TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

Proposed Revision to the State Implementation Plan

AGENDA REQUESTED: October 31, 2012

DATE OF REQUEST: October 12, 2012

INDIVIDUAL TO CONTACT REGARDING CHANGES TO THIS REQUEST, IF NEEDED: Joyce Spencer-Nelson, (512) 239-5017

CAPTION: Docket No. 2012-1636-SIP. Consideration for publication of, and hearing on, a proposed revision to the Texas Air Quality State Implementation Plan (SIP): the Federal Clean Air Act (FCAA), Section 110(a)(1) and (2) Infrastructure and Transport SIP Revision for the 2010 Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS).

The proposed SIP revision would outline the requirements of FCAA, Section 110(a)(2)(A) through (M), and the Texas provisions supporting the requirements for the 2010 SO_2 NAAQS. These requirements include basic program elements such as enforceable emission limitations and control measures, air quality monitoring and modeling, a permitting program, adequate funding and personnel, authority under state law to carry out the plan, emissions reporting, emergency powers, public participation, and fee collection. This SIP revision would also include a technical demonstration to support that Texas meets the interstate transport requirements of FCAA, Section 110(a)(2)(D)(i)(I). (Mary Ann Cook, Amy Browning) (Non-Rule Project No. 2012-022-SIP-NR)

Steve Hagle
Deputy Director

David Brymer
Division Director

Joyce Nelson
Agenda Coordinator

Copy to CCC Secretary? NO

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** October 12, 2012

Thru: Bridget C. Bohac, Chief Clerk
Zak Covar, Executive Director

From: Steve Hagle, P.E., Deputy Director
Office of Air

Docket No.: 2012-1636-SIP

Subject: Commission approval to propose a revision to the Texas Air Quality State Implementation Plan (SIP): the Federal Clean Air Act (FCAA), §110(a)(1) and (2) Infrastructure and Transport SIP Revision for the 2010 Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) (Non-rule Project No. 2012-022-SIP-NR)

Background and reason(s) for the SIP revision:
Reasons for the SIP revision:
The United States Environmental Protection Agency (EPA) strengthened the SO_2 NAAQS on June 2, 2010, (published June 22, 2010; 75 FR 35520), adding a 75 parts per billion (ppb) primary standard. FCAA, §110(a)(1) requires that states submit plans to provide for the implementation, maintenance, and enforcement of a new or revised NAAQS within three years of promulgation. FCAA, §110(a)(2) identifies infrastructure requirements states must address for each NAAQS. Infrastructure requirements are stipulated in §110(a)(2)(A) through (M), as listed in the attached document. The SIP revision to address infrastructure requirements for the 2010 SO_2 NAAQS is due to the EPA by June 3, 2013.

Infrastructure requirements to adequately address the interstate transport of criteria pollutants that contribute significantly to nonattainment, or interfere with maintenance of, the NAAQS in other states are specified in §110(a)(2)(D)(i)(I) of the FCAA. Section 110(a)(2)(D)(i) also contains provisions prohibiting downwind interference with Prevention of Significant Deterioration (PSD) and visibility elements of Part C (see attached document).

Additional Background Information:
Initial implementation instructions included in the preamble to the final 2010 SO_2 NAAQS conveyed the EPA's expectation for infrastructure SIP submittals to include maintenance plans with modeling demonstrations for areas designated unclassifiable. A requirement for the use of American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) refined dispersion modeling to assess compliance by large SO_2 sources was also explicitly discussed in the rule. The maintenance plan and modeling demonstration expectations led to challenges by Texas and others to the standard. Texas' Petition for Review was denied by the D.C. Circuit on July 20, 2012.

In preparation for a final implementation rule (anticipated July 2013), the EPA issued a white paper to promote discussion and obtain stakeholder feedback on implementation issues and compliance assessment options. In an April 12, 2012, letter to states, the EPA

recommended that states focus their June 2013 SIP submittals on the traditional infrastructure elements of FCAA, §110(a)(1) and (2) rather than on modeling demonstrations showing attainment for unclassifiable areas.

The EPA has not yet made area designations for the 2010 SO_2 NAAQS but recently indicated it does not anticipate designating any attainment areas. In making designations, the EPA intends to focus initially on areas with sufficient ambient air quality monitoring data. Areas with monitors indicating violation(s) will be designated nonattainment. All other areas are expected to be designated unclassifiable. The EPA intends to make final designations by June 3, 2013. Texas' recommended designations that were submitted to the EPA on June 2, 2011, and revised on April 20, 2012, are: attainment for Dallas, Ellis, El Paso, Galveston, Gregg, Harris, Kaufman, McLennan, Nueces, and Jefferson Counties and unclassifiable for all remaining counties. The recommended attainment designations are based on monitors with 2011 design values showing attainment.

Other requirements of the 2010 SO_2 NAAQS include fully operational SO_2 air quality monitors in place by January 1, 2013, for a number of Texas cities. Based on recent census and emissions data, seven total monitors are required. Two are required in the Houston-Sugar Land-Baytown area, and one monitor for each area is required in San Antonio-New Braunfels, Dallas-Fort Worth-Arlington, Longview, Beaumont-Port Arthur, and Amarillo. One monitor for the San Antonio-New Braunfels area and one monitor in the Amarillo area were both deployed after promulgation of this NAAQS. The other five monitors were already in place.

SIP revisions for nonattainment areas are due to the EPA within 18 months of designations and must demonstrate attainment of the standard by August 2017.

Scope of the SIP revision:

A.) Summary of what the SIP revision will do:
This proposal would identify the FCAA-required infrastructure and transport requirements and document how the Texas SIP satisfies those requirements in order to provide for the implementation, maintenance, and enforcement of the 2010 SO_2 NAAQS in Texas.

B.) Scope required by federal regulations or state statutes:
The proposed revision would outline the infrastructure requirements of §110(a)(2)(A) through (M) and identify how the Texas SIP addresses those requirements in order to provide for implementation, maintenance, and enforcement of the 2010 SO_2 NAAQS. This proposal would also address the interstate transport of pollutants pursuant to FCAA, §110(a)(2)(D)(i)(I). A technical analysis would demonstrate that Texas does not significantly contribute to nonattainment or interfere with the maintenance of the 2010 SO_2 NAAQS in any other state.

SIP-required air quality programs and elements to support Texas meeting infrastructure and transport requirements are identified and discussed. Those programs and elements identified include any applicable emission limits and control measures, the SO_2 air quality monitoring network, modeling and permitting programs, funding and personnel, state legal authority, the emissions reporting program, emergency powers, public participation, and fee collections.

In accordance with the EPA's letter of April 12, 2012, this SIP revision would only address the "traditional infrastructure requirements" specified in FCAA, §110(a)(2)(A) through (M), including the §110(a)(2)(D)(i)(I) requirement dealing with pollutant transport between states. This proposed SIP revision would not include a maintenance plan or modeling demonstration as was initially indicated would be required with implementation of the 2010 SO_2 NAAQS.

C.) Additional staff recommendations that are not required by federal rule or state statute:
None

Statutory authority:
The authority to propose and adopt this SIP revision is derived from the FCAA, 42 United States Code, §7410, which requires states to submit SIP revisions that contain enforceable measures to attain the NAAQS and other general and specific authority in Texas Water Code, Chapters 5 and 7 and Texas Health and Safety Code, Chapter 382. Additionally, the specific requirements for the 2010 SO_2 NAAQS were published in the June 22, 2010, issue of the *Federal Register* (75 FR 35520).

Effect on the:

A.) Regulated community:
The proposal would have no effect on the regulated community.

B.) Public:
None

C.) Agency programs:
This SIP revision would have no new effect on agency programs.

Stakeholder meetings:
A public hearing will be held after proposal; the scheduled hearing date is December 4, 2012. A review and comment period will be provided for the public; the anticipated public comment period is November 5, 2012, through December 7, 2012.

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Potential controversial concerns and legislative interest:
The EPA's initial implementation expectations for June 2013 SIP submittals raised several issues not yet resolved. A lack of final implementation guidance or rules has contributed to difficulties in determining the EPA's exact requirements. Developing approvable SIP revisions may not be possible until major issues are resolved and implementation requirements are determined, conveyed, and understood.

Although recently not supported in federal court, Texas and other petitioners initially argued that the EPA should vacate the 2010 SO_2 NAAQS rule, referencing problems with the modeling approach, maintenance plan requirements, the form and stringency of the standard and inadequate notice/opportunity for states and stakeholders to comment. The EPA's initial implementation expectation was for states to include maintenance plans and modeling demonstrations in their infrastructure SIP submittals. However, the EPA recently withdrew this expectation, easing that extra burden previously associated with the development of this SIP revision.

Per the technical demonstration contained in this proposed revision, emissions reductions are not needed to demonstrate that interstate transport requirements are met for the SO_2 NAAQS in Texas. However, because the EPA has not yet specifically addressed transport requirements due to the delayed implementation guidance, the technical demonstration may be deemed insufficient.

Texas has air permitting programs in place per FCAA infrastructure requirements. The EPA previously disapproved various elements of Texas' air permitting programs due to issues regarding the regulation of greenhouse gasses. However, newly adopted rules, recent court ruling upholding some of the permitting programs, and a commitment to work closely with EPA staff to address the remaining issues should remedy most issues. Texas has a robust, SIP-approved permitting program, and therefore has met the infrastructure requirements of §110(a)(2).

EPA's draft guidance for the SO_2 infrastructure revisions states that an approved PSD program that applies to all regulated NSR pollutants, including greenhouse gasses, is necessary for a state to have a fully approvable infrastructure SIP. The EPA has already finalized a disapproval of a portion of Texas' Infrastructure SIP for fine particulate matter ($PM_{2.5}$) and the 1997 eight-hour ozone NAAQS on the same basis that Texas lacks an approved PSD permitting program for GHG. The EPA may similarly disapprove this and future infrastructure SIP revisions as they relate to GHG permitting. Litigation between Texas and the EPA regarding GHG is ongoing.

Will this SIP revision affect any current policies or require development of new policies?
No

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What are the consequences if this SIP revision does not go forward? Are there alternatives to this SIP revision?
Submittal of a SIP revision by June 3, 2013, is federally required to address infrastructure and transport requirements for the 2010 SO_2 NAAQS, per §110(a) of the FCAA. Late or non-submittal of the required SIP revision could lead to the EPA's promulgation of a federal implementation plan.

To document that interstate transport requirements specified in §110(a)(2)(D)(i)(I) are addressed for SO_2 in Texas, this proposal contains an analysis of SO_2 transport that includes a technical demonstration based on an evaluation of monitoring data. The inclusion of a transport analysis of Texas' emissions impacts on other states based on monitoring data only (no modeling) is consistent with Texas' position on the SO_2 NAAQS. Alternatively, a SIP revision could be delayed until further guidance is provided and the SIP revision would then likely not meet the FCAA deadline.

Key points in the proposal schedule:
Anticipated proposal date: October 31, 2012
Anticipated *Texas Register* publication date: November 16, 2012 (Hearing Notice)
Public hearing date: December 4, 2012
Public comment period: November 5, 2012 to December 7, 2012
Anticipated adoption date: April 24, 2013

Agency contacts:
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John Minter, Environmental Law Division, 239-0663
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Attachment

cc: Chief Clerk, 2 copies
Executive Director's Office
Susana M. Hildebrand, P.E.
Anne Idsal
Curtis Seaton
Tucker Royall
Office of General Counsel
Mary Ann P. Cook
Joyce Spencer-Nelson

Attachment: Requirements of the FCAA §110(a)(2)(A) through (M)

Requirements of the Federal Clean Air Act (FCAA), §110(a)(2)(A) through (M)

Each State Implementation Plan must:

(A) include enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of the Federal Clean Air Act (FCAA);

(B) provide for establishment and operation of devices, methods, systems, and procedures necessary to – (i) monitor, compile, and analyze data on ambient air quality, and (ii) upon request, make such data available to the U.S. Environmental Protection Agency (EPA);

(C) include a program to provide for enforcement of measures described in §110(a)(2)(A), and regulation of the modification and construction of any stationary source within the areas covered by the plan as necessary to assure that National Ambient Air Quality Standards (NAAQS) are achieved, including a permit program as required in parts (C) and (D);

(D) contain adequate provisions – (i) prohibiting any source or other type of emissions activity from emitting any air pollutant in amounts which will – (I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or (II) interfere with measures required to be included in the applicable implementation plan for any other state under part (C) to prevent significant deterioration of air quality or to protect visibility, (ii) insuring compliance with the applicable requirements of §126 and §115 (interstate and international pollution abatement);

(E) provide (i) necessary assurances that the state will have adequate personnel, funding, and authority under state law to carry out such implementation plan (and is not prohibited by any provision of federal or state law from carrying out such implementation plan or portion thereof), (ii) requirements that the state comply with the requirements respecting state boards under §128, and (iii) necessary assurances that, where the state has relied on a local or regional government, agency, or instrumentality for the implementation of any plan provision, the state has responsibility for ensuring adequate implementation of such plan provision;

(F) require, as may be prescribed by the EPA – (i) the installation, maintenance, and replacement of equipment, and the implementation of other necessary steps, by owners or operators of stationary sources to monitor emissions from such sources, (ii) periodic reports on the nature and amounts of emissions and emissions-related data from such sources, and (iii) correlation of such reports by the State agency with any emission limitations or standards established pursuant to the FCAA, which reports shall be available at reasonable times for public inspection;

(G) provide for authority comparable to that in §303 and adequate contingency plans to implement such authority;

(H) provide for revision of such plan – (i) from time to time as necessary to take account of revisions of such national primary or secondary ambient air quality standard or

the availability of improved or more expeditious methods of attaining such standard, (ii) except as provided in (3)(C), whenever the EPA finds on the basis of information available to the EPA that the plan is substantially inadequate to attain the NAAQS which it implements or to otherwise comply with any additional FCAA requirements;

(I) in the case of a plan or plan revision for an area designated as a nonattainment area, meet the applicable requirements of part(D) of this subchapter (relating to nonattainment areas);

(J) meet the applicable requirements of §121 (relating to consultation), §127 (relating to public notification), and part (C) (relating to prevention of significant deterioration of air quality and visibility protection);

(K) provide for (i) the performance of air quality modeling as the EPA may prescribe for the purpose of predicting the effect on ambient air quality of any emissions of any air pollutant for which the EPA has established a NAAQS, and (ii) the submission, upon request, of data related to such air quality modeling to the EPA;

(L) require the owner of a major stationary source to pay to the permitting authority, as a condition of any permit required under the FCAA, a fee sufficient to cover – (i) reasonable costs of reviewing and acting upon any application of such a permit, and (ii) if the owner or operator receives a permit for such a source, the reasonable costs of implementing and enforcing the terms and conditions of the permit (not including any court costs or other costs associated with any enforcement action), until such fee requirement is superseded with respect to such sources by the EPA's approval of a fee program under Title V; and

(M) provide for consultation and participation by local political subdivisions affected by the plan.

