



SIP 101

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Agenda

- What is a SIP?
- What are the NAAQS?
- What are the types of SIP revisions?
- How are SIP revisions developed?



What is a SIP?



State Implementation Plan (SIP)

- A plan to reduce pollution to meet federal air quality standards that:
 - in most cases, applies to areas not meeting federal air quality standards (nonattainment areas);
 - establishes control strategies and target dates for reducing emissions;
 - describes how the state will monitor air quality and determine compliance with the standards; and
 - includes technical and regulatory processes for demonstrating attainment.
- The SIP is:
 - developed and submitted by the state; and
 - federally enforceable



Pretest Question #1

There is only one SIP for each state. True or False?

TRUE

SIP revisions are completed as necessary to update the SIP.



SIP Revisions

- Revised as needed
 - when new laws or rules are enacted
 - when a region fails to attain standards or its attainment status changes
 - when new data or techniques become available
- Developed with participation from stakeholders
 - meetings, comment periods, and public hearings

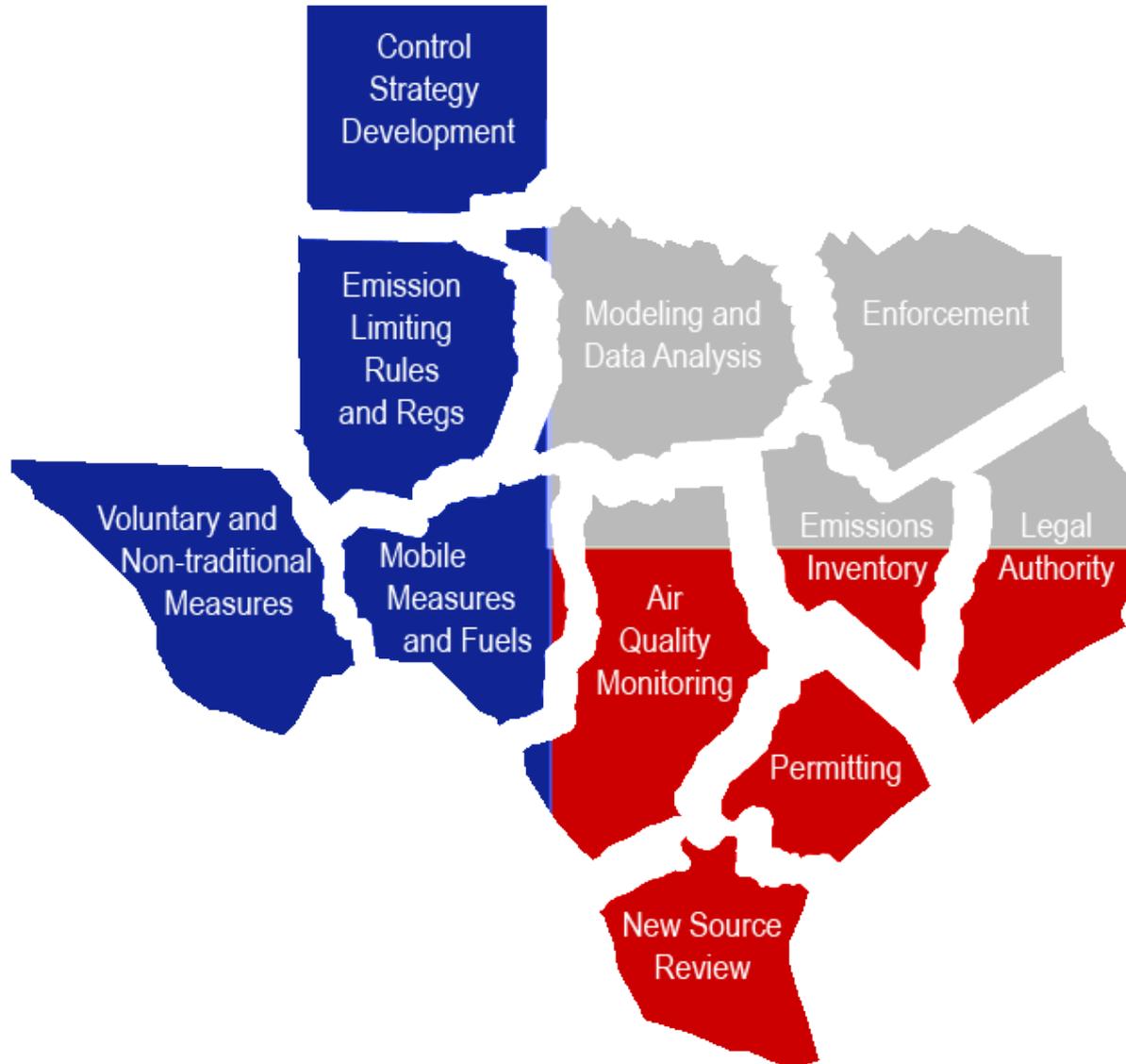


The Texas SIP

- Section I: Introduction
- Section II: Regional Classification
- Section III: Public Participation/Intergovernmental Coordination
- Section IV: Preliminary Review
- Section V: Legal Authority
- **Section VI: Control Strategy**
- Section VII: Compliance Schedule
- Section VIII: Texas Air Pollution Emergency Episode Contingency Plan
- Section IX: Air Quality Surveillance Plan
- Section X: Review of New Sources and Modifications
- Section XI: Source Surveillance
- Section XII: Resources
- Section XIII: Intergovernmental Cooperation
- Section XIV: TCEQ Adopted Rules and Regulations



Components of a SIP





What are the
NAAQS?



National Ambient Air Quality Standards (NAAQS)

- Required by the Federal Clean Air Act (FCAA)
- Set by the United States Environmental Protection Agency (EPA)
- Primary health-based standards and secondary welfare standards set for six criteria air pollutants



NAAQS Criteria Air Pollutants

- Standards set for six criteria air pollutants:
