

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

for Proposed State Implementation Plan Revision

AGENDA REQUESTED: April 13, 2022

DATE OF REQUEST: March 25, 2022

INDIVIDUAL TO CONTACT REGARDING CHANGES TO THIS REQUEST, IF NEEDED: Jamie Zech, Agenda Coordinator, (512) 239-3935.

CAPTION: Docket No. 2022-0134-SIP. Consideration for publication of, and hearing on, the proposed Navarro County Attainment Demonstration State Implementation Plan (SIP) Revision for the 2010 One-Hour Sulfur Dioxide (SO₂) National Ambient Air Quality Standard (NAAQS). The proposed SIP revision addresses federal Clean Air Act (FCAA) requirements for the Navarro County SO₂ nonattainment area by including a comprehensive inventory of current SO₂ emissions; evaluation and provision for implementing all reasonably available control measures and reasonably available control technology; air quality dispersion modeling to demonstrate attainment; a reasonable further progress demonstration; contingency measures; and certification that nonattainment New Source Review requirements are met.

The associated proposed 30 Texas Administrative Code Chapter 112 Subchapter G rulemaking (Rule Project 2021-035-112-AI) would provide the enforceable control strategy needed to demonstrate attainment of the 2010 SO₂ NAAQS by the April 30, 2026 attainment deadline. (Mary Ann Cook, Terry Salem, John Minter; SIP Project No. 2021-012-SIP-NR)

Tonya Baer

Director

Donna F. Huff

Deputy Director

Jamie Zech

Agenda Coordinator

Copy to CCC Secretary? NO ☒ YES ☐

Texas Commission on Environmental Quality

Interoffice Memorandum

To: Commissioners **Date:** March 25, 2022

Thru: Laurie Gharis, Chief Clerk
Toby Baker, Executive Director

From: Tonya Baer, Director
Office of Air

Docket No.: 2022-0134-SIP

Subject: Commission Approval to Propose the Navarro County Attainment Demonstration State Implementation Plan (SIP) Revision for the 2010 One-Hour Sulfur Dioxide (SO₂) National Ambient Air Quality Standard (NAAQS)

Navarro County 2010 SO₂ Attainment Demonstration SIP Revision
SIP Project No. 2021-012-SIP-NR

Background and reason(s) for the SIP revision:

On June 22, 2010, the United States Environmental Protection Agency (EPA) revised the SO₂ NAAQS, adding a 75 parts per billion (ppb) one-hour primary standard, effective August 23, 2010 (75 *Federal Register* (FR) 35520).

In the final round of designations for the 2010 SO₂ NAAQS, the EPA designated a portion of Navarro County as nonattainment, effective April 30, 2021 (86 FR 16055). Texas is required to submit an attainment demonstration SIP revision for the Navarro County nonattainment area to the EPA by October 30, 2022. The SIP revision is required to demonstrate attainment of the 2010 SO₂ NAAQS as expeditiously as practicable but no later than five years after the effective date of designations, or April 30, 2026.

Scope of the SIP revision:

This proposed SIP Revision would fulfill Texas' federal Clean Air Act (FCAA) SIP planning requirements for the 2010 One-Hour SO₂ NAAQS in the Navarro County nonattainment area. The proposed SIP revision, together with the associated proposed 30 Texas Administrative Code (TAC) Chapter 112, Subchapter G rulemaking (Rule Project No. 2021-035-112-AI), document the state's plan to achieve the emission reductions required to demonstrate attainment of the SO₂ NAAQS in the Navarro County nonattainment area and meet other FCAA-required SIP elements.

A.) Summary of what the SIP revision would do:

If adopted by the commission and approved by the EPA, this proposed SIP revision, along with associated proposed Chapter 112 rulemaking, would demonstrate attainment and maintenance of the 2010 SO₂ NAAQS in the Navarro County nonattainment area as expeditiously as practicable, and not later than April 30, 2026.

B.) Scope required by federal regulations or state statutes:

In accordance with FCAA, §172 general requirements and FCAA, §191 and §192 specific requirements, this proposed attainment demonstration SIP revision includes a comprehensive inventory of current SO₂ emissions; a control strategy with evaluation and provision for implementing all reasonably available control measures and reasonably available control technology; air quality dispersion modeling to demonstrate attainment of the 2010 SO₂ NAAQS; a reasonable further progress demonstration; contingency measures; and the state's certification that current regulations provide the means to satisfy nonattainment New Source Review requirements for the Navarro County 2010 SO₂ nonattainment area.

This SIP revision submittal must demonstrate that the 2010 SO₂ NAAQS will be attained as expeditiously as practicable, but not later than April 30, 2026. Based on the EPA's *Guidance for 1-*

Re: Docket No. 2022-0134-SIP

Hour SO₂ Nonattainment Area SIP Submissions, control strategies must be in place by January 1, 2025 to provide for attainment of the NAAQS by the April 30, 2026 attainment deadline.

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

Statutory authority:

Sections 382.002, 382.011 and 382.012 of the Texas Clean Air Act (TCAA), which is codified as Texas Health & Safety Code, (THSC), Chapter 382, provide authority for the commission's purpose to safeguard the state's air resources, as well as to control the quality of the state's air and prepare and develop a general, comprehensive plan for the proper control of the state's air. The Texas Water Code, Section 5.102 provides general authority for the commission necessary for it to exercise its jurisdiction and discharge its duties.

The authority to propose and adopt the proposed SIP revision is derived from FCAA, 42 United States Code, §7410, which requires states to submit SIP revisions that contain enforceable measures to achieve the NAAQS, and other general and specific authority in Texas Water Code, Chapters 5 and 7, and THSC, Chapter 382.

Effect on the:

A.) Regulated community:

For the Navarro County nonattainment area to attain the 2010 SO₂ NAAQS, SO₂ emission reductions are necessary at the Streetman Plant, a lightweight aggregate production plant in Navarro County. The control strategy for demonstrating attainment of the 2010 SO₂ NAAQS in the Navarro County nonattainment area would be made enforceable with commission adoption and EPA approval of the associated proposed Chapter 112 rulemaking. Arcosa LWS, LLC, the owner of the Streetman Plant, would be required to comply with all requirements and stipulations of the associated proposed rulemaking.

B.) Public:

The public in the nonattainment area, and possibly the surrounding areas, would benefit from improved air quality due to lower SO₂ emission levels resulting from implementation of the control strategy in this proposed SIP revision.

C.) Agency programs:

No impact on agency programs is anticipated from this proposed SIP revision.

Stakeholder meetings:

If this proposed SIP revision and associated proposed rulemaking are approved by the commission for public comment and public hearing, then a public comment period will be opened, and a public hearing will be offered.

Potential controversial concerns and legislative interest:

None.

Would this SIP revision affect any current policies or require development of new policies?

No.

Re: Docket No. 2022-0134-SIP

What are the consequences if this SIP revision does not go forward? Are there alternatives to revising the SIP?

The commission could choose to not comply with the requirements to develop and submit this attainment demonstration SIP revision to the EPA. However, if this SIP revision is not submitted to the EPA by the submittal deadline, the EPA could issue a finding of failure to submit, requiring that the TCEQ submit the required SIP revision within a specified time. The EPA could also impose sanctions on the state. Sanctions could include 200% emissions offsets requirements for new construction and major modifications of stationary sources in the nonattainment area as well as transportation funding restrictions. The EPA would be required to promulgate a federal implementation plan (FIP) if the TCEQ fails to submit, or the EPA does not approve, the required SIP revision within two years of the finding of failure to submit. The EPA could impose sanctions and implement a FIP until the state submits and the EPA approves a replacement SIP revision for the area.

Key points in the SIP revision schedule:

Anticipated proposal date: April 13, 2022

Anticipated public hearing date: May 23, 2022

Anticipated public comment period: April 15, 2022 through June 2, 2022

Anticipated adoption date: October 5, 2022

Agency contacts:

Mary Ann Cook, SIP Project Manager, Air Quality Division, (512) 239-6739

John Minter, Staff Attorney, Environmental Law Division, (512) 239-0663

Terry Salem, Staff Attorney, Environmental Law Division, (512) 239-0469

Jamie Zech, Agenda Coordinator, (512) 239-3935

cc: Chief Clerk, 2 copies
Executive Director's Office
Jim Rizk
Morgan Johnson
Krista Kyle
Office of General Counsel
Mary Ann Cook
John Minter
Terry Salem
Jamie Zech
Gwen Ricco
Laurie Barker
Tonya Baer
Donna Huff

REVISIONS TO THE STATE OF TEXAS AIR QUALITY
IMPLEMENTATION PLAN FOR THE CONTROL OF SULFUR
DIOXIDE AIR POLLUTION

NAVARRO COUNTY 2010 SULFUR DIOXIDE STANDARD
NONATTAINMENT AREA



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. BOX 13087
AUSTIN, TEXAS 78711-3087

**NAVARRO COUNTY ATTAINMENT DEMONSTRATION
STATE IMPLEMENTATION PLAN FOR THE 2010 ONE-HOUR
SULFUR DIOXIDE NATIONAL AMBIENT AIR QUALITY
STANDARD**

2021-012-SIP-NR

Proposal
April 13, 2022

This page intentionally left blank

EXECUTIVE SUMMARY

On June 22, 2010, the United States Environmental Protection Agency (EPA) revised the sulfur dioxide (SO₂) National Ambient Air Quality Standards (NAAQS) to add the 75 parts per billion (ppb) one-hour primary standard, effective August 23, 2010 (75 *Federal Register* (FR) 35520).

In the final round of designations for the 2010 SO₂ NAAQS, the EPA designated a portion of Navarro County as nonattainment, effective April 30, 2021 (86 FR 16055). Texas is required to submit an attainment demonstration state implementation plan (SIP) revision for the Navarro County 2010 SO₂ NAAQS nonattainment area to the EPA by October 30, 2022. The attainment demonstration SIP revision is required to demonstrate attainment of the 2010 SO₂ NAAQS as expeditiously as practicable but no later than five years after the effective date of designation, or April 30, 2026.

This proposed Navarro County Attainment Demonstration SIP Revision for the 2010 One-Hour SO₂ NAAQS demonstrates that the Navarro County nonattainment area will attain the 2010 SO₂ NAAQS by the April 30, 2026 attainment date. The Streetman Plant, a lightweight aggregate production plant in Navarro County owned and operated by the Arcosa LWS, LLC, is the only significant SO₂ emissions source in the Navarro County 2010 SO₂ NAAQS nonattainment area.

In accordance with federal Clean Air Act (FCAA), §172 general requirements and FCAA, §191 and §192 specific requirements, this proposed Navarro County Attainment Demonstration SIP Revision for the 2010 One-Hour SO₂ NAAQS includes a comprehensive inventory of current SO₂ emissions; evaluation and provision for implementing all reasonably available control measures and reasonably available control technology; air quality dispersion modeling to demonstrate attainment of the 2010 SO₂ NAAQS; a reasonable further progress demonstration; contingency measures; and the state's certification that current regulations provide the means to satisfy nonattainment New Source Review requirements for the Navarro County 2010 SO₂ nonattainment area.

This proposed SIP revision incorporates associated proposed 30 Texas Administrative Code (TAC) Chapter 112 Subchapter G rules (Rule Project No. 2021-035-112-AI). The proposed rulemaking provides an enforceable control strategy that limits emissions at the Streetman Plant to a level necessary to attain the 2010 SO₂ NAAQS. This proposed SIP revision, together with the associated proposed rulemaking, fulfills Texas' FCAA SIP planning requirements for the Navarro County nonattainment area for the 2010 SO₂ NAAQS.

SECTION V-A: LEGAL AUTHORITY

General

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, 2011, 2013, 2015, 2017, and 2019. 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). 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. With the creation of the TNRCC (and its successor the TCEQ), the authority over air quality is found in both the Texas Water Code and the TCAA. Specifically, the authority of the TCEQ 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 TCEQ, and the responsibilities and authority of the executive director. Chapter 5 also authorizes the TCEQ to implement action when emergency conditions arise and to conduct hearings. Chapter 7 gives the TCEQ enforcement authority.

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.

In addition, 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.

