

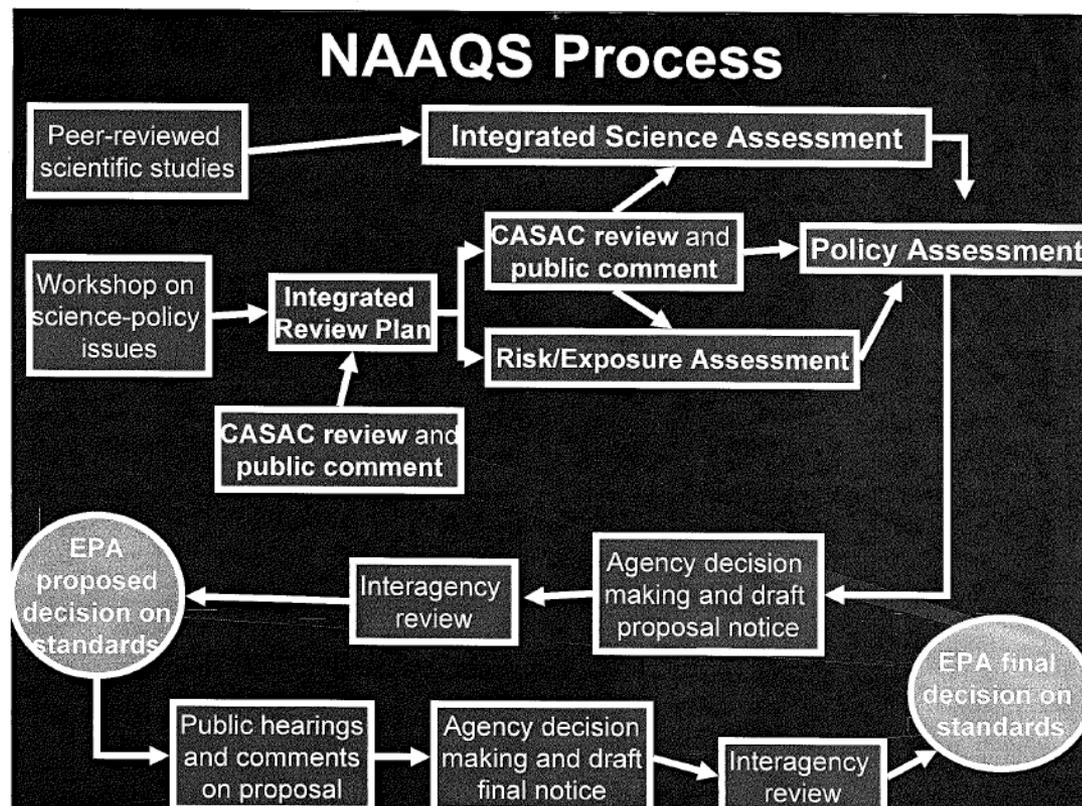
# What's New in National Ambient Air Quality Standards?

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# What is the NAAQS?

Ambient air quality standards established by the USEPA to protect public health and welfare (among other things).



# Pollutants monitored

- Nitrogen dioxide
- Carbon monoxide
- Particulate matter
- Sulfur dioxide
- Lead
- Ozone
- AQD monitors other things, not for NAAQS
  - Volatile organic compounds, semi-volatile organic compounds, metals, meteorological measurements



# History of NAAQS

	1971	1978	1979	1987	1997	2006	2008	2010	2012	2015	
CO	1 hour maximum: 35 ppm (1x per year). 8 hour maximum: 9 ppm (1x per year).										
Lead	Calendar quarter average: 1.5 µg/m³.					3-month average: 0.15 µg/m³.					
NO2	Annual average: 53 ppb.							98th %ile of 1-hour: 100 ppb (3 years). Annual average: retained.			
SO2	24-hour maximum: 0.14 ppm (1x per year). Annual average: 0.03 ppm.							1-hour average of 99th %ile: 75 ppb (3 year average). Previous revoked.			
Ozone	Total photochemical oxidants: 1-hour: 0.08 ppm (>1x per year).		1-hour maximum: 0.12 ppm (1x per year).		4 <sup>th</sup> highest daily maximum 8 hour: 0.08 ppm (3-year average).		4 <sup>th</sup> highest daily maximum 8 hour: 0.075 ppm (3-year average).		4 <sup>th</sup> highest daily maximum 8 hour: 0.070 ppm (3-year average).		
TSP & PM10	24-hour average: 260 µg/m³ (1x per year). Annual mean: 75 µg/m³.			24-hour average: 150 µg/m³ (1x/ year over 3 years). Annual mean: 50 µg/m³ (3-year average).		Annual average: revoked. 24-hour average: retained					
PM2.5					Annual mean: 15.0 µg/m³ (3-year average). 98 <sup>th</sup> %ile of 24-hour average: 65 µg/m³ (3-year average)	Annual mean: retained 98 <sup>th</sup> %ile of 24-hour average: 35 µg/m³ (3-year average).		Annual mean: 12.0 µg/m³ (3-year average). 98 <sup>th</sup> %ile of 24-hour average: retained			

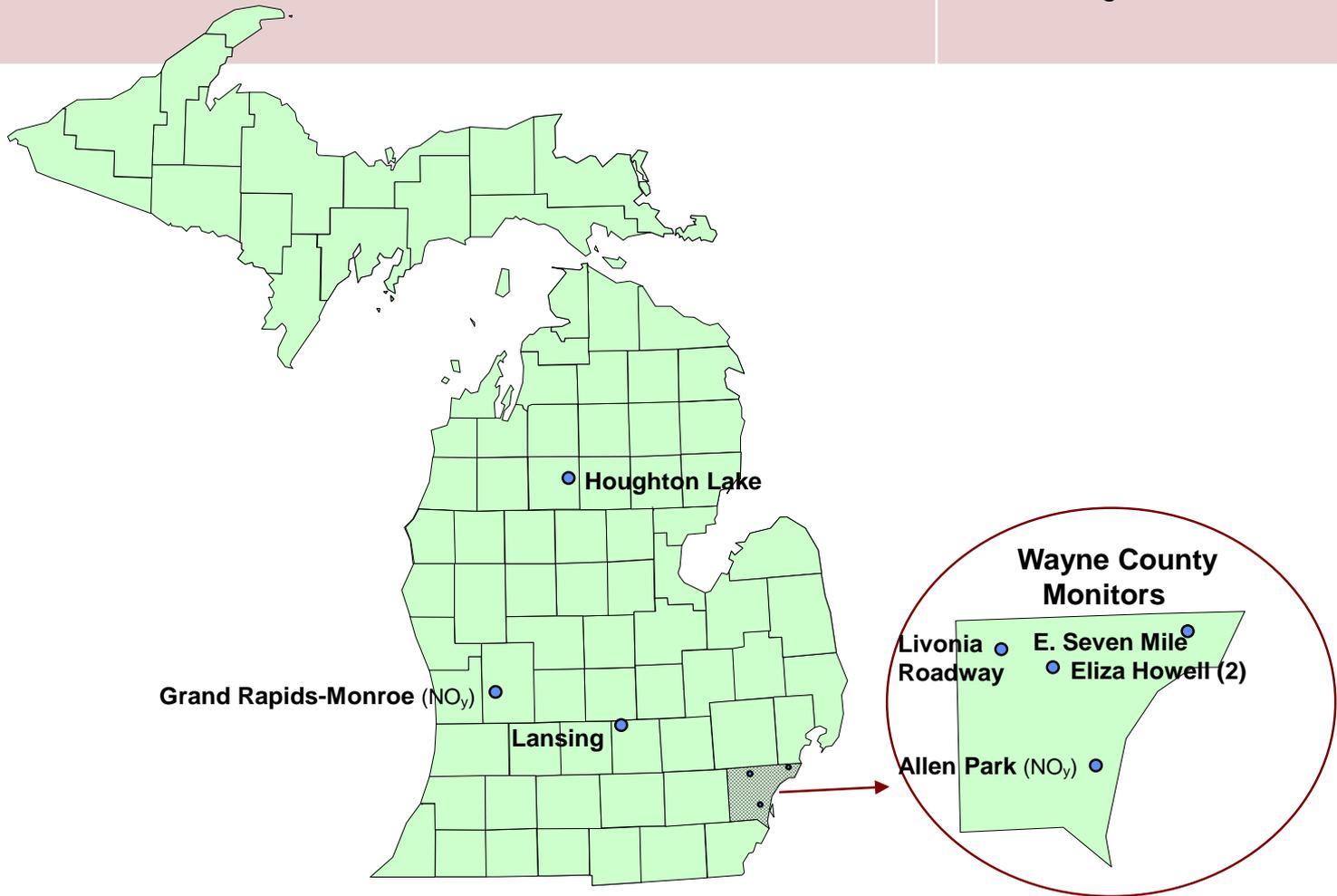
Particulates



# Oxides of Nitrogen



	1971	1978	1979	1987	1997	2006	2008	2010	2012	2015	
<b>NO2</b>	Annual average: 53 ppb.							1-hour: 100 ppb Annual avg: retained			



