

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
**AGENDA ITEM REQUEST**  
for Proposed State Implementation Plan Revision

**AGENDA REQUESTED:** 11/29/2023

**DATE OF REQUEST:** 11/10/2023

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

**CAPTION: Docket No. 2023-1159-SIP.** Consideration for publication of, and hearing on, the proposed Dallas-Fort Worth and Houston-Galveston-Brazoria Severe Areas Reasonable Further Progress (RFP) State Implementation Plan (SIP) Revision for the 2008 Eight-Hour Ozone National Ambient Air Quality Standard (NAAQS).

The proposed SIP revision would include an analysis of RFP toward attainment of the 2008 eight-hour ozone NAAQS, RFP motor vehicle emissions budgets for the 2023 analysis year and 2026 attainment year, vehicle miles traveled growth offset requirement, and an RFP contingency plan. (Denine Calvin, Terry Salem; Project No. 2023-108-SIP-NR)

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**Division Deputy Director**

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**Agenda Coordinator**

Copy to CCC Secretary? NO  YES

# Texas Commission on Environmental Quality

## Interoffice Memorandum

**To:** Commissioners **Date:** November 10, 2023

**Thru:** Laurie Gharis, Chief Clerk  
Kelly Keel, Interim Executive Director

**From:** Richard C. Chism, Director *RCC*  
Office of Air

**Docket No.:** 2023-1159-SIP

**Subject:** Commission Approval for Proposed Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HGB) Severe Areas Reasonable Further Progress (RFP) State Implementation Plan (SIP) Revision for the 2008 Eight-Hour Ozone National Ambient Air Quality Standard (NAAQS) Nonattainment Area

DFW-HGB 2008 Ozone NAAQS Severe RFP SIP Revision  
Non-Rule Project No. 2023-108-SIP-NR

### **Background and reason(s) for the SIP Revision:**

The DFW 2008 ozone NAAQS nonattainment area, consisting of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties, along with the HGB 2008 ozone NAAQS nonattainment area, consisting of Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties, were previously classified as serious nonattainment for the 0.075 parts per million (ppm) standard with a July 20, 2021 attainment date. Based on 2020 monitoring data, neither area attained the standard. On October 7, 2022, the U.S. Environmental Protection Agency (EPA) published a final notice reclassifying the DFW and HGB areas to severe nonattainment for the 2008 eight-hour ozone NAAQS effective November 7, 2022 (87 *Federal Register* (FR) 60926).

Since the DFW and HGB areas have been reclassified by EPA, they are now subject to the severe nonattainment area requirements in the federal Clean Air Act (FCAA), §182(d), and TCEQ is required to submit severe classification attainment demonstration (AD) and RFP SIP revisions to EPA. The attainment date for severe areas is July 20, 2027 with a 2026 attainment year (87 FR 60926).<sup>1</sup> The EPA set a May 7, 2024 deadline for states to submit AD and RFP SIP revisions to address the 2008 eight-hour ozone standard severe nonattainment area requirements.

### **Scope of the SIP Revision:**

As a result of the reclassification, TCEQ is required to submit to EPA an RFP SIP revision consistent with FCAA requirements for areas classified as severe nonattainment for the 2008 eight-hour ozone NAAQS. The required AD SIP revision proposals are being developed concurrent with this SIP revision (Project Nos. 2023-107-SIP-NR and 2023-110-SIP-NR).

### **A.) Summary of what the SIP Revision would do:**

The proposed RFP SIP revision would demonstrate that the DFW and HGB nonattainment areas will achieve emissions reductions in ozone precursors (volatile organic compounds (VOC) and/or nitrogen oxides (NO<sub>x</sub>)) consistent with the severe ozone nonattainment area requirements of FCAA, §182(d); the requirements of FCAA §182(c)(2)(B) to submit an RFP demonstration; and EPA's *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2008 eight-hour ozone standard SIP requirements rule) published on March 6, 2015, according to the following increments:

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<sup>1</sup> The attainment year ozone season is the ozone season immediately preceding a nonattainment area's attainment deadline.

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- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the 10-county DFW 2008 ozone NAAQS nonattainment area; and
- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the eight-county HGB 2008 ozone NAAQS nonattainment area.

In addition to demonstrating the required emissions reductions, this proposed SIP revision also fulfills the requirements of FCAA, §172(c)(9) to submit an RFP contingency plan in case of failure to demonstrate progress for a milestone (analysis) or attainment year, calculated as a 3% emissions reduction of the base year inventory, and establishes 2023 and 2026 NO<sub>x</sub> and VOC motor vehicle emissions budgets (MVEB) for transportation conformity purposes, as detailed in Chapter 5: Motor Vehicle Emissions Budget. This proposed SIP revision also addresses the FCAA requirement to demonstrate that increased emissions due to increased vehicle miles traveled (VMT) within the nonattainment areas are adequately offset.

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

This proposed RFP SIP revision is required to demonstrate that the DFW and HGB severe nonattainment areas will achieve emissions reductions consistent with the requirements of FCAA, §182(d) and the 2008 ozone standard SIP requirements rule.

The RFP calculations documented in this proposed SIP revision rely on an RFP base year of 2011 and a 2026 attainment year. In accordance with the 2008 ozone standard SIP requirements rule, the 42% reduction requirement covers the period from January 1, 2012 through December 31, 2026. This proposed SIP revision incorporates an additional 3% emissions reduction as a contingency plan in case of failure to demonstrate progress for a milestone (analysis) year or attainment year.

In addition to addressing the emissions reductions requirements, this SIP revision would also provide NO<sub>x</sub> and VOC MVEBs for the 2023 analysis year and the 2026 attainment year for both areas along with addressing severe classification VMT growth offset requirements under FCAA, §182(d)(1).

**C.) Additional staff recommendations that are not required by federal rule or state statute:**

None.

**Statutory authority:**

The authority to propose and adopt SIP revisions is derived from the following sections of Texas Health and Safety Code, Chapter 382, Texas Clean Air Act (TCAA), §382.002, which provides that the policy and purpose of the TCAA is to safeguard the state's air resources from pollution; TCAA, §382.011, which authorizes the commission to control the quality of the state's air; and TCAA, §382.012, which authorizes the commission to prepare and develop a general, comprehensive plan for the control of the state's air. This SIP revision is required by FCAA, §110(a)(1) and is also proposed under the commission's general authority under Texas Water Code, §5.102, General Powers and §5.105, General Policy. States are required to submit SIP revisions that specify the manner in which the NAAQS will be achieved and maintained within each air quality control region of the state by 42 United States Code, §§7420 *et seq.*, and implementing rules in 40 Code of Federal Regulations Part 51.

**Effect on the:**

**A.) Regulated community:**

The proposed DFW and HGB RFP SIP revision would set new NO<sub>x</sub> and VOC MVEBs for the 2026 attainment year. If found adequate or approved by EPA, use of the MVEBs could affect

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transportation planning conducted by local governments in both the DFW and HGB areas. The proposed DFW and HGB RFP SIP revision also contains a contingency plan as required by FCAA, §172(c)(9) which would implement new control requirements to reduce VOC emissions upon determination by EPA that the DFW and/or HGB 2008 eight-hour ozone nonattainment areas did not demonstrate RFP for a milestone (analysis) year or attainment year.

**B.) Public:**

The general public in the DFW and HGB areas may benefit from reduced ground-level ozone concentrations due to reduced emissions of ozone precursors documented in this proposed SIP revision.

**C.) Agency programs:**

This proposed SIP revision would have no new impact on agency programs.

**Stakeholder meetings:**

TCEQ hosted and attended multiple meetings on SIP planning for the DFW and HGB areas. Agenda topics included the development of 2008 eight-hour ozone severe classification SIP revisions. Attendees included representatives from industry, county and city government, environmental groups, and the public.

If approved by the commission, this proposed SIP revision would go through a public review and comment period, including a public hearing to be held in each affected area.

**Public Involvement Plan**

Yes.

**Alternative Language Requirements**

Yes. Spanish.

**Potential controversial concerns and legislative interest:**

Although EPA finalized its 2015 eight-hour ozone standard SIP requirements rule (83 FR 25776), the final rule did not revoke the 2008 eight-hour ozone standard. The EPA stated that revocation of the 2008 eight-hour ozone standard would be addressed in a separate future action. However, because of the February 16, 2018 U.S. Court of Appeals for the District of Columbia Circuit opinion in the case *South Coast Air Quality Management District v. EPA*, 882 F.3d 1138 (D.C. Cir. 2018), the requirement for EPA to reclassify the area and for TCEQ to submit this RFP SIP revision may remain even if the 2008 eight-hour ozone standard is revoked.

EPA released new draft guidance on contingency measures, published in the *Federal Register* for public comment on March 23, 2023 (88 FR 17571). The draft guidance proposed an entirely new scheme for determining the amount of emissions reductions necessary to address the contingency requirement. Since EPA had not issued final guidance to the states regarding the quantity of required reductions from contingency measures at the time this proposed DFW and HGB RFP SIP revision was developed, this proposed SIP revision relies on the historically approved approach (3% of the 2011 RFP base year emissions) to determine the amount of emissions reductions necessary to address the contingency requirement.

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

No.

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

The commission could choose to not comply with requirements to develop and submit this RFP SIP revision to EPA. If the RFP SIP revision is not submitted, EPA would impose sanctions on the state and promulgate a federal implementation plan (FIP). Sanctions could include transportation funding restrictions, grant withholdings, and 2-to-1 emissions offsets requirements for new construction and major modifications of stationary sources in the DFW and HGB nonattainment areas. EPA would impose such sanctions and implement a FIP until the state submitted, and EPA approved, an RFP SIP revision for the area.

**Key points in the proposal SIP revision schedule:**

**Anticipated proposal date:** November 29, 2023

**Anticipated public hearing dates:** January 11, 2024 in the DFW area and January 4, 2024 in the HGB area

**Anticipated public comment period:** December 1, 2023 through January 16, 2024

**Anticipated adoption date:** April 24, 2023

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

DALLAS-FORT WORTH AND HOUSTON-GALVESTON-  
BRAZORIA 2008 EIGHT-HOUR OZONE STANDARD  
NONATTAINMENT AREAS



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
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**DALLAS-FORT WORTH AND HOUSTON-GALVESTON-BRAZORIA  
SEVERE AREAS REASONABLE FURTHER PROGRESS STATE  
IMPLEMENTATION PLAN REVISION FOR THE 2008 EIGHT-HOUR  
OZONE NATIONAL AMBIENT AIR QUALITY STANDARD**

PROJECT NUMBER 2023-108-SIP-NR

Proposal  
November 29, 2023

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## EXECUTIVE SUMMARY

Federal Clean Air Act (FCAA), §182, requires ozone nonattainment areas designated with a classification of moderate or higher to submit plans showing reasonable further progress (RFP) toward attainment of the ozone National Ambient Air Quality Standard (NAAQS). On March 27, 2008, the United States Environmental Protection Agency (EPA) published a final rule revising the eight-hour ozone standard from 0.08 parts per million (ppm) to 0.075 ppm (73 *Federal Register* (FR) 16436). On May 21, 2012, EPA published initial designations for the 2008 eight-hour ozone standard with an effective date of July 20, 2012 (77 FR 30088). EPA designated a 10-county Dallas-Fort Worth (DFW) area for the 2008 eight-hour ozone NAAQS (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties) as nonattainment with a moderate classification. In the same action, EPA designated an eight-county Houston-Galveston-Brazoria (HGB) area for the 2008 eight-hour ozone NAAQS (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties) as nonattainment with a marginal classification. The HGB area was later reclassified from marginal to moderate nonattainment effective December 14, 2016 (published on December 14, 2016 (81 FR 90207)). The Texas Commission on Environmental Quality (TCEQ) adopted a moderate classification RFP SIP revision for the DFW area on June 3, 2015 and for the HGB area on December 15, 2016. EPA published final approval of the DFW moderate classification RFP SIP revision on December 7, 2016 (81 FR 88124) and published final approval of the HGB moderate classification RFP SIP revision on February 13, 2019 (84 FR 3708). On August 23, 2019, EPA published a final notice reclassifying the DFW and HGB nonattainment areas from moderate to serious for the 2008 eight-hour ozone NAAQS, effective September 23, 2019 (84 FR 44238). TCEQ adopted a serious classification RFP SIP revision for both the DFW and HGB areas on March 4, 2020. On May 10, 2021, EPA published final approval of the serious classification RFP demonstration for the HGB nonattainment area (86 FR 24717). On April 24, 2023, EPA published final approval of the serious classification RFP demonstration for the DFW nonattainment area (88 FR 24693). Neither final approval action included approval of the RFP contingency measure elements submitted for the two areas as part of the SIP revision.

The attainment date for nonattainment areas classified as serious was July 20, 2021 with a 2020 attainment year (84 FR 44238).<sup>1</sup> Based on monitoring data from 2018, 2019, and 2020, neither the DFW area nor the HGB area attained the 2008 eight-hour ozone NAAQS in 2020. On October 7, 2022, EPA published a final notice that reclassified the DFW and HGB 2015 eight-hour ozone nonattainment areas from serious to severe effective November 7, 2022 (87 FR 60926).

The DFW and HGB areas are now subject to the requirements in FCAA, §182(d), for severe ozone nonattainment areas as well as the requirement in FCAA, §182(c)(2)(B) to submit RFP. TCEQ is required to submit severe classification attainment demonstration (AD) and RFP state implementation plan (SIP) revisions to EPA. The attainment date for the severe classification is July 20, 2027 with a 2026 attainment year (80 FR 12264).

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<sup>1</sup> The attainment year ozone season is the ozone season immediately preceding a nonattainment area's attainment deadline.



EPA set a May 7, 2024 deadline for states to submit SIP revisions to address the 2008 eight-hour ozone standard severe nonattainment area requirements.

This proposed DFW-HGB RFP SIP revision is not required to demonstrate attainment of the 2008 ozone NAAQS but rather to demonstrate that the DFW and HGB 2008 ozone NAAQS nonattainment areas will meet the RFP requirements for severe ozone nonattainment areas. RFP requirements for severe ozone nonattainment areas, as specified in §182(d) of the FCAA and in 40 Code of Federal Regulations §51.1110, involve reducing ozone precursor emissions (nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC)) at annual increments between an established base year and the attainment year.

Emissions and emissions reductions were calculated from the 2011 base year through the 2026 attainment year, including a 2023 analysis year, for this proposed DFW and HGB severe classification RFP SIP revision; however, 2017 and 2020 are not included as analysis years because EPA approved the previous RFP demonstrations for those analysis years for both the DFW and HGB 2008 ozone NAAQS nonattainment areas. Details of EPA's previous approvals are located in Section 3.3.1: *General RFP Requirements*, 3.1.2: *Fifteen Percent Emissions Reductions Requirements*, and 3.1.3: *Additional Emissions Reduction Requirement*.

This proposed DFW-HGB RFP SIP revision demonstrates that the DFW and HGB 2008 ozone NAAQS nonattainment areas will achieve emissions reductions in NO<sub>x</sub> and/or VOC consistent with the severe ozone nonattainment area requirements of FCAA, §182(d), the requirements of §182(c)(2)(B), and EPA's *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* published on March 6, 2015, according to the following increments:

- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the 10-county DFW 2008 ozone NAAQS nonattainment area; and
- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the eight-county HGB 2008 ozone NAAQS nonattainment area.

The RFP methodology involves development of base year, attainment year, and contingency year emissions inventories and emissions reductions for each analysis year. The amount of emissions reductions is determined through the RFP methodology. Once calculated, the target levels and emissions inventories are compared to determine if the forecasted controlled (post-control) emissions inventories are less than the target level, thus meeting FCAA RFP requirements. The results of the DFW and HGB RFP analysis-year comparisons are provided in Chapter 3: *Progress Toward Meeting Target Emissions Levels*.

In addition to demonstrating the required emissions reductions, this proposed DFW-HGB RFP SIP revision also establishes 2023 and 2026 NO<sub>x</sub> and VOC motor vehicle emissions budgets (MVEB) for each area for transportation conformity purposes, as detailed in Chapter 5: *Motor Vehicle Emissions Budget*. This proposed SIP revision also addresses the severe classification vehicle miles traveled growth offset requirements

under FCAA, §182(d)(1) for both areas, as detailed in Section 4.6.2: *VMT Growth Demonstration*.

This proposed SIP revision demonstrates RFP for the DFW and HGB severe 2008 eight-hour ozone NAAQS nonattainment areas for the 2023 analysis year and the 2026 attainment year. The proposed SIP revision also fulfills the requirements of FCAA, §172(c)(9) to submit an RFP contingency plan in case of failure to demonstrate progress for a milestone (analysis) or attainment year, calculated as a 3% emissions reduction of the base year inventory, for the DFW and HGB 2008 eight-hour ozone NAAQS nonattainment areas.