REVISIONS TO THE STATE OF TEXAS AIR QUALITY
IMPLEMENTATION PLAN

INFRASTRUCTURE DEMONSTRATION AND TRANSPORT PLAN
FOR SULFUR DIOXIDE

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
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FEDERAL CLEAN AIR ACT SECTION 110(A)(1) AND (2) INFRASTRUCTURE AND TRANSPORT STATE IMPLEMENTATION PLAN REVISION FOR THE 2010 SULFUR DIOXIDE NATIONAL AMBIENT AIR QUALITY STANDARD

PROJECT NUMBER 2012-022-SIP-NR

Proposal
October 31, 2012

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EXECUTIVE SUMMARY

States are required by §110(a)(1) of the Federal Clean Air Act (FCAA) to revise their air quality state implementation plans (SIP) within three years of the promulgation of a new or revised National Ambient Air Quality Standard (NAAQS) to provide for the implementation, maintenance, and enforcement of the NAAQS. FCAA, §110(a)(2)(A) through (M) identifies infrastructure requirements that states must address for each NAAQS. The United States Environmental Protection Agency (EPA) strengthened the sulfur dioxide (SO_2) NAAQS on June 2, 2010, (published June 22, 2010; 75 FR 35520), adding a 75 parts per billion (ppb) one-hour primary standard. SIP revisions to address infrastructure requirements for the 2010 SO_2 NAAQS are due to the EPA by June 3, 2013. One infrastructure requirement, specified in FCAA, §110(a)(2)(D)(i)(I), stipulates that states adequately address the interstate transport of criteria pollutants that contribute significantly to nonattainment or interfere with maintenance of the NAAQS in other states. Section 110(a)(2)(D)(i) also contains provisions prohibiting downwind interference with prevention of significant deterioration (PSD) and visibility elements of Part C.

This proposed SIP revision would satisfy the FCAA, §110(a)(1) requirement and documents revisions to the Texas SIP at 40 Code of Federal Regulations Part 52, Subpart SS that satisfy the infrastructure requirements of 110(a)(2) for the 2010 SO_2 NAAQS. This proposal provides details about each of those requirements and identifies elements of the state's air quality programs, rules, regulations, and policies in place to address the infrastructure requirements. Air quality program controls and elements put in place by Texas statutes and rules that allow the Texas Commission on Environmental Quality (TCEQ) to meet infrastructure requirements include basic program elements such as enforceable emission limitations and control measures, air quality monitoring and modeling, a permitting program, adequate funding and personnel, authority under state law to carry out the plan, emissions reporting, emergency powers, public participation, and fee collection. A detailed technical analysis discussion is included in this SIP revision to demonstrate that Texas satisfies the infrastructure requirement in §110(a)(2)(D)(i)(I) to address interstate transport for the 2010 SO_2 NAAQS. The technical analysis demonstration includes an analysis of back trajectories from monitor sites in neighboring states used to determine air parcel originations. A discussion of the technical analysis for SO_2 transport demonstrates that Texas does not contribute significantly to nonattainment or interfere with maintenance of the 2010 SO_2 NAAQS in another state.

Additional requirements were initiated for states with promulgation of the 2010 SO_2 NAAQS. The rule requires fully operational SO_2 air quality monitors in place by January 1, 2013, for a number of identified cities. Based on recent census and emissions data, seven total SO_2 air quality monitors are required in Texas. Two monitors have been deployed since promulgation of the NAAQS - in the Amarillo and San Antonio-New Braunfels areas. The other five required monitors were already in place. Nonattainment area SIP revisions demonstrating attainment of the new NAAQS by August 2017 must be submitted to the EPA within 18 months of designations. Area designations for the 2010 SO_2 NAAQS have not yet been made, but are expected to be finalized by the EPA by June 3, 2013. State recommendations for designations were due to the EPA on June 3, 2011. The recommended designations for Texas were submitted to the EPA on June 2, 2011, and revised on April 20, 2012. Attainment designations were recommended for Dallas, Ellis, El Paso, Galveston, Gregg, Harris, Kaufman, McLennan, Nueces, and Jefferson Counties, because SO_2 design values (DV) from regulatory monitors located in those counties show the standard met. Unclassifiable designations were recommended for all remaining counties in Texas because there are no SO_2 regulatory monitors located in those counties.

Initial implementation instructions in the preamble to the 2010 SO_2 NAAQS rule conveyed the EPA's expectation for infrastructure SIP submittals to include maintenance plans with modeling demonstrations for areas designated unclassifiable. A requirement for the use of refined American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion modeling to assess compliance by large SO_2 sources was also explicitly discussed in the rule. The maintenance plan and modeling demonstration expectations led to challenges by Texas and others to the standard. Texas' Petition for Review was denied by the D.C. Circuit of Appeals on July 20, 2012. In preparation for a final implementation rule (anticipated July 2013), the EPA issued a white paper to promote discussion and obtain stakeholder feedback on implementation issues and compliance assessment options. In an April 12, 2012, letter to states, the EPA recommended that states focus their June 2013 SIP submittals on the traditional infrastructure elements of FCAA, §110(a)(1) and (2) rather than on modeling demonstrations showing attainment for unclassifiable areas. The EPA has not yet issued final infrastructure or transport guidance for the 2010 SO_2 NAAQS, but in order to meet statutory deadlines for submittal of infrastructure SIPs, states do not have the option of waiting for EPA to provide additional guidance before proceeding with infrastructure and transport SIP development, review, and submittal. The TCEQ is proceeding with this proposed SIP revision to ensure that there are adequate opportunities for public notice and comment as required by state and federal statutes.

Because the infrastructure demonstration explains how existing Texas statutes and rules provide the basis for Texas to meet its obligations under the FCAA, the infrastructure portion of this SIP revision was developed as an expansion of the existing Section V: *Legal Authority* section of the Texas SIP. This expanded section is unique to infrastructure SIP revisions submitted to address requirements of FCAA, §110(a)(1), as it demonstrates that the state can provide for the implementation, maintenance, and enforcement of the NAAQS. Because legal authorities alone do not provide sufficient basis for the state to address the FCAA's interstate transport requirements, the portion of this SIP revision addressing interstate transport was developed as an expansion of the existing Section VI: *Control Strategy* section of the Texas SIP.

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SECTION V: LEGAL AUTHORITY

A. General (Revised)

The Texas Commission on Environmental Quality (TCEQ) has the legal authority to implement, maintain, and enforce the National Ambient Air Quality Standards (NAAQS) and to control the quality of the state's air, including maintaining adequate visibility.

The first air pollution control act, known as the Clean Air Act of Texas, was passed by the Texas Legislature in 1965. In 1967, the Clean Air Act of Texas was superseded by a more comprehensive statute, the Texas Clean Air Act (TCAA), found in Article 4477-5, Vernon's Texas Civil Statutes. The legislature amended the TCAA in 1969, 1971, 1973, 1979, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, and 2011. In 1989, the TCAA was codified as Chapter 382 of the Texas Health and Safety Code.

Originally, the TCAA stated that the Texas Air Control Board (TACB) is the state air pollution control agency and is the principal authority in the state on matters relating to the quality of air resources. In 1991, the legislature abolished the TACB effective September 1, 1993, and its powers, duties, responsibilities, and functions were transferred to the Texas Natural Resource Conservation Commission (TNRCC). With the creation of the TNRCC, the authority over air quality is found in both the Texas Water Code and the TCAA. Specifically, the authority of the TNRCC is found in Chapters 5 and 7. Chapter 5, Subchapters A - F, H - J, and L, include the general provisions, organization, and general powers and duties of the TNRCC, and the responsibilities and authority of the executive director. Chapter 5 also authorizes the TNRCC to implement action when emergency conditions arise and to conduct hearings. Chapter 7 gives the TNRCC enforcement authority. In 2001, the 77th Texas Legislature continued the existence of the TNRCC until September 1, 2013, and changed the name of the TNRCC to the TCEQ. In 2009, the 81st Texas Legislature, during a special session, amended section 5.014 of the Texas Water Code, changing the expiration date of the TCEQ to September 1, 2011, unless continued in existence by the Texas Sunset Act. In 2011, the 82nd Texas Legislature continued the existence of the TCEQ until 2023.

The TCAA specifically authorizes the TCEQ to establish the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general, comprehensive plan. The TCAA, Subchapters A - D, also authorize the TCEQ to collect information to enable the commission to develop an inventory of emissions; to conduct research and investigations; to enter property and examine records; to prescribe monitoring requirements; to institute enforcement proceedings; to enter into contracts and execute instruments; to formulate rules; to issue orders taking into consideration factors bearing upon health, welfare, social and economic factors, and practicability and reasonableness; to conduct hearings; to establish air quality control regions; to encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities.

Local government authority is found in Subchapter E of the TCAA. Local governments have the same power as the TCEQ to enter property and make inspections. They also may make recommendations to the commission concerning any action of the TCEQ that affects their territorial jurisdiction, may bring enforcement actions, and may execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA and the rules or orders of the commission.

Subchapters G and H of the TCAA authorize the TCEQ to establish vehicle inspection and maintenance programs in certain areas of the state, consistent with the requirements of the Federal Clean Air Act; coordinate with federal, state, and local transportation planning agencies to develop and implement transportation programs and measures necessary to attain and maintain the NAAQS; establish gasoline volatility and low emission diesel standards; and fund and authorize participating counties to implement vehicle repair assistance, retrofit, and accelerated vehicle retirement programs.

B. Applicable Law

The following statutes and rules provide necessary authority to adopt and implement the state implementation plan (SIP). The rules listed below have previously been submitted as part of the SIP.

Statutes

All sections of each subchapter are included, unless otherwise noted.