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, 2019

TEXAS WATER CODE September 1, 2019

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
Subchapter A: General Provisions	
Subchapter B: Electronic Reporting Requirements	
Chapter 35: Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions	
Subchapter A: Purpose, Applicability, and Definitions	December 10, 1998
Subchapter B: Authority of Executive Director	December 10, 1998
Subchapter C: General Provisions	March 24, 2016
Subchapter K: Air Orders	July 20, 2006
Chapter 39: Public Notice	
Subchapter H: Applicability and General Provisions, §§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 Subchapter K: Public Notice of Air Quality Permit Applications, §§39.601 - 39.605	September 10, 2021
Chapter 55: Requests for Reconsideration and Contested Case Hearings; Public Comment, all of the chapter, except §55.125(a)(5) and (6)	September 10, 2021
Chapter 101: General Air Quality Rules	May 14, 2020
Chapter 106: Permits by Rule, Subchapter A	April 17, 2014
Chapter 111: Control of Air Pollution from Visible Emissions and Particulate Matter	August 3, 2017
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	July 2, 2020
Chapter 115: Control of Air Pollution from Volatile Organic Compounds	July 22, 2021
Chapter 116: Control of Air Pollution by Permits for New Construction or Modification	May 14, 2020
Chapter 117: Control of Air Pollution from Nitrogen Compounds	March 26, 2020
Chapter 118: Control of Air Pollution Episodes	March 5, 2000

Chapter 122: §122.122: Potential to Emit	February 23, 2017
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	June 3, 2001
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 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 (Revised)
 - 1. Harris County SO₂ State Implementation Plan (SIP) Revision (No change)
 - 2. Milam County SO₂ SIP Revision (No change)
 - 3. Attainment Demonstration for the Rusk-Panola 2010 SO₂ NAAQS Nonattainment Area (No change)
 - 4. Redesignation Request and Maintenance Plan for the Freestone-Anderson and Titus 2010 SO₂ NAAQS Nonattainment Areas (No change)
 - 5. Attainment Demonstration SIP Revision for the Howard County 2010 SO₂ NAAQS Nonattainment Area (Concurrent proposal under consideration)
 - 6. Attainment Demonstration SIP Revision for the Hutchinson County 2010 SO₂ NAAQS Nonattainment Area (Concurrent proposal under consideration)
 - 7. Attainment Demonstration SIP Revision for the Navarro County 2010 SO₂ NAAQS Nonattainment Area (New)
 - Chapter 1: General
 - Chapter 2: Emissions Inventories
 - Chapter 3: Control Strategy and Required Elements
 - Chapter 4: Attainment Demonstration Modeling
 - Chapter 5: Reasonable Further Progress
- 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 (No change)
- M. Regional Haze (No change)

TABLE OF CONTENTS

Executive Summary

Section V-A: Legal Authority

Section VI: Control Strategy

List of Acronyms

List of Tables

List of Figures

Chapter 1: General

1.1 Background

1.2 History of the Navarro County 2010 Sulfur Dioxide National Ambient Air
Quality Standard Nonattainment Area

1.3 Public Hearing and Comment Information

1.4 Health Effects

1.5 Stakeholder Participation

1.6 Social and Economic Considerations

1.7 Fiscal and Manpower Resources

Chapter 2: Anthropogenic Emissions Inventories

2.1 Introduction

2.2 Point Sources

2.2.1 2017 Base Year Point Source Emissions Inventory

2.2.2 2026 Attainment Year Point Source Emissions Inventory

2.3 Area Sources

2.3.1 2017 Base Year Area Source Emissions Inventory

2.3.2 2026 Attainment Year Area Source Emissions Inventory

2.4 Non-Road Mobile Sources

2.4.1 NONROAD Model Categories

2.4.1.1 2017 Base Year NONROAD Model Emissions Inventory

2.4.1.2 2026 Attainment Year NONROAD Model Emissions Inventory

2.4.2 Locomotives

2.4.2.1 2017 Base Year Locomotive Emissions Inventory

2.4.2.2 2026 Attainment Year Locomotive Emissions Inventory

2.4.3 Airports

2.4.3.1 2017 Base Year Airport Emissions Inventory

2.4.3.2 2026 Attainment Year Airport Emissions Inventory

2.5 On-Road Mobile Sources

2.5.1 2017 Base Year On-Road Mobile Emissions Inventory

2.5.2 2026 Attainment Year On-Road Mobile Emissions Inventory

2.6 Emissions Inventory Improvement

2.7 Emissions Summaries

Chapter 3: Control Strategies and Required Elements

3.1 Introduction

3.2 Permanent and Enforceable Measures

3.2.1 RACT and RACM Analysis

3.2.2 Enforceable Control Measures

3.3 Monitoring Network

3.4 Contingency Measures

3.4.1 Introduction

3.4.2 Contingency Plan

3.5 SIP Emissions Year for Emission Credit and Discrete Emission Credit Generation

3.6 Additional Federal Clean Air Act Requirements

3.6.1 Conformity Requirements

3.6.1.1 General Conformity

3.6.1.2 Transportation Conformity

3.6.2 Nonattainment New Source Review Certification Statement

Chapter 4: Attainment Demonstration Modeling

4.1 Introduction

4.2 Sources Overview

4.3 Streetman Plant Site

4.4 Summary of Attainment Demonstration Modeling

4.5 Modeling Scenarios and Results

4.5.1 Source Parameters

4.5.2 Modeling Scenarios

4.5.3 Modeling Results

4.6 Conclusion

4.7 References

Chapter 5: Reasonable Further Progress

5.1 Introduction

5.2 RFP demonstration

5.3 Compliance Schedule

LIST OF ACRONYMS

AEDT	Aviation Environmental Design Tool
AERR	Air Emissions Reporting Requirements
AMS	American Meteorological Society
AERMOD	American Meteorological Society/United States Environmental Protection Agency Regulatory Model
APU	auxiliary power unit
AQD	Air Quality Division
BPIPPRM	Building Profile Input Program for PRIME
CFR	Code of Federal Regulations
DV	design value
EI	emissions inventory
EPA	United States Environmental Protection Agency
EPN	Emissions Point Number
ERG	Eastern Research Group
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FCAA	federal Clean Air Act
FMVCP	Federal Motor Vehicle Control Program
Ft/s	feet per second
FR	<i>Federal Register</i>
FSA	full system audit
GSE	ground support equipment
hr	hour
ICI	Industrial, Commercial, and Institutional
km	kilometers
lb	pound
m	meters
MMBtu	one million British Thermal Units
MOVES	Motor Vehicle Emission Simulator
NAAQS	National Ambient Air Quality Standard
NEI	National Emissions Inventory
NSR	New Source Review
ppb	parts per billion

RACM	reasonably available control measures
RACT	reasonably available control technology
RFP	reasonable further progress
RN	Regulated Entity Reference Number
RRC	Railroad Commission of Texas
s	second
SIP	state implementation plan
SO ₂	sulfur dioxide
STARS	State of Texas Air Reporting System
TAC	Texas Administrative Code
TACB	Texas Air Control Board
TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Quality (commission)
TexN2.2	Texas NONROAD version 2.2
THSC	Texas Health and Safety Code
TNRCC	Texas Natural Resource Conservation Commission
tpy	tons per year
TSD	technical support document
TTI	Texas A&M Transportation Institute
TWC	Texas Water Code
TX	Texas
UTM	Universal Transverse Mercator

LIST OF TABLES

Table 1-1:	Public Hearing Information
Table 2-1:	Navarro County Nonattainment Area SO ₂ Emissions in TPY
Table 4-1:	NSR Permit Number 5337 Requirements for EPN E3-1
Table 4-2:	Enforceable Stack Parameters and Emission Limits for EPN E3-1
Table 4-3:	Modeling Scenario Descriptions
Table 4-4:	Modeling Scenarios and Results

LIST OF FIGURES

- Figure 4-1: Overview of the Navarro County Nonattainment Area
- Figure 4-2: Streetman Plant Site Overview
- Figure 4-3: Modeling Domain and Receptor Grid
- Figure 4-4: Innermost Receptor Grid
- Figure 4-5: Controlling Scenario Results Throughout the Nonattainment Area
- Figure 4-6: Controlling Scenario Results Near the Streetman Plant

LIST OF APPENDICES

<u>Appendix</u>	<u>Appendix Name</u>
Appendix A	Stationary Point Source Sulfur Dioxide (SO ₂) Emissions
Appendix B	Growth Factors for Area and Point Sources
Appendix C	Characterization of Oil and Gas Production Equipment and Develop a Methodology to Estimate Statewide Emissions
Appendix D	Industrial, Commercial, and Institutional (ICI) Fuel Use Study
Appendix E	TexN2.2 Updates for Compatibility with the US EPA MOVES3 Model
Appendix F	2020 Texas Statewide Locomotive and Rail Yard Emissions Inventory and 2011 through 2050 Trend Inventories
Appendix G	2020 Texas Statewide Airport Emissions Inventory and 2011 through 2050 Trend Inventories
Appendix H	MOVES3 On-road Inventory Development
Appendix I	Population Ratios for Non-Point Sources
Appendix J	Modeling Technical Support Document (TSD)

CHAPTER 1: GENERAL

1.1 BACKGROUND

Information on the Texas State Implementation Plan (SIP) and a list of SIP revisions and other air quality plans adopted by the commission can be found on the [Texas State Implementation Plan](http://www.tceq.texas.gov/airquality/sip) webpage (<http://www.tceq.texas.gov/airquality/sip>) and on the [Texas Commission on Environmental Quality's](http://www.tceq.texas.gov/) (TCEQ) website (<http://www.tceq.texas.gov/>).

1.2 HISTORY OF THE NAVARRO COUNTY 2010 SULFUR DIOXIDE NATIONAL AMBIENT AIR QUALITY STANDARD NONATTAINMENT AREA

On June 22, 2010, the United States Environmental Protection Agency (EPA) revised the sulfur dioxide (SO₂) National Ambient Air Quality Standards (NAAQS), adding a 75 parts per billion one-hour primary standard (75 *Federal Register* (FR) 35520). On June 2, 2011, Texas submitted a letter to the EPA recommending designations for all Texas counties, including an unclassifiable designation for Navarro County. An updated recommendation submitted to the EPA on April 20, 2012 did not change the state's initial recommendation for Navarro County.

On July 27, 2012, the EPA extended its deadline for area designations for the 2010 primary SO₂ standard for one year due to having insufficient information to make initial area designations at that time but intending to complete initial designations by June 3, 2013. On August 5, 2013, the EPA designated parts of 16 states as nonattainment for the 2010 SO₂ standard, effective October 4, 2013 (78 FR 47191). These were 29 areas that had monitored data indicating violations of the 2010 SO₂ NAAQS within the period from 2009 through 2011. The EPA was not prepared to issue designations for any remaining areas, so no areas of Texas were designated in Round 1 of the EPA's 2010 SO₂ standard designations.

The EPA's Data Requirements Rule (DRR) for the 2010 SO₂ NAAQS required that for areas to be characterized by monitoring for Round 4 designations, all source-oriented monitors used to inform designations were to be installed and operating by January 1, 2017. The TCEQ deployed an SO₂ monitor at the Richland Southeast 1220 Road site (air quality system number 483491081) on November 16, 2016, in Navarro County.

The EPA published final Round 4 designations on March 26, 2021, effective April 30, 2021 (86 FR 16055). These designations were based primarily on ambient monitoring data, including data from monitors installed pursuant to the DRR and in accordance with the EPA's September 5, 2019, memorandum to Regional Air Directors, *Area Designations for the 2010 Primary Sulfur Dioxide National Ambient Air Quality Standard - Round 4*.¹ Specifically defined portions of Howard, Hutchinson, and Navarro Counties were designated nonattainment, and Texas is required to submit attainment demonstrations for all three of these partial-county nonattainment areas to the EPA by October 30, 2022.

This Navarro County SO₂ attainment demonstration, in accordance with FCAA, §172 general requirements and FCAA, §191 and §192 specific requirements, includes a

¹ https://www.epa.gov/sites/default/files/2019-09/documents/round_4_so2_designations_memo_09-05-2019_final.pdf

comprehensive inventory of current SO₂ emissions; identification of existing federal and state controls; evaluation and provision for implementing all reasonably available control measures and reasonably available control technology; air quality dispersion modeling and analysis to evaluate projected air quality improvements from existing and new controls; a reasonable further progress (RFP) demonstration; contingency measures that would be implemented to achieve additional emissions reductions if the area fails to attain the NAAQS or meet an RFP milestone by the deadline; and the state's certification that current regulations provide the means to satisfy nonattainment New Source Review requirements for the Navarro County 2010 SO₂ nonattainment area.

This SIP revision for Navarro County is proposed concurrent with proposed attainment demonstration SIP revisions for the Howard County (Non-Rule Project No. 2021-010-SIP-NR) and Hutchinson County (Non-Rule Project No. 2021-011-SIP-NR) 2010 SO₂ NAAQS nonattainment areas and an associated proposed 30 Texas Administrative Code Chapter 112 rulemaking (Rule Project No. 2021-035-112-AI) to provide the control strategy applicable for each nonattainment area.

1.3 PUBLIC HEARING AND COMMENT INFORMATION

The commission will hold a public hearing for this proposed SIP revision at the following time and location.

Table 1-1: Public Hearing Information

City	Date	Time	Location
Corsicana	May 23, 2022	6:00 p.m. CDT	Cook Education Center Navarro College 3100 West Collin Street Corsicana, Texas 75110

The public comment period will open on April 15, 2022 and close on June 2, 2022. Written comments will be accepted via mail, fax, or through the [eComments](https://www6.tceq.texas.gov/rules/ecomments/) (<https://www6.tceq.texas.gov/rules/ecomments/>) system. All comments should reference the “Navarro County 2010 SO₂ NAAQS Attainment Demonstration SIP Revision” and should reference Project Number 2021-012-SIP-NR. Comments may be submitted to Mary Ann Cook, MC 206, State Implementation Plan Team, Air Quality Division, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 or faxed to (512) 239-6188. Electronic comments must be submitted through the eComments system. File size restrictions may apply to comments being submitted via the eComments system. Comments must be received by June 2, 2022.