 - Ground-Level Ozone (O_3)
 - Particulate Matter (PM)
 - Nitrogen Dioxide (NO_2)
 - Sulfur Dioxide (SO_2)
 - Carbon Monoxide (CO)
 - Lead (Pb)



Current Primary NAAQS

Pollutant	Level	Averaging Time
Ozone (O ₃) *	0.070 ppm (2015)	Eight-Hour
	0.075 ppm (2008)	Eight-Hour
Particulate Matter (PM _{2.5})	12.0 µg/m ³	Annual (Arithmetic Mean)
	35 µg/m ³	Twenty-Four-Hour
Particulate Matter (PM ₁₀)	150 µg/m ³	Twenty-Four-Hour
Nitrogen Dioxide (NO ₂)	53 ppb	Annual (Arithmetic Mean)
	100 ppb	One-Hour
Sulfur Dioxide (SO ₂)	75 ppb	One-Hour
Carbon Monoxide (CO)	9 ppm	Eight-Hour
	35 ppm	One-Hour
Lead (Pb)	0.15 µg/m ³	Rolling Three-Month Average

Note: Secondary NAAQS are the same as the primary NAAQS for all pollutants EXCEPT SO₂, which has a secondary NAAQS of 0.5 ppm over three hours, and PM_{2.5}, which has a secondary NAAQS of 15.0 µg/m³ annually. More information can be found at [EPA's NAAQS webpage \(http://epa.gov/air/criteria.html\)](http://epa.gov/air/criteria.html)

* In 1997 EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) and in 2015 the EPA revoked the 1997 eight-hour ozone standard (0.08 ppm); however, some areas have continued obligations under those standards ("anti-backsliding").



Pretest Question #2

The Federal Clean Air Act requires the EPA to revise the NAAQS every five years. TRUE or FALSE?

FALSE

The EPA is required to review the NAAQS every five years which may or may not result in a NAAQS revision.



What are the
types of SIP
revisions?

EPA Revises NAAQS



State Designation Recommendations



Infrastructure and Transport SIP Revision



EPA Nonattainment Designation



Emissions Inventory, RFP, and Attainment Demonstration SIP Revisions



Redesignation Request and Maintenance Plan SIP Revision



Redesignation to Attainment

 EPA Action

 State Action



Infrastructure and Transport SIP Revision

- Describes how the state meets the requirements of FCAA, §110(a) for a new or revised NAAQS
 - **Infrastructure** = Does Texas have the means and authority to implement the SIP?
 - ambient air quality monitoring and data systems
 - programs for enforcement of control measures
 - **Transport** = Does Texas significantly contribute to nonattainment or interfere with maintenance in another state?