TEXAS HEALTH & SAFETY CODE, Chapter 382	September 1, 2011
TEXAS WATER CODE	September 1, 2011

Chapter 5: Texas Natural Resource Conservation Commission
- Subchapter A: General Provisions
- Subchapter B: Organization of the Texas Natural Resource Conservation Commission
- Subchapter C: Texas Natural Resource Conservation Commission
- Subchapter D: General Powers and Duties of the Commission
- Subchapter E: Administrative Provisions for Commission
- Subchapter F: Executive Director (except §§5.225, 5.226, 5.227, 5.2275,5.231, 5.232, and 5.236)
- Subchapter H: Delegation of Hearings
- Subchapter I: Judicial Review
- Subchapter J: Consolidated Permit Processing
- Subchapter L: Emergency and Temporary Orders (§§5.514, 5.5145, and 5.515 only)
- Subchapter M: Environmental Permitting Procedures (§5.558 only)

Chapter 7: Enforcement
- Subchapter A: General Provisions (§§7.001, 7.002, 7.0025, 7.004, and 7.005 only)
- Subchapter B: Corrective Action and Injunctive Relief (§7.032 only)
- Subchapter C: Administrative Penalties
- Subchapter D: Civil Penalties (except §7.109)
- Subchapter E: Criminal Offenses and Penalties: §§7.177, 7.179-7.183

Rules

All of the following rules are found in 30 Texas Administrative Code, as of the following latest effective dates:

Chapter 7: Memoranda of Understanding, §§7.110 and 7.119	December 13, 1996 and May 2, 2002
Chapter 19: Electronic Reporting	March 15, 2007
Chapter 35: Subchapters A-C, K: Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions	July 20, 2006

Chapter 39: Public Notice, §§39.402(a)(1)-(6), (8), and (10)-(12), 39.405(f)(3) and (g), (h)(1)(A)-(4), (6), (8)-(11), (i) and (j), 39.407, 39.409, 39.411(a), (e)(1)-(4)(A)(i) and (iii), (4)(B), (5)(A) and (B), and (6)-(10), (11)(A)(i) and (iii) and (iv), (11)(B)-(F), (13) and (15), and (f)(1)-(8), (g) and (h), 39.418(a), (b)(2)(A), (b)(3), and (c), 39.419(e), 39.420 (c)(1)(A)-(D)(i)(I) and (II), (D)(ii), (c)(2), (d)-(e), and (h), and 39.601-39.605	June 24, 2010
Chapter 55: Requests for Reconsideration and Contested Case Hearings; Public Comment, §§55.150, 55.152(a)(1), (2), (5), and (6) and (b), 55.154(a), (b), (c)(1)-(3), and (5), and (d)-(g), and 55.156(a), (b), (c)(1), (e), and (g)	June 24, 2010
Chapter 101: General Air Quality Rules	April 19, 2012
Chapter 106: Permits by Rule, Subchapter A	May 15, 2011
Chapter 111: Control of Air Pollution from Visible Emissions and Particulate Matter	February 16, 2012
Chapter 112: Control of Air Pollution from Sulfur Compounds	July 16, 1997
Chapter 113: Standards of Performance for Hazardous Air Pollutants and for Designated Facilities and Pollutants	May 14, 2009
Chapter 114: Control of Air Pollution from Motor Vehicles	September 13, 2012
Chapter 115: Control of Air Pollution from Volatile Organic Compounds	December 29, 2011
Chapter 116: Permits for New Construction or Modification	August 16, 2012
Chapter 117: Control of Air Pollution from Nitrogen Compounds	April 19, 2012
Chapter 118: Control of Air Pollution Episodes	March 5, 2000
Chapter 122: §122.122: Potential to Emit	December 11, 2002
Chapter 122: §122.215: Minor Permit Revisions	June 3, 2001
Chapter 122: §122.216: Applications for Minor Permit Revisions	June 3, 2001
Chapter 122: §122.217: Procedures for Minor Permit Revisions	December 11, 2002
Chapter 122: §122.218: Minor Permit Revision Procedures for Permit Revisions Involving the Use of Economic Incentives, Marketable Permits, and Emissions Trading	June 3, 2001

SECTION V-E-1: INFRASTRUCTURE DEMONSTRATION FOR THE 2010 SULFUR DIOXIDE NATIONAL AMBIENT AIR QUALITY STANDARD

A. Background

States are required by Section 110(a)(1) of the Federal Clean Air Act (FCAA) to revise their air quality state implementation plans (SIPs) within three years of the promulgation of new or revised National Ambient Air Quality Standard (NAAQS) to provide for the implementation, maintenance, and enforcement of the NAAQS. FCAA, §110(a)(2)(A) through (M) identifies infrastructure requirements that states must address for each NAAQS. The United States Environmental Protection Agency (EPA) strengthened the SO_2 NAAQS on June 2, 2010, (published June 22, 2010; 75 FR 35520), adding a 75 parts per billion (ppb) one-hour primary standard. SIP revisions to address infrastructure requirements for the 2010 SO_2 NAAQS are due to the EPA by June 3, 2013.

This proposed SIP revision would satisfy the FCAA, §110(a)(1) requirement and documents revisions to the Texas SIP at 40 Code of Federal Regulations Part 52, Subpart SS that satisfy the 110(a)(2) infrastructure requirements for the 2010 SO_2 NAAQS. This proposal provides details about each of those requirements and identifies elements of the state's air quality programs, rules, regulations, and policies in place to address the infrastructure requirements. Air quality program controls and elements put in place by Texas statutes and rules that allow the Texas Commission on Environmental Quality (TCEQ) to meet infrastructure requirements include basic program elements such as enforceable emission limitations and control measures, air quality monitoring and modeling, a permitting program, adequate funding and personnel, authority under state law to carry out the plan, emissions reporting, emergency powers, public participation, and fee collection.

Because the infrastructure demonstration explains how existing Texas statutes and rules provide the basis for Texas to meet its obligations under the FCAA, the infrastructure portion of this SIP revision was developed as an expansion of the existing Section V: *Legal Authority* section of the Texas SIP. This expanded section is unique to infrastructure SIP revisions submitted to address requirements of FCAA, §110(a)(1), as it demonstrates that the state can provide for the implementation, maintenance, and enforcement of the NAAQS.

One infrastructure obligation, specified in FCAA §110(a)(2)(D)(i)(I), requires that states adequately address the interstate transport of criteria pollutants that contribute to nonattainment or interfere with maintenance the NAAQS in other states. A detailed technical analysis discussion demonstrating that Texas specifically addresses the interstate transport requirements in FCAA, §110(a)(2)(D)(i)(I) for the 2010 SO_2 NAAQS is contained in Chapter 2: *Required Control Strategy Elements* of this SIP revision, and revises Section VI: *Control Strategy* of the Texas SIP.

Additional requirements were initiated for states with promulgation of the 2010 SO_2 NAAQS. The rule requires fully operational SO_2 air quality monitors in place by January 1, 2013, for a number of identified cities. Based on recent census and emissions data, seven total SO_2 air quality monitors are required in Texas. Two of the required monitors have been deployed since promulgation of the NAAQS – in the Amarillo and San Antonio-New Braunfels areas. The other five monitors required by the rule were already in place. Nonattainment area SIP revisions demonstrating attainment of the new NAAQS by August 2017 must be submitted to the EPA within 18 months of designations. Area designations for the 2010 SO_2 NAAQS have not yet been made, but are expected to be finalized by the EPA by June 3, 2013. State recommendations for designations were due to the EPA on June 3, 2011. The recommended designations for Texas were submitted to the EPA on June 2, 2011, and revised on April 20, 2012. Attainment

designations were recommended for Dallas, Ellis, El Paso, Galveston, Gregg, Harris, Kaufman, McLennan, Nueces, and Jefferson Counties, because SO_2 design values (DV) from regulatory monitors located in those counties show the standard met. Unclassifiable designations were recommended for all remaining counties in Texas because there are no SO_2 regulatory monitors located in those counties.

Initial implementation instructions included in the preamble to the final 2010 SO_2 NAAQS rule conveyed the EPA's expectation for infrastructure SIP submittals to include maintenance plans with modeling demonstrations for areas designated unclassifiable. A requirement for the use of refined American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion modeling to assess compliance by large SO_2 sources was also explicitly discussed in the rule preamble. The EPA's maintenance plan and modeling demonstration expectations led to challenges by Texas and others to the standard. Texas' Petition for Review was denied by the D.C. Circuit Court of Appeals on July 20, 2012. In preparation for a final implementation rule (anticipated July 2013), the EPA issued a white paper to promote discussion and obtain stakeholder feedback on implementation issues and compliance assessment options. In an April 12, 2012 letter to states, the EPA recommended that states focus their June 2013 SIP submittals on the traditional infrastructure elements of FCAA, §110(a)(1) and (2) rather than on modeling demonstrations showing attainment for unclassifiable areas. The EPA has not yet issued final infrastructure or transport guidance for the 2010 SO_2 NAAQS, but in order to meet statutory deadlines for submittal of infrastructure SIPs, states do not have the option of waiting for EPA to provide guidance before proceeding with infrastructure and transport SIP development, review, and submittal. The TCEQ is proceeding with publication of this proposed SIP revision to ensure that there are adequate opportunities for public notice and comment as required by state and federal statutes.

B. Texas Statutory Authority

The TCEQ has the legal authority to implement, maintain, and enforce the NAAQS. Texas' legal authority has been submitted to the EPA as part of various SIP revisions that have been approved by the EPA.

The first air pollution control act, known as the Clean Air Act of Texas, was passed by the Texas Legislature in 1965. In 1967, the Clean Air Act of Texas was superseded by a more comprehensive statute, the Texas Clean Air Act (TCAA), found in Article 4477-5, Vernon's Texas Civil Statutes. The Legislature amended the TCAA in 1969, 1971, 1973, 1979, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, and 2011. In 1989, the TCAA was codified as Chapter 382 of the Texas Health and Safety Code.

Originally, the TCAA stated that the Texas Air Control Board (TACB) was the state air pollution control agency and was the principal authority in the state on matters relating to the quality of air resources. In 1991, the legislature abolished the TACB effective September 1, 1993, and its powers, duties, responsibilities, and functions were transferred to the Texas Natural Resource Conservation Commission (TNRCC). With the creation of the TNRCC, the authority over air quality is found in both the Texas Water Code and the TCAA. Specifically, the authority of the commission is found in Texas Water Code, Chapters 5 and 7. Chapter 5, Subchapters A-F, H-J, and L, include the general provisions, organization, and general powers and duties of the commission, and the responsibilities and authority of the executive director. Chapter 5 also authorizes the commission to implement action when emergency conditions arise and to conduct hearings. Chapter 7 gives the commission enforcement authority. In 2001, the 77th Texas Legislature continued the existence of the commission until September 1, 2013, and changed the name of the TNRCC to the TCEQ. In 2009, the 81st Texas Legislature, during a special session, amended the Texas Water Code, §5.014, changing the expiration date of the

TCEQ to September 1, 2011, unless continued in existence by the Texas Sunset Act. In 2011, the 82nd Texas Legislature continued the existence of the TCEQ until 2023.

The TCAA specifically authorizes the TCEQ to establish the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general, comprehensive plan. The TCAA, Subchapters A through D, also authorize the TCEQ to collect information to enable the commission to develop an inventory of emissions; conduct research and investigations; enter property and examine records; prescribe monitoring requirements; institute enforcement proceedings; enter into contracts and execute instruments; formulate rules; issue orders taking into consideration factors bearing upon health, welfare, social and economic factors, and practicability and reasonableness; conduct hearings; establish air quality control regions; encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and establish and operate a system of permits for construction or modification of facilities.

Local government authority concerning air quality matters is found in Subchapter E of the TCAA. Local governments have the same power as the TCEQ to enter property and make inspections. Local governments may also make recommendations to the commission concerning any action of the TCEQ that affects their territorial jurisdiction, may bring enforcement actions, and may execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA or the rules or orders of the commission.

Subchapters G and H of the TCAA authorize the TCEQ to establish vehicle inspection and maintenance programs in certain areas of the state, consistent with the requirements of the FCAA; coordinate with federal, state, and local transportation planning agencies to develop and implement transportation programs and measures necessary to attain and maintain the NAAQS; and fund and authorize participating counties to implement vehicle repair assistance, retrofit, and accelerated vehicle retirement programs.

Statutory Authority

The following statutory authority allows for the establishment and operation of the TCEQ and the adoption and implementation of all §110(a)(2) requirements.

Texas Clean Air Act, Texas Health and Safety Code, Chapter 382, except Subchapter I.

Texas Water Code:

§5.013(a)(11) & (13)	GENERAL JURISDICTION OF COMMISSION
§5.051.	COMMISSION
§5.052.	MEMBERS OF THE COMMISSION; APPOINTMENT
§5.053.	ELIGIBILITY FOR MEMBERSHIP
§5.054.	REMOVAL OF COMMISSION MEMBERS
§5.059.	CONFLICT OF INTEREST
§5.060.	LOBBYIST PROHIBITION
§5.101.	SCOPE OF SUBCHAPTER
§5.102.	GENERAL POWERS
§5.103.	RULES
§5.104.	MEMORANDA OF UNDERSTANDING
§5.105.	GENERAL POLICY
§5.106.	BUDGET APPROVAL