An electronic version of this proposed Navarro County 2010 SO₂ NAAQS Attainment Demonstration SIP Revision is provided on the TCEQ's [Air Pollution from Sulfur Dioxide](https://www.tceq.texas.gov/airquality/sip/criteria-pollutants/sip-so2#latest-air-quality-planning) webpage (<https://www.tceq.texas.gov/airquality/sip/criteria-pollutants/sip-so2#latest-air-quality-planning>). An electronic version of the hearing notice will be available on the [Texas SIP Revisions](https://www.tceq.texas.gov/airquality/sip/siplans.html#prosips) webpage (<https://www.tceq.texas.gov/airquality/sip/siplans.html#prosips>).

1.4 HEALTH EFFECTS

Current scientific evidence links short-term exposures to SO₂, ranging from five minutes to 24 hours, with an array of adverse respiratory effects including

bronchoconstriction and increased asthma symptoms (75 FR 35520). These effects are particularly important for people with asthma at elevated ventilation rates (e.g., while exercising or playing) and other at-risk populations including children and elderly people.

Sulfur oxides such as SO₂ 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).

1.5 STAKEHOLDER PARTICIPATION

The TCEQ and representatives of Arcosa held regular meetings during the development of this proposed SIP revision to discuss modeling, control strategies, contingency measures, and development of the proposed Chapter 112, Subchapter G rules. The TCEQ, representatives of Arcosa, and the EPA also held meetings to discuss modeling details.

1.6 SOCIAL AND ECONOMIC CONSIDERATIONS

No significant fiscal implications are anticipated for the TCEQ or other units of state or local governments from administration or enforcement of the associated proposed rulemaking. Because the Streetman Plant is the only significant SO₂ point source contributing to the nonattainment area, all controls to reach attainment will be borne by this emission source. As such, any economic impacts will be limited to the single SO₂ source associated with this proposed SIP revision. The associated proposed rules are expected to have a significant fiscal impact on Arcosa. The citizens living within the nonattainment area will benefit from reduced SO₂ emissions.

1.7 FISCAL AND MANPOWER RESOURCES

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

CHAPTER 2: ANTHROPOGENIC EMISSIONS INVENTORIES

2.1 INTRODUCTION

The federal Clean Air Act (FCAA) requires attainment demonstration emissions inventories (EI) be prepared from all sources within a planning area (57 *Federal Register* (FR) 13498, April 16, 1992). The EI must be a comprehensive, accurate, and current inventory of actual emissions for all sources in the nonattainment area plus any sources located outside the nonattainment area that may affect attainment.

The Texas Commission on Environmental Quality (TCEQ) maintains an inventory of current information for sources of sulfur dioxide (SO₂) emissions that identifies the types of emissions sources present in an area, the amount of each pollutant emitted, and the types of processes and control devices employed at each facility or source category. The total anthropogenic inventory of SO₂ emissions for an area is derived from estimates developed for three general categories of emissions sources: point, area, and mobile (both non-road and on-road). All inventories are developed in accordance with the Environmental Protection Agency's Air Emissions Reporting Requirements (AERR) (40 Code of Federal Regulations (CFR) Part 51, Subpart A).

This chapter discusses general EI and attainment year emissions development for each of the anthropogenic source categories. Chapter 4: *Attainment Demonstration Modeling* details specific EIs and emissions inputs developed for the Navarro County 2010 SO₂ National Ambient Air Quality Standard (NAAQS) nonattainment area dispersion modeling.

The most current periodic EI data were analyzed as part of this proposed state implementation plan (SIP) revision. The TCEQ chose 2017 as the base year for the analyses presented in this chapter because it was the most recent periodic inventory year available for all source categories to develop an EI for this proposed SIP revision. Details on the projection methods to forecast 2017 base year emissions to the 2026 attainment year for all source categories are documented in this chapter.

2.2 POINT SOURCES

Stationary point source data are collected annually from sites that meet the reporting requirements of 30 Texas Administrative Code (TAC) §101.10. The TCEQ provides detailed reporting instructions and tools for completing and submitting an EI. Companies submit EI data using a Web-based system called the Annual Emissions Inventory Report System. Companies are required to report emissions data and to provide sample calculations used to determine the emissions. Information characterizing the process equipment, the abatement units, and the emission points is also required. As required by FCAA, §182(a)(3)(B) and the United States Environmental Protection Agency (EPA) guidance, a company representative certifies that reported emissions are true, accurate, and fully represent emissions that occurred during the calendar year to the best of the representative's knowledge.

All data submitted in the EI are reviewed for quality assurance purposes and then stored in the State of Texas Air Reporting System (STARS) database. The TCEQ's [Point Source Emissions Inventory](https://www.tceq.texas.gov/airquality/point-source-ei/psei.html) webpage (<https://www.tceq.texas.gov/airquality/point-source-ei/psei.html>) contains guidance documents and historical point source emissions data. Additional information is available upon request from the TCEQ's Air Quality Division.

Arcosa LWS, LLC's Streetman Plant (Regulated Entity Reference Number [RN] RN100211283), a lightweight aggregate production facility, is the only SO₂ point source site located in the Navarro County 2010 SO₂ NAAQS nonattainment area. The Streetman plant emits over 99% of the SO₂ emissions in the nonattainment area.

2.2.1 2017 Base Year Point Source Emissions Inventory

The TCEQ extracted the 2017 point source inventory data from STARS on December 8, 2021. The extracted data include reported annual (routine) emissions of SO₂ in tons per year (tpy) for the Streetman Plant located in the Navarro County 2010 SO₂ NAAQS nonattainment area. The 2017 base year point source SO₂ EI is summarized in Table 2-1: *Navarro County Nonattainment Area SO₂ Emissions*.

2.2.2 2026 Attainment Year Point Source Emissions Inventory

If this proposed SIP revision and the associated proposed 30 TAC Chapter 112, Subchapter G rulemaking (Rule Project No. 2021-035-112-AI) are adopted by the commission, the Streetman Plant will be subject to TCEQ SO₂ emissions regulations implemented to reduce emissions from its SO₂ emissions source, a lightweight aggregate kiln.

The kiln's 2026 forecasted controlled actual emissions were projected based on the higher of the two hourly emissions limits set by requirements proposed in the rulemaking. This emissions limit was conservatively used to forecast the 2026 annual emissions assuming a full calendar year (8,760 hours) of operation.

The 2026 forecasted actual controlled emissions based on emission limits set by proposed rule requirements are lower than the historical 2017 through 2020 annual point source inventory SO₂ emissions that the TCEQ extracted from STARS on December 8, 2021.

Appendix A: *Stationary Point Source Sulfur Dioxide (SO₂) Emissions* provides details on the 2017 point source base year SO₂ emissions, 2018 through 2020 point source SO₂ emissions, and the 2026 projected point source SO₂ emissions.

The 2026 attainment year point source SO₂ EI is summarized in Table 2-1.

2.3 AREA SOURCES

Stationary emissions sources that do not meet the reporting requirements for point sources are classified as area sources. Area sources are small-scale stationary industrial, commercial, and residential sources that use materials or perform processes that generate emissions. Examples of typical SO₂ emissions sources include upstream oil and gas engines and heaters, stationary source fossil fuel combustion at residences and businesses, outdoor refuse burning, and agricultural crop burning.

EPA rules and guidance require area source emissions to be calculated as county-wide totals rather than as individual sources. Area source emissions are typically calculated by multiplying an EPA- or TCEQ-developed emissions factor (emissions per unit of activity) by the appropriate activity or activity surrogate responsible for generating emissions. Population is one of the more commonly used activity surrogates for area source calculations. Other activity data that are commonly used include the amount of gasoline sold in an area, employment by industry type, and crude oil and natural gas production.

The emissions data for each of the area source categories are developed, quality assured, stored in the Texas Air Emissions Repository database system, and compiled to develop the statewide area source EI.

2.3.1 2017 Base Year Area Source Emissions Inventory

The 2017 area source EIs were developed using EPA-generated EIs; TCEQ-contracted projects to develop EIs; TCEQ staff projects to develop EIs; and projecting 2014 EIs by applying growth factors derived from Eastern Research Group (ERG) study data, the [Economy and Consumer Credit Analytics](http://www.economy.com/default.asp) website (<http://www.economy.com/default.asp>), and the United States Energy Information Administration's *Annual Energy Outlook* publication. The documentation for the development of the ERG study projection factors is provided in Appendix B: *Growth Factors for Area and Point Sources*.

The EPA developed EIs for states to use for many area source categories as part of the National Emissions Inventory (NEI). The states access these individual EIs through the [EPA's NEI](https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data) website (<https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data>). These source categories include but are not limited to industrial coatings; degreasing; residential, commercial/institutional, and industrial fuel use; commercial cooking; aviation fuel use; and consumer products. For some source categories, the TCEQ developed state-specific emissions estimates by acquiring current state-specific activity data and applying appropriate emissions factors. These source categories include but are not limited to gasoline storage tanks, structure fires, dry cleaners, and automobile fires.

The TCEQ committed significant resources to improve the oil and gas area source inventory categories for the 2017 base year EI. The improvements included the development and refinement of a state-specific oil and gas area source emissions calculator. This oil and gas area source emissions calculator uses county-level production and local equipment activity data with local emissions requirements to estimate emissions from individual production categories including compressor engines, condensate and oil storage tanks, loading operations, heaters, and dehydrators. The documentation for the development of the oil and gas emissions calculator is provided in Appendix C: *Characterization of Oil and Gas Production Equipment and Develop a Methodology to Estimate Statewide Emissions*.

Another significant improvement made for the 2017 base year EI was the development of a Texas-specific industrial, commercial, and institutional (ICI) combustion emissions calculator. This improved upon the default calculations and parameters provided by the EPA for these fuel combustion sources. The documentation for the development of the ICI combustion emissions calculator is provided in Appendix D: *Industrial, Commercial, and Institutional (ICI) Fuel Use Study*.

Quality assurance of area source emissions involves ensuring that the activity data used for each category are current and valid. Data such as current population figures, fuel usage, and material usage were updated and the EPA guidance on emissions factors was used. Other routine efforts were also implemented, such as checking calculations for errors and conducting reasonableness and completeness checks.

The 2017 base year area source SO₂ EI is summarized in Table 2-1.

2.3.2 2026 Attainment Year Area Source Emissions Inventory

Since 2017 was the most recently available periodic EI year, the TCEQ designated the 2017 EI as the starting point for the 2026 attainment year EI projections of all area source categories except oil and gas sources. Since more recent activity data are available for oil and gas sources, the area source oil and gas EI was updated using Railroad Commission of Texas 2020 production data. These newer data reflect growth that has occurred since the 2017 base year and are more representative of recent operations. This 2020 oil and gas area source EI was used as the projection base year for the 2026 attainment year EI.

The updated 2026 attainment year EI for the area source categories were developed using projection factors derived from Appendix B. The study in this appendix contains individual projection factors for each source category and for each forecasting year. This projection method is the EPA standard and accepted methodology for developing future-year EIs.

The 2026 area source EI was developed by applying the selected emissions projection factor to the 2017 emissions for each area source category except oil and gas source categories; the 2026 area source EI for oil and gas source categories was developed by applying the selected emissions projection factor to the 2020 emissions. No controls were incorporated into the area source attainment year inventories.

The 2026 attainment year area source SO₂ EI is summarized in Table 2-1.

2.4 NON-ROAD MOBILE SOURCES

Non-road vehicles do not normally operate on roads or highways and are often referred to as off-road or off-highway vehicles. Non-road emissions sources include agricultural equipment, commercial and industrial equipment, construction and mining equipment, lawn and garden equipment, aircraft and airport equipment, and locomotives.

For this proposed SIP revision, EIs for non-road sources were developed for the following subcategories: NONROAD model categories, airports, and locomotives. The airport subcategory includes estimates for total emissions from the aircraft, auxiliary power units (APU), and ground support equipment (GSE) subcategories added together and presented as a total. The following sections describe the emissions estimation methods used for the non-road mobile source subcategories.

The 2017 base year and 2026 attainment year non-road mobile source SO₂ EIs are summarized in Table 2-1.

2.4.1 NONROAD Model Categories

The Motor Vehicle Emission Simulator 3 (MOVES3) model is the EPA's latest mobile source emissions model for estimating non-road source category emissions. The TCEQ used the most recent Texas-specific utility for the non-road mobile component of the MOVES3 model, called Texas NONROAD version 2.2 (TexN2.2), to calculate emissions from all non-road mobile source equipment and recreational vehicles, except for airports and locomotives.

Because emissions for airports and locomotives are not included in either the MOVES3 model or the TexN2.2 utility, the emissions for these categories are estimated using other EPA-approved methods and guidance.

The TCEQ conducted equipment survey studies that focused on various equipment categories operating in different areas of Texas, including diesel construction equipment, liquid propane gas-powered forklifts, and agricultural equipment. The resulting survey data contributed to input updates to the TexN utility to estimate non-road emissions more accurately for the State of Texas instead of using the national default values in the EPA's MOVES model.

The TexN2 utility was recently updated to be compatible with the MOVES3 model. In addition, enhancements were added to the utility to streamline the way TexN2 handles alternative equipment scrappage curves and generates county databases for submittal for the AERR and NEI. The resulting new TexN2 utility is called TexN2.2. More information regarding the updates and development for the TexN2.2 utility is provided in the ERG report in Appendix E: *TexN2.2 Updates for Compatibility with the US EPA MOVES3 Model*.