Contingency measures are control requirements that would take effect and result in emissions reductions if an area fails to attain a NAAQS by the applicable attainment date or fails to demonstrate RFP. EPA has interpreted recent court decisions to have invalidated key aspects of EPA's historical approach to implementing the contingency measure requirement. At the time these proposed contingency measures were being developed, EPA had historically accepted the use of surplus emissions reductions from previously implemented control measures to fulfill the contingency measure requirements. However, EPA's new draft guidance on contingency measures, published in the *Federal Register* for public comment on March 23, 2023 (88 FR 17571), indicates that contingency measures must be conditional and prospective (not previously implemented) based on the recent court rulings. The draft guidance also suggests an entirely new scheme for determining the amount of emissions reductions necessary to address the contingency requirement.

The proposed contingency measures are conditional and prospective (not previously implemented), which follows EPA's interpretation of recent court decisions. These measures do not rely on the historical approach of using surplus emissions reductions from previously implemented measures to fulfill contingency requirements. Since EPA had not issued final guidance to states regarding the amount of required reductions from contingency measures at the time this proposed DFW-HGB RFP SIP revision was developed, this proposed SIP revision relies on the historically approved approach to determine the amount of emissions reductions necessary to address the contingency requirement.

## 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. In 1989, the TCAA was codified as Chapter 382 of the Texas Health and Safety Code. The TCAA is frequently amended for various purposes during the biennial legislative sessions.

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 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 TNRCC until September 1, 2013 and changed the name of TNRCC to 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 TCEQ to September 1, 2011, unless continued in existence by the Texas Sunset Act. In 2011, the 82nd Texas Legislature continued the existence of TCEQ until 2023. In 2023, the 88th regular session of the Texas Legislature continued the existence of TCEQ until 2035.

With the creation of TNRCC (and its successor TCEQ), authority over air quality is found in both the Texas Water Code (TWC) and TCAA. The general authority of TCEQ is found in TWC, Chapter 5 and enforcement authority is provided by TWC, Chapter 7. TWC, Chapter 5, Subchapters A - F, H - J, and L, include the general provisions, organization, and general powers and duties of TCEQ, and the responsibilities and authority of the executive director. TWC, Chapter 5 also authorizes TCEQ to implement action when emergency conditions arise and to conduct hearings. The TCAA specifically authorizes 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 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 TCEQ to enter property and make inspections. They also may

make recommendations to the commission concerning any action of TCEQ that affects their territorial jurisdiction, may bring enforcement actions, and may execute cooperative agreements with TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA and the rules or orders of the commission.

In addition, Subchapters G and H of the TCAA authorize 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, with the most recent effective date, unless otherwise noted.

TEXAS HEALTH & SAFETY CODE, Chapter 382	September 1, 2023
TEXAS WATER CODE	September 1, 2023

#### 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, 5.231, 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, 7.178-7.183 only

## Rules

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

Chapter 7: Memoranda of Understanding, §§7.110 and 7.119	December 13, 1996 and May 2, 2002, respectively
Chapter 19: Electronic Reporting	March 15, 2007
Subchapter A: General Provisions	
Subchapter B: Electronic Reporting Requirements	
Chapter 39: Public Notice	
Subchapter H: Applicability and General Provisions, §§39.402(a)(1) - (a)(6), (a)(8), and (a)(10) - (a)(12); §§39.405(f)(3) and (g), (h)(1)(A), (h)(2) - (h)(4), (h)(6), (h)(8) - (h)(11), (i) and (j), §39.407; §39.409; §§39.411(a), (e)(1) - (4)(A)(i) and (iii), (4)(B), (e)(5) introductory paragraph, (e)(5)(A), (e)(5)(B), (e)(6) - (e)(10), (e)(11)(A)(i), (e)(11)(A)(iii) - (vi), (11)(B) - (F), (e)(13), and (e)(15), (e)(16), and (f) introductory paragraph, (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), (c)(1)(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 (a)(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	October 27, 2022
Chapter 114: Control of Air Pollution from Motor Vehicles	April 21, 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: Federal Operating Permits Program §122.122: Potential to Emit	February 23, 2017

## SECTION VI: CONTROL STRATEGY

- A. Introduction (No change)
- B. Ozone (Revised)
  - 1. Dallas-Fort Worth (Revised)
  - 2. Houston-Galveston-Brazoria (Revised)
  - 3. Beaumont-Port Arthur (No change)
  - 4. El Paso (No change)
  - 5. Regional Strategies (No change)
  - 6. Northeast Texas (No change)
  - 7. Austin Area (No change)
  - 8. San Antonio Area (No change)
  - 9. Victoria Area (No change)
- C. Particulate Matter (No change)
- D. Carbon Monoxide (No change)
- E. Lead (No change)
- F. Oxides of Nitrogen (No change)
- G. Sulfur Dioxide (No change)
- H. Conformity with the National Ambient Air Quality Standards (No change)
- I. Site Specific (No change)
- J. Mobile Sources Strategies (No change)
- K. Clean Air Interstate Rule (No change)
- L. Transport (No change)
- M. Regional Haze (No change)

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ABY	adjusted base year
AD	attainment demonstration
AEDT	Aviation Environmental Design Tool
AERR	Air Emissions Reporting Requirements
APU	auxiliary power unit
BY	Base Year
CMV	commercial marine vessel
CO	carbon monoxide
DFW	Dallas-Fort Worth
EI	emissions inventory
EPA	United States Environmental Protection Agency
ERG	Eastern Research Group
FAA	Federal Aviation Administration
FCAA	Federal Clean Air Act
FMVCP	Federal Motor Vehicle Control Program
FR	<i>Federal Register</i>
GSE	ground support equipment
H-GAC	Houston-Galveston Area Council
HGB	Houston-Galveston-Brazoria
I/M	inspection and maintenance
ICI	industrial, commercial, and institutional
MOVES	Motor Vehicle Emissions Simulator
MOVES3	MOVES version 3
MOVES4	MOVES version 4
MVEB	motor vehicle emissions budget
NAAQS	National Ambient Air Quality Standard
NCTCOG	North Central Texas Council of Governments
NEI	National Emissions Inventory
NEMO	Nonpoint Emissions Methodology and Operator
NO <sub>x</sub>	nitrogen oxides
ppb	parts per billion
ppm	parts per million

RAQPAC	Regional Air Quality Planning Advisory Committee
RFG	reformulated gasoline
RFP	reasonable further progress
RRC	Railroad Commission of Texas
RVP	Reid vapor pressure
SI	spark ignition
SIP	state implementation plan
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)
TDM	travel demand model
TexN2.2	Texas NONROAD utility version 2.2
TIM	technical information meeting
TNRCC	Texas Natural Resource Conservation Commission
TTI	Texas A&M Transportation Institute
TWC	Texas Water Code
TxLED	Texas Low Emission Diesel
VMT	vehicle miles traveled
VOC	volatile organic compounds

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## CHAPTER 1: GENERAL

### 1.1 REASONABLE FURTHER PROGRESS (RFP) BACKGROUND

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

#### 1.1.1 One-Hour Ozone National Ambient Air Quality Standard (NAAQS) History (No Change)

No change from the 2020 Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HGB) Serious Classification RFP SIP revision for 2008 Eight-Hour Ozone NAAQS (Project Number: 2019-079-SIP-NR).

#### 1.1.2 1997 Eight-Hour Ozone NAAQS History (No Change)

No change from the 2020 DFW and HGB Serious Classification RFP SIP revision for 2008 Eight-Hour Ozone NAAQS (Project Number: 2019-079-SIP-NR).

#### 1.1.3 Redesignation Request and Maintenance Plan SIP Revisions for the One-Hour and Eight-Hour Ozone NAAQS

On February 16, 2018, the United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit Court) issued an opinion in the case *South Coast Air Quality Management District v. EPA*, 882 F.3d 1138 (D.C. Cir. 2018). The case was a challenge to the United States Environmental Protection Agency's (EPA) final 2008 eight-hour ozone standard SIP requirements rule, which revoked the 1997 eight-hour ozone NAAQS as part of the implementation of the more stringent 2008 eight-hour ozone NAAQS. The court's decision vacated parts of the EPA's final 2008 eight-hour ozone standard SIP requirements rule, including the redesignation substitute, removal of anti-backsliding requirements for areas designated nonattainment under the 1997 eight-hour ozone NAAQS, waiver of requirements for transportation conformity for maintenance areas under the 1997 eight-hour ozone NAAQS, and elimination of the requirement to submit a second 10-year maintenance plan.

To address the court's ruling, the commission adopted formal redesignation request and maintenance plan SIP revisions for the one-hour and 1997 eight-hour ozone NAAQS for the HGB (December 12, 2018) and DFW (March 27, 2019) areas. The SIP revisions included a request that the DFW and HGB areas be redesignated to attainment for the revoked one-hour and 1997 eight-hour ozone NAAQS. The SIP revisions also included maintenance plans ensuring the areas remain in attainment of the standards through 2032. The maintenance plans used a 2014 base year inventory and included interim year inventories for 2020 and 2026, established motor vehicle emissions budgets (MVEB) for 2032, and included contingency plans.

#### 1.1.4 2008 Eight-Hour Ozone NAAQS History

On March 27, 2008, the United States Environmental Protection Agency (EPA) published a final rule revising the eight-hour ozone standard, lowering the primary and secondary eight-hour ozone NAAQS to 0.075 parts per million (ppm) or 75 parts per billion (ppb) (73 *Federal Register* (FR) 16436). Attainment of the standard (expressed as



0.075 ppm) is achieved when an area's design value does not exceed 75 ppb. On May 21, 2012, EPA published final designations for the 2008 eight-hour ozone standard with an effective date of July 20, 2012 (77 FR 30088). EPA's implementation rule for the 2008 eight-hour ozone NAAQS, also published on May 21, 2012, established December 31 of each relevant calendar year as the attainment date for all nonattainment area classification categories (80 FR 12264).

On June 6, 2013, EPA published the proposed 2008 eight-hour ozone standard SIP requirements rule (78 FR 34178). The proposed rule addressed SIP requirements, the timing of SIP submissions, revocation of the 1997 eight-hour ozone NAAQS, and anti-backsliding requirements for previous ozone standards.

The United States Court of Appeals for the District of Columbia (D.C. Circuit Court) published an opinion on December 23, 2014 agreeing with two challenges to EPA's May 21, 2012 implementation rule for the 2008 eight-hour ozone NAAQS). The court vacated the provisions of the rule relating to attainment deadlines and revocation of the 1997 eight-hour ozone NAAQS for transportation conformity purposes. As part of the final 2008 eight-hour ozone standard SIP requirements rule, EPA modified 40 Code of Federal Regulations §51.1103 consistent with the D.C. Circuit Court decision to establish attainment dates that run from the effective date of designation, i.e., July 20, 2012, and revoked the 1997 eight-hour ozone NAAQS for all purposes (80 FR 12264).

#### 1.1.4.1 DFW 2008 Eight-Hour Ozone NAAQS Designation History

On May 21, 2012, the EPA designated a 10-county DFW area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties) as nonattainment for the 2008 eight-hour ozone NAAQS with a moderate classification, effective July 20, 2012. The attainment date for the DFW moderate nonattainment area was originally established in the EPA's implementation rule for the 2008 eight-hour ozone NAAQS, published on May 21, 2012, and was set as December 31, 2018 (77 FR 30160). Due to the D.C. Circuit Court ruling, the attainment date changed from December 31, 2018 to July 20, 2018. In addition, because the attainment year ozone season is the ozone season immediately preceding a nonattainment area's attainment date, the attainment year for the DFW moderate nonattainment area changed from 2018 to 2017.

On July 2, 2014, the commission adopted a SIP revision to satisfy federal Clean Air Act (FCAA), §172(c)(3) and §182(a)(1) EI reporting requirements for the DFW nonattainment area under the 2008 eight-hour ozone standard (Project No. 2013-014-SIP-NR). The EPA published direct final approval of this SIP revision on February 20, 2015 (80 FR 9204).

To meet FCAA requirements for a moderate ozone nonattainment area, the commission adopted the DFW RFP SIP revision for the 2008 Eight-Hour Ozone NAAQS on June 3, 2015 (Project No. 2013-014-SIP-NR). The SIP revision provided an RFP analysis for a 2017 attainment year, a contingency plan, and 2017 nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) MVEBs. The RFP demonstration was made according to the following increments:

- a 15% emissions reduction in VOC for the six-year period from January 1, 2012 through December 31, 2017 for the newly designated one-county portion of the DFW 2008 eight-hour ozone nonattainment area consisting of Wise County;

- a 15% emissions reduction in VOC and/or NO<sub>x</sub> for the six-year period from January 1, 2012 through December 31, 2017 for the previously designated nine-county portion of the DFW 2008 eight-hour ozone nonattainment area consisting of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties; and
- a 3% emissions reduction in VOC and/or NO<sub>x</sub> for the one-year period from January 1, 2018 through December 31, 2018 as attainment year RFP contingency for all counties of the DFW 2008 eight-hour ozone nonattainment area.

The 2017 Wise County RFP demonstration in the adopted DFW RFP SIP revision used a transfer of excess VOC reductions from the nine-county area previously designated as nonattainment to the newly designated Wise County. Upon notification that the option to transfer creditable VOC reductions between county groups was no longer available per the EPA's final 2008 eight-hour ozone SIP requirements rule, the TCEQ corrected the adopted DFW RFP analyses to remove the VOC reduction transfer and credit emission reductions from drilling rig controls that were available but had not been credited (80 FR 12264). The corrections were submitted to the EPA in an April 22, 2016 technical supplement.

On December 7, 2016, the EPA published final approval of the DFW RFP SIP revision for the 2008 eight-hour ozone NAAQS (81 FR 88124).

#### 1.1.4.2 HGB 2008 Eight-Hour Ozone NAAQS Designation History

On May 21, 2012, the EPA designated an eight-county HGB area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties) as nonattainment for the 2008 eight-hour ozone NAAQS with a marginal classification, effective July 20, 2012. The attainment date for the HGB marginal nonattainment area was originally established in the EPA's implementation rule for the 2008 eight-hour ozone NAAQS, published on May 21, 2012, and was set as December 31, 2015 (77 FR 30160). Due to the D.C. Circuit Court ruling, the attainment date changed from December 31, 2015 to July 20, 2015. In addition, because the attainment year ozone season is the ozone season immediately preceding a nonattainment area's attainment date, the attainment year for the HGB marginal nonattainment area changed from 2015 to 2014.

On July 2, 2014, the commission adopted a SIP revision to satisfy FCAA, §172(c)(3) and §182(a)(1) EI reporting requirements for the HGB nonattainment area under the 2008 eight-hour ozone standard (Project No. 2013-016-SIP-NR). The EPA published direct final approval of this SIP revision on February 20, 2015 (80 FR 9204).

#### *HGB Reclassification to Moderate for the 2008 Eight-Hour Ozone NAAQS*

The HGB area did not attain the 2008 eight-hour ozone standard in 2014 but qualified for a one-year attainment date extension in accordance with FCAA, §181(a)(5). On May 4, 2016, the EPA granted a one-year attainment deadline extension for the HGB 2008 eight-hour ozone marginal nonattainment area to July 20, 2016 (81 FR 26697).

Because the HGB area's 2015 design value of 80 ppb exceeded the 2008 eight-hour ozone NAAQS, the EPA published a proposed determination of nonattainment and reclassification of the HGB area from marginal to moderate nonattainment on

September 27, 2016 (81 FR 66240). The EPA proposed a January 1, 2017 deadline for the state to submit an AD SIP revision that addresses the 2008 eight-hour ozone NAAQS moderate nonattainment area requirements, including RFP. As indicated in the EPA's 2008 eight-hour ozone standard SIP requirements rule, the attainment deadline for moderate classification was July 20, 2018 with an attainment year of 2017.

On December 15, 2016, the commission adopted the HGB 2008 Eight-Hour Ozone RFP SIP revision to satisfy the requirements of FCAA, §182(b)(1) for moderate ozone nonattainment areas. The SIP revision demonstrated a 15% emissions reduction in ozone precursors from the 2011 base year through the 2017 attainment year, a 3% reduction for contingency in 2018, and set NO<sub>x</sub> and VOC MVEBs for the 2017 attainment year. The EPA published final approval of this SIP revision on February 13, 2019 (84 FR 3708).

#### 1.1.4.3 Reclassification to Serious for the 2008 Eight-Hour Ozone NAAQS

With a moderate classification, the DFW and HGB areas were required to attain the 2008 eight-hour ozone NAAQS of 0.075 ppm by a July 20, 2018 attainment date. Based on monitoring data from 2015, 2016, and 2017, neither the DFW area nor the HGB area attained the 2008 eight-hour ozone NAAQS in 2017,<sup>2</sup> and neither qualified for a one-year attainment date extension in accordance with FCAA, §181(a)(5).<sup>3</sup> On August 23, 2019, the EPA published a final notice reclassifying the DFW and HGB 2008 eight-hour ozone nonattainment areas from moderate to serious for the 2008 eight-hour ozone NAAQS, effective September 23, 2019 (84 FR 44238).

Since the DFW and HGB areas were reclassified by the EPA, they became subject to the serious nonattainment area requirements in FCAA, §182(c), and the TCEQ was required to submit serious area RFP SIP revisions to the EPA. As indicated in the EPA's 2008 eight-hour ozone standard SIP requirements rule, published on March 6, 2015, the attainment deadline for a serious classification was July 20, 2021, with an attainment year of 2020 (80 FR 12264).

