

Ambient Air Quality Standards in Michigan – Particulate Matter and Ozone

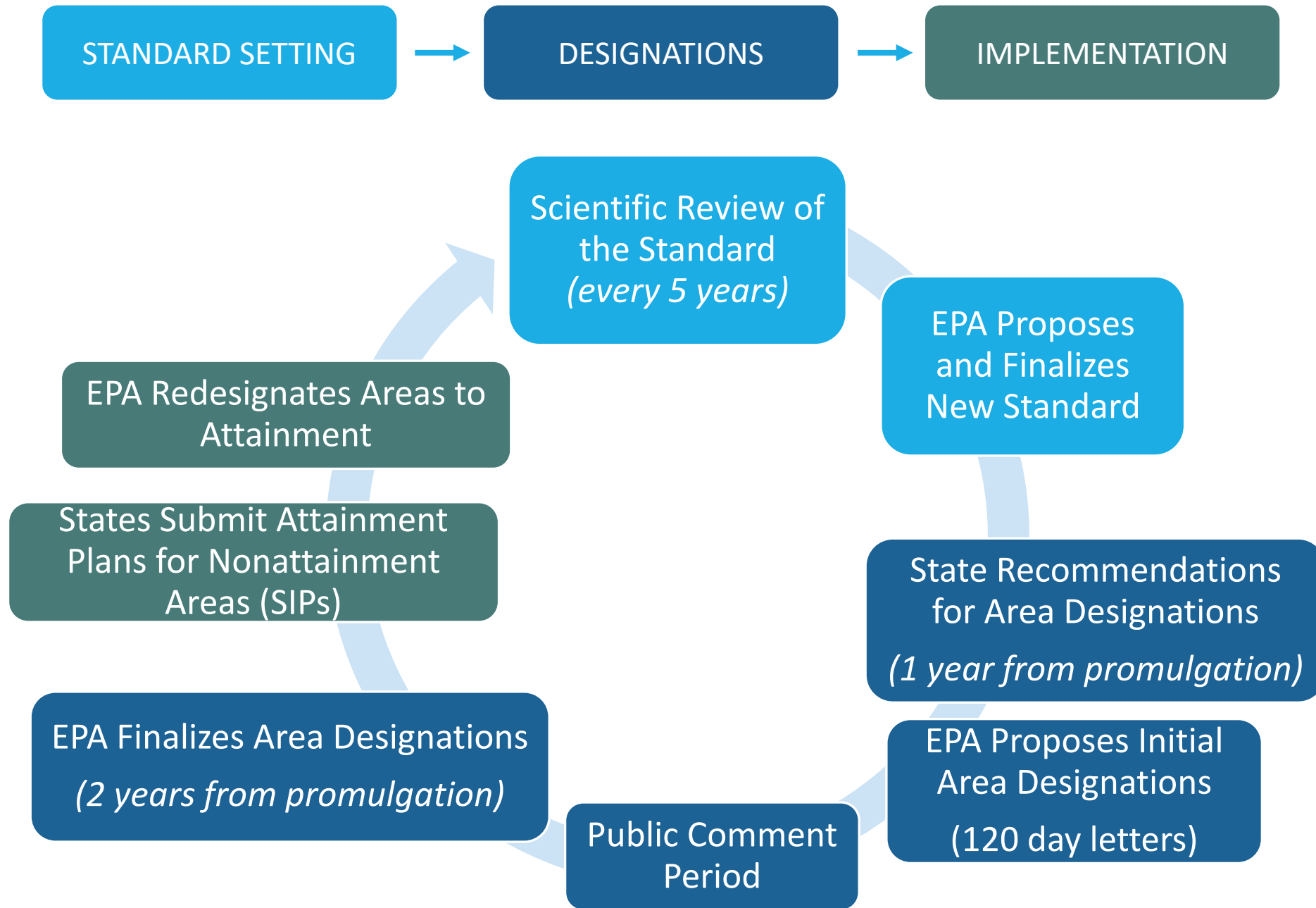
R5 AIR AND RADIATION DIVISION
AIR PROGRAMS BRANCH

SEPTEMBER 24, 2024

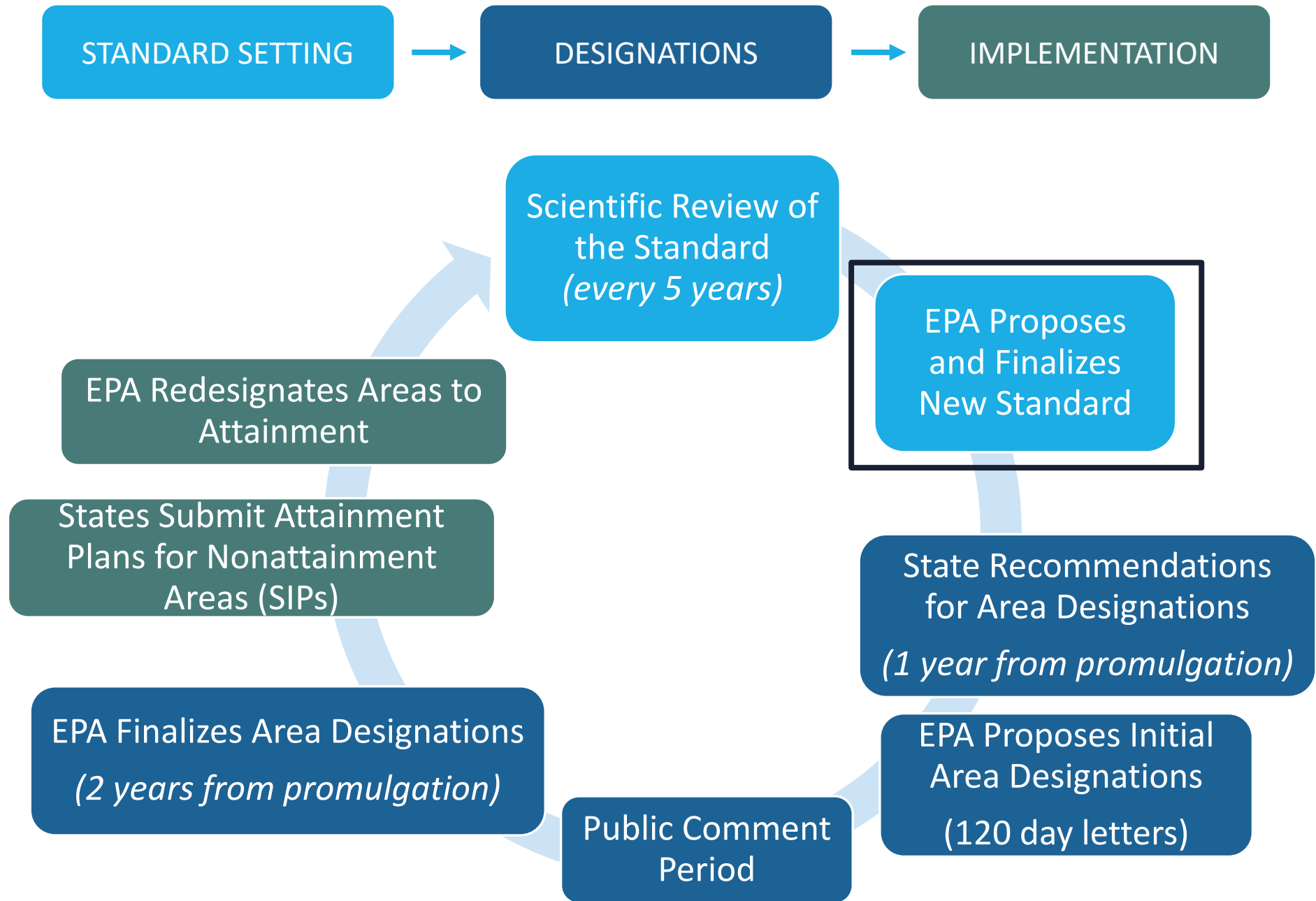
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The NAAQS Lifecycle