2.4.1.1 2017 Base Year NONROAD Model Emissions Inventory

TCEQ staff developed the 2017 base year non-road model category SO₂ emissions for this proposed SIP revision using the TexN2.2 utility set for fully controlled run scenarios that used 2017 meteorological input data.

2.4.1.2 2026 Attainment Year NONROAD Model Emissions Inventory

TCEQ staff developed the 2026 attainment year non-road model category SO₂ emissions for this proposed SIP revision using the TexN2.2 utility set for fully controlled run scenarios that used 2017 meteorological input data.

2.4.2 Locomotives

The locomotive EIs were developed from a TCEQ-commissioned study using EPA-accepted EI development methods. The locomotive EIs include line haul and yard emissions activity data from all Class I and III locomotive activity and emissions by rail segment (currently, there are no Class II operators in Texas). The method and procedures used to develop the locomotive EIs for this proposed SIP revision are detailed in the Texas A&M Transportation Institute (TTI) report in Appendix F: *2020 Texas Statewide Locomotive and Rail Yard Emissions Inventory and 2011 through 2050 Trend Inventories*.

2.4.2.1 2017 Base Year Locomotive Emissions Inventory

The 2017 base year locomotive SO₂ emissions for this proposed SIP revision were taken from the 2017 trend EI developed as part of the TTI report in Appendix F.

2.4.2.2 2026 Attainment Year Locomotive Emissions Inventory

The 2026 attainment year locomotive SO₂ emissions for this proposed SIP revision were taken from the 2026 trend EI developed as part of the TTI report in Appendix F.

2.4.3 Airports

The airport EIs were developed from a TCEQ-commissioned study using the Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT). The AEDT

is the most recent FAA model for estimating airport emissions and replaced the FAA's Emissions and Dispersion Modeling System. The airport emissions categories used for this proposed SIP revision included aircraft (commercial air carriers, air taxis, general aviation, and military), APU, and GSE operations.

The method and procedures used to develop the airport EIs for this proposed SIP revision are provided in the TTI report in Appendix G: *2020 Texas Statewide Airport Emissions Inventory and 2011 through 2050 Trend Inventories*.

2.4.3.1 2017 Base Year Airport Emissions Inventory

The 2017 base year airport SO₂ emissions for this proposed SIP revision were taken from the 2017 statewide airport trend EI developed as part of the ERG report in Appendix G.

2.4.3.2 2026 Attainment Year Airport Emissions Inventory

The 2026 attainment year airport SO₂ emissions for this proposed SIP revision were taken from the 2026 statewide airport trend EI developed as part of the ERG report in Appendix G.

2.5 ON-ROAD MOBILE SOURCES

On-road mobile emissions sources consist of automobiles, trucks, motorcycles, and other motor vehicles traveling on public roadways as well as off-network emissions occurring outside public roadways. On-road mobile source SO₂ emissions are usually categorized as combustion-related emissions. Combustion-related emissions are estimated for vehicle engine exhaust. To calculate emissions, both the rate of emissions per unit of activity and the number of units of activity must be determined.

Updated on-road EIs for this proposed SIP revision were developed using the inventory mode of the EPA's mobile source emissions model, MOVES3. During a MOVES3 inventory mode run, emissions rates are first calculated and then applied to user-provided activity levels or EPA MOVES default activity levels. The MOVES3 model may be run using national default information or the default information may be modified to simulate specific data, such as the control programs, driving behavior, meteorological conditions, and vehicle characteristics. Modifications to the national default values influence the emissions factors calculated internally by the MOVES3 model; therefore, parameters that are used in TCEQ EI development reflect local conditions to the extent that local values are available.

2.5.1 2017 Base Year On-Road Mobile Emissions Inventory

TCEQ staff developed the 2017 base year on-road mobile source category SO₂ emissions for this proposed SIP revision using the MOVES3 model. Values that reflect local conditions as well as local activity levels were used when available. Detailed information on the inputs and data sources used in the on-road EI development are provided in Appendix H: *MOVES3 On-road Inventory Development*.

The Federal Motor Vehicle Control Program (FMVCP) provides on-going emissions reductions from mobile sources. The FMVCP includes vehicle emission certification standards as well as corresponding limits on fuel sulfur content. The limits on sulfur content for diesel and gasoline fuels contribute to reduced SO₂ emissions from mobile sources.

The 2017 base year on-road mobile source SO₂ EI is summarized in Table 2-1.

2.5.2 2026 Attainment Year On-Road Mobile Emissions Inventory

TCEQ staff developed the 2026 attainment year on-road mobile source category SO₂ emissions for this proposed SIP revision using the MOVES3 model. Values reflect local conditions as well as local activity levels when available, excluding meteorology and fuel inputs, which were held constant at 2017 levels. For more detailed information on the inputs and data sources used in the on-road EI development, see Appendix H.

The 2026 attainment year on-road mobile source SO₂ EI is summarized in Table 2-1.

2.6 EMISSIONS INVENTORY IMPROVEMENT

The TCEQ EI reflects years of emissions data improvement, including extensive point and area source inventory reconciliation with ambient emissions monitoring data. Reports detailing recent TCEQ EI improvement projects are provided at the TCEQ's [Air Quality Research and Contract Projects](https://www.tceq.texas.gov/airquality/airmod/project/pj.html) webpage (https://www.tceq.texas.gov/airquality/airmod/project/pj.html).

2.7 EMISSIONS SUMMARIES

The 2017 base year and 2026 attainment year Navarro County 2010 SO₂ NAAQS nonattainment area SO₂ emissions for this proposed SIP revision are summarized in Table 2-1. In this table, annual routine emissions for all source categories are provided in tpy. These emissions summaries demonstrate that the point source category contributes the largest portion (99.9%) of SO₂ emissions in the Navarro County 2010 SO₂ NAAQS nonattainment area.

The 2026 attainment year EI presented in this chapter is not the modeled EI. For more details on the modeled EI, please consult Chapter 4: *Attainment Demonstration Modeling*.

Per EPA EI rules and guidance, area, non-road mobile, and on-road mobile source emissions are typically calculated as county-wide totals for Navarro County. To obtain area, non-road mobile, and on-road mobile source emissions for the Navarro County 2010 SO₂ NAAQS nonattainment area for this proposed SIP revision, county-level emissions were ratioed based on the 2010 population located within the portions of the nonattainment boundaries for the area. Details of the population-based ratios applied to the county-wide totals for the area, non-road mobile, and on-road mobile source categories are presented in Appendix I: *Population Ratios for Non-Point Sources*.

Table 2-1: Navarro County Nonattainment Area SO₂ Emissions in TPY

Source Category	2017 Base Year Reported Emissions	2026 Attainment Year Emissions
Point - Streetman Plant	3,493.10	1,239.54
Area - Non-Oil and Gas	0.46	0.79
Area - Oil and Gas	less than 0.01	less than 0.01
On-road Mobile	0.24	0.23
Non-road Mobile	0.05	0.05
Total	3,493.85	1,240.61

CHAPTER 3: CONTROL STRATEGIES AND REQUIRED ELEMENTS

3.1 INTRODUCTION

On March 26, 2021, the United States Environmental Protection Agency (EPA) finalized a rule designating a portion of Navarro County as nonattainment for the 2010 sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS), with an effective date of April 30, 2021 (86 *Federal Register* (FR) 16055). The SO₂ nonattainment area designated by the EPA includes the Streetman Plant, which is owned and operated by Arcosa LWS, LLC (Arcosa). The Streetman Plant manufactures lightweight aggregate for use in various industrial applications, such as concrete and asphalt, and is the only site covered under this proposed state implementation plan (SIP) revision. Federal Clean Air Act (FCAA), §172(c) establishes planning requirements for attainment demonstration SIP revisions for areas that do not meet the NAAQS for a criteria pollutant. This chapter describes how this SIP revision meets the statutory requirements under FCAA, §172(c)(1) for reasonably available control measures (RACM) including reasonably available control technology (RACT); under FCAA, §172(c)(6) for enforceable emissions limitations and control measures; under FCAA, §173(a) for a nonattainment New Source Review (NSR) permit program; and under FCAA, §172(c)(9) for an adequate contingency plan for the nonattainment area.

3.2 PERMANENT AND ENFORCEABLE MEASURES

The proposed SIP revision describes a control strategy that consists of permanent, quantifiable, and enforceable emission reductions at the Streetman Plant necessary to demonstrate attainment of the 2010 SO₂ NAAQS. The emission rates and control measures must be accompanied by appropriate methods and conditions to determine compliance with the respective emission limit and must be quantifiable (i.e., a specific amount of emission reduction can be ascribed to the measures), fully enforceable (i.e., specifying clear, unambiguous and measurable requirements for which compliance can be practicably determined), replicable (i.e., the procedures for determining compliance are sufficiently specific and non-subjective so that two independent entities applying the procedures would obtain the same result), and accountable (i.e., source specific limits must be permanent and must reflect the assumptions used in the SIP demonstration). This proposed SIP revision and the associated proposed 30 Texas Administrative Code (TAC) Chapter 112, Subchapter G rulemaking (Rule Project No. 2021-035-112-AI) provide the mechanism to make quantifiable SO₂ emission reductions, establish enforceable requirements for which compliance with the emission rates is determined in a replicable manner, and make permanent the emission rates established through the required SIP elements.

3.2.1 RACT and RACM Analysis

FCAA, §172(c)(1) requires that nonattainment areas provide for the implementation of all RACM, including RACT, as expeditiously as practicable and provide for attainment of the NAAQS. The SIP must provide for attainment of the NAAQS based on SO₂ emission reductions from control measures that are permanent and enforceable. RACT is defined in 40 Code of Federal Regulations (CFR) §51.100(o) as devices, systems, process modifications, or other apparatus or techniques that are reasonably available taking into account what is necessary to attain and maintain the NAAQS while considering the social environmental, and economic impact of such controls. The EPA's *Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions* (2014 SO₂ SIP guidance)

maintains previous EPA guidance regarding the definition of RACT.² The 2014 SO₂ SIP guidance also provides that states should consider all RACM, including RACT, that can be implemented in light of the attainment needs of the affected area.

The Streetman Plant is the only site contributing to nonattainment in the Navarro County 2010 SO₂ NAAQS nonattainment area and contains the only source for which RACM, including RACT, is required to be applied under FCAA §172(c)(1). The Streetman Plant will implement RACM, including RACT, through implementation of an SO₂ emissions limit of 248 pounds per hour (lb/hr) for the lightweight aggregate kiln and any associated control device. Arcosa has not yet determined what control measures to implement to attain and maintain the 2010 SO₂ NAAQS, and based on air dispersion modeling of the source, the associated proposed 30 TAC Chapter 112, Subchapter G rulemaking would require minimum operating limits on stack parameters such as velocity, temperature, and height to ensure that the proposed emission limit of 248 lb/hr would result in attainment and maintenance of the 2010 SO₂ NAAQS. Stack height, stack temperature, and exhaust velocity impact the attainment demonstration because they affect the dispersion of SO₂ emissions from the stack. To ensure sufficient dispersion and modeled attainment of the affected area, the associated proposed rule would require that the minimum stack velocity be 65 feet per second and that the minimum stack temperature be 125 degrees Fahrenheit.

Because the control measures that Arcosa would use to comply with the associated proposed rule are still unknown, Arcosa requested an alternate emissions limit for SO₂ that would also demonstrate attainment and maintenance of the 2010 SO₂ NAAQS if the final design of control measures would result in a different set of stack parameters that provide for the same or better dispersion. Therefore, if the minimum stack temperature and minimum exhaust velocity were 150 degrees Fahrenheit and 66 feet per second, a proposed emission limit of 283 lb/hr would also demonstrate attainment and maintenance of the 2010 SO₂ NAAQS. The associated proposed 30 TAC Chapter 112, Subchapter G rulemaking would specify these operating conditions. These proposed emission limits and corresponding operating conditions are based on what is required to model attainment and consider the attainment needs of the affected area. The control measures proposed for the source and included in the associated proposed rule were considered technically available and economically reasonable and necessary to attain and maintain the NAAQS.

In addition to the emissions limit on SO₂, the associated proposed rulemaking contains the other enforceable measures necessary for the affected area to attain and maintain the NAAQS, including fuel limitations, monitoring requirements, testing requirements, and recordkeeping and reporting requirements.

An option for owners or operators to request an alternative SO₂ emission limit is also provided for in the proposed rulemaking. The owner or operator would be required to conduct and submit dispersion modeling and analysis that includes the requested new limit, all the inputs in the most recent attainment demonstration SIP, and follows the methodology laid out in the most recent attainment demonstration SIP. Any deviations from the modeling methodology from the most recent attainment demonstration

² EPA, April 23, 2014. [Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions](https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf) (https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf).

would be required to be explained and approved by the executive director of the TCEQ and the EPA. The modeling and additional analyses would be required to confirm the modeled regulatory design value in the nonattainment area will not increase due to the new limit. The request would also be required to include any additional monitoring, testing, and recordkeeping requirements necessary to demonstrate compliance with the requested new limit. The owner or operator would only be allowed to comply with the alternative limit if the request is approved by both the TCEQ and the EPA. The alternative emission limit would satisfy RACM including RACT because it would ensure that any change in the emission limit would not increase the design values and will include monitoring, testing and recordkeeping necessary to determine compliance.