On March 4, 2020, the commission adopted the combined 2019 DFW-HGB 2008 Eight-Hour Ozone Standard RFP SIP Revision (Project No. 2019-079-SIP-NR), which included the following analyses to reflect the 2020 attainment year:

- a 9% emissions reduction in NO<sub>x</sub> and/or VOC for both the 2008 DFW and HGB areas for the three-year period from January 1, 2018 through December 31, 2020; and

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<sup>2</sup> The attainment year ozone season is the ozone season immediately preceding a nonattainment area's attainment deadline.

<sup>3</sup> An area that fails to attain the 2008 eight-hour ozone NAAQS by its attainment date would be eligible for the first one-year extension if, for the attainment year, the area's 4th highest daily maximum eight-hour average is at or below the level of the standard (75 ppb). The DFW area's fourth highest daily maximum eight-hour average for 2017 was 77 ppb as measured at the Dallas North No. 2 monitor (C63/C679). The DFW area's design value for 2017 was 79 ppb. The HGB area's fourth highest daily maximum eight-hour average for 2017 was 79 ppb as measured at the Conroe Relocated monitor (C78/A321). The HGB area's design value for 2017 was 81 ppb.

- a 3% emissions reduction in NO<sub>x</sub> and/or VOC for the one-year period from January 1, 2021 through December 31, 2021 for each area as an attainment year RFP contingency.

On May 10, 2021, EPA published final approval of the serious classification RFP demonstration for the HGB nonattainment area (86 FR 24717). On April 24, 2023, EPA published final approval of the serious classification RFP demonstration for the DFW nonattainment area (88 FR 24693). Neither final approval action included approval of the RFP contingency measure elements submitted for the two areas as part of the SIP revision.

#### 1.1.4.4 Reclassification to Severe for the 2008 Eight-Hour Ozone NAAQS

Based on monitoring data from 2018, 2019, and 2020, neither the DFW nor HGB area attained the 2008 eight-hour ozone NAAQS in the 2020 attainment year. On April 5, 2021, TCEQ submitted a one-year attainment date extension request to EPA for the HGB 2008 eight-hour ozone NAAQS nonattainment area. On October 7, 2022, EPA published a final notice denying the one-year attainment date extension request for the HGB area and reclassifying both the DFW and HGB 2008 eight-hour ozone nonattainment areas from serious to severe for the 2008 eight-hour ozone NAAQS effective November 7, 2022 (87 FR 60926). The attainment date for the severe classification is July 20, 2027, with a 2026 attainment year. States must submit AD and RFP SIP revisions to EPA by May 7, 2024, 18 months from the effective date of reclassification, to address the 2008 eight-hour ozone standard severe nonattainment area requirements.

#### **1.1.5 2015 Eight-Hour Ozone NAAQS History**

On October 1, 2015, the EPA lowered the primary and secondary eight-hour ozone NAAQS to 0.070 ppm and published the final rule revising the NAAQS in the *Federal Register* on October 26, 2015, effective December 28, 2015 (80 FR 65292). On June 4, 2018, the EPA published in the *Federal Register* final designations for the 2015 eight-hour ozone standard of 0.070 ppm (83 FR 25766). A nine-county DFW area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise Counties) and a six-county HGB area (Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery Counties) were designated nonattainment and classified as marginal under the 2015 eight-hour ozone NAAQS, effective August 3, 2018.

##### 1.1.5.1 Marginal Classification for the 2015 Eight-Hour Ozone NAAQS

Under a marginal classification, the DFW and HGB nonattainment areas were required to attain the 2015 eight-hour ozone standard by the end of 2020 to meet an August 3, 2021 attainment date. On June 10, 2020, the commission adopted the 2015 Eight-Hour Ozone NAAQS Emissions Inventory (EI) SIP Revision for the HGB, DFW, and Bexar County Nonattainment Areas (Non-Rule Project No. 2019-111-SIP-NR). The SIP revision satisfies FCAA, §172(c)(3) and §182(a)(1) EI reporting requirements for areas designated nonattainment for the 2015 eight-hour ozone NAAQS. The SIP revision also includes certification statements to confirm that the emissions statement and nonattainment new source review requirements have been met for the DFW, HGB, and Bexar County 2015 eight-hour ozone nonattainment areas. On June 29, 2021, the EPA published final approval of the EI for the DFW, HGB, and Bexar County 2015 ozone nonattainment areas (86 FR 34139). On September 9, 2021, the EPA published final

approval of the nonattainment new source review and emissions statement portions of the SIP revision (86 FR 50456).

#### 1.1.5.2 Reclassification to Moderate for the 2015 Eight-Hour Ozone NAAQS

Based on monitoring data from 2018, 2019, and 2020, neither the DFW nor the HGB nonattainment area attained the 2015 eight-hour ozone NAAQS in the 2020 attainment year, and neither qualified for a one-year attainment date extension in accordance with FCAA, §181(a)(5).<sup>4</sup> On October 7, 2022, the EPA published a final notice reclassifying the DFW and HGB 2015 eight-hour ozone nonattainment areas from marginal to moderate, effective November 7, 2022 (87 FR 60897). The attainment date for areas classified as moderate for the 2015 ozone NAAQS is August 3, 2024, with a 2023 attainment year. The EPA set a January 1, 2023 deadline for states to submit SIP revisions to address the 2015 eight-hour ozone standard moderate nonattainment area requirements.

On October 12, 2023, Texas Governor Greg Abbott signed and submitted a letter to EPA to reclassify the Bexar County, DFW, and HGB moderate 2015 eight-hour ozone NAAQS nonattainment areas to serious. As indicated in EPA's *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach*; Final Rule, published on March 9, 2018 (83 FR 10376), the attainment date for a serious classification is August 3, 2027, with a 2026 attainment year.

### **1.2 RFP REQUIREMENTS**

FCAA, §110 requires states to submit SIP revisions that contain enforceable measures to achieve the NAAQS. FCAA, §182(c)(2)(B) also requires states with ozone nonattainment areas classified as serious or above to submit plans showing reasonable further progress toward attainment. This proposed DFW-HGB RFP SIP revision is not required to demonstrate attainment of the ozone NAAQS but rather to demonstrate that ozone precursor emissions (NO<sub>x</sub> and/or VOC) will be reduced by specified amounts between the 2011 base year and the 2026 attainment year, including a 2023 analysis year, for both the DFW and HGB 2008 ozone NAAQS nonattainment areas.

This proposed DFW-HGB RFP SIP revision demonstrates that both areas will achieve emissions reductions according to the following increments, consistent with the requirements of FCAA, §182(c)(2)(B), EPA's *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2008 eight-hour ozone standard SIP requirements rule) published on March 6, 2015 (80 FR 12264), and EPA's interpretation of implementing contingency requirements based on recent court rulings:

- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the 10-county DFW 2008 ozone NAAQS nonattainment area;
- an RFP contingency plan in case of failure to demonstrate progress for a milestone (analysis) year or attainment year, calculated as a 3% emissions reduction of the base year inventory;

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<sup>4</sup> *Id*

- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the eight-county HGB 2008 ozone NAAQS nonattainment area; and
- an RFP contingency plan in case of failure to demonstrate progress for a milestone (analysis) year or attainment year, calculated as a 3% emissions reduction of the base year inventory.

For a severe classification under the 2008 eight-hour ozone NAAQS, a 42% emissions reduction is required over the 15-year period between the RFP base year and the RFP attainment year. A summary of these reductions that were already demonstrated in previous approved RFP SIP revisions or are being demonstrated in this proposed DFW-HGB RFP SIP revision are provided below.

- 15% NO<sub>x</sub> and VOC emissions reductions from 2012 through 2017 were demonstrated in approved moderate classification RFP SIP revisions for the 2008 eight-hour ozone NAAQS.
  - For Wise County, the one newly designated county, the 15% VOC-only emissions reductions were demonstrated from 2012 through 2017.
- 9% NO<sub>x</sub> and VOC emissions reductions from 2018 through 2020 were demonstrated in approved serious classification RFP SIP revisions for the 2008 eight-hour ozone NAAQS.
- 9% NO<sub>x</sub> and VOC emissions reductions from 2021 through 2023 are being demonstrated as part of this proposed severe classification RFP SIP revision for the 2008 eight-hour ozone NAAQS.
- 9% NO<sub>x</sub> and VOC emissions reductions from 2024 through 2026 are being demonstrated as part of this proposed severe classification RFP SIP revision for the 2008 eight-hour ozone NAAQS.

Please see the following tables in Chapter 3: *Progress Toward Meeting Target Emissions Levels* for details on the summary listed above:

- Table 3-1: *EPA Approval of 15% VOC-Only RFP SIP Revisions for DFW and HGB Ozone NAAQS Nonattainment Areas,*
- Table 3-2: *EPA Approval of 9% NO<sub>x</sub> and/or VOC Emissions Reductions between 2018 and 2020,*
- Table 3-7: *Summary of the 2023 DFW RFP Demonstration (tons per day),*
- Table 3-8: *Summary of the 2026 DFW RFP Demonstration (tons per day),*
- Table 3-9: *Summary of the 2023 HGB RFP Demonstration (tons per day), and*
- Table 3-10: *Summary of the 2026 HGB RFP Demonstration (tons per day).*

Requirements for severe ozone nonattainment areas under the FCAA include a 15% VOC emissions reduction within the first six years following the RFP base year; however, EPA's 2008 eight-hour ozone standard SIP requirements rule indicates that nonattainment areas with a previously approved plan meeting the 15% VOC

requirement under the one-hour ozone standard, the 1997 eight-hour ozone standard, or the 2008 ozone standard may substitute reductions in NO<sub>x</sub> for VOC.<sup>5</sup>

For the 2008 eight-hour ozone NAAQS, TCEQ previously adopted RFP SIP revisions for the DFW and HGB ozone nonattainment areas. The DFW RFP SIP revision adopted on June 3, 2015 demonstrated a 15% emissions reduction in VOC from the 2011 base year through the 2017 moderate attainment year for the newly designated one-county portion of the DFW ozone nonattainment area (Wise County) and a 15% emissions reduction in NO<sub>x</sub> and/or VOC from the 2011 base year through the 2017 moderate attainment year for the previously designated nine-county portion of the DFW ozone nonattainment area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties). The HGB RFP SIP Revision adopted on December 15, 2016 demonstrated a 15% emissions reduction in NO<sub>x</sub> and/or VOC from the 2011 base year through the 2017 moderate attainment year for the eight-county HGB ozone nonattainment area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties).

The TCEQ also previously adopted a serious RFP SIP revision for DFW and HGB for the 2008 eight-hour ozone NAAQS. The DFW-HGB RFP SIP revision adopted on March 4, 2020 demonstrated a 9% emissions reduction in NO<sub>x</sub> and/or VOC in the three year period from 2018 through the 2020 serious attainment year for each area. This is in addition to the 15% reduction in NO<sub>x</sub> and/or VOC (VOC only for Wise County) from the 2011 base year through the 2017 moderate attainment year previously demonstrated in the moderate RFP SIP revisions.

The RFP calculations documented in this proposed DFW-HGB RFP SIP revision rely on an RFP base year of 2011 and a 2026 attainment year. In accordance with the 2008 ozone standard SIP requirements rule, the emission reduction requirement covers the period from January 1, 2012 through December 31, 2026. Emissions and emissions reductions were calculated from 2011 through 2026; however, 2017 and 2020 are not included as RFP analysis years for this SIP revision because EPA approved those RFP analysis years as part of the moderate and serious classification RFP demonstrations, on December 7, 2016 (81 FR 88124) and April 24, 2023 (88 FR 24693) for the DFW-area 2017 and 2020 analysis years and February 13, 2019 (84 FR 3708) and May 10, 2021 (86 FR 24717) for the HGB-area 2017 and 2020 analysis years, respectively. Details of EPA's previous approvals are located in Section 3.3.1: *General RFP Requirements*, 3.1.2: *Fifteen Percent Emissions Reductions Requirements*, and 3.1.3: *Additional Emissions Reduction Requirement*.

This proposed DFW-HGB RFP SIP revision demonstrates RFP for the DFW and HGB 2008 ozone NAAQS nonattainment areas for the 2023 analysis year and the 2026 attainment year. In addition to demonstrating the required emissions reductions, this proposed SIP revision also provides NO<sub>x</sub> and VOC motor vehicle emissions budgets (MVEB) for the 2023 analysis year and 2026 attainment year for both areas. This proposed SIP revision also addresses the severe classification vehicle miles traveled (VMT) growth

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<sup>5</sup> NO<sub>x</sub> may be substituted for VOC under conditions defined in EPA's December 1993 [NO<sub>x</sub> Substitution Guidance](https://www3.epa.gov/ttn/naaqs/aqmguid/collection/cp2_old/19931201_oaqps_nox_substitution_guidance.pdf) (https://www3.epa.gov/ttn/naaqs/aqmguid/collection/cp2\_old/19931201\_oaqps\_nox\_substitution\_guidance.pdf).

offset requirements under FCAA, §182(d)(1), as detailed in Section 4.6.2: VMT Growth Demonstration.

As required by FCAA, §172(c)(9), a contingency plan is also included for the DFW and HGB 2008 eight-hour ozone NAAQS nonattainment areas in case of failure to demonstrate progress for a 2008 eight-hour ozone NAAQS milestone (analysis) year or attainment year.

Contingency measures are control requirements that would take effect and result in emissions reductions if an area fails to attain a NAAQS by the applicable attainment date or fails to demonstrate RFP. EPA has interpreted recent court decisions to have invalidated key aspects of EPA's historical approach to implementing the contingency measure requirement. At the time the proposed DFW-HGB RFP SIP revision was being developed, EPA had historically accepted the use of surplus emissions reductions from previously implemented control measures to fulfill the contingency measure requirements. However, EPA's new draft guidance on contingency measures, published in the *Federal Register* for public comment on March 23, 2023 (88 FR 17571), indicates that contingency measures must be conditional and prospective (not previously implemented) based on the recent court rulings. The draft guidance also establishes an entirely new scheme for determining the amount of emissions reductions necessary to address the contingency requirement.

The proposed contingency measures are conditional and prospective (not previously implemented), which follows EPA's interpretation of recent court decisions. These measures do not rely on the historical approach of using surplus emissions reductions from previously implemented measures to fulfill contingency requirements. Since EPA had not issued final guidance to states regarding the amount of required reductions from contingency measures at the time this proposed DFW-HGB RFP SIP revision was developed, this proposed SIP revision relies on the historically approved approach to determine the amount of emissions reductions necessary to address the contingency requirement.

A summary of the DFW and HGB areas' progress toward meeting RFP requirements can be found in Appendix 1: *Dallas-Fort Worth (DFW) Reasonable Further Progress (RFP) Demonstration Spreadsheet* and Appendix 2: *Houston-Galveston-Brazoria (HGB) Reasonable Further Progress (RFP) Demonstration Spreadsheet*.

### **1.3 STAKEHOLDER PARTICIPATION AND PUBLIC MEETINGS**

#### **1.3.1 Technical Information Meetings (TIM)**

TCEQ's Air Quality TIMs are provided to present technical and scientific information related to air quality modeling and analysis in the state's ozone nonattainment areas. TCEQ hosted a virtual TIM on July 28, 2022 for HGB-area stakeholders, which included presentations on ozone planning, conformity analysis, ozone design values, modeling platform updates, marine emissions inventory development, Tracking Aerosol Convection Experiment - Air Quality field study, FCAA, §185 fees, and an update from EPA. More information about the HGB Air Quality TIM is available at on the [HGB Air Quality TIM](https://www.tceq.texas.gov/airquality/airmod/meetings/aqtim-hgb.html) webpage (<https://www.tceq.texas.gov/airquality/airmod/meetings/aqtim-hgb.html>).



TCEQ hosted a virtual TIM on August 24, 2022 for DFW-area stakeholders, which included presentations on ozone planning, ozone design values, modeling platform updates, airport emissions inventory development, and an update from EPA. More information is available on the [DFW Air Quality TIM](https://www.tceq.texas.gov/airquality/airmod/meetings/aqtim-dfw.html) webpage (https://www.tceq.texas.gov/airquality/airmod/meetings/aqtim-dfw.html).

### 1.3.2 Virtual Outreach Meetings

TCEQ hosted virtual stakeholder outreach meetings in the DFW and HGB areas to provide an update on planning for the 2008 and 2015 ozone NAAQS SIP submissions (September 6, 2022 and September 7, 2022 for the DFW area and September 7, 2022 and September 8, 2022 for the HGB area). These meetings provided a brief overview of the areas' air quality status, plan requirements for ozone nonattainment areas, and provided an opportunity for input on existing and potential NO<sub>x</sub> and/or VOC emission reduction measures being implemented within the point, area, and mobile emissions source sectors in the two regions. Presentation topics included ozone planning, ozone design values, emissions inventories and trends, emission control strategies, contingency measures, FCAA, §185 fees, and reasonably available control technology.