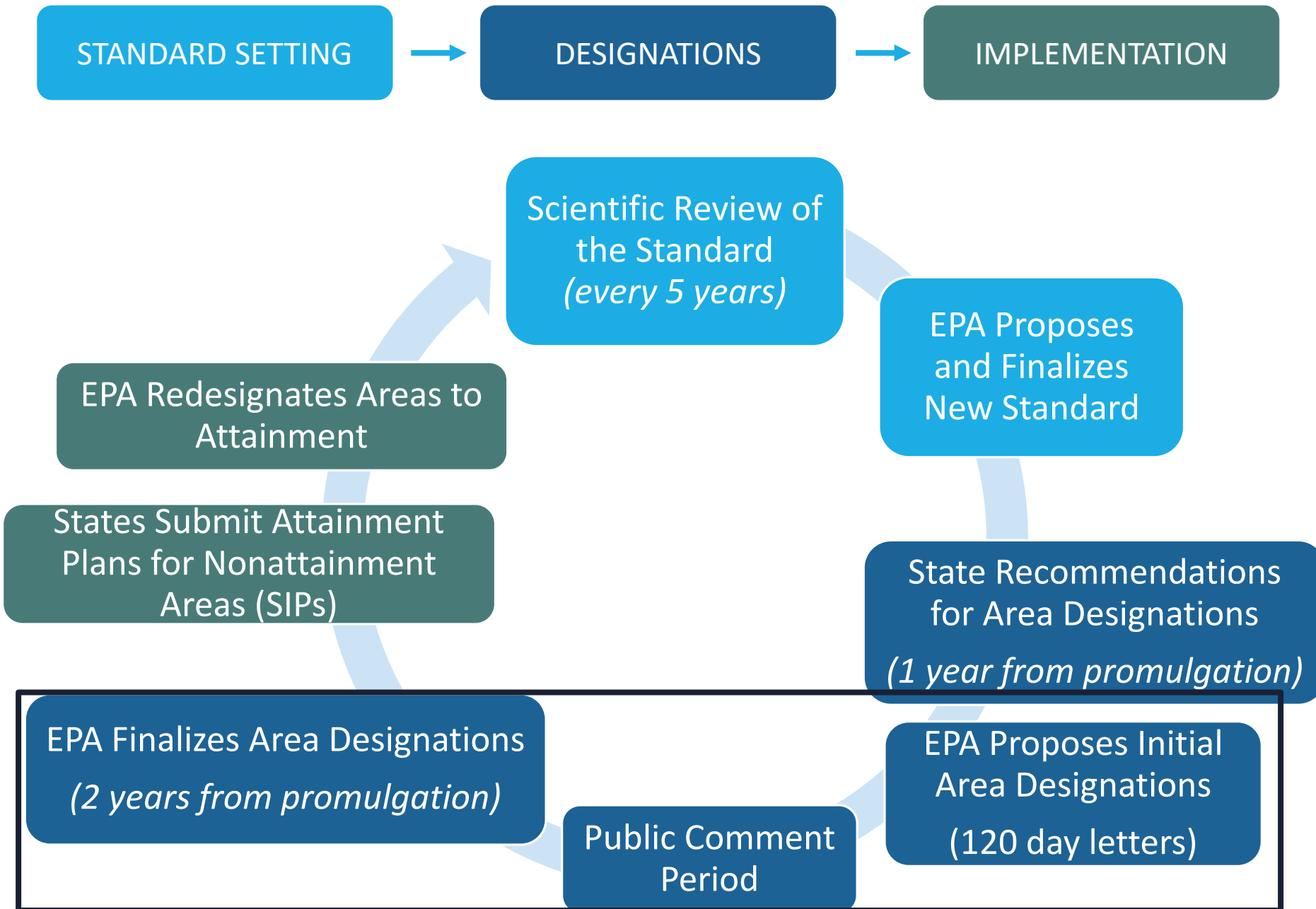


New 2024 PM Standard



Overview of the Final Rule

- On February 7, 2024, EPA strengthened the National Ambient Air Quality Standards for Particulate Matter (“PM NAAQS”) to protect millions of Americans from harmful and costly health impacts, such as heart attacks and premature death.
- Particle or soot pollution is one of the most dangerous forms of air pollution, and an extensive body of science links it to a range of serious and sometimes deadly illnesses.
- After taking into consideration the available scientific evidence, advice from the Clean Air Scientific Advisory Committee (CASAC), and nearly 700,000 public comments, **EPA is strengthened the annual health-based standard for fine particles to 9.0 micrograms per cubic meter.**



Background: What is the Area Designations Process?

- EPA regulates six ambient air criteria pollutants: particulate matter, ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead.
- Clean Air Act section 107(d) sets the requirements for the area designations process.
- After EPA revises a National Ambient Air Quality Standard (NAAQS), EPA analyzes whether all areas of the country are meeting the standard and issues regulatory determinations for states and territories within 2 years.

Types Area Designations

Attainment

- An area that meets the primary or secondary standard for a NAAQS

Nonattainment

- An area that does not meet the primary or secondary standard for a NAAQS
- An area that contributes to air quality in a nearby area that does not meet the primary or secondary standard for a NAAQS

Unclassifiable

- An area that cannot be classified on the basis of available information

Designations Schedule under CAA 107(d)

- States and tribes submit to EPA a list of areas recommended as nonattainment, attainment, and unclassifiable
 - Deadline is one year from promulgation of a new or revised NAAQS
- EPA notifies states and tribes of modifications to their recommendations
 - Deadline is 120 days prior to final designations
- EPA makes final nonattainment designations
 - Deadline is two years from promulgation of a new or revised NAAQS
 - EPA may take one additional year, if available information is insufficient