3.2.2 Enforceable Control Measures

The control measures needed to meet the final SO₂ emissions limits and demonstrate attainment of the Navarro County 2010 SO₂ NAAQS nonattainment area are made enforceable by the associated proposed 30 TAC Chapter 112, Subchapter G rulemaking, which includes the control measures for attainment and the associated implementation schedules, and the contingency measures to be triggered in the event of failure to attain the 2010 SO₂ NAAQS. The proposed SO₂ rulemaking also makes enforceable the appropriate SO₂ emissions monitoring, testing, recordkeeping, and reporting requirements necessary to determine compliance with the final SO₂ emissions limits to ensure enforceability of the final SO₂ emissions limits in lb/hr. The proposed compliance deadline is January 1, 2025.

3.3 MONITORING NETWORK

The Texas Commission on Environmental Quality (TCEQ) ambient air quality monitoring network provides monitoring data to characterize air quality based on the 2010 SO₂ NAAQS. SO₂ monitors are managed in accordance with 40 CFR Part 58 to provide data to determine compliance or progress towards compliance with the 2010 SO₂ NAAQS. The SO₂ monitor site evaluation and selection process considers the SO₂ source's peak modeled impacts along with other monitor siting criteria, including power availability, site access, and 40 CFR Part 58, Appendix E siting criteria requirements.

In areas not previously designated under the 2010 SO₂ NAAQS, the TCEQ deployed SO₂ monitors near sources meeting specifications referenced in the EPA's SO₂ Data Requirements Rule (DRR). To meet the relevant requirement of the DRR, the TCEQ deployed an SO₂ monitor at the Richland Southeast 1220 Road site (air quality system number 483491081) on November 16, 2016, in Navarro County. A portion of Navarro County around the Streetman Plant was designated nonattainment, effective April 30, 2021 (86 FR 16055). The designation was based on three years of monitoring data that resulted in a design value exceeding the NAAQS.

The TCEQ commits to maintaining an air monitoring network that meets regulatory requirements. The TCEQ continues to work with the EPA through the air monitoring network review process, as required by 40 CFR Part 58, to determine: the adequacy of the federal air monitoring network, additional monitoring needs, and recommended monitor decommissions. Air monitoring data from the Richland Southeast 1220 Road SO₂ monitor are quality assured, reported, and certified according to 40 CFR Part 58.

3.4 CONTINGENCY MEASURES

3.4.1 Introduction

FCAA, §172(c)(9) defines contingency measures as such measures in a SIP that are to be implemented in the event that an area fails to make reasonable further progress, or fails to attain the NAAQS, by the applicable attainment date. FCAA, §172(c)(9), further requires contingency measures to become effective without further action. According to the EPA's 2014 SO₂ SIP guidance, contingency measures should consist of other available control measures that are not made enforceable as the control strategy as part of the SIP. In the 2014 SO₂ SIP guidance, the EPA acknowledged that SO₂ presents special considerations as a directly emitted pollutant. The EPA stated that control efficiencies are well understood for SO₂ control measures and are less uncertain than for other pollutants. Because the control strategy for an attainment demonstration SIP revision is based on the controls necessary through dispersion modeling to demonstrate the nonattainment area would attain the 2010 SO₂ NAAQS, it would be unlikely for the area to then fail to meet the NAAQS. As such, the EPA's 2014 SO₂ SIP guidance stated that a comprehensive program to identify sources causing a violation of the 2010 SO₂ NAAQS and undertake aggressive follow-up action for compliance and enforcement pending the adoption of a revised SIP is a valid contingency measure.

Required contingency measures, described in section 3.4.2: *Contingency Plan*, would be triggered upon the effective date of the EPA's final notice of failure to attain for the Navarro County 2010 SO₂ NAAQS nonattainment area. Under FCAA, §172(c)(1), the EPA has six months following the attainment date to determine whether the area attained the standard. The EPA makes the determination of attainment based on available monitoring data, air dispersion modeling, and a demonstration that an enforceable control strategy incorporated in the SIP has been implemented. If the EPA determines that the affected nonattainment area failed to attain the 2010 SO₂ NAAQS, the contingency measures will be triggered.

3.4.2 Contingency Plan

The TCEQ's comprehensive program to identify sources of violations of the 2010 SO₂ NAAQS is satisfied through the monitoring network discussed in Section 3.3 of this chapter, and follow-up for compliance and enforcement is satisfied through the TCEQ's enforcement programs authorized under the Texas Water Code (TWC) Chapter 7 and Texas Health and Safety Code (THSC) Chapter 382. See the Legal Authority (Section V-A) of this proposed SIP revision for more information on the TCEQ's enforcement authority. Texas has the authority to issue orders pursuant to §382.024 and §382.025 of the Texas Clean Air Act (TCAA or the Act), THSC Chapter 382, and the FCAA, 42 United States Code, §§7401 et seq., for the purpose of supporting attainment and maintenance of the 2010 SO₂ NAAQS. Texas has the authority to promulgate rules according to THSC, §382.017 and TWC, §5.103. State administrative procedures require that proposed rules are adopted no more than six months after notice of the proposal is published in the *Texas Register* (see Texas Government Code, §2001.027).

The only site in the Navarro County 2010 SO₂ NAAQS nonattainment area determined to have a significant impact on attainment of the 2010 SO₂ NAAQS is the Streetman Plant. The control strategy that will be made enforceable if the associated proposed SO₂ rulemaking is adopted, discussed in Section 3.2.4: *Enforceable Control Measures* of this chapter, is protective of and provides for attainment of the 2010 SO₂ NAAQS. The TCEQ's comprehensive program to identify sources of violations of the 2010 SO₂ NAAQS is satisfied through the monitoring network discussed in Section 3.3:

Monitoring Network of this proposed SIP revision, and follow-up for compliance and enforcement is satisfied through the TCEQ's enforcement programs authorized under the TWC Chapter 7 and THSC Chapter 382. See the Legal Authority (Section V-A) of this SIP narrative for the TCEQ's enforcement authority.

Upon the effective date of a determination by the EPA that the affected nonattainment area in Navarro County failed to attain the 2010 SO₂ NAAQS, pursuant to FCAA §179(c), 42 United States Code (U.S.C.), §7509(c), Arcosa would be notified by the TCEQ that a full system audit (FSA) is required of the source of SO₂ at the Streetman Plant subject to the associated proposed 30 TAC Chapter 112 rulemaking. Within 90 calendar days of the effective date of the EPA's determination of failure to attain the SO₂ NAAQS, Arcosa must submit the FSA, including recommended provisional SO₂ emission control strategies, to the TCEQ's Deputy Director of the Air Quality Division (AQD).

As part of the FSA, Arcosa will conduct a root cause analysis of the circumstances surrounding the cause of the determination of failure to attain. The root cause analysis will include:

- a review and consideration of, at a minimum, hourly mass emissions of SO₂ from the lightweight aggregate kiln, any associated control device, and associated stack parameters and sulfur content of the fuel(s) covered in the associated proposed 30 TAC Chapter 112, Subchapter G rulemaking;
- the meteorological conditions at the monitor, including the frequency distribution of wind direction temporally correlated with SO₂ readings greater than 75 parts per billion at the monitor for which the EPA's determination of failure to attain was made; and
- any exceptional event that may have occurred.

TCEQ AQD staff will analyze the FSA to verify and/or determine the cause of the failure to attain the 2010 SO₂ NAAQS. Any additional or adopted revised SO₂ control strategy required to achieve attainment would be submitted as a SIP revision to the EPA including any necessary changes to the adopted Chapter 112 rules.

3.5 SIP EMISSIONS YEAR FOR EMISSION CREDIT AND DISCRETE EMISSION CREDIT GENERATION

The Emissions Banking and Trading rules in 30 TAC §101.300 and §101.370 define SIP emissions for emission credit and discrete emission credit generation, respectively. There has been no previous attainment demonstration SIP revision applicable to Navarro County for the 2010 SO₂ NAAQS. Since this proposed attainment demonstration SIP revision does not use a projection-base year inventory for SO₂ emissions, this proposed SIP revision establishes 2017 as the SIP emissions year for all affected point sources in the nonattainment area, under §101.300(30)(E) and §101.370(31)(E).

3.6 ADDITIONAL FEDERAL CLEAN AIR ACT REQUIREMENTS

3.6.1 Conformity Requirements

Section 176(c) of the FCAA establishes that no federal institution may support or approve an action in a NAAQS nonattainment or maintenance area that does not conform to the approved SIP. According to FCAA, §176(c)(1)(B)(i-iii), federal actions may not "cause or contribute to any new violation of any standard in any area; increase

the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.” Requirements for complying with FCAA, §176(c) and conforming to the SIP fall under two categories, general conformity requirements (40 CFR Part 93, Subpart B) and transportation conformity requirements (40 CFR Part 93, Subpart A).

3.6.1.1 General Conformity

General conformity regulations apply in all NAAQS nonattainment and maintenance areas (ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), SO₂, and lead) for all federal actions except those related to transportation plans, programs, and projects developed, funded, or approved under Title 23 United States Code or the Federal Transit Act, namely transportation-related actions by the Federal Highway Administration or the Federal Transit Administration. Federal actions in the Navarro County 2010 SO₂ NAAQS nonattainment area became subject to general conformity requirements April 30, 2022, one year after the effective date of designation as nonattainment. Federal actions with SO₂ emissions that are expected to meet or exceed 100 tons per year (tpy) will be required to demonstrate general conformity according to the criteria and procedures established in 40 CFR Part 93, Subpart B. In consultation with federal agencies that are required to approve general conformity determinations for federal actions in the Navarro County 2010 SO₂ NAAQS nonattainment area, the TCEQ will ensure that those actions conform to the SIP according to the criteria established in 40 CFR §93.158.

3.6.1.2 Transportation Conformity

Federal transportation conformity regulations are only applicable for the transportation-related NAAQS: ozone, CO, NO₂, PM₁₀ and PM_{2.5}, and certain precursor pollutants in applicable NAAQS nonattainment and maintenance areas (40 CFR §93.102(b)(1)). SO₂ is not considered a transportation-related NAAQS, and the Navarro County 2010 SO₂ NAAQS nonattainment area is not subject to transportation conformity requirements.

Title 40 CFR §93.102(b)(2)(v) stipulates that transportation-related emissions of SO₂ in certain PM_{2.5} nonattainment and maintenance areas may be considered significant enough to subject the areas to transportation conformity requirements for SO₂ as a precursor pollutant. The Navarro County 2010 SO₂ NAAQS nonattainment area has never been designated nonattainment for another NAAQS, including PM_{2.5}, so only the SO₂ NAAQS is applicable. Based on the EPA’s transportation conformity regulations, the Navarro 2010 SO₂ NAAQS nonattainment area has no transportation conformity obligations; therefore, this proposed SIP revision does not include a motor vehicle emissions budget, and 30 TAC §114.270 is not applicable.

3.6.2 Nonattainment New Source Review Certification Statement

SO₂ nonattainment area SIP revisions must include provisions to require permits for the construction and operation of new or modified stationary sources. Major stationary sources in SO₂ nonattainment areas are those sources emitting at least 100 tpy of SO₂. An NSR permitting program for nonattainment areas is required by FCAA, §172(c)(5) and §173, and further defined in 40 CFR 51, Subpart I (Review of New Sources and Modifications). Under these requirements, new major sources or major modifications at existing sources in an SO₂ nonattainment area must comply with the lowest achievable emissions rate and obtain sufficient emissions offsets. Nonattainment NSR

permits for SO₂ authorize construction of new major sources or major modifications of existing sources of SO₂ in an area that is designated nonattainment for the SO₂ NAAQS. The NSR offset ratio for SO₂ nonattainment areas is 1.00:1.

In response to changes made by the Texas Air Control Board (a predecessor agency to the TCEQ) to address requirements of the federal Clean Air Act Amendments of 1990 as well as other changes, the EPA published its approval of Texas' nonattainment NSR regulation for SO₂ on September 27, 1995, effective November 27, 1995 (60 FR 49781). The TCEQ has determined that because the Texas SIP already includes 30 TAC §116.12 (Nonattainment and Prevention of Significant Deterioration Review Definitions), most recently approved by the EPA as published on November 10, 2014 (79 FR 66626), and 30 TAC §116.151 (New Major Source or Major Modification in Nonattainment Area Other Than Ozone), most recently approved by the EPA as published on October 25, 2012 (77 FR 65119), the nonattainment NSR SIP requirements are met for Texas for the 2010 SO₂ NAAQS for areas including the Navarro County 2010 SO₂ NAAQS nonattainment area. Further, the TCEQ already certified that Texas has EPA-approved rules that cover nonattainment NSR requirements with the timely-submitted 2010 SO₂ NAAQS Infrastructure and Transport SIP Revision.