### 1.3.3 HGB Regional Air Quality Planning Advisory Committee Meetings

The Regional Air Quality Planning Advisory Committee (RAQPAC) is appointed by the Houston-Galveston Area Council (H-GAC) Board of Directors and includes representatives of local government, public health, transportation, industry, business, environmental organizations, and citizens from the HGB eight-county nonattainment area. The committee assists and advises H-GAC, regional and local governments, transportation organizations and other agencies on air quality issues. TCEQ staff provide air quality planning updates at the RAQPAC monthly meetings. More information about this committee is available on the [RAQPAC](https://www.h-gac.com/board-of-directors/advisory-committees/regional-air-quality-planning-advisory-committee/default.aspx) webpage (https://www.h-gac.com/board-of-directors/advisory-committees/regional-air-quality-planning-advisory-committee/default.aspx).

### 1.3.4 Stakeholder Meetings

TCEQ hosted and attended multiple meetings on SIP planning for the DFW and HGB areas. Agenda topics included the development of 2008 eight-hour ozone moderate classification SIP revisions. Attendees included representatives from industry, county and city government, environmental groups, and the public.

## 1.4 PUBLIC HEARING AND COMMENT INFORMATION

The commission will offer public hearings for this proposed DFW-HGB RFP SIP revision at the following times and locations.

**Table 1-1: Public Hearing Information**

City	Date	Time	Location
Arlington	January 11, 2024	7:00 p.m.	Arlington City Hall 101 W. Abrams St Arlington, TX 76010
Houston	January 4, 2024	7:00 p.m.	Houston-Galveston Area Council 3555 Timmons Ln Houston, TX 77027

The public comment period will open on December 1, 2023 and close on January 16, 2024. Written comments will be accepted via mail, fax, or through TCEQ's [Public Comment](https://tceq.commentinput.com/) system (<https://tceq.commentinput.com/>). All comments should reference the "DFW-HGB 2008 Ozone NAAQS Severe RFP SIP Revision" and should reference Project Number 2023-108-SIP-NR. Comments submitted via hard copy may be mailed to Denine Calvin, MC 206, State Implementation Plan Team, Air Quality Division, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 or faxed to (512) 239-4808. Comments submitted electronically must be submitted through TCEQ's Public Comments system. File size restrictions may apply to comments being submitted via TCEQ's Public Comments system. Comments must be received by 11:59 p.m. CST on January 16, 2024.

An electronic version of the proposed DFW-HGB RFP SIP Revision and appendices are available at TCEQ's [DFW: Latest Ozone Planning Activities](https://www.tceq.texas.gov/airquality/sip/dfw/dfw-latest-ozone) webpage (<https://www.tceq.texas.gov/airquality/sip/dfw/dfw-latest-ozone>) and [HGB: Latest Ozone Planning Activities](https://www.tceq.texas.gov/airquality/sip/hgb/hgb-latest-ozone) webpage (<https://www.tceq.texas.gov/airquality/sip/hgb/hgb-latest-ozone>). An electronic version of the public hearing notice will be available on the [Texas SIP Revisions](https://www.tceq.texas.gov/airquality/sip/siplans.html) webpage (<https://www.tceq.texas.gov/airquality/sip/siplans.html>).

### **1.5 SOCIAL AND ECONOMIC CONSIDERATIONS**

For a detailed explanation of the social and economic issues involved with the concurrently proposed rule revisions associated with this proposed SIP revision (Rule Project No. 2023-116-115-AI and Rule Project No. 2023-117-117-AI), please refer to the preamble that precedes each rule package.

### **1.6 FISCAL AND MANPOWER RESOURCES**

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

## CHAPTER 2: EMISSIONS INVENTORIES

### 2.1 INTRODUCTION

The federal Clean Air Act (FCAA) requires that reasonable further progress (RFP) emissions inventories be prepared for ozone nonattainment areas. Ground-level (tropospheric) ozone is produced when ozone precursor emissions, nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) undergo photochemical reactions in the presence of sunlight.

The Texas Commission on Environmental Quality (TCEQ) maintains an inventory of current information for anthropogenic sources of NO<sub>x</sub> and VOC 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 source or source category. The total anthropogenic inventory of NO<sub>x</sub> and VOC emissions for an area is derived from estimates developed for three general categories of emissions sources: point, area, and mobile (both non-road and on-road).

The emissions inventory (EI) also provides data for a variety of air quality planning tasks, including establishing baseline emissions levels, calculating reduction targets, developing control strategies to achieve emissions reductions, developing emissions inputs for air quality models, and tracking actual emissions reductions against established emissions growth and control budgets.

This proposed Dallas-Fort Worth (DFW)-Houston-Galveston-Brazoria (HGB) 2008 eight-hour ozone National Ambient Air Quality Standard (NAAQS) severe RFP state implementation plan (SIP) revision demonstrates RFP for a 2023 analysis year and a 2026 attainment year for both nonattainment areas according to the United States Environmental Protection Agency's (EPA) *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2008 eight-hour ozone standard SIP requirements rule), published in the *Federal Register* (FR) on March 6, 2015 (80 FR 12264). Specifically, this proposed DFW-HGB RFP SIP revision demonstrates an 18% emissions reduction from calendar years 2021 through 2026 for the counties designated as severe nonattainment for the 2008 ozone NAAQS by combining NO<sub>x</sub> and VOC emissions reductions.

To develop an RFP SIP revision for the 2008 eight-hour ozone NAAQS, states must: (1) determine the base year emissions for NO<sub>x</sub> and VOC; (2) calculate RFP target emissions reductions levels based on the RFP percent reduction requirements; (3) determine the analysis and attainment year inventories according to RFP requirements; and (4) account for creditable emissions reductions in the analysis year and attainment year EIs in accordance with applicable requirements. When the RFP controlled emissions reductions meet or exceed the calculated target emissions reductions, then RFP is demonstrated.

To demonstrate how the required RFP emissions reductions are met, a set of emissions inventories and estimated reductions from control measures is required. This proposed DFW-HGB RFP SIP revision includes:

- a 2011 base year EI;  
The base year EI is the starting point for calculating the target levels of emissions. A base year of 2011 was selected in accordance with EPA’s 2008 eight-hour ozone standard SIP requirements rule.
- 2023 and 2026 uncontrolled EIs;  
The RFP analysis requires an uncontrolled EI that accounts for growth between the base year and each analysis year. The uncontrolled EI may include controls that existed prior to the base year; in these cases, the EI is referred to as an “existing controlled” EI. Determining the uncontrolled EI is the first step in the calculations for the analysis year.
- quantification of control measure reductions for the 2023 and 2026 analysis and attainment years;  
The RFP analysis requires the calculations of emissions reductions for control strategies that are implemented or occur between the base year and the analysis year, which are then subtracted from the uncontrolled or existing controlled emissions to determine the controlled RFP EI. The RFP emissions reductions are individually quantified for each control strategy that pertains to particular source categories. A discussion of RFP control strategies is provided in Chapter 4: Control Measures to Achieve Target Levels.
- 2023 and 2026 controlled EIs; and  
The controlled EI represents the projected (forecasted) EI with all controls implemented. The controlled projected RFP EI is the result of subtracting the emissions reductions for controls that are used to demonstrate RFP from the uncontrolled or existing controlled projected EI.
- RFP contingency control reductions.  
The RFP analysis requires the calculation of the emissions reductions that must be implemented if an RFP requirement is not met. A discussion of the RFP contingency control strategies for the DFW and HGB 2008 ozone NAAQS nonattainment areas is provided in Chapter 4.

The RFP calculations for this proposed DFW-HGB RFP SIP revision are documented in Chapter 3: *Progress Toward Meeting Target Emissions*. Details of the DFW and HGB 2008 ozone NAAQS nonattainment areas’ progress toward meeting RFP requirements can be found in Appendix 1: *Dallas-Fort Worth (DFW) Reasonable Further Progress (RFP) Demonstration Spreadsheet* and Appendix 2: *Houston-Galveston-Brazoria (HGB) Reasonable Further Progress (RFP) Demonstration Spreadsheet*.

### **2.1.1 Updated Uncontrolled Analysis and Attainment Year Inventories for Mobile Sources**

Uncontrolled analysis and attainment year EIs for non-road mobile sources represent what each analysis and attainment year’s emissions would be if the post-1990 mobile control strategies were never implemented. First, EIs are calculated for each mobile source category using EPA-approved methodologies. The inventories are then combined to derive the total uncontrolled attainment year EI for NO<sub>x</sub> and VOC. The

uncontrolled attainment year EI includes 1990 or prior FCAA and/or state controls as well as growth in activity from 2011 to the 2023 analysis year and the 2026 attainment year, but the inventory does not include post-1990 FCAA and/or state controls.

Uncontrolled analysis and attainment year EIs for on-road mobile sources include Federal Motor Vehicle Program (FMVCP) controls since Motor Vehicles Emissions Simulator version 3 (MOVES3) no longer allows quantification of FMVCP emissions reductions. The uncontrolled analysis and attainment year EIs represent what each analysis and attainment year's emissions would be if controls such as fuel programs and inspection and maintenance programs were never implemented.

### **2.1.2 Updated Controlled Analysis and Attainment Year Inventories for Mobile Sources**

The controlled analysis and attainment year EIs represent projected emissions for 2023 and 2026, accounting for emissions growth from either 2011 or the projection base year as detailed below and specified applicable controls. Emissions inventories are calculated for each source category using EPA-approved methodologies. Then, the inventories are combined to obtain the total controlled analysis year and attainment year EIs for NO<sub>x</sub> and VOC. The controlled analysis year and attainment year EIs include specified FCAA and/or state controls implemented prior to the base year or analysis year; growth in activity from the base year or the projection base year to the analysis year and the attainment year; and specified FCAA and/or state controls used to meet the RFP target emissions levels.

### **2.1.3 Updated Uncontrolled and Controlled Analysis and Attainment Year Inventories for Stationary Sources**

For stationary sources, the uncontrolled analysis and attainment year EIs represent the estimated future year emissions if no further action to control emissions growth were taken beyond the controls already accounted for in the EI. More recent stationary source data than the 2011 base year data are available; these newer data reflect growth that has occurred since the base year. These newer data also reflect more recent operations and applied controls since the 2011 base year. Therefore, the most recent annual EI was selected as the year from which to forecast emissions and is referred to as the *projection base year*.

Stationary source emissions inventories are calculated for each applicable source category according to the methods detailed in the appropriate sections below. The inventories are then combined to derive the total analysis and attainment year EIs for NO<sub>x</sub> and VOC. These future year EIs reflect specified FCAA and/or state controls (like those mandated by the oil and gas production CTG) implemented after the end of the projection base year. In addition, the future year EIs also reflect growth in activity from the projection base year to the 2023 analysis year and 2026 attainment year. The uncontrolled 2011 EI for stationary sources includes all controls and associated reductions implemented by the end of the 2011 base year. The projected 2026 controlled stationary sources EI includes all controls and associated reductions implemented by the end of the severe ozone attainment year. Stationary source RFP VOC reductions are derived by subtracting the 2026 projected attainment year EI VOC from the 2011 base year EI VOC total.

#### **2.1.4 Updated Adjusted Base Year Inventories**

EPA removed the RFP requirement to calculate and account for the non-creditable on-road mobile source emissions reductions due to pre-1990 FMVCP reductions in RFP analyses under the 2008 eight-hour ozone standard SIP requirements rule. This rule change eliminates the requirements to calculate the adjusted base year (ABY) EI that estimates the effects of the non-creditable pre-1990 FCAA controls, use the ABY EI to calculate the percent reductions, and include the non-creditable reductions in the RFP target calculations.

With the release of MOVES3 model in 2020, EPA removed the ability to determine ABY EIs. Accordingly, the RFP analyses presented in this proposed DFW-HGB RFP SIP revision do not include any of the RFP elements or non-creditable effects related to the pre-1990 FMVCP, including ABY EIs and related summaries and documentation.

### **2.2 POINT SOURCES**

#### **2.2.1 Emissions Inventory Development**

Stationary point source emissions data are collected annually from sites that meet the reporting requirements of 30 Texas Administrative Code (TAC) §101.10. This rule, referred to as TCEQ EI reporting rule, establishes point source EI reporting thresholds in ozone nonattainment areas that are currently at or less than major source thresholds in the DFW and HGB 2008 ozone NAAQS nonattainment areas. Therefore, both major sources and some minor sources in the areas report to the point source EI.

To collect the data, TCEQ sends notices to all sites identified as potentially meeting the reporting requirements. 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. FCAA, §182(a)(3)(B) and 30 TAC §101.10(d)(1) require company representatives to certify 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 are reviewed for quality-assurance purposes and then stored in the State of Texas Air Reporting System (STARS) database. EI guidance documents and historical point source emissions of criteria pollutants are available on TCEQ's [Point Source Emissions Inventory](https://www.tceq.texas.gov/airquality/point-source-ei/psei.html) webpage (<https://www.tceq.texas.gov/airquality/point-source-ei/psei.html>). Additional information is available upon request from TCEQ's Air Quality Division.

#### **2.2.2 Updated 2011 Base Year Inventory**

The 2011 point source EI data were extracted from STARS on March 31, 2023. The extracted data include reported annual and ozone season daily emissions of NO<sub>x</sub> and VOC for each site in the DFW and HGB 2008 ozone NAAQS nonattainment areas that submitted a 2011 EI. The data reflect revisions to the 2011 EI that were reviewed, approved, and entered into STARS on or before the extract date.

### 2.2.3 Updated Analysis and Attainment Year Inventories

Updated 2023 analysis year and 2026 attainment year inventories were projected from the 2019 through 2021 emissions inventories, which were developed according to the general requirements described in Section 2.2.1: *Emissions Inventory Development*.

NO<sub>x</sub> and VOC emissions were projected using the maximum of the 2019, 2020, or 2021 emission rates. This approach follows EPA's guidance, which assumes stable emissions trends when projecting future emissions.<sup>6</sup> While continued economic growth is anticipated for the DFW and HGB 2008 ozone NAAQS nonattainment areas, EPA has noted that emissions trends for ozone precursors generally have remained stable or declined even during economic growth; therefore, EPA makes similar assumptions when projecting emissions for many source categories. This approach is also consistent with historic NO<sub>x</sub> and VOC emission trends for the area. Point source NO<sub>x</sub> emissions trends have been flat and point source VOC emissions trends have been declining in the DFW and HGB 2008 ozone NAAQS nonattainment areas over the last ten years. Emissions trend data is available at TCEQ's [Air Success](https://www.tceq.texas.gov/airquality/airsuccess/airsucsessemissions) webpage (<https://www.tceq.texas.gov/airquality/airsuccess/airsucsessemissions>).

The 2019 through 2021 point source EI data were extracted from STARS on March 31, 2023. The extracted data include reported annual and ozone season daily emissions of NO<sub>x</sub> and VOC for each site in the DFW and HGB 2008 ozone NAAQS nonattainment areas that submitted a 2019, 2020, or 2021 EI. The data reflect revisions to EIs that were reviewed, approved, and entered into STARS on or before the extract date.

A summary of the point source RFP inventories is presented in:

- Table 2-3: *10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2011 Base Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*;
- Table 2-4: *10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 Analysis Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*;
- Table 2-5: *10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2026 Attainment Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*;
- Table 2-6: *Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2011 Base Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*;
- Table 2-7: *Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 Base Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*; and

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<sup>6</sup> United States Environmental Protection Agency. "Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations." Accessed July 13, 2023. [https://www.epa.gov/sites/default/files/2017-07/documents/ei\\_guidance\\_may\\_2017\\_final\\_rev.pdf](https://www.epa.gov/sites/default/files/2017-07/documents/ei_guidance_may_2017_final_rev.pdf).

- Table 2-8: *Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2026 Attainment Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day).*

## 2.3 AREA SOURCES

### 2.3.1 Emissions Inventory Development

Stationary emissions sources that do not meet the reporting requirements of 30 TAC §101.10 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 VOC emissions sources include oil and gas production sources, printing operations, industrial coatings, degreasing solvents, house paints, gasoline service station underground tank filling, and vehicle refueling operations. Examples of typical fuel combustion sources that emit NO<sub>x</sub> include oil and gas production sources, stationary source fossil fuel combustion at residences and businesses, outdoor refuse burning, and structure fires.

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

### 2.3.2 Updated 2011 Base Year Inventory

The 2011 area source EIs were developed using EPA-generated emissions inventories; TCEQ-contracted projects to develop emission inventories; TCEQ staff projects to develop emission inventories; and projecting 2008 EIs by applying growth factors derived from Eastern Research Group (ERG) study data, the [Economy and Consumer Credit Analytics](http://www.economy.com/default.asp) website (<http://www.economy.com/default.asp>), and the United States Energy Information Administration's *Annual Energy Outlook* publication. The documentation for development of the ERG study projection factors can be found in Appendix 3: *Growth Factors for Area and Point Sources*.

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 inventories through EPA's [2011 NEI Data](https://www.epa.gov/air-emissions-inventories/2011-national-emissions-inventory-nei-data) website (<https://www.epa.gov/air-emissions-inventories/2011-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, 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.

TCEQ committed significant resources to improve the oil and gas area source inventory categories for the 2011 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 development of the oil and gas emissions calculator can be found in Appendix 4: *Characterization of Oil and Gas Production Equipment and Develop a Methodology to Estimate Statewide Emissions*.

