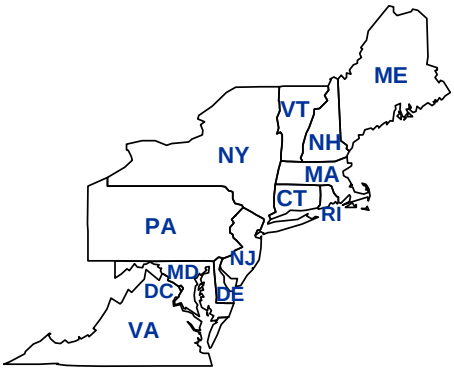
Item 3

OTC Modeling Summary



OZONE TRANSPORT COMMISSION

OZONE TRANSPORT COMMISSION

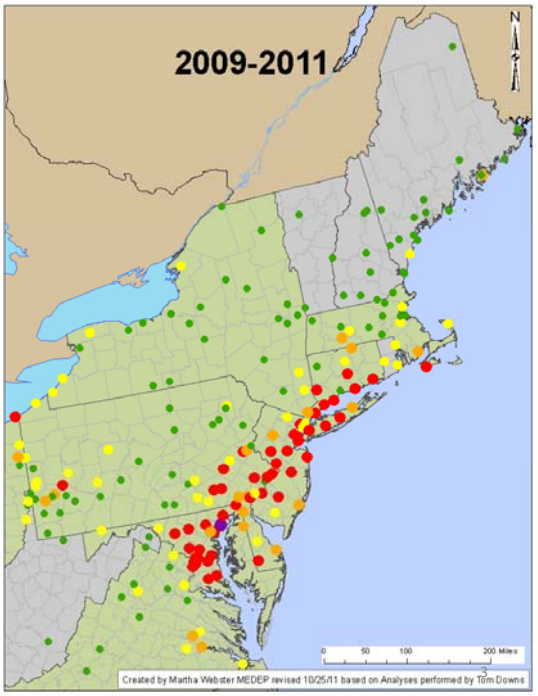
1

Where are we now?

1 – OZONE SEASON UPDATE

2

Preliminary 2011 Design Values in the OTR



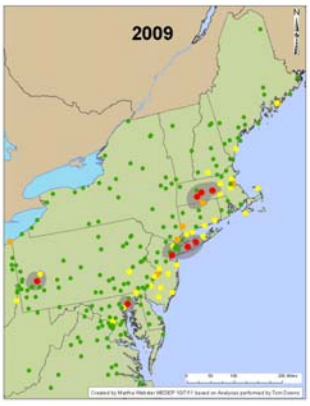
- <71
- 71-73
- 74-75
- 76-85 (mar)
- >85 (mod)

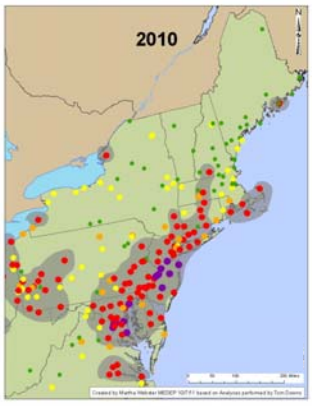
Parts per Billion (ppb)

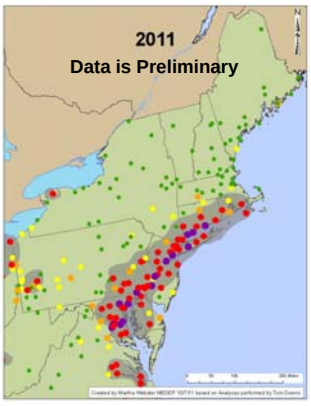
States with Nonattainment Monitors

Annual 4th High Ozone Values

for the 3 Design Value Years – 2009, 2010 and 2011







Grey shaded area highlights general areas greater than 75 ppb ozone

- <71
- 71-73
- 74-75
- 76-85
- >85

Parts per Billion (ppb)

4

Where are we going?