§5.107.	ADVISORY COMMITTEES, WORK GROUPS, AND TASK FORCES
§5.115.	PERSONS AFFECTED IN COMMISSION HEARINGS; NOTICE OF APPLICATION
§5.117.	MANDATORY ENFORCEMENT HEARING
§5.120.	CONSERVATION AND QUALITY OF ENVIRONMENT
§5.133.	ACTIONS IN MEXICO
§5.1733.	ELECTRONIC POSTING OF INFORMATION
§5.223.	ADMINISTRATIVE ORGANIZATION OF COMMISSION
§5.230.	ENFORCEMENT
§5.233.	GIFTS AND GRANTS
§5.234.	APPLICATIONS AND OTHER DOCUMENTS
§5.237.	OPERATING FUND
§5.501.	EMERGENCY AND TEMPORARY ORDER OR PERMIT; TEMPORARY SUSPENSION OR AMENDMENT OF PERMIT CONDITION
§5.502.	APPLICATION FOR EMERGENCY OR TEMPORARY ORDER
§5.514.	ORDER ISSUED UNDER AIR EMERGENCY
§5.515.	EMERGENCY ORDER BECAUSE OF CATASTROPHE
§5.701(a)	FEES
§5.702.	PAYMENT OF FEES REQUIRED WHEN DUE
§5.703.	FEE ADJUSTMENTS
§5.704.	NOTICE OF CHANGE IN PAYMENT PROCEDURE
§5.705.	NOTICE OF VIOLATION
§7.002.	ENFORCEMENT AUTHORITY
§7.032.	INJUNCTIVE RELIEF
§7.051.	ADMINISTRATIVE PENALTY
§7.052.	MAXIMUM PENALTY
§7.053.	FACTORS TO BE CONSIDERED IN DETERMINATION OF PENALTY AMOUNT
§7.061.	PAYMENT OF PENALTY; PETITION FOR REVIEW
§7.066.	REFERRAL TO ATTORNEY GENERAL
§7.067.	SUPPLEMENTAL ENVIRONMENTAL PROJECTS
§7.072.	RECOVERY OF PENALTY
§7.073.	CORRECTIVE ACTION
§7.101.	VIOLATION
§7.102.	MAXIMUM PENALTY
§7.103.	CONTINUING VIOLATIONS
§7.105.	CIVIL SUIT
§7.106.	RESOLUTION THROUGH ADMINISTRATIVE ORDER
§7.177.	VIOLATIONS OF CLEAN AIR ACT
§7.178.	FAILURE TO PAY FEES UNDER CLEAN AIR ACT
§7.179.	FALSE REPRESENTATIONS UNDER CLEAN AIR ACT
§7.180.	FAILURE TO NOTIFY UNDER CLEAN AIR ACT
§7.181.	IMPROPER USE OF MONITORING DEVICE
§7.182.	RECKLESS EMISSION OF AIR CONTAMINANT AND ENDANGERMENT
§7.183.	INTENTIONAL OR KNOWING EMISSION OF AIR CONTAMINANT AND KNOWING ENDANGERMENT
§7.186.	SEPARATE OFFENSES
§7.187.	PENALTIES
§7.302.	GROUNDS FOR REVOCATION OR SUSPENSION OF PERMIT

C. Texas Regulatory Authority

The TCEQ has promulgated rules implementing statutory authority to meet the requirements of both the FCAA and the TCAA. These rules were submitted to the EPA in various SIP revisions and have been approved in the *Federal Register* (FR) or are pending EPA review. Rules that are relevant for each FCAA, §110(a)(2) requirement are noted below.

FCAA, §110(a)(2)(A)

Federal Requirement

(A) include enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of this Act;

Texas Requirement

The TCEQ has promulgated rules to implement and enforce the NAAQS and other air quality standards. These rules include programs for banking and trading of emissions, as well as permits and fees. Periodic revisions to the SIP establish timetables and schedules for improving the air quality in nonattainment areas.

The following chapters of Title 30 Texas Administrative Code (TAC) contain rules relevant for this federal requirement:

Chap. 7	Memoranda of Understanding
Chap. 101	General Air Quality Rules
Chap. 106	Permits by Rule, Subchapter A, General Requirements
Chap. 111	Control of Air Pollution from Visible Emissions and Particulate Matter
Chap. 112	Control of Air Pollution from Sulfur Compounds
Chap. 113	Standards of Performance for Hazardous Air Pollutants and for Designated Facilities and Pollutants
Chap. 114	Control of Air Pollution from Motor Vehicles
Chap. 115	Control of Air Pollution from Volatile Organic Compounds
Chap. 116	Control of Air Pollution by Permits for New Construction or Modification
Chap. 117	Control of Air Pollution from Nitrogen Compounds
Chap. 118	Control of Air Pollution Episodes
Chapter 122: §122.122	Potential to Emit
Chapter 122: §122.215:	Minor Permit Revisions
Chapter 122: §122.216:	Applications for Minor Permit Revisions
Chapter 122: §122.217:	Procedures for Minor Permit Revisions
Chapter 122: §122.218:	Minor Permit Revision Procedures for Permit Revisions Involving the Use of Economic Incentives, Marketable Permits, and Emissions Trading

FCAA, §110(a)(2)(B)

Federal Requirement

(B) provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to (i) monitor, compile, and analyze data on ambient air quality, and (ii) make such data available to the Administrator;

Texas Requirement
The TCEQ maintains a network of air quality monitors to measure air quality data that is reported to the EPA on a regular basis. Texas submits annual monitoring plans to the EPA that describe how the state has complied with monitoring requirements and explains any proposed changes. Federally required monitoring is conducted under an EPA-approved Quality Assurance Project Plan (QAPP).

The following chapters of 30 TAC contain rules relevant for this federal requirement:

Chap. 101	General Air Quality Rules
Chap. 106	Permits by Rule, Subchapter A, General Requirements
Chap. 111	Control of Air Pollution from Visible Emissions and Particulate Matter
Chap. 112	Control of Air Pollution from Sulfur Compounds
Chap. 115	Control of Air Pollution from Volatile Organic Compounds
Chap. 116	Control of Air Pollution by Permits for New Construction or Modification
Chap. 117	Control of Air Pollution from Nitrogen Compounds

FCAA, §110(a)(2)(C)
Federal Requirement

(C) include a program to provide for the enforcement of the measures described in subparagraph (A), and regulation of the modification and construction of any stationary source within the areas covered by the plan as necessary to assure that national ambient air quality standards are achieved, including a permit program as required in parts C and D;

Texas Requirement
The TCEQ has established rules governing the enforcement of control measures, including attainment plans and permitting programs that regulate construction and modification of stationary sources.[1]

The EPA has published various proposed disapproval notices for Texas' air permitting programs, and these disapprovals have not yet been fully resolved. Texas has new rules that address these notices and has committed to working closely with the EPA to ensure that these rulemaking efforts will result in rules that are approvable by the EPA. The EPA has also proposed limited approval/limited disapproval of the commission's rules regarding public participation for air quality New Source Review (NSR) permits. Texas has withdrawn from EPA consideration most of the rules that were the subject of the proposed limited approval/limited disapproval and has submitted new and revised adopted public participation rules to the EPA for the SIP. On October 28, 2010, the EPA signed a notice withdrawing its limited approval and limited disapproval of the SIP revisions relating to public participation, because those revisions are no longer before the EPA for review. Although the EPA has disapproved various elements of

[1] Texas has permitting rules for Prevention of Significant Deterioration (PSD), as required by the FCAA. The EPA has recently promulgated regulations for the permitting of greenhouse gases under the PSD program. Although Texas has not amended or proposed amendments to its permitting program to include greenhouse gases, Texas is meeting its obligations under the FCAA to provide for permitting of facilities that emit criteria pollutants. Greenhouse gases are not criteria pollutants, with a NAAQS that must be met. Therefore, a lack of permitting requirements in Texas rules for greenhouse gas emissions does not constitute a lack in the required infrastructure elements of §110(a)(2).

Texas' air permitting programs, those concerns are being addressed with newly adopted rules and a commitment to work closely with EPA staff to issue EPA-approvable rules. Texas has a robust, SIP-approved permitting program and therefore has met the infrastructure requirements of §110(a)(2).

The following chapters of 30 TAC contain rules relevant for this federal requirement:

Chap. 35	Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions; Subchapters A, B, C, K
Chap. 39	Public Notice
Chap. 55	Requests for Reconsideration and Contested Case Hearings; Public Notice
Chap. 101	General Air Quality Rules
Chap. 106	Permits by Rule, Subchapter A, General Requirements
Chap. 112	Control of Air Pollution from Sulfur Compounds
Chap. 115	Control of Air Pollution from Volatile Organic Compounds
Chap. 116	Control of Air Pollution by Permits for New Construction or Modification
Chap. 117	Control of Air Pollution from Nitrogen Compounds

FCAA, §110(a)(2)(D)

Federal Requirement

(D) contain adequate provisions (i) prohibiting, consistent with the provisions of this title, any source or other type of emissions activity from emitting any air pollutant in amounts which will (I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or (II) interfere with measures required to be included in the applicable implementation plan for any other State under part C to prevent significant deterioration of air quality or to protect visibility,(ii) insuring compliance with the applicable requirements of sections 126 and 115 (relating to interstate and international pollution abatement);

Texas Requirement

This SIP revision includes an interstate transport technical analysis in Section VI: *Control Strategy* to address the requirements of §110(a)(2)(D)(i)(I).

Texas has a SIP-approved PSD and nonattainment NSR permitting program that contains requirements for sources of air pollutants to obtain an approved permit before beginning construction of a facility and before modifying an existing facility (see requirements for §110(a)(2)(C) previously listed). Texas submitted a Regional Haze SIP revision to the EPA on March 19, 2009. Regional haze program requirements include progress reports due to the EPA in 2014 and every five years thereafter to demonstrate progress toward the visibility goal. Another Regional Haze SIP is due in 2018 and every 10 years thereafter, through 2064.

On August 21, 2012, the DC Circuit Court of Appeals vacated EPA's Cross State Air Pollution Rule. As part of its decision, the court stated that EPA needed to inform states of their transport obligations under section 110(a)(2)(D)(i)(I) before states could submit SIPs addressing those obligations. The TCEQ is moving ahead to meet our FCAA obligations with the information that we have, and may supplement this documentation in the future if necessary.

The following chapter of 30 TAC contains rules relevant for this federal requirement:

Chap. 101	General Air Quality Rules

Chap. 122 Subchapter E, Division 2, Clean Air Interstate Rule

FCAA, §110(a)(2)(E)

Federal Requirement

(E) provide (i) necessary assurances that the State (or, except where the Administrator deems inappropriate, the general purpose local government or governments, or a regional agency designated by the State or general purpose local governments for such purpose) will have adequate personnel, funding, and authority under State (and, as appropriate, local) law to carry out such implementation plan (and is not prohibited by any provision of Federal or State law from carrying out such implementation plan or portion thereof), (ii) requirements that the state comply with the requirements respecting State boards under section 128, and (iii) necessary assurances that, where the State has relied on a local or regional government, agency, or instrumentality for the implementation of any plan provision, the State has responsibility for ensuring adequate implementation of such plan provision;

Texas Requirement

The TCEQ has consistently included assurances in SIP revisions that the state has adequate personnel, funding, and authority under state law to carry out the SIP. The TCEQ has various Memoranda of Understanding and Memoranda of Agreement with other state and local agencies. Local governments have their own responsibilities and privileges regarding the protection of air quality as established by the Texas legislature.

The TCEQ relies on the complete statutory and regulatory authority as referenced throughout this document. This statutory authority ensures that Texas can meet the requirements of this section, including the requirements of §128 of the FCAA. The TCEQ also regularly submits a description of our legal authority with SIP revisions submitted to the EPA.

FCAA, §110(a)(2)(F)

Federal Requirement

(F) require, as may be prescribed by the Administrator: (i) the installation, maintenance, and replacement of equipment, and implementation of other necessary steps, by owners or operators of stationary sources to monitor emissions from such sources, (ii) periodic reports on the nature and amounts of emissions and emissions-related data from such sources, and (iii) correlation of such reports by the State agency with any emission limitations or standards established pursuant to is Act, which reports shall be available at reasonable times for public inspection;

Texas Requirement

The TCEQ requires monitoring for air pollutants as part of its NSR permit program. Certain emission sources are required to submit annual emission inventories and periodic reporting of emissions, which provides data that is used in air quality modeling to help Texas prepare SIP revisions. Emissions data are available at reasonable times for public inspection, with some information also available on the agency Web site.

The following chapters of 30 TAC contain rules relevant for this federal requirement:

Chap. 101 General Air Quality Rules
Chap. 106 Permits by Rule, Subchapter A, General Requirements

Chap. 111	Control of Air Pollution from Visible Emissions and Particulate Matter
Chap. 112	Control of Air Pollution from Sulfur Compounds
Chap. 115	Control of Air Pollution from Volatile Organic Compounds
Chap. 116	Control of Air Pollution by Permits for New Construction or Modification
Chap. 117	Control of Air Pollution from Nitrogen Compounds

FCAA, §110(a)(2)(G)

Federal Requirement

(G) provide for authority comparable to that in section 303 and adequate contingency plans to implement such authority;

Texas Requirement

The TCEQ may issue emergency orders, or issue or suspend air permits as required by an air pollution emergency. In addition, the TCEQ also maintains air quality information in a form readily available to the public on the TCEQ's *Today's Texas Air Quality Forecast* Web site (http://www.tceq.texas.gov/compliance/monitoring/air/monops/forecast_today.html).

The following chapters of 30 TAC contain rules relevant for this federal requirement:

Chap. 35	Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions; Subchapters A, B, C, K
Chap. 118	Control of Air Pollution Episodes

FCAA, §110(a)(2)(H)

Federal Requirement

(H) provide for revision of such plan: (i) from time to time as may be necessary to take account of revisions of such national primary or secondary ambient air quality standard or the availability of improved or more expeditious methods of attaining such standard, and (ii) except as provided in paragraph (3)(C), whenever the Administrator finds on the basis of information available to the Administrator that the plan is substantially inadequate to attain the national ambient air quality standard which it implements or to otherwise comply with any additional requirements Established under this Act;

Texas Requirement

The TCEQ regularly revises the Texas SIP in response to revisions of the NAAQS and EPA rules. See §110(a)(2)(A) above.

