TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

for State Implementation Plan Adoption

AGENDA REQUESTED: October 5, 2022

DATE OF REQUEST: September 16, 2022

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

CAPTION: Docket No. 2022-0132-SIP. Consideration for adoption of the Howard County Attainment Demonstration State Implementation Plan (SIP) Revision for the 2010 One-Hour Sulfur Dioxide (SO_2) National Ambient Air Quality Standard (NAAQS). The SIP revision addresses federal Clean Air Act SIP requirements for the Howard County SO_2 nonattainment area by including 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; a reasonable further progress demonstration; contingency measures; and certification that nonattainment New Source Review requirements are met.

The associated 30 Texas Administrative Code Chapter 112, Subchapter E rulemaking (Rule Project No. 2021-035-112-AI) provides the enforceable control strategy demonstrating attainment of the 2010 SO_2 NAAQS by the April 30, 2026, attainment deadline. (Mary Ann Cook, Terry Salem, John Minter; SIP Project No. 2021-010-SIP-NR)

Sam Short
Acting Director

Donna F. Huff
Deputy Director

Jamie Zech
Agenda Coordinator

Copy to CCC Secretary? NO ☒ YES ☐

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** September 16, 2022

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

From: Sam Short, Acting Director
Office of Air

Docket No.: 2022-0132-SIP

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

Howard County 2010 SO_2 Attainment Demonstration SIP Revision
SIP Project No. 2021-010-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, adding a 75 parts per billion (ppb) one-hour primary standard, effective August 23, 2010 (75 *Federal Register* (FR) 35520).

In the final round of designations for the 2010 SO_2 NAAQS, the EPA designated a portion of Howard County as nonattainment, effective April 30, 2021 (86 FR 16055). Texas is required to submit an attainment demonstration SIP revision for the Howard County nonattainment area to the EPA by October 30, 2022. The SIP revision is required to demonstrate attainment of the 2010 SO_2 NAAQS as expeditiously as practicable but no later than five years after the effective date of designations, or April 30, 2026.

Scope of the SIP revision:
This SIP Revision fulfills Texas' federal Clean Air Act (FCAA) SIP planning requirements for the 2010 One-Hour SO_2 NAAQS in the Howard County nonattainment area. This SIP revision, together with the associated 30 Texas Administrative Code (TAC) Chapter 112, Subchapter E rules (Rule Project No. 2021-035-112-AI), documents the state's plan to achieve the emission reductions required to demonstrate timely attainment of the 2010 SO_2 NAAQS in the Howard County nonattainment area and meet other FCAA-required SIP elements.

A.) Summary of what the SIP revision would do:
This SIP revision, along with the associated Chapter 112 rules, demonstrates attainment and maintenance of the 2010 SO_2 NAAQS in the Howard County nonattainment area as expeditiously as practicable, but not later than April 30, 2026.

B.) Scope required by federal regulations or state statutes:
In accordance with FCAA, §172 general requirements and FCAA, §191 and §192 specific requirements, this attainment demonstration SIP revision includes a comprehensive inventory of current SO_2 emissions; a control strategy with evaluation and provision for implementing all reasonably available control measures and reasonably available control technology; air quality dispersion modeling to demonstrate attainment of the 2010 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 Howard County 2010 SO_2 nonattainment area.

This SIP revision must demonstrate that the 2010 SO_2 NAAQS will be attained as expeditiously as practicable and not later than April 30, 2026. Based on the EPA's *Guidance for 1-Hour SO_2*

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

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

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

The authority to 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 THSC, Chapter 382.

Effect on the:

A.) Regulated community:
For the Howard County nonattainment area to attain the 2010 SO_2 NAAQS, SO_2 emission reductions are necessary at sites in the nonattainment area. The control strategy for demonstrating attainment of the 2010 SO_2 NAAQS in the Howard County nonattainment area is made enforceable with commission adoption of the associated Chapter 112 rules. All affected emissions sources in the nonattainment area are required to comply with all requirements and stipulations of the associated rules.

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:
Stakeholder meetings were held with regulated entities during development of the proposed associated rules. The proposed SIP revision went through public review and comment with one public hearing offered.

Public comment:
The commission offered a public hearing for this SIP revision and the associated rules on May 18, 2022, in Big Spring, Texas. Notice of the public hearing was published in the *Texas Register* as well as the *Midland Reporter-Telegram* and *Big Spring Herald*. Texas Commission on Environmental Quality (TCEQ) staff were present and ready to open the hearing for public comment; however, no attendees arrived to make comments on the record. Therefore, the public hearing was not formally opened for comment and a transcript was not prepared.

The public comment period opened on April 15, 2022 and closed on June 2, 2022. During the comment period, TCEQ staff received comments from the EPA. The EPA's comments primarily

concerned the appropriateness of the background concentration used in modeling; adequate representation of multi-flare events in modeling; a discrepancy between an emission rate in the rule and modeled emission value; the characterization of statements in EPA guidance regarding averaging times; a request for yearly verification of emission rate discount factor; clarification that contingency measures also trigger upon failing to achieve RFP; appropriateness of the January 1, 2025 compliance date; reasonable notice and public hearing requirements, and requirements for enforceable limits for all modeled sources. The EPA also requested additional detail and documentation for various modeling and control strategy requirements.

Significant changes from proposal:
The following significant changes were made in response to comments received on both the SIP revision and associated rulemaking proposals.

- Contingency measures were revised to account for failure to meet RFP.
- Some compliance dates were changed to require compliance earlier than proposed.
- Compliance with concentration limit for refinery flare gas streams is no longer required for refinery gas streams generated during maintenance, startup and shutdown consistent with 40 CFR §60.103a(h) because the pound per hour SO_2 limits used in the attainment demonstration modeling apply during maintenance startup and shutdown.
- A time weighted average of emission limits is now allowed to determine the appropriate emission limits during transitions periods at Tokai's Big Spring Carbon Black Plant.
- Alternate means of control provisions were added in the associated Chapter 112, Subchapter E rules.
- A one pound per hour discrepancy between the emission limit specified in the rule and emission limit used in the modeling was corrected and the modeling was redone. The correction resulted in the highest modeled design value changing from 193.7 to 193.8 micrograms per cubic meter ($\mu g/m^3$) and from 73.96 to 74 ppb.
- More details regarding modeling procedures and files were added to the SIP narrative and Appendix K: *Modeling Technical Support Document (TSD)* to address the EPA's comments. Section 4.5.1: *Monte Carlo (MC) Simulations* contains a revised modeled design value (DV) in response to a comment from the EPA.

Potential controversial concerns and legislative interest:
None.

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 revising the SIP?
If this SIP revision is not submitted to the EPA by October 30, 2022, the EPA could issue a finding of failure to submit and require the state to submit the required SIP revision within a specified period. The EPA could also impose sanctions on the state that could include 200% emission offset requirements for new construction and major modifications of stationary sources in the nonattainment area as well as transportation funding restrictions. The EPA would be required to promulgate a federal implementation plan (FIP) if the TCEQ fails to submit, or the EPA does not approve, the required SIP revision within two years of the finding of failure to submit. The EPA could impose sanctions and implement a FIP until the state submits and the EPA approves a replacement SIP for the nonattainment area.

Key points in the SIP revision adoption schedule:
Anticipated adoption date: October 5, 2022

Re: Docket No. 2022-0132-SIP

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

HOWARD COUNTY 2010 SULFUR DIOXIDE STANDARD NONATTAINMENT AREA

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

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

2021-010-SIP-NR
SFR-122/2021-010-SIP-NR

Adoption
October 5, 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).

In the final round of designations for the 2010 SO_2 NAAQS, the EPA designated a portion of Howard County as nonattainment, effective April 30, 2021 (86 FR 16055). There are three sites with multiple SO_2 emissions sources at each site in the Howard County 2010 SO_2 NAAQS nonattainment area. Texas is required to submit an attainment demonstration state implementation plan (SIP) revision for the Howard County 2010 SO_2 NAAQS nonattainment area to the EPA by October 30, 2022. The attainment demonstration SIP revision is required to demonstrate attainment of the 2010 SO_2 NAAQS as expeditiously as practicable but no later than five years after the effective date of designation, or April 30, 2026.

This Howard County Attainment Demonstration SIP Revision for the 2010 One-Hour SO_2 NAAQS demonstrates that the Howard County nonattainment area will attain the 2010 SO_2 NAAQS by the April 30, 2026 attainment deadline. In accordance with federal Clean Air Act (FCAA), §172 general requirements and FCAA, §191 and §192 specific requirements, this 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 the state's certification that current regulations provide the means to satisfy nonattainment New Source Review requirements for the Howard County 2010 SO_2 nonattainment area.

This SIP revision incorporates associated 30 Texas Administrative Code Chapter 112, Subchapter E rules (Rule Project No. 2021-035-112-AI). The rules provide an enforceable control strategy that limits emissions at applicable emissions sources at two of the three sites in the nonattainment area to a level necessary to attain the 2010 SO_2 NAAQS. This SIP revision, together with the associated Chapter 112 rules, fulfills Texas' FCAA SIP planning requirements for the Howard County 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.

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, 2021
TEXAS WATER CODE	September 1, 2021

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 August 22, 2019
Chapter 19: Electronic Reporting	November 11, 2010
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 16, 2021
Chapter 55: Requests for Reconsideration and Contested Case Hearings; Public Comment, all of the chapter, except §55.125(a)(5) and (6)	September 16, 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	November 12, 2020
Chapter 112: Control of Air Pollution from Sulfur Compounds	July 16, 1997
Chapter 114: Control of Air Pollution from Motor Vehicles	June 23, 2022
Chapter 115: Control of Air Pollution from Volatile Organic Compounds	July 22, 2021
Chapter 116: Control of Air Pollution by Permits for New Construction or Modification	July 1, 2021
Chapter 117: Control of Air Pollution from Nitrogen Compounds	March 26, 2020
Chapter 118: Control of Air Pollution Episodes	March 5, 2000
Chapter 122: §122.122: Potential to Emit	February 23, 2017

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. Attainment Demonstration for the Rusk-Panola 2010 SO_2 NAAQS Nonattainment Area (No change)
    4. Redesignation Request and Maintenance Plan for the Freestone-Anderson and Titus 2010 SO_2 NAAQS Nonattainment Areas (No change)
    5. Attainment Demonstration SIP Revision for the Howard County 2010 SO_2 NAAQS Nonattainment Area (New)
        Chapter 1: General
        Chapter 2: Emissions Inventories
        Chapter 3: Control Strategy and Required Elements
        Chapter 4: Attainment Demonstration Modeling
        Chapter 5: Reasonable Further Progress
    6. Attainment Demonstration SIP Revision for the Hutchinson County 2010 SO_2 NAAQS Nonattainment Area (No change)
    7. Attainment Demonstration SIP Revision for the Navarro County 2010 SO_2 NAAQS Nonattainment Area (No change)
H. Conformity with the National Ambient Air Quality Standards (No change)
I. Site Specific (No change)
J. Mobile Sources Strategies (No change)
K. Clean Air Interstate Rule (No change)
L. Transport (No change)
M. Regional Haze (No change)

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LIST OF ACRONYMS

AEDT	Aviation Environmental Design Tool
AERR	Air Emissions Reporting Requirements
AMOC	alternate means of control
AMS	American Meteorological Society
AERMOD	American Meteorological Society/United States Environmental Protection Agency Regulatory Model
APU	auxiliary power unit
AQD	Air Quality Division
BPIPPRM	Building Profile Input Program for PRIME
C	cap
CEMS	continuous emissions monitoring system
CEV	critical emissions value
CFR	Code of Federal Regulations
DV	design value
EGU	electric generating unit
EI	emissions inventory
EPA	United States Environmental Protection Agency
EPN	Emissions Point Number
ERG	Eastern Research Group
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FCAA	federal Clean Air Act
FCCU	Fluidized Catalytic Cracking Unit
FGD	flue gas desulfurization
FIP	federal implementation plan
FMVCP	Federal Motor Vehicle Control Program
ft	feet
FR	*Federal Register*
FSA	full system audit
g	gram
GSE	ground support equipment
H_2S	hydrogen sulfide
hr	hour

HRSG	heat recovery steam generator
ICI	Industrial, Commercial, and Institutional
km	kilometers
lb	pound
m	meters
MC	Monte Carlo
MMBtu	one million British Thermal Units
MSS	maintenance, startup, and shutdown
MOVES	Motor Vehicle Emission Simulator
NAAQS	National Ambient Air Quality Standard
NEI	National Emissions Inventory
NSR	New Source Review
ppb	parts per billion
RACM	reasonably available control measures
RACT	reasonably available control technology
RFP	reasonable further progress
RN	Regulated Entity Reference Number
RRC	Railroad Commission of Texas
s	second
SIL	significant impact level
SIP	state implementation plan
SO_2	sulfur dioxide
STARS	State of Texas Air Reporting System
TAC	Texas Administrative Code
TACB	Texas Air Control Board
TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Quality (commission)
TexN2.2	Texas NONROAD version 2.2
THSC	Texas Health and Safety Code
TNRCC	Texas Natural Resource Conservation Commission
tpy	tons per year
TSD	technical support document
TWC	Texas Water Code
TX	Texas

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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 HOWARD COUNTY 2010 SULFUR DIOXIDE NATIONAL AMBIENT AIR QUALITY STANDARD NONATTAINMENT AREA

On June 22, 2010, the United States Environmental Protection Agency (EPA) revised the sulfur dioxide (SO_2) National Ambient Air Quality Standards (NAAQS), adding a 75 parts per billion one-hour primary standard (75 *Federal Register* (FR) 35520). On June 2, 2011, Texas submitted a letter to the EPA recommending designations for all Texas counties, including an unclassifiable designation for Howard County. An updated recommendation submitted to the EPA on April 20, 2012, did not change the state's initial recommendation for Howard County.

On July 27, 2012, the EPA extended its deadline for area designations for the 2010 primary SO_2 standard for one year due to having insufficient information to make initial area designations at that time but intending to complete initial designations by June 3, 2013. On August 5, 2013, the EPA designated parts of 16 states as nonattainment for the 2010 SO_2 standard, effective October 4, 2013 (78 FR 47191). These were 29 areas that had monitored data indicating violations of the 2010 SO_2 NAAQS within the period from 2009 through 2011. The EPA was not prepared to issue designations for any remaining areas, so no areas of Texas were designated in Round 1 of the EPA's 2010 SO_2 standard designations.

The EPA's Data Requirements Rule (DRR) for the 2010 SO_2 NAAQS required that for areas to be characterized by monitoring for Round 4 designations, all source-oriented monitors used to inform designations were to be installed and operating by January 1, 2017. The TCEQ deployed an SO_2 monitor at the Big Spring Midway site (air quality system number 482271072) on December 3, 2016, in Howard County.

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

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

This Howard County SO_2 attainment demonstration, in accordance with FCAA, §172 general requirements and FCAA, §191 and §192 specific requirements, includes a comprehensive inventory of current SO_2 emissions; identification of existing federal and state controls; evaluation and provision for implementing all reasonably available control measures and reasonably available control technology; air quality dispersion modeling and analysis to evaluate projected air quality improvements from existing and new controls; a reasonable further progress (RFP) demonstration; contingency measures that would be implemented to achieve additional emissions reductions if the area fails to attain the NAAQS or meet RFP by the deadline; and the state's certification that current regulations provide the means to satisfy nonattainment New Source Review requirements for the Howard County 2010 SO_2 nonattainment area.

This SIP revision for Howard County is concurrent with attainment demonstration SIP revisions for the Navarro County (Non-Rule Project No. 2021-012-SIP-NR) and Hutchinson County (Non-Rule Project No. 2021-011-SIP-NR) 2010 SO_2 NAAQS nonattainment areas and an associated 30 Texas Administrative Code Chapter 112, Subchapter E rules (Rule Project No. 2021-035-112-AI) to provide the control strategy applicable for each nonattainment area.

1.3 PUBLIC HEARING AND COMMENT INFORMATION

The public comment period opened on April 15, 2022 and closed on June 2, 2022. Notice of public hearings regarding this and two concurrently proposed SO_2 attainment demonstration SIP revisions and associated proposed Chapter 112 rulemaking was published in the *Texas Register* on April 29, 2022. An abbreviated notice of the May 18, 2022 hearing scheduled specifically for this SIP and the rulemaking was published in the *Midland Reporter-Telegram* and *Big Spring Herald*. The commission offered that public hearing on May 18, 2022 at 6:00 p.m. in Big Spring, Texas. TCEQ staff were present and ready to open the hearing; however, no attendees registered to provide comment on the record. Therefore, the public hearing was not opened.

Written comments were accepted via mail, fax, or through the eComments (https://www6.tceq.texas.gov/rules/ecomments/) system. During the comment period, TCEQ received comments from the United States Environmental Protection Agency (EPA). The comments regarding the SIP received from the EPA are summarized and addressed in the Response to Comments for this SIP revision. The comments received regarding proposed Chapter 112 rulemaking are summarized and addressed in the Response to Comments contained in the preamble to the adopted rules. This SIP revision reflects changes made in response to comments received on both the SIP and rulemaking proposals.

1.4 HEALTH EFFECTS

Current scientific evidence links short-term exposures of 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. Some observational epidemiology studies have reported statistical associations between such health effects and ambient particulate matter. These reported effects vary widely with geographical location as well as with size and composition of the particulate matter (EPA/600/R-08/139F sections 2.1.1 and 2.2.2).

1.5 STAKEHOLDER PARTICIPATION

The TCEQ and representatives of significant SO_2 emissions sources located in the Howard County 2010 SO_2 NAAQS nonattainment area held regular meetings during the development of this SIP revision to discuss modeling, control strategies, contingency measures, and development of the associated Chapter 112 rules. The TCEQ, representatives of significant SO_2 emissions sources in the Howard County nonattainment area, and the EPA also held meetings to discuss modeling details.

1.6 SOCIAL AND ECONOMIC CONSIDERATIONS

No significant fiscal implications are anticipated for the TCEQ or other units of state or local governments from administration or enforcement of the associated rules. All controls to reach attainment will be borne by the emission sources identified in this SIP revision and Chapter 112, Subchapter E of the rules. As such, any economic impacts will be limited to the SO_2 sources associated with this SIP revision and associated rules. The rules are expected to have significant fiscal impact to the affected sources in Howard County, and those impacts are discussed in the preamble to the rules. 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 federal Clean Air Act (FCAA) requires that attainment demonstration emissions inventories (EI) be prepared from all sources within a planning area (57 *Federal Register* (FR) 13498, April 16, 1992). The EI must be a comprehensive, accurate, and current inventory of actual emissions for all sources in the nonattainment area plus any sources located outside the nonattainment area that may affect attainment.

The Texas Commission on Environmental Quality (TCEQ) maintains an inventory of current information for sources of sulfur dioxide (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 site 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). All inventories are developed in accordance with the Environmental Protection Agency's Air Emissions Reporting Requirements (AERR) (40 Code of Federal Regulations (CFR) Part 51, Subpart A).

This chapter discusses general EI and attainment year emissions development for each of the anthropogenic source categories. Chapter 4: *Attainment Demonstration Modeling* details specific EIs and emissions inputs developed for the Howard County 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 2017 as the base year for most of the analyses presented in this chapter because it was the most recent periodic inventory year available for all source categories to develop an EI for this SIP revision. For the two source categories that contributed the largest portion of SO_2 emissions in the Howard County 2010 SO_2 NAAQS nonattainment area (point source and area source oil and gas), the TCEQ developed 2020 EIs to forecast emissions to the 2026 attainment year. Details on the projection methods to forecast 2017 base year emissions to the 2026 attainment year for all source categories are documented in this chapter.

2.2 POINT SOURCES

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

All data submitted in the EI are reviewed for quality assurance purposes and then stored in the State of Texas Air Reporting System (STARS) database. The TCEQ's Point Source Emissions Inventory 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.

The SO_2 nonattainment area designated by the EPA includes:

- Alon USA Big Spring Refinery (Alon USA Big Spring Refinery) (Regulated Entity Reference Number [RN] RN100250869) owned by Alon USA, LP (Alon);
- Tokai's Big Spring Carbon Black Plant (Tokai Big Spring Carbon Black Plant) (RN100226026) owned by Tokai Carbon CB LTD (Tokai); and
- BHER Power Resources INC's C R Wing Cogeneration (BHER C R Wing Cogeneration Plant) (RN100215896) owned by BHER Power Resources INC (BHER).