2 – SCREENING MODELING UPDATE

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Screening Runs

1. 2007 Base Case
2. 2020 "Scenario 4" Control Case
   (Approximates OTC Recommendations)
3. 2020 Bounding Cases
   A. 10% Less NO_X Reductions Compared to "Scenario 4"
      (N48/V23: 48% NO_X/23% VOC Reduction)
   B. 10% More NO_X Reductions Compared to "Scenario 4"
      (N68/V23: 68% NO_X/23% VOC Reduction)

- For bounding runs, reductions were applied uniformly to all sectors and entire modeling domain

Caveats:

Not final emission inventories for:

- Mobile & EGU sectors in the OTR
- All sectors outside the OTR
- Modeling domain boundary conditions

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Summary of 2020 "Scenario 4"

- Approximates OTC's recommendations for onroad mobile and EGUs

Uses best available 2020 data except where noted

Domain-Wide NO_X Reductions

- EGU: 65% from 2007
  - Estimate of OTC recommended 900,000 ton cap
- Onroad: 70% from 2007
  - Estimate of Tier 2 fleet turnover & LEV3

Domain-Wide VOC Reductions

- 30% EGU & On-road sectors from 2007

OTR Only: Extra 5% NO_X

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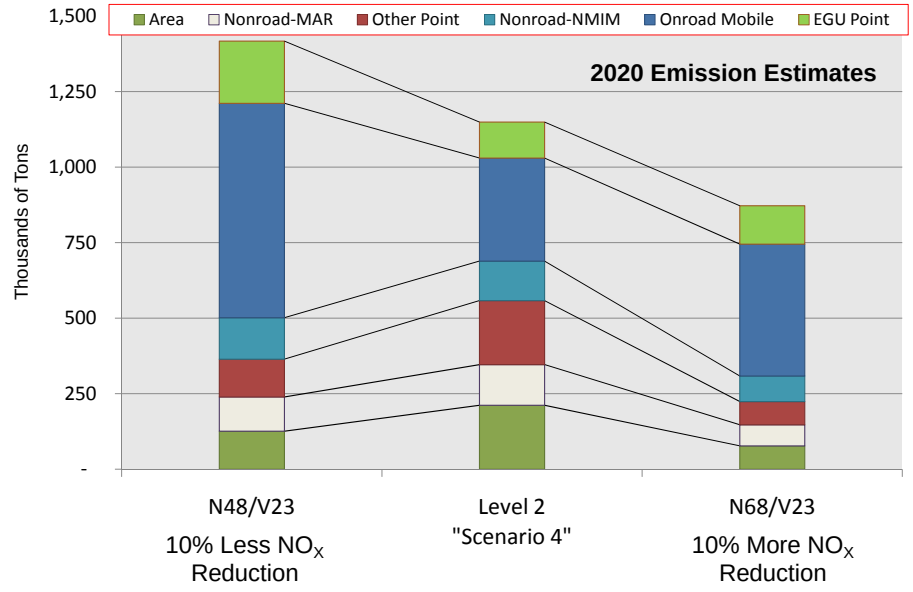
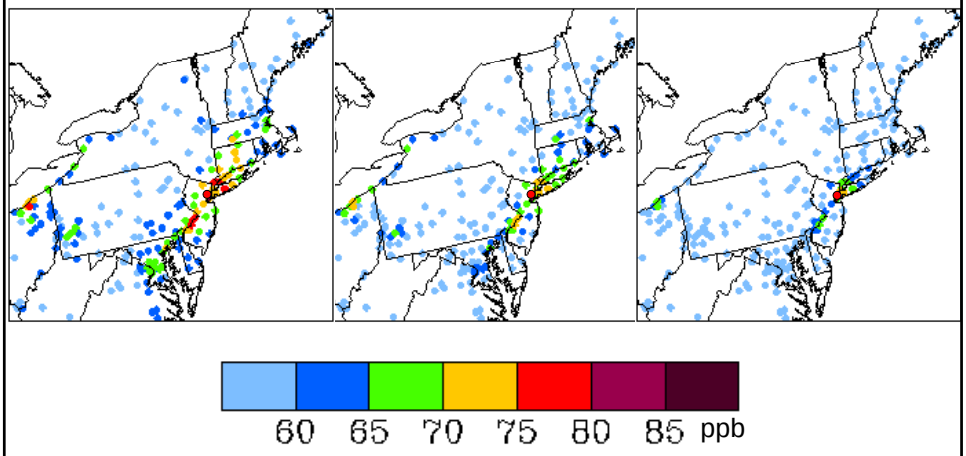
Comparison of Annual NO_X Emissions