CHAPTER 4: ATTAINMENT DEMONSTRATION MODELING

4.1 INTRODUCTION

This chapter describes the air quality dispersion modeling conducted in support of the proposed Navarro County Attainment Demonstration State Implementation Plan (SIP) Revision for the 2010 Sulfur Dioxide (SO₂) National Ambient Air Quality Standard (NAAQS). The United States Environmental Protection Agency's (EPA) *Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions* (EPA, 2014; SO₂ SIP guidance) requires air quality dispersion modeling to demonstrate attainment of the 2010 SO₂ NAAQS of 75 parts per billion (ppb) throughout the nonattainment area.

The modeling demonstration includes recommended and required elements for air quality dispersion modeling for SO₂ attainment demonstration SIP revisions as provided in 40 Code of Federal Regulations (CFR) Part 51 Appendix W (EPA, 2017) and the 2014 SO₂ SIP guidance.

This chapter summarizes the attainment demonstration modeling and presents results demonstrating that the control measures described in Chapter 3: *Control Strategies and Required Elements* will be effective in achieving attainment of the 2010 SO₂ NAAQS. A detailed description of the various modeling elements can be found in Appendix J: *Modeling Technical Support Document (TSD)*.

4.2 SOURCES OVERVIEW

The Navarro County 2010 SO₂ NAAQS nonattainment area includes a portion of Navarro County as indicated by the red line in Figure 4-1: *Overview of the Navarro County Nonattainment Area*. The Streetman Plant, owned by Arcosa LWS, LLC (Arcosa), is the only significant source of SO₂ emissions within the Navarro County 2010 SO₂ NAAQS nonattainment area (property outlined with a blue line in Figure 4-1). A Data Requirements Rule monitor, the Richland Southeast 1220 Road monitor or Continuous Ambient Monitoring Station 1081 (C1081), was sited near the Streetman Plant in November 2016 to monitor SO₂ concentrations near the site (shown as a green triangle in Figure 4-1). C1081 is located adjacent to a public county road, Southeast 1220 Road, which intersects the Streetman Plant property. The National Weather Service (NWS) monitor that has been used for surface meteorological data, the Corsicana Campbell Field station at the Corsicana Municipal Airport, is marked on Figure 4-1 as a purple plus-sign.

Besides the Streetman Plant, Guardian Industries (Guardian) is the only other site with SO₂ emissions greater than 100 tons per year within 50 kilometers (km) of C1081. Guardian is located approximately 18 km north-northwest of the Streetman Plant and approximately 7 km north of the nonattainment area. Due to Guardian's distance from the Streetman Plant and its highly localized concentration gradient, as demonstrated in the Texas Commission on Environmental Quality's (TCEQ) SO₂ nonattainment area designation modeling (TCEQ, 2020), Guardian is not expected to significantly impact concentrations within the Navarro County 2010 SO₂ NAAQS nonattainment area. Therefore, Guardian was accounted for in modeling in the background concentration and was not explicitly modeled for this demonstration (see Appendix J, Section 4.1: *Guardian Industries* for more details).

Impacts of other sources of SO₂ affecting the Navarro County 2010 SO₂ NAAQS nonattainment area that are not explicitly modeled, such as emissions from mobile

sources or area sources outside of a specific site, are represented in the model as a background concentration. A representative background concentration of 6 ppb was used based on data from the Midlothian Old Fort Worth monitor (C52) in Ellis County, Texas (see Appendix J, Section 4.2: *Background Concentration* for details).

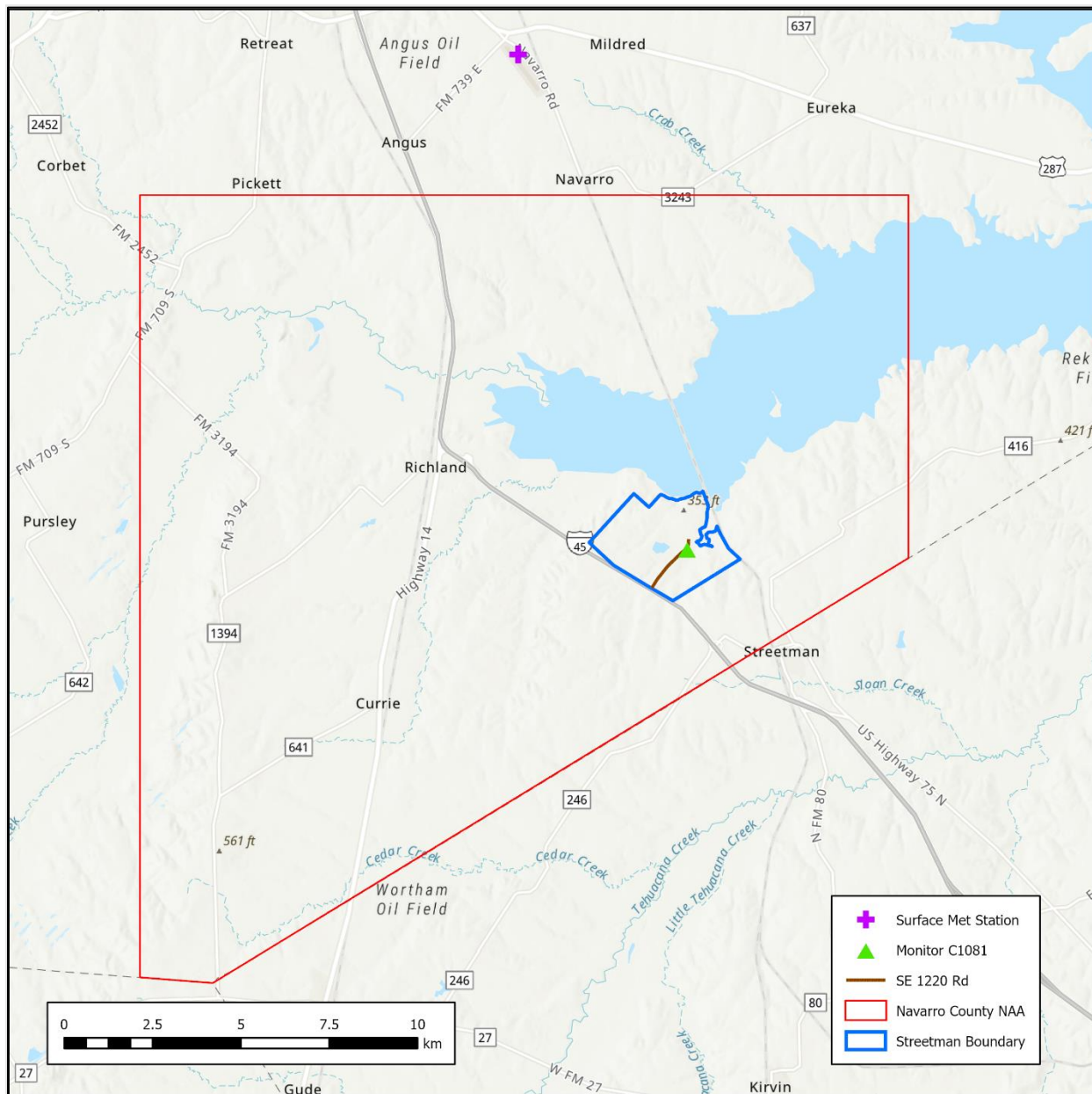


Figure 4-1: Overview of the Navarro County Nonattainment Area

4.3 STREETMAN PLANT SITE

A map of the Streetman Plant site is shown in Figure 4-2: *Streetman Plant Site Overview*, with the property boundary outlined in blue and buildings outlined in red. There is a single emissions source of SO₂ at the Streetman Plant: a kiln stack for a lightweight aggregate kiln, Emission Point Number (EPN) E3-1, indicated in Figure 4-1

as a blue pin marker. Section 4.5.1: *Source Parameters and Modeling Scenarios* provides more details concerning EPN E3-1.

Also shown in Figure 4-2 is the nonambient air boundary, marked with an orange dashed line, which denotes the section of the Streetman Plant property that the TCEQ considered as nonambient for this proposed attainment demonstration SIP revision. Per the 2014 SO₂ SIP guidance, modeling for SO₂ attainment demonstrations must evaluate SO₂ concentrations across all areas within the nonattainment area “that are considered ambient air (i.e., where the public generally has access).” The EPA’s ambient air policy allows for the “atmosphere over land owned or controlled by the stationary source” to be excluded from ambient air given that measures are in place to restrict access to the land from the general public (EPA, 2019). Due to agricultural leasing on portions of the Streetman Plant property, only areas that are not leased and can be made inaccessible to the public were considered nonambient for this demonstration. Arcosa provided the TCEQ and the EPA’s Region 6 office with documentation of measures to restrict public access to the marked area that are either currently in place or will be put in place, including fencing, guarded gates, signage, and security patrols. The sections of Arcosa’s property that are not leased and have documented access restrictions were not considered ambient air for this proposed attainment demonstration SIP revision.

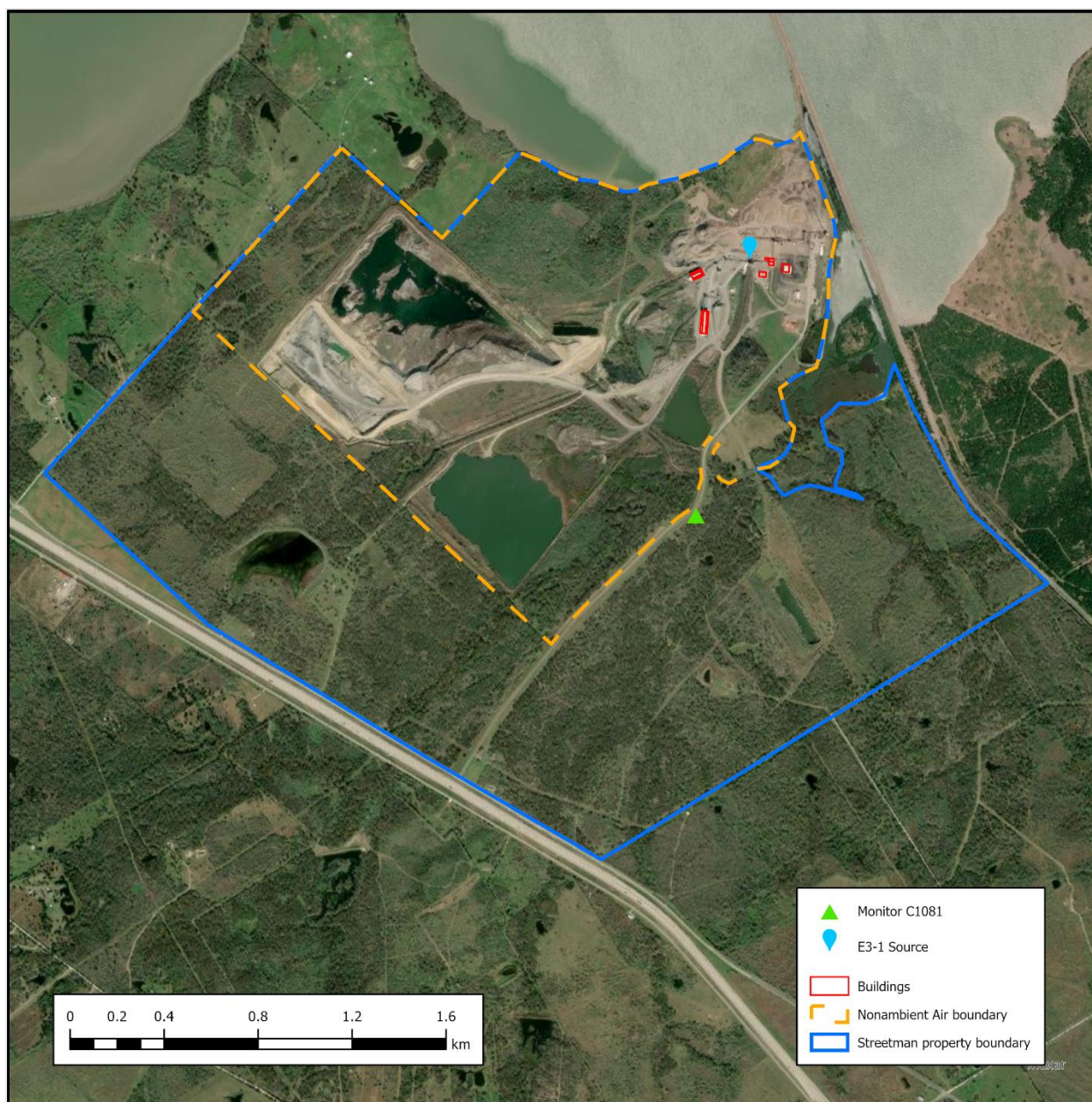


Figure 4-2: Streetman Plant Site Overview

4.4 SUMMARY OF ATTAINMENT DEMONSTRATION MODELING

As recommended in the 2014 SO₂ SIP guidance and 40 CFR Part 51 Appendix W, the American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD) version 21112 was used for this demonstration along with the associated suite of preprocessors. Software versions and settings used in the preprocessors, are included in Appendix J, Section 7: *Reference Tables for Modeling Information*. Modeling details relating to the domain, receptor grid, meteorological inputs, background concentration, and building downwash were shared with the EPA's Region 6 office and finalized after extensive consultation.

