TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

for State Implementation Plan Revision Adoption

AGENDA REQUESTED: February 9, 2022

DATE OF REQUEST: January 21, 2022

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

CAPTION: Docket No. 2021-0510-SIP. Consideration of the adoption of a state implementation plan (SIP) revision to address the federal Clean Air Act (FCAA) requirements for the Rusk-Panola 2010 Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) nonattainment area. The SIP revision includes a comprehensive inventory of current SO_2 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 SO_2 NAAQS; a reasonable further progress demonstration; contingency measures; and certification that nonattainment New Source Review requirements are met for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area.

An associated Agreed Order with Luminant Generation Company LLC provides the enforceable control strategy for this attainment demonstration by documenting the commission's order, and the company's agreement, to comply with requirements identified for the Martin Lake Steam Electric Station, pursuant to the Texas Clean Air Act, the Texas Health & Safety Code, and the FCAA. (Mary Ann Cook, John Minter, Terry Salem) (Non-Rule Project No. 2020-057-SIP-NR)

Tonya Baer

Director

Donna F. Huff

Division Deputy Director

Jamie Zech

Agenda Coordinator

Copy to CCC Secretary? NO ☒ YES ☐

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** January 21, 2022

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

From: Tonya Baer, Director
Office of Air

Docket No.: 2021-0510-SIP

Subject: Commission Approval for Adoption of the Rusk-Panola Attainment Demonstration State Implementation Plan (SIP) Revision for the 2010 Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS)

Rusk-Panola 2010 SO_2 NAAQS Attainment Demonstration SIP Revision
SIP Project No. 2020-057-SIP-NR

Background and reason(s) for the SIP revision:
On June 22, 2010, the United States Environmental Protection Agency (EPA) revised the SO_2 NAAQS to add the 75 parts per billion (ppb) one-hour primary standard, effective August 23, 2010 (75 *Federal Register* (FR) 35520). On December 13, 2016, the EPA published 2010 SO_2 NAAQS designations for several areas, including a nonattainment designation for portions of Rusk and Panola Counties (Rusk-Panola), effective January 12, 2017 (81 FR 89870). The Martin Lake Steam Electric Station owned and operated by Luminant Generation Company LLC (Luminant or the company) is the only major SO_2 emissions source in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area.

A SIP revision for the Rusk-Panola nonattainment area was due to the EPA by July 13, 2018 to demonstrate that the area will attain the 2010 SO_2 NAAQS by the January 12, 2022 attainment date. The Texas Commission on Environmental Quality (TCEQ or the commission) did not submit the SIP revision due to ongoing litigation and because the EPA intended to propose an error correction under federal Clean Air Act (FCAA), §110(k)(6) to revise the Rusk-Panola nonattainment area designation to unclassifiable, which would have eliminated the nonattainment area SIP requirements. The EPA proposed the error correction on August 22, 2019 (84 FR 43757). However, on August 10, 2020, the EPA published a final notice of Texas' failure to submit required SIP elements for the Rusk-Panola and other 2010 SO_2 NAAQS nonattainment areas, effective September 9, 2020 (85 FR 48111). Additionally, on June 29, 2021, the EPA published a notice withdrawing the error correction proposal (86 FR 34187).

The EPA's notice of failure to submit triggered an EPA obligation under FCAA, §110(c) to promulgate a federal implementation plan (FIP) anytime within two years of the finding of failure to submit if the state fails to meet the SIP planning requirements. If the EPA does not make a completeness determination by March 9, 2022 (18 months after the finding of failure to submit) of a Texas SIP submittal to address the deficiencies, then pursuant to FCAA, §179(a) and (b) and 40 Code of Federal Regulations (CFR) §52.31, the emissions offset sanction identified in FCAA, §179(b)(2) will apply for the affected nonattainment areas. If the EPA does not determine that the state's submittal is complete within six months after imposing the offset sanction, then the highway funding sanction will apply. If Texas submits the required SIP submittal and the EPA approves the submittal by September 9, 2022 (two years after the finding of failure to submit), then the EPA will not be required to promulgate a FIP.

Scope of the SIP revision:
The SIP revision, together with an associated Agreed Order with the company, documents the commission's order and the company's agreement to comply with the emission reduction requirements identified for the Martin Lake Steam Electric Station. The enforceable control

strategy for this attainment demonstration will fulfill Texas' outstanding FCAA SIP planning requirements for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area.

A.) Summary of what the SIP revision will do:
This SIP revision and associated Agreed Order together support attainment and maintenance of the 2010 SO_2 NAAQS by documenting requirements to ensure that the company will comply with the 2010 SO_2 NAAQS.

Adoption by the commission and approval by the EPA of both this SIP revision and associated Agreed Order will provide the nonattainment plan required to demonstrate attainment and maintenance of the 2010 SO_2 NAAQS in the Rusk-Panola nonattainment area as expeditiously as practicable.

B.) Scope required by federal regulations or state statutes:
In accordance with FCAA, §172 general requirements and FCAA, §191 and §192 specific requirements, this attainment demonstration SIP revision includes a comprehensive inventory of current SO_2 emissions; evaluation and provision for implementing all reasonably available control measures (RACM) and reasonably available control technology (RACT); air quality dispersion modeling to demonstrate attainment of the 2010 SO_2 NAAQS; a reasonable further progress (RFP) demonstration; contingency measures; and the state's certification that current regulations provide the means to satisfy nonattainment New Source Review (NSR) requirements for the Rusk-Panola 2010 SO_2 nonattainment area. The modeling demonstration included in this SIP revision uses the American Meteorological Society/EPA Regulatory Model – Highly Buoyant Plume (AERMOD-HBP) alternative to characterize air quality for the purpose of demonstrating attainment for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. On May 24, 2021, the TCEQ submitted a request to the EPA to approve the alternative model for use in this SIP revision, as provided by 40 CFR Part 51, Appendix W, Section 3.2.2(b)(2).

The associated Agreed Order with Luminant Generation Company LLC (Agreed Order 2021-0508-MIS, Non-Rule Project No. 2020-013-OTH-NR) will document the commission's order, and the company's agreement, to comply with the emission reduction requirements identified. The Agreed Order, if signed and adopted, will provide the enforceable control strategy for the Rusk-Panola attainment demonstration for the 2010 SO_2 NAAQS. This SIP revision and the associated Agreed Order will fulfill Texas' outstanding FCAA SIP planning requirements for the Rusk-Panola nonattainment area for the 2010 SO_2 NAAQS.

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

Statutory authority:
Sections 382.011 and 382.012 of the Texas Clean Air Act (TCAA) provide authority for the commission 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; and §§382.023, and 382.024 of the TCAA provide the commission with authority to issue orders.

The authority to propose and adopt the 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 Texas Health and Safety Code, Chapter 382.

Re: Docket No. 2021-0510-SIP

Effect on the:

A.) Regulated community:
SO_2 emission reductions at the Martin Lake Steam Electric Station are necessary for the Rusk-Panola nonattainment area to attain the 2010 SO_2 NAAQS. The control strategy for demonstrating attainment of the 2010 SO_2 NAAQS in the Rusk-Panola nonattainment area will be made enforceable with commission adoption and EPA approval of the associated Agreed Order. The company will be required to comply with all requirements and stipulations of the Agreed Order.

B.) Public:
The public in the nonattainment area and possibly the surrounding areas will benefit from improved air quality due to lower SO_2 emission levels resulting from implementation of the control strategy in this SIP revision.

C.) Agency programs:
No impact on agency programs is anticipated from this SIP revision.

Stakeholder meetings:
The proposed SIP revision and associated Agreed Order went through a public review and comment period, including one public hearing.

Public comment:
The commission held a virtual public hearing for this SIP revision on October 12, 2021 at 2:00 p.m. Notice of the public hearing was published in the *Texas Register* as well as the *Dallas Morning News* and *Longview News-Journal* newspapers.

The public comment period opened on September 10, 2021 and closed on October 13, 2021. During the comment period, TCEQ staff received comments from the EPA, Luminant Generation Company LLC and Luminant Mining Company LLC, National Parks Conservation Association, the Sierra Club, Southern Sector Rising, and 292 individuals. Adverse comments primarily concern health effects, the inadequacy of the SIP revision's technical analysis and control strategy, and the SIP revision's use of an unapproved alternate model. A summary of the comments and TCEQ responses are included as a part of this SIP revision in the Response to Comments.

Significant changes from proposal:
The following significant changes were made in response to comments made by the EPA:

- Sections 3.2.1: *RACT and RACM Analysis* and 3.2.4: *Enforceable Control Measures* were revised to add a supplemental pound per million British thermal units (lb/MMBtu) emissions limit and update the proposed pound per hour (lb/hr) emissions limit;
- Section 3.2.3: *Variability Analysis* was revised to incorporate data from a surrogate source, NRG Limestone, to derive discount factors for the two emissions limits; and
- Section 4.6: *Modeling Scenarios* and Appendix K were updated to include TCEQ's identification of modeling scenarios and the resulting design values which enhance the protectiveness of this SIP revision under conditions described in the EPA's comment.

Potential controversial concerns and legislative interest:
The TCEQ determined that the AERMOD-HBP modeling platform is applicable and appropriate for use to model the intended control strategy in the attainment demonstration SIP revision. However, the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) is the approved model for SO_2 applications. The EPA has not yet approved the use of AERMOD-HBP as an alternative model in this SIP revision. If the EPA does not approve of the use of the alternative model, the SIP revision may not be approvable by the EPA.

Re: Docket No. 2021-0510-SIP

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

What are the consequences if this SIP revision does not go forward? Are there alternatives to SIP revision?
If the state does not address the outstanding SIP planning requirements set out in the EPA's failure-to-submit notice and does not submit an approvable SIP revision to the EPA by March 9, 2022, or the EPA does not approve the submittal by September 9, 2022, the EPA will be required to promulgate a FIP and impose sanctions. The EPA's imposition of sanctions and implementation of a FIP would remain in place until the state submits and the EPA approves a replacement SIP revision for the area.

Key points in the adoption rulemaking schedule:
Anticipated Adoption Date: February 9, 2022

Agency contacts:
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Terry Salem, Staff Attorney, Environmental Law Division, Co-Project Manager for associated Agreed Order (512) 239-0469
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cc: Chief Clerk, 2 copies
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REVISIONS TO THE STATE OF TEXAS AIR QUALITY IMPLEMENTATION PLAN FOR THE CONTROL OF SULFUR DIOXIDE AIR POLLUTION

RUSK-PANOLA 2010 SULFUR DIOXIDE STANDARD (SO_2) NONATTAINMENT AREA

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

RUSK-PANOLA ATTAINMENT DEMONSTRATION STATE IMPLEMENTATION PLAN REVISION FOR THE 2010 SO_2 NATIONAL AMBIENT AIR QUALITY STANDARD

2020-057-SIP-NR
SFR-122/2020-057-SIP-NR

Adoption
February 9, 2022

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EXECUTIVE SUMMARY

On June 22, 2010, the United States Environmental Protection Agency (EPA) revised the sulfur dioxide (SO_2) 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). On December 13, 2016, the EPA published 2010 SO_2 NAAQS designations for several areas, including a nonattainment designation for portions of Rusk and Panola Counties (Rusk-Panola), effective January 12, 2017 (81 FR 89870). The Martin Lake Steam Electric Station (Martin Lake), owned and operated by Luminant Generation Company LLC (Luminant or the company), is the only major SO_2 emissions source in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area.

A state implementation plan (SIP) revision for the Rusk-Panola nonattainment area was due to the EPA by July 13, 2018 to demonstrate that the area will attain the 2010 SO_2 NAAQS by its January 12, 2022 attainment date. The Texas Commission on Environmental Quality (TCEQ or the commission) did not submit the SIP revision due to ongoing litigation and because the EPA intended to propose an error correction under federal Clean Air Act (FCAA), §110(k)(6) to revise the Rusk-Panola nonattainment area designation to unclassifiable, which would have eliminated the nonattainment area SIP requirements. The EPA proposed the error correction on August 22, 2019 (84 FR 43757). However, on August 10, 2020, the EPA published a final notice of Texas' failure to submit required SIP elements for the Rusk-Panola and other 2010 SO_2 NAAQS nonattainment areas, effective September 9, 2020 (85 FR 48111). Additionally, on June 29, 2021, the EPA published a notice withdrawing the proposed error correction (86 FR 34187).

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In accordance with FCAA, §172 general requirements and FCAA, §191 and §192 specific requirements, this attainment demonstration SIP revision includes a comprehensive inventory of current SO_2 emissions; evaluation and provision for implementing all reasonably available control measures (RACM) and reasonably available control technology (RACT); air quality dispersion modeling to demonstrate attainment of the 2010 SO_2 NAAQS; a reasonable further progress (RFP) demonstration; contingency measures; and the state's certification that current regulations provide the means to satisfy nonattainment New Source Review requirements for the Rusk-Panola 2010 SO_2 nonattainment area. The modeling demonstration included in this SIP revision uses the American Meteorological Society/EPA Regulatory Model – Highly Buoyant Plume (AERMOD-HBP) alternative to characterize air quality for the purpose of

demonstrating attainment for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. On May 24, 2021, the TCEQ submitted a request to the EPA to approve the alternative model for use in this SIP revision, as provided by 40 CFR Part 51, Appendix W, Section 3.2.2(b)(2).

This SIP revision incorporates an associated Agreed Order with the company that documents the commission's order, and the company's agreement, to comply with the emission reduction requirements identified and provide an enforceable control strategy for Martin Lake (Agreed Order 2021-0508-MIS, Non-Rule Project No. 2020-013-OTH-NR). This SIP revision and the associated Agreed Order fulfill Texas' outstanding FCAA SIP planning requirements for the Rusk-Panola nonattainment area for the 2010 SO_2 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

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 SO_2 State Implementation Plan (SIP) Revision (No change)
    2. Milam County SO_2 SIP Revision (No change)
    3. Rusk-Panola Attainment Demonstration SIP for the 2010 One-Hour SO_2 National Ambient Air Quality Standard (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)

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LIST OF ACRONYMS

AD	Attainment Demonstration
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
AERMOD-HBP	AERMOD-Highly Buoyant Plume
APU	auxiliary power unit
AQD	Air Quality Division
BPIPPRM	Building Profile Input Program for PRIME
CAMS	Continuous Ambient Air Monitoring Station
CEMS	continuous emissions monitoring system
CEV	critical emissions value
CFR	Code of Federal Regulations
CPM	Composite Performance Measure
CR	County Round
DV	design value
EF	emissions factor
EGF	electric generating facility
EGU	electric generating unit
EI	emissions inventory
EPA	United States Environmental Protection Agency
EPN	Emissions Point Number
ERG	Eastern Research Group
ESP	Electrostatic Precipitators
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FCAA	federal Clean Air Act
FGD	flue gas desulfurization
FIP	federal implementation plan
FMVCP	Federal Motor Vehicle Control Program
fps	feet per second
FR	*Federal Register*

FSA	full system audit
GSE	ground support equipment
H_2S	hydrogen sulfide
hr	hour
ID	Identifier
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
NWS	National Weather Station
ppb	parts per billion
RACM	reasonably available control measures
RACT	reasonably available control technology
RFP	reasonable further progress
RHC	Robust Highest Concentration
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)
TexN2.1	Texas NONROAD version 2.1
THSC	Texas Health and Safety Code
TNRCC	Texas Natural Resource Conservation Commission
tpy	tons per year

TSD	technical support document
TWC	Texas Water Code
TX	Texas
UTM	Universal Transverse Mercator

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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 webpage (http://www.tceq.texas.gov/airquality/sip) and on the Texas Commission on Environmental Quality's (TCEQ) website (http://www.tceq.texas.gov/).

1.2 HISTORY OF THE 2010 SULFUR DIOXIDE NATIONAL AMBIENT AIR QUALITY STANDARD IN RELATION TO THE RUSK AND PANOLA COUNTIES

On June 22, 2010, the United States Environmental Protection Agency (EPA) revised the sulfur dioxide (SO_2) National Ambient Air Quality Standards (NAAQS), adding the 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 unclassifiable designations for Rusk and Panola Counties. A revised recommendation submitted to the EPA on April 20, 2012 did not change the state's initial recommendation for the Rusk and Panola County designations.

On August 5, 2013, the EPA published final nonattainment area designations for areas that had monitored data indicating violations of the 2010 SO_2 NAAQS within the period from 2009 through 2011 (78 FR 47191). The EPA announced nonattainment designations for 29 areas in 16 states but was not prepared to issue designations for the remaining areas, including all of Texas. Following those initial designations, several entities sued the EPA for failing to complete all area designations within 3 years of promulgation of the revised SO_2 NAAQS, as required by the FCAA by the June 2013 deadline.

On March 2, 2015, to resolve outstanding litigation, the United States District Court for the Northern District of California approved and entered a consent decree setting deadlines for the EPA to complete three additional rounds of designations. By July 2, 2016 (for Round 2 designations), the EPA was required to designate areas with newly monitored violations as well as areas with large emissions sources not announced for retirement as of March 2015, those with 2012 SO_2 emissions either greater than 16,000 tons per year (tpy) or greater than 2,600 tpy with an average emission rate over 0.45 pounds per million British Thermal Units (lbs/MMBtu).

In a letter to the TCEQ dated March 20, 2015, the EPA identified 12 electric power plants with emissions meeting the court-ordered criteria for required designation by July 2016. The list included the Martin Lake Steam Electric Station (Martin Lake) in Rusk County. The EPA's letter provided an opportunity for Texas to submit updated recommendations and supporting information for the EPA to consider for area designations by September 18, 2015.

On August 21, 2015, the EPA published the Data Requirements Rule (DRR) for the 2010 SO_2 NAAQS (80 FR 51052). The DRR required states to identify sources with 2014 emissions greater than 2,000 tpy, and to inform the EPA of plans to characterize air quality at the identified sources, either through modeling or monitoring.

On September 18, 2015, Texas submitted revised recommendations in response to the EPA's March 2015 letter, recommending unclassifiable/attainment designations for areas of the state that did not have monitors at that time, Rusk and Panola Counties.

On January 15, 2016, in compliance with the DRR, Texas submitted to the EPA a list with final identification of 24 sources in the state with 2014 emissions greater than 2,000 tpy. This list included Martin Lake in Rusk County. The state submitted the DRR-required air quality characterization plans for all identified sources by the July 1, 2016 deadline. In its air quality characterization plans, the TCEQ indicated that monitoring would be used to characterize air quality for Martin Lake in Rusk County. However, the March 2015 consent decree designation deadline for areas where these facilities were located would not allow for sufficient time to collect monitoring data from source-oriented monitors in accordance with the DRR. The DRR required that all source-oriented monitors to be used to characterize air quality to inform designations were to be installed and operating by January 1, 2017, which further limited the state's ability to obtain sufficient qualified monitoring data before the EPA's designations needed to be finalized.

On February 11, 2016, the EPA issued a 120-day notice to Texas with proposed designations for areas surrounding the 12 sources identified in its March 2015 letter, being areas that the EPA was required to designate by July 2, 2016. The notice included intended nonattainment area designations with the portions of Rusk, Gregg, and Panola Counties in a single nonattainment area (the Rusk-Gregg-Panola nonattainment area). On April 19, 2016, Texas responded to the 120-day notice restating the position that Rusk, Gregg, and Panola Counties should each be designated unclassifiable/attainment. The letter specifically stated that the EPA's proposed nonattainment designation for Gregg County should be revised based on the TCEQ's Longview SO_2 monitor, which is located in Gregg County and had continuously monitored attainment of the 2010 SO_2 NAAQS. On July 12, 2016, the EPA published final Round 2 designations but delayed those for Rusk, Gregg, Panola, and four other counties (81 FR 45039).

On December 13, 2016, the EPA published the final nonattainment designation for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area (81 FR 89870).[1] An attainment demonstration SIP revision for the Rusk-Panola SO_2 nonattainment area was due to the EPA by July 13, 2018 to demonstrate attainment of the 2010 SO_2 NAAQS by January 12, 2022. Due to ongoing litigation challenging these designations as well as an EPA-proposed error correction that would have revised the designations if finalized (86 FR 34187, September 29, 2021), Texas did not submit the SIP elements required for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area to the EPA by the submittal deadline.

On August 10, 2020, in response to a notice of intent to sue by the Sierra Club, the EPA published a final action finding that Texas failed to submit the required nonattainment area SIP revisions for the 2010 SO_2 NAAQS (85 FR 48111). This action triggered an EPA obligation under federal Clean Air Act (FCAA), §110(c) to promulgate a federal implementation plan (FIP) anytime within two years of the finding of failure to submit

[1] On January 9, 2018, the EPA designated Gregg County as attainment/unclassifiable (83 FR 1098).

if the state fails to meet the SIP planning requirements. If the EPA does not make a completeness determination by March 9, 2022 (18 months after the finding of failure to submit) of a Texas SIP submittal to address the deficiencies, then pursuant to FCAA, §179(a) and (b) and 40 Code of Federal Regulations (CFR) §52.31, the emissions offset sanction identified in FCAA, §179(b)(2) will apply for the affected nonattainment areas. If the EPA does not determine that the state's submittals are complete within six months after imposing the offset sanction, then the highway funding sanction will apply. If Texas submits the required SIP submittals and the EPA approves those submittals by September 9, 2022 (two years after the finding of failure to submit), then the EPA will not be required to promulgate a FIP.

To avoid offset sanctions, Texas must submit required SIP revisions to the EPA by March 9, 2022. This SIP revision includes a comprehensive inventory of current SO_2 emissions; evaluation and provision for implementing all reasonably available control measures (RACM) and reasonably available control technology (RACT); air quality dispersion modeling to demonstrate attainment of the 2010 SO_2 NAAQS; a reasonable further progress (RFP) demonstration; contingency measures; and the state's certification that current regulations provide the means to satisfy nonattainment New Source Review (NSR) requirements for the Rusk-Panola 2010 SO_2 nonattainment area. The modeling demonstration included in this SIP revision uses the American Meteorological Society/EPA Regulatory Model – Highly Buoyant Plume (AERMOD-HBP) alternative to characterize air quality for the purpose of demonstrating attainment for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. On May 24, 2021, the TCEQ submitted a request to the EPA to approve the alternative model for use in this SIP revision, as provided by 40 CFR Part 51, Appendix W, Section 3.2.2(b)(2).

1.3 PUBLIC HEARING AND COMMENT INFORMATION

The public comment period opened on September 10, 2021 and closed on October 13, 2021. The commission held a virtual public hearing for this SIP revision on October 12, 2021 at 2:00 p.m. Notice of the public hearing was published in the *Texas Register* as well as the *Dallas Morning News* and *Longview News-Journal*.