Two of the three stationary point source sites located in the Howard County 2010 SO_2 NAAQS nonattainment area emit over 99% of the 2017 SO_2 emissions. The Alon USA Big Spring Refinery is a petroleum refinery that processes crude oil from the Permian Basin into other petroleum products such as transportation fuels, solvents, and finished asphalt. The Tokai Big Spring Carbon Black Plant is a carbon black plant that produces carbon black used in tires, manufactured rubber goods, plastics, coatings, inks, and toners.

The third stationary point source site in the nonattainment area emits less than 1% of the 2017 SO_2 emissions. The BHER C R Wing Cogeneration Plant is an electric generating facility consisting of two cogeneration turbines with associated duct burners and ancillary equipment. BHER C R Wing Cogeneration Plant's SO_2 emissions have been below five tons per year (tpy) since 2003.

2.2.1 2017 Base Year Point Source Emissions Inventory

The TCEQ extracted the 2017 point source inventory data from STARS on December 8, 2021. The extracted data include reported annual (routine) emissions of SO_2 in tpy for the three stationary sources located in the Howard County 2010 SO_2 NAAQS nonattainment area.

The 2017 base year point source SO_2 EI is summarized in Table 2-1: *Howard County Nonattainment Area SO_2 Emissions.*

2.2.2 2026 Attainment Year Point Source Emissions Inventory

In accordance with the associated 30 TAC Chapter 112, Subchapter E rules (Rule Project No. 2021-035-112-AI), the Alon USA Big Spring Refinery and Tokai Big Spring Carbon Black Plant are subject to TCEQ SO_2 emissions regulations required for attainment. The 2026 forecasted controlled actual emissions were determined from historical emissions and/or the application of enforceable requirements from consent decrees, rules, modeled emissions rates, and/or permits to affected sources.

The historical emissions were the average of the reported 2017 through 2020 annual point source inventory SO_2 emissions. The TCEQ extracted the 2017 through 2020 point source inventory data from STARS on December 8, 2021. The extracted data

include reported annual routine SO_2 emissions in tpy for point sources located in the Howard County 2010 SO_2 NAAQS nonattainment area.

The 2017 through 2020 emissions average was held constant to project the 2026 forecasted emissions for most sources. For sources subject to enforceable requirements that have annual permitted limits lower than the historical average, the 2026 forecasted emissions were projected to the annual permitted limits. For sources that did not report point source emissions inventory data, the 2026 forecasted emissions were determined from modeled emissions rates or rule limits.

Appendix A: *Stationary Point Source Sulfur Dioxide (SO_2) Emissions* provides details on the 2017 point source base year SO_2 emissions, 2018 through 2020 point source SO_2 emissions, and the 2026 projected point source SO_2 emissions.

The 2026 attainment year point source SO_2 EI is summarized in Table 2-1.

2.3 AREA SOURCES

Stationary emissions sources that do not meet the reporting requirements for point sources are classified as area sources. Area sources are small-scale stationary industrial, commercial, and residential sources that use materials or perform processes that generate emissions. Examples of typical SO_2 emissions sources include upstream oil and gas flares, compressor engines, and heaters; stationary source fossil fuel combustion at residences and businesses; outdoor refuse burning; and agricultural crop burning.

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

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

2.3.1 2017 Base Year Area Source Emissions Inventory

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

The EPA developed EIs for states to use for many area source categories as part of the National Emissions Inventory (NEI). The states access these individual EIs through the

EPA's NEI website (https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data). These source categories include but are not limited to industrial coatings; degreasing; residential, commercial/institutional, and industrial fuel use; commercial cooking; aviation fuel use; and consumer products. For some source categories, the TCEQ developed state-specific emissions estimates by acquiring current state-specific activity data and applying appropriate emissions factors. These source categories include but are not limited to gasoline storage tanks, structure fires, dry cleaners, and automobile fires.

The TCEQ committed significant resources to improve the oil and gas area source inventory categories for the 2017 base year 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 C: *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 emissions factors 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 D: *Industrial, Commercial, and Institutional (ICI) Fuel Use Study*.

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

The 2017 base year area source SO_2 EI is summarized in Table 2-1.

2.3.2 2026 Attainment Year Area Source Emissions Inventory

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

operations. This 2020 oil and gas area source EI was used as the projection base year for the 2026 attainment year EI.

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

No controls were incorporated into the area source attainment year inventories.

The 2026 attainment year area source SO_2 EI is summarized in Table 2-1.

2.4 NON-ROAD MOBILE SOURCES

Non-road vehicles do not normally operate on roads or highways and are often referred to as off-road or off-highway vehicles. Non-road emissions sources include agricultural equipment, commercial and industrial equipment, construction and mining equipment, lawn and garden equipment, aircraft and airport equipment, 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 added together and presented as a total. The following sections describe the emissions estimation methods used for the non-road mobile source subcategories.

The 2017 base year and 2026 attainment year non-road mobile source SO_2 EIs are summarized in Table 2-1.

2.4.1 NONROAD Model Categories

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

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

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

2.4.1.1 2017 Base Year NONROAD Model Emissions Inventory

TCEQ staff developed the 2017 base year non-road model category SO_2 emissions for this SIP revision using the TexN2.2 utility set for fully controlled run scenarios that used 2017 meteorological input data.

2.4.1.2 2026 Attainment Year NONROAD Model Emissions Inventory

TCEQ staff developed the 2026 attainment year non-road model category SO_2 emissions for this SIP revision using the TexN2.2 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 TexN2.2 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 TexN2.2 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 F: *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 F combined with 2017 RRC drilling activity data.

2.4.2.2 2026 Attainment Year Drilling Rig Emissions Inventory

The 2026 attainment year drilling rig SO_2 emissions for this SIP revision were based on 2020 drilling activity data (the most recently available activity data) combined with the 2026 year-specific projected emissions factors from the 2015 ERG report in Appendix F.

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 and III locomotive activity and emissions by rail

segment (currently, there are no Class II operators in Texas). The method and procedures used to develop the locomotive EIs for this SIP revision are detailed in the Texas A&M Transportation Institute (TTI) report in Appendix G: *2020 Texas Statewide Locomotive and Rail Yard Emissions Inventory and 2011 through 2050 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 TTI report in Appendix G.

2.4.3.2 2026 Attainment Year Locomotive Emissions Inventory

The 2026 attainment year locomotive SO_2 emissions for this SIP revision were taken from the 2026 trend EI developed as part of the TTI report in Appendix G.

2.4.4 Airports

The airport EIs were developed from a TCEQ-commissioned study using the Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT). The AEDT is the most recent FAA model for estimating airport emissions and replaced the FAA's Emissions and Dispersion Modeling System. The airport emissions categories used for this 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 TTI report in Appendix H: *2020 Texas Statewide Airport Emissions Inventory and 2011 through 2050 Trend Inventories.*

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 trend EI developed as part of the ERG report in Appendix H.

2.4.4.2 2026 Attainment Year Airport Emissions Inventory

The 2026 attainment year airport SO_2 emissions for this SIP revision were taken from the 2026 statewide airport trend EI developed as part of the ERG report in Appendix H.

2.5 ON-ROAD MOBILE SOURCES

On-road mobile emissions sources consist of automobiles, trucks, motorcycles, and other motor vehicles traveling on public roadways as well as off-network emissions occurring outside public roadways. On-road mobile source 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 (emission factors) and the number of units of activity must be determined.

Updated on-road EIs for this SIP revision were developed using the inventory mode of the EPA's mobile source emissions model, MOVES3. During a MOVES3 inventory mode run, emissions rates are first calculated and then applied to user-provided activity levels or EPA MOVES default activity levels. The MOVES3 model may be run using national default information or the default information may be modified to simulate specific data, such as the control programs, driving behavior, meteorological

conditions, and vehicle characteristics. Because modifications to the national default values influence the emissions factors 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 Mobile 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 that reflect local conditions as well as local activity levels were used when available. Detailed information on the inputs and data sources used in the on-road EI development are provided in Appendix I: *MOVES3 On-road Inventory Development*.

The Federal Motor Vehicle Control Program (FMVCP) provides on-going emissions reductions from mobile sources. The FMVCP includes vehicle emission certification standards as well as corresponding limits on fuel sulfur content. The limits on sulfur content for diesel and gasoline fuels contribute to reduced SO_2 emissions from mobile sources.

The 2017 base year on-road mobile source SO_2 EI is summarized in Table 2-1.

2.5.2 2026 Attainment Year On-Road Mobile Emissions Inventory

TCEQ staff developed the 2026 attainment year on-road mobile source category 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.

The 2026 attainment year on-road mobile source SO_2 EI is summarized in Table 2-1.

2.6 EMISSIONS INVENTORY IMPROVEMENT

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

2.7 EMISSIONS SUMMARIES

The 2017 base year and 2026 attainment year Howard County 2010 SO_2 NAAQS nonattainment area SO_2 emissions for this SIP revision are summarized in Table 2-1. In this table, annual routine emissions for all source categories are provided in tpy. These emissions summaries demonstrate that the point source category contributes the largest portion (over 99%) of SO_2 emissions in the Howard County 2010 SO_2 NAAQS nonattainment area.

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

Per EPA EI rules and guidance, the area, non-road mobile, and on-road mobile sources emissions are typically calculated as county-wide totals for Howard County. To obtain area, non-road mobile, and on-road mobile source emissions for the Howard County 2010 SO_2 NAAQS nonattainment area for this SIP revision, county-level emissions were ratioed based on the 2010 population located within 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: Howard County Nonattainment Area SO_2 Emissions in TPY

Source Category	2017 Base Year Reported Emissions (TPY)	2026 Attainment Year Emissions (TPY)
Point – Alon USA Big Spring Refinery	769.78	718.31
Point – Tokai Big Spring Carbon Black Plant	5,327.70	4,830.19
Point – BHER C R Wing Cogeneration Plant	0.22	1.62
Area – Non- Oil and Gas	0.05	0.07
Area – Oil and Gas	6.30	10.53
On-road Mobile	0.02	0.02
Non-road Mobile	0.02	0.02
Total	6,104.09	5,560.76

CHAPTER 3: CONTROL STRATEGIES AND REQUIRED ELEMENTS

3.1 INTRODUCTION

On March 26, 2021, the United States Environmental Protection Agency (EPA) finalized a rule designating a portion of Howard County as nonattainment for the 2010 sulfur dioxide (SO_2) National Ambient Air Quality Standard (NAAQS), with a rule effective date of April 30, 2021 (86 *Federal Register (FR)* 16055). The SO_2 nonattainment area designated by the EPA includes:[2]

- Alon USA Big Spring Refinery (Alon USA Big Spring Refinery) owned by Alon USA, LP (Alon);
- Tokai's Big Spring Carbon Black Plant (Tokai Big Spring Carbon Black Plant) owned by Tokai Carbon CB LTD (Tokai), and
- BHER Power Resources INC's C R Wing Cogeneration (BHER C R Wing Cogeneration Plant) owned by BHER Power Resources INC (BHER).

The Alon USA Big Spring Refinery manufactures transportation fuels, solvents, finished asphalt, and liquified petroleum gas. The Tokai Big Spring Carbon Black Plant manufactures carbon black for use in various industrial applications, such as tires. The BHER C R Wing Cogeneration Plant is a cogeneration plant that generates electric power. Only two of the three sites, the Alon USA Big Spring Refinery and the Tokai Big Spring Carbon Black Plant, are to be included in the associated 30 Texas Administrative Code (TAC) Chapter 112, Subchapter E rules. The EPA has historically used pollutant-specific concentration levels, known as significant impact levels (SIL), to identify the degree of air quality impact that causes or contributes to a violation of the NAAQS or a New Source Review (NSR) Prevention of Significant Deterioration permit program increment. As a result, the Texas Commission on Environmental Quality (TCEQ) used the SIL for SO_2 of 3 parts per billion (ppb) or 7.85 micrograms per cubic meter ($\mu g/m^3$) to determine which emission points were most likely to be significant contributors to nonattainment. Although the screening level was used to determine which sources have enforceable limits in the rules, no sources were screened out from the attainment demonstration modeling. The commission included many small emission sources in its modeling in response to discussions with EPA Region 6 and to ensure that the modeling was representative and conservative. The emissions from these sources were based on the represented permit-enforceable emission limits, as stated in 40 Code of Federal Regulations (CFR) Part 51, Appendix W, Section 2.1.c: "Appropriate model input data should be available before an attempt is made to evaluate or apply an air quality model. Assuming the data are adequate, the greater the detail with which a model considers the spatial and temporal variations in meteorological conditions and permit-enforceable emissions, the greater the ability to evaluate the source impact and to distinguish the effects of various control strategies." Additionally, 40 CFR Part 51, Appendix W, Section 9.2.3.1, *Considerations in Developing Emission Limits*, does not require that every emission source that is modeled have a corresponding SIP emission limit. Section 9.2.3.1 states that "[e]missions limits and resulting control requirements should be established to provide for compliance with

[2] Although referenced in various and sometimes shortened forms in the proposals for this SIP revision and associated rules, at adoption the commission has revised all references to consistently refer to the sites and owners in the Howard nonattainment area.

each applicable NAAQS … [t]he appropriate reviewing authority … and appropriate EPA guidance should be consulted to determine the appropriate emission limits on a case-by-case basis."

Through air dispersion modeling, the TCEQ identified the SO_2 emission rates that modeled attainment by using an iterative process that included modeling and consultation with the affected regulated entities of the nonattainment area. The associated Chapter 112 rules specify the SO_2 emission rates determined necessary to model attainment of the 2010 SO_2 NAAQS in the Howard County nonattainment area.

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 RACM including RACT; under FCAA, §172(c)(6) for enforceable emissions limitations and control measures; under FCAA, §173(a) for a nonattainment 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 the Alon USA Big Spring Refinery and the Tokai Big Spring Carbon Black Plant 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 30 TAC Chapter 112, Subchapter E rules (Rule Project No. 2021-035-112-AI) 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 devices, systems, process modifications, or other apparatus or techniques that are reasonably available taking into account what is necessary to attain and maintain the NAAQS while considering the social, environmental, and economic impact of such controls. The EPA's *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (2014 SO_2 SIP

guidance) maintains previous EPA guidance regarding the definition of RACT.[3] The 2014 SO_2 SIP guidance also provides that states should consider all RACM, including RACT, that can be implemented in light of the attainment needs of the affected area.

Because modeling of the sources at the BHER C R Wing Cogeneration Plant and several sources at the Alon USA Big Spring Refinery and the Tokai Big Spring Carbon Black Plant found those sources of SO_2 emissions to have impacts below the SO_2 SIL of 3 ppb (7.85 µg/m^3), those sources were determined not to have a significant impact in the nonattainment area. Because the TCEQ determined that those sources do not have a significant impact, reasonably available control measures (RACM), including reasonably available control technology (RACT), are not required to be applied to those sources as part of the overall control strategy to reduce SO_2 emissions and attain and maintain the 2010 SO_2 NAAQS.

The Alon USA Big Spring Refinery and the Tokai Big Spring Carbon Black Plant contain the sources of SO_2 determined to significantly contribute to nonattainment in the Howard County 2010 SO_2 NAAQS nonattainment area and are the only sources for which RACM, including RACT, are required to be applied under FCAA §172(c)(1). The Alon USA Big Spring Refinery will implement RACM, including RACT, through compliance with the SO_2 emissions limits on the following sources at the site:

- Fluidized Catalytic Cracking Unit (FCCU) with an SO_2 limit of 250.00 pounds per hour (lb/hr) on a seven-day rolling average basis;
- Northeast flare with the following limitations:
  - An SO_2 limit of 25.00 lb/hr during routine operations;
  - For maintenance, startup, and shutdown (MSS) operations to occur no more than 12 calendar days per year, the following:
    - Equal to or greater than 25.01 lb/hr but less than 250.01 lb/hr in any hour within a calendar day for no more than four days per calendar year;
    - Equal to or greater than 250.01 lb/hr but less than 500.01 lb/hr in any hour within a calendar day for no more than six calendar days per year;
    - Equal to or greater than 500.01 lb/hr but less than 1,500.01 lb/hr in any hour within a calendar day for no more than two calendar days per year;
    - SO_2 emissions greater than 1,500.00 lb/hr are prohibited; and
    - SO_2 emissions of the higher range apply when emissions that correspond to more than one range specified occur during a calendar day;
- Crude flare with the following limitations:
  - An SO_2 limit of 51.80 lb/hr during routine operations;
  - For MSS operations to occur no more than 17 calendar days per year, the following:
    - Equal to or greater 51.81 lb/hr but less than 250.01 lb/hr in any hour within a calendar day for no more than 14 calendar days per year;
    - Equal to or greater than 250.01 lb/hr but less than 750.01 lb/hr in any hour within a calendar day for no more than three calendar days per year;
    - SO_2 emissions greater than 750.00 lb/hr are prohibited; and

[3] 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).

    - SO_2 emissions of the higher range apply when emissions that correspond to more than one range specified occur during a calendar day;
- Reformer flare with the following limitations:
    - An SO_2 limit of 103.70 lb/hr during routine operation;
    - For MSS operations to occur no more than nine calendar days per year, the following:
        - Equal to or greater than 103.71 lb/hr but less than 250.01 lb/hr in any hour within a calendar day for no more than four calendar days per year;
        - Equal to or greater than 250.01 lb/hr but less than 750.01 lb/hr in any hour within a calendar day for no more than five calendar days per year;
        - SO_2 emissions greater than 750.00 lb/hr are be prohibited; and
        - SO_2 emissions of the higher range apply when emissions that correspond to more than one range specified occur during a calendar day;
- South flare with the following limitations:
    - An SO_2 limit of 118.70 lb/hr during routine operation;
    - For MSS operations to occur no more than 18 calendar days per year, the following:
        - Equal to or greater than 118.71 lb/hr but less than 250.01 lb/hr in any hour within a calendar day for no more than four calendar days per year;
        - Equal to or greater than 250.01 lb/hr but less than 500.01 lb/hr in any hour within a calendar day for no more than 12 calendar days per year;
        - Equal to or greater than 500.01 lb/hr but less than 1,696.01 lb/hr in any hour within a calendar day for no more than two calendar days per year
        - SO_2 emissions greater than 1,696.00 lb/hr are prohibited; and
        - SO_2 emissions of the higher range apply when emissions that correspond to more than one range specified occur during a calendar day; and
- Two sulfur recovery unit incinerators with the following limitations:
    - An SO_2 limit of 17.03 lb/hr for Emission Point Number (EPN) 69TGINC; and
    - An SO_2 limit of 12.78 lb/hr for EPN 71TGINC.

The Alon USA Big Spring Refinery will also comply with a limit on the sulfur content of any refinery gas stream combusted in any flare covered by the rule to a maximum of 162 parts per million by volume hydrogen sulfide (H_2S) determined on a three-hour rolling average, during normal operation, in accordance with 40 CFR §60.103a(h).

The maximum number of calendar days per year that each flare can operate in MSS is based on ranges of emission rates and is designed to ensure that modeling demonstrates compliance with the one-hour SO_2 NAAQS. The emissions ranges begin just above the routine emission limit and increase sequentially through the maximum limit. The range applicable to a specific day is based on the maximum hourly rate during that day, with the highest emission rate determining the appropriate number of calendar days per year.

The Tokai Big Spring Carbon Black Plant will implement RACM, including RACT, through compliance with SO_2 emissions limits on the following sources at the site:

- Incinerator plus heat recovery steam generator (HRSG) with an SO_2 limit of 1,138.00 lb/hr when all furnaces in the production units are operating.

- Flare, when the incinerator plus HRSG is not operating with an SO_2 limit of 1,138.00 lb/hr when all furnaces in the production units are operating.
- Dryer stack unit number 3 with an SO_2 limit of 146.00 lb/hr;
- Source cap for Dryer stack unit numbers 1 and 2 and Dryer stack unit number 3 with an SO_2 limit of 407.00 lb/hr when all furnaces in the production units are operating; and
- Source cap for incinerator plus HRSG, Dryer stack unit numbers 1 and 2, and Dryer stack unit number 3 with an SO_2 limit of 1,355.00 lb/hr when all furnaces in the production units are operating.