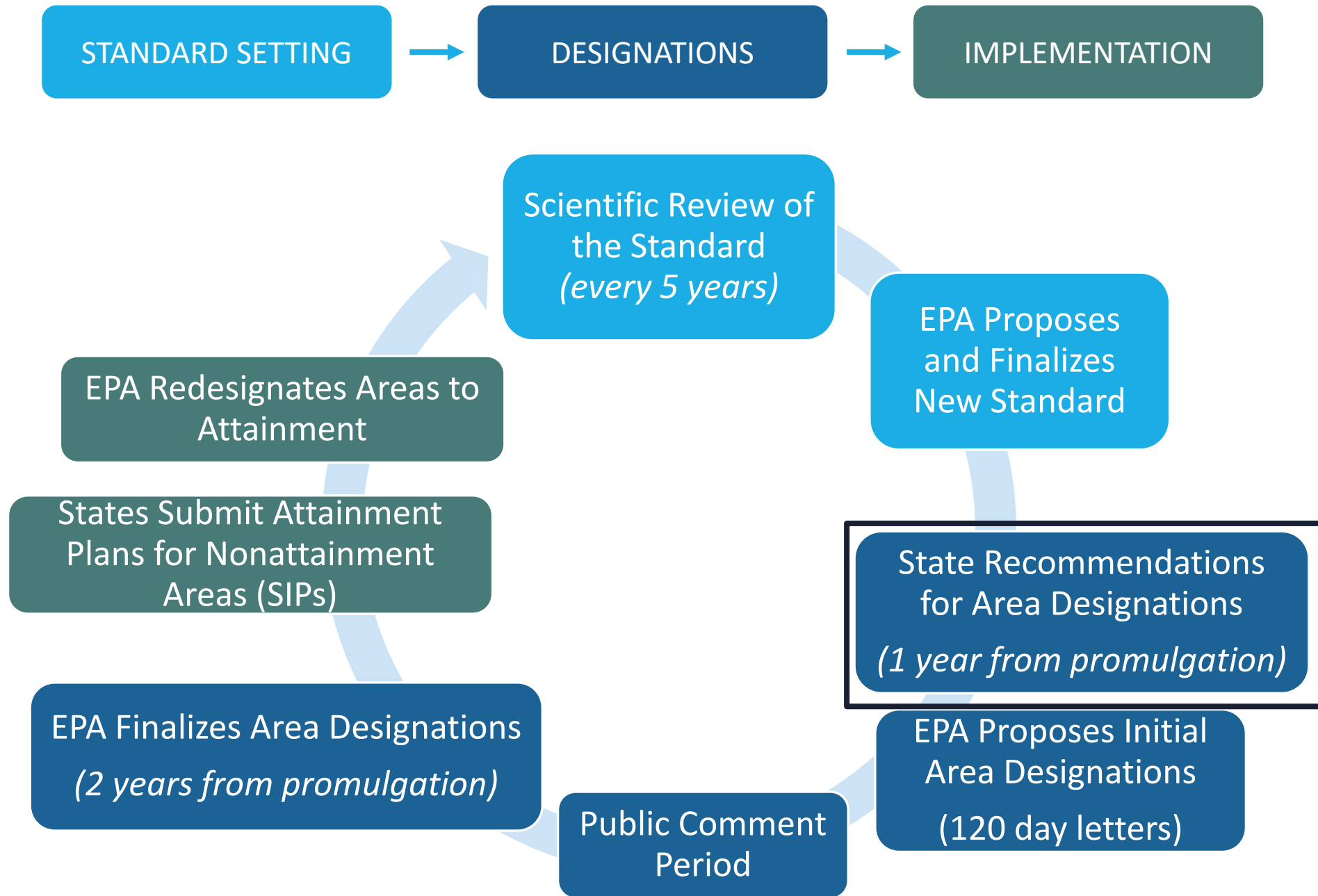
EPA's Five Factor Analysis

Generally*, where there is a violating monitor, there is a nonattainment designation

The extent of the area is determined using EPA's five factor analysis

1. Air quality data
2. Emissions and emissions-related data
3. Meteorology
4. Geography and topography
5. Jurisdictional boundaries

*For SO₂, a violation may be modeled or monitored




2024 PM2.5 NAAQS Designations Schedule

- Particulate matter (particle or soot pollution) is a dangerous form of air pollution linked to serious health impacts such as heart attacks and premature deaths.
- **February 7, 2024:** EPA revises the primary annual standard for PM2.5 from 12.0 to 9.0 micrograms per cubic meter
- **February 7, 2025:** State recommendations due
- **October 2025:** 120-day letters notifying states, then EPA proposes initial area designations
- Public comment period
- **February 6, 2026:** EPA finalizes area designations



2020-2022 PM_{2.5} Design Values Compared to Prior Nonattainment Areas

Based on 2020-2022 monitoring data

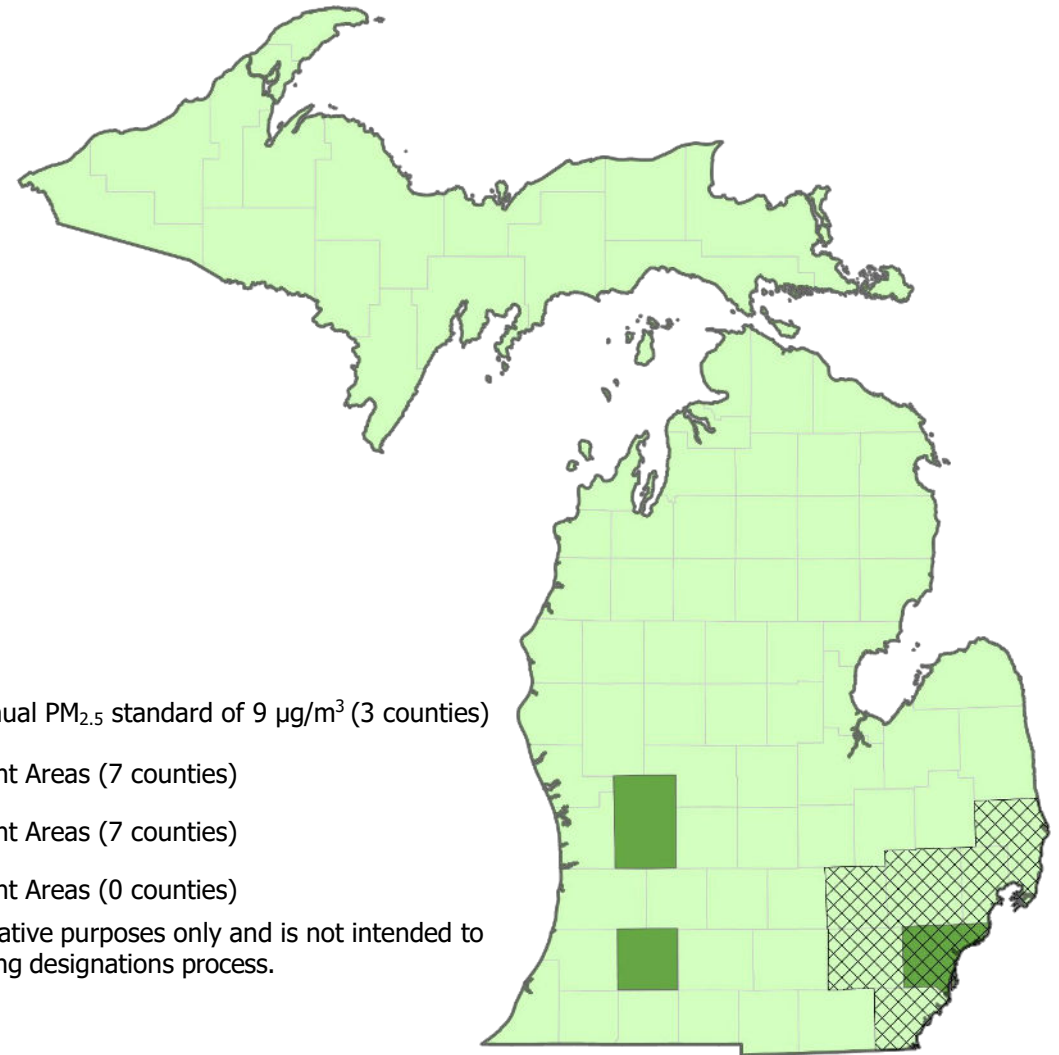
 Counties do not meet the annual PM_{2.5} standard of 9 µg/m³ (3 counties)

 PM_{2.5} 1997 Std Nonattainment Areas (7 counties)

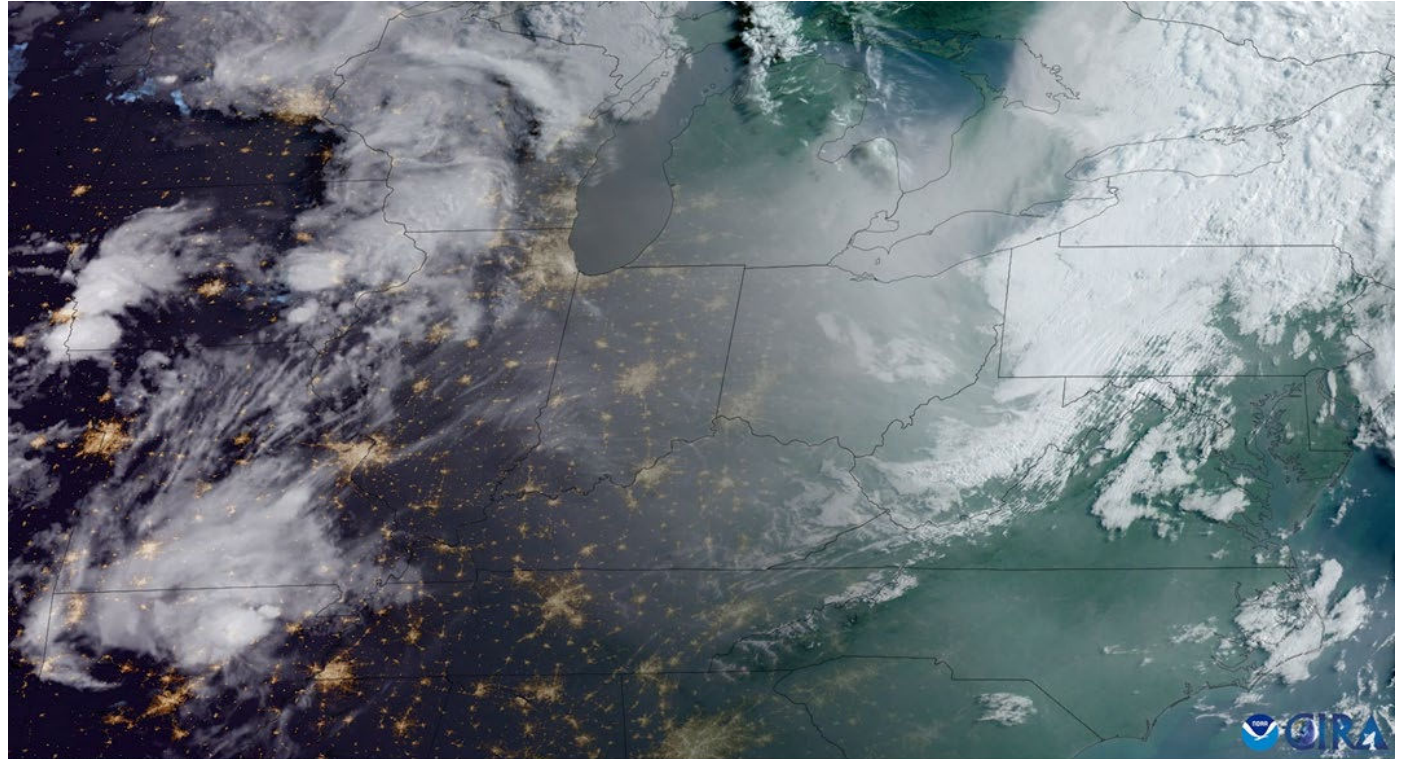
 PM_{2.5} 2006 Std Nonattainment Areas (7 counties)