Written comments were accepted via mail, fax, or through the eComments (https://www6.tceq.texas.gov/rules/ecomments/) system. During the comment period, TCEQ staff received comments from the EPA, Luminant Generation Company LLC and Luminant Mining Company LLC (Luminant), the National Parks Conservation Association, the Sierra Club, Southern Sector Rising, and 292 individuals. The comments received are summarized and addressed in the Response to Comments for this SIP revision.

1.4 HEALTH EFFECTS

Current scientific evidence links short-term exposures to SO_2, ranging from five minutes to 24 hours, with an array of adverse respiratory 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 SO_2 can react with other compounds in the atmosphere to form small particles. These particles have the potential to penetrate deeply into sensitive parts of the lungs, and at high levels, can contribute to respiratory disease, such as emphysema and bronchitis. They may aggravate existing heart disease, leading to increased hospital admissions and possibly premature death (75 FR 35520). However, the health effects associated with current ambient levels of particulate matter are less clear. Although some observational epidemiology studies have reported statistical associations between such health effects and ambient particulate matter, a clear mechanism of action has yet to be identified. Furthermore, these reported effects vary widely with geographical location as well as with size and composition of the particulate matter (EPA/600/R-08/139F sections 2.1.1 and 2.2.2).

1.5 STAKEHOLDER PARTICIPATION

Vistra Energy Corporation (Vistra) owns and controls access to the Martin Lake property through its subsidiary, Luminant. The TCEQ and representatives of both Luminant and Vistra held regular meetings during the development of the proposed SIP revision to discuss modeling, control strategies, contingency measures, and development of the proposed associated Agreed Order with Luminant (Agreed Order 2021-0508-MIS, Non-Rule Project No. 2020-013-OTH-NR).

1.6 SOCIAL AND ECONOMIC CONSIDERATIONS

No significant fiscal implications are anticipated for the TCEQ or other units of state or local governments as a result of administration or enforcement of the associated Agreed Order. Because Martin Lake is the primary contributing source to the nonattainment area, all controls to reach attainment will be borne by this source. As such, any economic impacts will be limited to the single SO_2 source associated with this SIP revision. The associated Agreed Order is expected to have significant fiscal impact to Luminant. The citizens living and working within the nonattainment area will benefit from reduced SO_2 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 1990 federal Clean Air Act (FCAA) Amendments require that attainment demonstration emissions inventories (EI) be prepared from all significant 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 in the area.

The Texas Commission on Environmental Quality (TCEQ) maintains an inventory of current information for sources of sulfur dioxide (SO_2) 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 SO_2 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). The EI also provides data for a variety of air quality planning tasks, including establishing baseline emissions levels, calculating reduction targets, developing control strategies to achieve emissions reductions, developing emissions inputs for air quality models, and tracking actual emissions reductions against established emissions growth and control budgets.

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 Rusk-Panola 2010 SO_2 National Ambient Air Quality Standard (NAAQS) nonattainment area dispersion modeling.

The most current periodic EI data were analyzed as part of this state implementation plan (SIP) revision. The TCEQ chose the year 2017 as the base year for the analyses presented in this chapter because it was the most recent periodic inventory year available and it was also the year that the United States Environmental Protection Agency (EPA) designated the Rusk-Panola area as nonattainment for the 2010 SO_2 NAAQS.

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 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 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.

Stationary point sources comprised over 99% of the SO_2 emissions in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. The Martin Lake Steam Electric Station (Martin Lake) (Regulated Entity Reference Number [RN] RN102583093) is the only point source located in the Rusk-Panola nonattainment area boundary. The American Electric Power Pirkey Power Plant (AEP Pirkey) (RN100214287) in Harrison County is approximately 17 kilometers from the Rusk-Panola 2010 SO_2 NAAQS nonattainment area boundary and is included in this analysis per the EPA's *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions*.[2] Both are coal-fired electric generating units (EGU).

2.2.1 2017 Base Year Point Source Emissions Inventory

The TCEQ extracted the 2017 point source inventory data from STARS on April 12, 2021. The extracted data include reported annual (routine) emissions of SO_2 in tons per year (tpy) for Martin Lake located in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area boundary and AEP Pirkey located outside the nonattainment area boundary.

A summary of the base year point source SO_2 EIs is presented in Table 2-1: *Rusk-Panola Nonattainment Area SO_2 Emissions* and Table 2-2: *AEP Pirkey Power Plant SO_2 EI Annual and Permitted Emissions in TPY.*

2.2.2 2022 Attainment Year Point Source Emissions Inventory

2.2.2.1 Martin Lake

The 2022 forecasted actual emissions for Martin Lake was determined from the historical point source heat input and a future year emissions limit that accounts for enforceable emissions reductions as required by the updated associated Agreed Order (Agreed Order 2021-0508-MIS, Non-Rule Project No. 2020-013-OTH-NR). This approach represents annual operational variations and is a more conservative approach than applying grid-based coal EGU growth factors from the Eastern Regional Technical Advisory Committee. The TCEQ extracted Martin Lake point source data for 2017 through 2019 on April 12, 2021 and the data are presented in Table 2-1.

The 2022 forecasted actual emissions for Martin Lake were determined by multiplying the projected 2022 annual heat input by the enforceable SO_2 emissions limit (in pounds per one million British Thermal Units) from the updated associated Agreed Order. The projected 2022 annual heat input was the average of the 2017 through 2019 annual heat input from the EPA Clean Air Markets Division. The forecasted emissions were updated between proposal and adoption to account for the revised SO_2 enforceable limit in the updated Agreed Order.

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[2] EPA, April 23, 2014. *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf).

2.2.2.2 AEP Pirkey Power Plant

There were no emissions control or operational changes affecting SO_2 emissions at AEP Pirkey. To reflect this, the 2022 forecasted actual emissions were the average of the 2017 through 2019 annual (routine) SO_2 emissions in tpy. The TCEQ extracted the AEP Pirkey Power Plant point source data for 2017 through 2019 on April 12, 2021 and the data are presented in Table 2-2.

A summary of the attainment year point source SO_2 EIs is presented in Table 2-1 and Table 2-2.

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 SO_2 emissions sources include upstream oil and gas flares, compressor engines, 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 countywide totals rather than as individual sources. Area source emissions are typically calculated by multiplying an EPA- or TCEQ-developed EF (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 the different 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 in accordance with the requirements of the Air Emissions Reporting Requirements (AERR) rule. The 2017 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 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 A: *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 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 EFs. 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 EIs. 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 B: *Characterization of Oil and Gas Production Equipment and Develop a Methodology to Estimate Statewide Emissions*.

A significant improvement made to the oil and gas calculator for the 2017 base year inventories was the development of refined EFs for oil and gas wellhead flaring. County-level factors for the flared gases were developed using the amount of flared gas from each field and the hydrogen sulfide (H_2S) field concentrations from the Railroad Commission of Texas (RRC) website (https://www.rrc.state.tx.us/oil-and-gas/research-and-statistics/field-data/hydrogen-sulfide-h2s/).

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 C: *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 EFs was used. Other routine efforts were also implemented, such as checking calculations for errors and conducting reasonableness and completeness checks.

A summary of the base year area source SO_2 EI is presented in Table 2-1.

2.3.2 2022 Attainment Year Area Source Emissions Inventory

Since 2017 is the most recently available periodic EI year, the TCEQ designated the 2017 EI as the starting point for the 2022 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 has been updated using RRC 2019 production data. This newer data reflect growth that has occurred since the 2017 base year and reflect more recent operations.

The updated 2022 attainment year EI for the area source categories were developed using projection factors derived from Appendix A. 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 2022 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 2022 area source EI for oil and gas source categories was developed by applying the selected emissions projection factor to the 2019 emissions. No controls were incorporated into the attainment year inventories.

A summary of the attainment year area source SO_2 EIs is presented 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, locomotives, and drilling rigs.

For this SIP revision, EIs for non-road sources were developed for the following subcategories: NONROAD model categories, airports, locomotives, and drilling rigs used in upstream oil and gas exploration activities. The airport subcategory includes estimates for total emissions from the aircraft, auxiliary power units (APU), and ground support equipment (GSE) subcategories. The following sections describe the emissions estimation methods used for the non-road mobile source subcategories.

A summary of the base year non-road source SO_2 EI is presented 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. However, the EPA did not make any significant non-road emissions calculations updates between the previous version of the model, MOVES2014b, and the new version, MOVES3, and the two models generate essentially identical non-road emissions. Therefore, the TCEQ used the most recent Texas-specific utility for the non-road mobile component of MOVES2014b model, called Texas NONROAD version 2.1 (TexN2.1), to calculate emissions from all non-road mobile source equipment and recreational vehicles, except for airports, locomotives, and drilling rigs used in upstream oil and gas exploration activities.

Because emissions for airports and locomotives are not included in either the MOVES3 model or the TexN2.1 utility, the emissions for these categories are estimated using other EPA-approved methods and guidance.

The TCEQ has 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 the updating of inputs 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 TexN2.1 utility was recently updated for select non-road diesel equipment profiles, equipment populations, Texas-specific fuel data and growth factors for the full range of non-road equipment categories contained within the utility for 2013 through 2050 to improve the accuracy of future activity and emissions estimates. More information regarding the updates and development for the TexN2.1 utility is provided in the ERG report in Appendix D: *TexN2.1 Utility Diesel Equipment Profile and Growth Factor Updates for Use with MOVES.*

2.4.1.1 2017 Base Year NONROAD Model Emissions Inventory

TCEQ staff developed the 2017 base year non-road model category SO_2 emissions for this SIP revision using the TexN2.1 utility set for fully controlled run scenarios that used 2017 meteorological input data.

2.4.1.2 2022 Attainment NONROAD Model Year Emissions Inventory

TCEQ staff developed the 2022 attainment year non-road model category SO_2 emissions for this SIP revision using the TexN2.1 utility set for fully controlled run scenarios that used 2017 meteorological input data.

2.4.2 Drilling Rigs

Although emissions for drilling rig diesel engines used in upstream oil and gas exploration activities are included in the TexN2.1 utility, alternate emissions estimates were developed for this source category to develop more accurate county-level inventories. The equipment populations for drilling rigs were set to zero in the TexN2 utility to avoid duplicating emissions.

Due to significant growth in the oil and gas exploration and production industry, a 2015 TCEQ-commissioned survey of oil and gas exploration and production companies was used to develop updated drilling rig emissions characterization profiles. The drilling rig emissions characterization profiles from this study were combined with county-level drilling activity data obtained from the RRC to develop the EI. The documentation of procedures used in developing the drilling rigs EI is provided in the ERG report in Appendix E: *2014 Statewide Drilling Rig Emissions Inventory with Updated Trends Inventories.*

2.4.2.1 2017 Base Year Drilling Rig Emissions Inventory

The 2017 base year drilling rig SO_2 emissions for this SIP revision were developed using the results of a 2015 statewide EI improvement study referenced in Appendix E combined with 2017 RRC drilling activity data.

2.4.2.2 2022 Attainment Year Drilling Rig Emissions Inventory

The 2022 attainment year drilling rig SO_2 emissions for this SIP revision were based on 2019 drilling activity data (the most recently available activity data) combined with the 2022 year-specific projected EFs from the 2015 ERG report in Appendix E.

2.4.3 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, II, and III locomotive activity and emissions by rail segment. The method and procedures used to develop the locomotive EIs for this

SIP revision are detailed in the ERG report in Appendix F: *2014 Texas Statewide Locomotive Emissions Inventory and 2008 through 2040 Trend Inventories.*

2.4.3.1 2017 Base Year Locomotive Emissions Inventory

The 2017 base year locomotive SO_2 emissions for this SIP revision were taken from the 2017 trend EI developed as part of the ERG report in Appendix F.

2.4.3.2 2022 Attainment Year Locomotive Emissions Inventory

The 2022 attainment year locomotive SO_2 emissions for this SIP revision were taken from the 2022 trend EI developed as part of the ERG report in Appendix F.

2.4.4 Airports

The airport EIs were developed from TCEQ-commissioned studies 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 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 SIP revision are provided in the ERG reports in Appendix G: *2017 Texas Statewide Aircraft Emissions Inventory* and Appendix H: *Development of Texas Statewide Aircraft Trend Emissions Inventories 2011 through 2045.*

2.4.4.1 2017 Base Year Airport Emissions Inventory

The 2017 base year airport SO_2 emissions for this SIP revision were taken from the 2017 statewide airport EI developed as part of the ERG report in Appendix G. To develop the base year 2017 statewide airport EI, 2017 activity data provided by local airports were compiled and supplemented with publicly available 2017 activity data as the basis for estimating emissions.

2.4.4.2 2022 Attainment Year Airport Emissions Inventory

The 2022 attainment year airport SO_2 emissions for this SIP revision were taken from the 2022 statewide airport trend EI developed as part of the ERG report in Appendix H. The 2017 statewide airport EI was used as the base year EI from which 2011 through 2045 trend EIs were projected based on growth factors from the FAA's Terminal Area Forecast data.

2.5 ON-ROAD MOBILE SOURCES

On-road mobile emissions sources consist of automobiles, trucks, motorcycles, and other motor vehicles traveling on public roadways in conjunction with off-network emissions, occurring outside public roadways. On-road mobile source SO_2 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 (EFs) and the number of units of activity must be determined.

Updated on-road EIs for this SIP revision were developed using the EPA's mobile source emissions model, MOVES3, run in inventory mode. During a MOVES3 inventory mode

run, emissions rates are first calculated and then applied to user-supplied 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. Because modifications to the national default values influence the EFs calculated internally by the MOVES3 model, 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 Emissions Inventory

TCEQ staff developed the 2017 base year on-road mobile source category SO_2 emissions for this SIP revision using the MOVES3 model. Values to 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, reference Appendix I: *MOVES3 On-road Inventory Development*.

The Federal Motor Vehicle Control Program (FMVCP) provides on-going reductions of emissions 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 maintenance of reduced SO_2 emissions from mobiles sources.

A summary of the on-road source SO_2 EIs is presented in Table 2-1.

2.5.2 2022 Attainment Year On-Road Emissions Inventory

TCEQ staff developed the 2022 attainment year on-road mobile source category SO_2 emissions for this 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 I.

A summary of the on-road source SO_2 EIs is presented 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 webpage (https://www.tceq.texas.gov/airquality/airmod/project/pj.html).

2.7 EMISSIONS SUMMARIES

The summaries of the 2017 base year, 2018 and 2019 baseline projection years, and 2022 attainment year Rusk-Panola 2010 SO_2 NAAQS nonattainment area SO_2 emissions for this SIP revision are presented in Table 2-1. In this table, annual routine emissions for the TCEQ point source EI are provided in tpy, emissions for other source categories are also provided in tpy, and the Martin Lake permitted emissions are provided in pounds per hour. A summary of AEP Pirkey emissions for the 2017 base year, 2018 and 2019 baseline projection years, 2022 attainment year, and permitted SO_2 emissions from New Source Review permit number 6269 is presented in Table 2-2.

Please note that the 2022 attainment year emissions inventory presented in this chapter is not the modeled emissions inventory, which instead relies on federally enforceable emissions rates. For more details on the modeled emissions inventory, please consult Chapter 4: *Attainment Demonstration Modeling*.

In accordance with EPA emissions inventory rule and guidance, the area, non-road mobile, and on-road mobile sources emissions are typically calculated as county-wide totals for Rusk and Panola Counties. To obtain area, non-road mobile, and on-road mobile source emissions for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area for this 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 ratios applied to the county-wide totals for the area, non-road mobile, and on-road mobile source categories are presented in Appendix J: *Population Ratios for Non-Point Sources*.

Table 2-1: Rusk-Panola Nonattainment Area SO_2 Emissions in TPY

Source Category	2017 Base Year Reported Emissions (TPY)	2018 Reported Emissions (TPY)	2019 Reported Emissions (TPY)	2022 Attainment Year Emissions (TPY)	Agreed Order Federally Enforceable Maximum Emissions (TPY)[3]
Point - Martin Lake	36,441.46	56,198.55	46,549.50	22,269.31	32,736.76
Area	0.31	N/A	N/A	0.43	N/A
On-road Mobile	0.14	N/A	N/A	0.14	N/A
Non-road Mobile	0.02	N/A	N/A	0.02	N/A
Total	36,441.93	56,198.55	46549.50	22,269.90	32,736.76

Table 2-2: AEP Pirkey Power Plant SO_2 EI Annual and Permitted Emissions in TPY

Source	2017 Reported Emissions	2018 Reported Emissions	2019 Reported Emissions	2022 Attainment Year Emissions	Permitted Emissions
Point - AEP Pirkey	3,959.80	5,084.80	3,073.00	4,039.20	35,829.00

[3] Calculated by converting the 24-hour block average limit to tons per year assuming 100% operation (8,760 hours) and then adding emissions from additional units.

CHAPTER 3: CONTROL STRATEGIES AND REQUIRED ELEMENTS

3.1 INTRODUCTION

The Rusk-Panola nonattainment area for the 2010 sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) consists of the area around the Martin Lake Steam Electric Station (Martin Lake) in Rusk County, Texas. Martin Lake is the major source of SO_2 emissions in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area and is the source covered under this state implementation plan (SIP) revision. SIPs must contain certain elements as part of the attainment demonstration showing that a nonattainment area will attain the relevant standard as expeditiously as practicable but no later than the applicable statutory attainment date. 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 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 SIP revision describes a control strategy that consists of permanent, quantifiable, and enforceable emission reductions at Martin Lake necessary to demonstrate attainment of the 2010 SO_2 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 SIP revision and the associated Agreed Order (Agreed Order 2021-0508-MIS, Non-Rule Project No. 2020-013-OTH-NR) provide the mechanism to make quantifiable SO_2 emissions 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 SO_2 emission reductions from control measures that are permanent and enforceable. RACT is defined in 40 Code of Federal Regulations (CFR) §51.100(o) as control technology necessary to achieve the NAAQS. The United States Environmental Protection Agency's

(EPA) *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (2014 SO_2 SIP guidance) maintains previous EPA guidance regarding the definition of RACT.[4]

Martin Lake is the major source of SO_2 emissions in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area and is the only source for which RACM, including RACT, is required to be applied under FCAA, §172(c)(1). Martin Lake will implement RACM, including RACT, through implementation of an SO_2 emissions limit of 7,469 pounds per hour (lb/hr). The proposed SIP revision and associated Agreed Order included a 7,305 lb/hr limit. This limit has been revised to the adopted limit based on a new discount factor, and a new SO_2 emission limit of 0.32 pounds per million British Thermal Units (lb/MMBtu) was added to this SIP revision and associated Agreed Order in response to comments. Additional discussion of those comments and the commission's responses are provided in the Response to Comments document for this SIP revision.

The revised 7,469 lb/hr SO_2 emissions limit is a combined three-unit limit cap with a discount factor applied to allow the limit to apply over a block 24-hour averaging period. The calculated limit is 7,469 lb/hr applied to the combined three electric generating facility (EGF) boilers as a three-unit cap. The three EGF boilers will operate under a single SO_2 emissions limit, or a source cap. The source cap for the three primary boilers, or EGFs, allows for operational flexibility for the site to generate electric power for sale to the electric power grid while simultaneously operating and remaining at or below the emission rate on a block 24-hour averaging period.

The newly added lb/MMBtu emissions limit is a per-unit limit with a discount factor applied to allow the limit to apply over a block 24-hour averaging period. The calculated limits are each 0.32 lb/MMBtu, the same value for all three EGFs. To ensure that there would be no modeled exceedances of the 2010 SO_2 NAAQS, the supplemental lb/MMBtu limit applies to each EGF on a block 24-hour averaging basis. The lb/MMBtu limit for each EGF will apply in conjunction with the lb/hr source cap for the combined three EGFs. The result is a demonstration of attainment with no expected exceedances of the 2010 SO_2 NAAQS while also providing the necessary operational flexibility for the site.

Discount factors, or adjustment factors, were applied to the one-hour critical emissions value (CEV) for both the lb/hr source cap and the lb/MMBtu source limits to derive comparably stringent SO_2 emissions limits for a longer averaging time of a block 24-hour averaging basis. The air dispersion modeling contemplated various anticipated, real-world operating scenarios for the combined three-unit source cap to ensure that the final three-EGF boiler SO_2 source cap remains protective of the 2010 SO_2 NAAQS. The TCEQ conducted air dispersion modeling for additional operational scenarios of the three EGFs that includes both the lb/hr limit and the added lb/MMBtu limit, and the modeling showed no exceedances of the 2010 SO_2 NAAQS. To further ensure that the nonattainment area will attain the 2010 SO_2 NAAQS, the air dispersion modeling considered various anticipated, real-world operating scenarios for the two

[4] EPA, April 23, 2014. *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf).

auxiliary boilers also located at Martin Lake. The modeling therefore included all anticipated, real-world operating scenarios for the simultaneous operation of the three EGFs as a source cap and the two auxiliary boilers, which are authorized to operate simultaneously.

To achieve the emission rates established as RACM, including RACT, the control strategy applied at Martin Lake encompasses both pre-combustion and post-combustion controls for the three EGF boilers and lower SO_2 emission limits for the two auxiliary boilers. The current air permit authorization for the EGF boilers at Martin Lake allows the burning of lignite and a lignite-blended mix of coals, No. 2 fuel oil, and natural gas. Martin Lake will cease burning lignite coals. The associated Agreed Order will allow the three EGF boilers to only burn subbituminous coal, No. 2 fuel oil, and natural gas in any combination during all operation of the EGF boilers provided that the three EGF boilers operating under a source cap do not exceed the final SO_2 emissions limit of 7,469 lb/hr on a block 24-hour averaging basis and that the three EGF boilers do not exceed the added emissions limit of 0.32 lb/MMBtu on a block 24-hour averaging basis, applied to each boiler. Switching to the burning of only subbituminous coal will reduce the overall sulfur content of the fuels burned in the boilers compared to the lignite and lignite-blended mix of coals currently used at Martin Lake. The final lb/hr SO_2 source cap will apply at all times when fuel of any type is fired in any EGF boiler unit. The added lb/MMBtu SO_2 source limits will apply at all times to each boiler when fuel of any type is fired in the boiler.

The three EGF boilers will also be limited to a combined maximum firing rate, when fuel is fired in any EGF boiler unit, not to exceed 27,000 million British Thermal Units per hour (MMBtu/hr). This firing rate limit will be an operating cap for all three EGF boilers combined. Each existing SO_2 wet limestone scrubber system for each EGF boiler will be optimized and operated to ensure that the final combined SO_2 emissions limit of 7,469 lb/hr on a block 24-hour averaging basis is not exceeded. While each EGF boiler will not be limited to a maximum firing rate associated with the added lb/MMBtu limit for each EGF boiler, the site will have to optimize and operate each scrubber system as well as the EGF boiler itself to ensure that the final lb/MMBtu emissions limit applicable to each EGF boiler on a block 24-hour averaging basis is also not exceeded.