The Tokai Big Spring Carbon Black Plant has three production units and associated carbon black dryers to manufacture carbon black. Because the plant can operate all sources to produce carbon black but does not need all sources operating simultaneously, a minimum number of carbon black oil furnaces must be in operation for each production unit. Reduced loads at each of the production units are accommodated by operating fewer oil furnaces. With varying emission rates of SO_2 due to the various operational scenarios due to reduced loads, final SO_2 limits were developed that demonstrate attainment of the 2010 SO_2 NAAQS through air dispersion modeling. It is expected that modeled concentrations will be progressively lower at reduced loads, and the 100% load case will represent worst-case emissions. The rule specifies four limits: an overall cap for the incinerator plus HRSG (or flare when operating), dryer stack unit numbers 1 and 2, and dryer stack unit number 3; a cap for the dryer stack unit number 1 and 2 and dryer stack unit number 3; a limit for the dryer stack unit number 3; and a limit for the incinerator plus HRSG, or flare when the flare is operating.

There are 24 different operating scenarios representing different load levels, and two operating modes for the incinerator (on-line, or off-line [with flaring]). While distinct emission limits apply under each of the 24 load-varying scenarios, the emission limits do not change depending on whether the incinerator is on-line or off-line (the flare, when operational, has the same emission limit as would otherwise apply to the incinerator in all case). Finally, therefore, modeling a set of cap emission limits requires four scenarios, since only three out of four emission limits can be exactly met, simultaneously. In total, therefore, a total of $4 \times 24 \times 2 = 192$ distinct model scenarios were evaluated. These scenarios and corresponding limits on SO_2 emissions will be covered through the limitations on SO_2 emissions in the associated 30 TAC Chapter 112, Subchapter E rules (Rule Project No. 2021-035-112-AI). The rule provides emission limits at full load and reduced loads. The emission limits at reduced loads ensure attainment and maintenance of the 2010 SO_2 NAAQS as demonstrated through air dispersion modeling. During periods of transition, the number of furnaces on-line may change during an hour. In these cases, a time weighted average emission limit is calculated based on the number of furnaces on-line each minute of the hour. This approach generates an emission limit for transition periods that takes into account the amount of time any number of furnaces is on-line during the hour. Alternatively, a more conservative approach can be used in which the fewest number of furnaces on-line in any production unit during the hour can be used to determine the applicable emission limit. The TCEQ modeled 192 scenarios that bookend the possible range of emission limits when various combinations of furnaces could be on-line during transitional periods. TCEQ's modeling showed attainment of the NAAQS under all 192 scenarios.

In addition to SO_2 control requirements, the associated rules in 30 TAC Chapter 112, Subchapter E contains the other enforceable measures necessary for the affected area to attain and maintain the NAAQS, including monitoring requirements, testing requirements, and recordkeeping and reporting requirements.

3.2.1.1 Alternate Means of Control (AMOC)

An option for owners or operators to request an AMOC is provided in the associated rules in 30 TAC Chapter 112 based on the same procedural requirements in the SIP-approved 30 TAC Chapter 115 AMOC rules (30 TAC §§ 115.910 – 115.916). In approving these rules in 1997, the EPA stated that the AMOC provisions meet the requirements of the FCAA by requiring "greater emission reductions for alternate control methods…a public comment period and … EPA approval/disapproval."[4]

3.2.2 Variability Analysis

The 2014 SO_2 SIP guidance indicated that there may be cases in which an averaging time longer than one-hour may be appropriate provided that any emissions limits based on averaging periods longer than one-hour are designed to have comparable stringency to a one-hour average limit at the critical emission value (CEV). EPA indicated that if periods of hourly emissions above the critical emission value are a rare occurrence at a source, particularly if the magnitude of the emissions is not substantially higher than the critical emissions value, these periods would be unlikely to have a significant impact on air quality. EPA has further indicated that they do not expect that the use of longer-term averages will be necessary in cases where sources' emissions do not exhibit a high degree of variability. Therefore, the EPA recommends limiting the use of this approach to only those instances where a source's normal emissions variability would result in one-hour limits being extremely difficult to achieve in practice.

The 2014 SO_2 SIP guidance included a 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 to the source of SO_2 emissions. 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 sources 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. This approach to establishing an emissions limit on a longer averaging time is 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

[4] See Clean Air Act Limited Approval of Volatile Organic Compound (VOC) Control Measure for Texas, 62 Fed. Reg. 27964, 27965 (May 22, 1997).

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.

Alon is the only company in the nonattainment area that requested a limit on a longer averaging time. Alon USA Big Spring Refinery provided technical data concerning hourly mass SO_2 emissions from the FCCU at the Alon USA Big Spring Refinery. Four years of emissions data on a lb/hr basis covering the period from January 1, 2017, through December 31, 2020, for each operating hour of the FCCU were used for the emissions variability analysis to arrive at a final SO_2 emissions limit on a rolling seven-day average. The EPA's 2014 SO_2 SIP guidance allows states to consider limits on longer averaging times on a block basis and on a rolling basis; see Appendix C of the 2014 SO_2 SIP guidance. Appendices A, B, and C describe the process for determining emission rates for longer averaging times that are expected to be protective of the one-hour SO_2 NAAQS. Specifically, the 99th percentile of the one-hour lb/hr data was obtained as well as the 99th percentile of the rolling seven-day average lb/hr data. The ratio of the 99th percentile of the rolling seven-day average data to the 99th percentile of the one-hour data was then calculated to develop a discount factor to be applied to the one-hour CEV limit to arrive at the final limit on a longer averaging time basis. Alon expects to use a new catalyst for its FCCU that should result in greater control of SO_2 emissions, or fewer emissions of SO_2, compared to the current catalyst used in the FCCU and does not anticipate the new catalyst to vary significantly in design and function. Therefore, the historical emissions of the FCCU are considered representative of future emissions.

The final discount factor for the lb/hr emissions limit representing the modeled one-hour CEV was estimated to be 0.89. The TCEQ applied this discount factor to the one-hour limit of 280.90 lb/hr to derive a final limit of 250.00 lb/hr on a rolling seven-day averaging basis. The discount factor is expected to provide a degree of comparable stringency as the corresponding limit on a one-hour basis. The emission rate calculated using the discount factor is expected to constrain emissions from the FCCU so that any occasions of emissions above the CEV will be limited in frequency and magnitude.

3.2.3 Enforceable Control Measures

The control measures needed to meet the final SO_2 emissions limits and to further demonstrate attainment of the 2010 SO_2 NAAQS in the Howard County nonattainment area are made enforceable by the associated 30 TAC Chapter 112, Subchapter E rules, which 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 or failure to meet reasonable further progress (RFP). The rules also make enforceable the appropriate SO_2 emissions monitoring, testing, recordkeeping, and reporting requirements necessary to determine compliance with the final SO_2 emissions limits to ensure enforceability of the final SO_2 emissions limits in lb/hr, for both the Alon USA Big Spring Refinery and the Tokai Big Spring Carbon Black Plant. The compliance dates are designed to ensure that compliance is achieved as soon as practicable while acknowledging that achieving the dates depends on site-specific constraints related to design, construction, and installation of equipment, as well as global supply chain issues. Tokai is designing and constructing a new stack for the incinerator and a new flare, which could be impacted by supply chain issues. As a result, compliance may not be achievable until January 1, 2025. However, Alon can comply with the requirements associated with the FCCU Stack and both incinerators by

November 1, 2023. The TCEQ also considered the significant number of SO_2 sources subject to control requirements at both Alon and Tokai in determining that a January 1, 2025 compliance date for the majority of sources subject to Subchapter E is as soon as practicable given the constraints described above.

3.3 MONITORING NETWORK

The 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 sources' peak modeled impacts along with other monitor siting criteria, including power availability, site access, and 40 CFR Part 58, Appendix E siting criteria requirements.

In areas not previously designated under the 2010 SO_2 NAAQS, the TCEQ deployed SO_2 monitors near sources meeting specifications referenced in the EPA's SO_2 Data Requirements Rule (DRR). To meet the relevant requirement of the DRR, the TCEQ deployed an SO_2 monitor at the Big Spring Midway site (air quality system number 482271072) on December 3, 2016, in Howard County. A portion of Howard County was designated nonattainment, effective April 30, 2021 (86 F R 16055). The designation was based on three years of monitoring data that resulted in a design value exceeding the NAAQS.

The TCEQ commits to maintaining an air monitoring network that meets regulatory requirements. The TCEQ continues to work with the EPA through the air monitoring network review process, as required by 40 CFR Part 58, to determine: the adequacy of the federal air monitoring network, additional monitoring needs, and recommended monitor decommissions. Air monitoring data from the Big Spring Midway SO_2 monitor are quality assured, reported, and certified according to 40 CFR Part 58.

3.4 CONTINGENCY MEASURES

3.4.1 Introduction

FCAA, §172(c)(9) defines contingency measures as such measures in a SIP that are to be implemented in the event that an area fails to make RFP, 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 will attain the 2010 SO_2 NAAQS, it is 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 Howard County 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 an enforceable control strategy incorporated in the SIP has been implemented. If the EPA determines that the affected nonattainment area failed to attain the 2010 SO_2 NAAQS or failed to meet RFP, 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 Texas Water Code (TWC) Chapter 7 and Texas Health and Safety Code (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 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 sites in the Howard County 2010 SO_2 NAAQS nonattainment area determined to have a significant impact on attainment of the 2010 SO_2 NAAQS are the Alon USA Big Spring Refinery and Tokai Big Spring Carbon Black Plant. As discussed in Section 3.1: *Introduction*, certain sources of SO_2 at these two sites were determined to have a significant impact and contribution to nonattainment in the affected area. The control strategy that is made enforceable by the associated Chapter 112 rule is discussed in Section 3.2.4: *Enforceable Control Measures* of this chapter and 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 TWC Chapter 7 and THSC Chapter 382. See the Legal Authority (Section V-A) of this SIP narrative for the TCEQ's enforcement authority.

Upon the effective date of a determination by the EPA that the affected nonattainment area in Howard County failed to attain the 2010 SO_2 NAAQS or failed to meet RFP , pursuant to FCAA §179(c), 42 United States Code (U.S.C.), §7509(c), Alon and Tokai would be notified by the TCEQ that a full system audit (FSA) is required of all SO_2 emissions units at the Alon USA Big Spring Refinery and Tokai Big Spring Carbon Black Plant, respectively, subject to the associated 30 TAC Chapter 112, Subchapter E rule. Within 90 calendar days of the effective date of the EPA's determination of failure to attain the SO_2 NAAQS or failure to meet RFP, Alon and Tokai, respectively, 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, Alon and Tokai, respectively, 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 from the sources of SO_2 covered in the associated 30 TAC Chapter 112, Subchapter E rules;
- the meteorological conditions at the monitor, including the frequency distribution of wind direction temporally correlated with SO_2 readings greater than 75 ppb at the monitor for which the EPA's determination of failure to attain was made; and
- any exceptional event that may have occurred.

The two sites would also be required to conduct an FSA including a root cause analysis in the event of a failure to meet RFP. The rule clarifies that meteorological information is only required if EPA's determination is based on information from ambient monitoring. 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 adopted Chapter 112 rules.

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

The Emissions Banking and Trading rules in 30 TAC §101.300 and §101.370 define SIP emissions for emission credit and discrete emission credit generation, respectively. There has been no previous attainment demonstration SIP revision applicable to Howard County for the SO_2 NAAQS. Since this 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 ACT REQUIREMENTS

3.6.1 Conformity

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 Howard County 2010 SO_2 NAAQS nonattainment area became subject to general conformity requirements April 20, 2022, one year after the effective date of designation as nonattainment. Federal actions with SO_2 emissions that are expected to meet or exceed 100 tons per year (tpy) will be required to demonstrate general conformity according to the criteria and procedures established in 40 CFR Part 93, Subpart B. In consultation with federal agencies that are required to approve general conformity determinations for federal actions in the Howard County 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 Howard County 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 Howard County 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 Howard County 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 SIP revisions 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. A New Source Review (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.

In response to changes made by the Texas Air Control Board (a predecessor agency to the TCEQ) to address requirements of the federal Clean Air Act Amendments of 1990 as well as other changes, the EPA published its approval of Texas' nonattainment NSR regulation for SO_2 on September 27, 1995, effective November 27, 1995 (60 FR 49781). The TCEQ has determined that because the Texas SIP already includes 30 TAC §116.12 (Nonattainment and Prevention of Significant Deterioration Review Definitions), most

recently approved by the EPA as published on November 10, 2014 (79 FR 66626), and 30 TAC §116.151 (New Major Source or Major Modification in Nonattainment Area Other Than Ozone), most recently approved by the EPA as published on October 25, 2012 (77 FR 65119), the nonattainment NSR SIP requirements are met for Texas for the 2010 SO_2 NAAQS for areas including the Howard County 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 Howard County Attainment Demonstration State Implementation Plan (SIP) for the 2010 One-Hour 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 one-hour SO_2 NAAQS of 75 parts per billion (ppb) throughout the entire area designated as nonattainment.

The modeling demonstration includes recommended and required elements for air quality dispersion modeling for SO_2 attainment demonstration SIP revisions as provided in 40 Code of Federal Regulations (CFR) Part 51 Appendix W (EPA, 2017; hereafter referred to as Appendix W) and the 2014 SO_2 SIP Guidance.

This chapter summarizes the attainment demonstration modeling and presents results that demonstrate the control measures described in Chapter 3: *Control Strategies and Required Elements* will be effective in achieving attainment of the 2010 one-hour SO_2 NAAQS. A detailed description of the various modeling elements can be found in Appendix K: *Modeling Technical Support Document (TSD).*

For this attainment demonstration SIP modeling, to better model the characteristics of some SO_2 sources in the Howard County 2010 SO_2 NAAQS nonattainment area that emit SO_2 intermittently and non-deterministically, the TCEQ contracted with Ramboll US Corporation (Ramboll) to develop a technical framework, referred to as the Monte Carlo (MC) approach, that uses the air dispersion modeling in combination with simulations that use the outputs of the dispersion modeling with the MC statistical technique of repeated random sampling. The MC statistical simulation technique was used to estimate possible outcomes from uncertain events by repeatedly calculating an outcome, in this case the modeled design value (DV), by randomly selecting from a set of possible scenarios, in this case emission rates for sources in the nonattainment area, for each calculation.[5] Details of the MC approach are provided in Appendix L: *Howard County Monte Carlo Simulations*.

4.2 SOURCES OVERVIEW

There are three sites housing multiple SO_2 emissions sources in the Howard County 2010 SO_2 NAAQS nonattainment area that are included in the attainment demonstration modeling. They are listed:

- Tokai's Big Spring Carbon Black Plant (Tokai Big Spring Carbon Black Plant) owned by Tokai Carbon CB LTD (Tokai),
- Alon USA Big Spring Refinery (Alon USA Big Spring Refinery) owned by Alon USA, LP (Alon), and

[5] Although SO_2 design values are expressed in ppb, the Monte Carlo derived design values are represented in both $\mu g/m^3$ and ppb to present results with more precision because AERMOD outputs, Monte Carlo processing and results are in $\mu g/m^3$.

- BHER Power Resources Inc's C R Wing Cogeneration (BHER C R Wing Cogeneration Plant) owned by BHER Power Resources INC (BHER).

Emissions sources at all three sites are included in the attainment demonstration modeling, as discussed further below. Chapter 3: *Control Strategies and Required Elements* and preamble of the associated Chapter 112 rulemaking explains which of these sites and emissions sources are to be subject to new emissions limits or controls through this action.

Figure 4-1: *Overview of the Howard County 2010 SO_2 Nonattainment Area* shows the location and boundaries of Tokai Big Spring Carbon Black Plant, Alon USA Big Spring Refinery, and BHER C R Wing Cogeneration Plant sites as yellow, blue, and black solid lines, respectively. Also shown is the Big Spring Midway monitor (Continuous Ambient Monitoring Station 1072 (C1072), a Data Requirements Rule (DRR) monitor), represented by a green triangle.

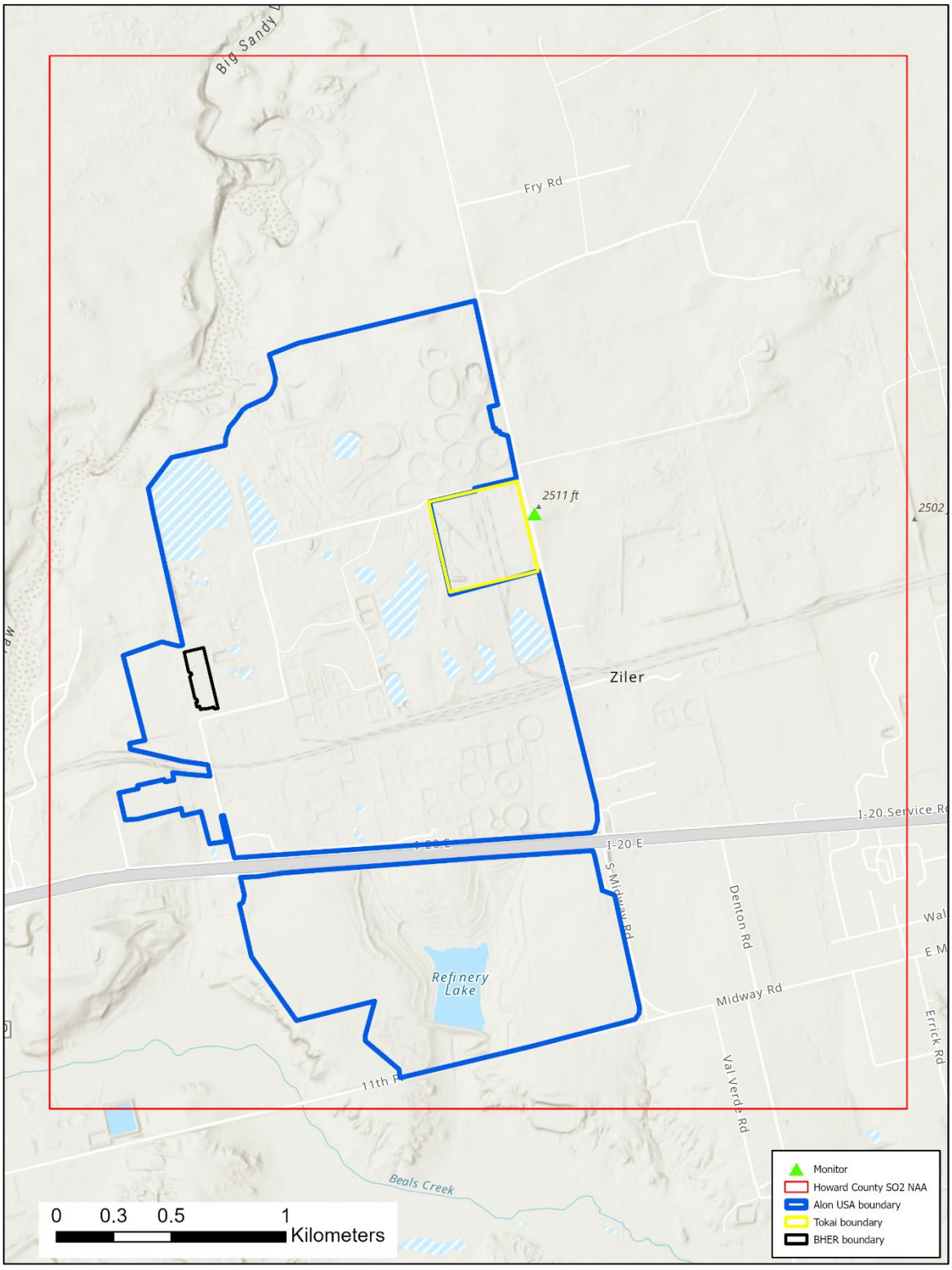

Figure 4-1: Overview of the Howard County 2010 SO_2 NAAQS Nonattainment Area

The location of emissions sources and buildings within each site's modeled site boundaries are presented in the next figures. Figure 4-2: *Tokai Big Spring Carbon Black Plant Site Overview* shows the Tokai Big Spring Carbon Black Plant modeled site boundary outlined in yellow, their associated buildings outlined in red, and their stack locations marked with pink dots within the boundary. Figure 4-3: *Alon USA Big Spring Refinery Site Overview* and Figure 4-4: *BHER C R Wing Cogeneration Plant Site Overview* follow a similar display structure, but the modeled site boundary is outlined in blue and black, respectively. All modeled emissions sources are discussed in Section 4.3: *Sources and Modeled Emission Rates.* A detailed list of emissions sources and parameters for all three sites in the Howard County 2010 SO_2 nonattainment area is included in Appendix K, Section 3: *Emissions Sources and Parameters*.