For those area source categories affected by TCEQ rules, rule effectiveness factors are applied to the baseline emissions to estimate controlled emissions. These factors address the efficiency of the controls and the percentage of the category's population affected by the rule. Quality assurance of area source emissions involves ensuring that the activity data used for each category is current and valid. Data such as current population figures, fuel usage, and material usage were updated, and EPA guidance on emissions factors was used. Other routine efforts such as checking calculations for errors and conducting reasonableness and completeness checks were implemented.

### **2.3.3 Updated Analysis and Attainment Year Inventories**

Updated 2023 analysis year and 2026 attainment year inventories were developed according to the general requirements described in Section 2.3.1: *Emissions Inventory Development*. TCEQ designated the 2020 EI as the starting point for EI projections of area source categories for the attainment year because it is the most recently available periodic inventory year.

The 2020 area source EI was developed in accordance with the requirements of the Air Emissions Reporting Requirements (AERR) rule. The 2020 EI was developed using EPA-generated emissions inventories, TCEQ-contracted projects to develop emission inventories, and TCEQ staff projects to develop emission inventories. A significant improvement made for the 2020 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 EPA for these fuel combustion sources. The documentation for development of the ICI combustion emissions calculator is provided in Appendix 5: *Industrial, Commercial, and Institutional (ICI) Fuel Use Study*.

Another significant improvement made for the 2020 EI was the use of updated emission factors for volatile chemical product (VCP) categories developed by EPA. The documentation for development of the improved VCP emissions is provided in Appendix 6: *2020 EPA Volatile Chemical Product (VCP) Nonpoint Emissions Methodology and Operator (NEMO) Instructions (Draft Solvents NEMO)*.

The area source oil and gas inventory production categories have been updated using 2020 production data from the Railroad Commission of Texas (RRC).

The updated 2023 analysis year and 2026 attainment year inventories for the area source categories were developed using projection factors derived from Appendix 3. The study in this appendix contains individual projection factors for each source category and for each forecasting year. This projection method is EPA's standard and accepted methodology for developing future year emissions inventories.

The 2023 and 2026 area source EIs were developed by applying the selected emissions projection factor to the 2020 emissions for each area source category. Rules controlling emissions from industrial coatings, portable fuel containers, 30 TAC Chapter 117 Subchapter D controls on minor sources in ozone nonattainment areas, and gasoline station underground tank filling (Stage I) were applied in the base year inventory. Federal New Source Performance Standards Subpart OOOO emissions reductions were applied to the 2020 projection base year inventory but not the 2011 base year inventory because the compliance deadlines occurred in 2012 and 2016. No additional controls were incorporated into the attainment year inventories; see Chapter 4 for additional details.

A summary of the area source RFP inventories is presented in Tables 2-3 through 2-8.

## **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, drilling rigs, and commercial marine vessels (CMV). For this proposed DFW-HGB RFP SIP revision, emissions inventories for non-road sources were developed for the following subcategories: non-road model categories, airports, locomotives, CMVs (applicable for certain counties in the HGB area only), and drilling rigs used in upstream oil and gas exploration activities. The airport subcategory includes estimates for emissions from the aircraft, auxiliary power units (APU), and ground support equipment (GSE) subcategories added together and presented as a total. The sections below describe the emissions estimates methodologies used for the non-road mobile source subcategories.

### **2.4.1 Non-road Model Categories Emissions Estimation Methodology**

The MOVES3 model is EPA's latest mobile source emissions model available for estimating non-road source category emissions at the time of inventory development. The MOVES4 model was not used in this SIP revision since TCEQ had already invested significant resources to develop a non-road mobile source EI using MOVES3. As EPA stated in its notice of availability published in the Federal Register on September 12, 2023, "[...] state and local agencies that have already completed significant work on a SIP with a version of MOVES3 (e.g., attainment modeling has already been completed with MOVES3) may continue to rely on this earlier version of MOVES" (88 FR 62567, 62569). TCEQ used the most recent Texas-specific utility for the non-road mobile component of the MOVES3 model, called Texas Nonroad utility version 2.2 (TexN2.2), to calculate emissions from all non-road mobile source equipment and recreational vehicles, with the exception of airports, locomotives, CMVs, and drilling rigs used in upstream oil and gas exploration activities. Because emissions for airports, CMVs, and locomotives are not included in either the MOVES3 model or the TexN2.2 utility, the emissions for these categories were estimated using other EPA-approved methods and guidance as described in the sections below. Although emissions for drilling rigs are included in the MOVES3 model and TexN2.2 utility, alternate emissions estimates were developed for that source category to develop more accurate county-level inventories as described in Section 2.4.2: *Drilling Rig Diesel Engine Emissions Estimation*

*Methodology.* The equipment populations for drilling rigs were set to zero in the TexN2.2 utility to avoid double counting emissions from these sources.

TCEQ has conducted equipment survey studies that focused on various equipment categories operating in different areas of Texas, including diesel construction equipment, liquid propane gas-powered forklifts, and agricultural equipment. The resulting survey data contributed to the updating of inputs to the TexN2.2 utility to estimate non-road emissions more accurately for the State of Texas instead of using the national default values in EPA's MOVES3 model.

The TexN2.2 utility was updated to be compatible with the MOVES3 model. In addition, enhancements were added to the utility to streamline the way TexN2.2 handles alternative equipment scrappage curves and generates county databases for submittal for the AERR and NEI, resulting in version TexN2.2. The non-road model category emissions included in this proposed DFW-HGB RFP SIP revision were developed from a TCEQ-commissioned study using the TexN2.2 utility. More information regarding the development of these emissions is provided in the ERG report in Appendix 7: *Development of the Non-road Model RFP Emissions Inventories for the HGB Eight-County and DFW 10-County Ozone Nonattainment Areas.*

#### **2.4.2 Drilling Rig Diesel Engine Emissions Estimation Methodology**

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 these sources 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 uncontrolled and controlled drilling rig emissions characterization profiles from this study were combined with county-level drilling activity data obtained from RRC to develop the drilling rigs EI. The documentation of procedures used in developing the drilling rigs EI can be found in Appendix 8: *2014 Statewide Drilling Rig Emissions Inventory with Updated Trends Inventories.*

#### **2.4.3 CMV and Locomotive Emissions Estimation Methodology**

The CMV EI was developed from a TCEQ-commissioned study using EPA-accepted EI development methods. The CMV EI includes at-port and underway emissions activity data from Category 1, 2, and 3 CMVs by county for applicable counties in the HGB 2008 nonattainment area. Documentation of the methods and procedures used to develop the CMV EI can be found in Appendix 9: *2020 Texas CMV Emissions Inventory and 2011 through 2050 Trend Inventories.*

A U.S. Army Corps of Engineers project to deepen and widen the Houston Ship Channel (Project 11), once complete, is expected to reduce NO<sub>x</sub> emissions from ocean-going vessels due to improved traffic flow. The project is estimated to be complete by the 2026 attainment year for the HGB 2008 ozone NAAQS nonattainment area. Since these traffic flow improvements were not captured in the study TCEQ commissioned

to develop the CMV EI, TCEQ proposes adjusting the CMV EI to account for anticipated NO<sub>x</sub> emissions reductions resulting from the completion of Project 11 by 2026. To account for improved vessel traffic, the total 2026 NO<sub>x</sub> emissions for all Category 3 vessels (ocean-going vessels) were reduced by 3% based on the projections provided from project studies.<sup>7</sup> If information becomes available prior to adoption that indicates Project 11 will not be complete by 2026, TCEQ will remove the CMV EI NO<sub>x</sub> adjustment for adoption.

The locomotive EI was developed from a TCEQ-commissioned study using EPA-accepted EI development methods. The locomotive EI includes line haul and rail yard emissions activity data from all Class I and Class III (currently, there are no Class II operators in Texas) locomotive activity and emissions by rail segment. Documentation of methods and procedures used to develop the locomotive EI can be found in *Appendix 10: 2020 Texas Statewide Locomotive and Rail Yard Emissions Inventory and 2011 through 2050 Trend Inventories*.

#### **2.4.4 Airport Emissions Estimation Methodology**

The airport EI was developed from a TCEQ-commissioned study using the Federal Aviation Administration's (FAA) Aviation Environmental Design Tool (AEDT). AEDT is the most recent FAA model for estimating airport emissions.

The airport emissions categories used for this proposed DFW-HGB RFP SIP revision included aircraft (commercial air carriers, air taxis, general aviation, and military), APU, and GSE operations. Documentation of methodology and procedures used to develop the DFW and HGB 2008 ozone NAAQS nonattainment areas' airport emissions inventories can be found in *Appendix 11: 2020 Texas Statewide Airport Emissions Inventory and 2011 through 2050 Trend Inventories*.

#### **2.4.5 Updated 2011 Base Year Inventory**

For certain non-road mobile source categories detailed below, the updated 2011 base year EI was developed from the 2020 periodic EI to provide consistency between emissions estimation approaches used for this proposed DFW-HGB RFP SIP revision. Exceptions and specific details about non-road source category inventory development are included in the relevant section below.

The Texas Low Emission Diesel (TxLED) Program was implemented in 2002 to reduce NO<sub>x</sub> emissions from diesel-powered motor vehicles and non-road equipment. TxLED regulations apply to all diesel fuel sold or supplied for use in motor vehicles and non-road equipment operating in 110 central and eastern Texas counties, including the DFW and HGB 2008 ozone NAAQS nonattainment areas. Historically, TxLED NO<sub>x</sub> emissions reductions have been calculated based upon an EPA 2001 memorandum.<sup>8</sup>

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<sup>7</sup> [https://www.swg.usace.army.mil/Portals/26/docs/Planning/Public%20Notices-Civil%20Works/HSC-ECIP%20FIFR-EIS/App%20J%20%20Clean%20Air%20Act%20%20GC%20Determination%20\(30Jan20\).pdf?ver=2020-04-29-095348-507](https://www.swg.usace.army.mil/Portals/26/docs/Planning/Public%20Notices-Civil%20Works/HSC-ECIP%20FIFR-EIS/App%20J%20%20Clean%20Air%20Act%20%20GC%20Determination%20(30Jan20).pdf?ver=2020-04-29-095348-507)

<sup>8</sup> <https://www.epa.gov/sites/default/files/2016-11/documents/tx-led-fuel-benefit-2001-09-27.pdf>

In February 2023, EPA released new guidance on calculating emissions reductions from TxLED.<sup>9</sup> This new EPA guidance applies to analysis years 2021 and later, including the 2023 and 2026 analysis years in this RFP SIP revision.

Since the base year for this SIP revision is 2011, it is unaffected by the new TxLED emissions reductions guidance. For this SIP revision, the 2001 EPA TxLED guidance memo was used to develop the 2011 base year EIs for the DFW and HGB 2008 ozone NAAQS nonattainment areas.

#### 2.4.5.1 Updated 2011 Base Year Non-road Model Category Inventory

The 2011 base year EI used for all non-road mobile model-specific source categories was developed using TexN2.2 with updated county-specific input data, including 2011 meteorological input data, as detailed in Appendix 7.

#### 2.4.5.2 Updated 2011 Base Year Drilling Rig Diesel Engines Inventory

The 2011 base year EI for drilling rig diesel engines used in upstream oil and gas exploration activities was developed using the results of a 2015 statewide EI improvement study combined with 2011 drilling activity data from RRC. The documentation of procedures used in developing the 2011 drilling rigs EI can be found in Appendix 8.

#### 2.4.5.3 Updated 2011 Base Year CMV and Locomotive Inventory

The 2011 base year CMV emissions were taken from the 2011 trend EI developed as part of a TCEQ-commissioned study detailed in Appendix 9.

The 2011 base year locomotive emissions were taken from the 2011 trend EI developed as part of a TCEQ-commissioned study detailed in Appendix 10.

#### 2.4.5.4 Updated 2011 Base Year Airport Inventory

The 2011 base year airport emissions were taken from the 2011 trend EI developed as part of a TCEQ-commissioned study detailed in Appendix 11.

### **2.4.6 Updated Uncontrolled Analysis and Attainment Year Inventories**

The non-road model category uncontrolled emissions for each analysis year (2011 base year, 2023 analysis year, and 2026 attainment year) were calculated by removing all federal and state control measures from the TexN2.2 utility runs as detailed in Appendix 7.

The uncontrolled 2011 EI for drilling rigs was developed using 2011 drilling activity data and the uncontrolled factors from the ERG report found in Appendix 8. An uncontrolled 2023 and an uncontrolled 2026 EI for drilling rigs were developed using 2020 drilling activity data (the most recently available activity data) and the uncontrolled factors from the ERG report found in Appendix 8. Because future drilling activity is difficult to predict, the 2020 drilling activity data were held constant to the

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<sup>9</sup> <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1016IFV.pdf>

2023 analysis year and 2026 attainment year, since 2020 data were the most current available.

TCEQ calculated updated, uncontrolled 2023 and 2026 emissions from CMVs based on the information detailed in Appendix 9. The uncontrolled 2026 CMV emissions were adjusted to account for the projected improvements in ocean-going vessel traffic efficiency due to the widening of the Houston Ship Channel, as mentioned above in Section 2.4.3.

TCEQ calculated updated, uncontrolled 2023 and 2026 emissions from locomotives based on the information as detailed in Appendix 10.

TCEQ calculated updated, uncontrolled 2023 and 2026 emissions from airports based on the information as detailed in Appendix 11.

#### **2.4.7 Updated Controlled Analysis and Attainment Year Inventories**

The non-road model category controlled emissions for each analysis year (2011 base year, 2023 analysis year, and 2026 attainment year) were calculated by accounting for all federal and state control measures in the TexN2.2 utility runs as detailed in Appendix 7.

In February 2023, EPA released new guidance on calculating emissions reductions from TxLED.<sup>10</sup> This new EPA guidance applies to analysis years 2021 and later, including the 2023 and 2026 analysis years in this RFP SIP revision. TCEQ is reviewing the new EPA guidance to understand it how impacts non-road emissions inventories in Texas. To be conservative, this proposed DFW-HGB RFP SIP revision set the 2023 and 2026 emissions reductions from TxLED to zero for both areas. For reference, the 2023 and 2026 TxLED emissions reductions calculated using the 2001 EPA guidance memo are provided in Section 4.1.1: *TxLED Reductions*.

Controlled 2023 and 2026 emissions for diesel drilling rigs were based on 2020 drilling activity data (the most recently available activity data) combined with the 2023 or 2026 year-specific controlled emission factors from the ERG report found in Appendix 8.

TCEQ calculated updated controlled 2023 and 2026 emissions from CMVs based on the information detailed in Appendix 9. The controlled 2026 CMV emissions were adjusted to account for the projected improvements in ocean-going vessel traffic efficiency due to the widening of the Houston Ship Channel, as mentioned in Section 2.4.3.

TCEQ calculated updated controlled 2023 and 2026 emissions from locomotives based on the information as detailed in Appendix 10.

TCEQ calculated updated controlled 2023 and 2026 emissions from airports based on the information as detailed in Appendix 11.

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<sup>10</sup> <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P1016IFV.pdf>

A summary of the non-road mobile source RFP inventories is presented in Tables 2-3 through 2-8.

## 2.5 ON-ROAD MOBILE SOURCES

The 2011, 2023, and 2026 on-road mobile source emissions inventories for this proposed DFW-HGB RFP SIP revision were developed under contract by the North Central Texas Council of Governments (NCTCOG) and the Texas A&M Transportation Institute (TTI) for the DFW and HGB 2008 ozone NAAQS nonattainment areas, respectively. The data, methods, activity inputs, emissions factors, and results are documented in the NCTCOG and TTI reports provided in:

- Appendix 12: *Dallas-Fort Worth Motor Vehicle Emissions Simulator 3 (MOVES3)-Based Reasonable Further Progress On-road Inventories and Control Strategy Reductions for 2011, 2023, and 2026;*
- Appendix 13: *Updated 2026 On-road EIs with RFG in all 10 Counties for the Dallas-Fort Worth (DFW) 2008 Eight-Hour Ozone Reasonable Further Progress (RFP); and*
- Appendix 14: *Houston-Galveston-Brazoria (HGB) 2008-Eight-Hour Ozone Reasonable Further Progress (RFP) On-Road Mobile Emissions Inventories.*

The inventories include the 10 DFW and eight HGB counties designated as nonattainment for the 2008 eight-hour ozone NAAQS. As required by the SIP requirements rule, the on-road inventories are based on vehicle miles traveled (VMT) estimates and emission rates for an average summer work weekday. MOVES3, the latest major revision of EPA's mobile source emission model available at the time of inventory development, was used to estimate the summer weekday emission rates in units of grams per mile for NO<sub>x</sub> and VOC. The MOVES4 model was not used in this SIP revision since TCEQ had already invested significant resources to develop an on-road mobile source EI using MOVES3. As EPA stated in its notice of availability published in the Federal Register on September 12, 2023, "[...] state and local agencies that have already completed significant work on a SIP with a version of MOVES3 (e.g., attainment modeling has already been completed with MOVES3) may continue to rely on this earlier version of MOVES" (88 FR 62567, 62569). The roadway link-level VMT estimates were obtained from travel demand modeling for the DFW 2008 ozone NAAQS nonattainment area and the HGB 2008 ozone NAAQS nonattainment area for each analysis year.