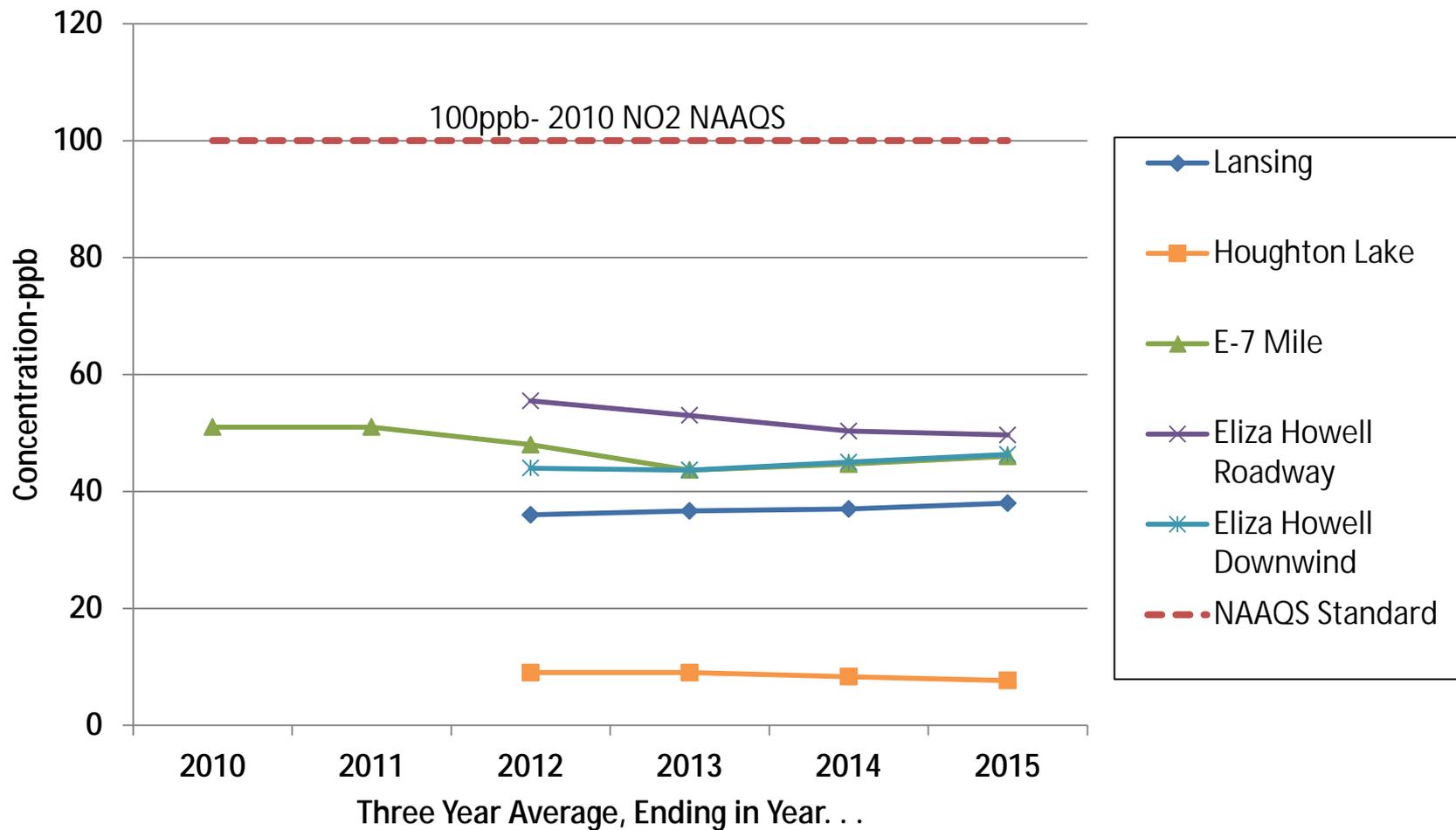
## The 2010 NO<sub>2</sub> NAAQS

- added 1-hr standard
- included a Near Road component
  - ∅ Phase 1: Eliza Howell Park in Detroit (2 sites)
  - ∅ Phase 2: I-96/Telegraph in Detroit
  - ∅ Phase 3: Grand Rapids (may be withdrawn by EPA)

## Eliza Howell Near Road



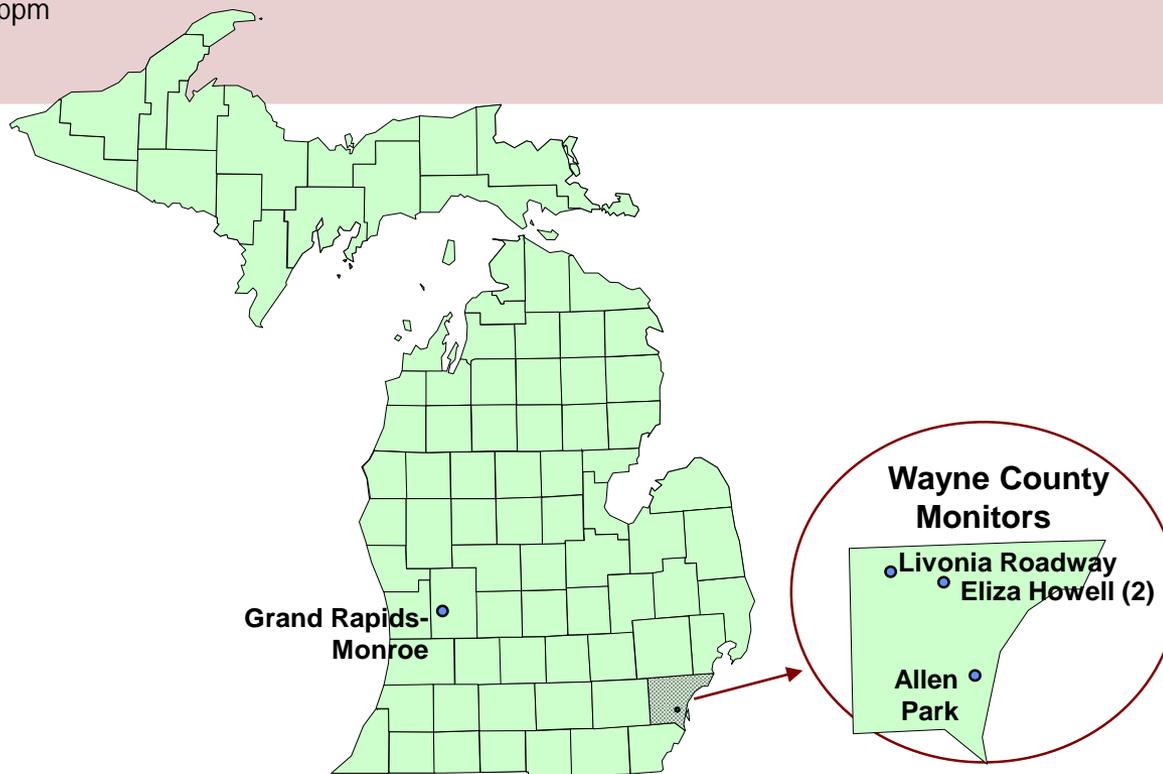
## 3-year average of the 98th percentile of 1-hr values



Michigan has not had an NO<sub>2</sub> non-attainment area for the annual or 1-hour NAAQS since it was promulgated (1971).