Martin Lake will continue to burn only No. 2 fuel oil with a sulfur content not to exceed 0.10% by weight for each of the two auxiliary boilers. The two auxiliary boilers will be limited to final combined hourly SO_2 emissions rate of 51.46 lb/hr on a one-hour basis and a final combined annual SO_2 emissions rate of 22.54 tons per year (tpy) on an annual basis. The hourly and annual emission rates will be emission caps for the two auxiliary boilers combined. Each auxiliary boiler will further be limited to a 10% annual capacity factor based on the ratio between the actual heat input from all fuels burned during a calendar year and the potential heat input had the boiler been operated for 8,760 hours during the same calendar year at the maximum steady-state design heat input capacity, therefore resulting in a heat input limit of 219,000 MMBtu per calendar year, per auxiliary boiler.

Although the associated Agreed Order allows Martin Lake to burn subbituminous coal, No. 2 fuel oil, and natural gas in any combination during all operation of an EGF boiler, the current relatively high prices associated with the procurement of No. 2 fuel oil are

expected to prevent its use in high quantities and in great frequency specific to each of the three EGF boilers.[5] Furthermore, Martin Lake relies on a single, central storage tank for the storage and use of No. 2 fuel oil for firing in both the EGF boilers and the auxiliary boilers. While Martin Lake will not be required to demonstrate compliance with a fuel oil sulfur content for the three EGF boilers, it will be required to demonstrate compliance with a fuel oil sulfur content for the auxiliary boilers. Fuel oil sampling to demonstrate compliance with the fuel oil sulfur content for the auxiliary boilers will be conducted according to Appendix D of 40 CFR Part 75. Sampling is required for each delivery of fuel oil that is to be combusted in a unit, and the sulfur content representing the highest value sampled during the previous calendar year will be used to calculate SO_2 mass emissions. These sampling and calculation procedures are allowed for any consistent fuel that comes from a single source regardless of whether the fuel is supplied under a contractual agreement, or the maximum value indicated in a contract with a fuel supplier, until the actual sampled sulfur content of a delivery exceeds the assumed maximum contract value. Therefore, it is expected that the same No. 2 fuel oil that will be fired in any of the three EGF boilers will also be limited in fuel sulfur content to 0.10% by weight. Based on historical sulfur content data of the subbituminous coal expected to be procured by Martin Lake, the sulfur content of this subbituminous coal is expected to be between 0.4% and 0.9% by weight. The upper end of this range may largely depend on the quality of the subbituminous coal itself, which would subsequently be expected to significantly factor into the cost of the subbituminous coal. Therefore, any amount of firing of No. 2 fuel oil in any of the three EGF boilers, in any anticipated operational combination under the final SO_2 emissions source cap, is expected to result in fewer SO_2 mass emissions relative to corresponding amounts of subbituminous coal fired in any of the three EGF boilers, in any anticipated real-world operational combination, with the relatively higher fuel sulfur content associated with the subbituminous coal. Firing of natural gas is not expected to cause or contribute to emissions of SO_2; however, if sulfur is present in natural gas, its content is expected to be minimal.

Wet limestone scrubbers are operated on each of the three EGF boilers at Martin Lake. Wet limestone scrubbers in general achieve higher control efficiency than dry sorbent injection and dry scrubbing. The necessary operating overall SO_2 control efficiency is expected to be at least 75%, with operating SO_2 control efficiencies further anticipated to be as high as 90% depending on EGF boiler operating load and subbituminous coal sulfur content, and anticipated bypass necessary to maintain stack temperatures and accommodate existing scrubber flow limitations. These control measures satisfy the statutory FCAA, §172(c)(1) RACM, including RACT, requirement because such control measures are technologically available and economically feasible controls that can be applied at Martin Lake and demonstrate, through air dispersion modeling, the Rusk-Panola nonattainment area will attain the 2010 SO_2 NAAQS as expeditiously as practicable.

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[5] United States Energy Information Administration, Petroleum & Other Liquids, Gulf Coast No. 2 Distillate Retail Sales by All Sellers (https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMA_EPD2_PTA_R30_DPG&f=A), accessed June 28, 2021.

3.2.2 Existing Control Measures

Martin Lake is an electric power generating station that operates three EGF boilers, authorized under New Source Review (NSR) permit number 933 to burn a combination of Wilcox formation lignite coal mined locally as well as western subbituminous coal. Martin Lake is also authorized to burn No. 2 fuel oil or natural gas as ignitor fuels only for start-up and for supplemental use such as for flame stabilization. The three EGF boilers produce steam to drive steam turbines for electrical production. The three EGF boilers are used to generate electricity that is distributed via an independent system operator to end-use customers. Emissions of SO_2 for each of the three EGF boilers are currently authorized at 1.2 pounds of SO_2 per million British Thermal Units (lb/MMBtu) based on federal New Source Performance Standards, Subpart D, Standards of Performance for Fossil-Fuel Fired Steam Generators. Control of SO_2 emissions from each of the three EGF boilers is currently met by using low-sulfur fuels and operating with a wet limestone scrubber system flue gas desulfurization (FGD) system. The maximum SO_2 removal efficiency of the Martin Lake scrubber system varies considerably depending on operating conditions, such as variations in load, ductwork and air preheater conditions, fuel blend and composition, the amount of flue gas routed through the scrubber, and whether any scrubber towers are offline for maintenance. Each EGF boiler is equipped with a continuous emissions monitoring system (CEMS) to monitor SO_2 emissions.

The auxiliary boilers are currently authorized in NSR permit number 933 to emit 128.7 lbs/hr each. These auxiliary boilers are permitted to burn only No. 2 fuel oil with a sulfur content of 0.10% by weight or less in each of the two auxiliary boilers.

3.2.3 Variability Analysis

The 2014 SO_2 SIP guidance specifies the recommended approach to determine an appropriate longer-term averaging limit than a block one-hour emission rate. This approach involves calculating an appropriate longer-term averaging limit as a percentage of the one-hour CEV limit that would otherwise be applied. The first step of these calculations is to conduct air dispersion modeling to determine the CEV defined as the one-hour SO_2 emissions limit that shows attainment of the 2010 SO_2 NAAQS through modeling.

The discount factor is a percentage applied to the CEV that results in an emissions limit on a longer averaging time that can be expected to be comparably stringent as an emissions limit on a one-hour basis. This approach reconciles the inherent variability in hourly SO_2 emissions in the operations of some sources that may subsequently prove difficult to demonstrate compliance with an emissions limit on a one-hour basis. The EPA generally expects units with longer averaging time limits to experience some occasions of hourly emissions to exceed the CEV while the majority of hourly emissions will remain below the CEV. The EPA further expects that this emissions pattern will still allow a source to meet the final longer-term limit that is sufficiently adjusted downward from the CEV to a comparable stringency. This approach to establishing an emissions limit on a longer averaging time is therefore expected to result in an emissions limit on the longer averaging time that remains protective of the 2010 SO_2 NAAQS, because it is unlikely that the limited occurrences of hourly SO_2 emissions above the CEV would coincide with times when the meteorology is conducive for high ambient concentrations of SO_2.

The EPA recognizes in its 2014 SO_2 SIP guidance that the variability of emissions is influenced by source-specific variations in operating rates and fuel sulfur content. These factors should be weighed to assure that the analysis of historical SO_2 emissions variability provides the best projection of variability in SO_2 emissions that can be expected once the limit takes effect. The EPA also expresses in its 2014 SO_2 SIP guidance that a time series of SO_2 emissions from the source itself are generally the best source of data for determining expected emissions variability. However, implementation of a control strategy might change the source's expected emissions variability. Instead of source-specific data, data from other sources of comparable source type, size, operation, fuel, and control type may be useful for these comparisons, where available. However, the historical data of the three EGF boilers at Martin Lake do not reflect the likely variability expected for future operations due to changes discussed in Section 3.2.1: *RACT and RACM Analysis* to burn primarily subbituminous coal, as opposed to lignite or a lignite-blended mix of coals, and optimization of the existing wet FGD systems.

While the subbituminous coal may have a substantially lower sulfur content than the lignite and lignite-blended mix of coals currently used as the fuel for the three EGF boilers, the sulfur content in subbituminous coal is still expected to have significant variability different than the variability associated with a lignite and lignite-blended mix. Although Martin Lake will be provided the option to burn subbituminous coal, No. 2 fuel oil, or natural gas through the associated Agreed Order, Martin Lake intends for the subbituminous coal to be the primary fuel burned. As previously discussed, the firing of No. 2 fuel oil is expected to be minimal, and the fuel oil sulfur content is expected to be lower than that of the subbituminous coal. Natural gas is expected to contain little to no sulfur. However, the switch to only subbituminous coal and more firing of No. 2 fuel oil, relative to historical operations, are expected to result in the emissions variability of historical operations to not reflect the likely variability expected for future operations.

Additionally, to ensure compliance, Martin Lake expects to operate each wet limestone scrubber FGD system more aggressively to meet the new, three EGF boiler source cap and the lb/MMBtu source limits on each boiler added in response to the EPA's comments. Expected changes in operations of each wet limestone scrubber FGD system include increasing the scrubber system efficiency while simultaneously accounting for scrubber system bypass. Each EGF boiler with its respective existing wet limestone scrubber FGD system was originally designed with the ability to allow the EGF exhaust gas stream to bypass the wet limestone scrubber FGD system. The purpose of this design is to maintain stack temperatures high enough to prevent condensation of acid gases, subsequent corrosion, and damage to the inner linings of the exhaust stack; and to accommodate original scrubber system design and exhaust gas flow limitations of the scrubber system. Each wet limestone scrubber FGD system was designed to accept a certain, specified volume of exhaust flue gas from the EGF boiler such that each scrubber system cannot accommodate the full volume of each, respective EGF boiler exhaust gas. While Martin Lake previously engaged in a certain level of SO_2 control and frequency and magnitude of scrubber system bypass, future wet limestone scrubber FGD system performance is expected to change significantly due to the need to ensure compliance with the two new SO_2 24-hour block average emission limits. This change in scrubber operations combined with the change in fuel are expected to result in future variability in emissions that would be significantly different than the variability

associated with current operations. If the discount factors were determined using data with significantly greater variability than is expected for the future SO_2 emissions after implementation of the control measures, the discount factor would be lower than necessary to provide for attainment and maintenance of the 2010 SO_2 NAAQS, which could subsequently cause an unnecessarily restrictive final block 24-hour average.

While the EPA's 2014 SO_2 SIP guidance allows for evaluating data from surrogate sources to determine the discount factor, boiler units similar to the three EGF boilers at Martin Lake transitioning from lignite operations to subbituminous fuel are rare. Similarly, FGD wet scrubber systems similar to that of Martin Lake's unique scrubber system design are uncommon. The two sources identified as similar to the coal-type switching that will take place at Martin Lake are the NRG Limestone units and Luminant Generation Company LLC's (Luminant) retired Monticello Unit 3. The NRG Limestone units switched to full subbituminous coal fuel firing in 2018 and Monticello Unit 3 transitioned to 100% subbituminous fuel in early 2016 but was permanently retired by the end of 2017.

Luminant, as part of its comments on the proposed SIP revision, provided information and data concerning the use of NRG Limestone as a surrogate data source. The TCEQ considered the information and determined that NRG Limestone is appropriate as a surrogate source from which to extend the averaging period for both lb/hr emissions source cap and the lb/MMBtu emissions source limits.

Three years of NRG Limestone emissions data from October 2018 through September 2021 were used to conduct the variability analysis, which coincides with when NRG Limestone burned only subbituminous coal. Discount factors were developed using lb/hr data and lb/MMBtu data from sitewide emissions data for NRG Limestone Units 1 and 2, combined. Specifically, the 99th percentiles of one-hour lb/hr and lb/MMBtu data were obtained as well as the 99th percentiles of block 24-hour lb/hr and lb/MMBtu data. The ratios of the 99th percentiles of the block 24-hour data to the 99th percentile of the one-hour data were then calculated for lb/hr data and lb/MMBtu data to develop discount factors for both limits.

The final discount factor for the lb/hr emissions limit representing the modeled one-hour CEV was estimated to be 0.91. The commission applied the discount factor to the one-hour source cap of 8,208 lb/hr to derive a final source cap of 7,469 lb/hr on a block 24-hour averaging basis. The final discount factors for the lb/MMBtu emission limits representing the modeled one-hour CEV were estimated to be 0.97 for each of the three EGFs. The commission applied the discount factors to the one-hour limits of 0.33 lb/MMBtu for each of the three EGFs to arrive at a final source cap of 0.32 lb/MMBtu on a block 24-hour averaging basis for each EGF. The discount factors are expected to provide a degree of comparable stringency as the corresponding limits on a one-hour basis. The emission rates calculated using the discount factors are expected to constrain emissions so that any occasions of emissions above the CEV will be limited in frequency and magnitude.

3.2.4 Enforceable Control Measures

The associated Agreed Order, in Appendix N, documents the commission's order, and the company's agreement, to comply with the emission reduction requirements identified for Martin Lake, pursuant to the Texas Clean Air Act (TCAA), the Texas

Health and Safety Code (THSC), and the FCAA. The control measures needed to demonstrate attainment of the 2010 SO_2 NAAQS in the Rusk-Panola nonattainment area are made enforceable by the associated Agreed Order. The associated Agreed Order includes the control measures for attainment, the associated implementation schedules, and the contingency measures to be triggered in the event of failure to attain the 2010 SO_2 NAAQS.

The associated Agreed Order, adopted concurrent with this SIP revision, makes both the final SO_2 emissions cap of 7,469 lb/hr on a block 24-hour averaging basis for the three EGF boilers and the final SO_2 emissions rate of 0.32 lb/MMBtu on a block 24-hour averaging basis for each boiler enforceable. The overall SO_2 wet limestone scrubber FGD system control efficiency needed to maintain compliance with the SO_2 emissions limit is estimated using a mass balance approach with the key parameters being fuel sulfur content, fuel heating values, for subbituminous coal, No. 2 fuel oil, and natural gas, and outlet stack emission rates.

The associated Agreed Order includes the appropriate SO_2 emissions monitoring and recordkeeping requirements necessary to determine compliance with the two final SO_2 emissions limits on a block 24-hour averaging basis to ensure enforceability of the established final emission rates, in lb/hr and in lb/MMBtu, on the longer averaging time. Martin Lake will continue to operate SO_2 CEMS for each of the three EGF boilers in continued accordance with 40 CFR Part 75. For each EGF boiler, continued reliance of the existing SO_2 CEMS located downstream of the wet limestone scrubber FGD system will provide continuous emissions monitoring of the SO_2 emissions to determine compliance with the final SO_2 emissions limit of 7,469 lb/hr on a block 24-hour averaging basis and the final SO_2 emissions limit of 0.32 lb/MMBtu on a block 24-hour averaging basis. The CEMS will monitor the final recombined stream of the bypassed EGF boiler flue gas exhaust stream and the scrubbed SO_2 EGF boiler flue gas exhaust stream.

Martin Lake will be allowed to burn subbituminous coal, No. 2 fuel oil, or natural gas for each of the three EGF boilers. The No. 2 fuel oil and natural gas are not expected to be primary fuels fired for the three EGF boilers but are part of the control strategy to allow for situations necessitating the use of alternative fuel types, such as periods of extreme weather events threatening the stability of the electric grid. Regardless of the fuel fired and its corresponding amount, the three EGF boilers, combined, will be limited to a final SO_2 emissions limit of 7,469 lb/hr on a block 24-hour averaging basis, and each of the three EGF boilers will be limited to a final SO_2 emissions limit of 0.32 lb/MMBtu on a block 24-hour averaging basis. These final limits will apply at all times when fuel of any type is fired in any EGF boiler.

Upon implementation of the lb/hr emissions source cap, SO_2 emissions will be calculated using CEMS data obtained in accordance with the procedures of 40 CFR Part 75 for each EGF boiler, on an hourly basis. The block 24-hour average SO_2 emissions rate will be calculated as an average of all the hourly SO_2 emissions data for the 24-hour period, beginning at 12 am midnight and continuing through 12 am midnight of the next day, during which any fuel is combusted in an EGF boiler at any time. It will not be necessary for fuel to be combusted for the entire 24-hour period. In accordance with the 2014 SO_2 SIP guidance and the data handling procedures of the Mercury and Air Toxics Rule, only operating hours with actual SO_2 emissions will be included in the

calculation of the block 24-hour average. Non-operating hours, with no SO_2 emissions, will be excluded from the calculation of the block 24-hour average. Any fuel combusted for any part of an hour will be considered an operating hour. The calculation of the block 24-hour average SO_2 emission rate will include all emissions that occur during all periods of EGF boiler operation, including startup, shutdown, and maintenance. For the lb/hr emissions source cap, Martin Lake will be required to maintain records for 12 months, on a rolling 12-month basis, of each 24-hour average SO_2 emissions rate, the total SO_2 emissions rate, and the heat input for each EGF boiler.

Upon implementation of the lb/MMBtu emissions source limits, SO_2 emissions will be calculated using CEMS data obtained in accordance with the procedures specified in 40 C.F.R. Part 75, on an hourly basis. The block 24-hour average SO_2 emission rate will be calculated as the sum of all the hourly mass emissions from an EGF boiler unit during a block 24-hour period divided by the sum of all the hourly heat input from the same EGF boiler unit during the same block 24-hour period. A block 24-hour average will be calculated for each 24-hour period, beginning at 12 a.m. midnight and continuing through 12 a.m. midnight of the next day, provided that fuel was combusted in the EGF boiler unit. In order to constitute a qualifying hour, it will not be necessary for fuel to be combusted for the entire hour. Following the data handling procedures of the Mercury and Air Toxics Rule, only operating hours with actual SO_2 emissions will be included in the calculation of the block 24-hour average. Therefore, non-operating hours, in which an EGF boiler unit emits no SO_2, will be excluded from the calculation of the block 24-hour average emissions rate for that EGF boiler unit. Each block 24-hour average will include all emissions that occur during all periods of operation, including startup, shutdown, and maintenance. For the lb/MMBtu emissions source limits, Martin Lake will be required to maintain records for 12 months, on a rolling 12-month basis, of each 24-hour average SO_2 emissions rate, the total SO_2 emissions rate, and the heat input for each EGF boiler.

The auxiliary boilers at Martin Lake will continue to be allowed to burn only No. 2 fuel oil with a sulfur content of 0.10% by weight or less in each of the two auxiliary boilers. The two auxiliary boilers will also be limited to a final SO_2 emissions rate of 51.46 lb/hr on a one-hour basis and 22.54 tpy on an annual basis, combined for the two auxiliary boilers. The two auxiliary boilers will also be limited to an annual heat input of 219,000 MMBtu per calendar year, per auxiliary boiler. This final annual heat input limitation will correspond to a 10% annual capacity factor for each of the two auxiliary boilers.

Martin Lake must maintain records to demonstrate compliance including, documentation of fuel usage, fuel heating value, and fuel sulfur content. Additionally, Martin Lake will be required follow the fuel oil sampling procedures of Appendix D, Section 2.2 Oil Sampling and Analysis, of 40 CFR Part 75 to determine the sulfur content of the No. 2 fuel oil. Vendor fuel certification receipts may be used to show compliance with this requirement. Compliance with the SO_2 emission rates will be based on fuel usage, fuel heating value, fuel sulfur content, and the SO_2 emission factor from the EPA's AP-42, Table 1.3-1, version dated May 2010.[6] Records will be required to

[6] EPA, Air Emissions Factors and Quantification: AP 42, Fifth Edition, Volume 1, Chapter 1: External Combustion Sources (https://www3.epa.gov/ttnchie1/ap42/ch01/)

be maintained for each month of the type of fuel used, the results of fuel oil sampling or vendor fuel certification receipts, the amount of fuel oil used on an hourly basis during periods that an auxiliary boiler is operated, and the heat input for each auxiliary boiler. For both the EGFs and the auxiliary boilers, records will be required to be kept for a period of five years.

3.3 MONITORING NETWORK AND REPORTING REQUIREMENTS

The Texas Commission on Environmental Quality (TCEQ) ambient air quality monitoring network provides monitoring data to characterize air quality based on the 2010 SO_2 NAAQS. SO_2 monitors are managed in accordance with 40 CFR Part 58 to provide data to determine compliance or progress towards compliance with the 2010 SO_2 NAAQS. The SO_2 monitor site evaluation and selection process considers the SO_2 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.

Portions of Rusk and Panola Counties around Martin Lake were designated nonattainment for the 2010 SO_2 NAAQS, published on December 13, 2016 (81 *Federal Register* (FR) 89870). The TCEQ deployed a special purpose SO_2 monitor near Martin Lake at the Tatum County Road (CR) 2181d Martin Creek Lake site (air quality system number 484011082) in Rusk County on November 1, 2017.

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 Tatum CR 2181d Martin Creek Lake SO_2 monitor is 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 SO_2 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 SO_2 SIP guidance, the EPA acknowledged that SO_2 presents special considerations as a directly emitted pollutant. The EPA stated that control efficiencies are well understood for SO_2 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 SO_2 NAAQS, it would be unlikely for the area to then fail to meet the NAAQS. As such, the EPA's 2014 SO_2 SIP guidance stated that a comprehensive program to identify sources causing a violation of the 2010 SO_2 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 Rusk-Panola 2010 SO_2 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 enforceable control strategy incorporated in the SIP has been implemented. If the EPA determines that based on the modeling, control strategy implementation, and monitoring data available that the Rusk-Panola nonattainment area failed to attain the 2010 SO_2 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 SO_2 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 TWC Chapter 7 and THSC Chapter 382. See the Legal Authority (Section V-A) of this 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 SO_2 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 source of SO_2 emissions in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area is Martin Lake. The control strategy that will be made enforceable if the associated Agreed Order is adopted, discussed in Section 3.2.4: *Enforceable Control Measures* of this chapter, is protective of and provides for attainment of the 2010 SO_2 NAAQS. The TCEQ's comprehensive program to identify sources of violations of the 2010 SO_2 NAAQS is satisfied through the monitoring network discussed in Section 3.3: *Monitoring Network* of this SIP revision, 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 THSC Chapter 382. See the Legal Authority (Section V-A) of this SIP narrative for TCEQ's enforcement authority.

Upon the effective date of a determination by the EPA that the Rusk-Panola nonattainment area failed to attain the 2010 SO_2 NAAQS, pursuant to FCAA § 179(c), 42 United States Code (U.S.C.), §7509(c), Luminant would be notified by the TCEQ that a full system audit (FSA) is required of all SO_2 emissions units at Martin Lake subject to the Agreed Order adopted concurrently with this SIP revision. Within 90 calendar days of the effective date of the EPA's determination of failure to attain the SO_2 NAAQS, Luminant must submit the FSA, including recommended provisional SO_2 emission control strategies, to the TCEQ's Deputy Director of the Air Quality Division (AQD).