FCAA, §110(a)(2)(I)

Federal Requirement

(I) in the case of a plan or plan revision for an area designated as a nonattainment area, meet the applicable requirements of part D (relating to nonattainment areas);

Texas Requirement

SIP revisions that implement the control strategies necessary to bring a nonattainment area into attainment of the NAAQS are not required by the FCAA to be submitted within three years of the promulgation of a new or revised NAAQS. Therefore, §110(a)(1) does not require this element to be demonstrated as part of an infrastructure SIP submittal (73 FR 16205, at 16206).

FCAA, §110(a)(2)(J)

Federal Requirement

(J) meet the applicable requirements of section 121 (relating to consultation), section 127 (relating to public notification), and part C (relating to prevention of significant deterioration and visibility protection);

Texas Requirement

The TCEQ has an established public participation process for all SIP revisions and permitting programs. The EPA has proposed limited approval/limited disapproval of the rules regarding public participation for air quality NSR permits.[2] Texas has withdrawn from EPA consideration most of the rules that were the subject of the proposed limited approval/limited disapproval, and has submitted new and revised public participation rules to the EPA as a new SIP revision to address the EPA's published concerns regarding these requirements.[3] On October 28, 2010, the EPA signed a notice withdrawing its limited approval/limited disapproval of the SIP revisions relating to public participation because those revisions are no longer before the EPA for review (75 FR 68291). The TCEQ consults with other state agencies, local agencies, and non-governmental organizations, as well as with the environmental agencies of other states regarding air quality concerns. All major sources in Texas are subject to Texas' SIP-approved PSD program. Texas submitted a SIP revision to address Regional Haze, including a long-term strategy to address visibility impairment for each Class I area that may be impacted by emissions from Texas facilities.

The following chapters of 30 TAC contain rules relevant for this federal requirement:

Chap. 7	Memoranda of Understanding
Chap. 35	Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions; Subchapters H and K
Chap. 101	General Air Quality Rules
Chap. 116	Control of Air Pollution for New Construction or Modification

FCAA, §110(a)(2)(K)

Federal Requirement

(K) provide for (i) the performance of such air quality modeling as the Administrator may prescribe for the purpose of predicting the effect on ambient air quality of any emissions of any air pollutant for which the Administrator has established a national ambient air quality standard, and (ii) the submission, upon request, of data related to such air quality modeling to the Administrator;

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[2] Approval and Promulgation of Implementation Plans; Texas; Revisions to Chapters 39, 55, and 116 Which Relate to Public Participation on Permits for New and Modified Sources, 73 FR 72001 (November 26, 2008).

[3] The TCEQ adopted this rulemaking on June 2, 2010, and the adopted rules were published in the *Texas Register* (TR) on June 18, 2010 (35 TR 5198). These rules became effective on June 24, 2010, were submitted to the EPA on July 2, 2010, but the EPA has not yet taken any action on these rules.

Texas Requirement
Air quality modeling is conducted during development of revisions to the Texas SIP, as appropriate for the state to demonstrate attainment with required NAAQS. Modeling is also a part of the NSR permitting program.

The following chapter of 30 TAC contains rules relevant for this federal requirement:

Chap. 116	Control of Air Pollution for New Construction or Modification

FCAA, §110(a)(2)(L)
Federal Requirement

(L) require the owner or operator of each major stationary source to pay to the permitting authority, as a condition of any permit required under this Act, a fee sufficient to cover (i) reasonable costs of reviewing and acting upon any application for such a permit, and (ii) if the owner or operator receives a permit for such source, the reasonable costs of implementing and enforcing the terms and conditions of any such permit (not including any court costs or other costs associated with any enforcement action), until fee requirement is superseded with respect to such sources by the Administrator's approval of a fee program under title V;

Texas Requirement
The TCEQ assesses fees for reviewing permit applications and for enforcing the terms and conditions of permits.

The following chapters of 30 TAC contain rules relevant for this federal requirement:

Chap. 12	Payment of Fees
Chap. 101	General Air Quality Rules
Chap. 106	Permits by Rule, Subchapter A, General Requirements
Chap. 116	Control of Air Pollution by Permits for New Construction or Modification

FCAA, §110(a)(2)(M)
Federal Requirement

(M) provide for consultation and participation by local political subdivisions affected by the plan.

Texas Requirement
The TCEQ has several cooperative agreements and Memoranda of Understanding with various other state and local agencies and organizations. Consultation with a variety of different organizations is a regular part of the TCEQ's process of developing SIP revisions.

D. Conclusion
The foregoing demonstrates that Texas has the necessary regulatory and statutory authority to meet the infrastructure requirements of FCAA, §110(a)(1) and (2) for the 2010 SO_2 NAAQS.

SECTION VI: CONTROL STRATEGY

A. Introduction (No change)
B. Ozone (No change)
C. Particulate Matter (No change)
D. Carbon Monoxide (No change)
E. Lead (No change)
F. Oxides of Nitrogen (No change)
G. Sulfur Dioxide (No change)
H. Conformity with the National Ambient Air Quality Standards (No change)
I. Site Specific (No change)
J. Mobile Sources Strategies (No change)
K. Clean Air Interstate Rule (No change)
L. Transport (Revised)
M. Regional Haze (No change)

LIST OF ACRONYMS

AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FCAA	Federal Clean Air Act
FIP	federal implementation plan
FR	Federal Register
H_+	hydrogen ion
H_2O	water
H_2SO_4	sulfuric acid
HSO_{4-}	hydrogen sulfate ion
HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory Model
NAAQS	National Ambient Air Quality Standard
NO_2	nitrogen dioxide
S	sulfur
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SO_X	sulfur oxides
NSR	New Source Review
O_2	oxygen
$PM_{2.5}$	fine particulate matter
ppb	parts per billion
ppm	parts per million
PSD	Prevention of Significant Deterioration
SIP	state implementation plan
TAC	Texas Administrative Code
TACB	Texas Air Control Board
TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Quality (commission)
TNRCC	Texas Natural Resource Conservation Commission
TR	Texas Register

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CHAPTER 1: GENERAL

1.1 BACKGROUND

"The History of the Texas State Implementation Plan (SIP)," a comprehensive overview of the SIP revisions submitted to the United States Environmental Protection Agency (EPA) by the State of Texas, is available on the Introduction to the SIP Web page (http://www.tceq.texas.gov/airquality/sip/sipintro.html#History) on the Texas Commission on Environmental Quality's (TCEQ) Web site (http://www.tceq.texas.gov).

1.2 INTRODUCTION

The United States Environmental Protection Agency (EPA) strengthened the sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) on June 2, 2010, (published June 22, 2010; 75 FR 35520) with the promulgation of a new 75 parts per billion (ppb) one-hour primary standard. States are required by Section 110(a)(1) of the Federal Clean Air Act (FCAA) to revise their air quality SIPs within three years of NAAQS promulgation to provide for implementation, maintenance, and enforcement of the standard. Infrastructure SIPs addressing the requirements of Section 110(a)(2) for the 2010 SO_2 NAAQS are due to the EPA by June 3, 2013. Nonattainment area SIP revisions demonstrating attainment of the new NAAQS by August 2017 must be submitted to the EPA within 18 months of designations. Additional monitoring requirements were also initiated with promulgation of the 2010 SO_2 NAAQS, including fully operational SO_2 air quality monitors in place by January 1, 2013, for a number of identified cities. Area designations for the 2010 SO_2 NAAQS have not yet been made, but are expected to be finalized by the EPA by June 3, 2013. State recommendations for designations were due to the EPA on June 3, 2011. The recommended designations for Texas were submitted to the EPA on June 2, 2011, and revised on April 20, 2012. Attainment designations were recommended for Dallas, Ellis, El Paso, Galveston, Gregg, Harris, Kaufman, McLennan, Nueces, and Jefferson Counties, because SO_2 design values (DV) from regulatory monitors located in those counties show the standard met. Unclassifiable designations were recommended for all remaining counties in Texas because there are no SO_2 regulatory monitors located in those counties.

This proposed SIP revision would satisfy the FCAA §110(a)(1) requirement and documents revisions to the Texas SIP at 40 Code of Federal Regulations Part 52, Subpart SS to satisfy the infrastructure requirements for the 2010 SO_2 NAAQS, as stipulated in FCAA, §110(a)(2)(A) through (M). Texas infrastructure SIP revisions are developed as an expansion of the Section V: *Legal Authority* portion of the Texas SIP. As is unique to infrastructure SIP revisions submitted to address requirements of FCAA, §110(a)(1) in Texas, the infrastructure demonstration for SO_2 is contained in the portion of this proposed SIP revision revising Section V: *Legal Authority* of the Texas SIP. The infrastructure demonstration documents how existing Texas statutes and rules provide the basis for Texas to meet its obligations under the FCAA to provide for the implementation, maintenance, and enforcement of the 2010 SO_2 NAAQS. It details each of the infrastructure requirements in Section 110(a)(2) and identifies elements of the state's air quality programs, rules, regulations, and policies in place to address those requirements, including basic program elements such as enforceable emission limitations and control measures, air quality monitoring and modeling, a permitting program, adequate funding and personnel, authority under state law to carry out the plan, emissions reporting, emergency powers, public participation, and fee collection. Please see the portion of this proposed SIP revision revising Section V: *Legal Authority* of the Texas SIP for the infrastructure demonstration for the 2010 SO_2 NAAQS.

The infrastructure obligations specified in FCAA §110(a)(2)(D)(i)(I), require states to adequately address the interstate transport of criteria pollutants that contribute significantly to nonattainment or interfere with maintenance of the NAAQS in other states. A detailed technical analysis demonstrating that Texas specifically addresses the interstate transport requirements in FCAA, §110(a)(2)(D)(i)(I) for the 2010 SO_2 NAAQS is contained in Chapter 2: *Required Control Strategy Elements* of this SIP revision. The technical analysis demonstration contained in Chapter 2 was developed as an expansion of the existing Section VI: *Control Strategy* section of the Texas SIP.

The technical demonstration contained in Chapter 2 includes a discussion of SO_2 transport and an analysis of back trajectories from monitoring sites in neighboring states. The analysis reveals originations for the air parcels that could be impacting those monitors. The data collected from regulatory monitors showing no violations of the 2010 SO_2 NAAQS in Texas, together with the transport analysis in this revision demonstrates that SO_2 from Texas sources does not interfere with attainment or maintenance of the NAAQS in surrounding states. This documents that the Texas SIP satisfies FCAA §110(a)(2)(D)(i)(I), and has adequately addressed interstate transport requirements for the 2010 SO_2 NAAQS.

Initial implementation instructions included in the preamble to the final 2010 SO_2 NAAQS conveyed the EPA's expectation for infrastructure SIP submittals to include maintenance plans with modeling demonstrations for areas designated unclassifiable. A requirement for the use of refined American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion modeling to assess compliance by large SO_2 sources was also explicitly discussed in the rule. The maintenance plan and modeling demonstration expectations led to challenges by Texas and others to the standard. Texas' Petition for Review was denied by the D.C. Circuit Court of Appeals on July 20, 2012. In preparation for a final implementation rule (anticipated July 2013), the EPA issued a white paper to promote discussion and obtain stakeholder feedback on implementation issues and compliance assessment options. In an April 12, 2012, letter to states, the EPA recommended that states focus their June 2013 SIP submittals on the traditional infrastructure elements of FCAA, §110(a)(1) and (2) rather than on modeling demonstrations showing attainment for unclassifiable areas. The EPA has not yet issued final infrastructure or transport guidance for the 2010 SO_2 NAAQS, but in order to meet statutory deadlines for submittal of infrastructure SIPs, states do not have the option of waiting for EPA to provide guidance before proceeding with infrastructure and transport SIP development, review, and submittal. The TCEQ is proceeding with publication of this proposed SIP revision to ensure adequate opportunity for public notice and comment, as required by state and federal statutes.

1.3 HEALTH EFFECTS

Current scientific evidence links short-term exposures to SO_2, ranging from five minutes to 24 hours, with an array of adverse respiratory affects including bronchoconstriction and increased asthma symptoms (75 FR 35520). These effects are particularly important for asthmatics at elevated ventilation rates (e.g., while exercising or playing) and other at-risk populations including children and elderly people.

Sulfur oxides (SO_X) including SO_2 can react with other compounds in the atmosphere to form small particles. These particles have the potential to penetrate deeply into sensitive parts of the lungs and, at high levels, can contribute to respiratory disease, such as emphysema and bronchitis. They may aggravate existing heart disease, leading to increased hospital admissions and possibly premature death (75 FR 35520). However, the health effects associated with current ambient levels of particulate matter are less clear. Although some observational

epidemiology studies have reported statistical associations between such health effects and ambient particulate matter, a clear mechanism of action has yet to be identified. Furthermore, these reported effects vary widely with geographical location, as well as with size and composition of the particulate matter (EPA/600/R-08/139F sections 2.1.1 and 2.2.2).

1.4 PUBLIC HEARING AND COMMENT INFORMATION

The commission will hold a public hearing for this proposed SIP revision at the following time and location: December 4, 2012, at 10:00 a.m., Texas Commission on Environmental Quality Headquarters, 12100 Park 35 Circle, Building E, Room 201S, Austin, Texas 78753.