"Scenario 4" Bounding Predicted DVs (2020)

N48/V23 (10% Less) **"Scenario 4"** **N68/V23 (10% More)**



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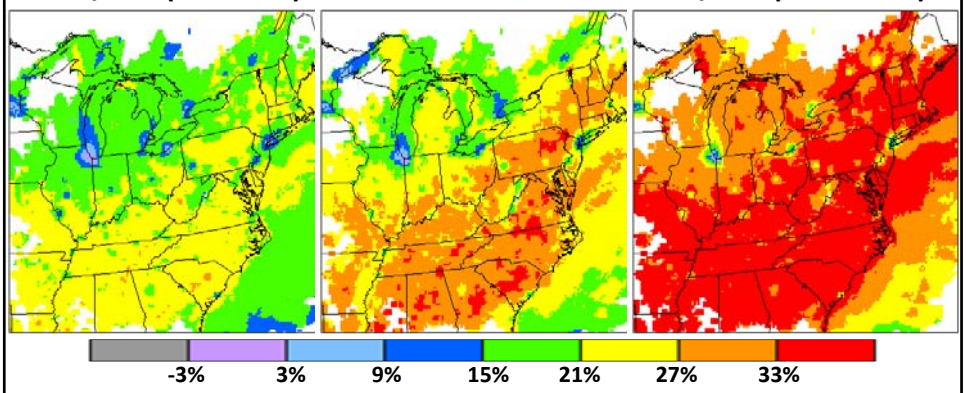
Relative Ozone Reductions (2020)

N48/V23 (10% Less) **"Scenario 4"** **N68/V23 (10% More)**



- Ozone reductions from "Scenario 4" run generally between 15 and 25% from the base case
- NO_X focused emission reductions show less benefit for urban core areas

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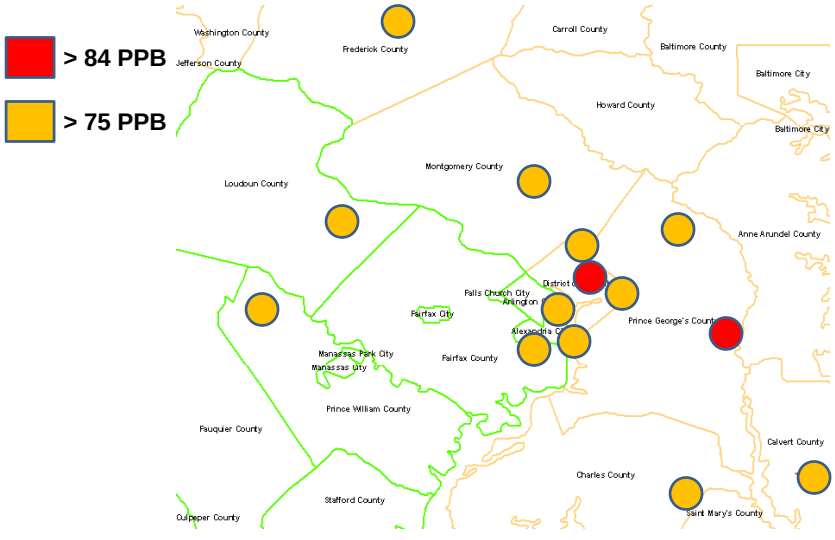
DC Area Screening Results

Monitor	2005-09	N48/V23	Sc. 4	N68/V23
Takoma (DC)	79	65	58	54
River Terrace (DC)	83	67	60	56
McMillan (DC)	85	69	61	57
Calvert Co (MD)	78	58	55	46
Southern (MD)	81	62	55	50
Frederick Co (MD)	80	61	56	50
Rockville (MD)	83	67	59	55
Greenbelt (MD)	82	66	59	55
PG Equestrian (MD)	85	65	61	53
Aurora Hills (VA)	84	68	61	57
Franconia (VA)	84	67	60	56
Ashburn (VA)	81	64	57	52
Long Park (VA)	76	58	51	47
Alexandria (VA)	80	64	58	54

