



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 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.



State Implementation Plan

- The SIP is:
 - developed and submitted by the state;
 - federally enforceable; and
 - revised as needed.
- There is only one SIP for each state.
 - SIP revisions are completed as needed to update the SIP.

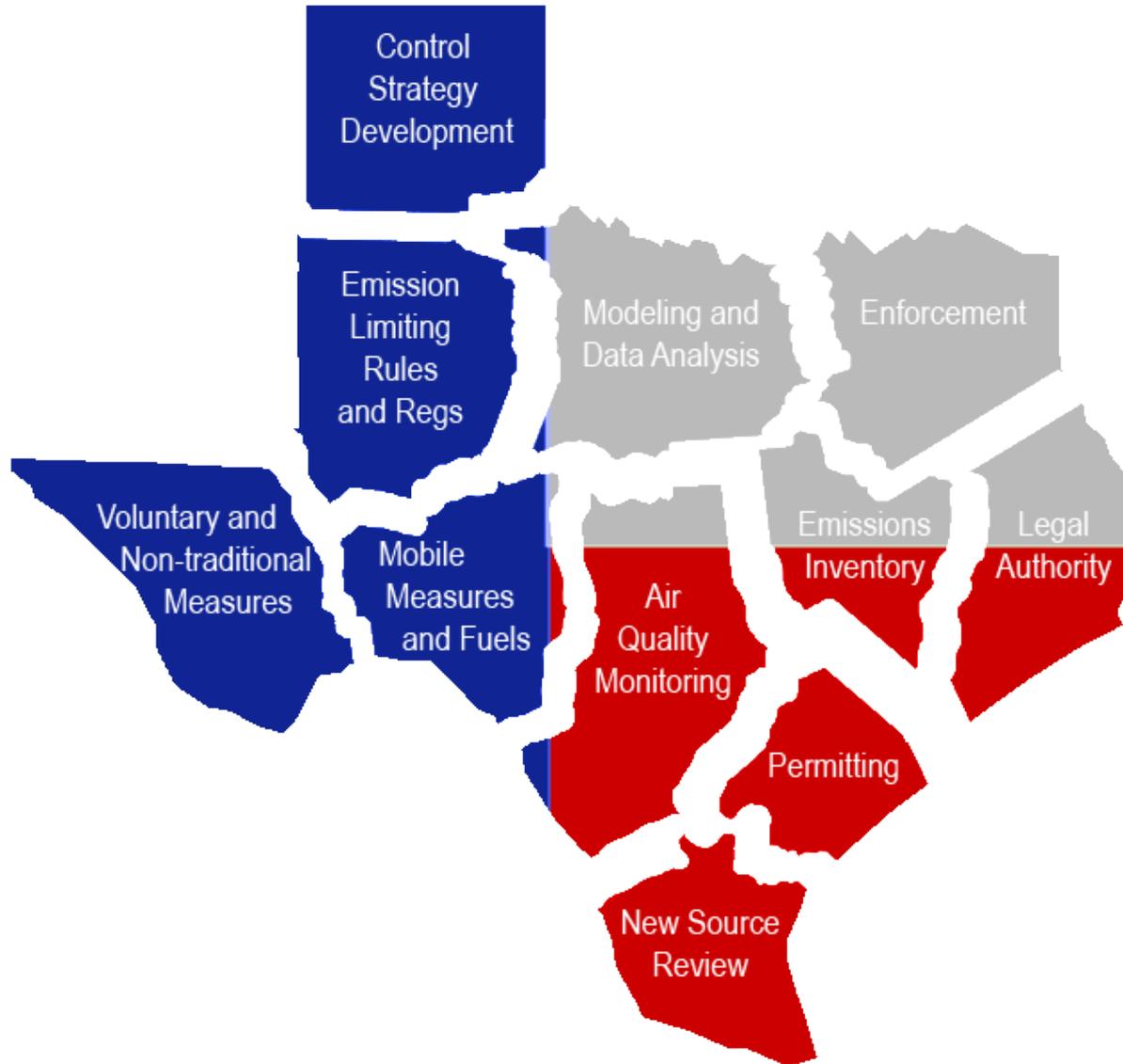


The Texas SIP

- 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 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
Carbon Monoxide (CO)	9 ppm	Eight-Hour
	35 ppm	One-Hour
Lead (Pb)	0.15 µg/m ³ (2008)	Rolling 3-Month Average
	1.5 µg/m ³ (1978)	Quarterly Average
Nitrogen Dioxide (NO ₂)	0.053 ppm	Annual (Arithmetic Mean)
	0.100 ppm	1-Hour
Particulate Matter (PM ₁₀)	150 µg/m ³	24-Hour
Particulate Matter (PM _{2.5})	12.0 µg/m ³ (2012)	Annual (Arithmetic Mean)
	15.0 µg/m ³ (1997)	Annual (Arithmetic Mean)
	35 µg/m ³	24-Hour
Ozone (O ₃)	0.075 ppm (2008)	8-Hour
	0.08 ppm (1997)	8-Hour
Sulfur Dioxide (SO ₂)	75 ppb	1-Hour

Note: At this time, secondary NAAQS are the same as the primary NAAQS for all pollutants EXCEPT SO₂, which has a secondary three-hour NAAQS of 0.5 ppm, and PM_{2.5}, which has a secondary annual NAAQS of 15.0 µg/m³. More information can be found at <http://epa.gov/air/criteria.html>



Federal Clean Air Act

- Legal foundation for the national air pollution control program
- Requires each state to produce and regularly update a SIP to attain and maintain the NAAQS in all areas
- Requires states with areas that do not meet the NAAQS to develop specific plans to attain the standards
- Grants the EPA power to establish NAAQS and to approve or disapprove SIPs