	1971	1978	1979	1987	1997	2006	2008	2010	2012	2015
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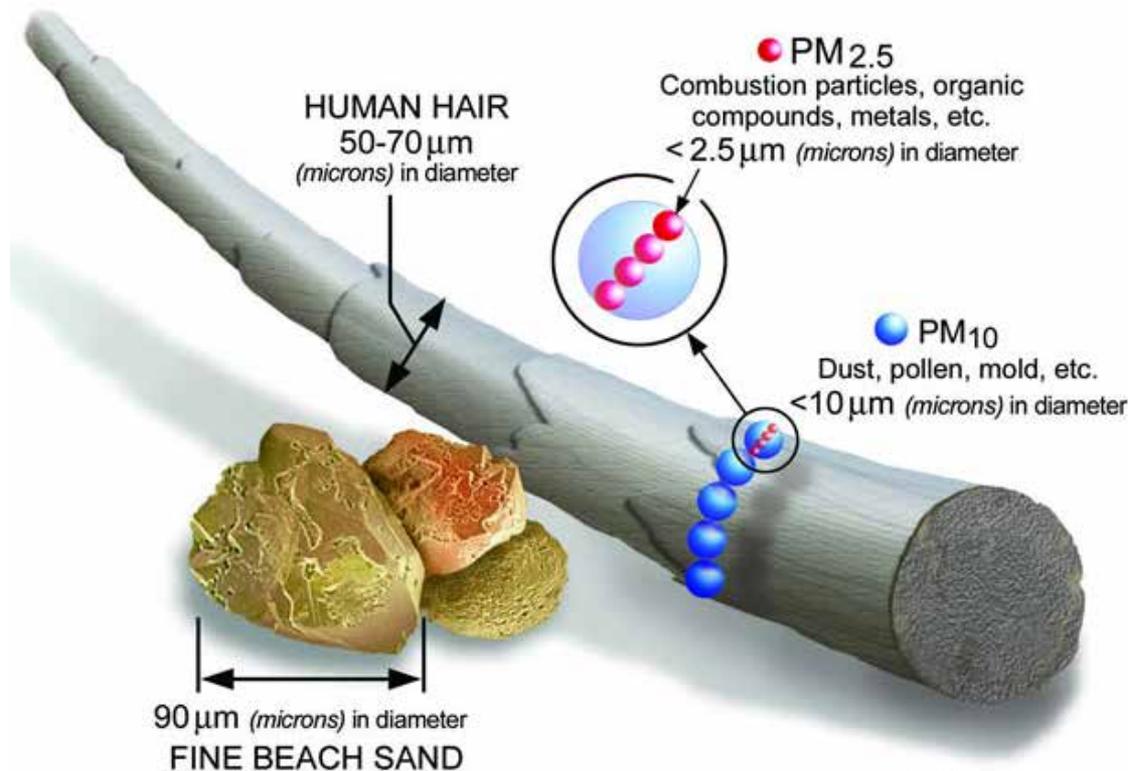
CO  
 1 hour maximum: 35 ppm  
 8 hour maximum: 9 ppm



- Been in attainment since the '80s
- It's rarely a concern
- Nothing new on the horizon

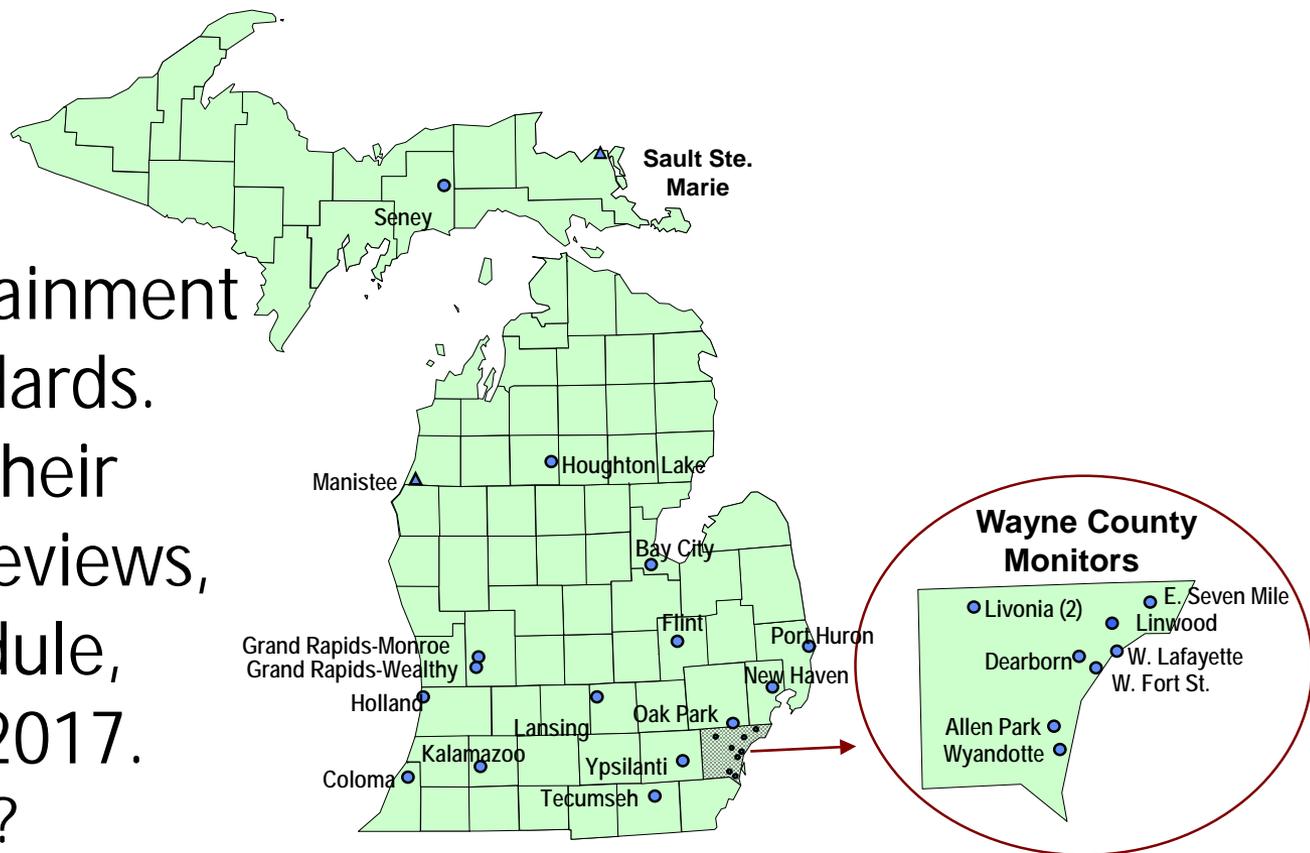
# Particulate Matter (PM<sub>2.5</sub> and PM<sub>10</sub>)

	1971	1978	1979	1987	1997	2006	2008	2010	2012	2015
TSP & PM <sub>10</sub>	TSP: 24-hr avg: 260 µg/m <sup>3</sup> Annual mean: 75 µg/m <sup>3</sup>			PM <sub>10</sub> : 24-hr avg: 150 µg/m <sup>3</sup> Annual mean : 50 µg/m <sup>3</sup>		PM <sub>10</sub> : 24-hr avg: retained Annual avg: revoked				
PM <sub>2.5</sub>					24-hr avg: 65 µg/m <sup>3</sup> Annual mean: 15.0 µg/m <sup>3</sup>	24-hr avg: 35 µg/m <sup>3</sup> Annual mean: retained	24-hr avg: retained Annual mean: 12.0 µg/m <sup>3</sup>			



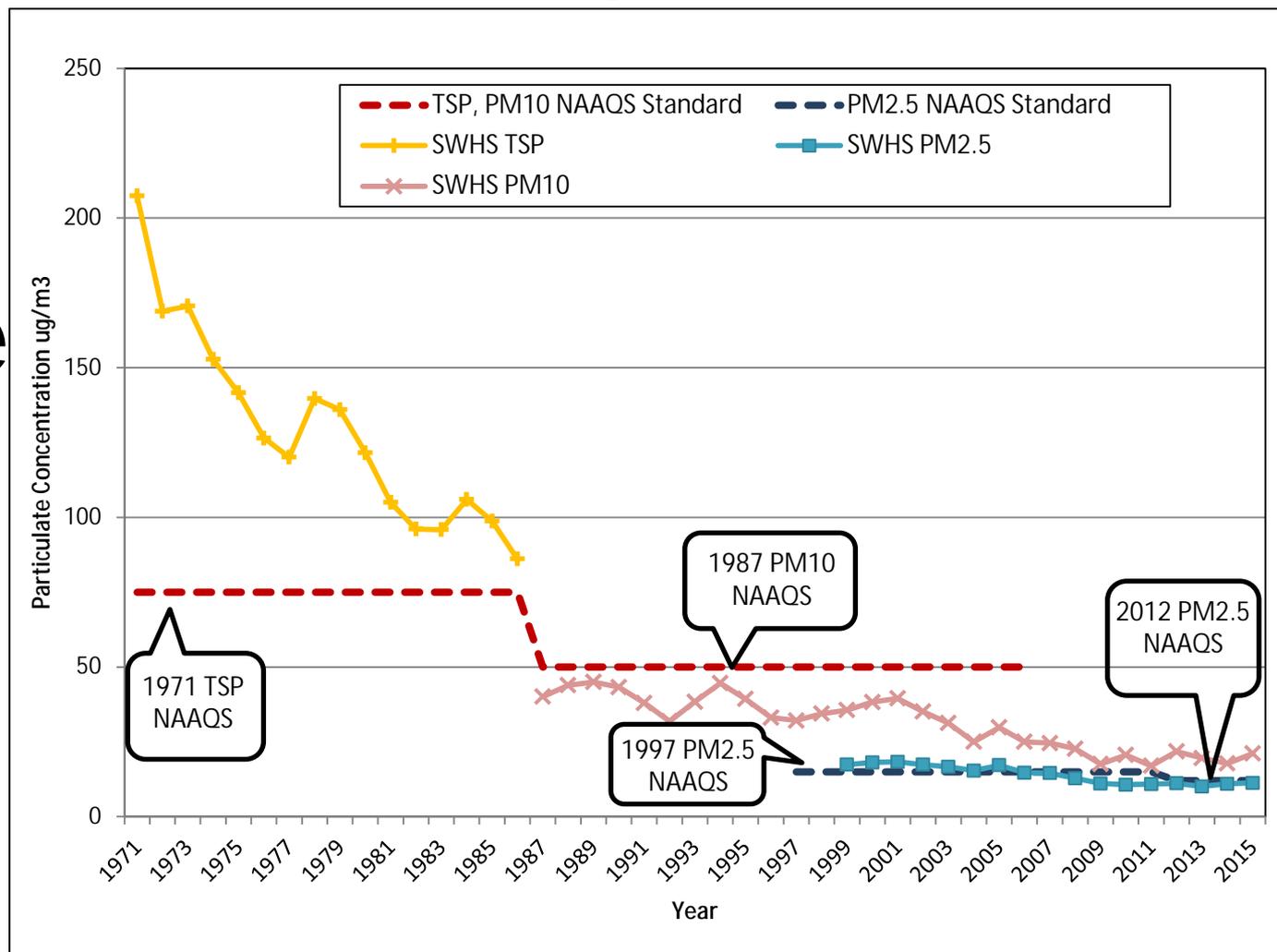
# Particulate Matter

- Currently in attainment for all PM standards.
- EPA is starting their next round of reviews, if kept on schedule, NAAQS due in 2017.
  - PM ultrafine?
  - 2<sup>nd</sup>: Urban visibility?