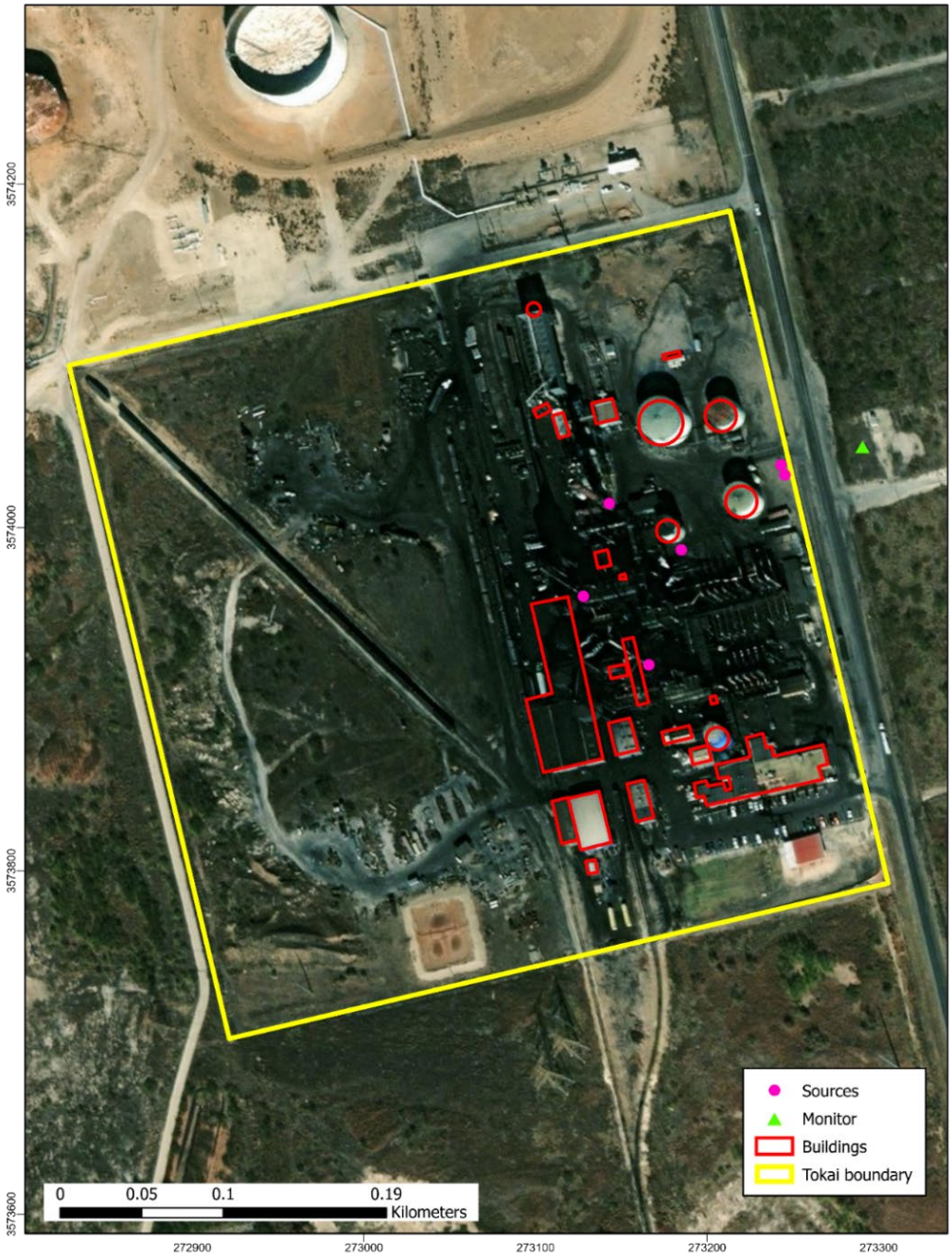

Figure 4-2: Tokai Big Spring Carbon Black Plant Site Overview

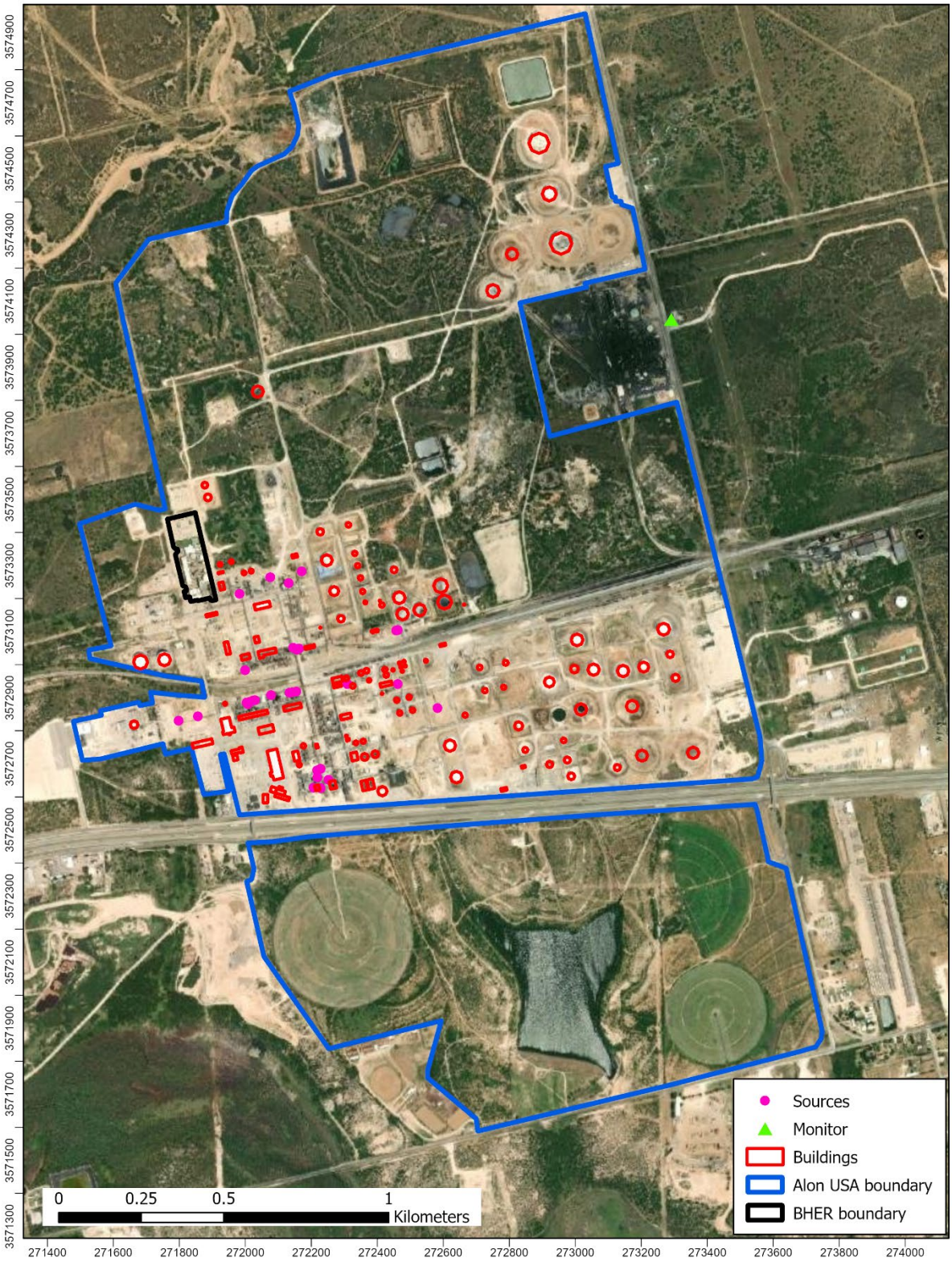

Figure 4-3: Alon USA Big Spring Refinery Site Overview

Figure 4-4: BHER C R Wing Cogeneration Plant Site Overview

4.3 SOURCES AND MODELED EMISSION RATES

Each of the three sites in the Howard County 2010 SO_2 NAAQS nonattainment area has many emissions sources. A detailed list of each emissions source and its parameters, including the Model Source IDs, location coordinates, and physical source parameters, can be found in Appendix K, Section 3: *Emissions Sources and Parameters*. This section provides details of the modeled emission rates for each of the sources in each site.

4.3.1 Tokai Big Spring Carbon Black Plant

The Tokai Big Spring Carbon Black Plant has six emissions sources that were modeled as point sources in two different modes of operation: routine and planned maintenance, startup, and shutdown (MSS).[6] The Emission Point Number (EPN), type of source (stack or flare), description, and modeled emission rates are provided in Table 4-1: *Tokai Big Spring Carbon Black Plant Point Sources*. Of the six emissions sources, four emissions sources have an emissions cap, designated as C in Table 4-1: Incinerator and Heat Recovery Steam Generator (HRSG) (EPN 13A), the flare (EPN FLARE 4), and the two dryer stacks (EPN 7A and EPN 12A). The combined SO_2 emissions from the four capped sources is 1,355 pounds per hour (lb/hr) when the four emissions sources are operating at full load level, i.e., when all dryers venting to EPN 7A, EPN 12A, EPN 13A and/or EPN FLARE 4 are operational. In addition to the emissions cap C, EPN 12A, EPN 13A, and EPN FLARE 4 each also have individual enforceable emission rates.

Due to the site's consent decree with the EPA, Tokai Big Spring Carbon Black Plant is allowed to flare from EPN FLARE 4 only when EPN 13A is in planned MSS. As a result of the cap for the four Tokai Big Spring Carbon Black Plant sources, a total of 192 scenarios were modeled taking into consideration variations in the operating load (when one or more of the dryers are not operational) and mode (routine vs. MSS) to ensure that the emission rates demonstrate attainment under differing operating conditions. A detailed discussion of emission limits and the emission cap for EPN 13A, EPN Flare 4, EPN7A, and EPN 12A is presented in Chapter 3: *Control Strategies and Required Elements* and the preamble of the accompanying Chapter 112 rulemaking. The modeling approach used to account for this cap is discussed in Section 4.4: *Modeling Technical Framework.*

Table 4-1: Tokai Big Spring Carbon Black Plant Point Sources

EPN	Type	Description	SO_2 Emission Rate (lb/hr)
14	Stack	Feedstock Oil Preheater 1	<0.01
15	Stack	Feedstock Oil Preheater 2	<0.01
12A	Stack	Dryer Stack Units No. 3	C
7A	Stack	Dryer Stack Units Nos. 1 and 2	C
13A	Stack	Incinerator + HRSG	C
FLARE 4	Flare	Flare 4	C

[6] In this chapter, "point source" refers to emissions sources with stacks and a specific location. This use of the term point source is consistent with the EPA's 2014 SO_2 SIP guidance and Appendix W.

4.3.2 Alon USA Big Spring Refinery

The Alon USA Big Spring Refinery has 33 point sources, 29 of which are continuous sources, while four of their flares (EPN 02CRUDEFLR, EPN 14NEASTFLR, EPN 05REFMRFLR, and EPN 16SOUTHFLR) have intermittent MSS emissions. The modeled emissions rates are shown in Table 4-2: *Alon USA Big Spring Refinery Point Sources*. There are nine heaters within an emissions cap, Heater CAP, of 12.47 lb/hr. For the heaters in the Heater CAP, the hourly emission rate modeled for each heater is the maximum hourly individual heater contribution and is based on what represented in the associated NSR permit application and provided by the company. These values are shown in Table 4-3: *Alon USA Big Spring Refinery Heater Emissions Cap*. When in MSS mode, the flares have tiered emission rates as shown in Table 4-4: *Alon USA Big Spring Refinery Flare Modeled Emissions Rate and Occurrences*. Appendix K, Section 7: *Modeling Scenarios* provides details on the modeling approach used for these emissions sources.

Table 4-2: Alon USA Big Spring Refinery Point Sources

EPN	Type	Description	SO_2 Emission Rate (lb/hr)
23AC-1HTR	Stack	PDA Asphalt Heater	Heater CAP
23KTTLEHTR	Stack	PDA Tea Kettle Superheater	Heater CAP
02BGVCMHTR	Stack	Big Vacuum Heater	Heater CAP
02CHRGAHTR	Stack	Crude A and B Heater	Heater CAP
02CHRGDHTR	Stack	Crude D Heater	Heater CAP
09CHRGHTR	Stack	LDH Charge Heater	Heater CAP
23GSOILHTR	Stack	PDA Gasoil Heater	Heater CAP
26C8WSTHTR	Stack	C8 Column West Heater	Heater CAP
15CHRGHTR	Stack	Gas Hydrotreater Charge Heater	Heater CAP
37BOXAHTR	Stack	Horizontal Asphalt Heater Box A	0.55
37BOXBHTR	Stack	Vertical Asphalt Heater Box B	0.29
04CHRGHTR	Stack	Naphtha HDS Charge Heater	0.63
06CHRGHTR	Stack	FCCU Charge Heater	1.84
80CHRGHTR	Stack	Heater (59 MMBtu/hr)	1.69
25CLAYHTR	Stack	Clay Tower Heater	0.43
69TGINC	Stack	No. 1 SRU Incinerator Vent	17.03
71TGINC	Stack	No. 2 SRU Incinerator Vent	12.78
04DEC5HTR	Stack	Naphtha HDS Depentanizer Heater	2.29

EPN	Type	Description	SO_2 Emission Rate (lb/hr)
05DEC5HTR	Stack	Reformer Dependanizer Reboiler	1.70
77HYDGNHTR	Stack	Hydrogen Preheat Heater	0.62
01PMAHTR	Stack	Polymer Modified Asphalt Unit Heater	0.03
37PMGTRHTR	Stack	Process Heater	0.29
06ESPPCV	Stack	FCCU Electrostatic Precipitators Stack	280.90
05CHRGHTR	Stack	Reformer 1, 2, and 3 Reactor Reheater and Charge Heater	10.36
80STABLRBR	Stack	Heater (21 MMBtu/hr)	0.60
24STM23BLR	Stack	Steam Boiler	7.19
24STM24BLR	Stack	Steam Boiler	7.46
77STRBRHTR	Stack	Naphtha Stripper Reboiler	0.44
02CRUDEFLR	Flare	Crude Unit Flare	51.80
14NEASTFLR	Flare	Northeast Flare	25.00
37PMGTRFLR	Flare	Process Vapor Combustor	0.16
05REFMRFLR	Flare	Reformer Flare	103.70
16SOUTHFLR	Flare	South Flare	118.70

Table 4-3: Alon USA Big Spring Refinery Heater Emissions Cap

EPN	Type	Description	SO_2 Modeled Emission Rate (lb/hr)
23AC-1HTR	Stack	PDA Asphalt Heater	0.65
23KTTLEHTR	Stack	PDA Tea Kettle Superheater	0.06
02BGVCMHTR	Stack	Big Vacuum Heater	1.35
02CHRGAHTR	Stack	Crude A and B Heater	5.71
02CHRGDHTR	Stack	Crude D Heater	2.86
09CHRGHTR	Stack	LDH Charge Heater	0.51
23GSOILHTR	Stack	PDA Gasoil Heater	0.38
26C8WSTHTR	Stack	C8 Column West Heater	0.57
15CHRGHTR	Stack	Gas Hydrotreater Charge Heater	0.38
HEATER CAP	Stack	Heater Emission Caps	12.47

Table 4-4: Alon USA Big Spring Flare Modeled Emissions Rate and Occurrences

EPN	Emission Tier (lb/hr)	Occurrences per Year (Days)
02CRUDEFLR	750	3
02CRUDEFLR	250	14
05REFMRFLR	750	5
05REFMRFLR	250	4
14NEASTFLR	1500	2
14NEASTFLR	500	6
14NEASTFLR	250	4
16SOUTHFLR	1695	2
16SOUTHFLR	500	12
16SOUTHFLR	250	4

4.3.3 BHER C R Wing Cogeneration Plant

BHER C R Wing Cogeneration Plant has four emissions sources that operate continuously. The modeled emission rates are shown in Table 4-5: *BHER C R Wing Cogeneration Plant Point Sources*.

Table 4-5: BHER C R Wing Cogeneration Plant Point Sources

EPN	Type	Description	SO_2 Emission Rate (lb/hr)
E-3	Stack	Start-Up Emergency Electrical Generator	0.50
E-1	Stack	GE Frame 7 Turbine	16.40
E-2	Stack	GE Frame 7 Turbine	16.40
E-4	Stack	Maintenance Generator	0.10

Other sources of SO_2, affecting the Howard County 2010 SO_2 NAAQS nonattainment area that are not explicitly modeled, such as emissions from mobile sources or area sources outside of a specific site, are represented in the model as a background concentration. An hourly and seasonally varying background concentration was calculated based on data from the Midlothian Old Fort Worth monitor (C52) in Ellis County, Texas. Details on the choice of monitor and the calculation of background concentrations can be found in Appendix K, Section 6: *Background Concentration*.

4.4 MODELING TECHNICAL FRAMEWORK

The Howard County 2010 SO_2 NAAQS nonattainment area attainment demonstration SIP modeling applied a technical framework, referred to as the MC approach that uses a combination of the AERMOD dispersion modeling along with MC simulations that utilize outputs of the dispersion modeling with the MC statistical technique of repeated random sampling, to determine if the control measures described in Chapter 3: *Control Strategies and Required Elements* will result in attainment. While a brief description of the MC approach is provided in this section, additional details of the approach are provided in Appendix L.

The MC approach, estimates modeled DVs more realistically when some emissions sources emit SO_2 intermittently and non-deterministically. Ramboll developed computer code using the Python programming language to implement the modeling technical framework. For this attainment demonstration SIP modeling, the emissions sources in the Howard County 2010 SO_2 NAAQS nonattainment area were split into three categories, continuous emissions sources, capped emissions sources and intermittent sources based on how they operate.

The continuous emissions sources in Howard County 2010 SO_2 NAAQS nonattainment area include all sources at BHER C R Wing Cogeneration Plant, two sources (EPN 14 and EPN 15) at Tokai Big Spring Carbon Black Plant, and all sources at Alon USA Big Spring Refinery except the four flares (EPN02CRUDEFLR, EPN 14NEASTFLR, EPN 05REFMRFLR, and EPN 16SOUTHFLR). The continuous emissions sources were modeled at a constant emission rate as specified in Section 4.3: *Sources and Modeled Emission Rates* for all hours of a year for the five-year period modeled as required by the 2014 SO_2 SIP guidance. The American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD) version 21112 with the associated suite of preprocessors was used to derive modeled concentrations for continuous emissions sources in the nonattainment area. Given emissions and meteorological inputs, AERMOD predicts pollutant concentrations at specific physical locations determined by the user, known as receptors. For a quick reference to the software versions and settings used in the preprocessors, refer to Appendix K, Section 9: *Reference Tables for Modeling Information*.