 PM_{2.5} 2012 Std Nonattainment Areas (0 counties)

This information is provided for illustrative purposes only and is not intended to predict the outcome of any forthcoming designations process.

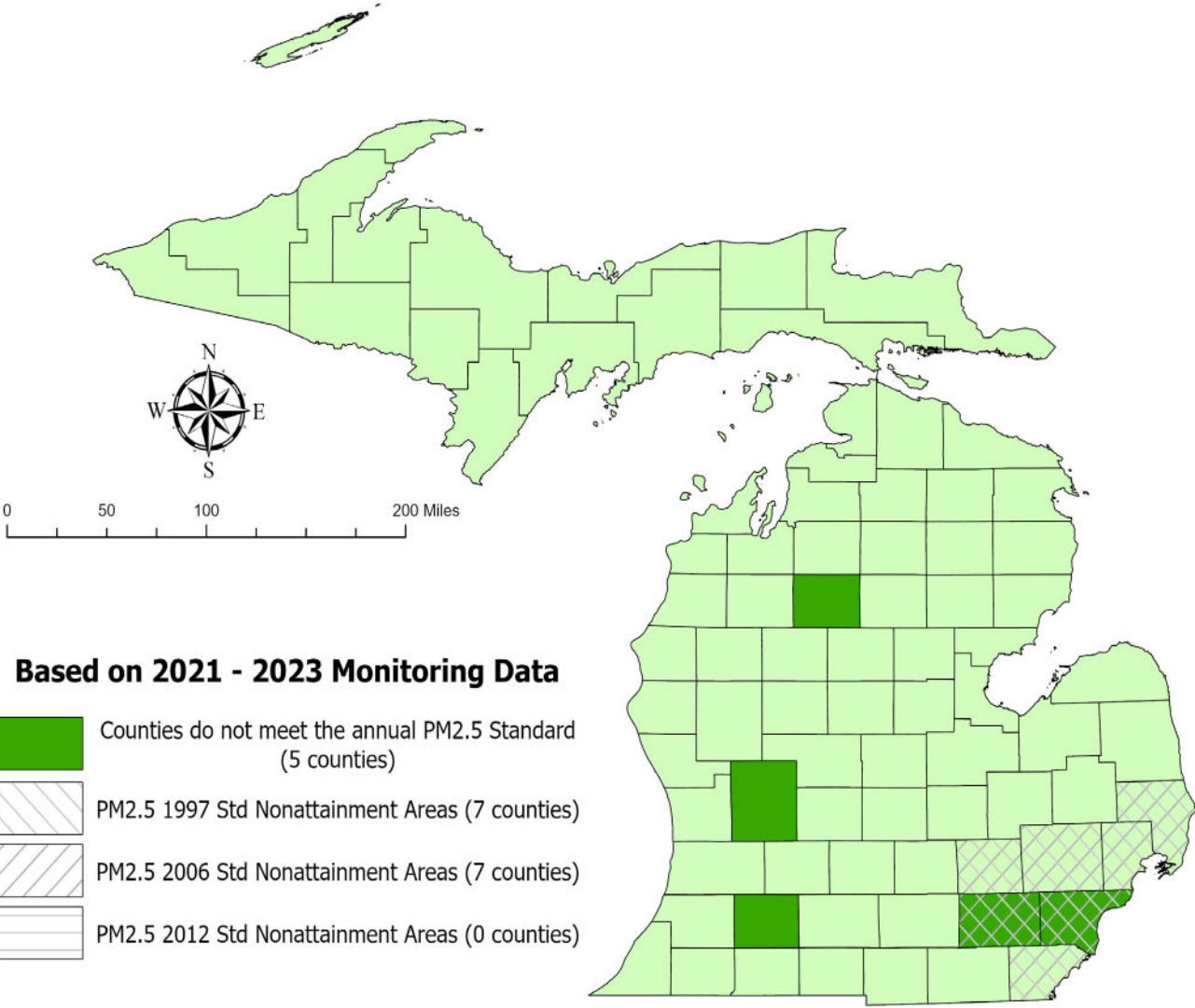


Smoke from the 2023 Canadian Wildfires



06-28-2023 | 11:31:17 UTC | GOES-16 | GeoColor

2021-2023 PM_{2.5} Design Values Compared to Prior Nonattainment Areas



Exceptional Event (EE) Rule

- “Exceptional event” criteria described in Clean Air Act Section 319(b) and the implementing EPA Exceptional Events Rule
 - Clear causal relationship
 - Event is not reasonably controllable or preventable
 - Caused by human activity that is unlikely to recur at a location or a natural event
 - Determined by EPA via regulatory process to be an exceptional event
- EPA exceptional event regulations are located 40 CFR 50.1, 50.14, and 51.930
- Wildfire activity (exceptional events) observed across Region 5 states in 2023
 - States notify EPA of intent to submit exceptional events (EE) demonstrations by January 1, 2025
 - States submit EE demonstrations by February 1, 2025

Regulatory Significance of EE-Related Data Exclusion

- If EPA concurs with a demonstration, the ambient air monitoring data affected by the EE are *excluded* from use in a specific (or sometimes more than one specific) regulatory action
 - NAAQS area designations and redesignation decisions
 - Classifications
 - Determinations regarding whether a nonattainment area has attained
 - Attainment date extensions
 - Certain findings of SIP inadequacy
 - Other actions on a case-by-case basis