Given emissions and meteorological inputs, AERMOD predicts pollutant concentrations at specific physical locations determined by the user, known as receptors. Per the 2014 SO₂ SIP guidance, receptors have been placed throughout the Navarro County 2010 SO₂ NAAQS nonattainment area to ensure that the modeled scenarios demonstrate attainment of the NAAQS for all areas of ambient air within the nonattainment area. The domain for the proposed Navarro County Attainment Demonstration SIP Revision for the 2010 SO₂ NAAQS modeling consists of three nested receptor grids centered on the Streetman Plant's EPN E3-1 to cover a 28.0 km by 30.5 km area, shown in Figure 4-3: *Modeling Domain and Receptor Grid*. The three grids decrease in resolution with increased distance away from the Streetman Plant to sufficiently capture SO₂ concentration gradients from the source. Receptors have been removed from the portion of the Streetman Plant property considered nonambient air (as depicted by the orange, dashed line in Figure 4-2) and placed along the nonambient air boundary, as shown in Figure 4-4: *Innermost Receptor Grid*. Receptor elevations were derived from AERMOD's terrain preprocessor, AERMAP. Appendix J, Section 5: *Modeling Domain* provides more detail on the modeling domain.

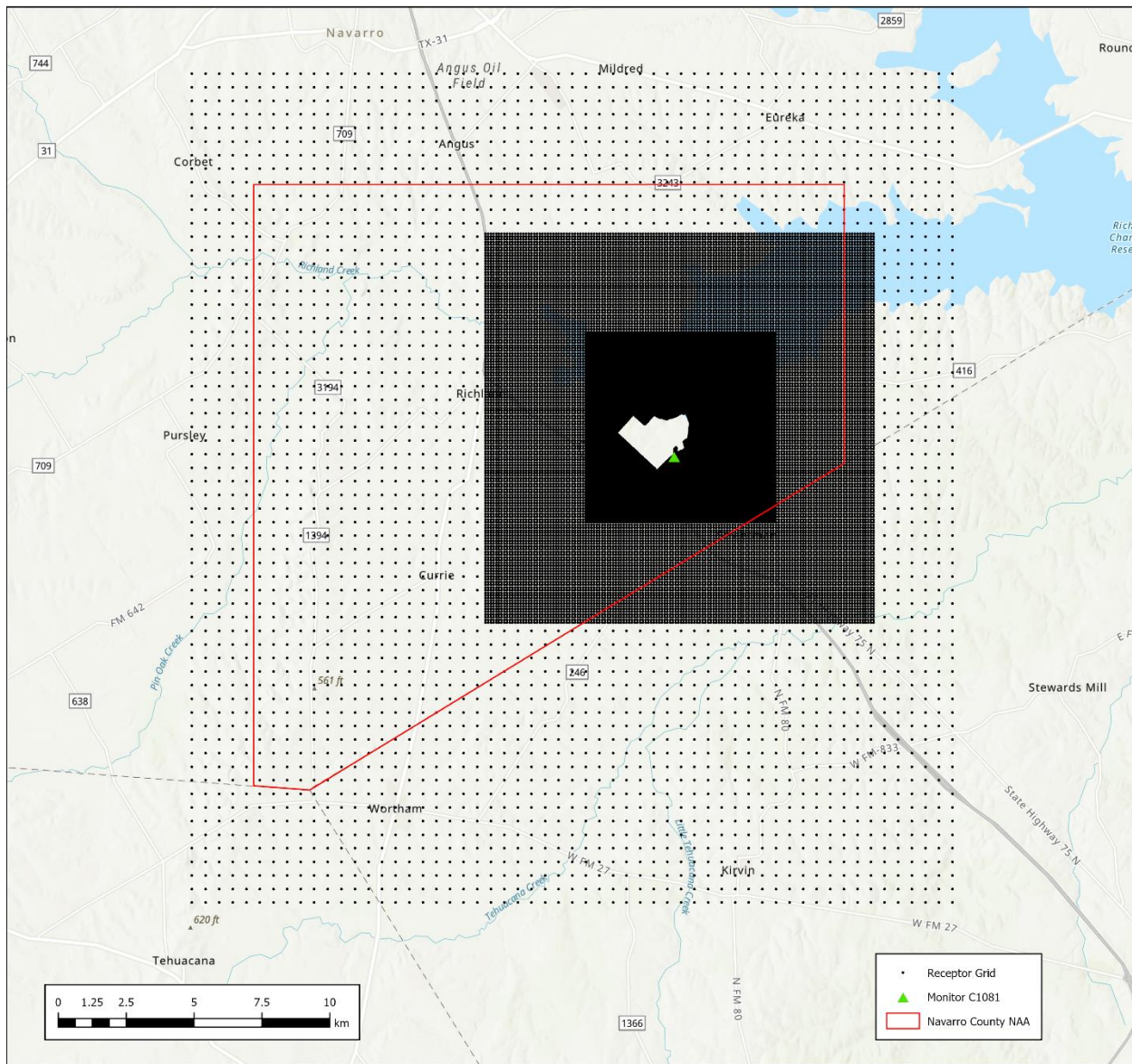


Figure 4-3: Modeling Domain and Receptor Grid



Figure 4-4: Innermost Receptor Grid

Meteorological inputs for AERMOD have been created using the AERMET, AERMINUTE, and AERSURFACE preprocessors. Five years of meteorological data from 2015, 2016, 2017, 2019, and 2020 were processed, following the recommendations in 40 CFR Part 51 Appendix W §8.4, to capture meteorological variability. Data from 2018 were not used because the fourth quarter of the year did not meet the EPA's data completeness requirements for regulatory dispersion modeling (EPA, 2000). Since the 2021 data were not available at the time modeling was conducted, data from 2015 were used instead of 2018. The decision to use data from 2015 was made in consultation with the EPA's Region 6 office. Surface data were taken from the NWS station at the Corsicana Municipal Airport, and upper air data came from the NWS station in Shreveport,

Louisiana. Sub-hourly one-minute wind data from the surface station were processed with AERMINUTE using a threshold windspeed of 0.5 meters per second (m/s). AERSURFACE was used to supply surface characteristics to AERMET. Details on AERMET, AERMINUTE, and AERSURFACE settings and data are provided in Appendix J, Section 6: *Meteorology*.

Building downwash was calculated for the Streetman point source using AERMOD's downwash preprocessor, the Building Profile Input Program for PRIME (BPIPPRM). Detailed building information used for BPIPPRM can be found in Appendix J, Section 3.1: *Building Layout and Stack-Tip Downwash*.

4.5 MODELING SCENARIOS AND RESULTS

4.5.1 Source Parameters

As previously mentioned in Section 4.3: *Streetman Plant Facility*, the only point source of SO₂ emissions at the Streetman Plant is EPN E3-1. Table 4-1: *NSR Permit Number 5337 Requirements for EPN E3-1* lists the currently permitted stack parameters and SO₂ emission rate for EPN E3-1 from New Source Review (NSR) permit number 5337. Source location is in meters based on Universal Transverse Mercator (UTM) coordinates, elevation, height, and diameter are in meters (m), temperature is in degrees Fahrenheit (°F), velocity is in feet per second (ft/s), and the maximum allowable emission rate is in pound per hour (lb/hr). The listed location coordinates for EPN E3-1 were corrected from the location listed in NSR permit 5337 with input from Arcosa, and the elevation of EPN E3-1 was determined using AERMOD's terrain preprocessor, AERMAP.

Table 4-1: NSR Permit Number 5337 Requirements for EPN E3-1

EPN	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Height (m)	Diameter (m)	Temperature (°F)	Velocity (ft/s)	SO ₂ Emission Rate (lb/hr)
E3-1	750666	3533945	103.2	35.1	1.5	150.0	66	1,000.0

As discussed in Chapter 3, SO₂ emissions from EPN E3-1 need to be controlled from the currently permitted 1,000 lb/hr SO₂ limit to achieve attainment in the Navarro County 2010 SO₂ NAAQS nonattainment area. However, the required control efficiency to achieve attainment is dependent on the future stack parameters, as stack temperature, velocity, and height all influence dispersion characteristics. Depending on the control strategy or device implemented by Arcosa to control SO₂ emissions from the lightweight aggregate kiln, the controlled stack parameters may or may not be altered from the currently permitted values. For example, the addition of a scrubber could lead to a decrease in stack temperature, whereas lowering the sulfur content of the feed stock would not be expected to decrease stack temperature. To address the uncertainty surrounding the future stack parameters in the absence of a particular control device, the TCEQ has proposed an SO₂ emission limit with two tiers, tied to minimum limits on stack temperature and velocity. Under this strategy, during normal operations, the EPN E3-1 stack temperature can never fall below 125°F, and the stack velocity can never fall below 65 ft/s at any given time. The emission limit is 248 lb/hr SO₂. However, if both the stack temperature and exit velocity meet or exceed their currently permitted values (150°F and 66 ft/s respectively), then the applicable emission limit is increased to 283 lb/hr SO₂. The emission limits and associated minimum stack parameters for both enforceable scenarios are summarized in Table

4-2: *Enforceable Stack Parameters and Emission Limits*. The two emission limits were determined to be the critical emission values that demonstrate attainment in the Navarro County 2010 SO₂ NAAQS nonattainment area through modeling (see Section 4.5.3: *Modeling Results*).

Table 4-2: Enforceable Stack Parameters and Emission Limits for EPN E3-1

Control Scenario	Enforceable Minimum Temperature (°F)	Enforceable Minimum Velocity (ft/s)	Enforceable Maximum SO ₂ Emission Limit (lb/hr)
Lower Limit Tier	125	65	248
Higher Limit Tier	150	66	283

4.5.2 Modeling Scenarios

To demonstrate that the proposed control strategy will be protective of the NAAQS under future operating scenarios, guidance in 40 CFR Part 51 Appendix W §8.2.2(d) recommends that multiple operating conditions be considered in modeling.

Under the proposed control strategy, all normal operations of EPN E3-1 at any load will be subject to the tiered emissions and stack parameter limits. The highest ground-level concentrations of SO₂ are expected to occur when the stack temperature and velocity are minimized and the emissions of SO₂ are maximized (i.e., at the maximum allowable emission rate). Therefore, the TCEQ modeled three scenarios that assess the bounds of the tiered limits under normal operating conditions: two scenarios which correspond to the lower limit tier and higher limit tier extremes, and one scenario with the lower limit tier emission limit with the higher limit tier stack parameters. These modeling scenarios are listed in Table 4-3: *Modeling Scenario Descriptions*.

Besides normal operations, the TCEQ also considered the planned maintenance, startup, and shutdown (MSS) practices of the lightweight aggregate kiln to determine if additional modeling scenarios were needed to evaluate the potential for exceedances of the SO₂ NAAQS. Planned MSS activities of the lightweight aggregate kiln were authorized in an amendment to NSR permit number 5337 in 2012. As documented in the permit application, the kiln is fired exclusively with natural gas during startup until sufficient temperature is reached and the raw material feed can be introduced. The startup period ends when the raw material feed has been continuously fed for at least 30 minutes or when the kiln feed rate exceeds 60% of the kiln design limitation rate, which typically takes 12 to 24 hours. During shutdown of the kiln, raw material and fuel feed are discontinued, and subsequent combustion occurs only for a brief period following cessation of kiln feed to move the remaining material through the kiln. Shutdowns typically take approximately 24 hours. Maintenance of the kiln is performed when the kiln is not operating, so there are no emissions associated with maintenance activities. The permit application states that planned MSS activities occur roughly twice per year. Based on the SO₂ emission factor of natural gas, the twice-yearly frequency of planned MSS activities, and the 24-hour duration of planned MSS activities, the permit application represents the estimated potential to emit for SO₂ as less than 0.1 lb/hr SO₂ and less than 0.1 tons per year SO₂. Planned MSS activities are not expected to change in the future. Based on the current MSS practices and previously represented estimation of SO₂ emissions, MSS activities were not modeled as a separate scenario for this proposed attainment demonstration SIP revision.

The three modeling scenarios that were determined to be adequately representative to assess the boundaries of the tiered limits are listed in Table 4-3. All scenarios were run using the same meteorological inputs, domain, downwash, and background concentration.

Table 4-3: Modeling Scenario Descriptions

Scenario Number	Description
1	Lower limit stack parameters (125°F and 65 ft/s) with lower limit emission rate (248 lb/hr)
2	Higher limit stack parameters (150°F and 66 ft/s) with higher limit emission rate (283 lb/hr)
3	Higher limit stack parameters (150°F and 66 ft/s) with lower limit emission rate (248 lb/hr)

4.5.3 Modeling Results

In every model run at each receptor in the domain, the 99th percentile daily maximum one-hour SO₂ concentrations for each of the five modeled years were averaged to calculate a design value (DV). All three modeled scenarios resulted in a maximum DV less than or equal to 75 ppb (including the 6.0 ppb background concentration), ranging from 65.7 ppb to 74.1 ppb, demonstrating that the control measures are protective of the 2010 SO₂ NAAQS. The modeling results for all three scenarios are listed in Table 4-4: *Modeling Scenarios and Results*. The scenario with the highest maximum DV (74.1 ppb), or the controlling scenario, was scenario 2 with the higher limit stack parameters and higher emission limit. The receptor with the maximum DV is on the nonambient air boundary line bordering the adjacent reservoir. The concentration results of this scenario are plotted in Figure 4-5: *Controlling Scenario Results Throughout the Nonattainment Area* and Figure 4-6: *Controlling Scenario Results Near the Streetman Plant*.