# Annual Average Concentrations

## Particulate Matter



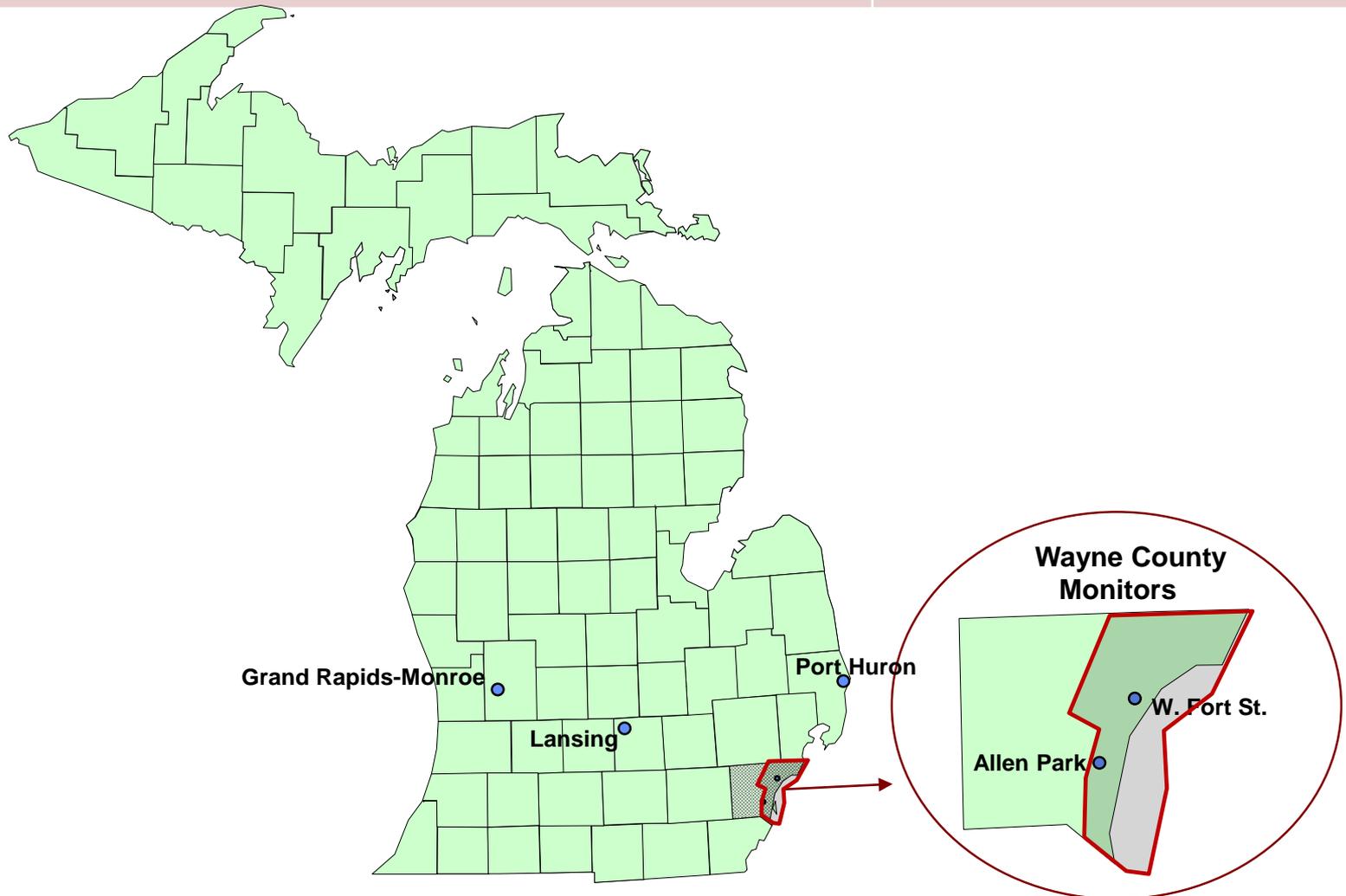
Michigan has had non-attainment areas in Southeast Michigan. Currently in attainment for all PM standards.



# Sulfur Dioxide



	1971	1978	1979	1987	1997	2006	2008	2010	2012	2015	
<b>SO2</b>	24-hr max: 0.14 ppm (1x per year). Annual avg: 0.03 ppm.							1-hr avg: 75 ppb. Previous revoked.			



# 2010 Standard

## Step 1 – SE Michigan

- State had to look at *monitored* violations and model sources of > 100 tpy in the area
- A monitor violated 75 ppb standard (SWHS - 96 ppb)
- We negotiated and EPA designated area as nonattainment in 2013
- AQD submitted State Implementation Plan (SIP) in May 2016 (Parallel FIP)
- SIP provides for compliance by Fall 2018 by controlling SO<sub>2</sub> sources
  - Carmeuse Lime
  - US Steel
  - DTE River Rouge
  - DTE Trenton Channel
  - EES Coke\*



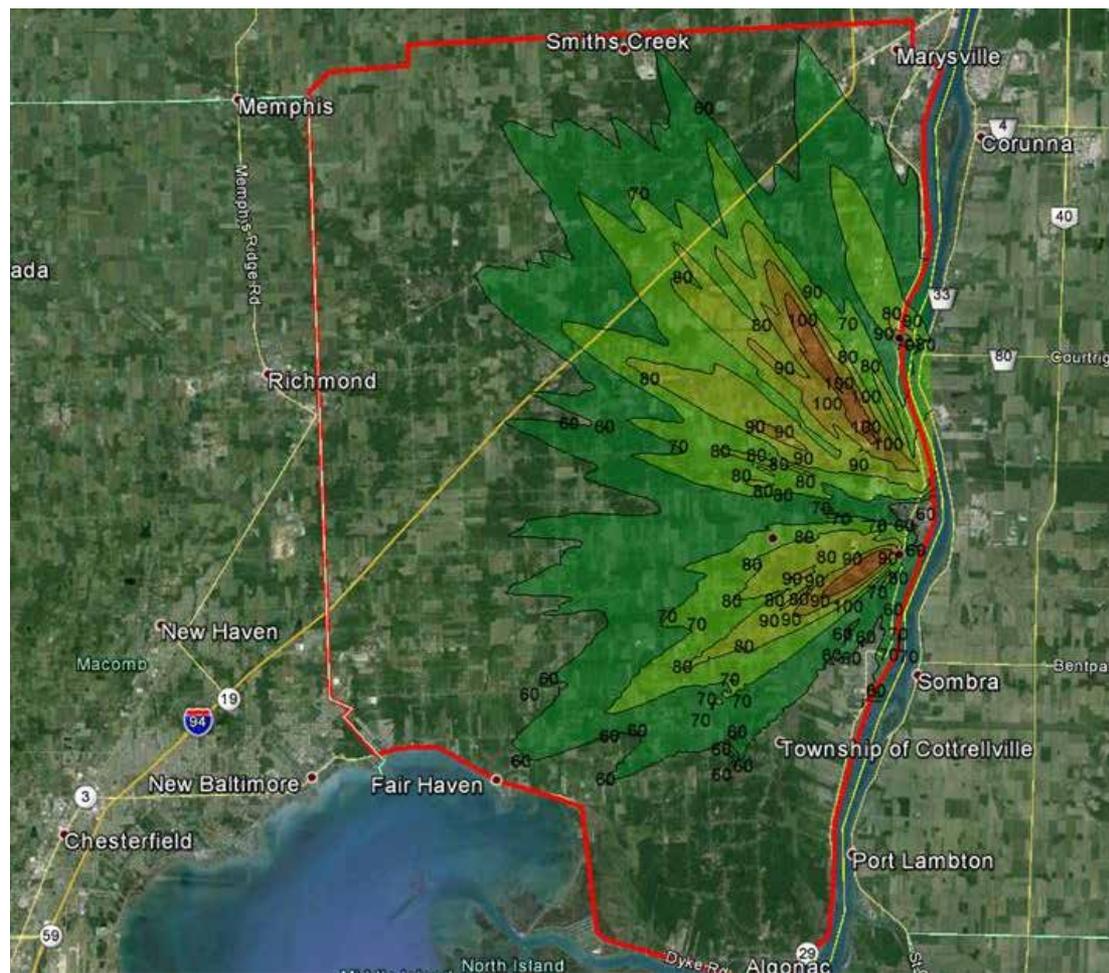
# SO<sub>2</sub> NAA in Southeast Michigan



