**
- Select **2025** or **2028** projections and improve
- EMF Growth
 - Evaluate USEPA V2 growth factors and adopt as appropriate.
 - Include new rules, including residential wood NSPS
 - Updates and corrections to state emissions

Other Model Runs in Planning

2011 Base Case
– Nested Grid

2028 Proxy Base Case
– Ozone Season

2028 Proxy Base Case
– Full Year (MANE-VU)

2011 Demand Response
– Peak Emissions

Demand Response - Peak Emissions

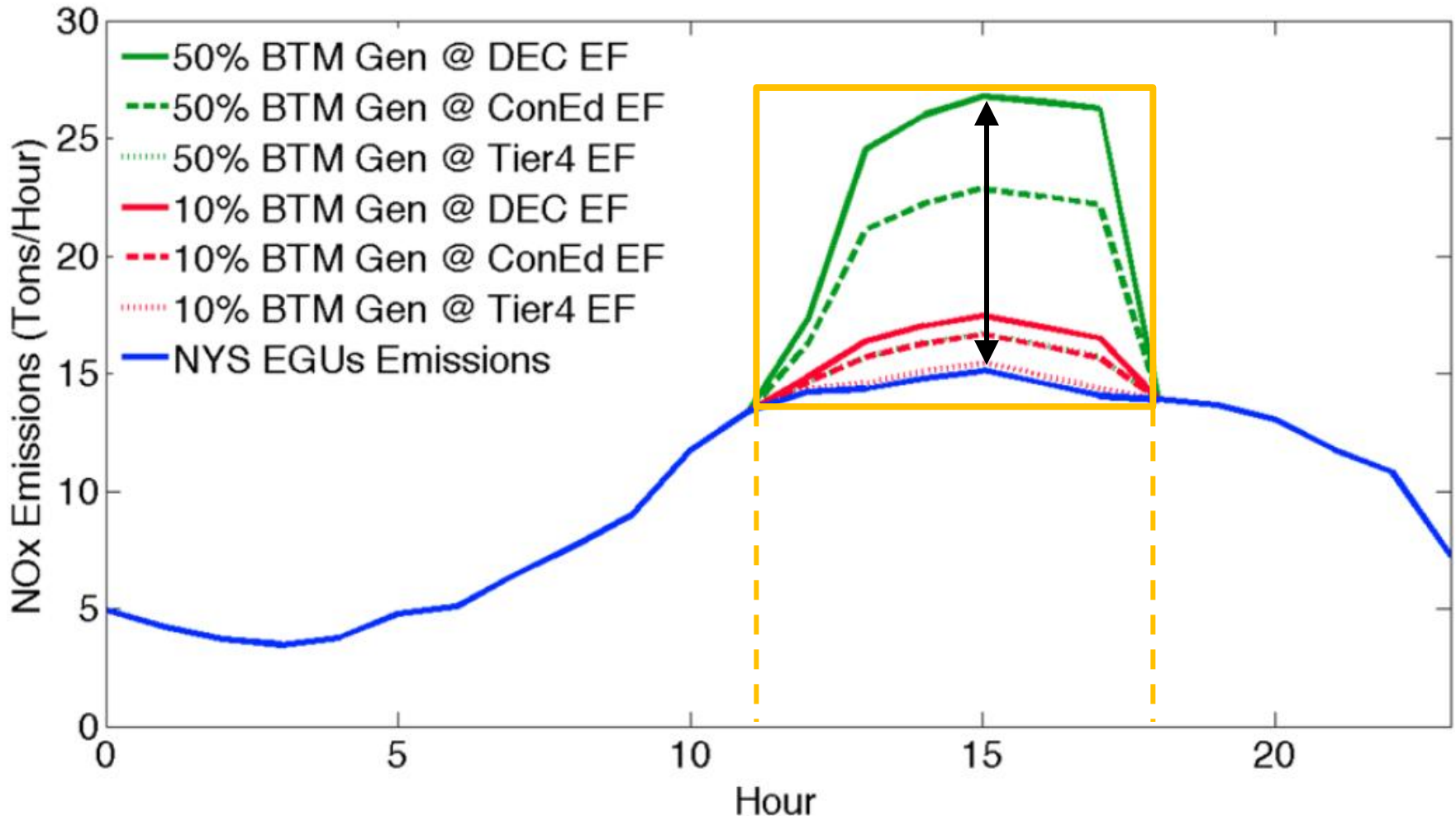
Developing sensitivity scenario for modeling peak emission days:

- Distributed generation – Behind the meter is not yet included in emission inventories

Emissions to be select geographic areas during peak hours

Basis of screening is a soon to be published research article (Zhang and Zhang)

Behind the Meter NOx Emissions



Summary

- Portions of the OTR are not meeting the 2008 ozone NAAQS
- Revised NAAQS due in October 2015
- OTC Modeling Committee is currently working on 5 model runs and planning others;
 - Improving data and performance
 - Working towards 2008 NAAQS Attainment
 - Revising the 2018 future year to 2017
 - Assessing what might be needed for 2015 NAAQS
 - Anticipate at least some results by the OTC Annual Meeting in June

Questions

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