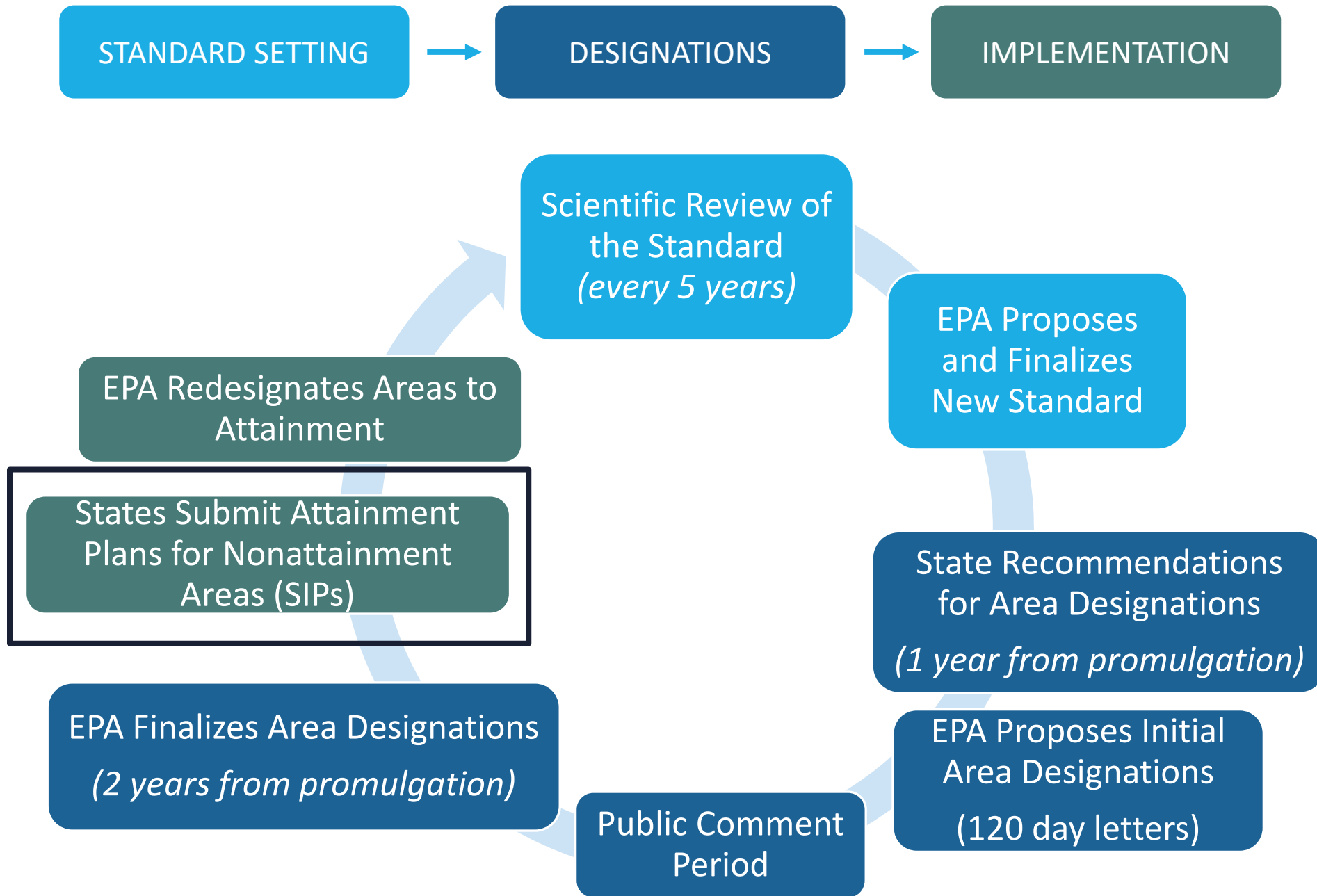
The AirKnowledge learning platform contains more information on EE core concepts and assembling a demonstration.

Implementation: New Source Review (NSR) Permitting Program

- NSR permitting requirements regulate construction of new and modified sources of air pollution
 - Requires industrial facilities to install modern pollution controls
 - Permits are enforceable, legal documents that outline how construction will meet emissions limits and include compliance oversight
- **Nonattainment New Source Review (NNSR)** ensures that air quality does not worsen in *nonattainment areas*
- **Prevention of Significant Deterioration (PSD)** ensures air quality is not significantly degraded in *attainment areas*

New Source Review (NSR) Permitting Program Requirements

- Effective date of revised standard: May 6, 2024
 - After this date, applicants for permits to construct a new major source or a major modification of an existing stationary source must demonstrate that facility emissions will not cause or contribute to a violation of the revised NAAQS.



Nonattainment SIP Requirements

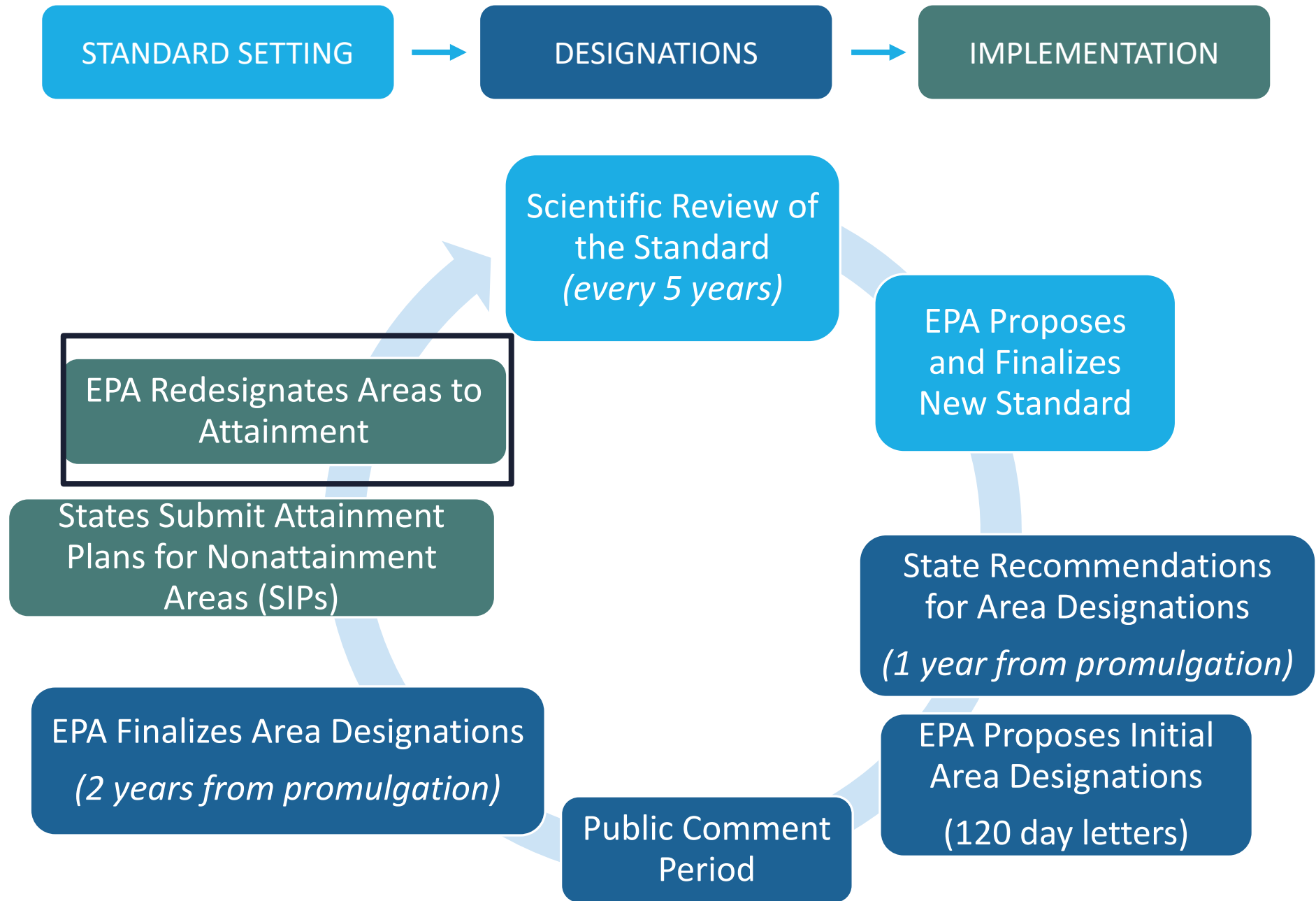
- **18 months after designation:** States must submit Nonattainment Area SIPs that specify how the areas will attain the standard
 - Attainment Demonstration
 - Base Year and Projected Attainment Year Emissions Inventory
 - Control Measures: RACM/RACT
 - Reasonable Further Progress
 - Quantitative Milestones
 - Contingency Measures

EPA Actions will Further Reduce Particle Pollution

– Helping Meet Standards and Fostering Clean Growth

- National programs help communities across the country breathe cleaner air.
- Federal rules and programs, in partnership with state, Tribal, and local partners, will help to improve air quality around the country and reduce particle pollution.