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

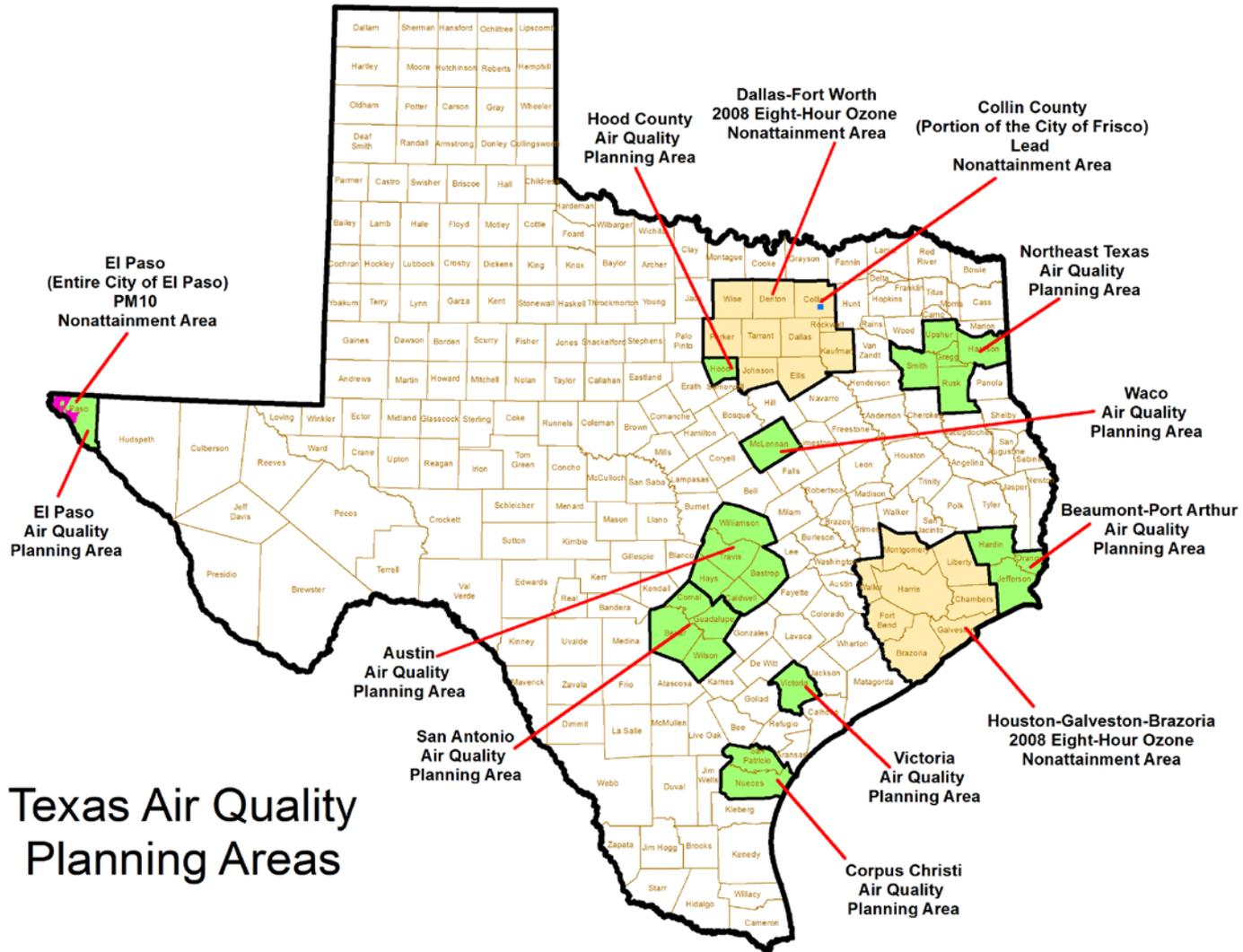


Texas NAAQS Nonattainment Areas

- Ozone
 - 1997 Standard – 0.08 ppm
 - Houston-Galveston-Brazoria
 - Dallas-Fort Worth
 - 2008 Standard – 0.075 ppm
 - Houston-Galveston-Brazoria
 - Dallas-Fort Worth
- Particulate Matter
 - El Paso County 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



Texas Attainment Status





What are the
types of SIP
revisions?

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
- Detail specific air quality targets and control strategies for nonattainment areas
 - rules, incentives, and enforcement activities
- Developed with participation from stakeholders
 - meetings, comment periods, and public hearings



EPA Revises NAAQS



State Designation Recommendations

Infrastructure and Transport SIP

EPA Nonattainment Designation

Attainment Demonstration SIP

Redesignation Request and Maintenance Plan

Redesignation to Attainment

-  EPA Action
-  State Action



Attainment Demonstration

- 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