### 2.5.1 On-Road Emissions Inventory Development

On-road mobile emissions sources consist of automobiles, trucks, motorcycles, and other motor vehicles traveling on public roadways. On-road mobile source ozone precursor emissions are usually categorized as combustion-related emissions or evaporative hydrocarbon emissions. Combustion-related emissions are estimated for vehicle engine exhaust. Evaporative hydrocarbon emissions are estimated for the fuel tank and other evaporative leak sources on the vehicle. To calculate emissions, both the rate of emissions per unit of activity (emission factors) and the number of units of activity must be determined.

Emission factors for this proposed DFW-HGB RFP SIP revision were developed using EPA's mobile emissions factor model, MOVES3. The MOVES3 model may be run using

national default information or the default information may be modified to simulate data specific to an area, such as the control programs, driving behavior, meteorological conditions, and vehicle characteristics. Because modifications to the national default values influence the emission factors calculated by the MOVES3 model, to the extent that local values are available, parameters that are used reflect local conditions. The localized inputs used for the on-road mobile EI development include vehicle speeds for each roadway link, vehicle populations, vehicle hours idling, temperature, humidity, vehicle age distributions for each vehicle type, percentage of miles traveled for each vehicle type, type of inspection and maintenance (I/M) program, fuel control programs, and gasoline Reid vapor pressure controls.

To estimate on-road mobile source emissions, emission factors calculated by the MOVES3 model must be multiplied by the level of vehicle activity. On-road mobile source emissions factors are expressed in units of grams per mile, grams per vehicle (evaporative), and grams per hour (extended idle); therefore, the activity data required to complete the inventory calculation are VMT in units of miles per day, vehicle populations, truck hoteling activity, and source hours idling. The level of vehicle travel activity is developed using travel demand models (TDM) run by the Texas Department of Transportation or by the local metropolitan planning organizations. The TDMs are validated against a large number of ground counts, i.e., traffic passing over counters placed in various locations throughout a county or area. For SIP inventories, VMT estimates are calibrated against outputs from the federal Highway Performance Monitoring System, a model built from a different set of traffic counters. Vehicle populations by source type are derived from the Texas Department of Motor Vehicles' registration database and, as needed, national estimates for vehicle source type population.

In addition to the number of miles traveled on each roadway link, the speed on each roadway type or segment is also needed to complete an on-road EI. Roadway speeds, required inputs for the MOVES3 model, are calculated by using the activity volumes from the TDM and a post-processor speed model.

A summary of the on-road mobile source VMT used to develop the various NO<sub>x</sub> and VOC emissions estimates for the DFW 2008 ozone NAAQS nonattainment area are presented in Table 2-1: *DFW 2008 Ozone NAAQS Nonattainment Area RFP Average Summer Weekday On-Road Mobile Source VMT (miles per day)*.

A summary of the on-road mobile source VMT used to develop the various NO<sub>x</sub> and VOC emissions estimates for the HGB 2008 ozone NAAQS nonattainment area are presented in Table 2-2: *HGB 2008 Ozone NAAQS Nonattainment Area RFP Average Summer Weekday On-Road Mobile Source VMT (miles per day)*.

The 2011, 2023, and 2026 controlled and uncontrolled emissions inventories are summarized in Section 2.7: *Emissions Summary*.

For complete documentation of the development of the on-road mobile source emissions inventories for the DFW 2008 ozone NAAQS nonattainment area RFP demonstration, refer to Appendices 12 and 13, and for the HGB 2008 ozone NAAQS nonattainment area RFP demonstration, refer to Appendix 14. The complete set of input and output files are available upon request from TCEQ's Air Quality Division.



**Table 2-1: DFW 2008 Ozone NAAQS Nonattainment Area RFP Average Summer Weekday On-Road Mobile Source VMT (miles per day)**

RFP Analysis Year	VMT <sup>1</sup>
2011	186,852,708
2023	234,338,498
2026	246,707,882

Note 1: For this RFP SIP revision, the same VMT is used for the uncontrolled and controlled scenarios.

**Table 2-2: HGB 2008 Ozone NAAQS Nonattainment Area RFP Average Summer Weekday On-Road Mobile Source VMT (miles per day)**

RFP Analysis Year	VMT <sup>1</sup>
2011	145,516,066
2023	199,141,361
2026	208,706,310

Note 1: For this RFP SIP revision, the same VMT is used for the uncontrolled and controlled scenarios.

### 2.5.2 On-Road Mobile Updated 2011 Base Year Inventory

The 2011 base year EI for on-road mobile sources was updated using emission factors calculated using the MOVES3 model. Additional updates were made to incorporate the latest activity estimates from the DFW and HGB TDM 2011 networks. Only control strategies implemented prior to 2011 were included in the input to the EI development for the 2011 on-road mobile source base year emissions inventories. Those controls include: the pre-1990 FMVCP, the 1990 to 2011 FMVCP, reformulated gasoline (RFG), the East Texas Regional Low Reid Vapor Pressure (RVP) Gasoline Program, federal ultra-low sulfur diesel, the vehicle I/M program, and on-road TxLED, where applicable. The activity levels used to calculate the EI reflect the 2011 roadway networks with 2011 VMT and speeds.

The TxLED Program was implemented in 2002 to reduce NO<sub>x</sub> emissions from diesel-powered motor vehicles and non-road equipment. TxLED regulations apply to all diesel fuel sold or supplied for use in motor vehicles and non-road equipment operating in 110 central and eastern Texas counties, including the DFW and HGB 2008 ozone NAAQS nonattainment areas. Historically, TxLED NO<sub>x</sub> emissions reductions have been calculated based upon an EPA 2001 memorandum.<sup>11</sup>

In February 2023, EPA released new guidance on calculating emissions reductions from TxLED.<sup>12</sup> This new EPA guidance applies to analysis years 2021 and later, including the 2023 and 2026 analysis years in this RFP SIP revision.

Since the base year for this SIP revision is 2011, it is unaffected by the new TxLED emissions reductions guidance. For this SIP revision, the 2001 EPA TxLED guidance memo was used to develop the 2011 base year EIs for the DFW and HGB 2008 ozone NAAQS nonattainment areas.

Summaries of the 2011 EIs are presented in Section 2.7. For complete documentation of the development of the EI and details on MOVES3 model inputs, refer to Appendix

<sup>11</sup> <https://www.epa.gov/sites/default/files/2016-11/documents/tx-led-fuel-benefit-2001-09-27.pdf>

<sup>12</sup> <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P10161FV.pdf>

12 for the DFW 2008 ozone NAAQS nonattainment area and Appendix 14 for the HGB 2008 ozone NAAQS nonattainment area.

### **2.5.3 On-Road Mobile Updated Adjusted Base Year Inventories**

The on-road ABY emissions inventories are not required for this proposed DFW and HGB RFP SIP revision. See Section 2.1.4: *Updated Adjusted Base Year Inventories* for additional information.

### **2.5.4 On-Road Mobile Updated Uncontrolled Analysis and Attainment Year Inventories**

The uncontrolled on-road mobile emissions inventories for the 2023 analysis year and 2026 attainment year were developed using emission factors that reflect only control strategies implemented prior to 2011. Those controls include pre-1990 FMVCP, post-1990 FMVCP, and the 1992 RVP control. MOVES3 was used to develop the emissions inventories for this proposed DFW-HGB RFP SIP revision. The activity levels were updated to include the latest output from the DFW and HGB TDMs. The activity levels used to calculate the EI reflect the attainment roadway network, with attainment year VMT and speeds. A summary of the 2023 and 2026 EIs are presented in Section 2.7. For complete documentation of the development of the EI and details on MOVES3 model inputs, refer to Appendix 12 for the DFW 2008 ozone NAAQS nonattainment area and Appendix 14 for the HGB 2008 ozone NAAQS nonattainment area.

### **2.5.5 On-Road Mobile Updated Controlled Analysis and Attainment Year Inventories**

The controlled on-road mobile emissions inventories for the 2023 analysis year and 2026 attainment year were developed using emission factors that include the effects of pre-1990 control strategies, the effects of all control strategies between 1990 and 2011, and the effects of all control strategies from 2011 through the 2023 and 2026 analysis years. The effects of the post-1990 control strategies between 2011 and the 2023 and 2026 analysis years are creditable reductions used to demonstrate compliance with RFP requirements. The pre- and post-1990 controls include pre-1990 FMVCP, post-1990 FMVCP, RFG, the East Texas Regional Low RVP Gasoline Program, federal ultra-low sulfur diesel, and the vehicle I/M program. Control strategies used to demonstrate RFP for DFW and HGB are documented in Chapter 4: *Control Measures to Achieve Target Levels*. Details of the on-road control strategies are documented in Appendices 12 and 13 for the DFW 2008 ozone NAAQS nonattainment area and Appendix 14 for the HGB 2008 ozone NAAQS nonattainment area.

In February 2023, EPA released new guidance on calculating emissions reductions from TxLED.<sup>13</sup> This new EPA guidance applies to analysis years 2021 and later, including the 2023 and 2026 analysis years in this RFP SIP revision.

TCEQ is reviewing the new EPA guidance to understand how it impacts on-road emissions inventories in Texas. To be conservative, this proposed DFW-HGB RFP SIP revision set the 2023 and 2026 emissions reductions from TxLED to zero for both

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<sup>13</sup> <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1016IFV.pdf>

areas. For reference, the 2023 and 2026 TxLED emissions reductions calculated using the 2001 EPA guidance memo are provided in Section 4.1.1.

The activity levels used to calculate the attainment year emissions inventories reflect the 2023 or 2026 roadway network with 2023 or 2026 VMT and speeds. A summary of the 2023 and 2026 EIs are presented in Section 2.7. For complete documentation of the development of the DFW 2008 ozone NAAQS nonattainment area emissions inventories and HGB 2008 ozone NAAQS nonattainment area EIs and details on MOVES3 model inputs, refer to Appendices 12 and 13 for DFW and Appendix 14 for HGB.

Quantification of specific control reductions is documented in Chapter 4 with details for on-road control reductions presented in Appendices 12 and 13 for the DFW 2008 ozone NAAQS nonattainment area and Appendix 14 for the HGB 2008 ozone NAAQS nonattainment area. Motor vehicle emissions budget calculations for the 2023 analysis year and 2026 attainment year are documented in Chapter 5: *Motor Vehicle Emissions Budgets*.

## **2.6 BIOGENIC SOURCES**

Biogenic sources include VOC emissions from crops, lawn grass, and trees as well as small amounts of NO<sub>x</sub> from soils and other sources. Previously, under the Consolidated Emissions Reporting Rule (June 2002) and earlier emissions reporting rules, biogenic sources were required to be reported along with point, nonpoint, on-road mobile, and non-road mobile sources. Beginning with the AERR rule (December 2008), the emissions required to be reported to EPA no longer include emissions from biogenic sources. Therefore, as of the 2011 reporting year, TCEQ's comprehensive triennial EI no longer includes emissions from biogenic sources. Biogenic inventories may still be developed for air quality modeling purposes, as necessary.

## **2.7 EMISSIONS SUMMARY**

Uncontrolled and controlled 2011 base year NO<sub>x</sub> and VOC emissions for each RFP source category are summarized in Tables 2-3 and 2-6.

For the 2023 analysis year, the uncontrolled and controlled NO<sub>x</sub> and VOC emissions for each RFP source category and analysis year are summarized in Tables 2-4 and 2-7.

For the 2026 attainment year, the uncontrolled and controlled NO<sub>x</sub> and VOC emissions for each RFP source category and analysis year are summarized in Tables 2-5 and 2-8.

Between 1990 and 2011, substantial emissions reductions have occurred in all EI source categories (stationary sources as well as mobile sources) due to regulations implemented at the federal, state, and local levels and innovative programs implemented by TCEQ. As noted in Section 2.1, the 2011 EI for stationary sources includes all controls and associated reductions implemented by the end of the 2011 base year. No additional stationary source controls are quantified for this proposed DFW-HGB RFP SIP revision; therefore, the 2011 controlled stationary source EI is equivalent to the 2011 existing controlled stationary source EI.

Similarly, the 2023 analysis year and 2026 attainment year inventories reflect: 1) all controls and associated reductions implemented by the end of the projection base EI

year and 2) growth from the projection base EI. Where there is no difference between the uncontrolled and controlled emissions for the base year or the attainment year, there were no controls quantified for the projected source inventories.

The DFW 2008 ozone NAAQS nonattainment area includes the nine DFW counties previously designated nonattainment under the one-hour and/or the 1997 eight-hour ozone NAAQS: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties. Wise County is the only county in the DFW 10-county area designated as nonattainment under the 2008 eight-hour ozone NAAQS but not previously designated as nonattainment under a prior ozone NAAQS (i.e., one-hour or 1997). The timing of Wise County's designation impacts certain RFP requirements and therefore Wise County is grouped separately, when appropriate, in Appendix 1.

**Table 2-3: 10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2011 Base Year Average Summer Weekday NO<sub>x</sub> and VOC emissions (tons per day)**

Emissions Inventory Source <sup>1</sup>	Uncontrolled or Existing Controlled NO <sub>x</sub>	Controlled NO <sub>x</sub>	Uncontrolled or Existing Controlled VOC	Controlled VOC
Non-Road Mobile Sources	180.27	104.92	182.82	65.37
On-Road Mobile Sources	252.23 <sup>2</sup>	252.23	106.99 <sup>2</sup>	106.99
Area Sources	50.98	50.98	291.31	291.31
Point Sources	39.95	39.95	29.89	29.89
<b>Total of All Sources</b>	<b>523.43</b>	<b>448.08</b>	<b>611.01</b>	<b>493.56</b>

Note 1: The 10-county DFW area includes all 10 counties designated nonattainment under the 2008 NAAQS: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties.

Note 2: The DFW 2008 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2011 reflect controls in place up to 2011, no post-2011 controls included.

**Table 2-4: 10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 Analysis Year Average Summer Weekday NO<sub>x</sub> and VOC emissions (tons per day)**

Emissions Inventory Source <sup>1</sup>	Uncontrolled or Existing Controlled NO <sub>x</sub>	Controlled NO <sub>x</sub>	Uncontrolled or Existing Controlled VOC	Controlled VOC
Non-Road Mobile Sources	196.44	61.99	233.25	49.81
On-Road Mobile Sources	107.08 <sup>2</sup>	79.56	54.10 <sup>2</sup>	41.62
Area Sources	37.51	37.51	301.57	301.57
Point Sources	33.46	33.46	21.18	21.18
<b>Total of All Sources</b>	<b>374.49</b>	<b>212.52</b>	<b>610.10</b>	<b>414.18</b>

Note 1: The 10-county DFW area includes all 10 counties designated nonattainment under the 2008 NAAQS: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties.

Note 2: The DFW 2008 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2023 reflect pre-1990 FMVCP, post-1990 FMVCP, and the 1992 RVP control.

**Table 2-5: 10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2026 Attainment Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)**

Emissions Inventory Source <sup>1</sup>	Uncontrolled or Existing Controlled NO <sub>x</sub>	Controlled NO <sub>x</sub>	Uncontrolled or Existing Controlled VOC	Controlled VOC
Non-Road Mobile Sources	206.26	60.08	246.45	51.56
On-Road Mobile Sources	86.09 <sup>2</sup>	66.72	46.46 <sup>2</sup>	35.39
Area Sources	36.22	36.22	296.25	296.25
Point Sources	33.46	33.46	21.18	21.18
<b>Total of All Sources</b>	<b>362.03</b>	<b>196.48</b>	<b>610.34</b>	<b>404.38</b>

Note 1: The 10-county DFW Area includes all 10 counties designated nonattainment under the 2008 NAAQS: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties.

Note 2: The DFW 2008 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2026 reflect pre-1990 FMVCP, post-1990 FMVCP, and the 1992 RVP control.

**Table 2-6: Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2011 Base Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)**

Emissions Inventory Source	Uncontrolled or Existing Controlled NO <sub>x</sub>	Controlled NO <sub>x</sub>	Uncontrolled or Existing Controlled VOC	Controlled VOC
Non-Road Mobile Sources	227.92	162.81	161.65	60.98
On-Road Mobile Sources	179.34 <sup>1</sup>	179.34	84.12 <sup>1</sup>	84.12
Area Sources	21.14	21.14	308.52	308.52
Point Sources	108.33	108.33	95.97	95.97
<b>Total of All Sources</b>	<b>536.73</b>	<b>471.62</b>	<b>650.26</b>	<b>549.59</b>

Note 1: The HGB 2008 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2011 reflect controls in place up to 2011, no post-2011 controls included.

**Table 2-7: Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 Analysis Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)**

Emissions Inventory Source	Uncontrolled or Existing Controlled NO <sub>x</sub>	Controlled NO <sub>x</sub>	Uncontrolled or Existing Controlled VOC	Controlled VOC
Non-Road Mobile Sources	298.67	117.01	209.75	45.62
On-Road Mobile Sources	82.87 <sup>1</sup>	61.55	45.03 <sup>1</sup>	33.85
Area Sources	33.87	33.87	311.04	311.04
Point Sources	105.53	105.53	79.17	79.17
<b>Total of All Sources</b>	<b>520.94</b>	<b>317.96</b>	<b>644.99</b>	<b>469.68</b>

Note 1: The HGB 2008 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2023 reflect pre-1990 FMVCP, post-1990 FMVCP, and the 1992 RVP control.