# 2010 Standard

## Step 2 – St. Clair County

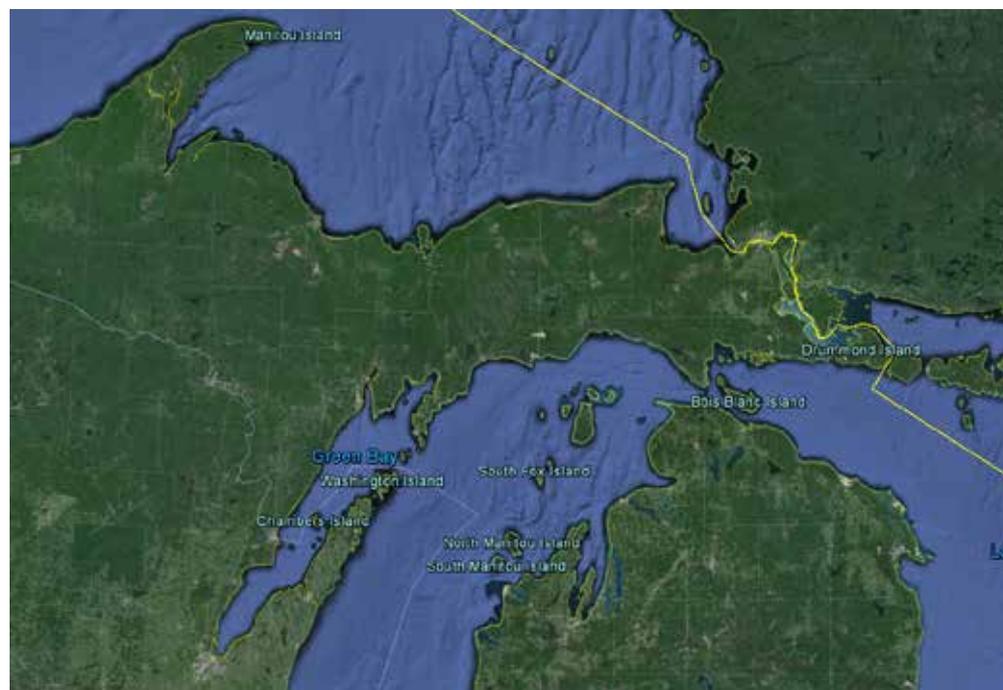
- Modeled sources meeting criteria (except those in NAA)
- Looked at 7 facilities w/Electrical Generating Units
- DTE Belle River / St. Clair
- AQD recommended a NAA boundary in Sept 2015 (red)
- EPA should designate NAA soon
- AQD must submit SIP around Dec of 2017
- SIP provides for compliance by June 2021

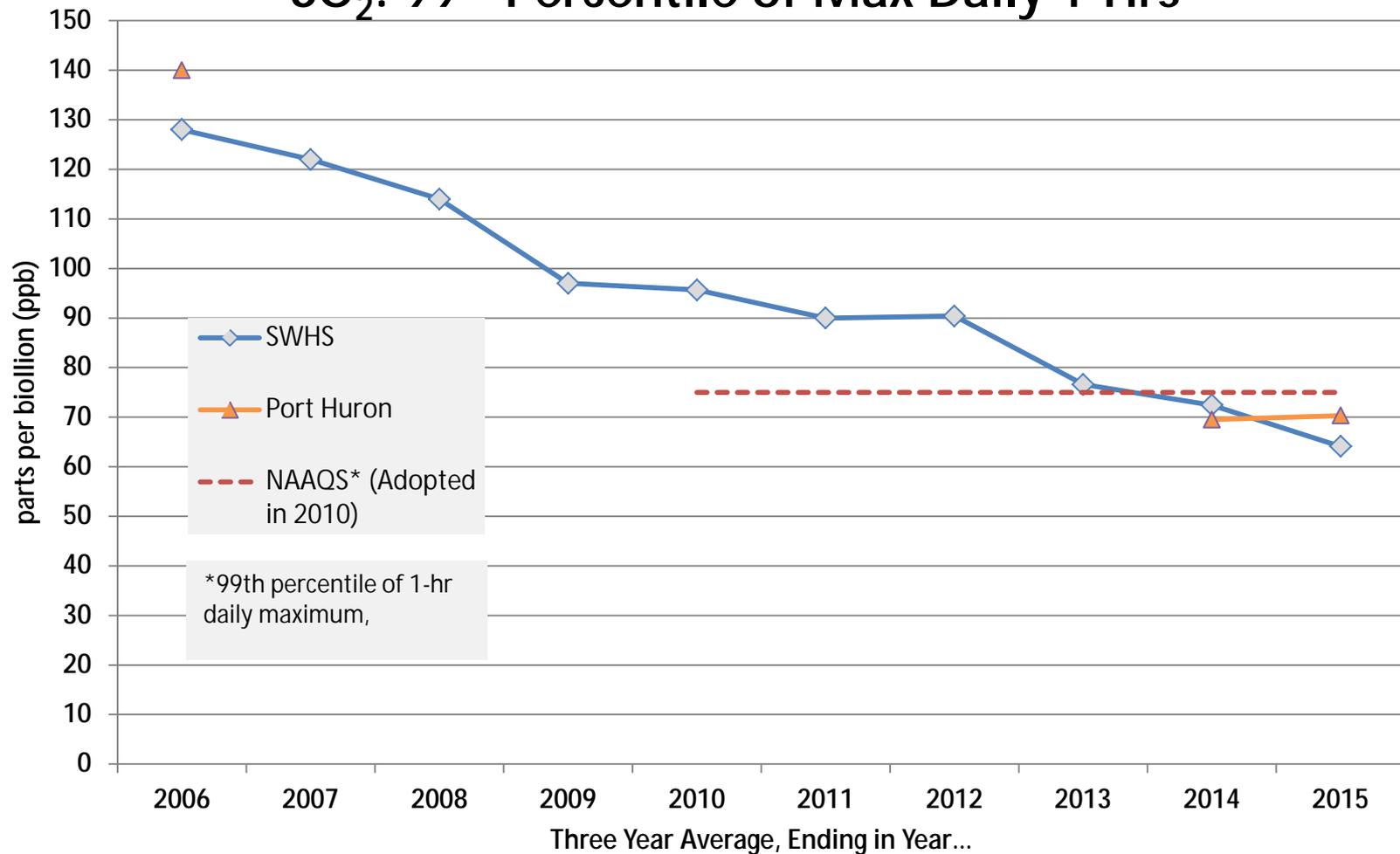


# 2010 Standard

## Step 3 – Northern Michigan

- Sources emitting > 2000 tpy of SO<sub>2</sub> that aren't covered by other two steps
- Two sources fit
  - Lafarge in Alpena (cement)
  - Escanaba Paper
- Two “paths” - monitoring or modeling
  - Both are choosing modeling (actuals)
- Recommend NAA by Jan 2017