As part of the FSA, Luminant 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 SO_2 on a block 24-hour average basis from the three coal-fueled EGF boilers covered in the associated Agreed Order;
- each of the auxiliary boilers covered in the associated Agreed Order;
- the meteorological conditions at the monitor, including the frequency distribution of wind direction temporally correlated with SO_2 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 SO_2 NAAQS. Any additional or adopted revised SO_2 control strategy required to achieve attainment would be submitted as a SIP revision to the EPA including any necessary changes to the Agreed Order, the development of a new order, or changes to an existing permit.

3.5 SIP EMISSIONS YEAR AND EMISSION CREDIT GENERATION

The Emissions Banking and Trading rules in 30 Texas Administrative Code (TAC) §101.300 and §101.370 define SIP emissions for emission credit and discrete emission credit generation, respectively. Since the most recent attainment demonstration SIP revision does not use a projection-base year inventory for SO_2 emissions, this 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 (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), SO_2, 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 Rusk-Panola 2010 SO_2 NAAQS nonattainment area became subject to general conformity requirements one year after the effective date of designation as nonattainment, or January 12, 2018. Federal actions with SO_2 emissions that are expected to meet or exceed 100 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 Rusk-Panola 2010 SO_2 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, NO_2, PM_{10} and $PM_{2.5}$, and certain precursor pollutants in applicable NAAQS nonattainment and maintenance areas (40 CFR §93.102(b)(1)). SO_2 is not considered a transportation-related NAAQS, and the Rusk-Panola 2010 SO_2 NAAQS nonattainment area is not subject to transportation conformity requirements.

Title 40 CFR §93.102(b)(2)(v) stipulates that transportation-related emissions of SO_2 in certain $PM_{2.5}$ nonattainment and maintenance areas may be considered significant enough to subject the areas to transportation conformity requirements for SO_2 as a precursor pollutant. The Rusk-Panola 2010 SO_2 NAAQS nonattainment area has never been designated nonattainment for another NAAQS, including $PM_{2.5}$, so only the SO_2 NAAQS is applicable. Based on the EPA's transportation conformity regulations, the Rusk-Panola 2010 SO_2 NAAQS nonattainment area has no transportation conformity obligations; therefore, this 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

SO_2 nonattainment area SIPs must include provisions to require permits for the construction and operation of new or modified stationary sources. Major stationary sources in SO_2 nonattainment areas are those sources emitting at least 100 tpy of SO_2. 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 SO_2 nonattainment area must comply with the lowest achievable emissions rate and obtain sufficient emissions offsets. Nonattainment NSR permits for SO_2 authorize construction of new major sources or major modifications of existing sources of SO_2 in an area that is designated nonattainment for the SO_2 NAAQS. The NSR offset ratio for SO_2 nonattainment areas is 1.00:1. The EPA initially approved Texas' nonattainment NSR regulation for SO_2 on 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) and 30 TAC §116.151 (New Major Source or Major Modification in Nonattainment Area Other Than Ozone), the nonattainment NSR SIP requirements are met for Texas for the 2010 SO_2 NAAQS for areas including the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. Further, the TCEQ already certified that Texas has EPA-approved rules that cover nonattainment NSR requirements with the timely-submitted 2010 SO_2 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 Rusk-Panola Attainment Demonstration State Implementation Plan (SIP) Revision for the 2010 Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS). The United States Environmental Protection Agency's (EPA) *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (EPA, 2014; 2014 SO_2 SIP guidance) requires air quality dispersion modeling to demonstrate attainment of the 2010 SO_2 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 SO_2 attainment demonstration SIP revisions as laid out in 40 Code of Federal Regulations (CFR) Part 51 Appendix W (EPA, 2017) and the 2014 SO_2 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 sufficient to attain the 2010 SO_2 NAAQS. A detailed description of the various modeling elements can be found in Appendix K: *Modeling Technical Support Document (TSD).*

4.2 SOURCES OVERVIEW

The Martin Lake Steam Electric Station (Martin Lake) is the major SO_2 emissions source within the Rusk-Panola 2010 SO_2 NAAQS nonattainment area, shown as a blue dot in Figure 4-1: *Overview of the Rusk-Panola Nonattainment Area.* A Data Requirements Rule monitor, the Tatum County Road 2181d Martin Creek Lake monitor or Continuous Ambient Monitoring Station 1082 (C1082), was sited in 2017 to monitor SO_2 concentrations near Martin Lake (shown as a green triangle in Figure 4-1). The National Weather Service (NWS) monitor used for surface meteorological data, located at the Longview East Texas (TX) Regional Airport, is marked on Figure 4-1 as a purple plus-sign.

According to 40 CFR Part 51 Appendix W §8.3.3(b), "all sources in the vicinity of the source(s) under consideration…," in this case Martin Lake, "…should be explicitly modeled…" if their contribution to SO_2 concentrations cannot be represented in ambient background concentrations (EPA, 2017). One such nearby source, the American Electric Power Pirkey Power Plant (AEP Pirkey), is located approximately 17 kilometers (km) northwest of the Rusk-Panola 2010 SO_2 NAAQS nonattainment area in Harrison County (shown as a pink dot in Figure 4-1).

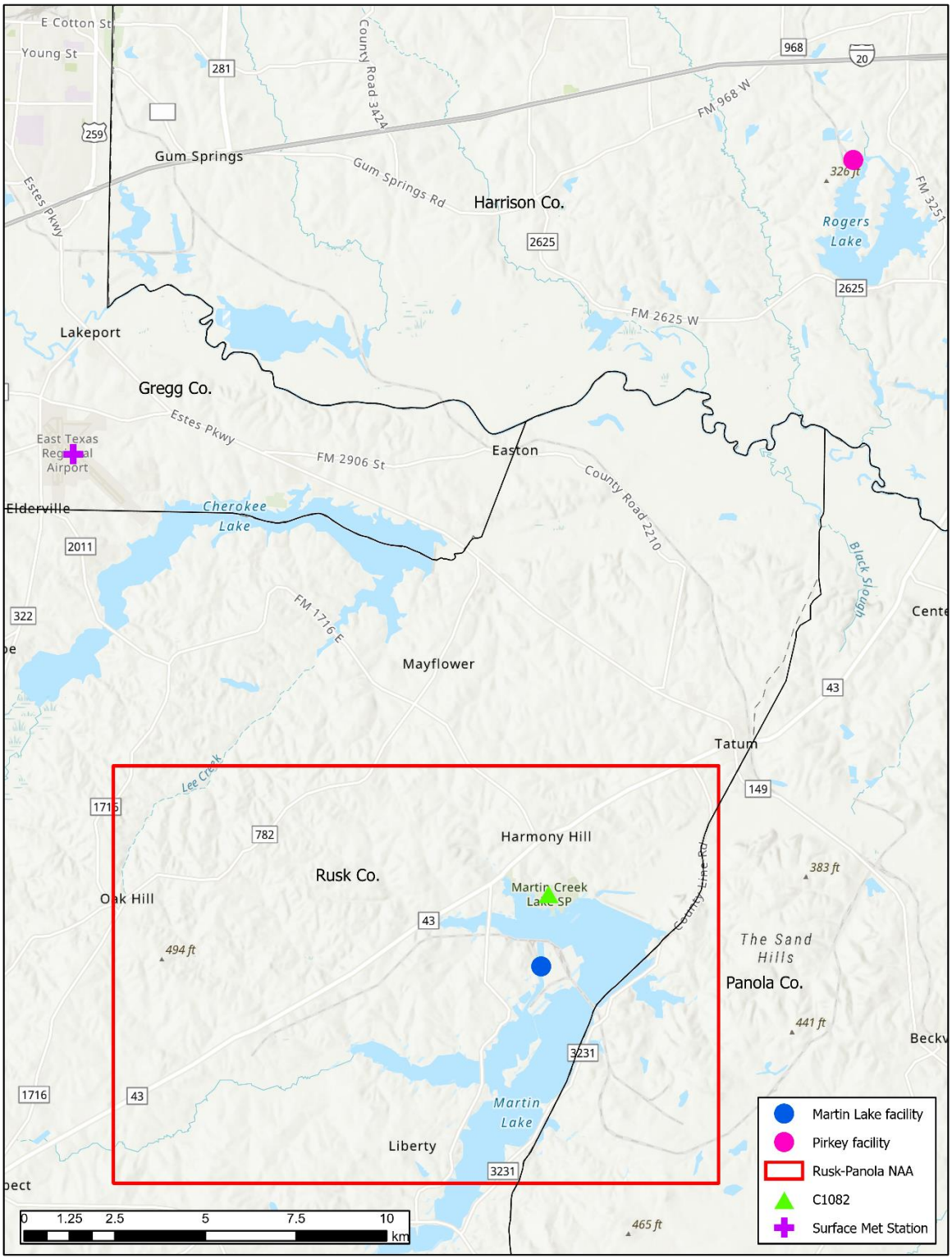

Figure 4-1: Overview of the Rusk-Panola Nonattainment Area

Figure 4-2: *Martin Lake Facility* shows an overview of Martin Lake, with the property boundary outlined in blue, buildings outlined in red, and stack locations marked with yellow points. New Source Review (NSR) permit number 933 for Martin Lake lists four boiler stack point sources, Emissions Point Numbers (EPN) S-1, S-2, S-3, and S1A&B. Section 4.5: *Source Parameters* of this chapter provides more details on these sources.

Figure 4-2: Martin Lake Facility

4.3 PROPERTY BOUNDARIES

Vistra Energy Corporation (Vistra) owns and controls access to the Martin Lake property through its subsidiary, Luminant Generation Company LLC (Luminant). Vistra also owns and controls access to an adjacent property, Liberty Mine, through another subsidiary, Luminant Mining Company. Property boundaries for Martin Lake and Liberty Mine are shown below in Figure 4-3: *Property Owned and Controlled by Vistra*. The Martin Lake property is outlined in orange, and the Liberty Mine property is outlined in pink.

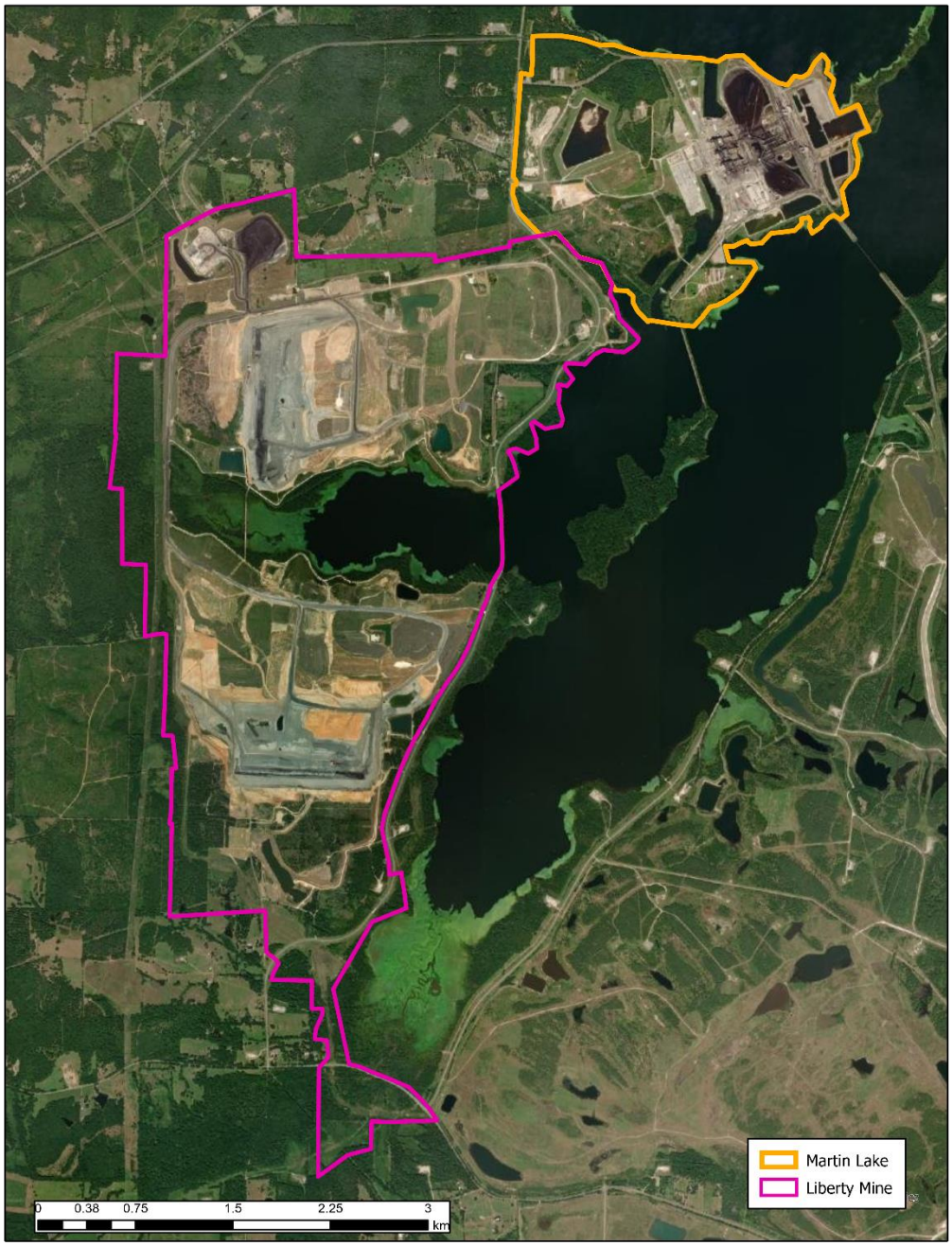

Figure 4-3: Property Owned and Controlled by Vistra

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). Vistra provided the Texas Commission on Environmental Quality (TCEQ) with evidence of measures to restrict public access to its properties that are either currently in place or will be put in place no later than the date by which the State of Texas is required to demonstrate compliance with the 2010 one-hour SO_2 NAAQS for the Rusk-Panola nonattainment area, which is January 12, 2022. These measures include barbed wire fencing, guarded gates, signage, and security patrols (see Appendix L: *Documentation from Vistra Energy Corporation for Property Boundaries*). Because Vistra controls access to both properties, atmosphere over the sections of their property with documented access restrictions was not considered ambient air for this attainment demonstration.

The non-ambient air boundary for this SIP revision is shown in Figure 4-4: *Property Owned by Vistra with Documented Restriction Measures*, marked in a blue line. The non-ambient air boundary follows the Martin Lake property boundary but only includes parts of the Liberty Mine property. Only areas of Liberty Mine where Vistra can ensure restrictive measures are or will be in place to prevent public access were excluded from ambient air. For example, sections of the western edge of the Liberty Mine property are heavily wooded and cannot be easily patrolled or fenced. Thus, the non-ambient air boundary was placed at the roadway within the property, where Vistra can add signage and patrol.

A public road, marked with a green line in Figure 4-4, runs through the parcel of land considered non-ambient air. This public road was considered ambient air.

Figure 4-4: Property Owned by Vistra with Documented Restriction Measures

4.4 SUMMARY OF ATTAINMENT DEMONSTRATION MODELING

The 2014 SO_2 SIP guidance and 40 CFR Part 51 Appendix W recommend that the EPA's preferred model, the Meteorological Society (AMS)/EPA Regulatory Model (AERMOD), be used for SO_2 attainment demonstration SIP modeling. However, initial dispersion modeling for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area performed by Vistra's consultant, AECOM, using AERMOD version 19191 showed that AERMOD strongly overpredicts SO_2 concentrations relative to available SO_2 observations. For specific applications, 40 CFR Part 51 Appendix W allows for the use of alternative models instead of AERMOD. Following the criteria in 40 CFR Part 51 Appendix W §3.2, the TCEQ submitted to the EPA a request for approval to use an alternative formulation of AERMOD called AERMOD-Highly Buoyant Plume (AERMOD-HBP) on May 24, 2021. Information regarding the alternative model, including AERMOD-HBP's formulation and the modeling protocol for the Alternative Model Approval demonstration developed by Ramboll US Consulting, Inc., is provided in Appendix M: *Alternative Model Approval Demonstration*.

Since AERMOD-HBP is an alternative formulation of AERMOD, it uses all the same regulatory preprocessors as AERMOD. The software versions and settings used in the preprocessors are detailed in Appendix K, Section 2: *Air Quality Model Selection* and Section 9: *Reference Tables for Modeling Preprocessors*.

The domain for the SIP revision modeling consisted of three nested receptor grids centered on Martin Lake's S1 source to cover a 25.5 km by 24.5 km area, shown in Figure 4-5: *Modeling Domain and Receptor Grid*. The modeling domain extended beyond the Rusk-Panola 2010 SO_2 NAAQS nonattainment area to ensure that the modeled scenarios demonstrate attainment of the NAAQS throughout the nonattainment area as well as the surrounding area. The three grids decrease in resolution with increased distance away from Martin Lake to sufficiently capture SO_2 concentration gradients from the source. Receptors were removed from areas not considered ambient air and placed along the non-ambient air boundary as well as the section of public road that crosses the non-ambient air region, as shown in Figure 4-6: *Receptors Around Non-Ambient Air Boundary*. Receptor elevations were derived from AERMOD's terrain preprocessor, AERMAP. Appendix K, Section 4: *Modeling Domain* provides more detail on the modeling domain.

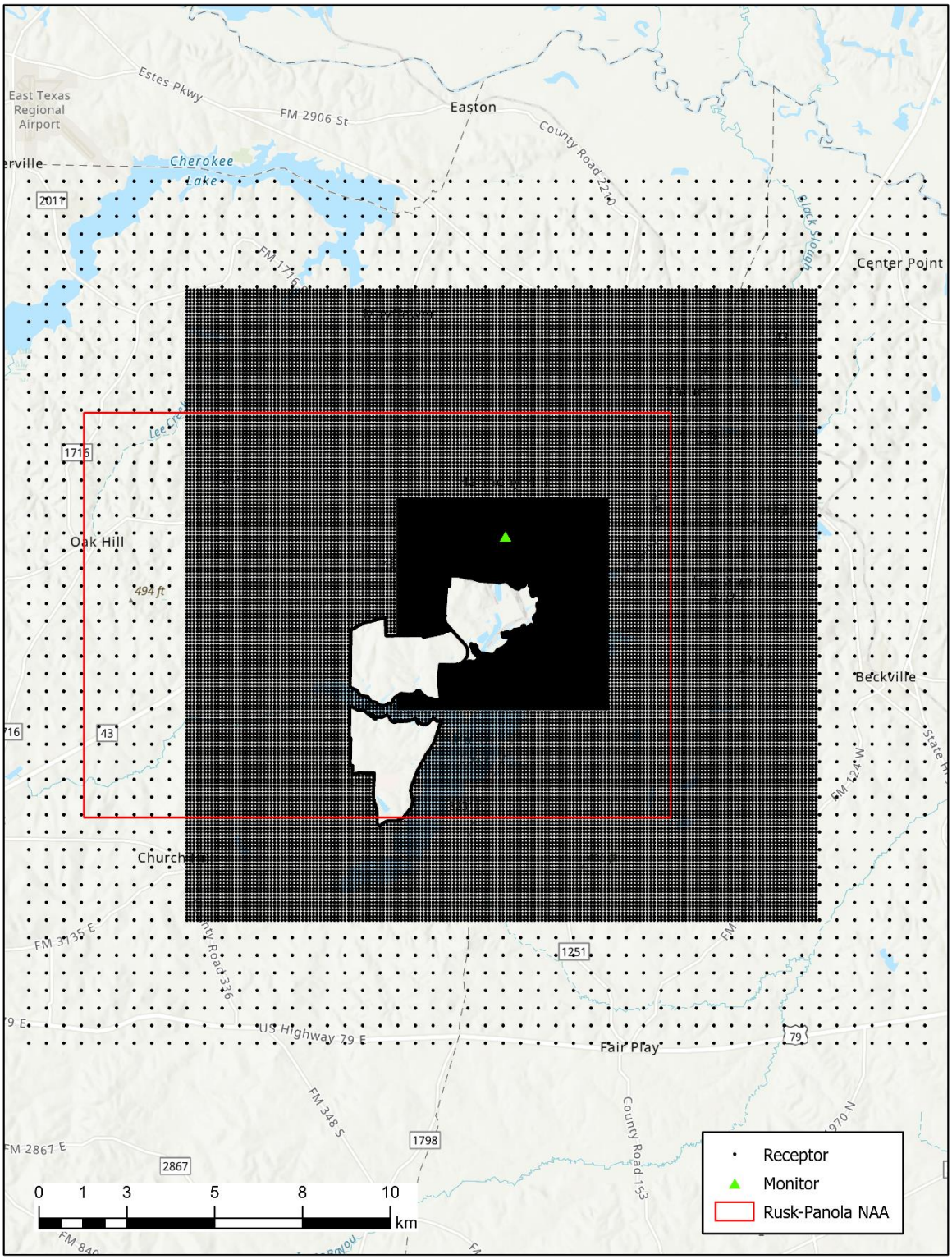

Figure 4-5: Modeling Domain and Receptor Grid

Figure 4-6: Receptors Around Non-Ambient Air Boundary

Meteorological inputs for AERMOD were created using the AERMET, AERMINUTE, and AERSURFACE preprocessors. Five years of meteorological data from 2015 through 2019 were processed, following the recommendations in 40 CFR 51 Appendix W §8.4, to capture meteorological variability. Surface data were taken from the NWS station at the Longview East TX Regional 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 K, Section 5: *Meteorology*.

Building downwash was calculated for the Martin Lake point sources using AERMOD's downwash preprocessor, the Building Profile Input Program for PRIME (BPIPPRM). Detailed building information used for BPIPPRM can be found in Appendix K, Section 3.2: *Buildings*.

4.5 SOURCE PARAMETERS

4.5.1 Martin Lake

There are four emission point sources at Martin Lake: three Electric Generating Facility (EGF) boiler stacks and one combined stack for two auxiliary boilers (SAUX), Facility Identification Numbers AUXB-A and AUXB-B. The sources were given Model Source Identifiers (ID) S1, S2, S3, and SAUX. Location coordinates and physical source parameters for the Martin Lake point sources are listed in Table 4-1: *Martin Lake Point Sources*. Locations of sources are shown in Table 4-1 in Universal Transverse Mercator (UTM) in meters (m). Stack temperatures, velocities, and emission rates vary based on the modeling scenario and are described in Section 4.6: *Modeling Scenarios and Results*.