2011	2014	2021	2022	2023	Coming Soon	Inflation Reduction Act
<ul style="list-style-type: none">▪ Power Plant Reductions (MATS)	<ul style="list-style-type: none">▪ Motor Vehicle Emission and Fuel Standards	<ul style="list-style-type: none">▪ Power Plant Reductions (CSAPR)	<ul style="list-style-type: none">▪ Heavy-Duty Engine and Vehicle Standards	<ul style="list-style-type: none">▪ Oil and Gas Regulations▪ Power Plant and Industrial Reductions (Good Neighbor Plan)	<ul style="list-style-type: none">▪ Light and Medium Duty Vehicle Rules▪ Power Plant Reductions (MATS RTR, Section III)	<ul style="list-style-type: none">▪ Investments in▪ Clean ports▪ Clean trucks▪ Climate Pollution Reduction Grants▪ Clean Energy Tax Credits



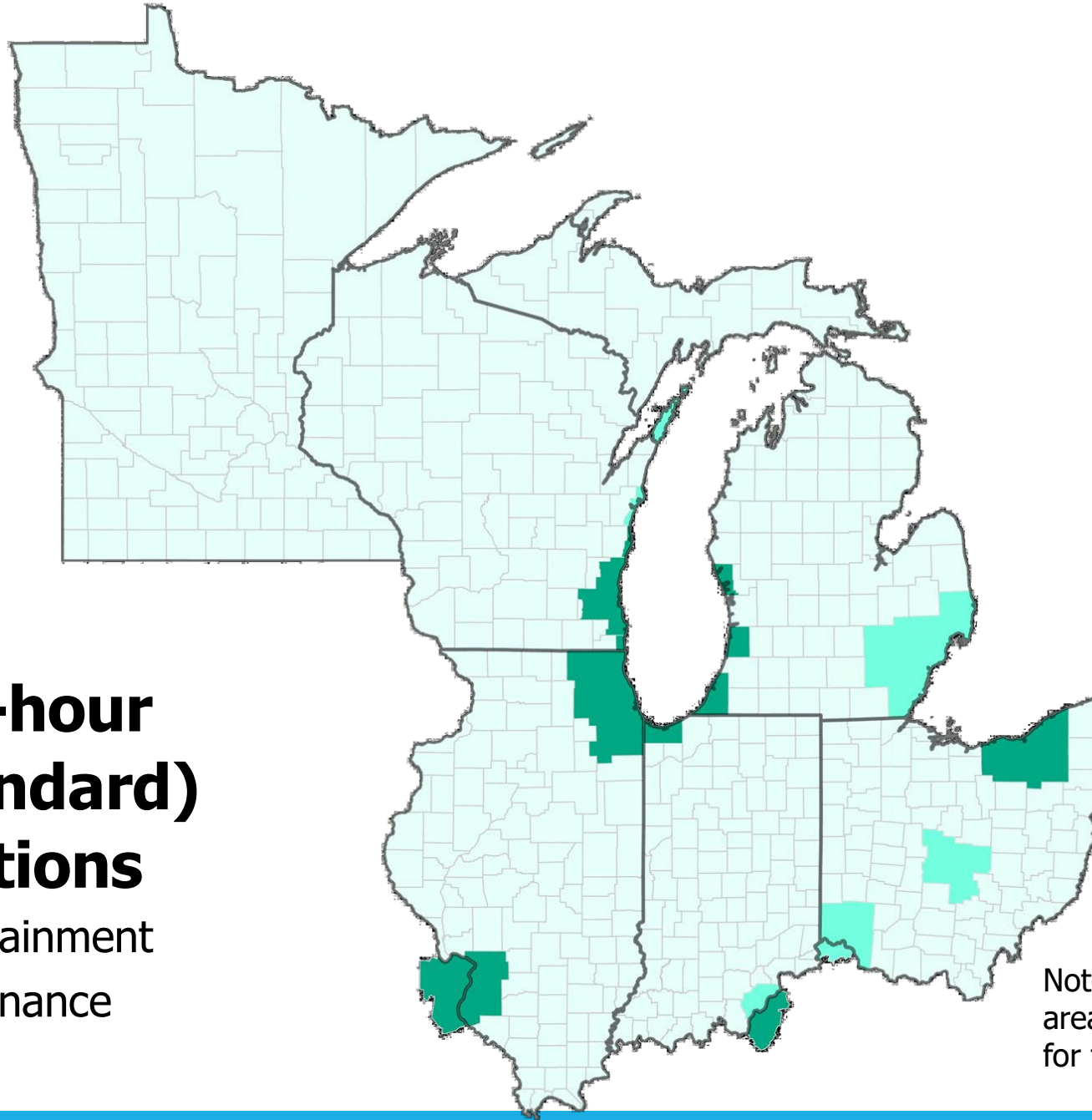
Redesignation Requirements

- Outlined by Clean Air Act section 107(d)
- State requests redesignation of area to attainment
- After the following requirements are met, EPA redesignates area through notice-and-comment rulemaking:
 - EPA determines the area has attained the NAAQS
 - EPA fully approves the SIP under Clean Air Act section 110(k)
 - EPA determines the improvement in air quality is due to permanent and enforceable emissions reductions
 - The state has met all applicable requirements under Clean Air Act section 110 and Part D
 - EPA fully approves a maintenance plan and contingency measures under Clean Air Act section 175A

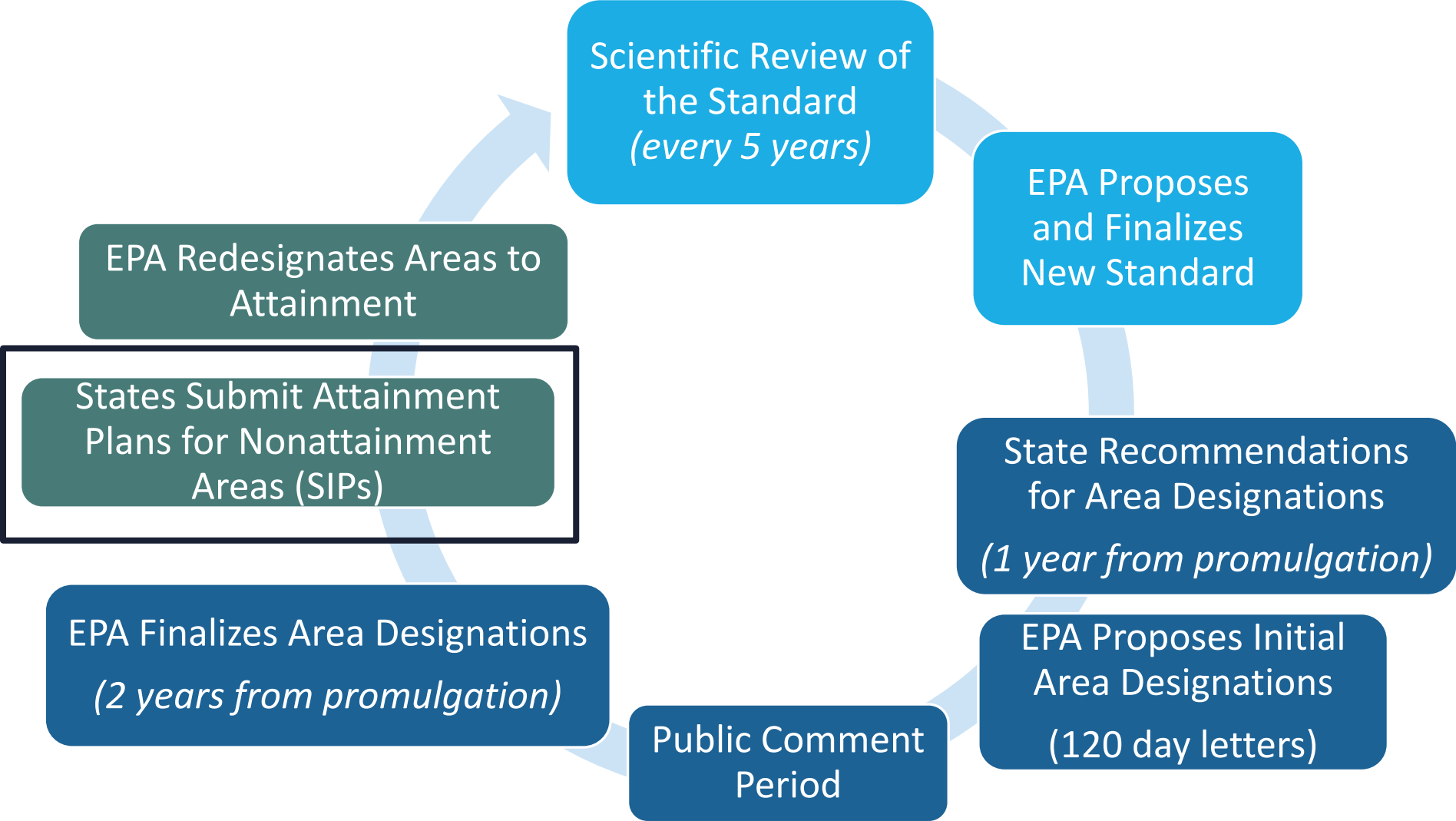
2015 Ozone Standard

Ozone 8-hour (2015 Standard) Designations

- Nonattainment
- Maintenance



Note: All Michigan nonattainment areas have a moderate classification for the 2015 ozone standard.