The capped emissions sources in the Howard County 2010 SO_2 NAAQS nonattainment area include four emissions sources, EPN 7A, EPN 12A, EPN 13A, and EPN FLARE 4, at Tokai Big Spring Carbon Black Plant. In addition, Tokai Big Spring Carbon Black Plant sources EPN 13A and EPN FLARE 4 operate depending on the site's mode of operation, routine and MSS, respectively. They can only operate in one of these modes. The standard method of modeling capped sources is to estimate maximum modeled design value for each possible operational scenario. This was done in two steps. In step one, an AERMOD run with an emission rate of 1 gram per second (g/s) for each of the four capped Tokai Big Spring Carbon Black Plant sources was completed. In step two, the resultant concentrations at each receptor for every hour was scaled by the emission rates associated with each possible operational scenario. The possible operational scenarios for modeling were determined taking into consideration the operating modes, routine and MSS and the 24 load levels based on how many dryers are online. The modeling uses distinct emission rates for each of the 24 load levels based on the tiered emission cap limits specified in the rule accompanying this SIP revision. To account for possible variation in the allocation of the cap between the four subject sources, four cap scenarios, A through D, were modeled at each load level for each operating mode. In total, 192 (24 load levels x 2 modes of operation x 4 cap scenarios) distinct modeling scenarios were evaluated. For details on how these 192 scenarios were developed and about the enforceable cap limits, refer to Chapter 3. Taking as an example the scenario with the highest modeled DV, or "the controlling scenario" (Routine 24D), Ramboll's python code assigns 948 lb/hr to EPN 13A, 261 lb/hr to EPN 7A, and 146 lb/hr to EPN 12A, with a total cap limit of 1,355 lb/hr, for each hour of every year for the five-year period modeled. The code then appropriately scales the modeled concentrations at each receptor from the AERMOD run where each capped Tokai Big Spring Carbon Black Plant source was modeled with 1 g/s to derive the modeled concentrations at each receptor for each of the five years. The code then

calculates the five-year average to derive the modeled concentrations at each receptor for the capped sources in the nonattainment area.

The intermittent sources in the Howard County 2010 SO_2 NAAQS nonattainment area include the four Alon USA Big Spring Refinery flares. Modeling these sources as if they operate continuously results in unrealistic modeled concentrations at each receptor. In the MC approach, the contributions from intermittent sources to SO_2 concentrations in the nonattainment area are determined in two steps. In step one, an AERMOD run is completed with an emission rate of 1 (g/s) for each of the four Alon USA Big Spring Refinery flares. In step two, one or more of the flares were randomly placed in MSS mode for short periods of time and assigned MSS emission rates over the course of a year for each of the modeled five-years. The code randomly determines which days of each year each of the Alon USA Big Spring Refinery flares (independent of the other flares) will be in each of the MSS tiers from Table 4-4. The code then conservatively assigns the maximum emission rate for that MSS tier to that flare. Though the company stated that MSS occurrences normally last a few hours, in the MC approach it was assumed that each occurrence will last a full calendar day to ensure that the daily maximum hourly modeled concentration at each receptor will be captured. For days when the flare is not randomly assigned to be in MSS, the code assigns the routine emissions rate for that flare. The code could also randomly assign all four flares to be in MSS operations on the same day. Taking as an example the crude flare, EPN 02CRUDEFLR, for each year of the five-years being modeled, the following emission rates would be modeled:

1. fourteen full days at 250 lb/hr;
2. three full days at 750 lb/hr; and
3. the remaining 348 days at the normal operations emission rate of 51.8 lb/hr.

Based on the assigned emission rates the code then calculates the modeled concentrations at each receptor for intermittent sources in the nonattainment area as described above.

The modeled concentrations at each receptor for the continuous sources, capped sources, and intermittent sources are combined along with background concentrations to generate a maximum DV for comparison to the SO_2 standard for one MC simulation.

The MC approach involves repeating a minimum of 10,000 MC simulations for each of the 192 Tokai Big Spring Carbon Black Plant scenarios and determining the modeled maximum DV for each of the MC simulations. Attainment is demonstrated if the modeled maximum DV for all MC simulations is less than the SO_2 standard. For a detailed description of the MC approach, refer to Appendix L.

Due to the large number of MC simulations (a minimum of 192,000 simulations), a critical receptor grid was established to ensure SO_2 concentrations in the nonattainment area were appropriately characterized without placing undue burden on available computing resources. The critical receptor grid was determined using a set of AERMOD runs where all the BHER C R Wing Cogeneration Plant and Alon USA Big Spring Refinery sources in the Howard County 2010 SO_2 NAAQS nonattainment area were modeled at their maximum emission rates simultaneously for the five-year period for each of the 192 Tokai Big Spring Carbon Black Plant scenarios. Figure 4-5: *Modeling*

Domain and Receptor Grid Covering the Nonattainment Area shows the modeling domain for the AERMOD runs used in determining the critical receptors for the MC simulations. Figure 4-5 shows the nonattainment border as a red line and black points representing modeling receptors. The receptor grid shown in Figure 4-5 covers the nonattainment area such that all areas within the nonattainment area "that are considered ambient air (i.e., where the public generally has access)" (2014 SO_2 SIP guidance) were evaluated. Receptors were removed from areas not considered ambient air, which include property that is owned/operated by the sites and to which public access is controlled through the use of physical barriers and security measures. The portions of the nonattainment area that are considered nonambient were determined based on discussion with the EPA and the companies. Additional receptors were placed on the modeled site boundaries.

A total of 648 receptors were included in the final critical receptor grid used in the MC simulations. The receptors included those in the modeling domain shown in Figure 4-5 that had a modeled design value of 70 ppb or greater in any of the 192 scenarios modeled. Additional receptors were added to provide a buffer around those with a modeled design value of 70 ppb or greater. Receptors were also placed along property boundaries and public road and railways. Receptors were placed 50 meter (m), 100 m, and 200 m apart based on proximity to emissions sources and the set of receptors that had modeled design values greater than 70 ppb as shown in Figure 4-6: *Critical Receptors for the Monte Carlo Analysis*. Receptors that had modeled design values less than 70 ppb in all 192 Tokai scenarios and areas not considered ambient air were not included in the critical receptor grid. Appendix K, Section 4: *Modeling Domain and Receptor Screening for Monte Carlo Analysis* provides more detail on the critical receptors included in the critical receptor grid.

Receptor elevations for the critical receptor grid were derived from AERMOD's terrain preprocessor, AERMAP.

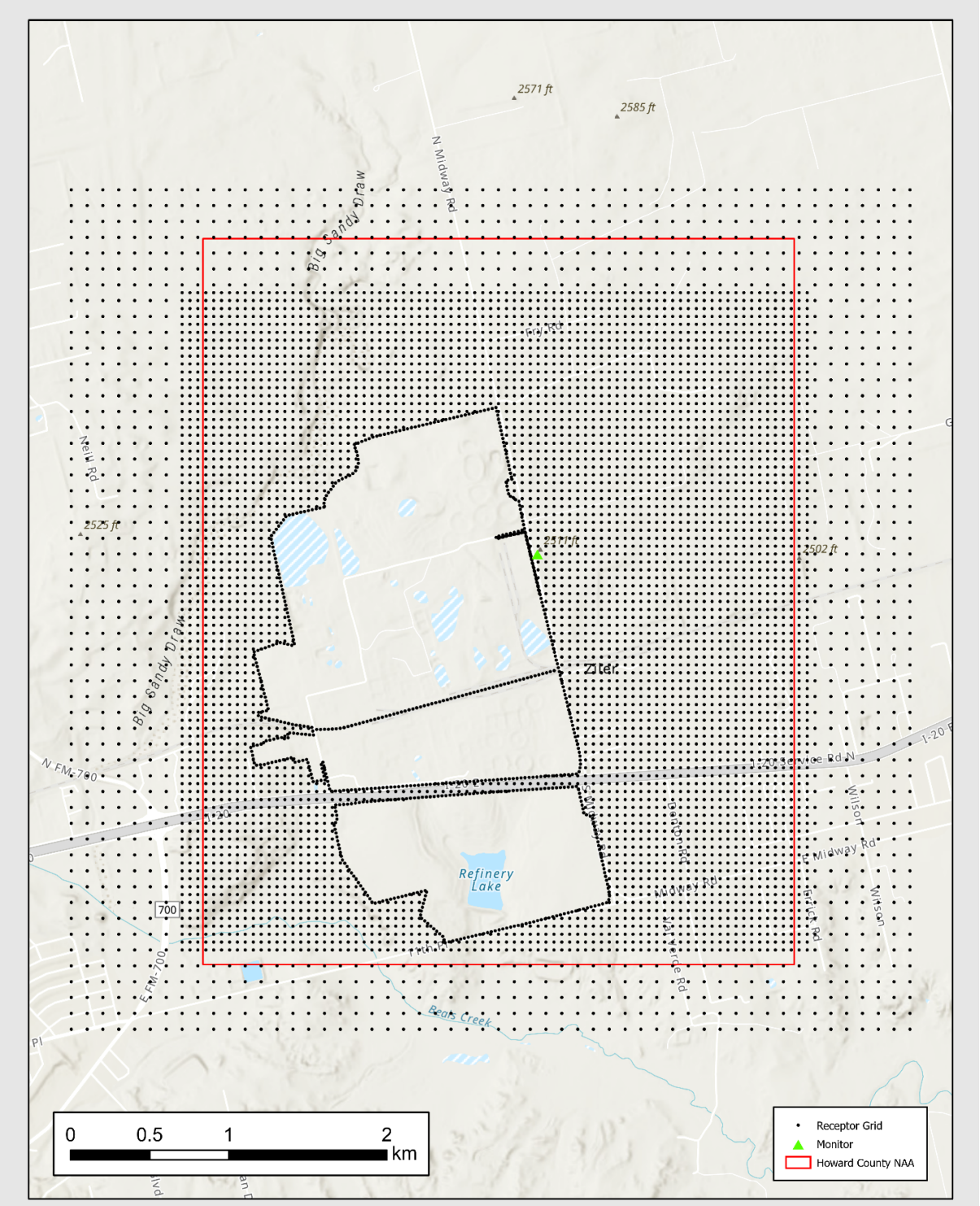

Figure 4-5: Modeling Domain and Receptor Grid Covering the Nonattainment Area

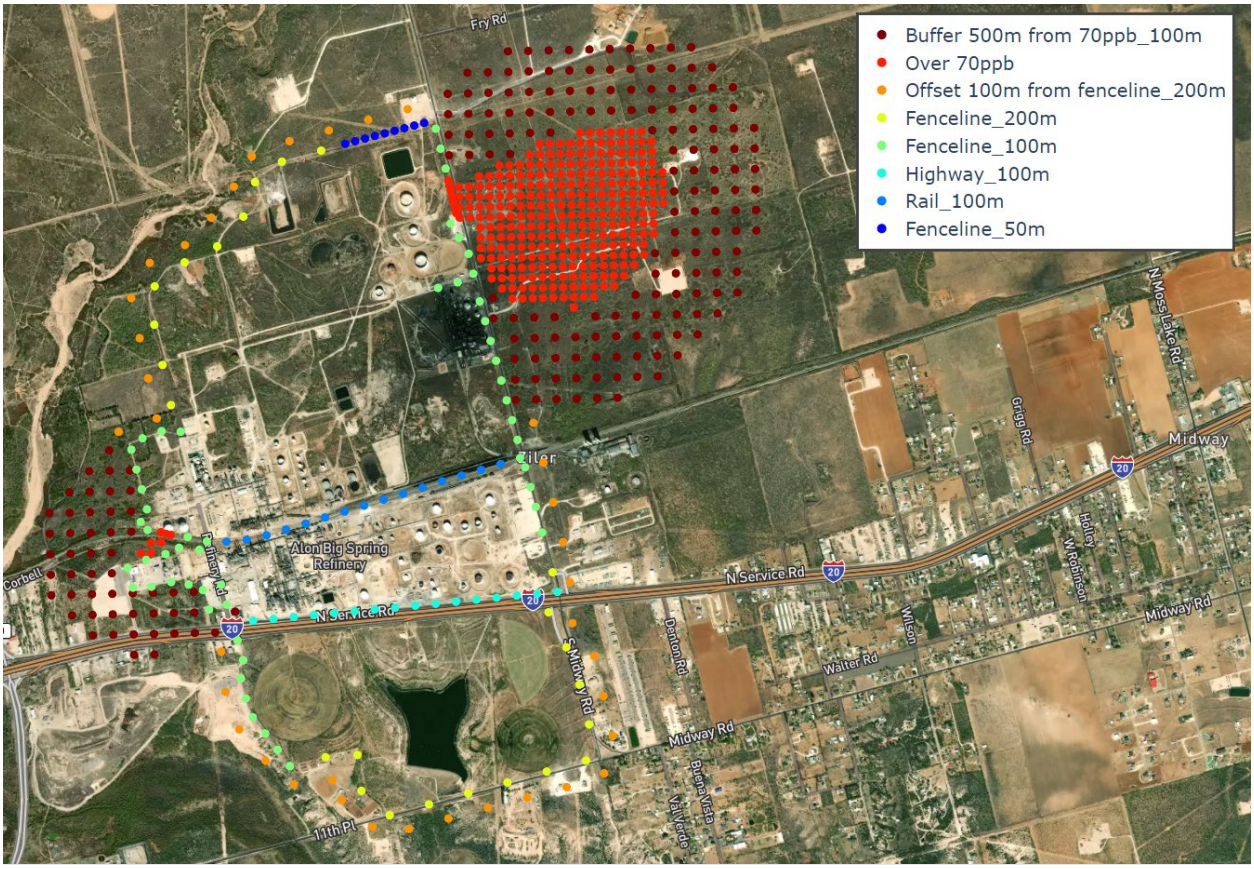

Figure 4-6: Critical Receptors for the Monte Carlo Analysis

Meteorological inputs for AERMOD were created using AERMET, AERMINUTE, and AERSURFACE. Five years of meteorological data from 2016 through 2020 were processed following the recommendations in 40 CFR Part 51 Appendix W §8.4, to capture meteorological variability. Surface and upper air data were taken from the Midland International Airport (Midland Intl AP) (Weather Bureau Army Navy [WBAN] 23023) station. Sub-hourly one-minute wind data from the surface station was included and processed with AERMINUTE using a threshold windspeed of 0.5 meters per second. AERSURFACE was used to supply surface characteristics to AERMET. Details on AERMET, AERMINUTE, and AERFURFACE settings and data are provided in Appendix K, Section 5: *Meteorology*.

Building downwash was calculated using AERMOD's downwash preprocessor, BPIPPRM. Detailed building information used for BPIPPRM can be found in Appendix K, Section 3: *Emissions Sources and Parameters.*

Modeling details relating to the MC approach, the critical receptor grid, meteorological inputs, background concentration, and property boundaries were shared with the EPA's Region 6 office and finalized after extensive consultation.

4.5 MODELING RESULTS

4.5.1 MC Simulations

The TCEQ conducted over two million MC simulations to ensure that the control measures described in Chapter 3 demonstrate attainment under a wide variety of operating conditions. The DV results of the MC simulations show no violations of the SO_2 standard at any receptors. The MC approach included repeated analysis of the operating conditions most likely to result in the maximum design value to ensure that the control measures remain protective. The MC simulations completed include:

- For each of the 192 Tokai modeling scenarios a run with 10,000 MC simulations;
- For each of the top 10 Routine and MSS Tokai scenarios,[7] a run with 20,000 MC simulations; and
- For the controlling Tokai scenario Routine 24D:
    - 20 runs each with 10,000 MC simulations,
    - 5 runs each with 20,000 MC simulations,
    - One run with 100,000 MC simulations, and
    - One run with 150,000 MC simulations.

The operating scenario routine 24D was identified as the top controlling scenario among 192 scenarios. When Tokai sources are operating in routine mode of operations at load level 24, all sources are operating at 100% capacity, resulting in higher emission rates. Cap scenario D consistently shows the highest concentrations among the four cap scenarios A to D. The results of 10,000 MC simulations for the routine load level 24, cap scenarios A to D are shown in Figure 4-7: *Histogram of Monte Carlo DVs from Routine Scenario Load 24*. The results of the 20,000 MC simulations for the top 10 routine and MSS Tokai scenarios are shown in Figure 4-8: *Histogram of Monte Carlo DVs from Top 10 Routine Scenarios* and Figure 4-9: *Histogram of Monte Carlo DVs from Top 10 MSS Scenarios*. The modeled maximum DVs for each scenario are in Appendix K, Table 7.1*: Modeling Scenarios and Maximum Modeled DV*. The scenario with the highest modeled DV, or the controlling scenario, was scenario Routine 24D, with a DV of 193.8 micrograms per cubic meter ($\mu g/m^3$)[8] or 74 ppb, which demonstrates attainment. Modeled DVs for each of the 20,000 MC simulations are shown in Figure 4-10: *Histogram of Monte Carlo DVs from Routine Scenario 24D.* A concentration plot for the critical receptors corresponding to the MC simulation that resulted in the DV of 193.8 µg/m3 or 74 ppb is shown in Figure 4-11: *Design Value Concentration at Critical Receptors*. The MC simulations for the controlling scenario, Routine 24D were re-run to update an error in the proposed sum for EPNs 7A and 12A. As a result of this update in the emissions rate, the modeled DV at the critical receptor increased by 0.1 $\mu g/m^3$ to 193.8 $\mu g/m^3$ (74 ppb).

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[7] The TCEQ identified the "top 10" or potentially most impactful routine (24D, 21D, 23D, 18D, 21C, 20D, 24A, 22D, 23C, and 18C) and Maintenance/Start-up/Shutdown (MSS) (24D, 24C, 21D, 23D, 21C, 18D, 23C, 20D, 18C, and 22D) scenarios. An additional set of 20,000 simulations was conducted on these top 10 scenarios.

[8] Although SO_2 design values are expressed in ppb, the Monte Carlo derived design values are represented in both $\mu g/m^3$ and ppb to present results with more precision because AERMOD outputs, Monte Carlo processing, and results are in $\mu g/m^3$.