**Table 2-8: Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP Summary of the 2026 Attainment Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)**

<b>Emissions Inventory Source</b>	<b>Uncontrolled or Existing Controlled NO<sub>x</sub></b>	<b>Controlled NO<sub>x</sub></b>	<b>Uncontrolled or Existing Controlled VOC</b>	<b>Controlled VOC</b>
Non-Road Mobile Sources	312.36	106.42	221.27	47.09
On-Road Mobile Sources	66.47 <sup>1</sup>	50.93	38.70 <sup>1</sup>	28.98
Area Sources	34.40	34.40	317.47	317.47
Point Sources	105.53	105.53	79.17	79.17
<b>Total of All Sources</b>	<b>518.76</b>	<b>297.28</b>	<b>656.61</b>	<b>472.71</b>

Note 1: The HGB 2008 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2026 reflect pre-1990 FMVCP, post-1990 FMVCP, and the 1992 RVP control.

## CHAPTER 3: PROGRESS TOWARD MEETING TARGET EMISSIONS LEVELS

### 3.1 INTRODUCTION

#### 3.1.1 General RFP Requirements

This chapter describes how the Dallas-Fort Worth (DFW) and the Houston-Galveston-Brazoria (HGB) reasonable further progress (RFP) demonstrations are calculated, documents the RFP calculations, and provides a summary of the RFP demonstrations for all RFP analysis years. The attainment date for the DFW and HGB severe nonattainment areas is July 20, 2027, with an attainment year of 2026 (87 *Federal Register* (FR) 60926).

For this proposed DFW-HGB RFP state implementation plan (SIP) revision, a base year of 2011 was used to harmonize the RFP base year with the triennial reporting requirement of the Air Emissions Reporting Requirements (AERR) rule and for consistency with the previous 2008 Eight-Hour Ozone National Ambient Air Quality Standard (NAAQS) Emissions Inventory (EI) SIP Revision for the DFW and HGB 2008 ozone nonattainment areas. The required emissions reductions for RFP, as detailed below, are calculated as a percentage of the 2011 base year EI and must occur no later than the required timeframe.

The RFP requirements for this proposed DFW-HGB RFP SIP revision are to demonstrate:

- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the 10-county DFW 2008 ozone NAAQS nonattainment area;
- an 18% emissions reduction for the six-year period from January 1, 2021 through December 31, 2026 for the eight-county HGB 2008 ozone NAAQS nonattainment area; and
- RFP contingency plans for the DFW and HGB 2008 ozone NAAQS nonattainment areas in case of failure to demonstrate progress for a milestone (analysis) year or attainment year, calculated as a 3% emissions reduction of the base year inventory.

For RFP and contingency analyses, the requirement to calculate and account for the non-creditable emissions reductions due to pre-1990 Federal Motor Vehicle Control Program (FMVCP) reductions was removed under the United States Environmental Protection Agency's (EPA) *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2008 eight-hour ozone standard SIP requirements rule), published on March 6, 2015 (80 FR 12264). The RFP analyses presented in this DFW-HGB RFP SIP revision does not include any of the RFP elements or non-creditable effects related to the pre-1990 FMVCP.

#### 3.1.2 Fifteen Percent Emissions Reduction Requirement

The 2008 eight-hour ozone standard SIP requirements rule requires states with severe nonattainment areas to submit an RFP plan with a 15% emissions reduction for the first six years following the RFP base year. In accordance with the 2008 ozone standard SIP requirements rule, if a state chooses 2011 as a base year for a severe area designated nonattainment in 2012, the 15% reduction requirement covers the period from January 1, 2012 through December 31, 2017.

The first 15% RFP reduction achieved by an area under its initial ozone nonattainment designation is required to be from volatile organic compounds (VOC) emissions. In subsequent RFP demonstrations, if an area has demonstrated that nitrogen oxides (NO<sub>x</sub>) are effective at reducing ozone, the 15% reduction requirement can be fulfilled with a combination of NO<sub>x</sub> and VOC emission reductions.

EPA previously approved demonstrations of the 15% VOC-only reduction requirements for all counties within the DFW and HGB 2008 ozone NAAQS nonattainment areas, as noted in Table 3-1: *EPA Approval of 15% VOC-Only RFP SIP Revision for DFW and HGB Ozone NAAQS Nonattainment Areas*. Since all counties in the DFW and HGB 2008 ozone NAAQS nonattainment areas have satisfied the 15% VOC-only requirement this proposed DFW-HGB RFP SIP revision uses a combination of NO<sub>x</sub> and VOC emissions reductions to demonstrate the 15% requirement between 2012 and the 2017 analysis year.

**Table 3-1: EPA Approval of 15% VOC-Only RFP SIP Revision for DFW and HGB Ozone NAAQS Nonattainment Areas**

Area	County or Counties	Ozone NAAQS	Publication Date of EPA Approval	Federal Register Notice Citation
DFW	Collin, Dallas, Denton, and Tarrant	One-hour	April 12, 2005	70 FR 18993
DFW	Ellis, Johnson, Kaufman, Parker, and Rockwall	1997 eight-hour	October 7, 2008	73 FR 58475
DFW	Wise	2008 eight-hour	December 7, 2016	81 FR 88124
HGB	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller	One-hour	November 14, 2001	66 FR 57160

### 3.1.3 Additional Emissions Reduction Requirements

To demonstrate RFP for the DFW and HGB serious ozone nonattainment areas for the 2008 eight-hour ozone NAAQS, an additional 9% emissions reduction was required for the three-year period from January 1, 2018 to December 31, 2020. A combination of NO<sub>x</sub> and VOC emissions reductions were used to achieve the 9% reduction requirements.<sup>14</sup> EPA previously approved the 9% emissions reductions for the DFW and HGB 2008 ozone nonattainment areas as summarized in Table 3-2: *EPA Approval of 9% NO<sub>x</sub> and/or VOC Emissions Reductions between 2018 and 2020*.

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<sup>14</sup> NO<sub>x</sub> may be substituted for VOC under conditions defined in EPA's December 1993 [NO<sub>x</sub> Substitution Guidance](https://www3.epa.gov/ttn/naaqs/aqmguid/collection/cp2_old/19931201_oaqps_nox_substitution_guidance.pdf) (https://www3.epa.gov/ttn/naaqs/aqmguid/collection/cp2\_old/19931201\_oaqps\_nox\_substitution\_guidance.pdf).



**Table 3-2: EPA Approval of 9% NO<sub>x</sub> and/or VOC Emissions Reductions between 2018 and 2020**

Area	Counties	Ozone NAAQS	Publication Date of EPA Approval	<i>Federal Register</i> Notice Citation
DFW	Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise	2008 eight-hour	April 24, 2023	88 FR 24693
HGB	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller	2008 eight-hour	May 10, 2021	86 FR 24717

To demonstrate RFP for the DFW and HGB severe ozone nonattainment areas for the 2008 eight-hour ozone NAAQS, an additional 18% emissions reduction is required for the six-year period from January 1, 2021 to December 31, 2026. This proposed DFW-HGB RFP SIP revision, uses a combination of NO<sub>x</sub> and VOC emissions reductions to achieve the 18% reduction requirements.

### 3.1.4 Contingency Demonstration

Contingency measures are control requirements that would take effect and result in emissions reductions if an area fails to attain a NAAQS by the applicable attainment date or fails to demonstrate RFP. This proposed SIP revision contains a contingency plan for the DFW and HGB 2008 eight-hour ozone NAAQS nonattainment areas, as required by FCAA, §172(c)(9). For each area’s plan, the proposed contingency measures include a 3% reduction for a milestone (analysis) year and for the attainment year. A combination of NO<sub>x</sub> and VOC emissions reductions may be used to achieve the 3% contingency reduction requirements. The amount of contingency emissions reductions required is based on 3% of the 2011 RFP base year emissions of NO<sub>x</sub> and VOC.

EPA has interpreted recent court decisions to have invalidated key aspects of EPA’s historical approach to implementing the contingency measure requirement. EPA had historically accepted the use of surplus emissions reductions from previously implemented control measures to fulfill the contingency measure requirements. However, EPA’s new draft guidance on contingency measures, published in the *Federal Register* for public comment on March 23, 2023, indicates that contingency measures must be conditional and prospective (not previously implemented) based on the recent court rulings (88 FR 17571). The draft guidance also establishes an entirely new scheme for determining the amount of emissions reductions necessary to address the contingency requirement.

The contingency measures proposed in the concurrent 30 TAC Chapter 115 rulemaking (Rule Project No. 2023-116-115-AI) are conditional and prospective (not previously implemented) which follow EPA’s interpretation of recent court decisions. These measures do not rely on the historical approach of using surplus emissions

reductions to fulfill the contingency measure requirements. Since EPA had not issued final guidance to states regarding the amount of required reductions from contingency measures at the time this SIP revision was developed, this SIP revision relies on the historically approved approach (3% of the base year emissions) to determine the amount of emissions reductions necessary to address the contingency requirement.

Contingency measure reductions for the DFW and HGB 2008 ozone NAAQS nonattainment areas would be achieved through reductions in VOC emissions. The contingency plan consists of reductions from six source categories: degreasers, industrial maintenance coatings, industrial cleaning solvents, emulsified asphalt paving, traffic markings coatings, and industrial adhesives. These contingency measures are discussed in further detail in Section 4.7: *Contingency Measures*.

Summaries of the contingency plans and measures are provided in Section 4.7.

- Table 4-9: *DFW 2008 Ozone NAAQS Nonattainment Area RFP Contingency Plan*; and
- Table 4-10: *HGB 2008 Ozone NAAQS Nonattainment Area RFP Contingency Plan*.

### **3.1.5 RFP Demonstration Method**

Required severe nonattainment area RFP demonstration elements for the 10-county DFW 2008 ozone NAAQS nonattainment area and the eight-county HGB 2008 ozone NAAQS nonattainment area include:

- the 2011 base year emissions;
- 2023 and 2026 target levels;
- 2023 and 2026 projected emissions, with growth; and
- individually quantified emissions reductions from control measures for 2023 and 2026.

Progress toward the 2023 analysis year and the 2026 attainment year emissions reductions requirements is demonstrated using EPA methodologies to calculate the elements of the RFP demonstration and complete the RFP analyses. First, the emissions inventories and control reductions are developed for each analysis year. Second, the target level of emissions is calculated for each analysis year. Third, the RFP control measure reductions for each analysis year are subtracted from the uncontrolled or existing controlled EI for the corresponding analysis year. The difference includes growth from the base year to the selected analysis year. When the combined uncontrolled projected inventory minus the RFP controls is less than or equal to the target level of emissions for NO<sub>x</sub> and/or VOC, the RFP requirement has been met.

Summaries of the RFP demonstrations are provided in:

- Table 3-7: *Summary of the 2023 DFW RFP Demonstration (tons per day)*;
- Table 3-8: *Summary of the 2026 DFW RFP Demonstration (tons per day)*;
- Table 3-9: *Summary of the 2023 HGB RFP Demonstration (tons per day)*; and
- Table 3-10: *Summary of the 2026 HGB RFP Demonstration (tons per day)*.

Details on how the RFP demonstration is calculated are located in Appendix 1: *Dallas-Fort Worth (DFW) Reasonable Further Progress (RFP) Demonstration Spreadsheet* and Appendix 2: *Houston-Galveston-Brazoria (HGB) Reasonable Further Progress (RFP) Demonstration Spreadsheet*.

### 3.2 TARGET LEVEL METHODOLOGY

EPA guidance specifies the method that should be used to calculate the maximum amount of emissions a nonattainment area can emit for each RFP analysis year. Those RFP target levels of emissions are calculated using a three-step process, which is used for this proposed DFW and HGB RFP SIP revision.

1. Determine the 2011 RFP base year EI.
2. Calculate the required 15% and 18% emissions reduction amounts between 2011 and 2023 and an additional 9% reduction between 2011 and 2026.
3. Calculate the 2023 and 2026 emissions target levels for NO<sub>x</sub> and VOC.

These steps are explained in Section 3.3: *Calculation of Target Emissions Levels*.

### 3.3 CALCULATION OF TARGET EMISSIONS LEVELS

The three-step process described above for target calculations for the 2023 analysis year and the 2026 attainment year are presented in:

- Table 3-3: *Calculation Process for 2023 DFW RFP Target Levels*;
- Table 3-4: *Calculation Process for 2026 DFW RFP Target Levels*;
- Table 3-5: *Calculation Process for 2023 HGB RFP Target Levels*; and
- Table 3-6: *Calculation Process for 2026 HGB RFP Target Levels*.

The 2023 DFW and HGB attainment year VOC and NO<sub>x</sub> target levels are found in Line 15 of Table 3-3 and Line 8 of Table 3-5.

The 2026 DFW and HGB attainment year VOC and NO<sub>x</sub> target levels are found in Line 17 of Table 3-4 and Line 9 of Table 3-6. In these tables, NO<sub>x</sub> and VOC target levels are expressed in tons per day (tpd) unless a percent reduction (%) is specified.

**Table 3-3: Calculation Process for 2023 DFW RFP Target Levels**

Line	Description	NO <sub>x</sub> (tpd or %)	VOC (tpd or %)
Line 1	2011 base year (BY) emissions inventory for one DFW newly designated county	33.24	33.97
Line 2	15% VOC to meet 15% VOC reduction requirement for 2012 through 2017 for newly designated county	N/A	15.00
Line 3	Percent of NO <sub>x</sub> (PN) and VOC (PV) to meet 9% reduction requirement for 2018 through 2020 for newly designated county, (PN + PV = 9)	5.00	4.00
Line 4	PN and PV to meet 9% reduction requirement for 2021 through 2023 for newly designated county	4.50	4.50

Line	Description	NO <sub>x</sub> (tpd or %)	VOC (tpd or %)
Line 5	Total PN and PV to meet 2023 reduction requirement for newly designated county (Line 2 + Line 3 + Line 4)	9.50	23.50
Line 6	Calculate the 33% NO <sub>x</sub> and VOC reduction requirement between 2011 and 2023 for newly designated county (Line 1 multiplied by Line 5)	3.16	7.99
<b>Line 7</b>	<b>Calculate the 2023 target level of emissions for newly designated county (Line 1 minus Line 6)</b>	<b>30.08</b>	<b>25.98</b>
Line 8	2011 BY emissions inventory for nine DFW previously designated counties	414.84	459.59
Line 9	PN and PV to meet 15% reduction requirement for 2012 through 2017 for nine previously designated counties	10.00	5.00
Line 10	PN and PV to meet 9% reduction requirement for 2018 through 2020 for nine previously designated counties	5.00	4.00
Line 11	PN and PV to meet 9% reduction requirement for 2021 through 2023 for nine previously designated counties	4.50	4.50
Line 12	Total PN and PV to meet 2023 reduction requirement for nine previously designated counties (Line 9 + Line 10 + Line 11)	19.50	13.50
Line 13	Calculate the 33% NO <sub>x</sub> and VOC reduction requirement between 2011 and 2023 for nine previously designated counties (Line 8 multiplied by Line 12)	80.89	62.04
<b>Line 14</b>	<b>Calculate the 2023 target level of emissions for nine previously designated counties (Line 8 minus Line 13)</b>	<b>333.95</b>	<b>397.55</b>
<b>Line 15</b>	<b>Calculate the 2023 target level of emissions for all ten DFW counties (Line 7 plus Line 14)</b>	<b>364.03</b>	<b>423.53</b>

**Table 3-4: Calculation Process for 2026 DFW RFP Target Levels**

Line	Description	NO <sub>x</sub> (tpd or %)	VOC (tpd or %)
Line 1	2011 base year (BY) emissions inventory for one DFW newly designated county	33.24	33.97
Line 2	15% VOC to meet 15% VOC reduction requirement for 2012 through 2017 for newly designated county	N/A	15.00
Line 3	Percent of NO <sub>x</sub> (PN) and VOC (PV) to meet 9% reduction requirement for 2018 through 2020 for newly designated county, (PN + PV = 9)	5.00	4.00
Line 4	PN and PV to meet 9% reduction requirement for 2021 through 2023 for newly designated county	4.50	4.50
Line 5	PN and PV to meet 9% reduction requirement for 2024 through 2026 for newly designated county	7.00	2.00
Line 6	Total PN and PV to meet 2026 reduction requirement for newly designated county (Line 2 + Line 3 + Line 4 + Line 5)	16.50	25.50
Line 7	Calculate the 42% NO <sub>x</sub> and VOC reduction requirement between 2011 and 2026 for newly designated county (Line 1 multiplied by Line 6)	5.49	8.67
<b>Line 8</b>	<b>Calculate the 2026 target level of emissions for newly designated county (Line 1 minus Line 7)</b>	<b>27.75</b>	<b>25.30</b>