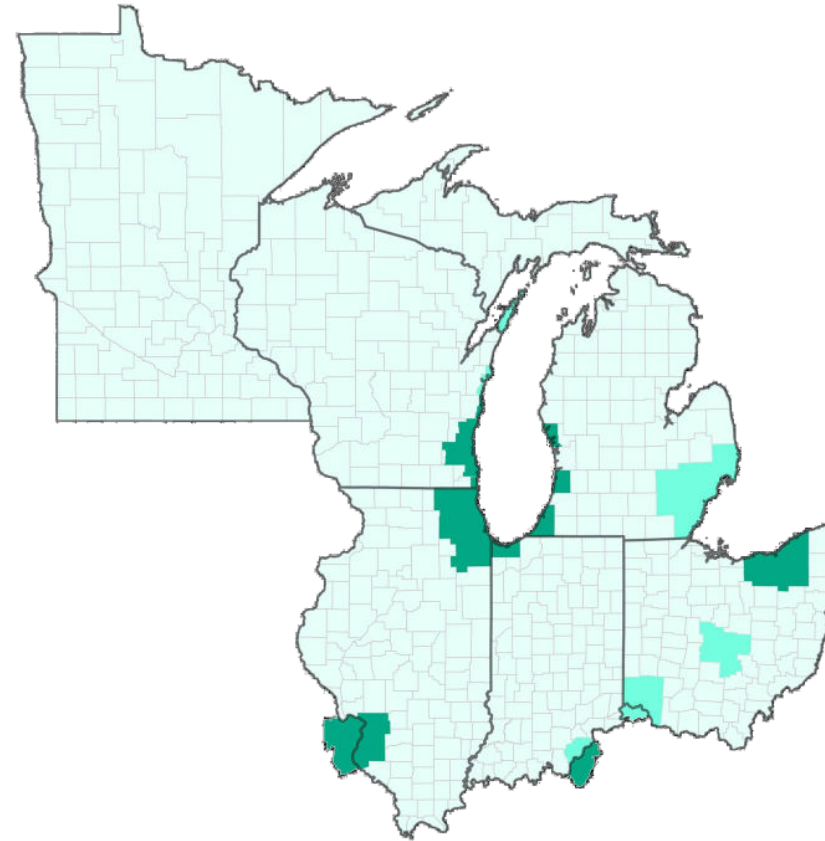


Additional Ozone Nonattainment Provisions

- Clean Air Act Section 182 (Part D, subpart 2) adds specific requirements for ozone nonattainment areas in a layered fashion
- There are five classifications levels. Each area is assigned based on how much above the ozone standard the area is
 - Marginal, moderate, serious, severe, and extreme
- The applicability threshold for control requirements for stationary sources increases in stringency as classifications go from marginal to extreme

Determination of Attainment by the Attainment Date

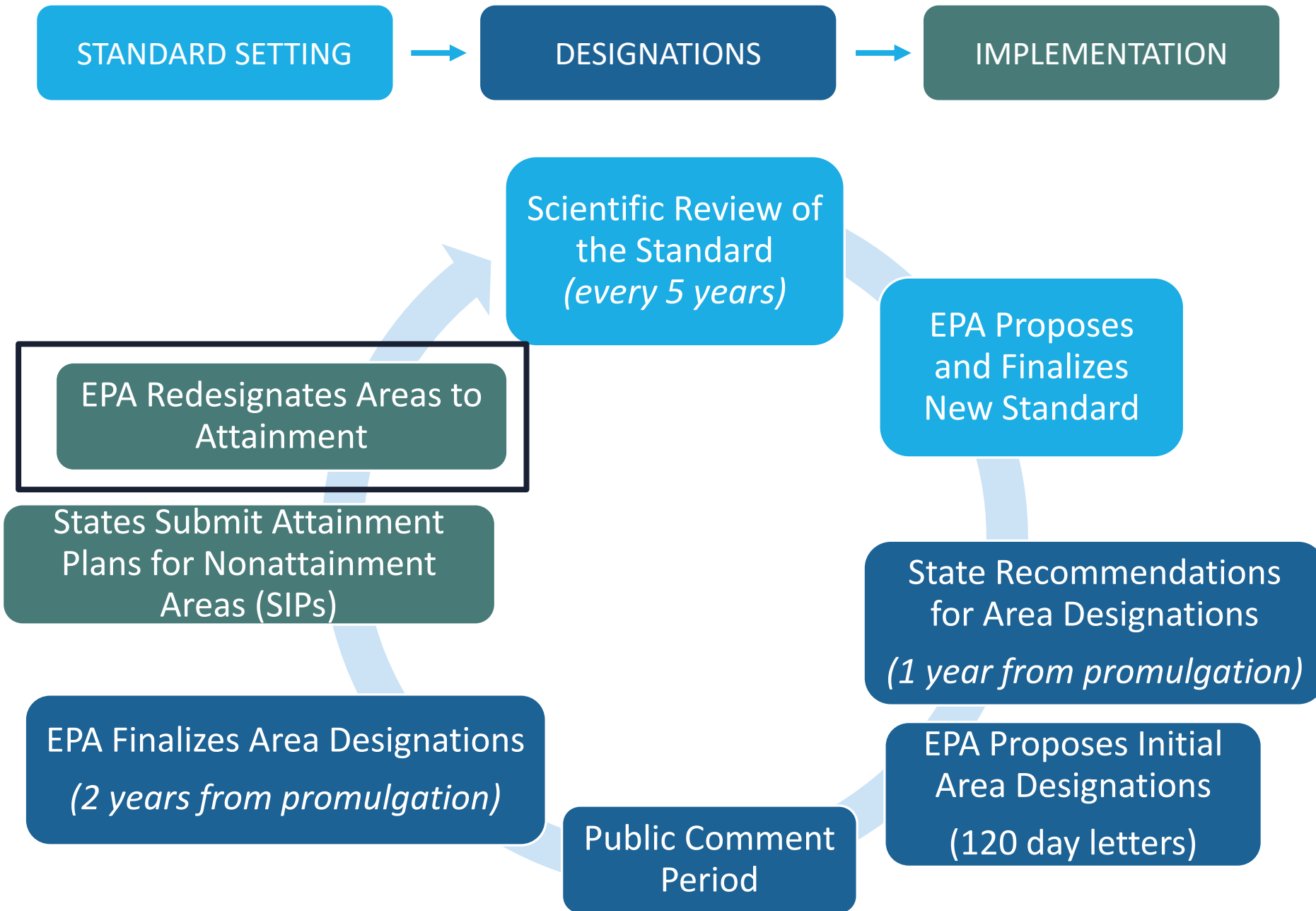
- Moderate Areas under the 2015 ozone standard were required to attain by August 3, 2024, meaning they had to attain using 2021-2023 ozone data.
- EPA has six months to determine whether areas met their attainment date and reclassify or “bump up” the areas that did not meet to a higher classification.