DC Area Screening Results (Base)



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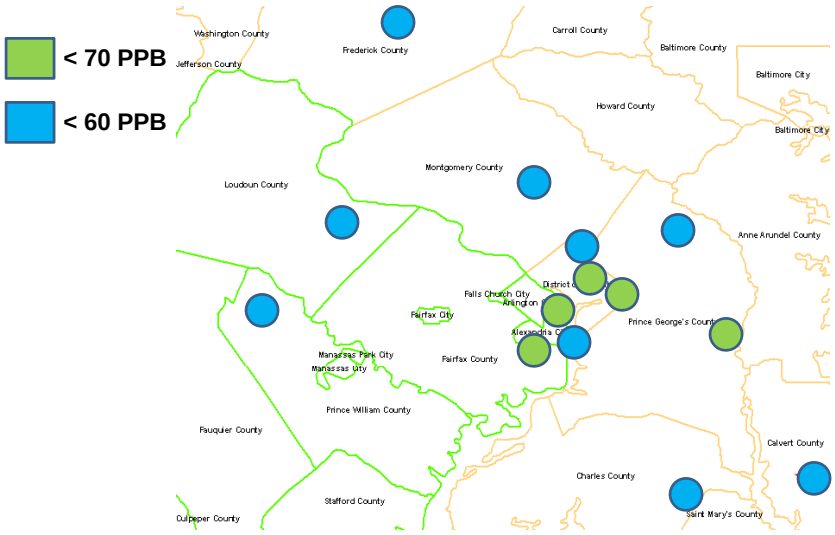
DC Area Screening Results (Sc. 4)



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Level 2 Screening Conclusions

- Model Performance: Very good but the model somewhat over-predicts peak observed ozone concentrations
- "Scenario 4" sensitivity simulation generally yields reduction factors between 0.75 – 0.85 (15 to 25% ozone reduction)
- All monitors in the DC area below 75 for all three screening scenarios