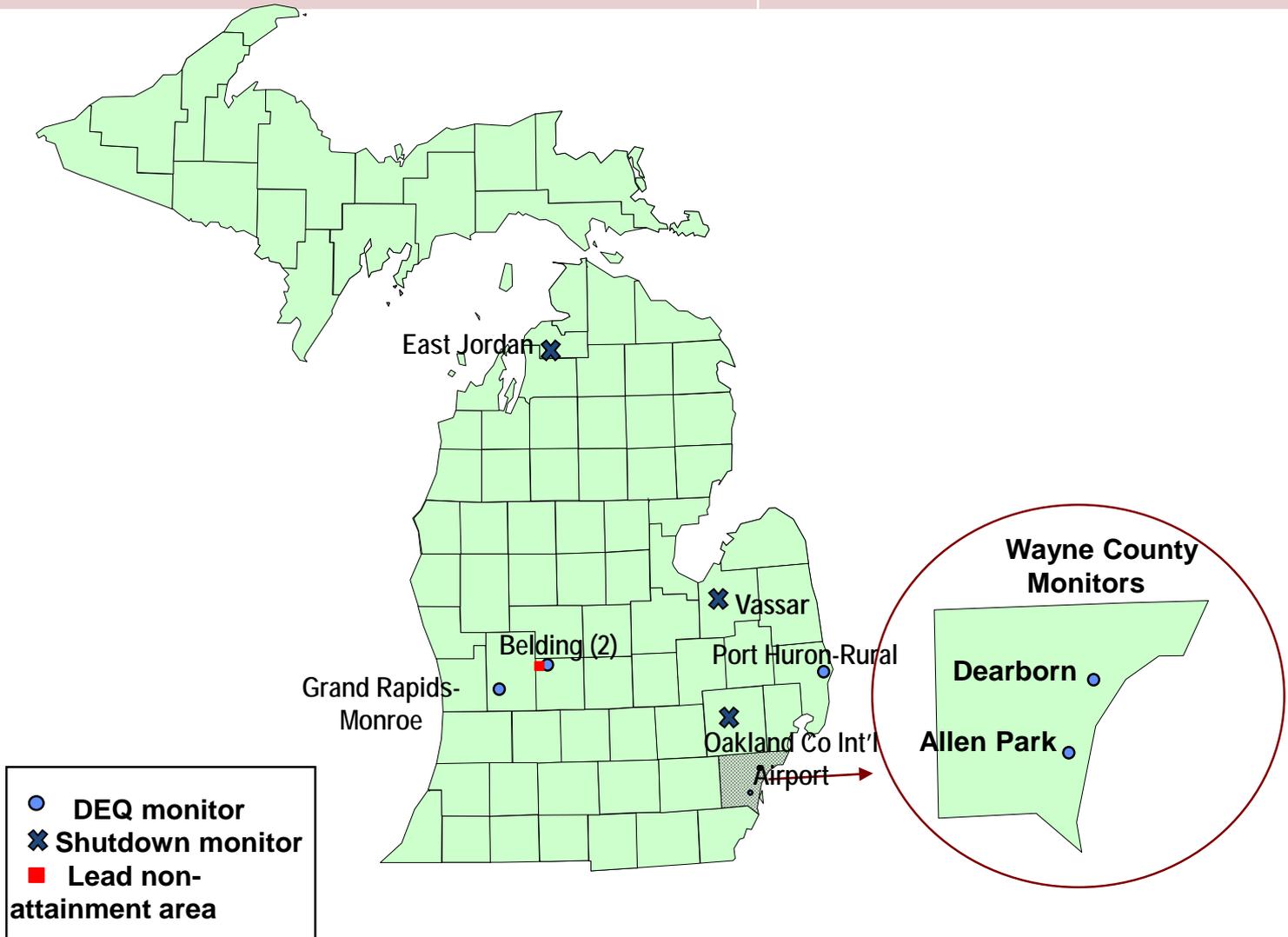
SO<sub>2</sub>: 99<sup>th</sup> Percentile of Max Daily 1-Hrs



# Lead (Pb)

Pb

	1971	1978	1979	1987	1997	2006	2008	2010	2012	2015	
Lead		Calendar quarter average: 1.5 $\mu\text{g}/\text{m}^3$ .					3-month average: 0.15 $\mu\text{g}/\text{m}^3$ .				





- EPA is proposing to retain the current Lead standards without revision (Jan 2015)
- DEQ submitted a Request for Redesignation to Attainment for 2008 Lead NAAQS Standard in January 2016.

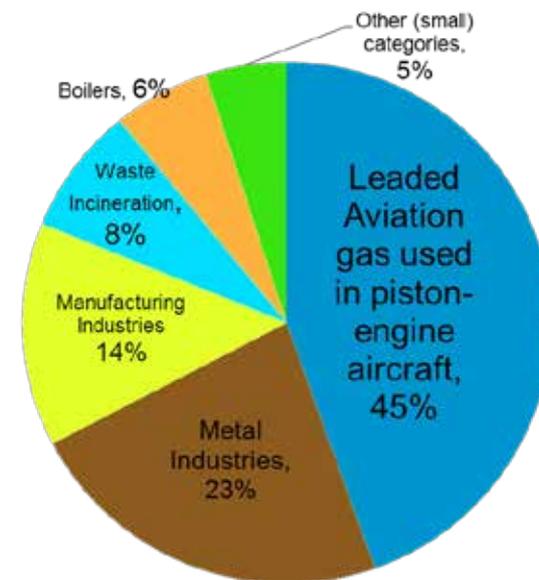
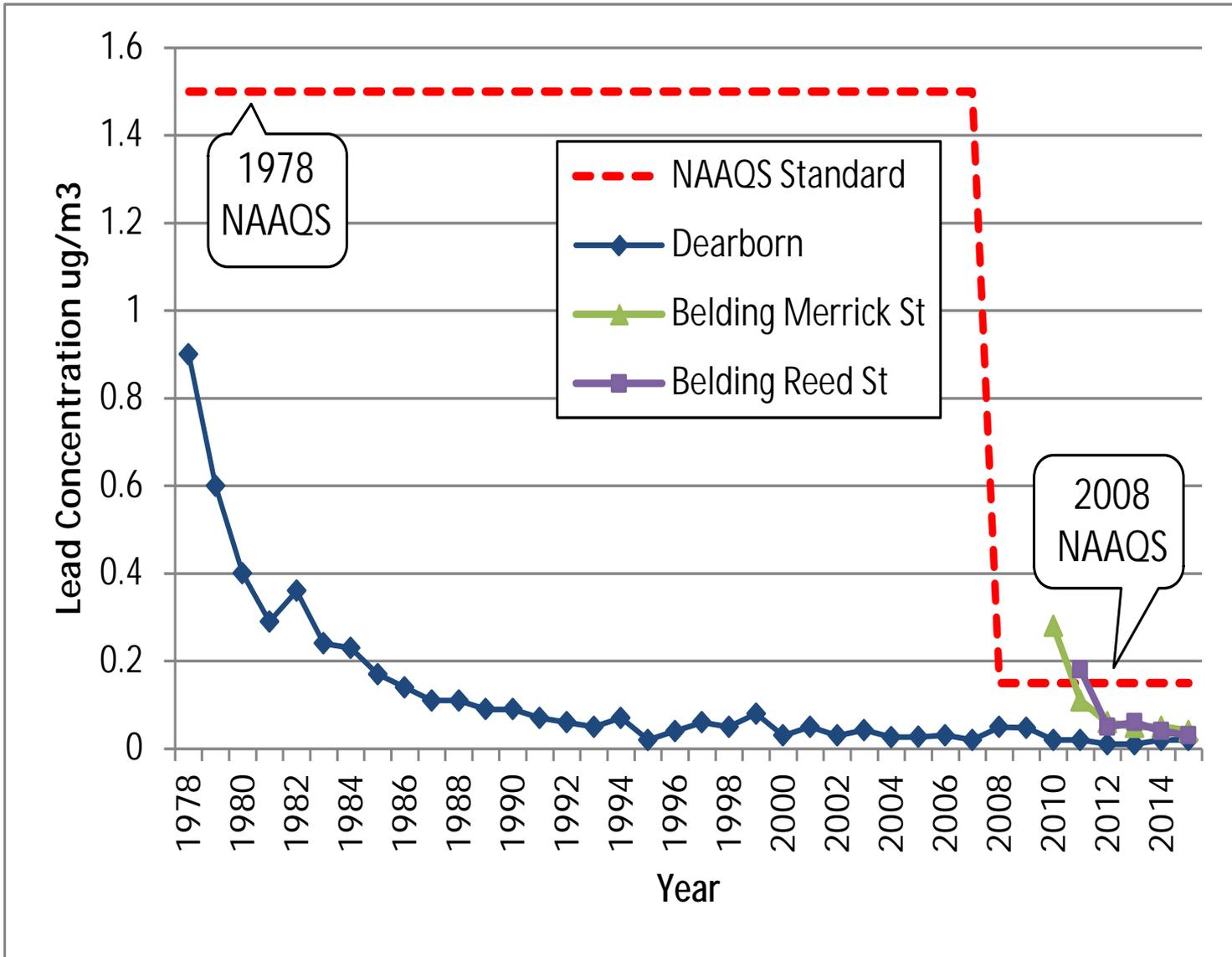


Chart based on EPA's 2002 National Emission Inventory (NEI) with modifications documented in Tom Pace's 05/01/08 memorandum and Marion Hoyer's 05/12/08 and 05/14/08 memoranda to the docket.