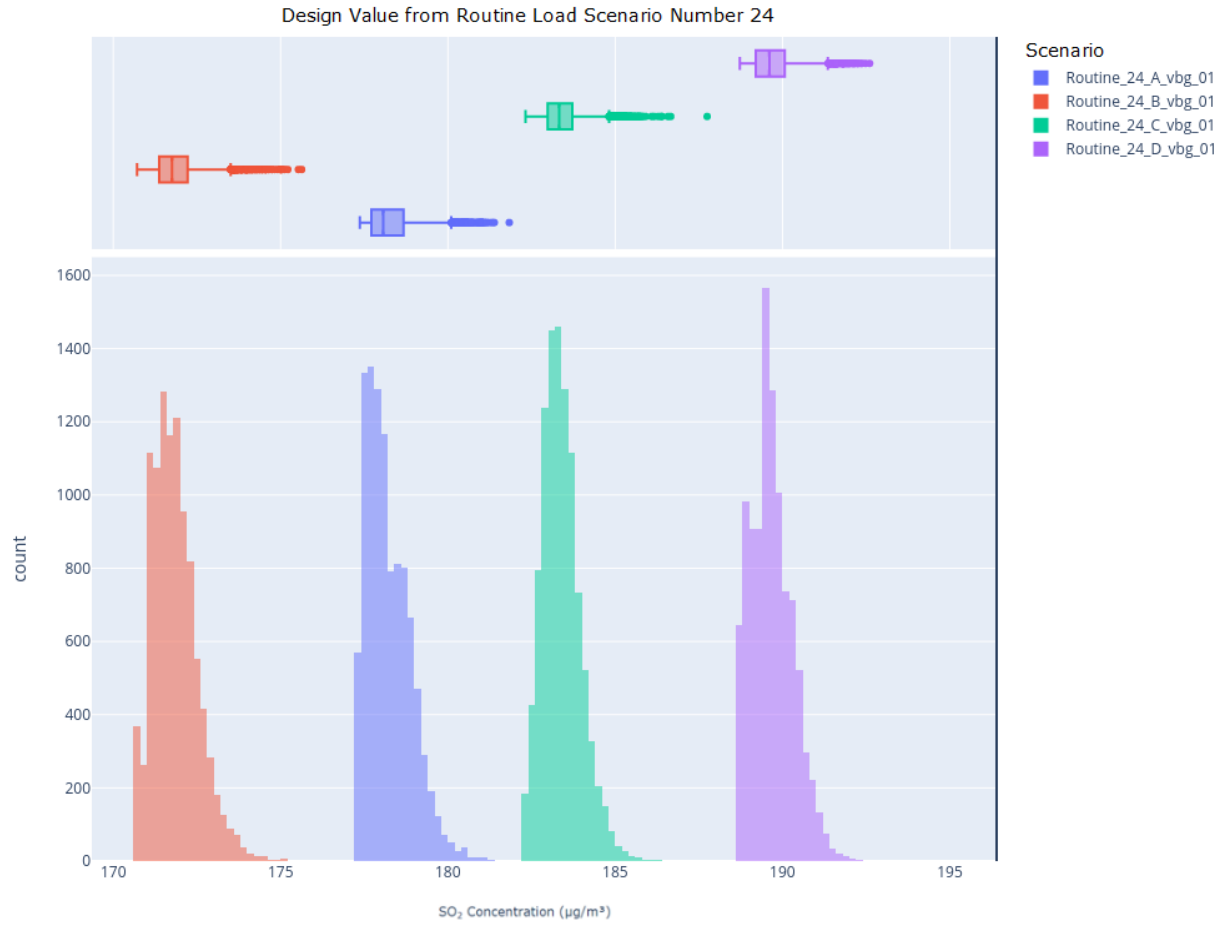

Figure 4-7: Histogram of Monte Carlo DVs from Routine Scenario Load 24

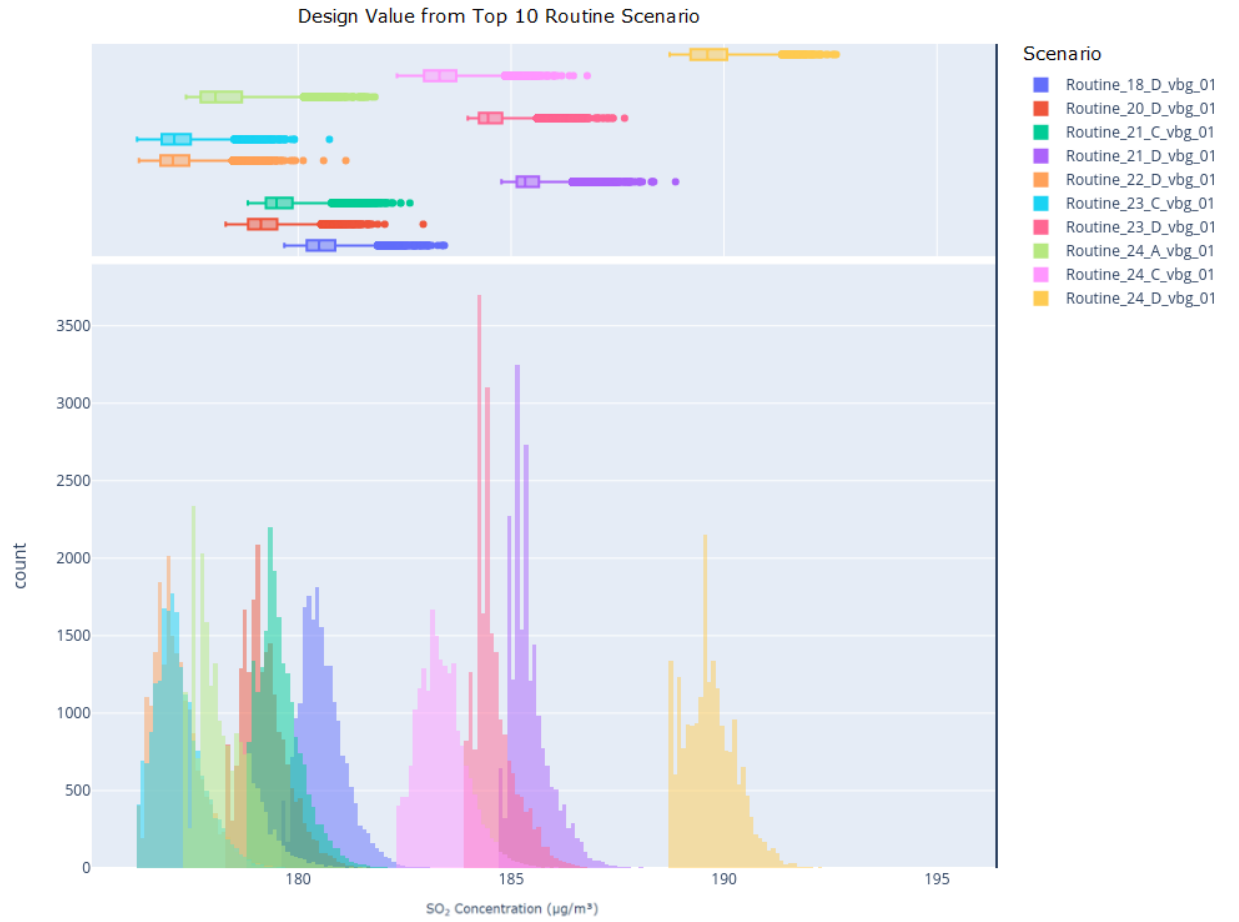

Figure 4-8: Histogram of Monte Carlo DVs from Top 10 Routine Scenarios

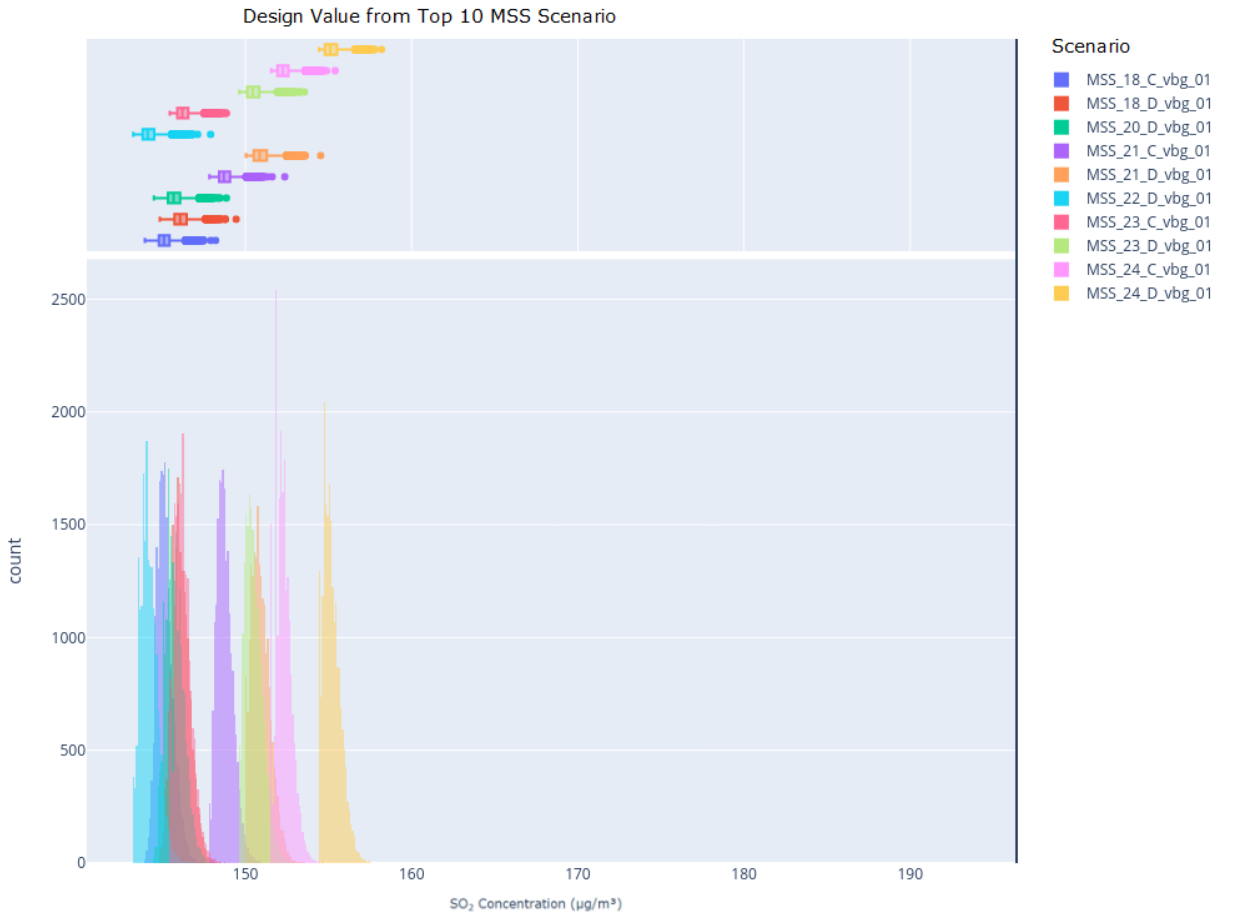

Figure 4-9: Histogram of Monte Carlo DVs from Top 10 MSS Scenarios

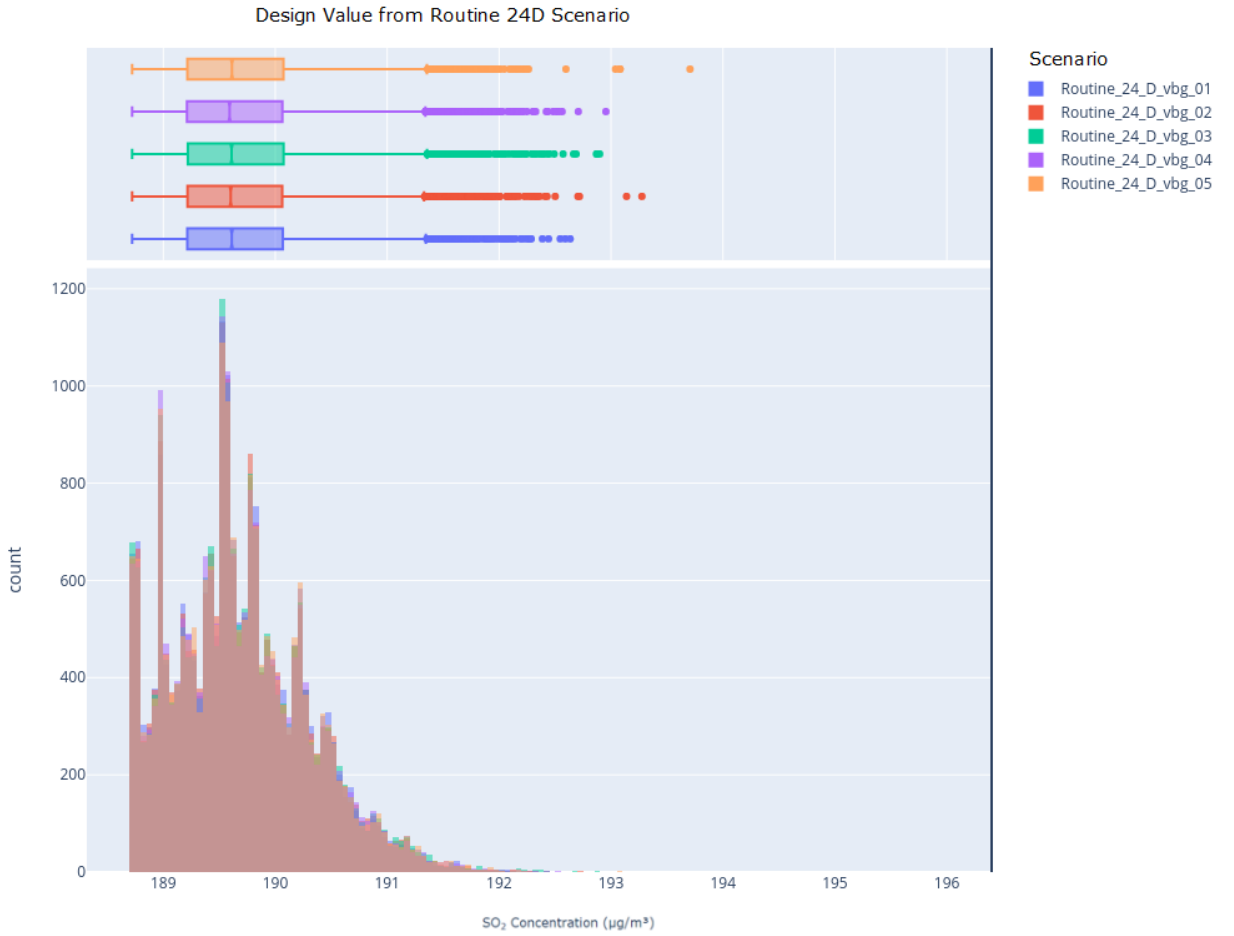

Figure 4-10: Histogram of Monte Carlo DVs from Routine Scenario 24D

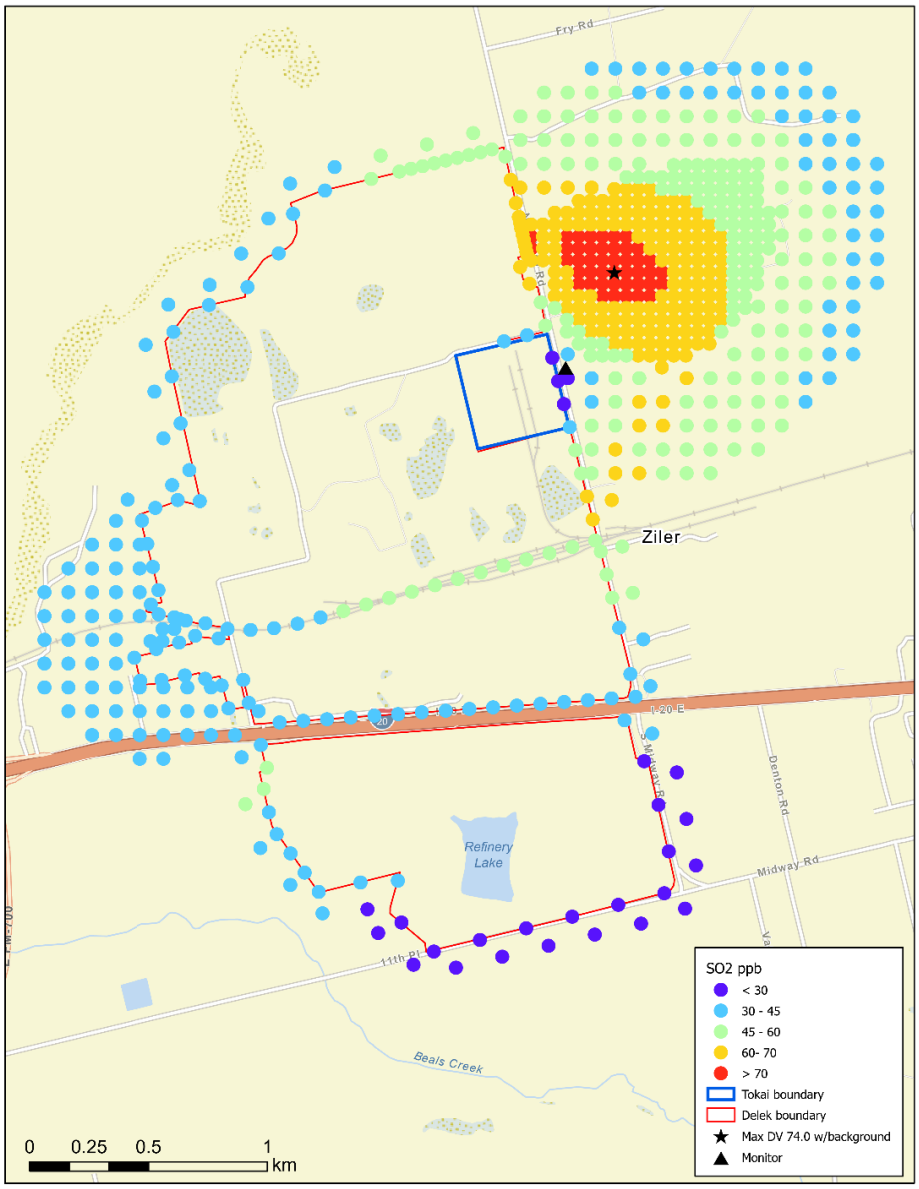

Figure 4-11: Design Value Concentration at Critical Receptors

The maximum design value across the approximately 2.5 million MC simulations is 193.8 µg/m^3 or 74.0 ppb. Therefore, the one-hour SO_2 standard was not exceeded in any simulation for any scenario at any receptor. Based on the large number of MC simulations conducted and the variety of operating conditions evaluated, the TCEQ concludes that the attainment demonstration modeling demonstrates that the control strategy and associated emissions limits demonstrate attainment of the standard.

4.5.2 Site Ambient Scenarios

In addition to the MC simulations, the TCEQ also modeled a set of site ambient scenarios. In the site ambient scenarios, receptors are placed within each site's modeled boundaries and impacts from sources other than the site's own sources are determined. The site ambient runs were done to demonstrate that no sites in the

nonattainment area will result in NAAQS exceedance within the boundary of neighboring sites. Since there are three sites in the Howard County 2010 SO_2 nonattainment area, three sets of site ambient scenarios were conducted: BHER C R Wing Cogeneration Plant site ambient scenarios, Alon USA Big Spring Refinery site ambient scenarios, and the Tokai Big Spring Carbon Black Plant site ambient scenarios, as discussed further below.

For the BHER C R Wing Cogeneration Plant site ambient scenarios, receptors were placed within the BHER C R Wing Cogeneration Plant site, emissions from BHER C R Wing Cogeneration Plant and Alon USA Big Spring Refinery sources were zeroed out and the 192 Tokai Big Spring Carbon Black Plant scenarios were modeled. The Alon USA Big Spring Refinery sources were zeroed out because BHER C R Wing Cogeneration Plant leases the property from Alon USA Big Spring Refinery. Due to the lessee-lessor relationship, the geographic area within the BHER C R Wing Cogeneration Plant fence line is considered non-ambient to Alon USA Big Spring Refinery as outlined in the EPA guidance memo from *Interpretation of "Ambient Air" In Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD)* (EPA 2007). The controlling scenario of routine 24D resulted in a modeled DV of 104.22 µg/m^3 or 39.8 ppb. The modeled concentrations within BHER C R Wing Cogeneration Plant for the controlling case are shown in Figure 4-12*: Maximum DV within BHER C R Wing Cogeneration Plant Site Boundary.*

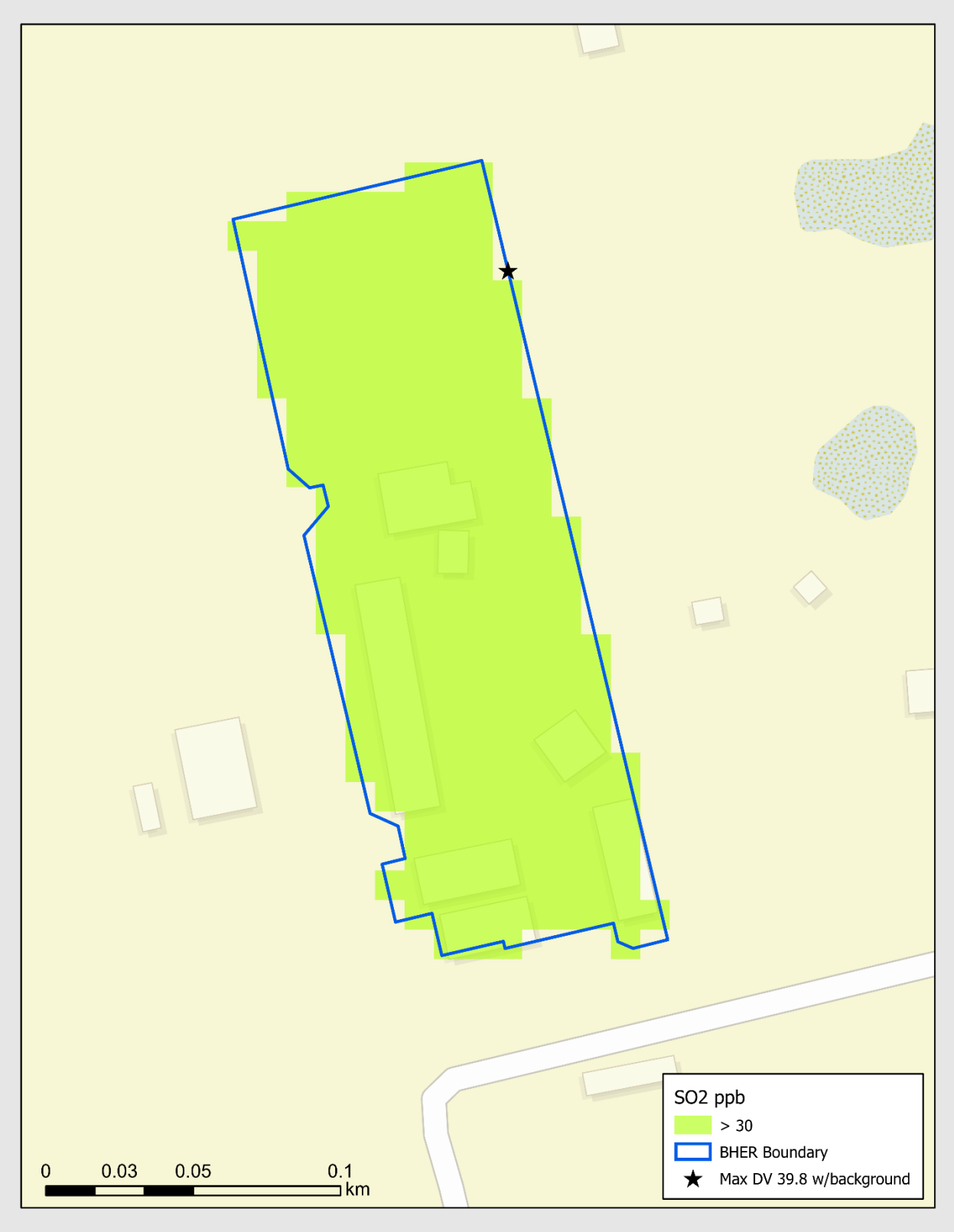

Figure 4-12: Maximum DV within BHER C R Wing Cogeneration Plant Site Boundary

For the Alon USA Big Spring Refinery site ambient scenarios, receptors were placed within the Alon USA Big Spring Refinery site, emissions from Alon USA Big Spring Refinery sources were zeroed out and the 192 Tokai Big Spring Carbon Black Plant scenarios were modeled with emissions from BHER C R Wing Cogeneration Plant and Tokai Big Spring Carbon Black Plant sources. The controlling scenario resulted in a modeled DV of 182.52 µg/m^3 or 69.7 ppb. The modeled concentrations within Alon USA Big Spring Refinery for the controlling case are shown in Figure 4-13*: Maximum DV within Alon USA Big Spring Refinery Site Boundary.*