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Emission Inventory Update

Calculation of Emission Inventory for SIP Modeling

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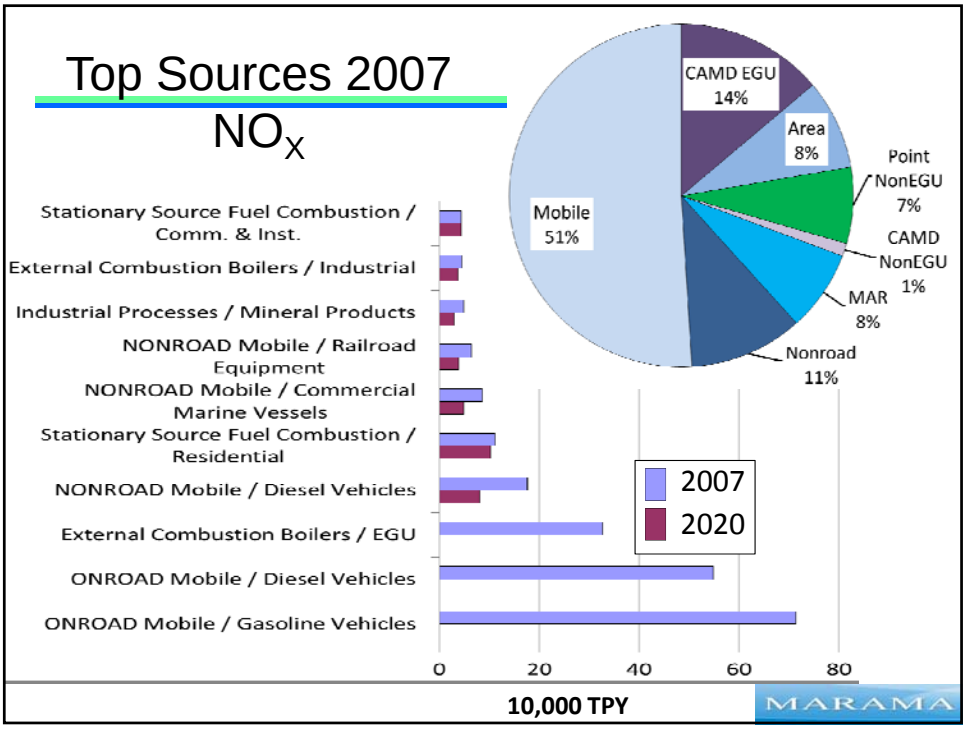
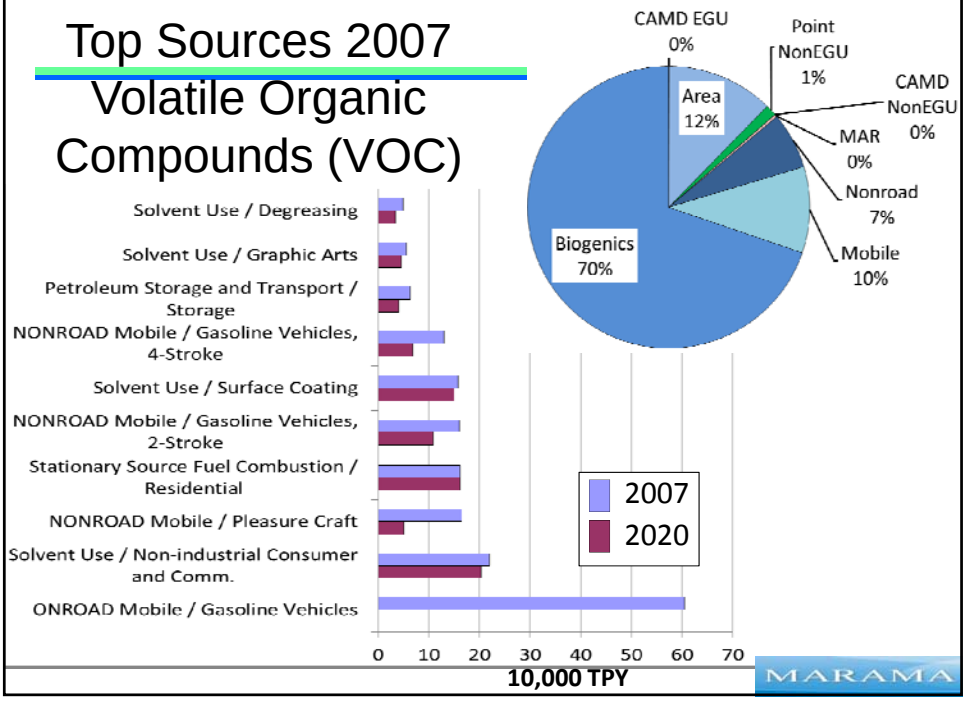
Top Sources 2007

NO_X



Top Sources 2007 Volatile Organic Compounds (VOC)



What we need to do to get there?

Attainment Options for 2015 and 2018

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Why 2015 & 2018?

- EPA is expected to issue final designations for 2008 NAAQS nonattainment areas in the Spring of 2012
- EPA is expected to require clean data for
  - Marginal areas from 2013-2015
  - Moderate areas from 2016-2018
- 2020 modeling for “Scenario 4” shows a potential pathway for ozone attainment for a 75ppb NAAQS