Pretest Question #3

For a new or revised NAAQS, the Federal Clean Air Act requires Infrastructure and Transport SIP revision submittals from:

- a. states with nonattainment areas for that NAAQS
- b. all states
- c. states bordering Canada or Mexico
- d. states that failed to submit an Infrastructure and Transport SIP revision for the previous NAAQS

B. All states



Infrastructure and Transport SIP Revision

- Required for all NAAQS
- Statewide plan
- Requirement is not tied to nonattainment area designations
- Due 3 years after the promulgation date of a new or revised NAAQS



Nonattainment Area Designations



Pretest Question #4

A nonattainment area is:

- a. an area designated by the EPA as not meeting federal air quality standards
- b. an area for which the state has failed to submit a SIP revision
- c. an area designated by the state as not meeting federal air quality standards
- d. a and c

A

Nonattainment areas are designated by the EPA

EPA Revises NAAQS



Infrastructure and Transport SIP Revision



State Designation Recommendations



EPA Nonattainment Designation



Emissions Inventory, RFP, and Attainment Demonstration SIP Revisions



Redesignation Request and Maintenance Plan SIP Revision



Redesignation to Attainment

 EPA Action

 State Action



Designations Process

- EPA sets a new or revised NAAQS
- States submit designation recommendations
 - *Attainment*: the area meets the NAAQS
 - *Nonattainment*: the area does not meet the NAAQS
 - *Unclassifiable*: the area cannot be classified based on available information
- EPA makes final designations
 - 120-day notice to states if designations differ from recommendations



Pretest Question #5

Nonattainment area designations are made:

- a. immediately upon NAAQS revision
- b. on the effective date of the NAAQS revision
- c. one year following the NAAQS revision
- d. two to three years following the NAAQS revision

D. Two to three years

State recommendations are due one year following a NAAQS revision. The EPA is required to finalize designations one year later, although this may be extended by an additional year.



Pretest Question #6

If an attainment area monitors pollutant levels that exceed the NAAQS after initial designations are final, the area is designated nonattainment by operation of law. True or False?

FALSE

Nonattainment area designations must be made through the formal designations process.



Texas NAAQS Nonattainment Areas

- Ozone
 - 2008 Standard – 0.075 ppm
 - Houston-Galveston-Brazoria
 - Dallas-Fort Worth
- Particulate Matter
 - El Paso for PM₁₀
- Lead
 - A portion of Collin County in the Dallas-Fort Worth Area
- Nitrogen Dioxide
 - All areas attainment
- Sulfur Dioxide
 - No areas designated
- Carbon Monoxide
 - All areas attainment