Table 4-4: Modeling Scenarios and Results

Scenario Number	Temperature (°F)	Velocity (ft/s)	Emission Rate (lb/hr)	Maximum DV (ppb)
1	125	65	248	74.0
2	150	66	283	74.1
3	150	66	248	65.7

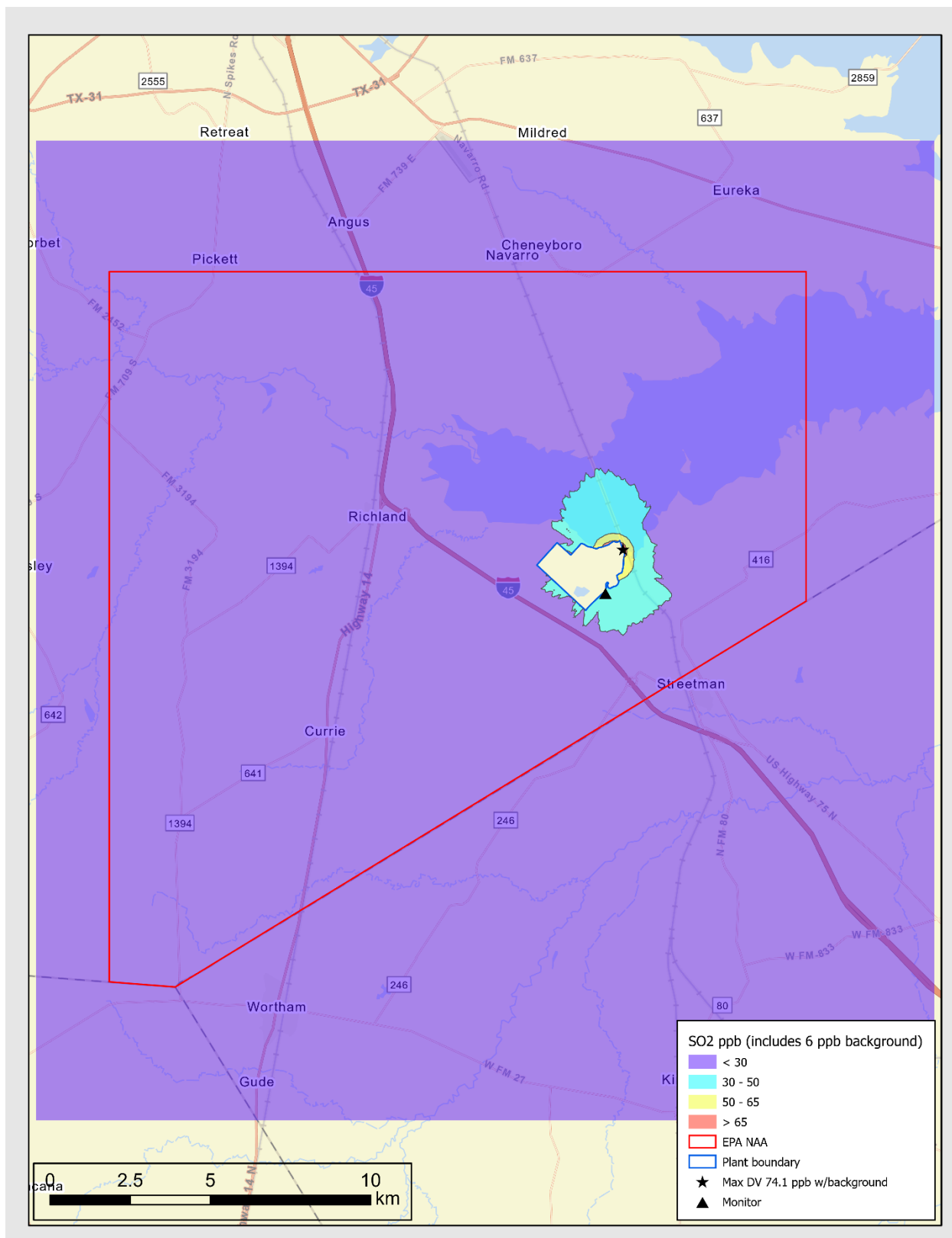


Figure 4-5: Controlling Scenario Results Throughout the Nonattainment Area

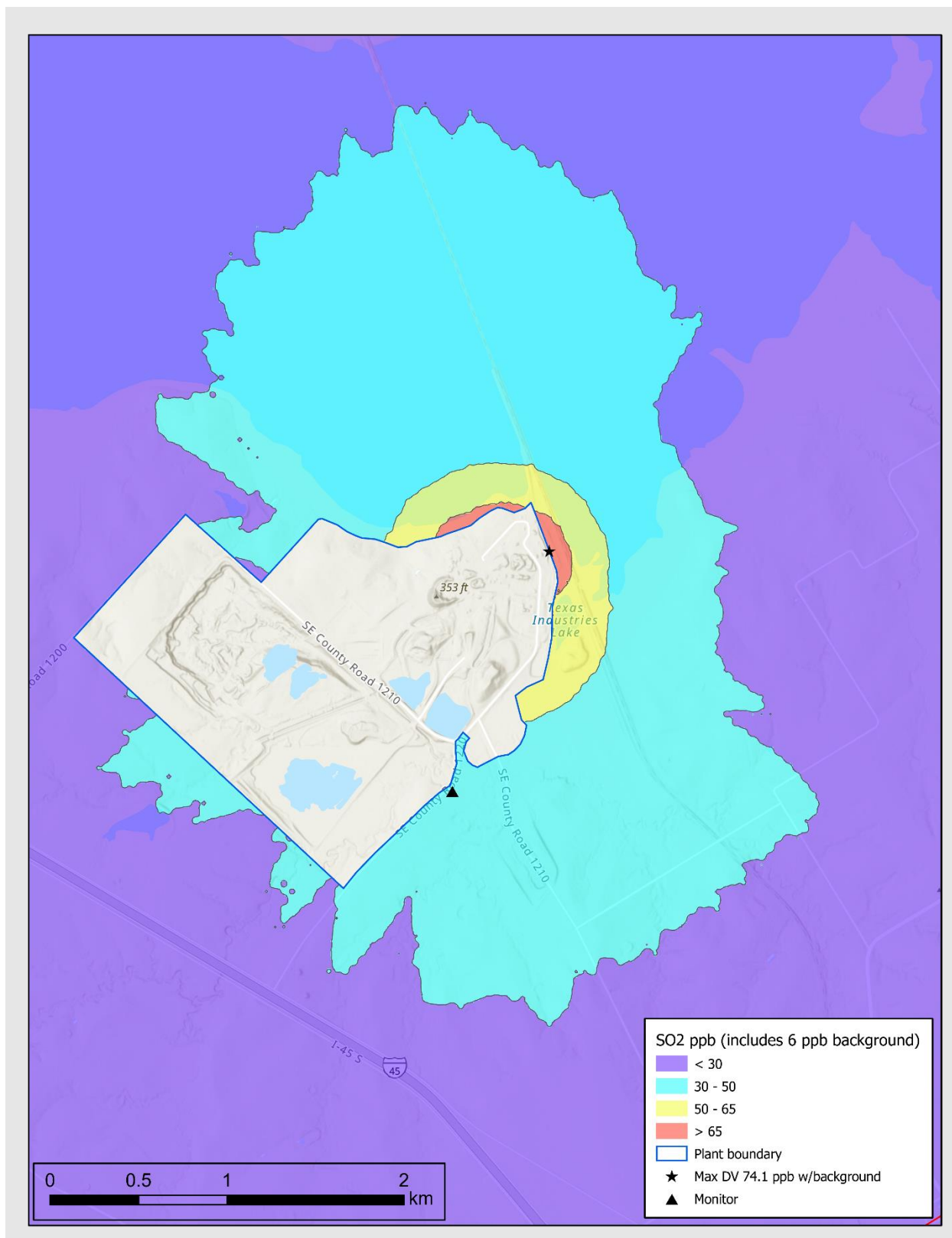


Figure 4-6: Controlling Scenario Results Near the Streetman Plant

4.6 CONCLUSION

The TCEQ conducted air quality dispersion modeling following the EPA's 2014 SO₂ SIP guidance and 40 CFR Part 51 Appendix W for the proposed Navarro County Attainment Demonstration SIP Revision for the 2010 SO₂ NAAQS. The TCEQ modeled the control measures for the Streetman Plant described in Chapter 3. The TCEQ considered possible operating scenarios of the tiered emission limit structure and modeled attainment in each case, thereby ensuring that the proposed controls will remain protective of the NAAQS. Based on the TCEQ's modeling, it is expected that the proposed controls for the Streetman Plant will result in attainment in the Navarro County 2010 SO₂ NAAQS nonattainment area.

4.7 REFERENCES

Environmental Protection Agency (EPA), 2000. [Meteorological Monitoring Guidance for Regulatory Modeling Applications](https://www.epa.gov/sites/default/files/2020-10/documents/mmgrma_0.pdf), accessed at https://www.epa.gov/sites/default/files/2020-10/documents/mmgrma_0.pdf.

EPA, 2014. [Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions](https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf), accessed at https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf, April 23.

EPA, 2017. [40 Code of Federal Regulations \(CFR\) Part 51 Appendix W: Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter](https://www.epa.gov/sites/production/files/2020-09/documents/appw_17.pdf), 82 *Federal Register* 5182, accessed at https://www.epa.gov/sites/production/files/2020-09/documents/appw_17.pdf, January 17.

EPA, 2019. [Revised Policy on Exclusions from "Ambient Air." Andrew R. Wheeler](https://www.epa.gov/sites/production/files/2019-12/documents/ambient_air2019.pdf), accessed at https://www.epa.gov/sites/production/files/2019-12/documents/ambient_air2019.pdf, December 2.

TCEQ, 2020. [Response to the United States Environmental Protection Agency's Intended Round 4 Area Designations for the 2010 One-Hour Sulfur Dioxide Primary National Ambient Air Quality Standard for Texas](https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2020_SO2_DocumentsLetters/GovAbbott_120Ltr_Response.pdf), accessed at [https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2020_SO2 DocumentsLetters/GovAbbott_120Ltr_Response.pdf](https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2020_SO2_DocumentsLetters/GovAbbott_120Ltr_Response.pdf), October 16.

CHAPTER 5: REASONABLE FURTHER PROGRESS

5.1 INTRODUCTION

Federal Clean Air Act (FCAA), §171(1) defines the reasonable further progress (RFP) state implementation plan (SIP) requirement as “such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.” The United States Environmental Protection Agency’s (EPA) *Guidance for 1-Hour SO₂ Nonattainment Area SIP Submissions* (2014 SO₂ SIP guidance) indicates that this definition is most appropriate for pollutants emitted by numerous and diverse sources where inventory-wide reductions are necessary to attain a standard, but that this definition of RFP is “generally less pertinent to pollutants like SO₂ that usually have a limited number of sources affecting areas which are relatively well defined, and emissions controls for such sources result in swift and dramatic improvement in air quality.” Therefore, the 2014 SO₂ SIP guidance indicates that for sulfur dioxide (SO₂) nonattainment areas, RFP is best construed as “adherence to an ambitious compliance schedule.”

5.2 RFP DEMONSTRATION

On March 26, 2021, the EPA published a designation for a portion of Navarro County as nonattainment for the 2010 SO₂ National Ambient Air Quality Standard (NAAQS), effective April 30, 2021 (86 FR 16055). Consistent with the EPA’s 2014 SO₂ SIP guidance document, the Navarro County 2010 SO₂ NAAQS nonattainment area contains a single site with an emissions source with well-defined emissions, such that emissions controls for this source should result in “swift and dramatic improvement in air quality.” As detailed in Chapter 3: *Control Strategy and Required Elements* of this state implementation plan (SIP) revision, enforceable emission limitations would be implemented for the emissions source at this single site in this area, as detailed in Section 5.3: Compliance Schedule. This compliance schedule therefore fulfills the RFP requirement for the Navarro County 2010 SO₂ NAAQS nonattainment area.

5.3 COMPLIANCE SCHEDULE

The EPA’s 2014 SO₂ SIP guidance indicates that RFP for the 2010 one-hour SO₂ NAAQS requires only such reductions in emissions that are necessary to attain the NAAQS. Given the relationship between SO₂ emissions and air quality and the immediate effect of air quality improvements, RFP is best construed as “adherence to an ambitious compliance schedule” (74 FR 13547, April 16, 1992). The EPA maintains its interpretation that the source(s) of SO₂ emissions implement appropriate control measures as expeditiously as practicable to ensure attainment of the standard by the applicable attainment date.

The compliance deadline for Arcosa LWS, LLC to meet the applicable rule requirements in the associated proposed 30 Texas Administrative Code Chapter 112, Subchapter G rulemaking (Rule Project No. 2021-035-112-AI) is January 1, 2025. The attainment date for the Navarro County 2010 SO₂ NAAQS nonattainment area is April 30, 2026.

Appendices Available Upon Request

Mary Ann Cook
maryann.cook@tceq.texas.gov
512-239-6739