- Due dates based on the area designation date and vary by pollutant



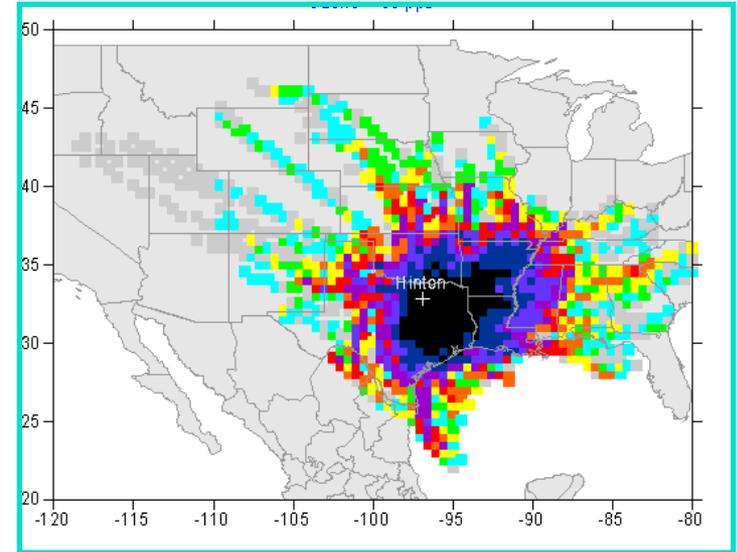
Components of an Attainment Demonstration

- Monitoring data
 - used to determine if an area is meeting the standard
 - used to analyze trends
- Emissions inventory
 - quantifies all sources of emissions: biogenic, point sources, area sources, and mobile sources
 - quantifies the inventory used to determine potential control strategies for the SIP revision
- Photochemical modeling
 - used to predict future pollutant levels
 - estimates the emissions reductions needed to attain the standard
- Control strategy
 - emissions reductions needed to attain the standard
 - implemented through rule revision



Monitoring Data

- Data is analyzed to determine:
 - ozone levels, trends, transport, meteorology, VOC contribution, and emissions sources; and
 - particulate matter and haze levels, trends, transport, effects of winds, and visibility.
- Data can be used to develop estimates of emissions from non-industrial, mobile, and biogenic sources.