Table 4-1: Martin Lake Point Sources

Model Source ID	NSR Permit Number 933 EPN	Type	UTM Easting (X; m)	UTM Northing (Y; m)	Height (m)	Diameter (m)	Elevation (m)
S1	S-1	Stack	352019.6	3570408.3	137.8	7.0	95.0
S2	S-2	Stack	352059.8	3570316.6	137.8	7.0	95.0
S3	S-3	Stack	352099.8	3570225.0	137.8	7.0	95.0
SAUX	S1A&B	Stack	351873.0	3570285.0	27.4	2.9	95.0

The auxiliary boilers are operated infrequently, typically only during startup, shutdown, testing, and maintenance. The operating hours and capacity factors for the auxiliary boilers in 2019 and 2020, as provided by Vistra, are shown in Table 4-2: *2019 and 2020 Operation Data for the Auxiliary Boilers*.

Table 4-2: 2019 and 2020 Operation Data for the Auxiliary Boilers

Calendar Year	AUX-A Total Operating Hours	AUX-A Capacity Factor (%)	AUX-B Total Operating Hours	AUX-B Capacity Factor (%)
2020	2.9	<0.1	0.4	<0.1
2019	10.2	0.14	2.3	<0.1

4.5.2 Nearby and Other Sources

As mentioned in Section 4.2: *Sources Overview*, AEP Pirkey is the only major source nearby Martin Lake with a contribution to the Rusk-Panola 2010 SO_2 NAAQS nonattainment area that is too high to be represented in the background concentration, and it was therefore modeled explicitly. AEP Pirkey has one point source of SO_2 listed in NSR permit number 6269, EPN P-16 (Model Source ID P16), with the stack parameters shown in Table 4-3: *AEP Pirkey Point Source Parameters*. For modeling, emissions from this source were determined based on the guidelines for nearby sources in 40 CFR Part 51 Appendix W Table 8-1. For a detailed explanation of the methods and data used to calculate emissions for P16, please refer to Appendix K, Section 7: *Nearby Sources*. Building downwash was not considered for P16 because the effects of downwash are localized, and P16 is too far from the Rusk-Panola 2010 SO_2 NAAQS nonattainment area for downwash to impact concentration gradients within the nonattainment area.

Table 4-3: AEP Pirkey Point Source Parameters

Model Source ID	NSR Permit Number 6269 EPN	Type	UTM Easting (X; m)	UTM Northing (Y; m)	Height (m)	Stack Temp. (Kelvin)	Stack Velocity (m/s)	Diameter (m)	Maximum Allowable Emission Rate (lb/hr)
P16	P-16	Stack	360479	3592510	160.02	338.71	25.91	7.62	8,160

Impacts of other sources of SO_2 affecting the Rusk-Panola 2010 SO_2 NAAQS nonattainment area were represented in the model as a background concentration. A representative background concentration of 6.0 ppb was used from the Midlothian Old Fort Worth monitor (C52) in Ellis County, Texas (see Appendix K Section 7: *Background Concentration* for details).

4.6 MODELING SCENARIOS AND RESULTS

4.6.1 Controlled Emissions and Stack Parameters

As discussed in Chapter 3, Martin Lake will operate its three EGF boiler units (S1, S2, and S3) under a three-boiler capped SO_2 emissions limit of 7,305 pounds per hour (lb/hr) over a block 24-hr averaging period. In addition to the lb/hr limitation, each EGF boiler will also be limited to an emissions factor (EF) of 0.32 pounds of SO_2 per one million British Thermal Units (lb/MMBtu) over a block 24-hour averaging period. Following the 2014 SO_2 SIP guidance, the longer-term average emission limits were calculated from the hourly emission rate for which the TCEQ modeling demonstrated attainment of the 2010 SO_2 one-hour NAAQS, known as the critical emission value

(CEV). The three-boiler combined critical emission value (CEV) used as the basis for the longer-term averaging calculation was 8,208 lb/hr. The supplemental EF limit was calculated based on a critical emission factor (CEF) of 0.33 lb/MMBtu. Based on the recommendations in the 2014 SO_2 SIP guidance, the CEV and CEF were used to determine the modeled emission rates rather than the discounted longer-term averaged limits.

Because variable operating loads can impact stack parameters and, thereby, dispersion characteristics, 40 CFR Part 51 Appendix W §8.2.2(d) recommends that multiple operating loads be modeled to ensure that the control measures will be protective of the standard under any expected operating condition. For this demonstration, high, medium, and low operating loads were modeled, as well as a maintenance, startup and shutdown (MSS) load. The load ranges were based on the combined maximum heat input for the EGF boilers of 27,000 MMBtu/hr, or 9,000 MMBtu/hr per boiler. Due to the interaction of the EF limit with the heat input, the per-boiler hourly emission rates decrease with decreasing operating load. The ranges of heat inputs and associated per-boiler emission rates for each operating load are shown below in Table 4-4: *EGF Boiler Operating Loads, Heat Inputs, and Emission Rates*.

Table 4-4: EGF Boiler Operating Loads, Heat Inputs, and Emission Rates

Operating Load	Per-Boiler Heat Input Range (MMBtu/hr)	EF Limit (lb/MMBtu)	Per-Boiler Minimum Emission Rate (lb/hr)	Per-Boiler Maximum Emission Rate (lb/hr)	Three-Boiler Emission Rate (lb/hr)
High	7,500 to 9,000	0.33	2,475	2,970	8,208
Medium	4,750 to 7,250	0.33	1,568	2,393	8,208
Low	2,000 to 4,500	0.33	660	1,485	8,208
MSS	30 to 1,750	0.33	10	578	8,208

Vistra provided the TCEQ with representative stack temperatures and stack velocities for the high, medium, and low operating loads. Vistra estimated these values based on an analysis of 2015 through 2020 hourly monitoring data, which is described in Appendix K, Section 8: *Modeling Scenarios and Results.* The TCEQ replicated the analysis and used a consistent methodology to estimate the stack parameters for the MSS operating load. The final estimates used in the modeling are listed in Table 4-5: *EGF Boiler Stack Parameters Under Various Operating Loads.*

Table 4-5: EGF Boiler Stack Parameters Under Various Operating Loads

Operating Load	Stack Temperature (degrees Fahrenheit; °F)	Stack Velocity (feet per second; fps)
High	163	94
Medium	160	83
Low	160	64
MSS	160	32

As discussed in Chapter 3, the two auxiliary boilers, AUXB-A and AUXB-B, will be controlled separately from the EGF boilers and are not contained under the three-boiler cap. The combined maximum allowable emission rate for AUXB-A and AUXB-B under the control measures is 51.46 lb/hr, or 25.73 lb/hr per boiler. As previously stated, SAUX is the combined stack for both auxiliary boilers. Stack parameters for SAUX when one or both boilers are operating are presented in Table 4-6: *Auxiliary Boilers Combined Stack (SAUX) Parameters*. The stack temperature and velocities were unchanged from the values in NSR permit number 933.

Table 4-6: Auxiliary Boilers Combined Stack (SAUX) Parameters

Number of Auxiliary Boilers Operating	Maximum Allowable Emission Rate (lb/hr)	Stack Temperature (°F)	Stack Velocity (fps)
1	25.73	600	20
2	51.46	600	40

4.6.2 Modeling Scenarios and Results

Because the control measures agreed upon by the TCEQ and Vistra use a three-boiler combined hourly CEV of 8,208 lb/hr, Vistra has flexibility in how emissions will be distributed across the three EGF boiler units. However, the addition of the 0.33 lb/MMBtu limit constrains the extent to which the cap can be distributed across the boilers at different operating loads. To determine modeling scenarios that account for this flexibility, the TCEQ examined twelve cap-distribution cases that capture the potential flexibility in distributing the capped emissions given the EF constraint. The twelve cap-distribution cases were considered for each operating load. The cases are described in Table 4-7: *EGF Cap-Distribution Case Descriptions*.

Table 4-7: EGF Cap-Distribution Case Descriptions

Cap-Distribution Case Number	Description
1	All three units operating at the minimum heat input of the operating load.
2	All three units operating at the maximum heat input of the operating load.
3	Emissions cap split evenly between the three units.
4	Two units operating at the maximum heat input of the operating load; third unit emitting the rest of the emissions cap.
5	Two units operating at the minimum heat input of the operating load; third unit emitting the rest of the emissions cap.
6	One unit emitting the entire emissions cap.
7	Emission cap split evenly between two units.
8	One unit operating at the maximum heat input of the operating load; one unit offline; third unit emitting rest of cap.
9	One unit operating at the minimum heat input of the operating load; one unit offline; third unit emitting rest of cap.

Cap-Distribution Case Number	Description
10	One unit operating at the maximum heat input of the operating load; one unit at the minimum heat input of the operating load; third unit emitting rest of cap.
11	Two units operating at the maximum heat input of the operating load; one unit operating at the minimum heat input of the operating load.
12	Two units operating at the minimum heat input of the operating load; one unit operating at the maximum heat input of the operating load.

For each case and operating load, the scenario was eliminated from consideration for modeling if the emissions cap limit or EF limit were exceeded using the ranges and values in Table 4-4. For the cases that consider a combination of maximum and minimum heat inputs (cases 10, 11, and 12), only cases that utilized at least 75% of the 8,208 lb/hr emission cap were included. Through this exercise, the TCEQ identified 20 modeling scenarios that capture the potential operating conditions of the three EGF boilers under the combined hourly emission limit and EF. The full table of calculations which determined whether the scenario was modeled is included in Appendix K, Table 8-6: *Calculations for Cap-Distribution Scenarios*.

While the auxiliary boilers are mainly operated during startup, shutdown, and testing, and infrequently outside of those circumstances, there are no restrictions on when these boilers can operate and for what duration. As a conservative approach, the TCEQ modeled SAUX at the maximum allowable hourly rate for every hour of the year for all five years in each of the 20 scenarios identified. The 20 scenarios were modeled with one auxiliary boiler operating and then repeated with both auxiliary boilers operating, resulting in 40 scenarios. Two additional scenarios were modeled in which only the auxiliary boilers were operating (one or both).

A total of 42 scenarios were modeled by the TCEQ:

- 20 scenarios with the three EGF boilers operating at different levels and one auxiliary boiler operating;
- 20 scenarios with the three EGF boilers operating at different levels and two auxiliary boilers operating;
- one scenario with one auxiliary boiler in operation and none of the EGF boilers were operating; and
- one scenario with two auxiliary boilers operation and none of the EGF boilers were operating.

The full set of 42 modeling scenarios is described in Table 4-8: *Modeling Scenario Descriptions*. All modeling scenarios were run using the same meteorological inputs, domain, downwash, and background concentration. AEP Pirkey's source P16 was included in all modeling scenarios.

Table 4-8: Modeling Scenario Descriptions

Modeling Scenario Number(s)	EGF Boiler Operating Load	Cap-Distribution Case Number	Description
1 (22)	High	3	Full emissions cap split evenly between the three EGF boilers at the High operating load; one (two) auxiliary boiler(s) operating
2-4 (23-25)	High	4	Two EGF boilers operating at the maximum heat input of the High operating load; third unit emitting rest of cap; one (two) auxiliary boiler(s) operating
5 (26)	High	1	All three EGF boilers operating at the minimum heat input of the High operating load; one (two) auxiliary boiler(s) operating
6-8 (27-29)	High	10	One EGF boiler operating at the maximum heat input of the High operating load; one EGF boiler operating at the minimum heat input of the High operating load; third unit emitting rest of cap; one (two) auxiliary boiler(s) operating
9-11 (30-32)	High	12	Two EGF boilers operating at the minimum heat input of the High operating load; one EGF boiler operating at the maximum heat input of the High operating load; one (two) auxiliary boiler(s) operating
12 (33)	Medium	1	All three EGF boilers operating at the minimum heat input of the Medium operating load; one (two) auxiliary boiler(s) operating
13 (34)	Medium	2	All three EGF boilers operating at the maximum heat input of the Medium operating load; one (two) auxiliary boiler(s) operating
14-16 (35-37)	Medium	11	Two EGF boilers operating at the maximum heat input of the High operating load; one EGF boiler operating at the minimum heat input of the High operating load; one (two) auxiliary boiler(s) operating
17 (38)	Low	2	All three EGF boilers operating at the maximum heat input of the Low operating load; one (two) auxiliary boiler(s) operating
18 (39)	Low	1	All three EGF boilers operating at the minimum heat input of the Low operating load; one (two) auxiliary boiler(s) operating
19 (40)	MSS	2	All three EGF boilers operating at the maximum heat input of the MSS operating load; one (two) auxiliary boiler(s) operating
20 (41)	MSS	1	All three EGF boilers operating at the minimum heat input of the MSS operating load; one (two) auxiliary boiler(s) operating
21 (42)	N/A	N/A	Only one (two) auxiliary boiler(s) operating

In every model run at each receptor in the domain, the 99th percentile daily maximum one-hour SO_2 concentration for each of the five modeled years were averaged to calculate a design value (DV). Every modeled scenario resulted in a maximum DV less than or equal to 75 ppb, ranging from 40.0 ppb to 73.6 ppb, demonstrating that the control measures are protective of the 2010 SO_2 NAAQS. The resulting maximum DVs for all modeling scenarios are listed in Appendix K, Table 8-5: *Modeling Scenarios and Maximum Modeled DV*.

The scenario with the highest maximum DV (73.6 ppb), or the controlling scenario, was scenario 23 with S1 and S2 operating at the maximum heat input of the High operating load, S3 emitting the rest of the three-boiler cap, and both auxiliary boilers operating. The stack parameters for the EGF boilers in the controlling scenario are shown in Table 4-9: *EGF Boiler Stack Parameters*. The results of this scenario are plotted in Figure 4-7: *Controlling Scenario Model Results*.

Table 4-9: EGF Boiler Stack Parameters for the Controlling Scenario

Model Source ID	Emission Rate (lb/hr)	Stack Temperature (°F)	Stack Velocity (fps)
S1	2,970	163	94
S2	2,970	163	94
S3	2,268	163	94

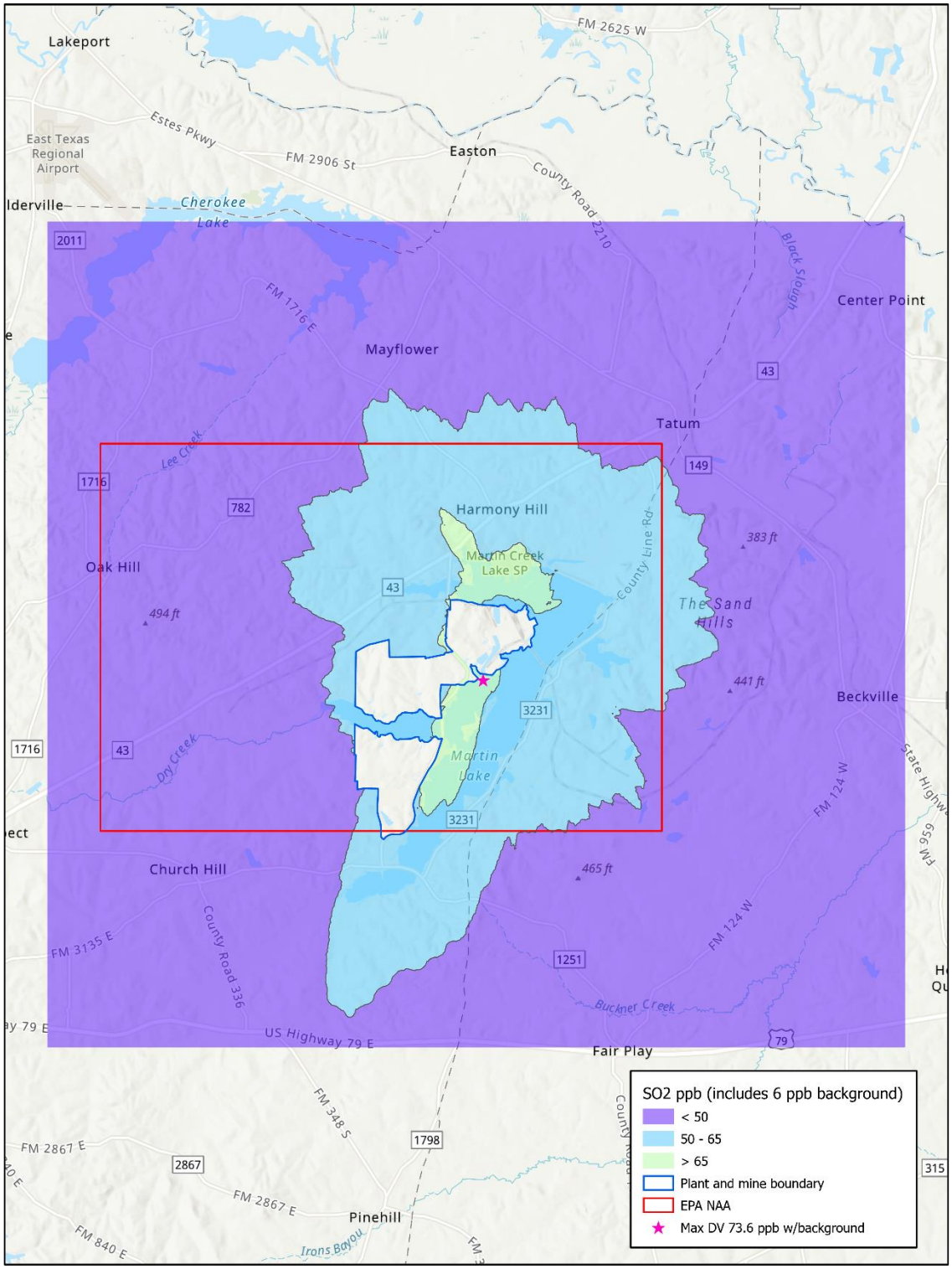

Figure 4-7: Controlling Scenario Model Results

4.7 CONCLUSION

The TCEQ conducted air quality dispersion modeling following the EPA's 2014 SO_2 SIP guidance and 40 CFR Part 51 Appendix W for the SIP revision for the 2010 SO_2 NAAQS. The TCEQ modeled the control measures for Martin Lake described in Chapter 3. The TCEQ considered possible operating scenarios and modeled attainment in each case, thereby ensuring that the flexibility in operating conditions allowed to Martin Lake sources under the controls will remain protective of the NAAQS. Based on the TCEQ's modeling, it is expected that the controls for Martin Lake will lead to attainment in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area.

4.8 REFERENCES

Environmental Protection Agency (EPA), 2014. Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions, 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. 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, accessed at https://www.epa.gov/sites/production/files/2019-12/documents/ambient_air2019.pdf, December 2.

CHAPTER 5: REASONABLE FURTHER PROGRESS

5.1 INTRODUCTION

Federal Clean Air Act (FCAA), §171(c) 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 SO_2 Nonattainment Area SIP Submissions* (2014 SO_2 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 SO_2 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."[7] Therefore, the 2014 SO_2 SIP guidance indicates that for sulfur dioxide (SO_2) nonattainment areas, RFP is best construed as "adherence to an ambitious compliance schedule."

5.2 RFP DEMONSTRATION

On December 13, 2016, the EPA designated the Rusk-Panola area near the Martin Lake Steam Electric Station (Martin Lake) as nonattainment for the 2010 SO_2 National Ambient Air Quality Standard (NAAQS), effective January 12, 2017 (81 FR 89870). Consistent with the EPA's 2014 SO_2 SIP guidance document, the Rusk-Panola nonattainment area contains a single 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 source in this area, as detailed in Section 5.3: *Compliance Schedule*. This compliance schedule therefore fulfills the RFP requirement for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area.

5.3 COMPLIANCE SCHEDULE

The EPA's 2014 SO_2 SIP guidance indicates that RFP for the 2010 SO_2 one-hour NAAQS is by definition only such reductions in emissions that are necessary to attain the NAAQS. Given the relationship between SO_2 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 SO_2 emissions implement appropriate control measures as expeditiously as practicable in order to ensure attainment of the standard by the applicable attainment date.

The compliance deadline for Luminant Generation Company LLC to meet the block 24-hour average for 7,305 lb/hr SO_2 is no later than the date by which Texas is required to demonstrate compliance with the 2010 SO_2 NAAQS in the Rusk-Panola nonattainment

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[7] EPA, April 23, 2014. *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (https://www.epa.gov/sites/production/files/2016-06/documents/20140423guidance_nonattainment_sip.pdf).

area. The attainment date for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area is January 12, 2022 and is the date by which compliance is required for Martin Lake. Due to the limited amount of time between development and adoption of this SIP revision and associated Agreed Order and the nonattainment area's attainment date, the specified compliance deadline reflects the most ambitious compliance schedule for the control strategy in the associated Agreed Order (Agreed Order 2021-0508-MIS, Non-Rule Project No. 2020-013-OTH-NR).

An additional control limit was added based on comments submitted by the EPA. The compliance date for this additional limit, 0.32 lb/MMBtu averaged over a block 24-hour averaging period, is as expeditiously as possible but no later than 180 calendar days from the compliance date specified for the lb/hr emissions source cap, which is July 11, 2022. Since the additional control limit was added in response to a comment, giving Luminant no time to plan for operational adjustments required to implement the control, the compliance deadline reflects the most ambitious compliance schedule in the associated Agreed Order (Agreed Order 2021-0508-MIS, Non-Rule Project No. 2020-013-OTH-NR).

Appendices Available Upon Request

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RESPONSE TO COMMENTS RECEIVED CONCERNING THE RUSK-PANOLA ATTAINMENT DEMONSTRATION STATE IMPLEMENTATION PLAN (SIP) REVISION FOR THE 2010 SULFUR DIOXIDE (SO_2) NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS)

The Texas Commission on Environmental Quality (TCEQ or commission) conducted a virtual public hearing on October 12, 2021 at 2:00 p.m. During the comment period, which closed on October 13, 2021, the commission received comments from the United States Environmental Protection Agency Region 6 (EPA), Luminant Generation Company LLC and Luminant Mining Company LLC (Luminant), the National Parks Conservation Association (NPCA), the Sierra Club, Southern Sector Rising, and 292 individuals.

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GENERAL COMMENTS

Luminant commented that it supports the TCEQ's efforts to develop and propose a SIP revision that demonstrates attainment of the SO_2 NAAQS in light of the significant time constraints; and supports the SIP revision and associated Agreed Order that require substantial SO_2 reductions from the Martin Lake Steam Electric Station (Martin Lake).

The TCEQ appreciates the support of this SIP revision. No changes were made in response to this comment.

Luminant commented that the TCEQ's proposed SIP revision satisfies all requirements for one-hour SO_2 nonattainment area SIP submission. Luminant stated that the TCEQ identified the reductions necessary to provide for attainment of the NAAQS and the means to achieve them as required by the federal Clean Air Act (FCAA). Luminant concluded that the TCEQ should adopt the SIP revision as proposed.

While the TCEQ agrees that the proposed SIP revision satisfied all SIP requirements under the 2010 SO_2 NAAQS, changes were made to the SIP revision and associated Agreed Order in response to comments from the EPA. These changes should aid the EPA in timely review and approval of the adopted SIP revision.