Clean Air Act Required Measures Based on Ozone Nonattainment Area Classification

		NSR Offset Ratio	Major Source Threshold	
EXTREME (20 years to attain)	TRAFFIC CONGESTION CONTROLS (if appropriate)	1.5 : 1 Extreme	10 tpy	
	CLEAN FUELS REQUIREMENT FOR BOILERS			
SEVERE (15/17 years to attain) RFG applies in areas reclassified as Severe	PENALTY FEE PROGRAM FOR MAJOR SOURCES	1.3 : 1 Severe	25 tpy	
	VMT GROWTH DEMONSTRATION (& TCMs if needed)			
	VMT REPORTING			
SERIOUS (9 years to attain)	NSR REQUIREMENTS FOR EXISTING SOURCE MODS	1.2 : 1 Serious	50 tpy	
	CLEAN FUELS PROGRAM OR SUBSTITUTE MEASURE FOR LARGER POP. AREAS			
	MODELED DEMO OF ATTAINMENT			MILESTONE DEMONSTRATIONS and CONTINGENCY MEASURES FOR RFP
	3% ANNUAL RFP UNTIL ATTAINMENT			ENHANCED I/M for larger population areas
	CONTINGENCY MEASURES FOR FAILURE TO ATTAIN			ENHANCED MONITORING PLAN
	BASIC VEHICLE I/M for larger population areas			
MODERATE (6 years to attain)	15% VOC ROP or 15% VOC/NO _x RFP (OVER 6 YEARS)	1.15 : 1 Moderate	100 tpy	
	VOC/NO _x RACT for MAJOR/CTG SOURCES			ATTAINMENT DEMONSTRATION
	NONATTAINMENT NEW SOURCE REVIEW PROGRAM			EMISSIONS STATEMENTS
MARGINAL (3 years to attain)	BASELINE EMISSIONS INVENTORY (EI)	1.1 : 1 Marginal	100 tpy	
	PERIODIC EMISSIONS INVENTORY UPDATES			

NOTE: Transportation and General Conformity apply in all ozone nonattainment areas.



Detroit Redesignation for the 2015 Ozone Standard

- EPA redesignated Detroit from nonattainment to attainment on May 19, 2023.
- This action was challenged in the 6th Circuit U.S. Court of Appeals on July 17, 2023.
- Current status: all parties have filed briefs; oral arguments have not yet been scheduled.

Clean Air and Economic Progress Go Hand-in-Hand

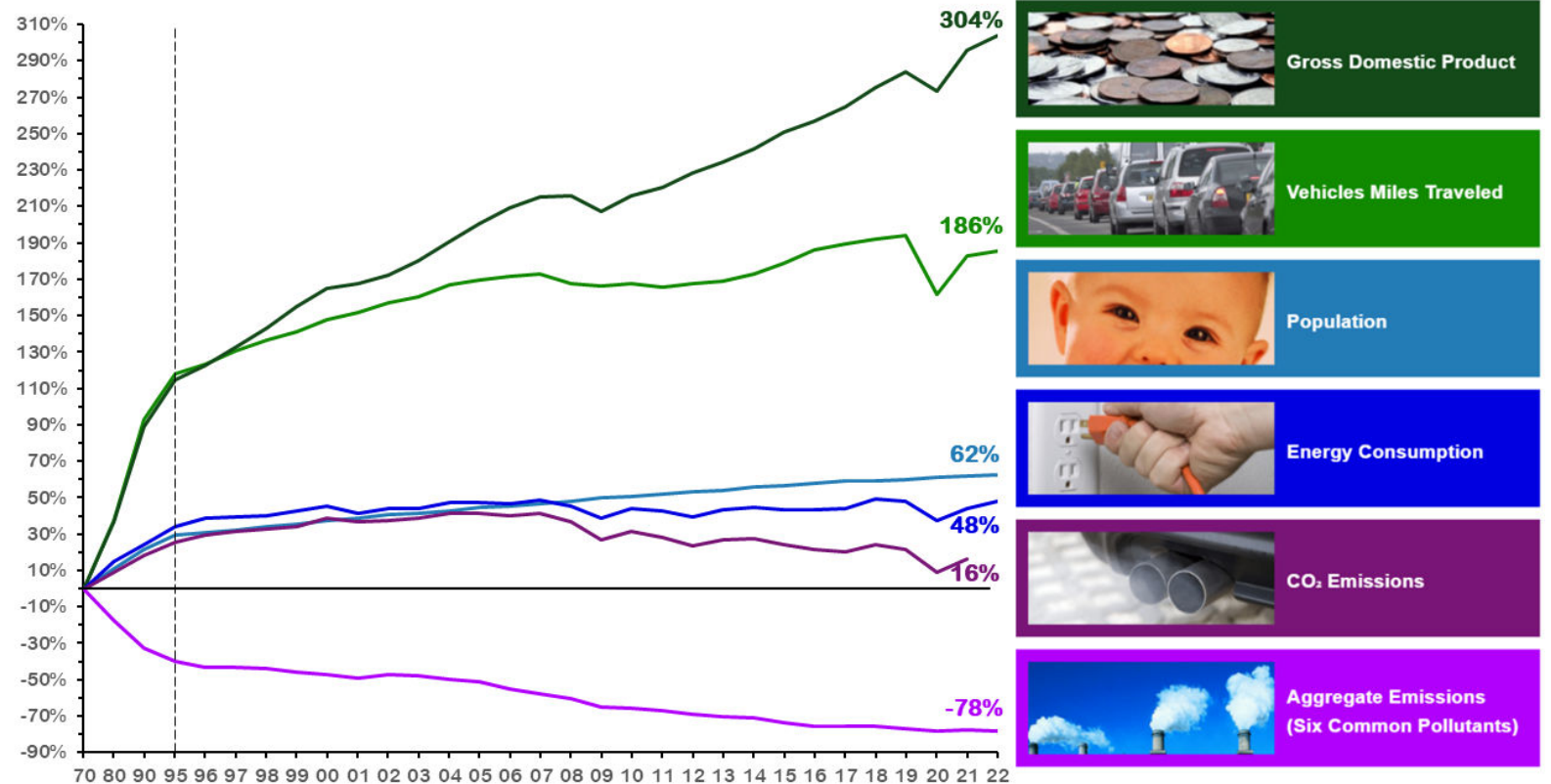
Emissions

- Since 1970, the Gross Domestic Product has increased more than 300%, while emissions of PM and 5 other common pollutants have dropped more than 75%.

PM and O3 Concentrations

- Since 2000, federal regulations have helped lower PM_{2.5} concentrations in the outdoor air by 37%. Similarly 8-hour ozone concentrations have decrease by 18% since 1990.
- This progress occurred while U.S. economic indicators remained strong, with the Gross Domestic Product increasing 52% during that time.

Comparison of Growth Areas and Emissions, 1970-2022



Source: [EPA Air Quality Trends](#)

History of Michigan O3 and PM Redesignations

OZONE NAAQS

PM NAAQS

Allegan County

8-Hour Ozone (1997) 9/24/2010
 1-Hour Ozone (1979) 1/16/2001

Benzie County

8-Hour Ozone (1997) 5/16/2007

Benton Harbor

8-Hour Ozone (1997) 5/16/2007

Cass County

8-Hour Ozone (1997) 5/16/2007

Detroit

8-Hour Ozone (2015) 5/19/2023
 8-Hour Ozone (1997) 6/29/2009
 1-Hour Ozone (1979) 4/6/1995

Flint

8-Hour Ozone (1997) 5/16/2007
 1-Hour Ozone (1979) 1/16/2001

Grand Rapids

8-Hour Ozone (1997) 5/16/2007
 1-Hour Ozone (1979) 6/21/1996
 1-Hour Ozone (1979) 1/16/2001

Huron County

8-Hour Ozone (1997) 5/16/2007

Kalamazoo-Battle Creek

8-Hour Ozone (1997) 5/16/2007

Lansing

8-Hour Ozone (1997) 5/16/2007

Mason County

8-Hour Ozone (1997) 5/16/2007

Muskegon

8-Hour Ozone (1997) 5/16/2007
 1-Hour Ozone (1979) 10/18/2000

Saginaw-Bay City-Midland

1-Hour Ozone (1979) 1/16/2001

Detroit

PM-2.5 (2006) 8/29/2013
 PM-2.5 (1997) 8/29/2013
 PM-10 (1987) 10/4/1996

Thank you!