Written comments will be accepted via mail, fax, or through the eComments (http://www5.tceq.texas.gov/rules/ecomments/) system. All comments should reference the "SO_2 Infrastructure and Transport SIP Revision" and Project Number 2012-022-SIP-NR. Comments may be submitted to Mary Ann Cook, MC 206, SIP Team, Office of Air, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 or faxed to (512) 239-6188. Electronic comments may be submitted through the eComments system. File size restrictions may apply to comments being submitted via the eComments system. Comments must be received by December 7, 2012.

An electronic version of this proposed SIP revision and appendices is available on the TCEQ's Web page Air Pollution from Sulfur Dioxide (http://www.tceq.texas.gov/airquality/sip/criteria-pollutants/sip-so2).

1.5 SOCIAL AND ECONOMIC CONSIDERATIONS

Because rulemaking is not a part of this SIP revision, there are no changes that would have an impact on society or the economy.

1.6 FISCAL AND MANPOWER RESOURCES

The TCEQ has determined that its fiscal and manpower resources are adequate and will not be adversely affected through the implementation of this plan.

1.7 COORDINATION WITH LOCAL AGENCIES

The TCEQ has determined that there will be no assignment to local agencies. However, pre-existing assignments to local agencies regarding various enforcement activities remain in effect and could be used if enforcement activities are delegated to the TCEQ from the EPA.

1.8 ORGANIZATIONS RESPONSIBLE FOR DEVELOPMENT, IMPLEMENTATION, AND ENFORCEMENT

The TCEQ is the agency delegated authority by the Texas Legislature regarding the protection of air quality in the State of Texas. Other local government entities have limited authority regarding air quality matters in the State of Texas.

1.9 DATA AVAILABILITY

The TCEQ affirms that it will retain all data used in the preparation of this SIP revision. All supporting documents and data are publicly available via the TCEQ's Texas State Implementation Plan Web site (http://www.tceq.texas.gov/airquality/sip) or are available from the TCEQ upon request.

CHAPTER 2: REQUIRED CONTROL STRATEGY ELEMENTS

2.1 BACKGROUND

The United States Environmental Protection Agency (EPA) first set standards for sulfur dioxide (SO_2) as a surrogate for sulfur oxides (SO_X) in 1971, setting a 24-hour primary standard at 140 parts per billion (ppb) and an annual average standard at 30 ppb (40 CFR Part 50.4). The EPA also set a three-hour average secondary standard at 500 ppb (40 CFR Part 50.5). The EPA strengthened the SO_2 National Ambient Air Quality Standard (NAAQS) on June 2, 2010, (published June 22, 2010; 75 FR 35520) with the promulgation of a new 75 ppb one-hour primary standard. The revised NAAQS was designed to protect against short term exposure to SO_2. With promulgation of the 2010 SO_2 NAAQS, the EPA also revoked the previous 24-hour and annual standards, with the revocation effective one year after final designations are made by the EPA for the 2010 SO_2 NAAQS (75 FR 35520).

States are required by Section 110(a)(1) of the Federal Clean Air Act (FCAA) to revise their air quality state implementation plans (SIP) within three years of NAAQS promulgation to provide for implementation, maintenance, and enforcement of the standard. Infrastructure SIPs addressing those requirements for the 2010 SO_2 NAAQS are due to the EPA by June 3, 2013. Infrastructure SIPs must contain adequate provisions to prohibit any source or other type of emissions activity within the state from emitting any NAAQS pollutants in amounts that will contribute significantly to nonattainment, or interfere with maintenance, of the NAAQS by any other state.

SO_2 is formed from sulfur and oxygen during combustion of a sulfur-containing fuel. Once SO_2 is formed, it can undergo oxidation in the presence of oxygen to form sulfur trioxide (SO_3), which is a reversible reaction. Typically, this reaction is slow, causing higher concentrations of SO_2 compared to SO_3; however, the presence of nitrogen dioxide (NO_2) acts as a catalyst to enhance the reaction (Holleman and Wiberg, 2001). SO_3 in the gaseous phase can then become hydrated to form sulfuric acid in an aqueous phase, which, when precipitated, is termed acid rain. Sulfuric acid then dissociates into hydrogen sulfate ions and a proton. Of the hydrogen sulfate ions, 10% will dissociate further into sulfate ions. These chemical reactions of sulfur, detailed below, were taken from *The Chemistry of Oxygen and Sulfur*, 2011.

Combustion of Sulfur:

$$S_{(s)} + O_{2\,(g)} \rightarrow SO_{2\,(g)}$$

Oxidation of Sulfur Dioxide to Form Sulfur Trioxide (Reversible Reaction):

$$2SO_{2\,(g)} + O_{2\,(g)} \Leftrightarrow 2SO_{3\,(g)}$$

Hydration of Sulfur Trioxide to Form Sulfuric Acid:

$$SO_{3\,(g)} + H_2O_{(l)} \rightarrow H_2SO_{4\,(aq)}$$

Dissociation of Sulfuric Acid

$$H_2SO_{4\,(aq)} \rightarrow HSO_4^-{}_{(aq)} + H^+{}_{(aq)}$$

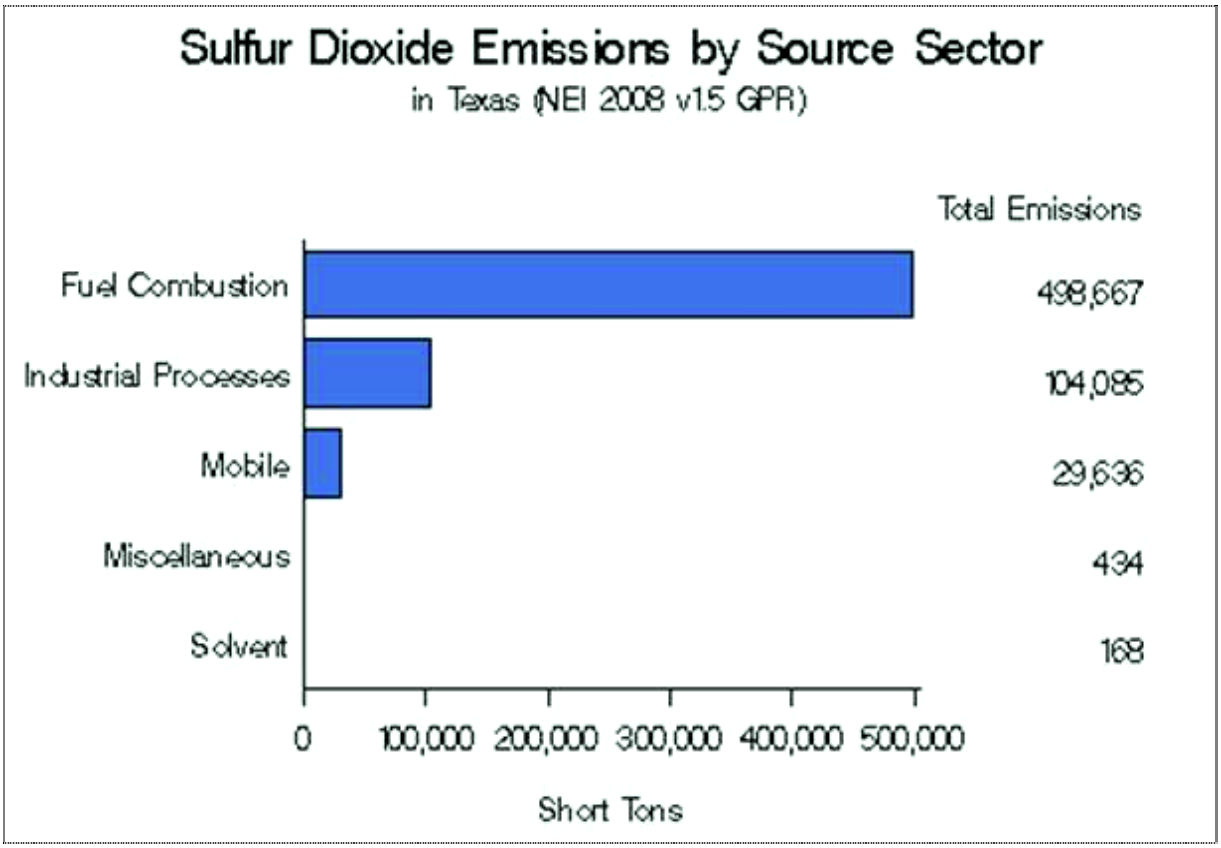
Dissociation of Hydrogen Sulfate Ion

$$HSO_4^-{}_{(aq)} \rightarrow SO_4^{2-}{}_{(aq)} + H^+{}_{(aq)}$$

SO_2 gas is a product of combustion and is released by volcanoes and by various industrial processes. Nationally, the largest source of SO_2 emissions is from fossil fuel combustion at

power plants, which account for 73% of SO_2 emissions, followed by fossil fuel combustion at other industrial facilities, which account for 20% of SO_2 emissions (Sulfur Dioxide, 2011). Smaller sources of SO_2 emissions originate from industrial processes such as extracting metal from ore, and burning high sulfur-containing fuels by locomotives, large ships, and non-road equipment.

Figure 2-1: *Sulfur Dioxide Emissions in Texas by Source Sector* shows SO_2 emissions from stationary sources in Texas. In Texas, fossil fuel combustion and industrial processes account for 96% of SO_2 emissions, with fossil fuel combustion emissions accounting for 79% and industrial process emissions accounting for 17%.



Note: State and County Emission Summaries, 2011

Figure 2-1: Sulfur Dioxide Emissions in Texas by Source Sector

2.2 CONTROL STRATEGY OVERVIEW

FCAA, §110(a)(2)(D)(i)(I) requires states to submit a SIP revision that contains adequate provisions to prohibit any source or other type of emissions activity within the state from emitting any air pollutants in amounts that will:

- contribute significantly to nonattainment of the NAAQS for areas in any other state, or
- interfere with maintenance of the NAAQS in any other state.

2.2.1 Significant Contribution to Nonattainment and Interference with Maintenance Elements

2.2.1.1 Modeling

No guidance has been developed by the EPA that requires modeling to address the interstate transport of SO_2. The TCEQ's regulatory monitors show no indication of areas of the state currently not attaining the 2010 SO_2 NAAQS. The HYSPLIT analysis to follow indicates that no area of Texas contributes to a nonattainment area in Region 6.

2.2.1.2 Region 6 Monitoring Information

In 2011, there were 26 regulatory SO_2 monitors in Texas, five in New Mexico, eight in Oklahoma, two in Arkansas, and six in Louisiana. A list of these monitors is found in Table 2-1: *EPA Region 6 SO_2 Monitor Sites in 2011*.

Along with revising the primary SO_2 NAAQS to a one-hour standard set at 75 ppb, the EPA also revised monitoring network requirements. Based on population data, the EPA is requiring SO_2 monitors to be fully operational by January 1, 2013, in several areas: Houston-Sugar Land-Baytown, San Antonio-New Braunfels, Dallas-Fort Worth-Arlington, Longview, Beaumont-Port Arthur, and Amarillo.

Table 2-1: *EPA Region 6 SO_2 Monitor Sites in 2011,* indicates that all but two monitor sites in EPA Region 6 are attaining the one-hour SO_2 NAAQS. The two monitor sites that have recorded SO_2 concentrations over the one-hour SO_2 NAAQS are Chalmette-Vista (VC) in Saint Bernard Parish, Louisiana, with a 2011 design value of 287 parts per billion (ppb) and Port Allen (PA) in West Baton Rouge Parish, Louisiana with a 2011 design value of 93 ppb.