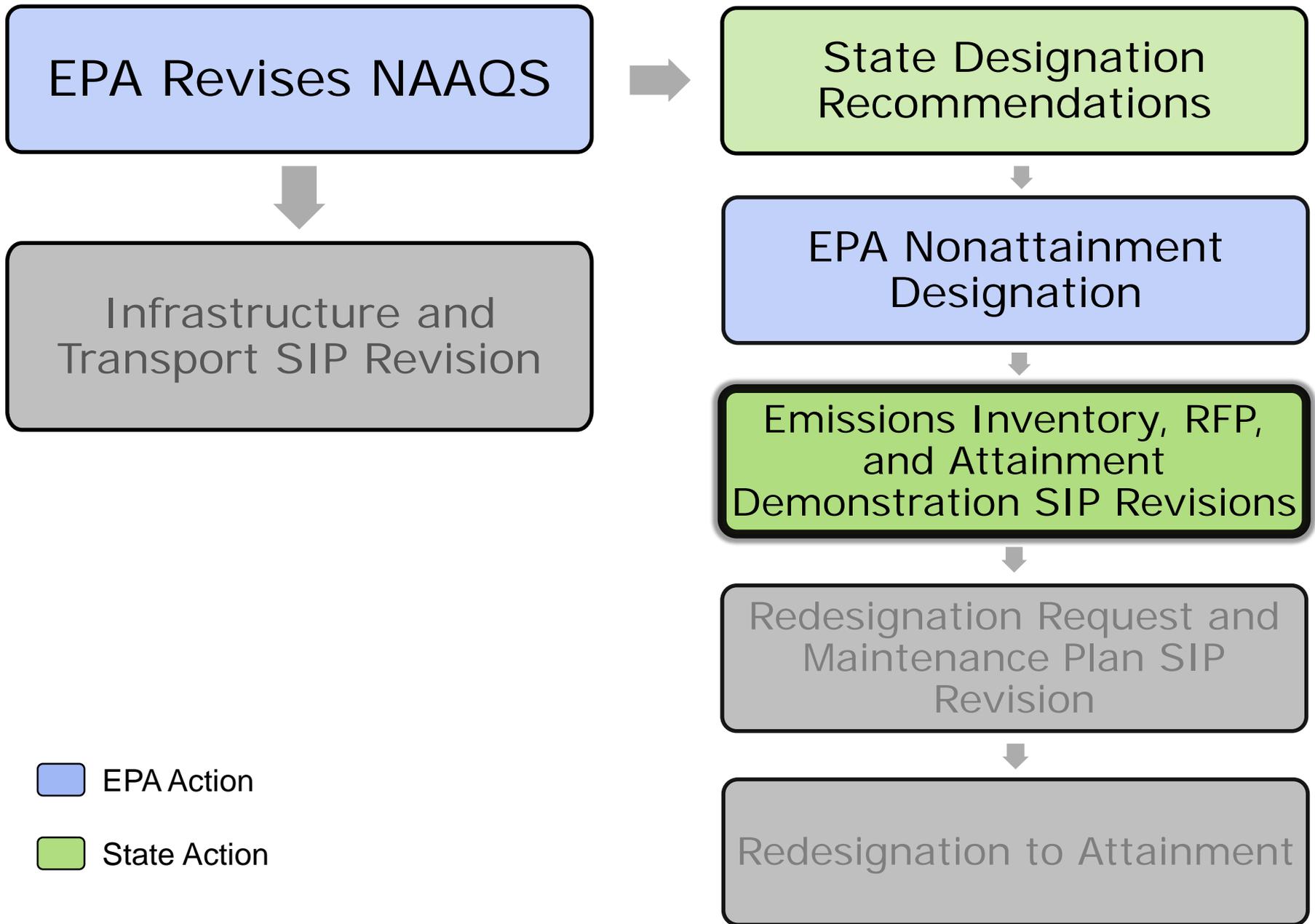


Nonattainment Area SIP Revisions



SIP Requirements for Ozone Nonattainment Areas

MARGINAL (3 Years)	MODERATE (6 Years)	SERIOUS (9 Years)	SEVERE (15-17 Years)	EXTREME (20 Years)
Emissions Inventory	Basic I/M	Enhanced Monitoring and I/M		
Emissions Statements	RACT & RACM Emissions Controls	Modeled Attainment Demonstration		
Nonattainment NSR Program & Emissions Offsets	Attainment Demonstration	3% per Year VOC Reductions After 6 Years	VMT Growth Offset	Clean Fuels and Controls for Boilers
RACT Fixups	Contingency Measures	RFP Milestone Contingency Measures	Major Source Fees for Failure to Attain (185 Fees)	Traffic Controls During Congestion
I/M Corrections	RFP - 15% VOC Reductions within 6 years	Clean Fuels Program		
Conformity		VMT Demonstration		





Emissions Inventory

- Identifies:
 - Types of emissions sources present in an area
 - Stationary Point Sources
 - Area Sources
 - Non-Road Sources
 - On-Road Sources
 - Amount of each pollutant emitted
 - Types of process and control devices employed at each plant or source category
- FCAA requires states to submit emissions inventory information for all relevant sources in nonattainment areas



Emissions Inventory SIP Revision

- Required for all nonattainment areas, regardless of classification
- Due two years after the effective date of a nonattainment designation
- Provides current and comprehensive data on emissions contributing to nonattainment
- Establishes a Base Year Inventory for the nonattainment area



Reasonable Further Progress SIP Revision

- Describes how incremental emissions reductions requirements will be met in a nonattainment area
- Demonstrates that emissions will be reduced by specified amounts between the base year and the nonattainment area's attainment year
- For ozone nonattainment areas:
 - Moderate or higher areas must submit plans providing for a 15% reduction in VOC emissions
 - Serious or higher areas must submit plans providing for additional 3% annual combined reductions of NO_x and VOC averaged over three-year increments until the attainment deadline



Pretest Question #7

A reasonable further progress SIP revision demonstrates:

- a. how a nonattainment area will improve air quality and meet the NAAQS by the area's attainment deadline
- b. how a nonattainment area will continue to meet the NAAQS once redesignated to attainment
- c. that emissions will be reduced by specified amounts between the base year and the nonattainment area's attainment year
- d. a and c

C

Attainment of the NAAQS is addressed in an Attainment Demonstration SIP revision.