The NPCA, Southern Sector Rising, the Sierra Club, and 292 individuals opposed the proposed SIP revision and commented that cleaning up SO_2 pollution from the Martin Lake Steam Electric Station (Martin Lake) is long overdue. The NPCA, the Sierra Club, and 292 individuals commented that the public health standard for SO_2 was finalized in 2010 and 292 individuals commented that the EPA made the determination that

Martin Lake was out of compliance with that standard in 2017 and that the TCEQ should have submitted a plan to address this pollution in July 2018.

On December 13, 2016, the EPA published designations in the *Federal Register* (FR) for the 2010 SO_2 NAAQS, including a nonattainment designation for portions of Rusk and Panola Counties, effective January 12, 2017 (81 FR 89870). Texas did not submit the required SIP revision for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area by the July 13, 2018 submittal deadline due to ongoing litigation challenging the designation, as well as an EPA-proposed error correction that would have revised the nonattainment designation to unclassifiable if finalized. The purpose of this SIP revision is to ensure the area's attainment of the 2010 SO_2 NAAQS as expeditiously as practicable.

No changes were made in response to this comment.

Southern Sector Rising commented that the TCEQ did not listen to previous concerns.

The TCEQ disagrees that it has not listened to previous concerns as this is the first SIP revision developed for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area and the first opportunity for the commission to receive public comments regarding the attainment demonstration.

No changes were made in response to this comment.

The Sierra Club commented that the TCEQ's decision to hold a virtual public hearing made it difficult for the organization to promote to its members and challenging for members to attend. The commenter specifically noted the requirement to register for the hearing a week in advance and that the hearing was held during the middle of a workday.

The commission disagrees that the public participation process for this proposed SIP revision was inadequate. The TCEQ complied with the relevant requirements for public hearing and notification under 40 Code of Federal Regulations (CFR) §51.102, Texas Government Code, Subchapter B, Chapter 2001, and under the Texas Clean Air Act, Texas Health and Safety Code (THSC), §382.017 and Texas Water Code, §5.103.

The TCEQ encourages public participation in the SIP development process and makes every effort to hold hearings in locations and at times that are accessible and convenient to the public. The public hearing notice provides a phone number for a contact person as well as a toll-free phone number for persons who have special communication or other accommodation needs to register for the virtual hearing. The public hearing registration deadline was in place to ensure that TCEQ staff had enough time to determine the appropriate virtual platform to accommodate the number of participants. In addition to providing the opportunity to comment at a public hearing, the TCEQ also provides the public with the option to submit written comments by mail, fax, or electronically through the TCEQ's eComments system.

No changes were made in response to this comment.

The NCPA, Sierra Club, and 292 individuals commented that they are strongly opposed to the proposed SIP revision, which they asserted does not adequately meet the 2010 SO_2 NAAQS. The NPCA and the Sierra Club asked for stronger provisions in the SIP and stricter enforcement of those provisions.

The commission is committed to attaining the 2010 SO_2 NAAQS in the Rusk-Panola nonattainment area. The purpose of this plan is to demonstrate attainment of the standard in the Rusk-Panola area as expeditiously as practicable. Changes to this SIP revision and the associated Agreed Order were made in response to comments from the EPA and are discussed elsewhere in this document.

Twelve individuals commented that the purpose of the TCEQ is to serve all Texans, but that this SIP revision prioritizes the financial interest of industry over the health of the community and the environment. Eight individuals commented that the TCEQ needs to do its job and clean up air pollution.

The TCEQ strives to protect our state's human and natural resources in a manner that is consistent with sustainable economic development. TCEQ staff work with key stakeholders to develop plans that will help nonattainment areas in the state meet federal air quality standards set by the EPA for SO_2 and other air pollutants. The purpose of this SIP revision is to address FCAA attainment demonstration SIP requirements for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. The commission worked with Luminant, the regulated entity and only major source of SO_2 in the area, to identify enforceable control measures that would reduce SO_2 emissions and enable the Rusk-Panola area to attain the 2010 SO_2 NAAQS. These control measures are included in the Agreed Order associated with this SIP revision.

No changes were made in response to these comments.

One individual commented that using coal in this day and age is unacceptable.

Coal as a source of fuel for electricity generation has been on the decline in Texas and the United States, but it is still relied on as a source of fuel for electric generation plants, as demonstrated during the winter storm that affected most of Texas in February 2021. No changes were made in response to this comment.

One individual commented that ancient coal plants were "grandfathered" on various standards of the FCAA, with the idea that new, improved technology would be installed as the plants were upgraded or replaced. Instead, companies like Luminant have stretched grandfathering to extremes, and thousands of people have suffered health consequences as a result.

The FCCA, §165, requires all major stationary sources that commenced construction after August 7, 1977 to obtain a permit prior to construction under the New Source Review (NSR) permitting program. Major stationary sources that began construction before August 7, 1977 are considered "grandfathered" from the

preconstruction permitting requirement. Congress determined that grandfathering was appropriate because of the cost to retrofit existing sources and because certain modifications at those sources would be subject to NSR (those that increase emissions above certain amounts). Some grandfathered plants have continued to operate while simultaneously making improvements to reduce plant emissions. As a result of the adopted SIP revision, Martin Lake is required to switch fuels to burn only subbituminous coal, number 2 fuel oil, or natural gas, with subbituminous coal expected to have a lower concentration of sulfur compared to the current fuel mix of lignite and subbituminous coal. Martin Lake will also operate its existing wet scrubber system more efficiently to meet new and lower SO_2 emission limits for its three main utility boilers. This control strategy is expected to result in attainment of the health-based 2010 SO_2 NAAQS for the area.

No changes were made in response to this comment.

Two individuals commented that because we are experiencing climate change, if we continue to use polluting energy sources like coal, they should be used with the most effective pollution controls to prevent emissions of particulates, mercury, and SO_2. One individual commented that the TCEQ has failed to act on climate change and toxic waste.

Climate change and toxic waste are outside the scope of this SIP revision. The use of coal has been previously discussed in this response to comments document.

No changes were made in response to this comment.

EMISSIONS INVENTORY

The Sierra Club commented that SO_2 emissions from Martin Lake have increased since 2016.

The TCEQ agrees that the SO_2 emissions from Martin Lake were greater in 2020 than in 2016; however, Martin Lake's SO_2 emissions decreased between 2018 and 2020. Martin Lake's SO_2 emissions vary annually due to a variety of factors including heat input and the sulfur content of the coal used. The SO_2 emissions reported by Martin Lake in the TCEQ emissions inventory were below the emissions limits allowed by its permits during the 2016 through 2020 timeframe.

No changes were made in response to this comment.

The Sierra Club commented that the Big Brown Steam Electric Station (Big Brown) in Anderson County, Monticello Steam Electric Station (Monticello) in Titus County, and Martin Lake in Rusk County are among the largest SO_2 emissions sources in the nation. The Sierra Club compared emissions from these sources to other SO_2 emissions sources in Texas and sources in Louisiana and Oklahoma.

The TCEQ was not able to verify the accuracy of all the Sierra Club's historical data and comparisons based on recent Air Markets Program emissions data. Big Brown and Monticello, which both permanently shut down in 2018, are not located in the

Rusk-Panola 2010 SO_2 nonattainment area and are therefore outside the scope of this SIP revision.

No changes were made in response to this comment.

HEALTH EFFECTS AND ENVIRONMENTAL IMPACTS

The NPCA and 292 individuals commented that air pollution from Martin Lake in the Rusk-Panola nonattainment area impacts the views in national parks in the region (Big Bend and Guadalupe Mountains National Parks). The NPCA commented on the potential economic impact of decreased park visitation as a result of hazy days related to air pollution, and the significant economic benefit to the Texas economy resulting from national parks.

The impacts of regional haze on national parks and other Class I areas are outside the scope of this SIP revision.

No changes were made in response to this comment.

The NPCA, Southern Sector Rising, the Sierra Club, and 292 individuals commented that the SO_2 emissions from Martin Lake significantly impacts the health and environment of nearby communities. Some commenters specifically mentioned the negative impact of SO_2 on the respiratory system and ailments like asthma and chronic obstructive pulmonary disease (COPD). The NPCA, the Sierra Club, and 292 individuals cited a 2017 study by Dr. George Thurston that found pollution from Martin Lake contributes to more than 100 premature deaths, thousands of asthma attacks, lost work and school days, and more than $1 billion in public health costs annually. The NPCA and 292 commenters also mentioned research linking chronic exposure to air pollution with higher death rates for those contracting COVID-19; however, no specific studies were cited. The 292 individual commenters asked the TCEQ to use the highest standards to protect the health of community members and to consider the health of future generations.

The commission strives to protect our state's human and natural resources. The commission is committed to attaining the 2010 SO_2 NAAQS, which is a health-based standard, as expeditiously as practicable. The primary NAAQS are those that the EPA determines are necessary to protect public health, including sensitive members of the population, such as children, the elderly, and those with existing lung or cardiovascular conditions. The purpose of this SIP revision is to demonstrate attainment of the 2010 SO_2 NAAQS in the Rusk-Panola area.

As stated in Section 1.4: *Health Effects* of this SIP revision, current scientific evidence links short-term exposures to SO_2 with an array of adverse respiratory effects, including bronchoconstriction and increased asthma symptoms. 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 the elderly.

The 2017 report by Dr. Thurston estimated the potential total public health-based economic benefits associated with reductions in ambient $PM_{2.5}$ concentrations, not

reductions in SO_2. All areas of Texas are currently designated attainment for the $PM_{2.5}$ NAAQS, which the EPA has set at levels that are protective of human health. Because Dr. Thurston's report does not provide information about the health risks from SO_2, it is not informative for this SIP revision.

No changes were made in response to these comments.

292 individuals commented that emissions from Martin Lake contribute to air pollution that impacts the health of downwind communities outside of the Rusk-Panola 2010 SO_2 NAAQS nonattainment area, specifically the Dallas metropolitan area. One commenter also stated that these emissions negatively impact air pollution in San Antonio.

The Dallas and San Antonio areas are currently designated attainment/unclassifiable for and are meeting the 2010 SO_2 NAAQS. These two areas are outside the scope of this SIP revision which pertains to attainment of the standard in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area.

No changes were made in response to this comment.

One individual commented that the SO_2 standards are important for acid rain and negative impacts on Texas agriculture.

The EPA sets secondary NAAQS to protect public welfare, including crops and vegetation, from the adverse effects of air pollutants. The current secondary SO_2 standard is 500 parts per billion (ppb) averaged over three hours, not to be exceeded more than once per year. This SIP revision is specific to demonstrating the Rusk-Panola area's attainment of the 2010 primary SO_2 NAAQS, therefore comments regarding the secondary standard are outside the scope of this SIP revision.

No changes were made in response to this comment.

TECHNICAL ANALYSIS

The EPA commented that EPA's approval of an alternate model is required by 40 CFR Part 51, Appendix W (Appendix W). The EPA stated that the process of seeking approval of an alternate model includes submission of preliminary analysis and documentation to demonstrate a general proof of concept: followed by review, agreement on a modeling protocol, and the completion of the required analysis described in the protocol. The EPA further commented that the review process is iterative, could include code changes, could take close to a year, and approval of AERMOD-Highly Buoyant Plume (AERMOD-HBP) is uncertain.

The TCEQ appreciates the EPA's detailed description of the ideal chronology for the alternate model approval process. However, the ideal chronology and process was not possible for this SIP revision due to the severely constrained SIP development timeline. The TCEQ did not submit the SIP revision by the deadline due to ongoing litigation and because the EPA intended to propose an error correction under FCAA, §110(k)(6) to revise the Rusk-Panola 2010 SO_2 NAAQS nonattainment area

designation to unclassifiable, which would have eliminated the nonattainment area SIP requirements. The EPA proposed the error correction on August 22, 2019 (84 FR 43757). However, on August 10, 2020, the EPA published a final notice of Texas' failure to submit required SIP elements for the Rusk-Panola and other 2010 SO_2 NAAQS nonattainment areas, effective September 9, 2020 (85 FR 48111). Additionally, on June 29, 2021, the EPA published a notice withdrawing the proposed error correction triggering the "FIP Clock" (86 FR 34187). If the TCEQ does not submit a SIP revision in time for the EPA to make a completeness determination by March 9, 2022, the emissions offset sanction identified in FCAA, §179(b)(2) will apply for the affected nonattainment areas. If the EPA does not determine that the state's submittal is complete within six months after imposing the offset sanction, then the highway funding sanction will apply.

Given the tight deadlines and sanctions that could apply, the TCEQ quickly engaged with the EPA on various aspects of SIP development including use of the alternate model. As the EPA noted in its comments, the TCEQ engaged with the EPA as early as November 2020. Due to the tight timelines, the TCEQ had to develop the attainment demonstration and conduct the evaluation of the alternate model in parallel. In January 2021, the TCEQ submitted a draft attainment demonstration modeling protocol that included a brief description of the alternate model evaluation, and the TCEQ verbally discussed preliminary results with the EPA in April and May of 2021. The TCEQ expanded the alternate model analysis in response to EPA questions, including adding the Longview monitor to the evaluation, reviewing the AERMOD evaluation database, and adjusting the placement of receptors for model performance evaluation. The TCEQ appreciates the feedback and guidance the EPA has provided to date. The TCEQ provided additional comprehensive information to the EPA in May 2021, including the required proof of concept and results from the EPA-suggested statistical, code, and graphical evaluations.

The good-faith effort the TCEQ made to consult with and incorporate the feedback of the EPA met the essential purpose of the alternate model approval process. Adherence to details of a non-regulatory procedure should not be used to remove a flexibility afforded to a state. The criteria for approval of the alternate model are the applicability and performance of the model rather than the specific chronology of the approval request. The TCEQ encourages the EPA to review the information provided and expedite the approval of the alternate model AERMOD-HBP.

The EPA commented that the initial review of AERMOD-HBP indicates the HBP alternative model underpredicts SO_2 concentrations some of the time and that the EPA may not be able to approve the alternative model.

The TCEQ evaluated model performance of AERMOD-HBP using procedures recommended in Appendix W, Section 3.2 and feedback provided by the EPA. In particular, the TCEQ followed a standard methodology from the EPA's *Protocol for Determining the Best Performing Model* (EPA, 1992).

The TCEQ's evaluation shows that AERMOD-HBP is a more appropriate model to simulate dispersion of emitted SO_2 from the Martin Lake facility. This conclusion was reached based on the following statistical evaluations:

- The one-hour averaging and Composite Performance Measure (CPM) Absolute Fractional Biases for AERMOD-HBP are lower than for AERMOD, indicating better agreement with observations and therefore better performance.
- The Model Comparison Measures, which is a difference between AERMOD and AERMOD-HBP's CPM values, is positive (0.04), indicating that the better performing model is the AERMOD-HBP.
- The ratio of differences in CPMs to standard deviation error for one-hour averaging is 1.81, which indicates with statistical significance that AERMOD-HBP is better than AERMOD.

Though AERMOD-HBP underpredicts concentrations in certain conditions, it is a better model to estimate concentrations at Martin Lake as demonstrated by the statistical evaluation results detailed above. Further, a review of the EPA's evaluations used to approve AERMOD shows that, similar to AERMOD-HBP, AERMOD overpredicts Robust Highest Concentration (RHC) ratio close to a source and underpredicts at larger distances from a source.

No model perfectly predicts observed conditions. The option to use an alternative model is provided in Appendix W, precisely for situations when the use of the preferred model is not appropriate. The TCEQ provided data and an evaluation demonstrating that AERMOD is not an appropriate model for the Martin Lake facility as it is does not appropriately estimate concentrations when there are penetrated plumes (occasions during which the mixed layer height is between the bottom of the SO plume and the center of the plume), which occur at Martin Lake. Further, the TCEQ's evaluation showed that, in the absence of penetrated plumes, AERMOD-HBP modeled concentrations match those of AERMOD. Using the EPA's recommended statistical evaluations, the results of TCEQ's evaluation show that in this case-specific scenario, AERMOD-HBP is the appropriate model to estimate SO_2 concentrations from Martin Lake. The TCEQ strongly encourages the EPA to review ***all*** the evaluation results and information provided when determining if AERMOD-HBP is the appropriate model to use for this SIP revision.

No changes were made in response to this comment.

The EPA commented that the TCEQ should consider evaluating what level of emission limits would be necessary to demonstrate attainment using the regulatory version of AERMOD.

The TCEQ provided the EPA with documentation to support that the regulatory version of AERMOD is not an appropriate model to use for the Rusk-Panola attainment demonstration. Details of the documentation were provided in Appendix M of this SIP revision. The AERMOD model has significant overprediction tendencies as shown by comparisons to the monitored concentrations at the Tatum CR 21381d Martin Creek Lake monitor, also known as Continuous Ambient

Monitoring Station (CAMS) 1082 (C1082). The overpredictions are due to the inability of AERMOD to appropriately characterize concentrations in the presence of penetrated plumes, which occur at Martin Lake. Evaluating emission limits using the regulatory version of AERMOD is unwarranted in this case-specific scenario that involves penetrated plumes.

No changes were made in response to this comment.

The EPA commented that the proposal did not include information to support the TCEQ's use of Vistra's (Luminant) estimate that the planned control measure would result in a 15% reduction in stack exit velocity. The EPA requested the supporting information be included to facilitate its review. The EPA further commented it is unclear if a 15% reduction should be applied to the stack exit temperature in addition to the velocity since reduction in temperature would reduce plume buoyancy and increase the modeled design value. The EPA provided details of a modeling sensitivity where the stack exit temperature was reduced by 15% from the values modeled by the TCEQ to demonstrate resulting increase in modeled design value.

The modeled stack parameters are based on the 2015 through 2020 monitored hourly continuous emissions monitor system (CEMS) data. The 2015 through 2020 CEMS data were provided to the EPA in July 2021. The methodology used to arrive at the modeled parameters is explained in Appendix K: *Modeling Technical Support Document (TSD)*. As stated by Luminant in its September 21, 2021 e-mail provided to the EPA and verified by the TCEQ, analysis of historical CEMS data demonstrates that stack exit velocity shows a linear relationship to heat input, while stack exit temperatures do not show such a linear relationship. This is because stack velocity is related to fuel flow whereas stack temperatures are based on scrubber use.

The 15% reduction to the stack velocity due to the fuel switch to exclude lignite coal will result in a decrease in the amount of fuel flow. The 15% reduction was estimated by Luminant based on stack velocity data from the retired Monticello Unit 3. The Monticello Unit 3 was utilized since it was a coal-fired boiler that switched from lignite to subbituminous and monitored stack velocity data was available to determine the impact on stack velocity before and after fuel switching. Stack velocity was retrieved and evaluated for periods of time before and after the fuel transition of the unit to 100% subbituminous coal. Monticello Unit 3 velocity data were evaluated over two timeframes and over four operating range bins to assess the change in stack velocity associated with the transition to 100% subbituminous fuel. Data between January 1, 2011 and December 31, 2015 was evaluated as pre-transition data, and data between October 1, 2016 and December 21, 2017 was labeled as post-transition data. Across the entire operating range, the maximum decrease in velocity is 11%. The 15% reduction was used as a conservative assumption. Details of this analysis have been added to Appendix K.

The historical temperature data used to estimate the expected future stack temperatures accounted for all possible scrubber usage when emission rates are less than 2,500 pounds per hour (lb/hr), therefore a further 15% reduction in temperatures is not required. Further, emission rates greater than 2,500 lb/hr are only possible with reduced scrubber usage, which will result in higher and not

lower temperatures than modeled. The modeling sensitivity that the EPA conducted to determine the change in the modeled design value due to a 15% reduction in the temperature is inappropriate since the 15% reduction was applied to temperatures in Kelvin. An application of a 15% reduction to stack temperature in Kelvin leads to a 50% decrease in stack temperatures when evaluated in Fahrenheit.

The EPA commented that, absent shorter term or input based emission limits (such as a pound per Million British thermal units ((lb/MMBtu)), any of the scenarios with a unit or units operating at less than 100% load could emit at a rate higher than was modeled (greater than the assumed 0.3 lb/MMBtu) and still meet the proposed agreed order limit. The EPA further commented that the modeled scenarios in the proposed SIP revision are insufficient to cover the range of emissions and stack parameters allowed under the proposed emission limit. The EPA commented that the TCEQ should model additional scenarios and/or include additional enforceable limitations, such as a lb/MMBtu limit on each unit, to restrict the possible scenarios allowed.

The TCEQ performed additional modeling to ascertain the extent of the theoretical situation described in this comment. Through this modeling and the agreed order development process, the TCEQ identified additional limitations to enhance the protectiveness of this SIP revision under the conditions described by the EPA in this comment. In addition to the proposed emissions cap for the combined three electric generating facility (EGF) boilers, a lb/MMBtu emission limit has been added for each individual boiler. The TCEQ took into account the 0.33 lb/MMBtu one-hour critical emission factor (CEF) limit and a one-hour critical emissions value (CEV) cap of 8,208 lb/hr for the three EGF boilers that are the basis of the compliance limits to determine the final set of 42 modeling scenarios used to demonstrate attainment of the NAAQS under different load levels and associated varying stack parameters. Details of the TCEQ's identification of modeling scenarios and the resulting modeled design values are documented in Chapter 4 and Appendix K of this SIP revision.

The EPA commented that the TCEQ noted incorrect stack locations for Martin Lake Units 1, 2, and 3 in relation to the buildings at the site. The EPA noted that the stack locations should be corrected in all the modeling runs.

The TCEQ incorporated the revised stack locations in all modeling runs based on location information provided by Luminant on July 20, 2021.

The EPA commented that Vistra (Luminant) included the internal and external checkpoints for the patrol routes to provide a check on the area that is being excluded from ambient air but did not include the actual routes for the main facility and Liberty mine checkpoints. The EPA commented that these routes should be included in the SIP documentation.

An updated letter with the requested patrol routes was provided by Luminant via e-mail on November 3, 2021 to the TCEQ and the EPA. The updated letter with the patrol routes, was added to Appendix L: *Documentation from Vistra Energy Corporation for Property Boundaries* for this SIP revision.

Luminant commented that the use of the alternate model (AERMOD-HBP) is appropriate in this case and meets EPA requirements for using an alternate model. Luminant stated that the EPA allows flexibility to use an alternative model if it performs better than or is more appropriate than the preferred model. Luminant concluded that, in this case, the alternative model provides a better statistical performance evaluation than the preferred model and, therefore, is more appropriate.

The TCEQ agrees and appreciates the support. No comments were made in response to this comment.

Luminant commented that the default AERMOD does not reflect actual observations in the area surrounding Martin Lake and over predicts SO_2 concentrations on specific occasions during which the mixed layer height is between the bottom of the SO_2 plume and the center of the plume. Luminant further stated that this issue has been raised with the EPA in the past and that the alternate AERMOD-HBP model resolves the penetrated plume issues during the affected hours.