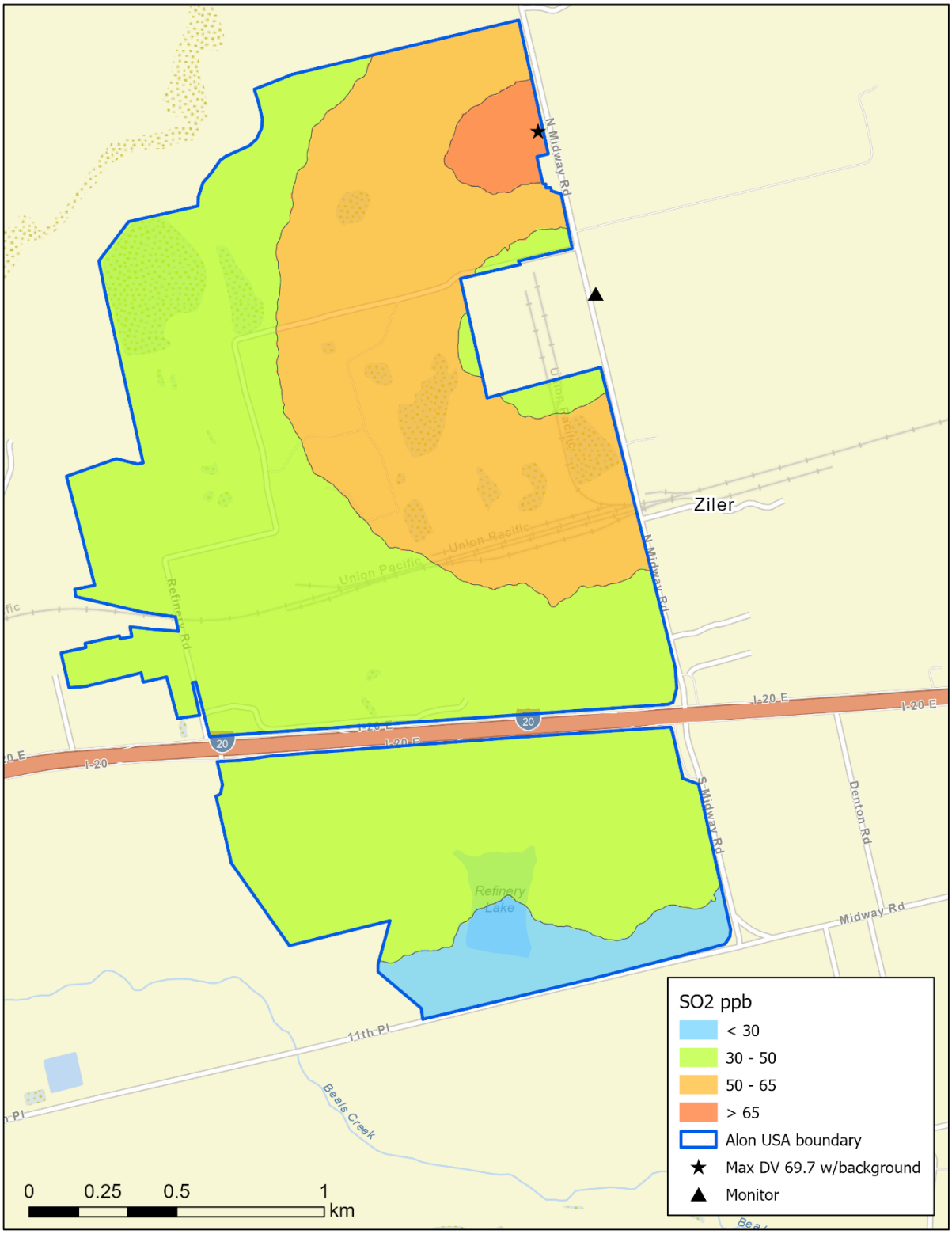

Figure 4-13: Maximum DV within Alon USA Big Spring Refinery Site Boundary

For the Tokai Big Spring Carbon Black Plant site ambient scenarios, a set of 10,000 MC simulations with only Alon USA Big Spring Refinery and BHER C R Wing Cogeneration Plant emissions was conducted to ensure that those emissions do not adversely impact the geographic area within the Tokai Big Spring Carbon Black Plant site boundary. The resultant maximum modeled DV was 54.3 µg/m^3 or 20.73 ppb. The modeled concentrations within Tokai Big Spring Carbon Black Plant for the MC simulation with the highest modeled DV are shown in Figure 4-14: *Maximum DV within Tokai Big Spring Carbon Black Plant Site Boundary*.

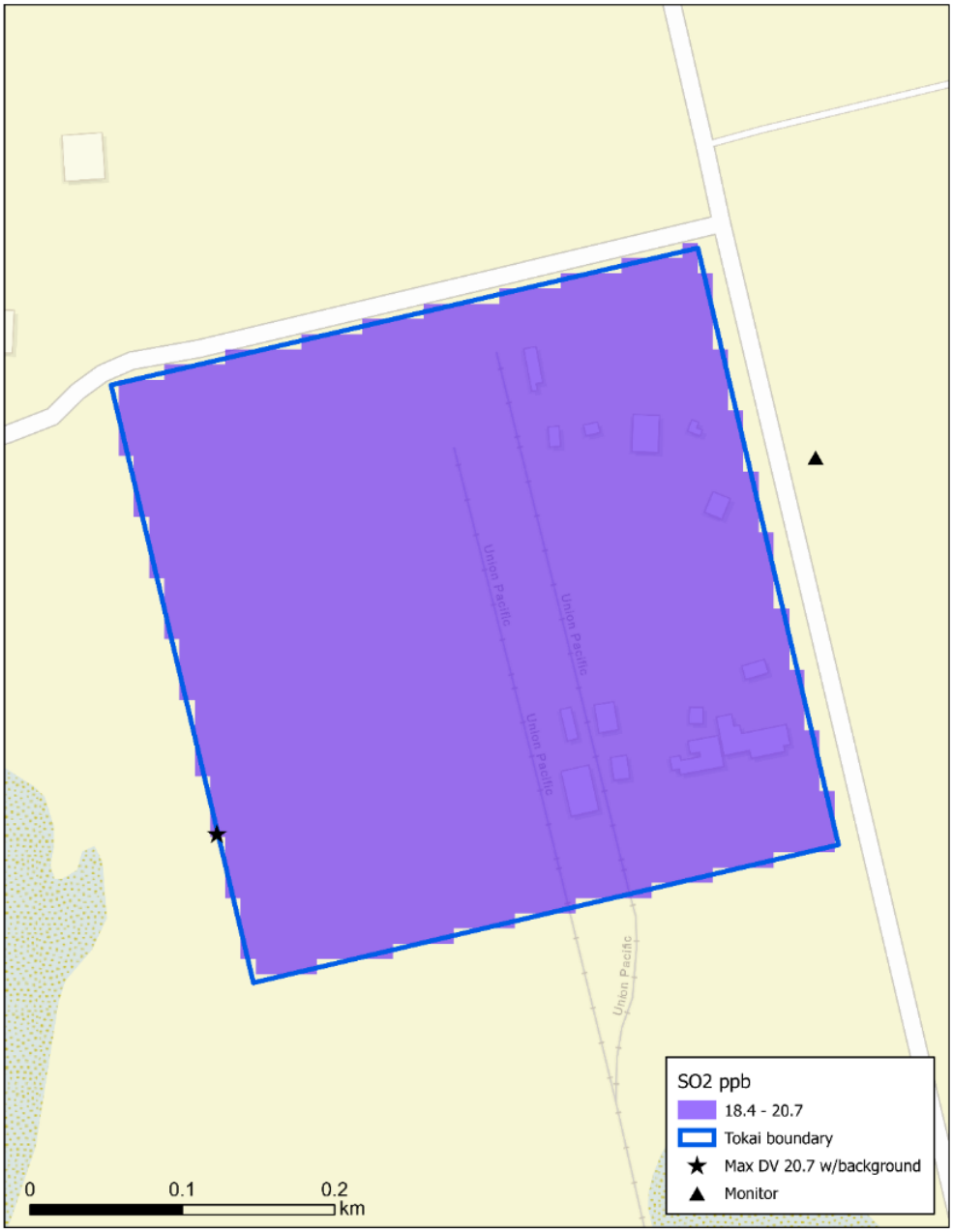

Figure 4-14: Maximum DV within Tokai Big Spring Carbon Black Plant Site Boundary

4.6 CONCLUSION

The TCEQ conducted a modeling analysis that included dispersion modeling following EPA guidance for the Howard County Attainment Demonstration SIP Revision for the 2010 One-Hour SO_2 NAAQS along with the MC approach, which appropriately characterizes the impact of sources that emit SO_2 intermittently and non-deterministically. The TCEQ's modeling analysis included a large number of MC simulations that repeatedly estimated the maximum design value in the Howard County 2010 SO_2 NAAQS nonattainment area for all operating conditions for the control measures for Howard County sources described in Chapter 3. The TCEQ modeling analysis showed attainment in all MC simulations, thereby ensuring that the controlled Howard County sources will remain protective of the NAAQS under all operating conditions. Based on the TCEQ's modeling analysis, it is expected that the Howard County 2010 SO_2 NAAQS nonattainment area will meet the 2010 one-hour SO_2 NAAQS by the attainment date.

REFERENCES

EPA, 2007. Interpretation of 'Ambient Air' In Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD), accessed at https://www.epa.gov/sites/default/files/2015-07/documents/leaseair.pdf, July 8.

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 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 FR 5182, accessed at https://www.epa.gov/sites/production/files/2020-09/documents/appw_17.pdf, January 17.

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 sulfur dioxide (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." Therefore, the 2014 SO_2 SIP guidance indicates that for SO_2 nonattainment areas, RFP is best construed as "adherence to an ambitious compliance schedule."

5.2 RFP DEMONSTRATION

On March 26, 2021, the EPA published a designation for a portion of Howard County as nonattainment for the 2010 SO_2 National Ambient Air Quality Standard (NAAQS), effective April 30, 2021 (86 FR 16055). Consistent with the EPA's 2014 SO_2 SIP guidance document, the Howard County 2010 SO_2 NAAQS nonattainment area includes three sites housing multiple SO_2 emissions sources from two of the three sites, as explained in Chapter 3 of this SIP revision, 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 will be implemented for the emissions sources at the two sites in this area, as detailed in Section 5.3: Compliance Schedule. This compliance schedule therefore fulfills the RFP requirement for the Howard County 2010 SO_2 NAAQS nonattainment area.

5.3 COMPLIANCE SCHEDULE

The EPA's 2014 SO_2 SIP guidance indicates that RFP for the 2010 one-hour SO_2 NAAQS requires 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 to ensure attainment of the standard by the applicable attainment date.

As described in Chapter 3, Alon USA, LP will comply with the requirements associated with their Fluidized Catalytic Cracking Units and incinerators by November 1, 2023. The compliance deadline for all other requirements for both Alon and Tokai Carbon CB LTD in the associated 30 Texas Administrative Code Chapter 112, Subchapter E rules (Rule Project No. 2021-035-112-AI) is January 1, 2025. The attainment date for the Howard County 2010 SO_2 NAAQS nonattainment area is April 30, 2026.

Appendices Available Upon Request

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RESPONSES TO COMMENTS RECEIVED CONCERNING THE HOWARD COUNTY ATTAINMENT DEMONSTRATION STATE IMPLEMENTATION PLAN (SIP) FOR THE 2010 SULFUR DIOXIDE (SO_2) NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS)

The Texas Commission on Environmental Quality (TCEQ or commission) offered a public hearing for the proposed SIP revision and associated proposed rulemaking on May18, 2020, at 6:00 p.m. at the Dora Roberts Community Center in Big Spring. No persons registered to provide comment; therefore, a hearing was not officially opened. During the comment period, which closed on June 2, 2022, the TCEQ received written comments from the United States Environmental Protection Agency (EPA).

Changes that were made to the proposal of this SIP revision that are based on comments received on the associated Chapter 112 rulemaking (Rule Project No. 2021-035-112-AI) are discussed in the Response to Comments section of the rule preamble and not in this document.

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GENERAL COMMENTS

The EPA stated that contingency measures are to become effective without further action by the state or the EPA, where the area has failed to achieve reasonable further progress (RFP) or failed to attain the NAAQS by the statutory attainment deadline. The EPA further stated that the attainment demonstration and the rules for each nonattainment area should clarify that the contingency measures in the SIP are triggered not only in the event that the area fails to attain the NAAQS, but also in the event that the area fails to make RFP. The EPA also recommended adding further discussion to Section 3.4.2: *Contingency Plan* on the contingency measures triggering in the event of the failure to make RFP.

The TCEQ updated Section 3.4 of this SIP revision to clarify that contingency measures are triggered in the event that the area fails to meet RFP Corresponding changes were made to the associated Chapter 112 rules, and those changes are discussed in the Response to Comments section of the rule preamble.

The EPA commented that some one-hour SO_2 nonattainment areas have adopted contingency measures that require investigation by the sources whenever an exceedance, a monitored ambient air concentration above the NAAQS, or a violation of a permit limit occurs, even prior to the attainment deadline date. The EPA stated that the requirement is to reach attainment as expeditiously as practicable, and this proactive contingency measure can help an area reach attainment. The EPA indicated that this approach could be beneficial for the Howard, Hutchinson, and Navarro attainment demonstrations.

All sites addressed in the Chapter 112 rules are subject to the Title V Operating Permits Program which provides additional compliance tools that, in conjunction with other aspects of the compliance and enforcement program, will help ensure attainment is reached as expeditiously as practicable. The TCEQ's robust enforcement program, exceedance reports in the associated rules, Title V deviation reports, and Title V compliance certifications will be used to investigate and address exceedances and violations of permit limits. Because the TCEQ already has the authority and tools needed to fully investigate exceedances and permit violations, no changes were made in response to this comment.

The EPA commented that an important feature of attainment plans is the date by which sources must comply with limits sufficient to provide for attainment and the EPA expects the approvable compliance dates for control measures in the attainment demonstration to be as expeditious as practicable. The EPA stated that the required compliance date should be specified based on consideration of the necessary measures needed to be implemented to comply with the emission limits and other requirements. The EPA also indicated that the identification of an enforceable compliance date should be supported by a justification of appropriateness, of the time frame necessary for the source to comply with the specific requirements and where no additional controls are needed to comply, a shorter compliance schedule may be appropriate. The EPA also noted that, to satisfy RFP requirements, sources should comply as expeditiously as practicable in order to ensure attainment of the standard by the applicable attainment date. The EPA requested that more explanation and rationale be provided for how the selected compliance dates for affected sources in Howard, Hutchinson, and Navarro counties satisfy this requirement.

In response to this comment, the TCEQ reevaluated the compliance dates to ensure that compliance is achieved as soon as practicable, depending on site-specific constraints as well as other considerations such as global supply chain delays. The basis for the compliance dates for each site is discussed in Section 3.2.3 of the attainment demonstration SIP revision and the Response to Comments section of the preamble for the associated Chapter 112 rulemaking.

The EPA commented that the Chapter 112 rulemaking allows greater than one-hour periods of measuring, sampling, or testing the sulfur content of inlet streams, tail gas, feed, products, etc.; and that the EPA prefers hourly data collection and calculation as that will match with the one-hour NAAQS. The EPA indicated that the SIP narrative, where applicable, should provide justification and additional supporting data from past measurements, sampling, or testing that this periodic measuring/sampling/testing of greater than one-hour periods does not vary considerably from one-hour measurements, sampling, or testing and provides for accurate calculations of actual emissions. The EPA stated that the SIP narrative should demonstrate that these measurements/sampling/testing provide for enough stringency for attainment (the corresponding one-hour emission limit for the applicable unit is stringent enough that slight variations in sulfur content measured in a greater than one-hour period do not impact attainment). The EPA also requested TCEQ provide an evaluation the use of a continuous emissions monitoring system (CEMS) to directly monitor SO_2 emissions to demonstrate compliance. The EPA stated that for sources that CEMS are not easily installed, post-combustion, continuous total

sulfur content and continuous flow monitoring should be evaluated and required unless technically or cost prohibitive to monitor emissions accurately.

The only sources in Subchapter E, for which continuous information regarding sulfur concentration is not collected are at the Tokai Big Spring Carbon Black Plant, where emissions are determined by a mass balance approach using sampling of the carbon black oil and the carbon black product. The cost of installing continuous sulfur analyzers for each EPN at the site is estimated by Tokai to be over half a million dollars. In addition, continuous analyzers on these types of streams may be difficult to maintain and require frequent repair or replacement. Concerns were also raised by Tokai over whether the continuous analyzer would result in more accurate emission estimates. The TCEQ evaluated daily samples of carbon black oil used over a one-year period which demonstrated a low overall variability of approximately 3%. Daily sampling over one year of each grade of carbon black product produced showed a much lower variation in sulfur content than in the carbon black oil. For each of the 11 grades of carbon black product produced over a year the variation was less than 1%. Consequently, the TCEQ has determined that daily sampling of each grade of carbon black product is adequate to represent the sulfur content of the product in the mass balance equation. Variability in sulfur content in the carbon black oil from different sources will be minimized by sampling from a mix tank that includes all sources of carbon black oil and the impact of variability over the day is minimized by increasing the frequency of sampling from one sample per day to two samples per day. Further, because emission limits were set based on modeling, which represented worse case emission limits from all sources at all sites in the nonattainment area occurring at the same time, the emission limits are conservative and small variations in emission limits that may occur between samples are unlikely to result in an exceedance of the NAAQS. Given that the estimated cost of continuous monitors is over a half million dollars per site, concerns over reliability of continuous total sulfur analyzers in this environment, and the conservatism of the modeling approach, the TCEQ has determined that the mass balance approach relying on twice daily sampling of carbon black oil and once daily sampling of each grade of carbon black product produced is the most appropriate approach for accurately representing emissions.

The EPA requested that the TCEQ provide an assurance that the proposed flare emission limits apply only to maintenance, startup, and shutdown (MSS) periods and not to upsets or periods of malfunctions and clarify that the analysis of historical events supporting development of emission limits and number of operating days for MSS periods does not include any malfunction events.