Emissions Inventory

- Identifies:
 - Types of emissions sources present in an area
 - Amount of each pollutant emitted
 - Types of process and control devices employed at each plant or source category
- Provides data for a variety of air quality planning tasks:
 - Establishing baseline emission levels
 - Calculating emission reduction targets
 - Control strategy development
 - Emission inputs into air quality simulation models
 - Tracking actual emissions



Emissions Inventory

- Stationary Point Sources
 - Sites that meet the reporting requirements of 30 Texas Administrative Code (TAC) §101.10
- Area Sources
 - Small-scale industrial, commercial, and residential sources
- Non-Road Sources
 - Vehicles, engines, and equipment used for construction, agriculture, transportation, recreation, and many other purposes
- On-Road Sources
 - Motor vehicles traveling on public roadways



Emissions Inventories: Assessing Air Emissions from Industrial and Mobile Sources

- Maintains an emissions inventory of:
 - self-reported emissions data from large stationary sources (point sources)
 - estimates of emissions from area sources
 - estimates of emissions from mobile sources
- Tracks 2 million tons of emissions each year from large stationary sources

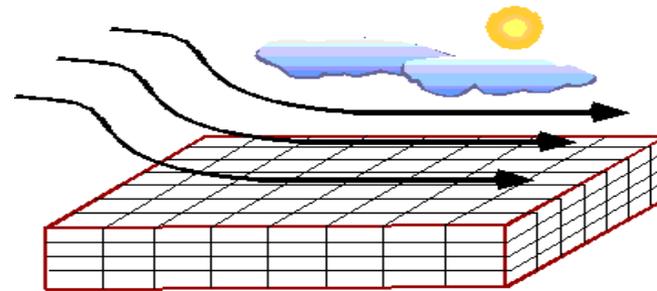


Modeling and Analyzing Air Data

- Models use meteorology, emissions, and chemistry to simulate pollution events and to test control strategies and real-world results.
- Models are used to support planning and show attainment of standards by mandated attainment dates.



Real World Situation



Computer Grid Simulation



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 or make reasonable further progress.



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 in addition to enforceability and practicality