The TCEQ agrees and appreciates the support. No changes were made in response to this comment.

Luminant commented that, per the EPA's request, numerous modeling evaluations were conducted to determine what approach best reflects Martin Lake's SO_2 impacts at the Martin Creek Lake monitor and the Longview Airport monitor, and that evaluations were refined to address EPA and TCEQ concerns. Luminant stated that AERMOD-HBP demonstrated significantly better performance compared to AERMOD for Martin Lake when both models were evaluated using the EPA-recommended Cox-Tikvart evaluation method. Luminant further stated that this analysis, along with previous information and analysis provided to the EPA and the TCEQ, shows that AERMOD-HBP more accurately reflects actual ambient conditions associated with SO_2 emissions from Martin Lake.

The TCEQ appreciates the support. No changes were made in response to this comment.

Luminant commented that the EPA, the TCEQ, and Luminant worked in coordination to ensure the site and facility characteristics, representative meteorological data, and other relevant information used in the modeling are accurate and reflect actual conditions at Martin Lake and the surrounding area and are understood by all parties. Luminant further noted that guidance taken from discussions with the EPA and the EPA's "Revised Policy on Exclusions from 'Ambient Air'" was used to determine which Luminant properties to exclude and differentiate from ambient air. In addition, Luminant provided information and data to the TCEQ and the EPA to address questions regarding varying stack data.

The TCEQ appreciates the information and support. No changes were made in response to this comment.

The NPCA, the Sierra Club, and 292 individuals commented that the TCEQ relied on a modeling technique that has not been approved by the EPA to develop this SIP revision.

For specific applications, Appendix W allows for the use of alternate models instead of AERMOD. Following the criteria laid out in Section 3.2 of Appendix W, the TCEQ submitted a request to the EPA for approval to use an alternate formulation of AERMOD called AERMOD-HBP on May 24, 2021. Due to timing constraints and because the TCEQ believes that the alternate model meets the criteria for approvability, the TCEQ proceeded to develop the SIP revision and the evaluation of the alternate model in parallel.

No changes were made in response to this comment.

The Sierra Club commented that the TCEQ failed to follow the required consultation process for the approval of AERMOD-HBP and that the EPA cannot approve the proposed SIP revision on the timeline to meet the attainment deadline.

As described elsewhere in this response to comments, the TCEQ engaged with the EPA in the required consultation process for approval of the AERMOD-HBP; and provided the required data and information to the EPA. The history regarding the designation, proposed error correction, subsequent withdrawal of the error correction, and the impacts on the SIP development timeline prior to the attainment date are also discussed elsewhere in this response.

No changes were made in response to this comment.

The Sierra Club commented that the TCEQ's statistical performance evaluation does not support the use of AERMOD-HBP for several reasons and there is no evidence in the record demonstrating that the alternative AERMOD-HBP model performs appreciably better than AERMOD.

The TCEQ disagrees with the Sierra Club's characterization of the TCEQ's AERMOD-HBP evaluation results and has described elsewhere in this response why AERMOD-HBP is the better model choice in this case. The Sierra Club appears to have reviewed the evaluation *protocol* and characterized it as the evaluation *results*. The protocol describes the analysis and data to be used to evaluate the alternate model and does not describe the evaluation results. As required by Section 3.2 of the Appendix W, the TCEQ submitted the details of the evaluation methodology and the results to the EPA for review and approval.

No changes were made in response to this comment.

The Sierra Club commented that the TCEQ should consider third party modeling. The Sierra Club commented that its independent modeling followed all EPA guidance, is based on actual emissions, stack temperature, and exit velocities for the two three-year periods modeled (2017 through 2019 and 2018 through 2020), and it clearly demonstrates that the Martin Lake Power Plant is causing, and will continue to cause, violations of the NAAQS. The Sierra Club further commented that it re-ran the TCEQ's scenarios 1, 6, 46, and 51 using the TCEQ's modeling inputs on the unaltered version of AERMOD. By using the TCEQ's own stack parameters and assumption on the unaltered AERMOD, the results demonstrate that the TCEQ's proposed SIP will fail to provide for attainment.

The TCEQ reviewed the information submitted by Sierra Club, which included three different sets of modeling. The first set included modeling two three-year periods (2017 through 2019 and 2018 through 2020) using actual past emissions to determine the 2019 and 2020 design values at the Martin Creek Lake monitor. The first set of modeling is not relevant to this SIP revision as it does not take into account the control strategy laid out in this SIP revision and Agreed Order and does not follow the attainment demonstration modeling requirements laid out in the EPA's 2014 *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (2014 SO_2 SIP guidance). The control strategy will result in lower emissions and attainment, as shown by the TCEQ's modeling.

The second set of runs in the Sierra Club modeling included re-running the TCEQ's scenarios 1, 6, 46, and 51 using the TCEQ's modeling inputs on the regulatory version of AERMOD. As stated in the SIP revision narrative and elsewhere in this response to comments document, the use of AERMOD is inappropriate for modeling Martin Lake. AERMOD has shown a significant over prediction bias and the Sierra Club's modeling results further illustrate this bias.

The third set of runs in the Sierra Club modeling included sensitivities on stack velocity where it modeled the TCEQ's scenario 51 to show that reduction in stack velocity will result in higher modeled maximum design value. The TCEQ determined the representative stack velocity used in the modeling based on historical CEMS data. Further, to account for possible change in stack velocity due to fuel switching, the TCEQ applied an additional 15% reduction to the stack velocity used in all its modeling scenarios, including scenario 51. The TCEQ used conservative stack velocities to ensure that attainment is demonstrated under differing operating conditions and varying stack velocities.

No changes were made in response to this comment.

The Sierra Club commented that the independent modeling done for Sierra Club compared the ratio of respective modeled design value derived by AERMOD-HBP and AERMOD to monitored design value and found that, although the modeled AERMOD-HBP concentration was slightly closer to monitored values, the difference between AERMOD and AERMOD-HBP is not significant enough to demonstrate that AERMOD-HBP provides superior performance.

Section 3.2.2(b) of Appendix W states that an alternate model can be approved "If a statistical performance evaluation has been conducted using measured air quality data and the results of that evaluation indicate the alternative model performs better for the given application than a comparable model in appendix A." The Appendix does not require that the alternate model be *significantly* better. The TCEQ's evaluation, which follows the requirements specified in Section 3.2.2(d) of Appendix W, shows that AERMOD-HBP performs better for this case-specific scenario at Martin Lake.

The Sierra Club commented that the narrow margin of attainment demonstrated with the AERMOD-HBP model versus the larger demonstration of nonattainment using AERMOD requires a more rigorous evaluation of the use of AERMOD-HBP.

The EPA's 2014 SO_2 SIP guidance and Appendix W do not require or specify a margin when demonstrating attainment. Attainment is demonstrated when the 99th percentile of maximum one-hour modeled concentrations averaged over five years is below the NAAQS of 196.4 micrograms per cubic meter ($\mu g/m^3$).

Further, the EPA specifically addressed this issue as part of the EPA's action to redesignate the Marshall, West Virginia 2010 SO_2 NAAQS nonattainment area and approve the area's maintenance plan (85 FR 67662), stating:

> **First, the 2010 SO_2 NAAQS was set at a level which already provides for an adequate margin of safety, as required by CAA Section 109(b)(1). Section 109(b)(1) of the FCAA defines a primary standard as one where "the attainment and maintenance of which, in the judgment of the Administrator, based on [the air quality] criteria and allowing an adequate margin of safety, are requisite to protect the public health." As noted, when the EPA set the SO_2 standard, "[t]hus, in selecting primary standards that include an adequate margin of safety, the Administrator is seeking not only to prevent pollution levels that have been demonstrated to be harmful but also to prevent lower pollutant levels that may pose an unacceptable risk of harm, even if the risk is not precisely identified as to nature or degree." (75 FR 35520, 35521 (June 22, 2010)). Because the NAAQS already includes a margin of safety, the fact that the 99th percentile of maximum daily one-hour modeled concentrations averaged over five years is below the NAAQS of 196.4 mg/m^3 ensures that public health is protected.**

Based on the requirements and the adequate margin of safety provided by the standard itself, the TCEQ is only required to have modeling and a control strategy that meets the standard of 196.4 $\mu g/m^3$ (75 ppb)—which is accomplished with this SIP revision.

No changes were made in response to this comment.

The Sierra Club commented that the modeling analysis is highly dependent on the assumed stack parameters, and that the SIP revision does not provide adequate support for the estimated stack velocities. The Sierra Club commented that the TCEQ does not explain how the future 15% reduction in average stack velocity was determined, or what data were used to arrive at that reduction. The Sierra Club commented that the estimated stack velocities are not supported by sufficient historical stack data. The Sierra Club commented that the expected stack velocities when the Martin Lake units switch to firing only subbituminous coal could be overestimated, because there is a lower volume of combustion products when firing subbituminous coal compared to that of lignite coal or mixed lignite and subbituminous coal. The Sierra Club commented that the TCEQ does not address the percentage of flue gas flow that bypassed the scrubbers and how that could affect stack velocity.

The Sierra Club provided conflicting comments on the issue of stack velocities. One comment was made that the modeled stack velocities do not reflect historical data but another was made that the modeled stack velocities did not account for the

changes that can be expected once the planned control measures are implemented. Appendix K of this SIP revision provides adequate support for the TCEQ's estimated stack velocities, including details of how the stack velocity was derived and the data used.

The stack velocities are based on historical CEMS data from the 2015 through 2020, which is sufficient for this purpose. The 15% reduction from historical averages was applied to address the change in stack velocities expected due to the planned control measure of fuel switching. The percent reduction was determined by Luminant and verified by the TCEQ based on the change observed in stack velocities after fuel switching in the retired Monticello Unit 3. The applicability of the Monticello Unit 3 data as a surrogate for future operations is discussed elsewhere in this response. Additional details regarding the data and analysis to determine the percent reduction to stack velocity due to the fuel-switching have been added to Appendix K of this SIP revision.

The Sierra Club commented that the TCEQ did not include in its proposed SIP revision the data necessary to thoroughly evaluate and determine the suitability of the alternative model (AERMOD-HBP) to model attainment for the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. Given uncertainties associated with potential modifications of the alternative model along with uncertainties in the model inputs used for the attainment demonstration modeling, there were significant risks in relying on AERMOD-HBP, and the substantial uncertainties made it quite likely that the nonattainment area would not be in attainment despite the TCEQ's modeling results.

As discussed elsewhere in this response to comments document, the TCEQ evaluated model performance of AERMOD-HBP using procedures recommended in Appendix W, Section 3.2 and feedback provided by the EPA. Following a standard methodology from the EPA's *Protocol for Determining the Best Performing Model* (EPA, 1992) and based on statistical evaluations performed by the TCEQ and recommended by the EPA, the TCEQ determined AERMOD-HBP to be a be a better performing and appropriate model to estimate SO_2 concentrations from Martin Lake.

The TCEQ provided the data used to evaluate the alternate model to the EPA as required by Appendix W. Appendix W does not require that the data used to evaluate the alternate model be made available as part of the SIP revision. The model inputs for the alternate model AERMOD-HBP are the same as for the regulatory model and were developed based on 2014 SO_2 SIP guidance, Appendix W, and feedback from EPA. All model inputs were made available as a part of this SIP revision.

No changes were made in response to this comment.

CONTROL STRATEGIES

Luminant commented that in the absence of representative source-specific data, the average discount factor value of 0.89 reasonably reflected the expected variability in future operations at Martin Lake, and that the TCEQ should finalize its proposed SIP revision based on this value. Luminant also commented that the 0.89 discount factor was based on an analysis of 200 electric generating units operating with wet scrubbers

similar to that of Martin Lake's and was appropriate for Martin Lake and is expected to reflect the hourly emissions variability for Martin Lake once the new emission limit and control strategy were implemented. Luminant further commented that historical operational data for Martin Lake did not reflect the expected variability in SO_2 emissions for Martin Lake once the site operates on 100% subbituminous coal or operates the existing scrubber system as necessary to meet the new, lower emission limit.

Luminant also commented that operations at its Monticello electric power generating site were not restricted to a low sulfur emission rate after the switch to 100% subbituminous coal; therefore, those emissions data were expected to necessarily reflect a higher emissions variability. Luminant submitted an analysis of NRG Limestone emissions data as part of its comments on the proposed SIP revision. The analysis showed a discount factor of 0.91 for Unit 1 and 0.92 for Unit 2. Luminant asserted that the average value for the two unites (0.91) would be an appropriate and defensible value for Martin Lake as an alternative to the average value of 0.89 from Appendix D of the EPA's 2014 SO_2 SIP guidance.

The commission agrees that historical operations emissions data for Martin Lake would not be representative of future operations required under the adopted SIP revision.

The commission considered the information provided by Luminant concerning the appropriateness of NRG Limestone as a surrogate source for Martin Lake and agrees that it is appropriate. This SIP revision and associated Agreed Order were revised to apply discount factors derived using NRG Limestone data as a surrogate source to the lb/hr limit and the added lb/MMBtu limit.

Three years of NRG Limestone emissions data from October 2018 through September 2021 were used to conduct the variability analysis, which coincides with when NRG Limestone burned only subbituminous coal. Discount factors were developed using lb/hr data and lb/MMBtu data from sitewide emissions data for NRG Limestone Units 1 and 2, combined. Specifically, the 99th percentiles of one-hour lb/hr and lb/MMBtu data were obtained as well as the 99th percentiles of block 24-hour lb/hr and lb/MMBtu data. The ratios of 99th percentiles of the block 24-hour data to the 99th percentiles of the one-hour data were then calculated for lb/hr data and lb/MMBtu data to develop discount factors for both limits.

The final discount factor for the lb/hr emissions limit representing the modeled one-hour CEV was estimated to be 0.91. The commission applied the discount factor to the one-hour source cap of 8,208 lb/hr to derive a final source cap of 7,469 lb/hr on a block 24-hour averaging basis for the three EGF boilers. The final discount factors for the lb/MMBtu emission limits representing the one-hour modeled CEVs were estimated to be 0.97 for each of the three EGFs. The commission applied the discount factors to the one-hour limits of 0.33 lb/MMBtu for each of the three EGFs to arrive at a final emissions limit of 0.32 lb/MMBtu on a block 24-hour averaging basis for each EGF.

This approach follows the EPA's 2014 SO_2 SIP guidance to use source data, where available, to conduct an emissions variability analysis to establish a discount factor that allows an emissions limit to apply over a longer averaging period. The TCEQ performed additional modeling of these adopted emission rates to demonstrate no expected modeled exceedances of the 2010 SO_2 NAAQS. The adopted emission limits, in lb/hr and lb/MMBtu on block 24-hour averaging times, are expected to be protective of the 2010 SO_2 NAAQS by ensuring that actual hourly SO_2 emissions from the three EGFs above the modeled one-hour CEV would be limited to rare occurrences, in accordance with EPA's guidance.

The final emission limits are incorporated into the Agreed Order for Martin Lake as part of the adopted SIP revision.

The EPA commented that it was inappropriate to use the average discount factor from Appendix D of the EPA's 2014 SO_2 SIP guidance to establish an emission limit on a longer averaging time considering the historical data for Martin Lake, the variations in use of the scrubber system bypass for each unit at the site, and the unique economic drivers of the electric grid for Texas. The EPA commented that the TCEQ did not provide information demonstrating that the average value from Appendix D was representative of future operations of the three EGFs at Martin Lake. The EPA further commented that the TCEQ did not include in its proposed SIP revision any supplemental limits or an analysis demonstrating that the proposed emission limit on a block 24-hour averaging time would be protective of the 2010 SO_2 NAAQS by ensuring that actual hourly SO_2 emissions from the three EGFs in excess of the modeled one-hour CEV would be rare.

The EPA commented that the average discount factor value of 0.89 from Appendix D was derived based on consideration of variability at individual units and not variability in emissions across multiple scrubbed units at a site. The EPA further commented that the Martin Lake scrubbers were in a unique situation, having bypass to control stack temperature and operated to prevent acid gases and corrosion that could damage the inner lining of the stacks, and that the age of the scrubber system along with its uniqueness raised additional concern that using the average discount factor from Appendix D was inappropriate and could not be protective of the 2010 SO_2 NAAQS.

The Sierra Club commented that neither the NRG Limestone units nor the Luminant Monticello unit were representative for determining comparable emissions variability profiles for Martin Lake, and that the TCEQ did not have sufficient data on which to rationally base a variability analysis. Additionally, given the historical variability of operating loads and SO_2 removal efficiencies, it would be difficult, if not impossible, for the TCEQ to ascertain projected modeling inputs based on Martin Lake's historical data; therefore, it was unclear if Martin Lake's historical operations were representative and useful. The Sierra Club commented that because the TCEQ failed to adequately support or explain its proposed emission limit, the proposed SIP revision was arbitrary, capricious, and contrary to law.

The EPA commented that emissions data from Luminant's Monticello electric power generating site are not representative for future operations of Martin Lake because Monticello was able to continue to operate under a significantly higher emission limit

after the fuel transition to 100% subbituminous coal. Additionally, the EPA commented that because NRG's Limestone did not have a significantly higher SO_2 emission limit and the site was not obligated to comply with a new, lower emission limit at the same time the site switched to 100% subbituminous coal, the emissions data for NRG Limestone were only of limited use in evaluating future variability at Martin Lake.

The EPA recommended that the TCEQ set the one-hour modeled emission rates as the limits for each EGF, and that the TCEQ also establish additional requirements in the SIP revision to ensure that actual hourly SO_2 emissions above the modeled one-hour CEV are tracked and kept to rare occurrences.

Though the proposed SIP revision concluded that Monticello and NRG Limestone were not appropriate surrogate sources for Martin Lake, Luminant submitted information on the NRG Limestone units as a part of its comments on the proposed SIP revision showing that NRG Limestone is an appropriate surrogate source for deriving a discount factor. NRG Limestone, though not legally required to do so, changed its operations from burning a blend of lignite and subbituminous coal to only subbituminous coal in its two utility boilers during the period for which data were compared. Three years of emissions data from October 2018 through September 2021 were used to conduct the variability analysis. These analysis years coincide with when Limestone burned only subbituminous coal. Though not identical to Martin Lake's existing wet scrubber systems, NRG Limestone has been required to operate wet limestone scrubber systems on its two utility boilers which are similar enough to those of Martin Lake's for comparison. The TCEQ was unable to find any other source with comparable data. The commission continues to conclude that insufficient data for Monticello are available that would allow the commission to consider Monticello as an appropriate surrogate source for Martin Lake.

NRG Limestone is appropriate for comparison and sufficient for establishing an emissions profile for future operations at Martin Lake. Once Martin Lake implements the controls required by this SIP revision, both sites will operate with the same type of fuel and post-combustion SO_2 control system. The future variability for Martin Lake is expected to be a function of the type of fuel and post-combustion SO_2 control system. Because the fuel and SO_2 post-combustion controls will be similar, NRG Limestone's emissions data are representative of hourly emissions variability that can be expected for Martin Lake once the new emission limits are in place. The information submitted by Luminant concerning NRG Limestone as a surrogate is provided in Appendix O: *Limestone 1 and 2 Discount Factor Analysis* of this SIP revision and will be part of the hearing book as formal comments submitted by Luminant during the comment period.

The longer-term average limits incorporated into the Agreed Order and adopted in the SIP revision represent stringency sufficiently comparable to the stringency expected of the one-hour limit at the CEV and, through modeling and development and application of the discount factors, are protective of the 2010 SO_2 NAAQS.

No changes were made in response to these comments.

The EPA commented the TCEQ should clarify if the intended calculation for comparison with the emission limit is based on the sum of total emissions, in pounds, from all three units during the 24-hour block divided by the number of operating hours (defined as at least one unit having some SO_2 emissions for part of an hour) during that 24-hour period, or on some other methodology.

As specified in the Agreed Order, the intended calculation for comparison to the lb/hr emission limit is based on the sum of total SO_2 emissions, in pounds, from all three EGFs during a block 24-hour period (defined as 12 a.m. of one day to 12 a.m. Central Standard Time (CST) of the following day) divided by the number of operating hours in the same block 24-hour period when any unit has some SO_2 emissions for part of an hour.

Additionally, as specified in the Agreed Order, the intended calculation for comparison to the added lb/MMBtu emission limit is based on the sum of all the hourly SO_2 emissions, in pounds, from each EGF individually during a block 24-hour period (defined as 12 a.m. of one day to 12 a.m. CST of the following day), in conjunction with the sum of all the hourly heat input, in MMBtu, from the same EGF during the same block 24-hour period, and dividing the total SO_2 emissions by the total heat input in the same block 24-hour period when any unit has some SO_2 emissions for part of an hour.

The EPA expressed concern about applying a lb/hr emission cap on the combined three EGFs on a 24-hour block basis because the block periods could include low emissions along with very high emissions that exceed the NAAQS. Averaging across the block 24-hour period could allow hourly exceedances of the NAAQS to occur while still meeting the required limit. The EPA provided an analysis it conducted to evaluate the frequency of different combinations of operating loads for the three units to demonstrate its concern. The EPA also commented that the average discount factor from Appendix D of the 2014 SO_2 SIP guidance did not consider variability in total emissions across multiple units and was instead intended to be applied on a unit-specific basis; therefore, it was inappropriate to apply the average discount factor of 0.89 to develop the 24-hour block average across the three EGFs. The Sierra Club also commented that there would be operating scenarios where the site's pollution would continue to violate the 2010 SO_2 NAAQS.

The EPA recommended that, in the absence of representative data for adjusting a one-hour CEV to a 24-hour block averaging period, the TCEQ should establish unit-specific emission limits on a lb/hr or lb/MMBtu basis and that each unit should have a specific lb/hr limit based on the modeling.

It is not unprecedented or inappropriate to implement an emissions cap across multiple units with an applied discount factor to extend the averaging time.[1] As discussed elsewhere in this response to comments document, the discount factor was revised from proposal based on comments submitted by Luminant concerning

1 Air Plan Approval and Designation of Areas; FL; Source-Specific SO_2 Permit Limits & Redesignation of the Hillsborough-Polk 2010 1-Hour SO_2 Nonattainment Area to Attainment & Mulberry Unclassifiable Area to Attainment/Unclassifiable (85 FR 9666, February 20, 2020)

the use of NRG Limestone as an appropriate surrogate source for emissions data to calculate a discount factor. NRG Limestone Units 1 and 2 are an appropriate surrogate source for conducting an emissions variability analysis for Martin Lake to establish a discount factor to inform a final emissions limit on a longer averaging time. Since surrogate data were available to obtain discount factors to establish longer averaging time emission limits, one-hour emissions limits were not necessary. Additionally, the commission added a supplemental limit of 0.32 lb/MMBtu for each EGF boiler. The adopted emission limits, in lb/hr and lb/MMBtu on block 24-hour averaging times, are expected to be protective of the 2010 SO_2 NAAQS by ensuring that actual hourly SO_2 emissions from the three EGFs above the modeled one-hour CEV would be limited to rare occurrences.