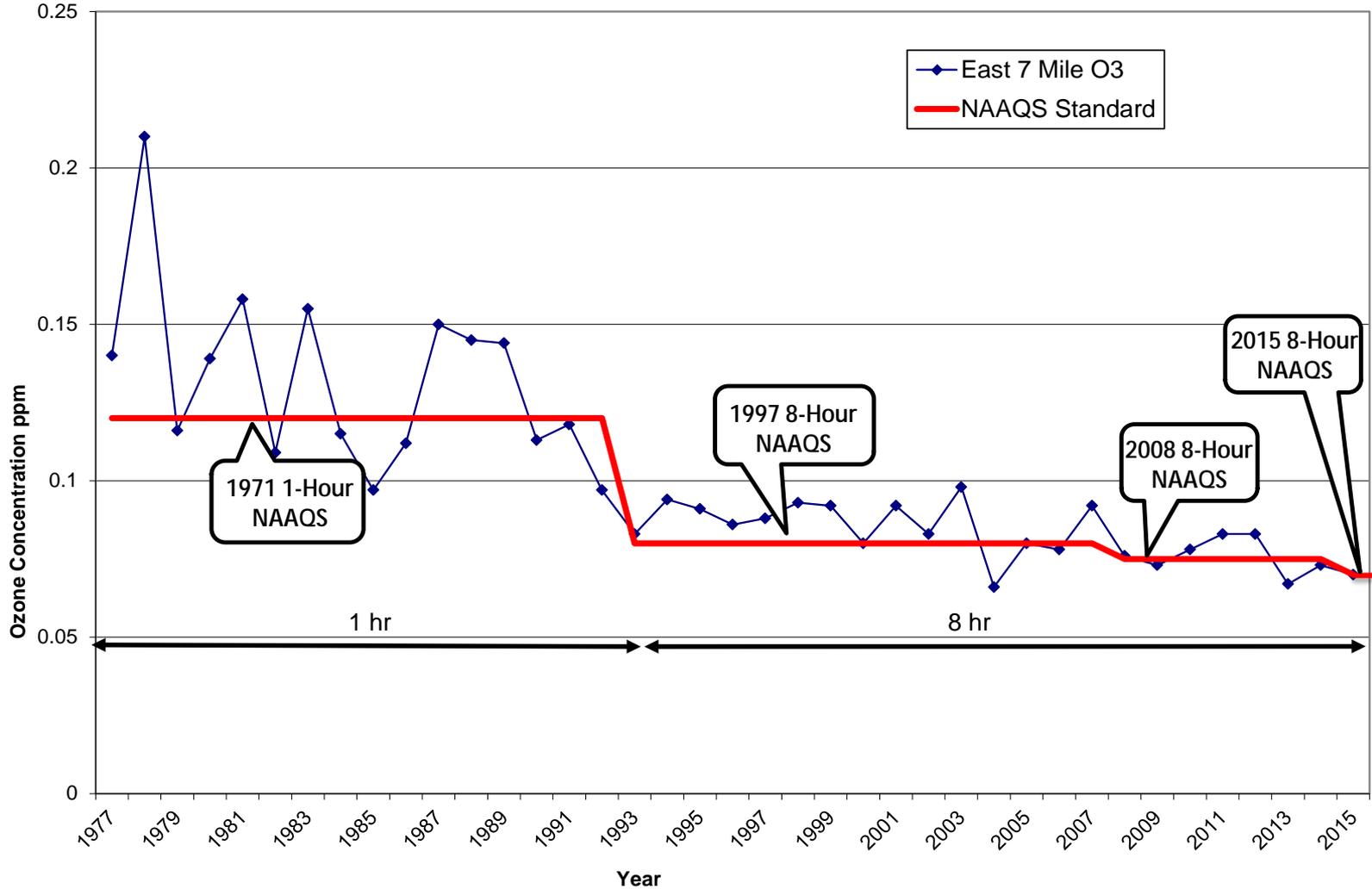
# Ozone



	1971	1978	1979	1987	1997	2006	2008	2010	2012	2015
Ozone	TPO: 1-hour: 0.08 ppm			1-hour max: 0.12 ppm		8 hour: 0.08 ppm		8 hour: 0.075 ppm		8 hour: 0.070 ppm



# Ozone Trend

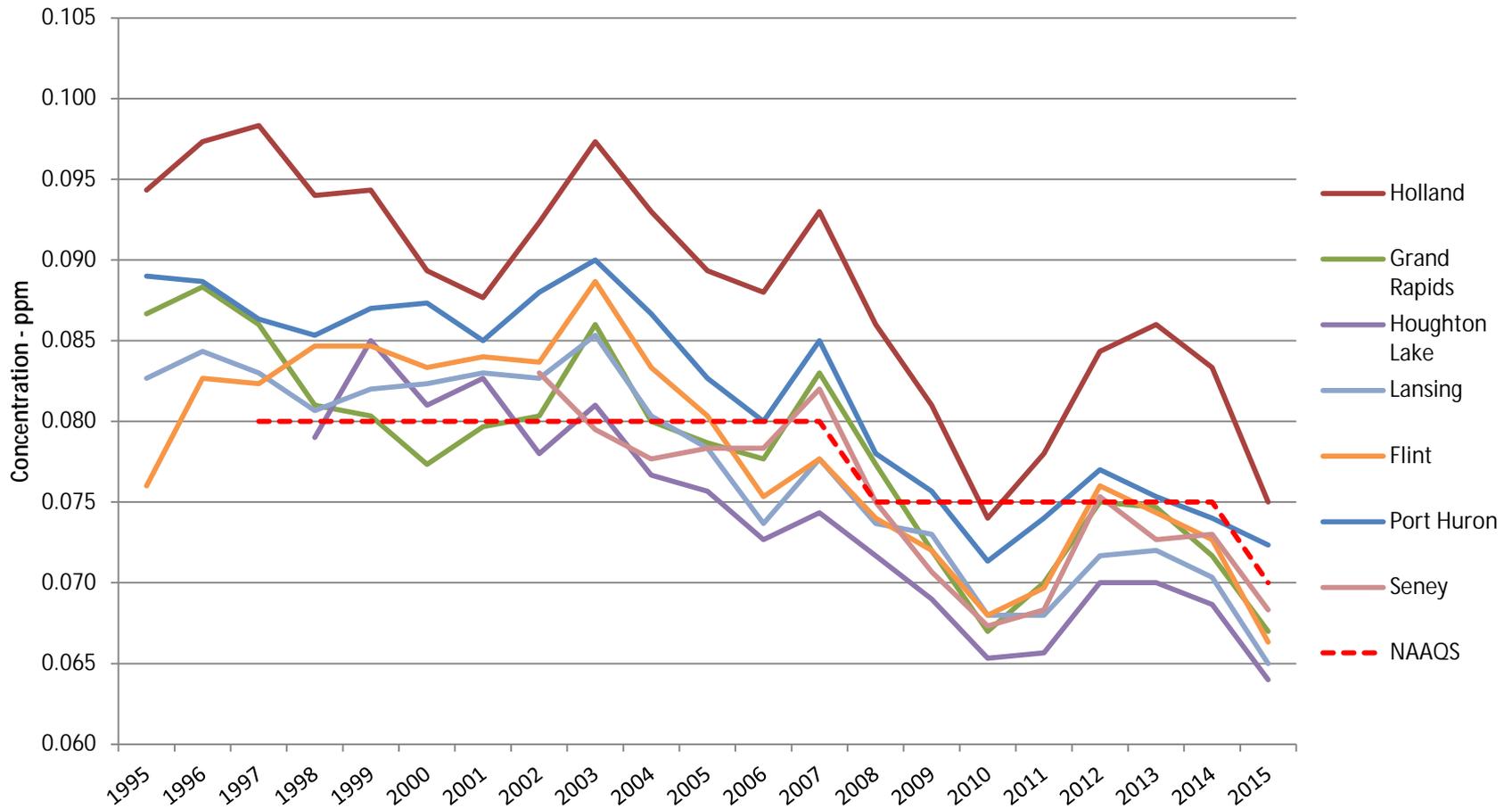


# 2015 Ozone Standard

- Reduced the NAAQS to 0.070 ppm
- Adjusts the Air Quality Index breakpoints
  - Index used to communicate air quality to the public
  - More Clean Air Action Days
- Extends the monitoring season (Mar-Oct)
- New monitoring provisions
  - More monitoring of organics