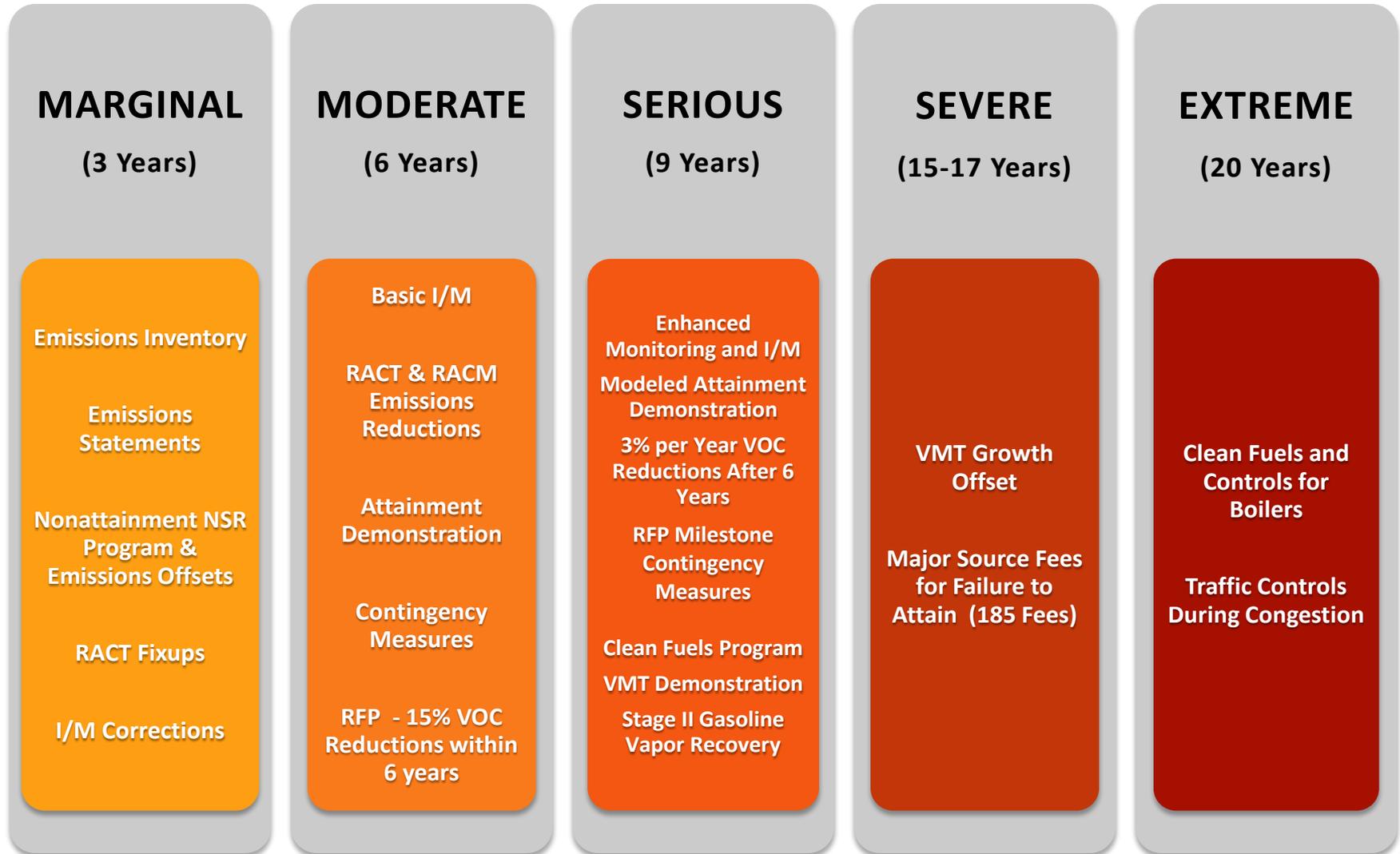


Reasonable Further Progress

- 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



SIP Requirements for Ozone Nonattainment Areas



EPA Revises NAAQS



State Designation Recommendations



Infrastructure and Transport SIP



EPA Nonattainment Designation



Attainment Demonstration SIP



Redesignation Request and Maintenance Plan



Redesignation to Attainment

 EPA Action

 State Action



Redesignation Requirements

- The EPA may redesignate an area to attainment if all of the following conditions are met:
 - the NAAQS have been attained;
 - 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;
 - the state has met all applicable requirements for the area under the FCAA, §110 and Part D; and
 - the EPA has fully approved a maintenance plan for the area under FCAA, §175A.



Redesignation Request and Maintenance Plan

- 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.

EPA Revises NAAQS



State Designation Recommendations



Infrastructure and Transport SIP

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Attainment Demonstration SIP



Redesignation Request and Maintenance Plan



Redesignation to Attainment

 EPA Action

 State Action



Infrastructure and Transport

- 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?
 - Transport = Does Texas significantly contribute to nonattainment or interfere with maintenance in another state?
- Must address a number of basic requirements, including:
 - ambient air quality monitoring and data systems
 - programs for enforcement of control measures
 - adequate authority and resources to implement the plan



Regional Haze

- 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
- Progress reports due to the EPA every five years through 2064



Program or Rule Update

- 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.



What have we
learned?



Key Takeaways

- The SIP is a plan developed by the state to meet federal air quality standards.
- There is only one SIP per state, which is revised as needed.
- The SIP is federally enforceable.
- The types of SIP revisions include:
 - attainment demonstrations and reasonable further progress;
 - redesignation requests and maintenance plans;
 - infrastructure and transport plans; and
 - regional haze plans.
- The SIP process is complex and can take several years to complete.



Further Reading

- TCEQ Main Web page
 - <http://www.tceq.texas.gov/>
- Texas SIP Main Web page
 - <http://www.tceq.texas.gov/airquality/sip>
- Texas SIP Revisions
 - <http://www.tceq.texas.gov/airquality/sip/siplans.html>
- Texas Regional Haze Plan
 - http://www.tceq.texas.gov/airquality/sip/bart/eq_aq_haze.html
- EPA SIP Status and Information
 - <http://www.epa.gov/air/urbanair/sipstatus/>
- Federal Clean Air Act
 - <http://www.epa.gov/air/caa/>



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Questions?