Luminant commented that the mass hourly emission rate of SO_2, in lb/hr, in the proposed SIP revision was supported by the EPA through the agency's SO_2 guidance for the 2010 SO_2 NAAQS as well as the EPA's prior approvals of other states' SO_2 SIP revisions. Luminant also commented that the proposed lb/hr three-unit source cap emissions limit averaged over a block 24-hour period was necessary to account for anticipated variability in mass hourly SO_2 emissions following implementation of the proposed Agreed Order, given the inherent variability in sulfur content of the fuel and anticipated variability in the SO_2 scrubber performance.

Luminant commented that the proposed change in fuel to a lower sulfur content and aggressive operation of the existing SO_2 scrubber system to meet the new emission limit would result in a significant reduction in SO_2 emissions and that the TCEQ's modeling demonstrated the expected reductions would ensure attainment of the 2010 SO_2 NAAQS for those operating scenarios expected to be relatively continuous or to occur frequently.

Luminant commented that the proposed control obligation aligned with the EPA's 2014 SO_2 SIP guidance and prior approvals of other states' SO_2 attainment demonstration plans. Luminant also commented that complying with an emissions limit on a one-hour basis, as opposed to a limit on a longer averaging time, could be extremely challenging if not impossible. A 24-hour block average would allow Martin Lake to adjust to changes in electric grid demand as demand increases and more renewables penetrate the electric market. Luminant further commented that a more stringent emission limit could not be achieved, and any substantial change to the proposed SIP revision could be impossible to effectuate by the statutory deadline; and subsequent lower emission limits could only be accomplished by reducing operation at the site. Luminant urged the TCEQ to consider the impact of additional reductions or other revisions that could jeopardize or limit future operations at the site and commented that the emission limits established in the proposed Agreed Order and as part of the proposed SIP revision were protective of human health and the environment and ensured attainment of the 2010 SO_2 NAAQS.

Luminant commented that the TCEQ's proposed control measures and obligations satisfied the FCAA's requirement to implement all reasonably available control measures (RACM), including reasonably available control technology (RACT), necessary to achieve the 2010 SO_2 NAAQS as expeditiously as practicable in the Rusk-Panola

nonattainment area. Luminant encouraged the TCEQ to finalize its SIP revision relying on such control measures and technologies.

The commission appreciates the support and recognizes the role Martin Lake plays in the electric generation market and electric grid for the State of Texas. As explained elsewhere in this response to comments document, the commission made changes in response to comments to strengthen the emission limits applicable to Martin Lake to ensure attainment of the SO_2 NAAQS. The emissions limits in the adopted SIP revision and associated Agreed Order meet all FCAA requirements, and the commission appreciates the agreement of Luminant to establish the necessary emission limits for controlling and reducing SO_2 emissions while balancing the operational needs of the site.

Luminant commented that the TCEQ's proposed plan to rely on its existing enforcement programs to address the contingency measures obligation for an attainment demonstration plan aligned with the EPA's guidance on contingency plans as well as the EPA's prior actions regarding approval of other states' SIP revisions to address SO_2 nonattainment. Luminant encouraged the TCEQ to finalize its proposed contingency plan.

The commission appreciates the support. No changes were made in response to this comment.

The NPCA commented that because Martin Lake is the largest polluter of SO_2 in Texas, the proposed SIP revision must be amended to require the site to properly clean up its operations by installing modern scrubbers and to create a plan that truly requires and enforces substantial pollution reductions.

Comments received from 292 individuals stated that basic pollution controls like upgraded scrubbers should be required rather than only changing the kind of coal burned and that less dirty coal should be an important component to an effective clean-up plan but cannot be a substitute for commonly available, cost-effective pollution technology.

The Sierra Club commented that a stronger SIP revision was necessary that would actually ensure compliance with the one-hour public health standard, be based on EPA-approved modeling, and require industry standard pollution controls for SO_2 like modern scrubbers. The Sierra Club further commented that these pollution controls were cost effective, that the EPA had determined them to be cost effective numerous times in other regulations, and that Martin Lake would come into compliance with such controls.

The commission does not agree that the proposed SIP revision did not require and enforce substantial pollution reductions; nor does the commission agree that modern scrubbers must be installed. While some sources of SO_2 emissions may have determined that SO_2 scrubbers are cost effective and necessary to meet certain other state or federal regulations, the commission notes that the requirement to satisfy all RACM, including RACT, for the EPA's 2010 one-hour SO_2 NAAQS is to consider all RACM and RACT that can be implemented to demonstrate

attainment in the affected area. As discussed elsewhere in this response to comments document, the modeled one-hour CEV was used to develop a control strategy that would ensure attainment of the 2010 SO_2 NAAQS in accord with EPA guidance. The TCEQ developed a set of RACM and RACT strategies necessary for the source to meet the emissions limit determined to be necessary for the area to show attainment.

No changes were made in response to these comments.

The Sierra Club commented that because current monitoring data showed the Rusk-Panola area to be not only currently violating the 2010 SO_2 NAAQS, but also on track to violate the 2010 SO_2 NAAQS by the attainment date, the EPA must disapprove the TCEQ's RACT evaluation, and the TCEQ must identify additional and stronger control measures considered reasonably available and adequate to assure attainment as expeditiously as practicable.

The Sierra Club commented that because the TCEQ did not evaluate obvious and technically and economically feasible control measures or exhaust all efforts to identify and adopt every RACT measure, such as those identified by the EPA during its January 2016 regional haze FIP and 2017 proposed best available retrofit technology plan, the TCEQ must adopt such control measures as RACT. The Sierra Club commented that the TCEQ specifically failed to evaluate scrubber upgrades to Martin Lake's existing SO_2 control systems to improve SO_2 removal efficiencies which would have ensured attainment, and that failure to even consider these upgrades was arbitrary, capricious, and contrary to law.

The Sierra Club commented that the TCEQ took the position that cessation of burning lignite coal was the only available RACT option due to the limited time between proposed SIP development and the Agreed Order and SIP adoption and the attainment date and that nothing in the FCAA or EPA guidance suggested the rejection of feasible RACT alternatives is allowed simply because such measures could not be installed and operational before the attainment date. Such an interpretation would defeat the mandate to require the most stringent control technology reasonably available to protect public health and would reward states and sources that delay developing and implementing lawful SIP revisions.

The Sierra Club commented that given that the EPA's regulations encourage a multi-pollutant approach, and that wet scrubber upgrades of Martin Lake's existing scrubber systems would be technically and economically feasible, not only would such control measures satisfy the TCEQ's RACT obligations, but they would also avoid the imposition of a FIP for the Rusk-Panola nonattainment area, ensure attainment of the 2010 SO_2 NAAQS, satisfy the TCEQ's obligations for meeting reasonable progress requirements for both the first and second planning periods of the regional haze rule, and assist with meeting good neighbor obligations concerning the 2015 ozone NAAQS.

The adopted attainment demonstration for the Rusk-Panola nonattainment area shows that controls, once applied, will ensure attainment of the 2010 SO_2 NAAQS. As discussed elsewhere in this response to comments document, the adopted attainment demonstration contains a set of RACM and RACT strategies determined

to be necessary for the source to meet the emission limits necessary for the area to show attainment, following the EPA's 2014 SO_2 SIP guidance.

Regional haze and good neighbor obligations are outside the scope of this SIP revision, which is intended to demonstrate attainment of the 2010 SO_2 NAAQS.

No changes were made in response to these comments.

The Sierra Club commented that the TCEQ did not actually evaluate all available SO_2 control options for Martin Lake, but instead determined the emission limit to be met through flawed attainment demonstration modeling analysis by reverse engineering the RACT level with iterative modeling analyses until the modeling demonstrated attainment. The TCEQ did not explain the basis for its assumed critical emission limit, provide any documentation supporting the adoption of a longer-term average SO_2 limit, or demonstrate that the proposed limit was sufficiently protective of the 2010 1-Hour SO_2 NAAQS.

The Sierra Club commented that the NRG Limestone units nor the Luminant Monticello unit were representative for determining comparable emissions variability profiles for Martin Lake; therefore, the TCEQ did not have sufficient data for it to rationally base a variability analysis. Given the historic variability of operational loads and SO_2 control efficiencies for Martin Lake, the Sierra Club expressed concern that Martin Lake's historical operations were unrepresentative and therefore useful for projecting modeling inputs.

Contrary to the perspective that an attainment demonstration is flawed by determining through modeling the emissions limit necessary for an affected area to show attainment, even with iterative modeling runs, the EPA's SO_2 attainment demonstration guidance allows for air dispersion modeling to be a tool by which states determine the appropriate level of control necessary to demonstrate attainment. States are allowed to establish one-hour emission limits at the CEV as a conservative approach to developing a control strategy that ensures attainment of and no violations of the 2010 SO_2 NAAQS. Through development of the adopted emission limits for the source, a control strategy reflecting the control measures and obligations necessary for the source to meet the modeled one-hour CEVs was developed. Consequently, the set of control measures determined as RACM including RACT was a requirement to burn 100% subbituminous coal, number 2 fuel oil, or natural gas, and operate the existing post-combustion SO_2 control system more efficiently.

The TCEQ also disagrees that the NRG Limestone emissions data were not representative for determining comparable emissions variability profiles for Martin Lake. As explained elsewhere in this response to comments section, three years of emissions data from October 2018 through September 2021 were used to conduct the variability analysis, which coincide to when Limestone burned only subbituminous coal. While not identical to Martin Lake's existing wet scrubber systems, Limestone has been required to operate wet limestone scrubber systems on its two utility boilers which are similar enough to those of Martin Lake's, and Limestone is thus appropriate for comparison and sufficient for establishing an

emissions profile for future operations at Martin Lake. This information is provided in Appendix O of this SIP revision. The longer-term average limits incorporated into the associated Agreed Order and adopted in the SIP revision represent stringency levels sufficiently comparable to the stringency expected of the one-hour limit at the CEV and, through modeling and development and application of the discount factors, are protective of the 2010 SO_2 NAAQS.

No changes were made in response to these comments.

The Sierra Club commented that the TCEQ did not propose any contingency measures that would have required immediate pollutant reductions in SO_2 emissions. The proposed contingency measures would have only required action by the TCEQ to review and adopt Luminant's recommended provisional SO_2 emission control strategy resulting from the site's full system audit, and the proposed contingency plan did not follow the intent of the EPA's guidance and the requirements of FCAA, §172(c)(9).

The Sierra Club comment that because the proposed emission limit was based on unjustified assumptions on which the TCEQ established a limit on a 24-hour average expected to demonstrate equivalent stringency to the one-hour modeled CEV, and given the absence of site-specific data or other surrogate source and reliance on an unapproved non-guideline model with excessive stack velocities, Martin Lake could comply with proposed SIP revision requirements, the area would still fail to attain the 2010 one-hour SO_2 NAAQS, and the requirement to undergo a full system audit would not remedy the nonattainment problem. The Sierra Club stated that the most readily implementable contingency measure for the TCEQ to impose was a requirement for Martin Lake to reduce operational load and thus reduce hourly SO_2 emissions.

The contingency plan was developed to conform to the EPA's 2014 SO_2 SIP guidance, which recognizes the source-specific nature of SO_2 pollution. The contingency plan requires immediate action by the source to recommend provisional SO_2 emission control strategies after conducting a full system audit specifying the root cause(s) of the violation so that corrective measures can be taken as expeditiously as practicable. The purpose of the full system audit is to determine what additional control measures would be necessary to help the area return to attainment. The EPA approved other states' SO_2 attainment demonstration SIP revisions where the states relied on a full system audit of the source to identify the potential cause(s) of the violation of the NAAQS. The states were allowed time to determine the possible reason(s) of the violation, develop a plan to address and rectify the identified problem(s), and implement the plan and associated control strategies expected to return the area to attainment. The TCEQ's contingency plan in the adopted SIP revision aligns with this approach. The commission additionally notes that pursuant to comments submitted on the proposed SIP revision, reducing operational load to reduce emissions may not actually result in lower SO_2 emissions.

No changes were made in response to these comments.

The Sierra Club commented that the proposed SIP violates the FCAA's "antibacksliding" requirement, 42 United States Code (U.S.C.) §740(l), specifically

applicable to reasonable further progress requirements. When determining whether a SIP revision interferes with NAAQS attainment, the EPA has interpreted FCAA, §110(l) as preventing SIP revisions that would increase overall air pollution or worsen air quality. The commenter asserted that the switch in fuel from lignite to subbituminous coal at Martin Lake could negatively impact particulate removal efficiency across the electrostatic precipitators (ESP), resulting in higher PM emissions.

The purpose of this SIP revision is to reduce SO_2 emissions in order to attain the 2010 SO_2 NAAQS. This SIP revision strengthens the overall Texas SIP by providing for emissions reductions of SO_2 at Martin Lake, which is the only major source of SO_2 emissions in the Rusk-Panola 2010 SO_2 NAAQS nonattainment area. The Rusk-Panola area is currently in attainment of both the $PM_{2.5}$ and PM_{10} NAAQS. Any potential increase in allowable PM emissions resulting from the switch from lignite to subbituminous coal would be evaluated during required New Source Review permitting to ensure that any such increases were protective of public health and did not interfere with attainment and maintenance of the NAAQS.

No changes were made in response to this comment.

The Sierra Club commented that recent emission data appears to confirm that burning higher amounts of subbituminous coal diminishes particulate collection efficiency of the ESPs and that there has been a corresponding decrease in SO_2 removal efficiency.

While higher levels of actual PM might occur when subbituminous coal is burned as fuel in the Martin Lake units, actual PM emissions must still comply with the allowable PM authorization limits unless additional authorization is received. Although SO_2 removal efficiency may have been reduced when burning subbituminous coal in the past, future operations must still meet existing authorization limits. This SIP revision requires significant SO_2 emissions reductions from current permit allowables. Lastly, Martin Lake must also comply with other state and federal requirements for coal fired EGU boilers.

No changes were made in response to this comment.

COMPLIANCE AND ENFORCEMENT

The EPA commented that the force majeure provision in the proposed Agreed Order: is overly broad (not properly or sufficiently bounded), which may result in enforceability issues, and that it may present an impermissible director's discretion issue; and does not appear to provide sufficient public process.

The commission disagrees that the proposed force majeure provision was overly broad; would have resulted in enforceability issues; or presented an impermissible Executive Director's discretion issue. However, to align language with other EPA approved source specific Agreed Orders and address the scope of potential force majeure events, the commission made changes to the proposed provision. The commission removed the phrase "to the Executive Director's satisfaction" and made changes to elaborate on the types of events that are contemplated by Luminant and TCEQ to potentially qualify as a force majeure event. Events that qualify as force majeure events must meet the specified criteria and are inherently limited; must be

identified within seven days; and the Company must take all reasonable measures to mitigate and minimize the failure to comply. Additionally, any exercise of discretion by the Executive Director (or the commission) may not be granted in an arbitrary and capricious manner. All actions of the Executive Director (or the commission) are appealable to Texas district court and are reviewable for an abuse of discretion. EPA's reference to "other SIP provisions authorizing unilateral changes to SIP requirements as impermissible director's discretion provisions" is inapplicable and incorrect under applicable law. EPA has adopted no specific or generally applicable rule prohibiting states from exercising discretionary enforcement authority and the FCAA contains no such prohibition. Similarly, there is no requirement for public process for the consideration of the claiming and granting of a force majeure event within either the EPA or TCEQ administrative regulatory enforcement process. As with all other SIP matters, EPA retains its oversight and enforcement authority and citizens continue to have the ability to exercise their rights granted under the FCAA.

One individual commented that measurements need to be taken on a 24-hour basis with state-of-the-art scrubbers. When the allowed limit is exceeded additional scrubbers should be installed as needed to not exceed the allowed level of SO_2. This procedure should be followed until the limit is not exceeded. This should be written into the regulations and enforced. Oversight of SO_2 levels should be observed by regulators reviewing the test results on a weekly basis. A gap in test results should result in a fine not less than $100,000.00.

Each stack at Martin Lake is equipped with a CEMS that measures the SO_2 concentration in the exhaust gases every 15 seconds. These CEMS for SO_2 emissions are required to be operating at all times when the utility boilers are operating. Data substitution procedures under the EPA's 40 CFR Part 75 apply when the boilers are operating and the CEMS are not operating. Therefore, pollutant concentration measurements are made and recorded, either directly or through substitution methods, during all periods of unit operation. The CEMS data are reviewed by TCEQ inspectors during inspections and are reported to the EPA on an ongoing basis. Appropriate fines consistent with statutory requirements can be assessed when needed.

No changes were made in response to these comments.

One individual commented that the TCEQ rarely uses its mandate to enforce regulations and protect the public. Another individual commented that the TCEQ should not allow loopholes for compliance.

The commission disagrees with this comment. The adopted SIP revision's control measures are made enforceable by the associated Agreed Order with Luminant. The SIP revision also contains contingency measures that come into effect if attainment of the standard is not maintained. The commission enforces the control measures through various means, including monitoring, recordkeeping, testing, and reporting requirements. The commission has the authority to, and does take, enforcement action against companies that fail to maintain compliance with both state and federal rules.

No changes were made in response to these comments.

The Sierra Club commented that the proposed SIP revision did not require Martin Lake to continuously comply with the proposed emission limit, including during periods of startup, shutdown, and malfunction (SSM), and that the proposed plan on affirmative defenses would also violate the FCAA and render the emission limitation even less protective through lack of sanctions. The Sierra Club commented that the proposed attainment demonstration SIP revision is unlawful because Texas' regulations continue to allow sources to avoid enforcement for violations during SSM and are not in compliance with the EPA's regulations requiring states to eliminate such unlawful exemptions/affirmative defenses (SSM SIP call, 80 FR 33840, June 12, 2015). The Sierra Club further commented that although the EPA withdrew its previous SIP call for Texas on February 7, 2020 (85 FR 7232) the EPA announced its intent to reconsider that decision.

The commission disagrees that the source would not be required to comply with the proposed emission limits at all times. The provisions in the Agreed Order, which is incorporated into the adopted SIP revision, extend the emission limits to SSM periods for the three EGFs. The EPA approved the SSM provisions, thereby determining they do not interfere with attainment and maintenance of the NAAQS. While the commenter is correct that the EPA announced its intent to reconsider its prior final action withdrawing the SIP call concerning Texas' SSM affirmative defense provisions, 30 Texas Administrative Code (TAC) §101.222(b)-(e), no decision has been finalized. These SSM affirmative defense provisions are EPA-approved and federally enforceable. The SSM affirmative defense provisions in 30 TAC §101.222(b)-(e) do not exempt or authorize emissions. For further information regarding the commissions interpretation of the SSM affirmative defense provisions and the EPA's SIP call and withdrawal actions, the TCEQ refers the commenter to prior rulemaking preambles for 30 TAC §101.222(b)-(e) and the EPA's proposed and final actions concerning SSM affirmative defense provisions for Texas.

No changes were made in response to these comments.

Texas Commission on Environmental Quality

ORDER ADOPTING
REVISIONS TO THE STATE IMPLEMENTATION PLAN

Docket No. 2021-0510-SIP
Project No. 2020-057-SIP-NR
Docket No. 2021-0508-MIS
Project No. 2021-013-OTH-NR

On February 9, 2022, the Texas Commission on Environmental Quality (Commission), during a public meeting, considered the adoption of an attainment demonstration State Implementation Plan (SIP) for the Rusk-Panola 2010 Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS) Nonattainment Area and an Agreed Order between the Commission and Luminant Generation Company, LLC (Luminant) that provides the enforceable control strategy for the associated Rusk-Panola 2010 SO_2 NAAQS attainment demonstration. The Commission adopts the Rusk-Panola Attainment Demonstration SIP Revision for the Rusk-Panola SO_2 NAAQS Nonattainment Area and the Agreed Order with Luminant that provides the enforceable control strategy for the associated Rusk-Panola 2010 SO_2 NAAQS attainment demonstration; and corresponding revisions to the SIP.

The adopted Rusk-Panola 2010 SO_2 NAAQS attainment demonstration includes the required inventory of current SO_2 emissions; provisions 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 adopted Agreed Order with Luminant provides the enforceable control strategy for the attainment demonstration by documenting the Commission's order, and the company's agreement, to comply with requirements identified for the Martin Lake Steam Electric Station, pursuant to the Texas Clean Air Act, the Texas Health & Safety Code, and the federal Clean Air Act. Under Tex. Health & Safety Code Ann. §§ 382.011, 382.012, and 382.023 (West 2016), the Commission has the authority to control the quality of the state's air and to issue orders consistent with the policies and purposes of the Texas Clean Air Act, Chapter 382 of the Tex. Health & Safety Code. Notice of the proposed Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and Agreed Order with Luminant were published for comment in the September 24, 2021, issue of the *Texas Register* (46 Tex. Reg. 6425).

Pursuant to 40 Code of Federal Regulations § 51.102 and after proper notice, the Commission conducted a virtual public hearing to consider the Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant. Proper notice included prominent advertisement in the areas affected at least 30 days prior to the date of the hearing. A virtual public hearing was held in Austin on October 12, 2021.

The Commission circulated hearing notices of its intended action to the public, including interested persons, the Regional Administrator of the EPA, and all applicable local air pollution control agencies. The public was invited to submit data, views, and recommendations on the

proposed Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant, either orally or in writing, at the virtual hearing or during the comment period. Prior to the scheduled hearing, copies of the proposed Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant were available for public inspection at the Commission's central office and on the Commission's website.

Data, views, and recommendations of interested persons regarding the proposed Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant were submitted to the Commission during the comment period and were considered by the Commission as reflected in the analysis of testimony incorporated by reference to this Order. The Commission finds that the analysis of testimony includes the names of all interested groups or associations offering comment on the proposed Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant and their position concerning the same.

IT IS THEREFORE ORDERED BY THE COMMISSION that the Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant incorporated by reference to this Order are hereby adopted. The adopted Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant are incorporated by reference in this Order as if set forth at length verbatim in this Order.

IT IS FURTHER ORDERED BY THE COMMISSION that on behalf of the Commission, the Chairman should transmit a copy of this Order, together with the adopted Rusk-Panola Attainment Demonstration SIP Revision for the 2010 SO_2 NAAQS and the Agreed Order with Luminant, to the Regional Administrator of EPA as proposed revisions to the Texas SIP pursuant to the federal Clean Air Act, codified at 42 U.S. Code Ann. §§ 7401 - 7671q, as amended.

If any portion of this Order is for any reason held to be invalid by a court of competent jurisdiction, the invalidity of any portion shall not affect the validity of the remaining portions.

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

_____
Jon Niermann, Chairman

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Date Signed