The emission limits in the rules apply only to authorized emissions. This comment is further addressed in the response to comment for the associated Chapter 112 rulemaking.

The EPA commented that the screening out from inclusion in the rules of some sources at a 3 parts per billion (ppb) threshold at the maximum design value in the attainment demonstration modeling is not protective of the NAAQS because those excluded sources would change emission limits or stack parameters resulting in exceedances of

the NAAQS. The EPA commented that all sources included in the modeling must have enforceable limits. The EPA stated that the TCEQ did not document how the 3 ppb level is protective but relied on this threshold as an interim Significant Impact Level (SIL) in permitting to evaluate impacts from all sources at a site rather than on a unit-by-unit basis. The EPA noted that the use of the SIL in permit modeling evaluates cumulative emission increases for all ambient air receptors rather than for individual sources at only the maximum design value receptor, since the cumulative impact from multiple units at a site could represent a significant portion of the 75 ppb NAAQS. The EPA commented that maximum design value in the attainment demonstration for Howard County is 72 ppb and for Hutchinson County is 74.9 ppb, meaning that only small increases could exceed the NAAQS, and that there are many receptors within a few ppb of the NAAQS.

The TCEQ included all sources in the nonattainment area and a cumulative impact of emissions from all sources was simulated at all ambient receptors in the attainment modeling. Further, all sources modeled were modeled at the enforceable emission rates, as represented, per Appendix W, from permits, registration, or rule. No sources were screened out from the attainment demonstration modeling. Further, for inclusion into the associated rules, the impact of each individual source was evaluated at all ambient receptors in the modeling domain and not just at a maximum design value receptor. Therefore, no violations of the NAAQS are expected from emissions from sources that were not included in the associated rules. The TCEQ included many small emission sources in its modeling in response to discussion with EPA Region 6 and to ensure that the modeling was representative and conservative. The emissions from these sources were based on the represented permit-enforceable emission limits, as appropriately noted by 40 Code of Federal Regulations (CFR) Part 51, Appendix W, section 2.1.c, "Appropriate model input data should be available before an attempt is made to evaluate or apply an air quality model. Assuming the data are adequate, the greater the detail with which a model considers the spatial and temporal variations in meteorological conditions and permit-enforceable emissions, the greater the ability to evaluate the source impact and to distinguish the effects of various control strategies." Additionally, 40 CFR Part 51, Appendix W, section 9.2.3.1, *Considerations in Developing Emission Limits*, does not require that every emission source that is modeled have a corresponding SIP emission limit. Section 9.2.3.1 notes that "[e]missions limits and resulting control requirements should be established to provide for compliance with each applicable NAAQS…(t)he appropriate reviewing authority…and appropriate EPA guidance should be consulted to determine the appropriate emission limits on a case-by-case basis."

Reliance on permit limits established under the federally approved new source review program is appropriate for these emission sources, as the modeling shows their potential impact on any receptor is de minimis. No changes were made based on this comment.

The EPA noted that unless monitors are shown to be located in the area of highest concentration, the determination of attainment must consider modeling, emissions data, and evidence of full implementation and compliance of required control measures in addition to monitoring data. The EPA stated that the current monitors are

not located where the modeled maximum design value occurred in any of the nonattainment areas and that siting additional monitors at those locations would provide data to determine attainment more clearly.

No change was made in response to this comment as monitor siting issues are beyond the scope of this SIP revision.

TECHNICAL ANALYSIS

The EPA commented that permits and other data sources used to provide modeling inputs should be included in the SIP revision in greater detail, such as including not only a permit number but also reference to the revision date and location where the document can be viewed.

Permit information is included not just in the SIP documentation but also in the rule and all the publicly available permit information can be searched and viewed electronically in the TCEQ records online website at https://records.tceq.texas.gov/cs/idcplg?IdcService=TCEQ_SEARCH.

The EPA requested explanation on why the State of Texas Air Reporting System (STARS) database was not relied upon for stack parameters and historical actual emission rates.

As explained in the SIP narrative and Appendix K: *Modeling Technical Support Document (TSD),* the TCEQ did not rely solely on the historical STARS data but instead used updated parameters and/or emission rates from permits and industry consultation, as needed, to ensure the most recent and accurate data was used in the attainment demonstration modeling. Further, *Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions* (EPA, 2014; SO_2 SIP guidance) and 40 *Code of Federal Regulations* (CFR) Part 51 Appendix W (EPA, 2017; Appendix W) require that attainment demonstration modeling be based on allowable emissions and corresponding stack parameters and not actual emissions. No changes were made based on this comment.

The EPA commented that details should have been provided on modeling run configurations and the procedure of dividing up the large number of receptors into smaller grids. The EPA commented that such an approach is prone to errors when remerging information. The EPA also noted that the 2007 EPA memo on the Regulatory Status of Proprietary Version of American Meteorological Sociated/United States Environmental Protection Agency Regulatory Model (AERMOD) requires that the use of parallel versions of AERMOD or the approach of dividing receptors into smaller grids needed to be communicated with and approved in advance by EPA Region 6. Lastly, the EPA commented that the TCEQ did not consult appropriately with EPA Region 6; that the TCEQ's approach does not generate all information as would have been generated by one model run; and that the EPA has previously not approved such approaches.

The draft modeling protocol provided to the EPA and the SIP revision documentation both have sections on model selection providing information on the choice of the model used in the attainment demonstration modeling. The model that the TCEQ used is the EPA-approved AERMOD model, version 21112. The TCEQ did

not alter the code and did not parallelize it. The source code, downloaded from the EPA website (https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models#aermod), was compiled on the TCEQ's Linux system and used for modeling. Since the source code was not altered, the TCEQ does not agree that EPA approval was needed prior to use, nor with the EPA's characterization that the TCEQ parallelized the code. The TCEQ ran the EPA-approved AERMOD multiple times for each scenario with the same inputs with only a fraction of receptors included in each run. The results from all runs, and therefore all receptors, were analyzed to determine the maximum design value for a given scenario. AERMOD is a deterministic model, and concentrations at each receptor are calculated independently from other receptors. Therefore, AERMOD results remain the same whether the model is run for all receptors in a single run, or the receptors are divided into subsets to be modeled in multiple runs. Running AERMOD multiple times with a fraction of receptors is very time efficient and advantageous for areas with multiple sources and thousands of receptors, such as the Howard and Hutchinson nonattainment areas, for which a single AERMOD run for one scenario takes several days. Having over five hundred scenarios would take years to finish with a single run approach, which is impractical and would affect SIP revision submittal timelines. The TCEQ does not agree with the EPA that the final AERMOD run should have been performed with all receptors included.

Along with the modeling files, the TCEQ provided a modeling run configuration file for each run scenario as well as a file with data from all receptors for each modeling scenario at TCEQ Air Modeling FTP site. In response to this comment, a section has been added to Appendix K (Section 8: *Modeling Run Information and Archive*) that provides a description on running AERMOD with a subset of modeling receptors and merging results into one file. Information is also provided on where and how the modeling files can be accessed from the TCEQ Air Modeling FTP site in Appendix K.

The EPA commented that the ambient air determination was based on various access limiting procedures, including periodic patrols of a facility's perimeter. The EPA commented that companies, Delek Refinery (referenced in this SIP revision and associated rule as (Alon USA Big Spring Refinery) owned by Alon USA, LP (Alon)), BHER, and Tokai Big Spring should be required to submit their patrol plan and records of periodic patrols to the TCEQ and the EPA. The EPA also commented that TCEQ and EPA approval should be required for patrol plan modifications.

Per the EPA's 2019 Revised Policy on Exclusions from "Ambient Air", "the atmosphere over land owned or controlled by the stationary source may be excluded from ambient air where the source employs measures, which may include physical barriers, that are effective in precluding access to the land by the general public." To make ambient air determinations, companies provided the EPA and the TCEQ with extensive documentation detailing the current restriction measures in place that secure their property against access by the the general public. Alon USA Big Spring Refinery, BHER C R Wing Cogeneration Plant, and Tokai Big Spring Carbon Black Plant are fenced and have restrictions in place to limit access. Where restrictions are not currently in place, companies have provided letters addressed to the EPA committing to putting those restrictions in place by the compliance

deadline. These plans include details about fencing, signage, and patrolling when appropriate.

The TCEQ does not agree with the EPA that TCEQ and EPA approval is necessary for changes to ambient air property restriction plans. The TCEQ is not aware of any precedent or EPA guidance requiring that ambient air property restriction measures be made enforceable via the SIP. As a matter of practice, companies have a vested interest in maintaining and securing their properties against public access. Other regulations may already apply that would require the companies to strictly monitor public access to their properties. There are also potential national security concerns that could arise with requiring ambient air property restriction plans to be reviewed and approved by the TCEQ and the EPA.

No changes were made based on this comment.

The EPA commented that in the Monte Carlo (MC) analysis, the coding treats the flares as operating independently and does not have situations coded such that more than one flare is chosen to operate at the same time, but historical data provided by the company showed that two or more flares have operated in MSS operations. The EPA commented that it is not clear if the MC modeling captures these multi-flare events occurring at the same time or the emission range bins for each flare when more than one flare operates simultaneously (or if it could in the future). The EPA also commented that limits should be included to restrict the occurrences of more than one flare operating at MSS conditions in a day. The EPA also commented that the TCEQ should analyze the existing MC modeling and document when the MC runs for each scenario have more than one flare operating; document the emission rate for each flare; and provide this information to the EPA before finalizing the SIP. The EPA further commented that another option would be to rerun the MC modeling with assignment of multi-flare events in the code.

The TCEQ's MC code does not prohibit the model from having multiple flares operating at the same time, and two or more flares could emit at their planned maintenance, startup, and shutdown (MSS) emissions rates simultaneously because MC simulation uses repeated random sampling to calculate the modeled maximum DV. The historical data referenced by the EPA showed the most instances of multi-flare events occurred due to upsets and multi-flare planned MSS events were very rare. In fact, the historical data referenced by the EPA showed that there were only two events of planned MSS activities involving multiple flares.

Each of the 192 scenarios for the Tokai Big Spring Carbon Black Plant scenarios was tested with a minimum of 10,000 simulations. Then, the top ten MSS and routine scenarios (those with the highest modeled Design Value) were then further tested with an additional 20,000 simulations. Then, the worst-case scenario (24D) was tested with over 200,000 simulations. Thus, a total of over 2.5 million simulations for all scenarios combined were tested to ensure attainment of the NAAQS under a wide variety of operating conditions. Since the historical data indicates that that multiple flare MSS events are rare and a large number of MC simulations were conducted, the TCEQ is confident that the modeling was able to adequately verify

that varied planned MSS events will show attainment and rerunning the MC model with assignment of multi-flare events in the code is not necessary.

Additionally, Appendix M: *Supporting Documentation Regarding Background Concentration and Multi-flare Events*, provides additional analysis of multiple flare occurrences in the multiple simulation statistical modeling approach prepared by ALL4 Inc. on behalf of Alon USA Big Spring Refinery to complement the TCEQ modeling in support of the SIP.

The EPA commented that there is a difference of 1.0 pound per hour (lb/hr) between what the tables list for the sum of EPNs 7A and 12A for worst case scenario (24D) in Appendix K, Table 3-2 and Section 3.2.1 of the SIP narrative (406 lb/hr vs. 407 lb/hr, respectively).The EPA further commented that the TCEQ modeled worst case 24D scenario with only the sum total of 406 lb/hr and not the max of 407 lb/hr as was done for scenario 24C which should be reconciled.

The TCEQ appreciates this comment and has corrected this typographical error. The represented sum of Emission Point Numbers (EPN) 7A and 12A of 406 lb/hr in Appendix K, Table 3-2 has been updated with the correct emission rate of 407 lb/hr. Additionally, the worst case 24D modeling scenario was remodeled with a sum of 407 lb/hr.

The EPA commented that with varying numbers of dryers and heaters in use and operating at varying loads, causing varying flow rates, it is expected that this would cause varying exhaust velocities and temperatures from the stacks. The EPA commented that TCEQ should discuss how it addressed the potential variability in stack velocity/flow and temperature. The EPA commented that the TCEQ didn't provide sufficient discussion on how changes in load affect stack parameters which can change dispersion and ground level concentrations. The EPA commented that neither the modeling TSD nor the proposed SIP identified the specific stack parameters for less than the full load at Tokai and this information is needed to verify stack parameters at different loads when stack testing is conducted.

During consultation regarding the development of this SIP revision, the Tokai Big Spring Carbon Black Plant shared information about reduced load and cap operating scenarios for the dryer stacks and corresponding stack parameters with the TCEQ and EPA Region 6, and these load and cap operating scenarios were determined after technical consultation with the TCEQ and the EPA. Appendix K includes operating load scenarios for the dryer stacks in response to feedback received from EPA Region 6 on November 3, 2021. The technical memorandum on reduced load and cap operating scenarios for Tokai Big Spring Carbon Black has all the relevant information on stack exit velocity, including how it changes with different load scenarios.

Any changes in dispersion and ground level concentrations because of changes in velocity and temperature due to reduced load were properly accounted for in the SIP modeling and the model input file spreadsheet has all the stack parameters including temperature and velocities for reduced load scenarios. The reference to the input file spreadsheet ("Tokai_cap_load_scenario_model_input.xlsx.") and its

location was discussed in Section 2.1.2 of Appendix L: Howard County Monte Carlo Simulations. The spreadsheet file is available on the TCEQ FTP site at the following link: ftp://amdaftp.tceq.texas.gov/so2/mc_approach. Further, the spreadsheet along with other input files were separately provided to the EPA as part of the Monte Carlo files package.

The EPA's assertion that temperatures have to vary with load for dryer stacks is not supported. Upstream of the stacks that emit tailgas combustion products, temperature is managed to quench the reaction mixture and stop the pyrolysis reaction, and further managed upstream of the primary bag filters to avoid condensation of water in the tailgas. The dryers operate at certain temperatures to achieve a product specification for moisture (currently 1%) and maintain the desired product properties. Temperature at the incinerator stack is mainly driven by the requirements of the selective catalytic reduction (SCR), whose catalyst requires a particular operating temperature to achieve its nitrogen oxides (NO_x) reduction requirements. In conclusion, the temperature does not change with load but stack exit velocity changes with different load scenarios.

Similarly, the stack parameters for varying loads for Tokai's flare (EPN FLARE-4) are appropriately documented and represented in TCEQ modeling. Tokai's flare (EPN FLARE-4) uses a default temperature and velocity of 1273 degree Kelvin (^oK) and 20 meter per second (m/s) to calculate the effective flare diameter. The temperature and velocity are constant for all the load scenarios but heat release value and flare effective diameter changes with different load scenarios and is reflected in the input spreadsheet referenced above.

The EPA commented that the use of seasonally varying background values from the Midlothian monitor (0.66 to 4.02 ppb) may result in underestimation of actual background levels in the Big Spring area since the Goldsmith monitor is showing values greater than the Midlothian monitor for the same time period; and that this is a particular concern since a number of the modeling scenarios result in modeled concentrations within a few ppb of the NAAQS. The EPA further commented that the TCEQ should consider the potential impact higher background values could have on modeled attainment demonstration and required emission limits and provide additional analysis of West Texas monitors compared to the Midlothian monitor.

In response to this comment, the TCEQ conducted an additional analysis with more data from the Goldsmith, Odessa Westmark, and Big Spring Midway monitors. After conducting the additional analysis and comparing the SO_2 concentrations from these monitors, the TCEQ stands by the decision to use the Ellis County Midlothian monitor as the representative monitor for SO_2 background concentrations in the Howard County attainment demonstration modeling. With only 18 months of SO_2 data available from the Goldsmith and the Odessa Westmark monitors, the TCEQ reiterates that it is premature to consider these monitors representative of the areas where they are placed, much less use them as the basis for background levels in this attainment demonstration modeling. It should also be noted that "the West Texas area" is large and diverse, with many differences between Ector County and Howard County, which are more than 80 miles apart.

Appendix K, Section 6, Background Concentration, was updated in response to this comment. The updated analysis covers November 7, 2020 through April 25, 2022 for the Goldsmith monitor. Data with the wind direction readings between 235 and 266 degrees were excluded to remove the influence of a nearby gas plant. Similar analyses were done for the Odessa Westmark and Big Spring Midway monitors. These analyses showed a similar trend as was observed when the Ellis County Midlothian monitor was selected as the background monitor for the SIP proposal.

Appendix M provides additional information comparing the characteristics of the areas surrounding the Ector and Howard County monitors, as well as further analysis of the monitor readings. This information was prepared by All 4 Inc. on behalf of the Alon Big Spring Refinery and the Tokai Big Spring Carbon Black Plant. While it is premature to even consider the Ector County monitors as the basis for background in attainment demonstration modeling, Appendix M further supports that these monitors, especially Goldsmith, are not representative of background for Howard County attainment demonstration modeling.

CONTROL STRATEGIES

The EPA stated that the TCEQ mischaracterized their comments regarding averaging times longer than one hour.

In response to this comment, the discussion of longer averaging times has been updated in the SIP narrative and in Rule Project No. 2021-035-112-AI consistent with the EPA's comments.

The EPA stated that the discount factor applied to the critical emission value used to determine the emission rate for longer averaging times for the Fluidized Catalytic Cracking Unit (FCCU) at the Alon Big Spring Refinery should be verified each year using CEMS data because the emission limit for the FCCU is so much lower than the previous limit.

The commission does not agree that verification of the discount factor each year is needed; nor does the EPA's guidance regarding the use of discount factors require such verification on an on-going basis. The TCEQ followed EPA guidance in determining an appropriate discount factor using historical data. No change to the rule or SIP narrative has been made in response to this comment.

Texas Commission on Environmental Quality

ORDER ADOPTING
REVISION TO THE STATE IMPLEMENTATION PLAN

Docket No. 2022-0132-SIP
Project No. 2021-010-SIP-NR

On October 5, 2022, the Texas Commission on Environmental Quality (Commission), during a public meeting, considered adoption of a revision to the State Implementation Plan (SIP) consisting of an attainment demonstration for the Howard County 2010 One-Hour Sulfur Dioxide (SO_2) Nonattainment Area (Howard County 2010 SO_2 Attainment Demonstration SIP Revision). The Howard County 2010 SO_2 Attainment Demonstration SIP Revision addresses federal Clean Air Act requirements for SO_2 nonattainment areas including 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; a reasonable further progress demonstration; contingency measures; and certification that nonattainment New Source Review requirements are met. The Howard County 2010 SO_2 Attainment Demonstration SIP Revision included an associated rulemaking, 30 Texas Administrative Code, Chapter 112, Subchapter E, that provided the enforceable control strategy necessary to demonstrate attainment, which was considered separately by the Commission. 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 public hearing regarding the proposed Howard County 2010 SO_2 Attainment Demonstration SIP Revision was published in the April 29, 2022, issue of the *Texas Register* (47 TexReg 2598) and the April 15, 2022 editions of the *Big Spring Herald* and the *Midland Reporter-Telegram*.

Pursuant to 40 Code of Federal Regulations § 51.102 and after proper notice, the Commission offered the public an opportunity for a public hearing to consider the Howard County 2010 SO_2 Attainment Demonstration SIP Revision. Proper notice included prominent advertisement in the area affected at least 30 days prior to the date of the hearing. A public hearing was offered in Big Spring, Texas on May 18, 2022 but was not opened because no one signed up to comment.

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 Howard County 2010 SO_2 Attainment Demonstration SIP Revision, either orally or in writing, at the hearing or during the comment period. Prior to the scheduled hearing, a copy of the proposed attainment demonstration SIP revision was 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 attainment demonstration SIP revision 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 attainment demonstration SIP revision and their position concerning the same.

IT IS THEREFORE ORDERED BY THE COMMISSION that the Howard County 2010 SO_2 Attainment Demonstration SIP Revision incorporated by reference to this Order is hereby adopted. The adopted Howard County 2010 SO_2 Attainment Demonstration SIP Revision is 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 Howard County 2010 SO_2 Attainment Demonstration SIP Revision to the Regional Administrator of EPA as a proposed revision 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

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Jon Niermann, Chairman

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Date Signed