Table 2-1: EPA Region 6 SO_2 Monitor Sites in 2011

AIRS	State	County or Parish	Site Name	2011 Design Value (ppb)	2011 99th Percentile (ppb)
051190007	Arkansas	Pulaski	PIKE AVE AT RIVER ROAD	12	12.2
051390006	Arkansas	Union	UNION MEMORIAL HOSPITAL, ELDORADO	25	25.1
220190008	Louisiana	Calcasieu	WESTLAKE (WL)	39	37.0
220330009	Louisiana	East Baton Rouge	BATON ROUGE-CAPITOL (BC)	46	31.1
220870004	Louisiana	St. Bernard	MERAUX (MX)	26	30.0
220870007	Louisiana	St. Bernard	CHALMETTE-VISTA (VC)	287	300.1
220870009	Louisiana	St. Bernard	JUDGE PEREZ DRIVE	†	85.2
221210001	Louisiana	West Baton Rouge	PORT ALLEN (PA)	93	48.0
350010023	New Mexico	Bernalillo	DEL NORTE HIGH SCHOOL	†	55.2
350171003	New Mexico	Grant	HURLEY SMELTER	1	0.0
350450009	New Mexico	San Juan	BLOOMFIELD	7	9.0
350451005	New Mexico	San Juan	SAN JUAN SUBSTATION	20	20.0
350451233	New Mexico	San Juan	DINE COLLEGE GIS LAB	†	136.0
400019009	Oklahoma	Adair	CHERRY TREE	†	8.5
400710602	Oklahoma	Kay	PONCIA CITY	33	34.0
401010167	Oklahoma	Muskogee	MUSKOGEE	55	94.0
401091037	Oklahoma	Oklahoma	OKC NORTH	5	5.0
401130501	Oklahoma	Osage	TULSA EDIS	42	45.0
401430175	Oklahoma	Tulsa	TULSA PARL	65	68.0
401430235	Oklahoma	Tulsa	TULSA TCWD	32	34.0
401431127	Oklahoma	Tulsa	TULSA CENTRAL	†	25.3
481130069	Texas	Dallas	DALLAS HINTON	†	7.7
481390016	Texas	Ellis	MIDLOTHIAN OFW	15	10.7
481391044	Texas	Ellis	ITALY	7	5.8
481410037	Texas	El Paso	EL PASO UTEP	8	9.8
481410044	Texas	El Paso	EL PASO CHAMIZAL	†	11.1
481410053	Texas	El Paso	EL PASO SUN METRO	11	11.2
481410058	Texas	El Paso	SKYLINE PARK	3	3.8
481670005	Texas	Galveston	TEXAS CITY BALL PARK	41	25.7
481830001	Texas	Gregg	LONGVIEW	61	50.9
482010046	Texas	Harris	HOUSTON NORTH WAYSIDE	13	9.9
482010051	Texas	Harris	HOUSTON CROQUET	22	24.2
482010062	Texas	Harris	HOUSTON MONROE	22	21.2
482010070	Texas	Harris	HOUSTON REGIONAL OFFICE	35	24.5
482010416	Texas	Harris	PARK PLACE C416	38	34.3
482011035	Texas	Harris	CLINTON	42	41.1
482011039	Texas	Harris	DEER PARK #2	†	26.6
482011050	Texas	Harris	SEABROOK FRIENDSHIP PARK	15	15.3
482450009	Texas	Jefferson	BEAUMONT DOWNTOWN	66	26.3
482450011	Texas	Jefferson	PORT ARTHUR WEST	68	62.3
482451050	Texas	Jefferson	BEAUMONT MARY	†	56.4
482570005	Texas	Kaufman	KAUFMAN	14	13.4
483091037	Texas	McLennan	WACO MAZANEC	6	4.2
483491051	Texas	Navarro	CORSICANA AIRPORT	†	51.3
483550025	Texas	Nueces	CORPUS CHRISTI WEST	12	8.6
483550026	Texas	Nueces	CORPUS CHRISTI TULOSO	9	10.2
483550032	Texas	Nueces	CORPUS CHRISTI HUISACHE	27	18.1

Note: † indicates an incomplete or unavailable design value.

2.2.1.3 Region 6 Design Values and 99th Percentiles

Prior to promulgation of the 2010 one-hour SO_2 standard, no area in EPA Region 6 was designated nonattainment for any SO_2 NAAQS. Grant County, New Mexico was the only area designated as a maintenance area for the annual and 24-hour SO_2 NAAQS (Sulfur Dioxide Information, 2012). Designations for the 2010 one-hour SO_2 standard have not been released by the EPA. However, two parishes in Louisiana have 2011 design values over the one-hour standard: Saint Bernard Parish and West Baton Rouge Parish. Figure 2-2: *One-Hour SO_2 Design Values in EPA Region 6* shows these two areas over the standard in a light and dark purple, based on severity of monitored SO_2 concentrations. Areas meeting the standard, based on 2011 SO_2 one-hour design values, are shown in different shades of blue. The Westlake (Louisiana) monitor located in Calcasieu Parish has a 2011 design value of 39 ppb. That monitor is in an area located between the two Louisiana counties with 2011 design values over the one-hour standard and the Texas border. The Westlake monitor is attaining the NAAQS, which suggests that SO_2 transport from Texas does not influence elevated SO_2 concentrations seen at the VC monitor in Saint Bernard Parish, or the PA monitor in West Baton Rouge Parish. The 2011 design value for the Baton Rouge-Capitol (Louisiana) monitor located in East Baton Rouge Parish is attaining the SO_2 NAAQS, at 46 ppb. This monitor is in an area located between the two Louisiana monitors with 2011 design values over the one-hour standard, which suggests little to no SO_2 transport between the parishes. In Saint Bernard Parish, two monitors had enough data for a valid 2011 design value. One of the monitors - VC, exceeded the standard with a 2011 design value of 287 ppb. The other monitor - Meraux (MX), easily attained the standard, with a 2011 design value of 26 ppb. This suggests that local emissions, rather than long range transport, are more likely contributing to the high concentrations of SO_2.

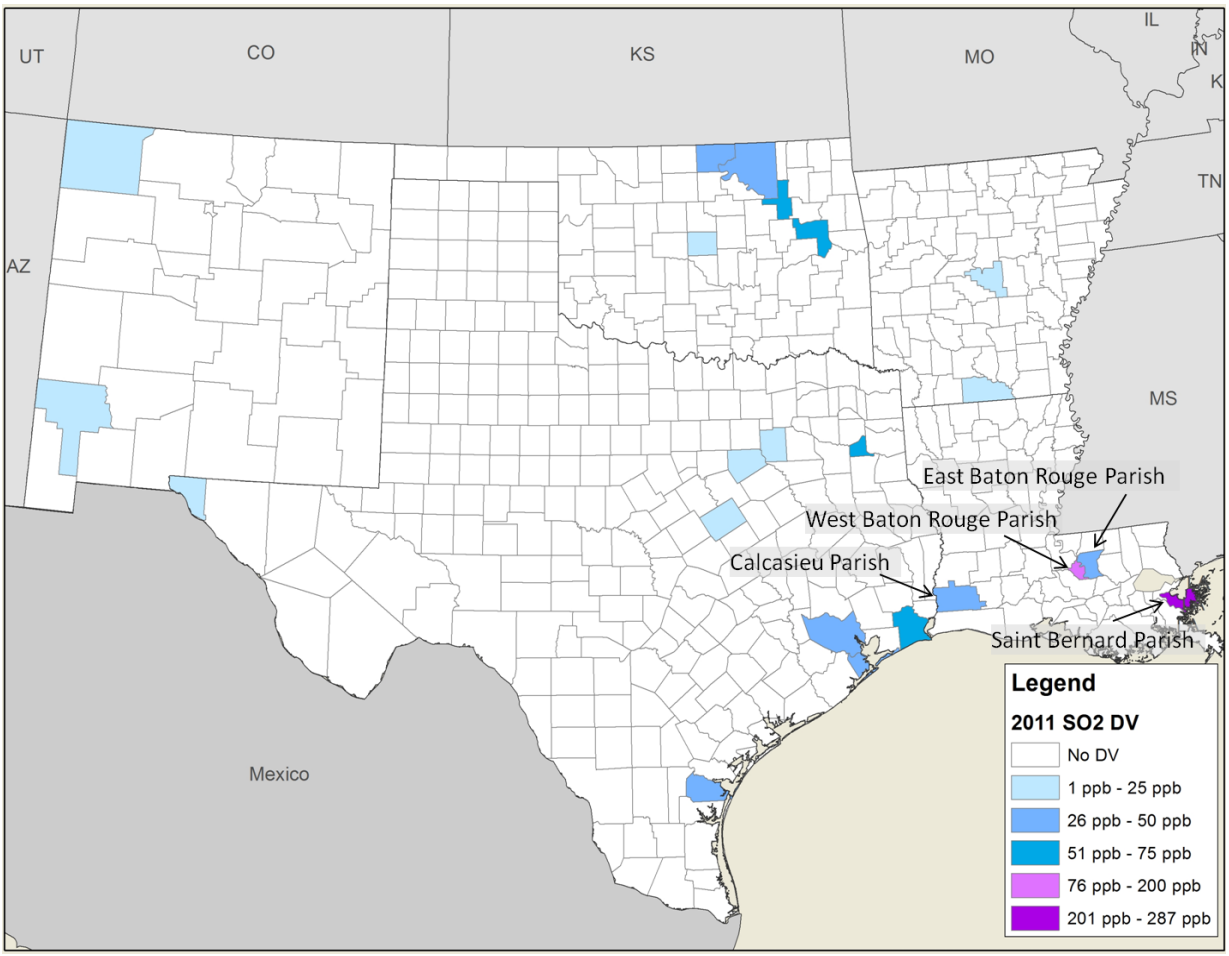


Figure 2-2: One-Hour SO_2 Design Values in EPA Region 6

Because a design value is calculated as the three year average of the 99th percentiles, it is important to examine the 99th percentile in more detail. Figure 2-3: *2011 One-Hour SO_2 2011 99th Percentile in EPA Region 6* shows the locations of all the current SO_2 monitors in EPA Region 6. The range of their 2011 99th percentiles is indicated. Monitors located within an area can vary in 99th percentiles. An example of this occurring is in San Juan County, New Mexico. The Dine College GIS lab monitor in San Juan County did not have sufficient valid data for use in computing a 2011 design value, but it has a 2011 99th percentile of 136 ppb. Other monitors in New Mexico located in San Juan County, Bloomfield and San Juan Substation, had 99th percentiles below 25 ppb. This analysis suggests these monitors are observing locally contributed SO_2, but that the emissions contributed are not enough to cause an exceedance of the standard.

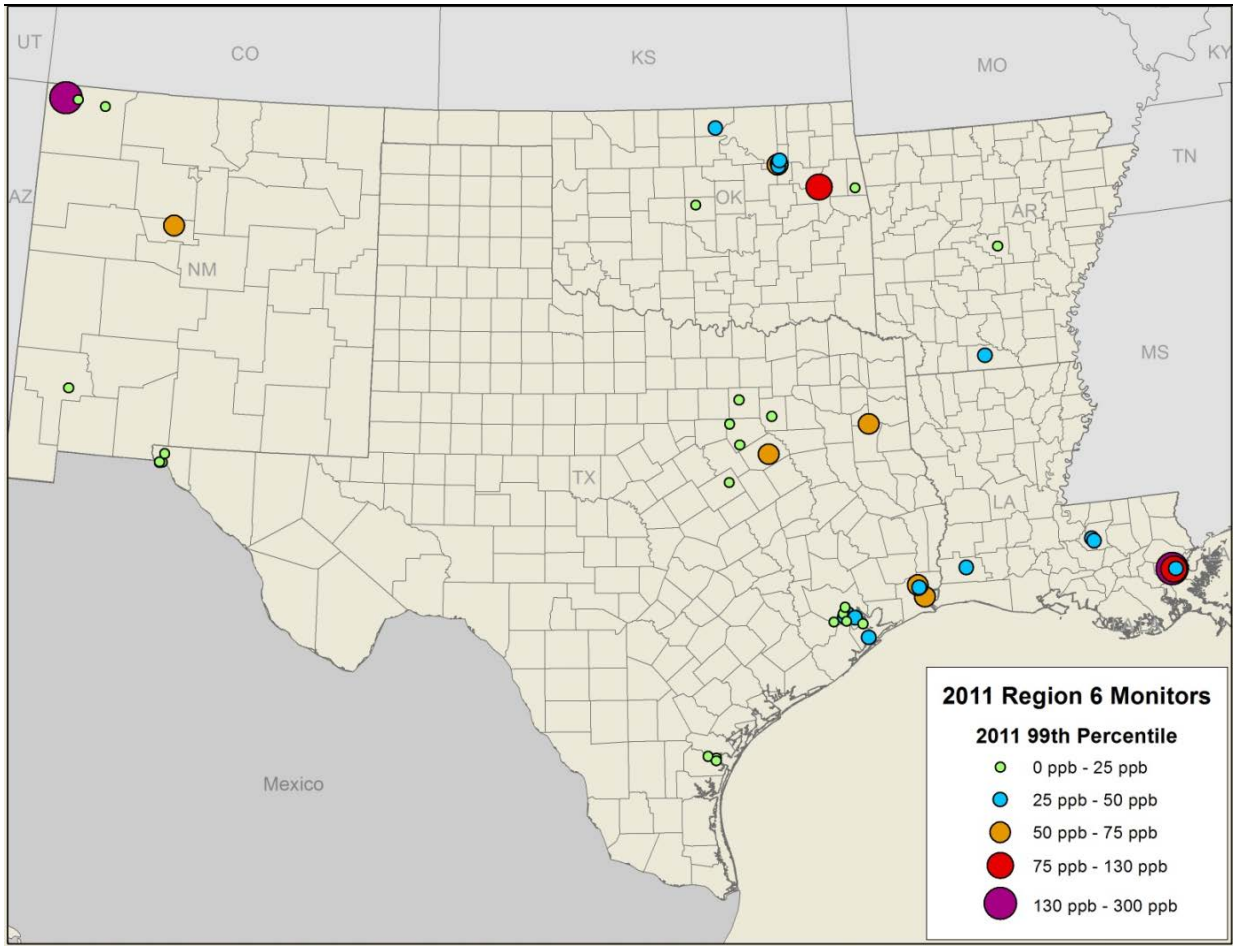


Figure 2-3: 2011 One-Hour SO_2 2011 99th Percentile in EPA Region 6

2.2.1.4 Review of Texas Design Values

Figure 2-5: *One-Hour SO_2 Design Values in Texas* indicates that all counties of Texas with SO_2 monitors attained the 2010 NAAQS in 2011. Kaufman and Dallas Counties have exhibited fairly flat design value trends since 2003 and 2000, respectively, never exceeding more than 20 ppb. SO_2 design values have been reported at McLennan County since 2010, but that is not enough data to determine a trend. El Paso County monitored a 78% drop in its SO_2 design value, from 67 ppb in 2000 to 15 ppb in 2002, followed by a fairly steady trend well below 20 ppb since 2002.