Attainment Demonstration SIP Revision

- Describes in detail the strategies and emissions control measures that show how a nonattainment area will improve air quality and meet the NAAQS by the attainment deadline
- Components of an attainment demonstration include:
 - Monitoring data
 - Emissions inventory
 - Photochemical modeling
 - Control strategy



Pretest Question #8

A state is required to develop Attainment Demonstration SIP revisions for:

- a. the entire state
- b. all nonattainment areas in the state
- c. all attainment areas in the state
- d. some nonattainment areas in the state, depending on classification

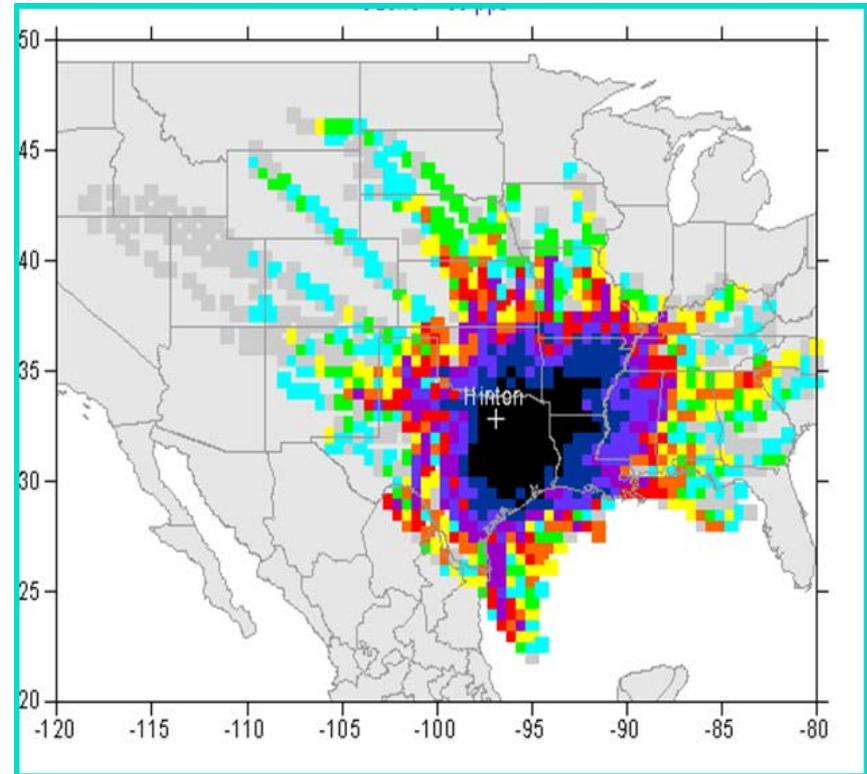
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For ozone nonattainment areas, states must submit Attainment Demonstration SIP revisions for nonattainment areas classified as moderate and above.



Components of an Attainment Demonstration: Monitoring Data

- Monitoring Data is used to:
 - determine if an area is meeting the standard
 - analyze trends
- Monitoring Data is also used to:
 - provide information on transport, meteorology, and emissions sources
 - develop estimates of emissions from non-industrial, mobile, and biogenic sources.





Components of an Attainment Demonstration: Emissions Inventory

- Provides data for a variety of air quality planning tasks:
 - Establishing baseline emission levels
 - Calculating emission reduction targets
 - Control strategy development (quantifies the inventory used to determine potential control strategies for the SIP revision)
 - Emission inputs into air quality simulation models

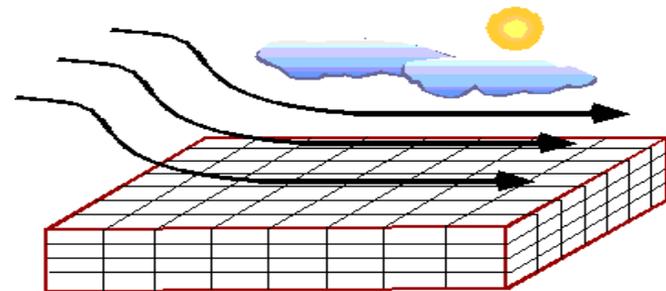


Components of an Attainment Demonstration: Modeling

- Models are used to predict future pollutant levels for use in demonstrating attainment of standards by mandated attainment dates.
- Models estimate the emissions reductions needed to attain the standard and use meteorology, emissions, and chemistry to simulate pollution events and to test control strategies and real-world results.