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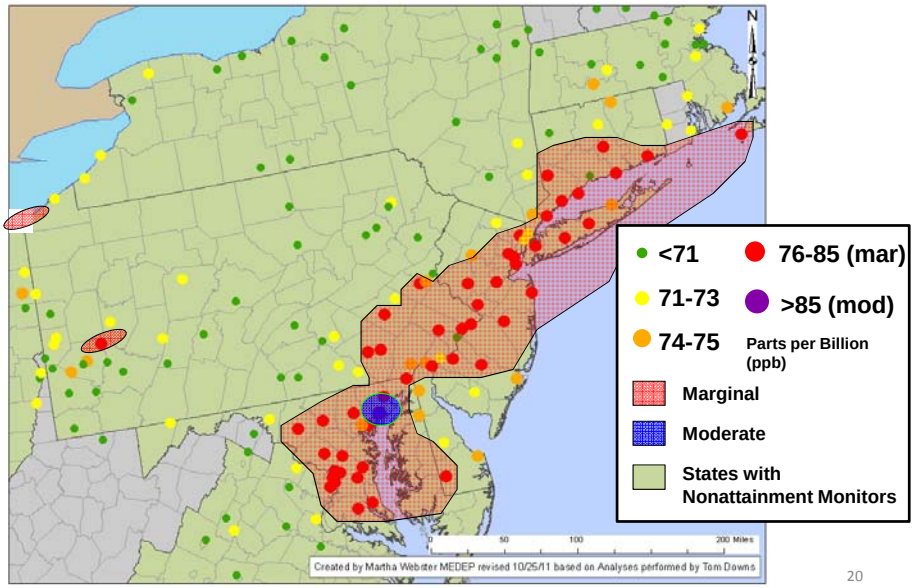
Locations Facing Potential 2015/2018 Attainment Dates (2011 DV)



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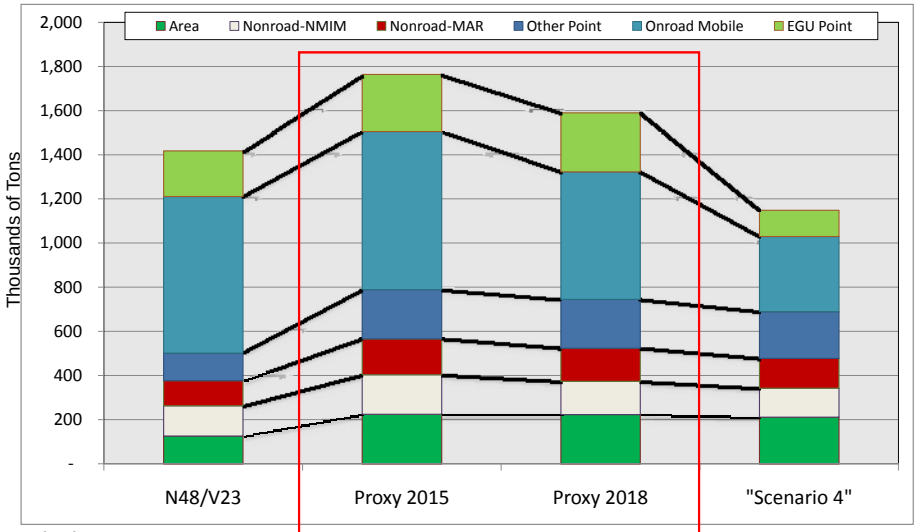
Interpolation of Annual NO_X Emissions



Emissions as % of 2007 Base:	52%	65%	58%	42%

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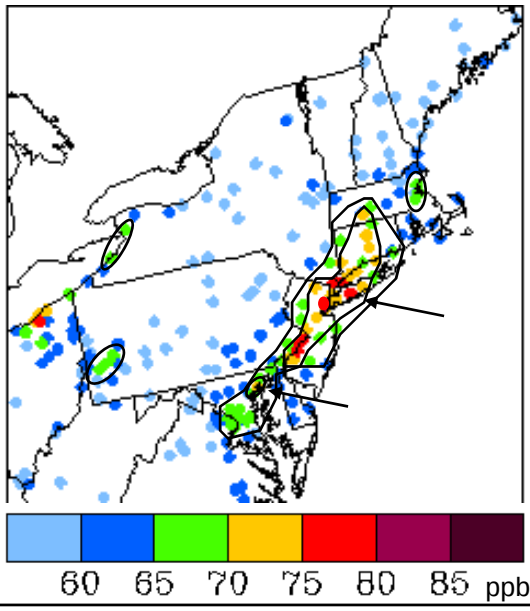
Estimated Areas Above 75ppb

Based on 2020 (N48/V23) Bounding Run



2018

Most red and yellow locations will fail to attain

More locations would likely fail to attain by 2015
(Probably will include all yellow and most green locations)

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