# Ozone Trend

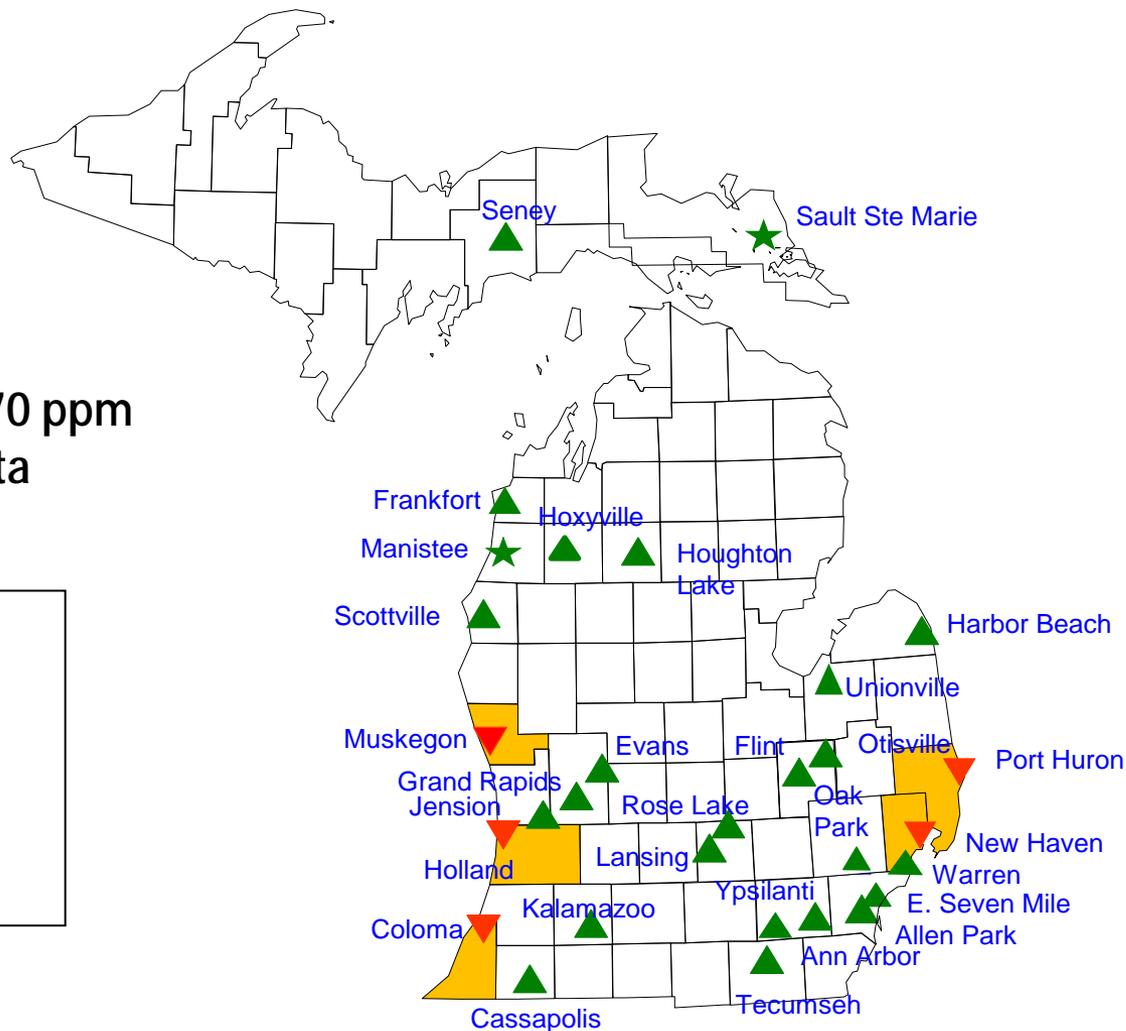


# Potential Ozone Non-attainment

Based on  
8-hr NAAQS of 0.070 ppm  
2013-2015 data

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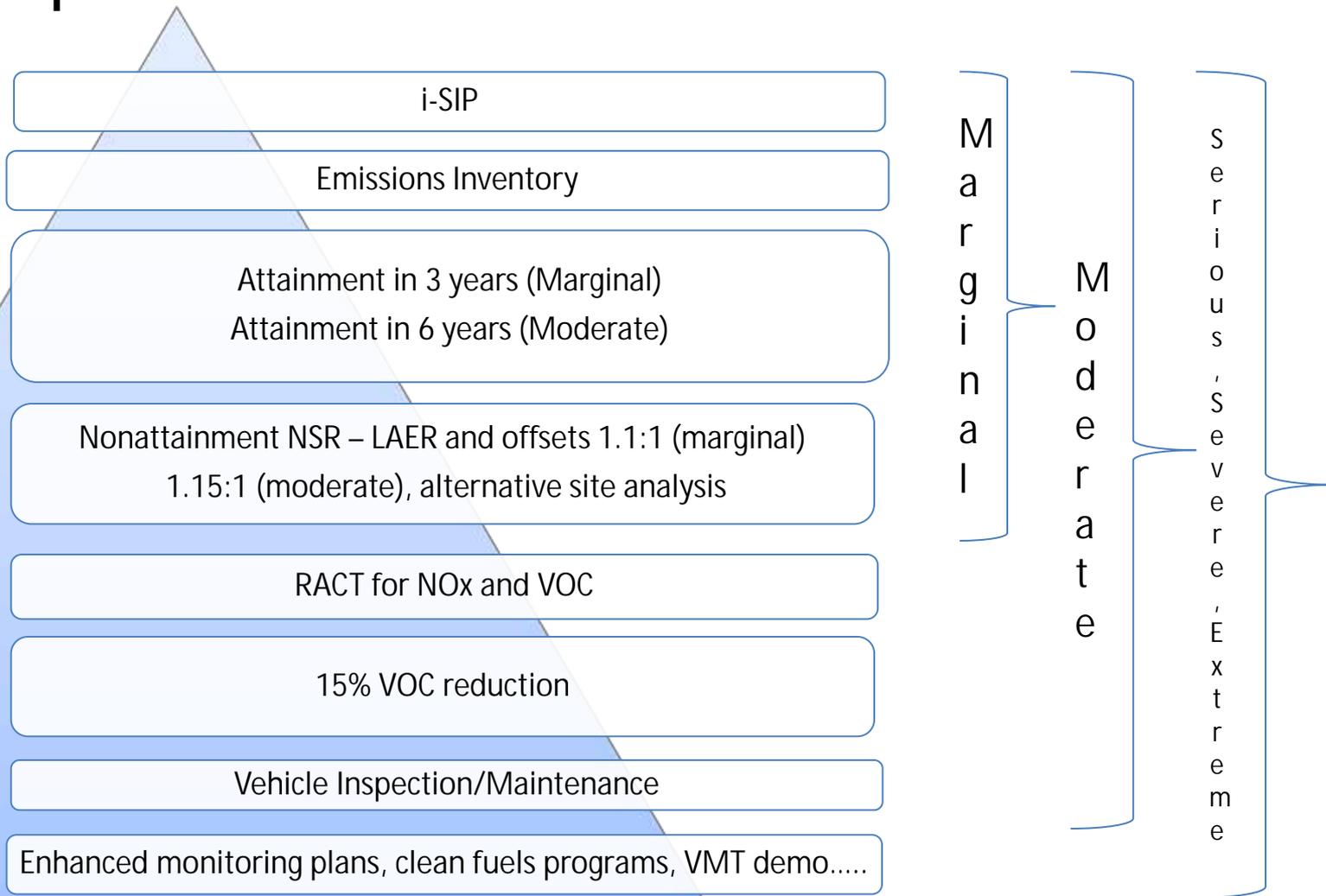
- ▼ MDEQ monitors over maximum value
- ▲ MDEQ monitors under maximum value
- ★ Tribal monitors over maximum value
- ★ Tribal monitors under maximum value



# Timeline - Implementation of Standard

- **By October 1, 2016:** States (and tribes) recommend the boundaries of the non-attainment area(s). Based on 2013-2015 air quality data
  - Use Five Factor Analysis: Air Quality Data, Emissions Data, Meteorology, Geography, Jurisdictional Boundaries
- **By June 1, 2017:** EPA responds to states initial recommendations by proposing their own boundaries. EPA then takes comments on their proposal.
- **By October 1, 2017:** EPA issues final area designations; those designations likely would be based on 2014-2016 air quality data.
- **2020 to 2021:** States and tribes complete attainment demonstrations (SIP), outlining how they will reduce pollution to meet the standards.
- **2020 to 2037:** States are required to meet the primary (health) standard, with deadlines depending on the severity of an area's ozone problem.

# Requirements for NAA Classifications



## Maximum allowable for 2016 (4<sup>th</sup> high not to exceed in ppb)

### Holland

Max to meet  
Standard: 63

So far:

~~84, 80, 78, 76~~

2015: 72

2014: 77

### Port Huron

Max to meet  
Standard: 66

So far:

~~82, 79, 78, 66~~

2015: 75

2014: 71

### Lansing

Max to meet  
Standard: 83

So far:

~~78, 76, 73, 70~~

2015: 64

2014: 65

(As of June 16, 2016)

# What's on the horizon?



# Upcoming activities

- EPA is supposed to evaluate each NAAQS every 5 years
- Each NAAQS is at a different stage of review
- State SIP milestones are at different stages
  - 2010 SO<sub>2</sub>
  - 2015 Ozone
  - 2008 Lead
  - All others in attainment

**Near Road Monitoring:** In September 2015 MDEQ received grant to collect air toxics data at two metro Detroit near road sites. Sampling to run for two years, beginning Spring 2016.

**A New Monitoring Station in 48217 (EJ area in Detroit).** Possible start date in July 2016.

**Monitoring at Refineries:** Perimeter benzene monitoring. Two week passive monitors must encircle the facility.



# Coming up!

- Regional Haze changes
- Citizen Science Monitoring
  - Toolbox for personal air sensors  
<https://www.epa.gov/air-research/air-sensor-toolbox-citizen-scientists>
- Climate change
  - Clean Power Plan
  - Vehicle standards
- Transport of pollutants to other states (CSAPR)

Thank you!