Real World Situation



Computer Grid Simulation



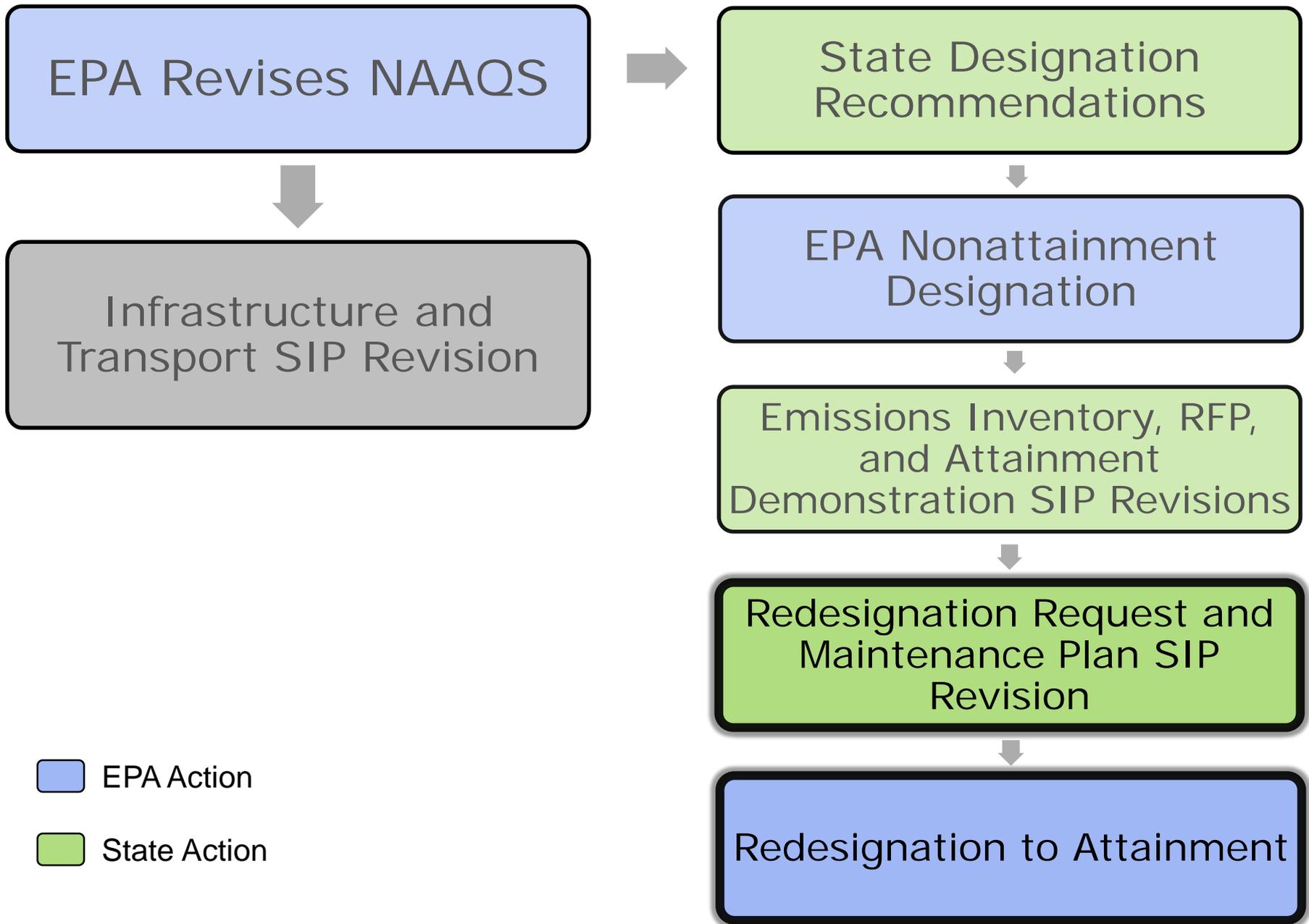
Components of an Attainment Demonstration: Control Strategy Development

- Analysis is done to determine the type and need for emissions reductions to attain the NAAQS.
- State, local, and federal strategies are considered.
- Rules are adopted and incorporated into the SIP as needed.
- Contingency measures are included in the plan to be implemented if the area fails to attain the standard by the attainment date.