Harris and Galveston Counties have seen steadily decreasing SO_2 design values, dropping by 56.7% and 53.9% respectively since 2000. The SO_2 design value in Gregg County increased slightly from 2002 to 2007, but has fallen since 2007, returning to a value below the 2002 design value in 2011. The SO_2 design value in Nueces County peaked in 2003 at 81 ppb before declining 66.6% to 27 ppb (preliminary) in 2011. Because not all 2011 measured SO_2 concentrations have yet been validated, these 2011 values are still preliminary.

Despite three years of design value increases - in 2005, 2006, and 2007, overall the SO_2 design value in Ellis County has fallen 90.5% from its peak of 159 ppb in 2001 to the current

(preliminary) 2011 value of 15 ppb. Jefferson County saw a similar spike in 2006, before resuming its downward trend, falling 60.2% from 171 ppb in 2000 to 68 ppb (validated) in 2011.

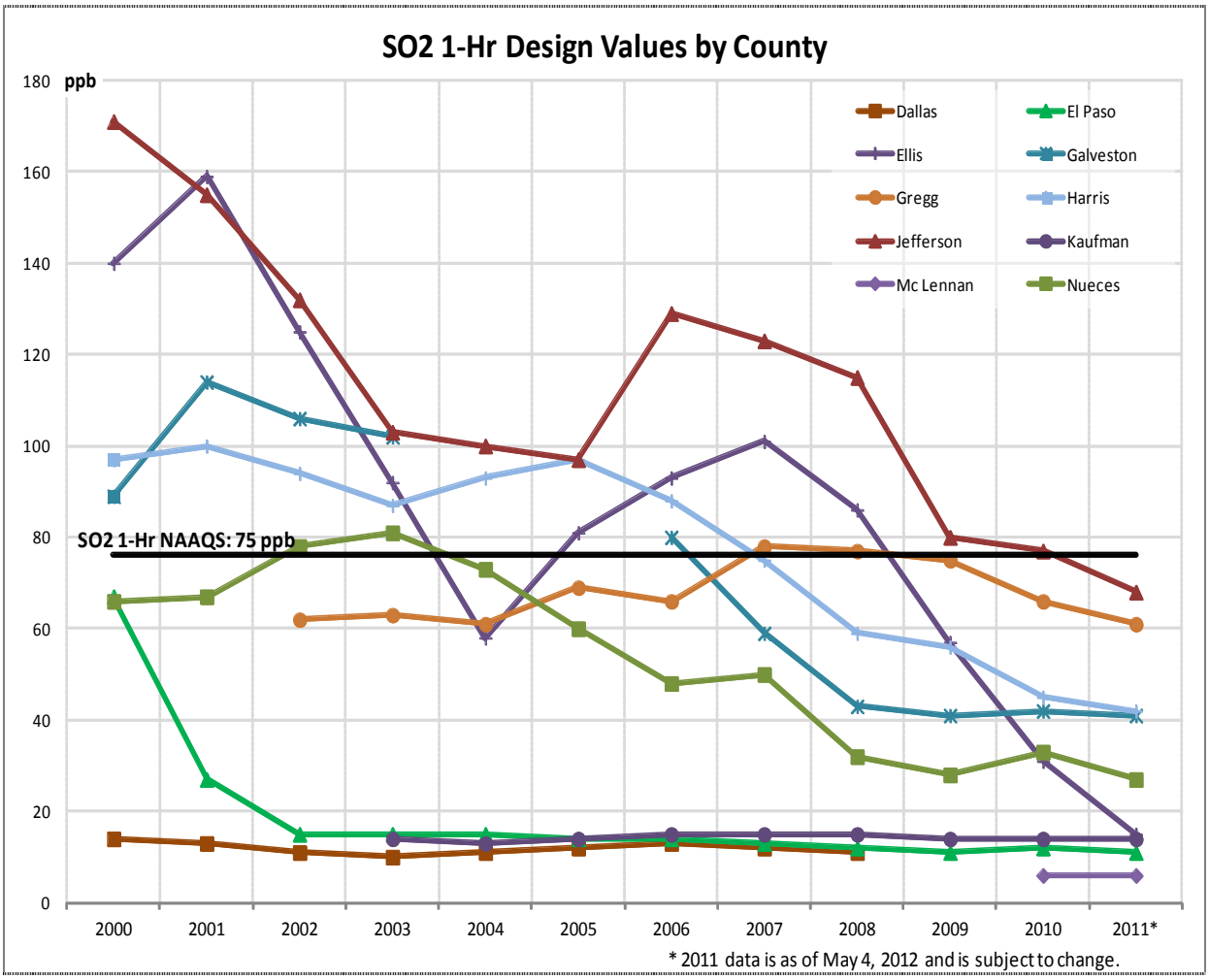


Figure 2-4: One-Hour SO_2 Design Values in Texas

2.2.1.5 Transport Analysis

To assess possible impacts of SO_2 emitted in Texas and transported to a neighboring state, back trajectory analysis was conducted to identify the most likely paths (mean-trajectory-path), if any, of possible SO_2 transport. There are assumptions associated with this procedure; for example, there is no link between a mean-trajectory-path and an SO_2 concentration. A mean-trajectory-path only provides an indication of the direction a parcel of air might have traveled; much more analysis is needed to confirm an impact.

To construct back trajectories, the Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) model version 4, developed by the National Oceanic and Atmospheric Administration (NOAA) (HYSPLIT - Hybrid Single Particle Lagrangian Integrated Trajectory Model, 2012) was employed. Monitors with the highest observed SO_2 values were chosen as the receptor sites used in the back trajectory analysis. For each of these monitors, cluster analysis

was performed to find the mean-trajectory-path. This mean-trajectory-path represents the "average" of a group of trajectories from which air currents traveled from other places to a representative monitor. This method quantifies the directions and frequency of air traveling to the monitor, but cannot identify precise routes of travel of airborne particles. This method also cannot determine the concentrations of pollutants, if any, in these air parcels.

Details of HYSPLIT parameters are as follows: trajectories were initiated from a receptor site during the late afternoon when surface winds are most conducive for SO_2 transport. For this analysis, the time selected to begin tracking a backward trajectory from a receptor site was 5:00 p.m. LST (Local Standard Time). Trajectory height was set to 800 meters to ensure transport within the mixing layer and minimal disruption from surface terrain. Each computed trajectory was followed for 12 hours in duration using EDAS-4KM meteorological data sets. Trajectories were created for all days observing SO_2 concentrations at or above the 90th percentile of SO_2 at the receptor site, thus the top 10% of days.

Results suggest that Oklahoma is the state most likely to be affected by air parcels arriving from Texas; however, SO_2 concentrations are usually highest near sources, decreasing as the distance from the source increases. Two likely transport paths were identified by the clustering procedure, which accounted for 35% of the 358 trajectories ending in Oklahoma. Arkansas is the next most likely state to be affected by emissions from Texas, though to a much lesser degree. Potential transport paths from Texas identified by the clustering procedure accounted for 12% of the trajectories ending in Arkansas. However, neither Oklahoma nor Arkansas has regulatory monitors with a 2011 design value over the NAAQS. Likely transport paths from Texas, which pass near the coast of Southeast Texas, account for 11% of trajectories ending in Louisiana. No potential transport paths from Texas to New Mexico were observed.

In the lower right quadrant of Figure 2-5: *12-Hour Backward Trajectories for Representative Sites in States Neighboring Texas*, there is a mean trajectory that passes from the Houston area and near the Lake Charles, Louisiana area, which currently is in attainment of the standard, before reaching the New Orleans, Louisiana area. Although the clusters show possible evidence of transport, this analysis does not confirm any link between SO_2 generated beyond the monitor and the measured SO_2 at the monitor.

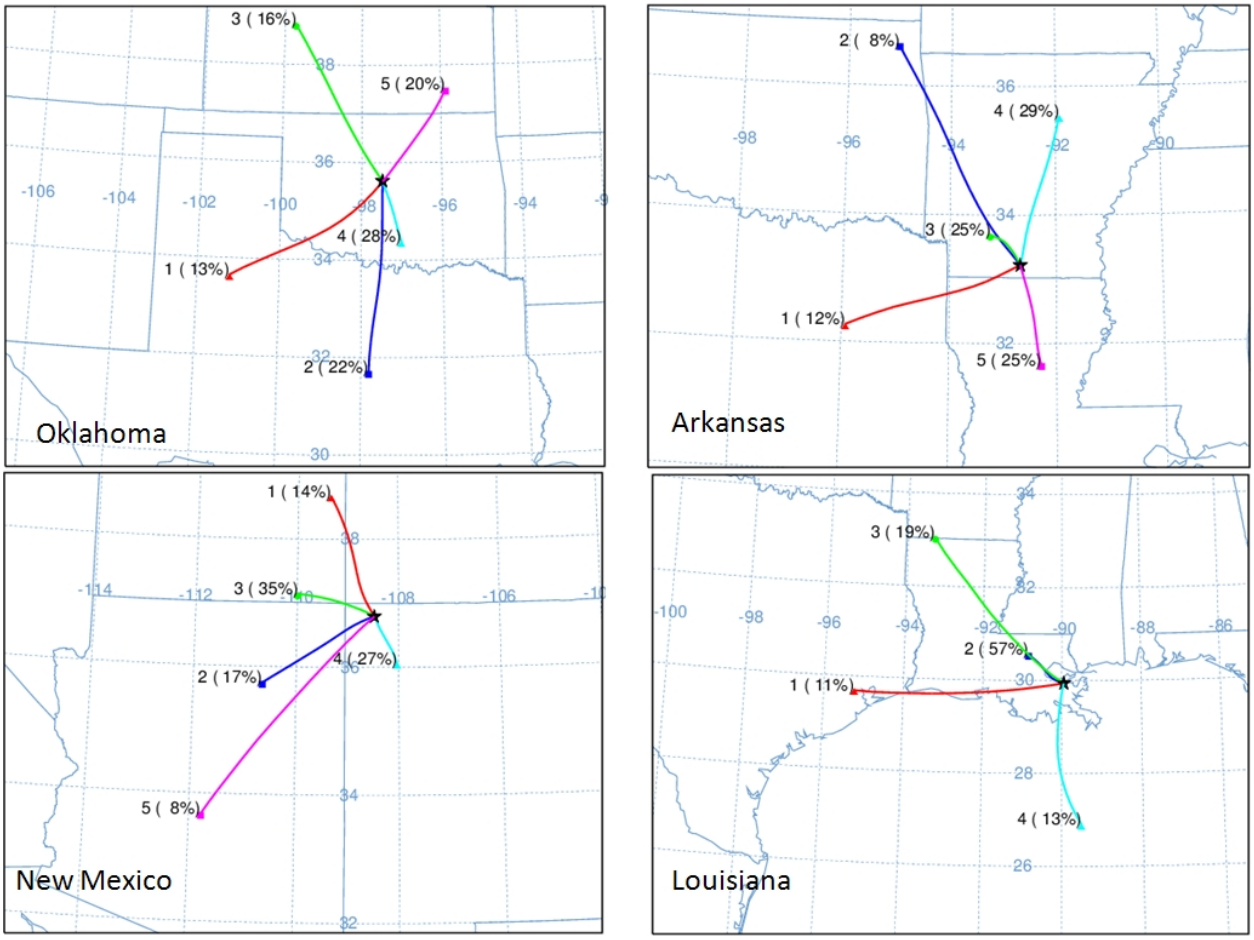


Figure 2-5: 12-Hour Backward Trajectories for Representative Sites in States Neighboring Texas

2.3 CONCLUSION

In 2011, Texas did not have any regulatory monitors with design values exceeding the one-hour standard. Within the EPA's Region 6 area, two monitors that are located in Louisiana (Saint Bernard Parish and West Baton Rouge Parish) have 2011 design values exceeding the standard. The Westlake monitor located in Louisiana and bordering Texas is attaining the standard. This analysis indicates that SO_2 is not transported to this area from Texas sources. If emissions from Texas sources significantly contribute to the areas in Louisiana with monitors exceeding the standard, the Westlake monitor would also exhibit high SO_2 concentrations. Furthermore, back trajectory analysis indicates that air masses are typically not transported from Texas to Louisiana.

2.4 REFERENCES

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CHAPTER 3: FUTURE REVISIONS TO THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Federal Clean Air Act (FCAA), §110(a)(1) requires states to submit state implementation plans within three years after the promulgation of new or revised NAAQS to meet the infrastructure requirements of FCAA, §110(a)(2), including FCAA, §110(a)(2)(D)(i), relating to interstate transport. If the NAAQS are revised in the future, the Texas Commission on Environmental Quality will need to take the adequate steps relating to the interstate transport of air pollution.