Control Strategy Development: **RACT and RACM**

- Federally required control measures
- Reasonably Available Control Technology (RACT)
 - Lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility
- Reasonably Available Control Measures (RACM)
 - Helps advance attainment of the NAAQS
 - Considers technological and economic feasibility as well as enforceability and practicality





Determination of Attainment

- Also known as a Clean Data Determination
- The nonattainment area is meeting the NAAQS based on certified monitoring data
- Initiated by a state request or by the EPA
- Final determination from EPA will suspend planning requirements for so long as the area continues to attain the NAAQS



Pretest Question #9

A nonattainment area is redesignated to attainment when the EPA finalizes a Determination of Attainment for the area. True or False?

FALSE

A determination of attainment (or clean data determination) is not a redesignation and does not change an area's attainment status. It does suspend planning requirements but not anti-backsliding requirements.



Anti-Backsliding Requirements

- Anti-Backsliding requirements are intended to ensure that air quality in nonattainment areas does not get worse after a standard is revoked.
- Examples include: New Source Review permitting, contingency measures, Failure to Attain fees.
- Areas still designated nonattainment for a revoked standard remain subject to applicable anti-backsliding requirements.
- Anti-backsliding obligations are removed through redesignation.



Redesignation Requirements

- The EPA may redesignate an area to attainment if all of the following conditions are met:
 - the NAAQS have been attained (clean data);
 - the state has met all applicable requirements for the area under the FCAA, §110 and Part D;
 - the applicable SIP revision has been fully approved by the EPA under the FCAA, §110(k);
 - the improvement in air quality is due to permanent and enforceable reductions in emissions; and
 - the EPA has fully approved a maintenance plan for the area under FCAA, §175A.



Redesignation Request and Maintenance Plan SIP Revision

- The Redesignation Request describes how a nonattainment area meets redesignation requirements and how the area will continue to meet the NAAQS once redesignated to attainment.
- The Maintenance Plan should contain:
 - attainment inventory;
 - maintenance demonstration;
 - verification of continued attainment;
 - monitoring network; and
 - contingency plan.
- Two 10-year maintenance plans are required.



Pretest Question #10

The EPA will not redesignate a nonattainment area to attainment for a revoked NAAQS. True or False?

TRUE

The EPA recently established a “redesignation substitute” option for revoked standards.



Redesignation Substitute for Revoked Standards

- EPA's Ozone Standard SIP Requirements Rule provides the redesignation substitute to remove anti-backsliding measures for revoked ozone NAAQS
 - Includes substance of FCAA redesignation criteria
- Redesignation Substitute elements
 - Monitoring data showing attainment of the revoked NAAQS
 - Showing that attainment was due to permanent and enforceable emissions reductions
 - Demonstration that the area can maintain the standard for 10 years after approval



Other types of SIP revisions



Regional Haze SIP Revision

- Describes how the state will meet visibility progress goals in Class I areas
 - Guadalupe and Big Bend National Parks in Texas
- Establishes goals and strategies to reduce visibility-impacting pollutants to meet a national visibility goal by 2064
 - In Texas, primarily NO_x , SO_2 , and PM
- Comprehensive analysis due to the EPA every 10 years and progress reports due every five years through 2064



Program or Rule Update SIP Revision

- Updates to required programs or rules incorporated into the SIP control strategy
- Requires a SIP revision
- Examples include:
 - Vehicle Inspection and Maintenance (I/M) Program
 - Rules for Stationary Sources



How are SIP
revisions
developed?



SIP Development

- Initial research phase
 - Data collected and modeled, control strategies proposed and tested, and the revision drafted
 - Typically requires 1-4 years
- TCEQ's formal rulemaking process
 - Publication of the proposal, public meetings, hearings, review of public comments, and adoption by TCEQ's commissioners
 - Takes about six months
 - Legally binding and enforceable under state law once SIP revision adopted by the commission
- Submitted to the EPA for review and approval
 - Federally enforceable after it has been approved by the EPA



Consequences of Failing to Develop an Approvable SIP

- Failure to submit or implement a SIP or submission of a SIP that is unacceptable to the EPA can result in:
 - start of a federal implementation plan (FIP) clock;
 - SIP call; or
 - EPA sanctions or other penalties on the state.
 - Sanctions can include cutting off federal highway funds and setting more stringent pollution offsets for certain emitters.



Contact Information

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Questions?