Line	Description	NO <sub>x</sub> (tpd or %)	VOC (tpd or %)
Line 9	2011 BY emissions inventory for nine DFW previously designated counties	414.84	459.59
Line 10	PN and PV to meet 15% reduction requirement for 2012 through 2017 for nine previously designated counties	10.00	5.00
Line 11	PN and PV to meet 9% reduction requirement for 2018 through 2020 for nine previously designated counties	5.00	4.00
Line 12	PN and PV to meet 9% reduction requirement for 2021 through 2023 for nine previously designated counties	4.50	4.50
Line 13	PN and PV to meet 9% reduction requirement for 2024 through 2026 for nine previously designated counties	7.00	2.00
Line 14	Total PN and PV to meet 2026 reduction requirement for nine previously designated counties (Line 10 + Line 11 + Line 12 + Line 13)	26.50	15.50
Line 15	Calculate the 42% NO <sub>x</sub> and VOC reduction requirement between 2011 and 2026 for nine previously designated counties (Line 8 multiplied by Line 12)	109.93	71.23
<b>Line 16</b>	<b>Calculate the 2026 target level of emissions for nine previously designated counties (Line 9 minus Line 15)</b>	<b>304.91</b>	<b>388.36</b>
<b>Line 17</b>	<b>Calculate the 2026 target level of emissions for all ten DFW counties (Line 8 plus Line 16)</b>	<b>332.66</b>	<b>413.66</b>

**Table 3-5: Calculation Process for 2023 HGB RFP Target Levels**

Line	Description	NO <sub>x</sub> (tpd or %)	VOC (tpd or %)
Line 1	2011 base year (BY) emissions inventory	471.62	549.59
Line 2	Percent of NO <sub>x</sub> (PN) and VOC (PV) to meet 15% reduction requirement from 2012 through 2017	11.00	4.00
Line 3	PN and PV to meet 9% reduction requirement for 2018 through 2020	7.00	2.00
Line 4	PN and PV to meet 9% reduction requirement for 2021 through 2023	6.00	3.00
Line 5	Total percent of NO <sub>x</sub> and VOC to meet 2023 reduction requirement (Line 2 + Line 3 + Line 4)	24.00	9.00
Line 6	Calculate the 33% NO <sub>x</sub> and VOC reduction requirement between 2011 and 2023 (Line 1 multiplied by Line 5)	113.19	49.46
<b>Line 7</b>	<b>Calculate the 2023 target level of emissions</b>	<b>358.43</b>	<b>500.13</b>

**Table 3-6: Calculation Process for the 2026 HGB RFP Target Levels**

Line	Description	NO <sub>x</sub> (tpd or %)	VOC (tpd of %)
Line 1	2011 base year (BY) emissions inventory	471.62	549.59
Line 2	Percent of NO <sub>x</sub> (PN) and VOC (PV) to meet 15% reduction requirement from 2012 through 2017	11.00	4.00
Line 3	PN and PV to meet 9% reduction requirement for 2018 through 2020	7.00	2.00
Line 4	PN and PV to meet 9% reduction requirement for 2021 through 2023	6.00	3.00

Line	Description	NO <sub>x</sub> (tpd or %)	VOC (tpd of %)
Line 5	PN and PV to meet 9% reduction requirement for 2024 through 2026	5.50	3.50
Line 6	Total percent of NO <sub>x</sub> and VOC to meet 2026 reduction requirement (Line 2 + Line 3 + Line 4 + Line 5)	29.50	12.50
Line 7	Calculate the 42% NO <sub>x</sub> and VOC reduction requirement between 2011 and 2026 (Line 1 multiplied by Line 6)	139.13	68.70
<b>Line 8</b>	<b>Calculate the 2026 target level of emissions</b>	<b>332.49</b>	<b>480.89</b>

**3.4 GROWTH**

This proposed DFW and HGB RFP SIP revision must account for any growth in emissions between the RFP base year (2011) and the analysis year (2023) and attainment year (2026). For future analysis years, the uncontrolled (for mobile sources) or existing controlled (for stationary sources) NO<sub>x</sub> and VOC emissions inventories are developed by applying the appropriate projection methodologies to the most recent EI estimates, emissions factors, and/or to activity-level estimates. The resulting emissions inventories include any growth between 2011 and 2023 and 2026.

The projection methodology for the uncontrolled or existing controlled RFP EI excludes changes in the emissions factor due to control strategies so that the projections represent the total growth in emissions. When the creditable RFP control reductions are subtracted from uncontrolled or existing controlled projected emissions inventories that include growth, the result will be the forecasted controlled RFP emissions.

The controlled RFP emissions are compared to the target emissions levels to determine if a nonattainment area successfully demonstrates RFP, thereby meeting RFP requirements. The method for accounting for growth is based on EPA guidance for performing RFP calculations.<sup>15</sup> The development of the uncontrolled or existing controlled projected EI is documented in Chapter 2: *Emissions Inventories*. The development of the projected control reductions is documented in Chapter 4: *Control Measures to Achieve Target Levels*.

**3.5 RFP DEMONSTRATION**

EPA’s final 2008 ozone standard SIP requirements rule requires the RFP demonstration to show ozone precursor (NO<sub>x</sub> and VOC) emissions reductions that will reduce controlled RFP analysis year emissions to values equal to or less than the emissions target values. To demonstrate RFP, the creditable RFP control reductions are subtracted from the uncontrolled or existing controlled forecast EI for each RFP analysis year.

For this proposed DFW-HGB RFP SIP revision, the RFP requirement is met if the 2023 controlled RFP EI forecast is less than the 2023 target level of emissions and the 2026 controlled RFP EI forecast is less than the 2026 target level of emissions.

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<sup>15</sup> United States Environmental Protection Agency, “Final Rule to Implement the 8-Hour Ozone National Ambient Air Quality Standard; Final Rule,” *Federal Register* (70 FR 71631), November 29, 2005.

Section 3.5.1 *DFW 2008 Ozone NAAQS Nonattainment Area RFP Demonstration*, and Section 3.5.2 *HGB 2008 Ozone NAAQS Nonattainment Area RFP Demonstration* provide the DFW and HGB 2008 ozone NAAQS nonattainment areas' RFP demonstrations for this proposed DFW-HGB RFP SIP revision.

### 3.5.1 DFW 2008 Ozone NAAQS Nonattainment Area RFP Demonstration

The RFP demonstration calculations were completed for the 2023 analysis year and the 2026 attainment year. Summaries of the 2023 and 2026 DFW RFP demonstrations are provided in Table 3-7 and 3-8. As concluded in the final row of each table, the 10-county DFW 2008 ozone NAAQS nonattainment area demonstrates the required RFP emission reductions for 2023 and 2026. All RFP calculations, including the required reductions and the target emissions levels, are calculated and shown in Appendix 1. Details of the emissions reductions used to calculate the creditable RFP control reductions for 2023 and 2026 are documented in Chapter 4 and summarized in:

- Table 4-1: *Summary of DFW 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2023 (tons per day)* and
- Table 4-2: *Summary of DFW 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2026 (tons per day)*.

**Table 3-7: Summary of the 2023 DFW RFP Demonstration (tons per day)**

Line	Description	NO <sub>x</sub>	VOC
Line 1	Uncontrolled or existing controlled 10-county DFW 2023 emissions forecast with growth	374.49	610.10
Line 2	Creditable 10-county DFW RFP control reductions between 2011 and 2023	161.68	195.86
Line 3	Controlled 10-county DFW 2023 RFP emissions forecast (Line 1 minus Line 2)	212.81	414.24
Line 4	Amount of substituted NO <sub>x</sub> reductions (see Sheet 3 of Appendix 1)	0.00	0.00
Line 5	Controlled 10-county DFW 2023 RFP forecast accounting for NO <sub>x</sub> substitution (Line 3 plus Line 4)	212.81	414.24
Line 6	10-county DFW 2023 RFP target level of emissions	364.03	423.53
Line 7	Excess (+) / Shortfall (-) (Line 6 minus Line 5)	151.22	9.29
<b>Line 8</b>	<b>Is controlled RFP EI less than target level of emissions?</b>	<b>Yes</b>	<b>Yes</b>

**Table 3-8: Summary of the 2026 DFW RFP Demonstration (tons per day)**

Line	Description	NO <sub>x</sub>	VOC
Line 1	Uncontrolled or existing controlled 10-county DFW 2026 emissions forecast with growth	362.03	610.34
Line 2	Creditable 10-county DFW RFP control reductions between 2011 and 2023	161.68	195.86
Line 3	Creditable 10-county DFW RFP control reductions between 2023 and 2026	3.52	10.02

Line	Description	NO <sub>x</sub>	VOC
Line 4	Controlled 10-county DFW 2026 RFP emissions forecast (Line 1 minus Line 2 minus Line 3)	196.83	404.46
Line 5	Amount of substituted NO <sub>x</sub> reductions (see Sheet 5 of Appendix 1)	0.00	0.00
Line 6	Controlled 10-county DFW 2026 RFP forecast accounting for NO <sub>x</sub> substitution (Line 4 plus Line 5)	196.83	404.46
Line 7	10-county DFW 2026 RFP target level of emissions	332.66	413.66
Line 8	Excess (+) / Shortfall (-) (Line 7 minus Line 6)	135.83	9.20
<b>Line 9</b>	<b>Is controlled RFP EI less than target level of emissions?</b>	<b>Yes</b>	<b>Yes</b>

### 3.5.2 HGB 2008 Ozone NAAQS Nonattainment Area RFP Demonstration

The RFP demonstration calculations were completed for the 2023 analysis year and the 2026 attainment year. Summaries of the 2023 and 2026 HGB RFP demonstrations are provided in Table 3-9 and 3-10. As concluded in the final row of each table, the eight-county HGB 2008 ozone NAAQS nonattainment area demonstrates the required RFP emission reductions for 2023 and 2026. All RFP calculations, including the required reductions and the target emissions levels, are calculated and shown in Appendix 2. Details of the emissions reductions used to calculate the creditable RFP control reductions for 2026 are documented in Chapter 4 and summarized in:

- Table 4-3: *Summary of HGB 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2023 (tons per day) and*
- Table 4-4: *Summary of HGB 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2026 (tons per day).*

**Table 3-9: Summary of the 2023 HGB RFP Demonstration (tons per day)**

Line	Description	NO <sub>x</sub>	VOC
Line 1	Uncontrolled or existing controlled eight-county HGB 2023 emissions forecast with growth	520.94	644.99
Line 2	Creditable eight-county HGB RFP control reductions between 2011 and 2023	202.93	175.30
Line 3	Controlled eight-county HGB 2023 RFP emissions forecast (Line 1 minus Line 2)	318.01	469.69
Line 4	Amount of substituted NO <sub>x</sub> reductions (see Sheet 3 of Appendix 2)	0.00	0.00
Line 5	Controlled eight-county HGB 2023 RFP forecast accounting for NO <sub>x</sub> substitution (Line 3 plus Line 4)	318.01	469.69
Line 6	Eight-county HGB 2023 RFP target level of emissions	358.43	500.13
Line 7	Excess (+) / Shortfall (-) (Line 6 minus Line 5)	40.42	30.44
<b>Line 8</b>	<b>Is controlled RFP EI less than target level of emissions?</b>	<b>Yes</b>	<b>Yes</b>

**Table 3-10: Summary of the 2026 HGB RFP Demonstration (tons per day)**



<b>Line</b>	<b>Description</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Line 1	Uncontrolled or existing controlled eight-county HGB 2026 emissions forecast with growth	518.76	656.61
Line 2	Creditable eight-county HGB RFP control reductions between 2011 and 2023	202.93	175.30
Line 3	Creditable eight-county HGB RFP control reductions between 2023 and 2026	18.48	8.61
Line 4	Controlled eight-county HGB 2026 RFP emissions forecast (Line 1 minus Line 2 minus Line 3)	297.35	472.70
Line 5	Amount of substituted NO <sub>x</sub> reductions (see Sheet 6 of Appendix 2)	0.00	0.00
Line 6	Controlled eight-county HGB 2026 RFP forecast accounting for NO <sub>x</sub> substitution (Line 4 plus Line 5)	297.35	472.70
Line 7	Eight-county HGB 2026 RFP target level of emissions	332.49	480.89
Line 8	Excess (+) / Shortfall (-) (Line 7 minus Line 6)	35.14	8.19
<b>Line 9</b>	<b>Is controlled RFP EI less than target level of emissions?</b>	<b>Yes</b>	<b>Yes</b>

## CHAPTER 4: CONTROL MEASURES TO ACHIEVE TARGET LEVELS

### 4.1 OVERVIEW OF CONTROL MEASURES

Appendix 1: *Dallas-Fort Worth (DFW) Reasonable Further Progress (RFP) Demonstration Spreadsheet* and Appendix 2: *Houston-Galveston-Brazoria Reasonable Further Progress (RFP) Demonstration Spreadsheet* include a list of control strategies for the 2023 analysis year and 2026 attainment year to achieve the emissions reductions in nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) used to demonstrate RFP for the Dallas-Fort Worth (DFW) 2008 eight-hour ozone National Ambient Air Quality Standard (NAAQS) nonattainment area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, Rockwall, and Wise Counties) and the Houston-Galveston-Brazoria (HGB) 2008 eight-hour ozone NAAQS nonattainment area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties). Summaries of the control strategy lists, and corresponding emissions reductions are provided in:

- Table 4-1: *Summary of DFW 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2023 (tons per day);*
- Table 4-2: *Summary of DFW 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2026 (tons per day);*
- Table 4-3: *Summary of HGB 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2023 (tons per day);* and
- Table 4-4: *Summary of HGB 2008 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2026 (tons per day).*

The projected emissions reductions reflect the identified federal and state emissions controls. All state control measures are codified in regulations for the State of Texas. Control measures used for RFP do not include all emissions reduction programs and requirements for the DFW and HGB 2008 ozone NAAQS nonattainment areas.

**Table 4-1: Summary of DFW 2008 Ozone NAAQS Nonattainment Area RFP NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2023 (tons per day)**

Control Strategy Description	Source Category	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Chapter 117 NO <sub>x</sub> controls <sup>1</sup>	Point	0.00	0.00
Chapter 115 storage tank rule <sup>1</sup>	Point	0.00	0.00
Coating / printing rules <sup>1</sup>	Point	0.00	0.00
Portable fuel containers <sup>1</sup>	Area	0.00	0.00

<b>Control Strategy Description</b>	<b>Source Category</b>	<b>NO<sub>x</sub> Emissions Reduction</b>	<b>VOC Emissions Reduction</b>
Chapter 117 NO <sub>x</sub> area source engine controls <sup>1</sup>	Area	0.00	0.00
Federal Motor Vehicle Control Program (FMVCP) <sup>2</sup>	On-road	0.00	0.00
Reformulated Gasoline (RFG)/East Texas Regional Low Reid vapor pressure (RVP)/Low Sulfur Gasoline/Ultra Low Sulfur Diesel <sup>3</sup>	On-road	25.19	7.46
Inspection and maintenance (I/M)	On-road	2.34	5.02
On-road Texas Low Emission Diesel (TxLED) <sup>4</sup>	On-road	0.00	0.00
Tier I and II locomotive NO <sub>x</sub> standards	Non-road	0.70	0.00
Small non-road spark ignition (SI) engines (Phase I) <sup>5</sup>	Non-road	-7.40	61.51
Heavy duty non-road engines	Non-road	0.93	3.56
Tiers 2 and 3 non-road diesel engines	Non-road	3.57	0.66
Small non-road SI engines (Phase II)	Non-road	5.30	57.82
Large non-road SI and recreational marine	Non-road	50.40	17.75
Non-road TxLED <sup>4</sup>	Non-road	0.00	0.00
Non-road RFG <sup>5</sup>	Non-road	-0.01	0.86
Tier 4 non-road diesel engines	Non-road	74.37	15.32
Diesel recreational marine	Non-road	0.01	0.00
Small SI (Phase III)	Non-road	5.06	25.68
Drilling rigs: federal engine standards	Non-road	1.22	0.22
Drilling rigs: TxLED <sup>4</sup>	Non-road	0.00	0.00
Locomotive: TxLED <sup>4</sup>	Non-road	0.00	0.00
<b>Sum of reductions from projected uncontrolled or existing controlled emissions</b>	<b>N/A</b>	<b>161.68</b>	<b>195.86</b>

Note 1: These rules had compliance deadlines before 2011 in the DFW 2008 ozone NAAQS nonattainment area. The 2011 base year emissions inventory (EI) includes the effect of the control. No additional emissions reductions beyond 2011 are claimed.

Note 2: On-road emissions inventories developed using MOVES3 include FMVCP emissions reductions; however, MOVES3 does not include an option for quantifying FMVCP reductions separately from the overall emissions inventory. For continuity with previous state implementation plan (SIP) revisions, FMVCP is still included as a control strategy, but the reductions are set to zero.

Note 3: In 2023, the 10-county DFW 2008 ozone NAAQS nonattainment area includes counties with federal RFG and counties with Texas Regional Low RVP. The four counties with federal RFG are: Collin, Dallas, Denton, and Tarrant. The six counties with Texas Regional Low RVP are: Ellis, Johnson, Kaufman, Parker, Rockwall, and Wise. Federal RFG will be implemented in all ten counties starting in 2026.

Note 4: The U.S. Environmental Protection Agency (EPA) released new guidance on calculating emissions reductions from TxLED during development of this SIP revision. To be conservative, this SIP revision did not include emissions reductions from TxLED.

Note 5: The small SI Phase 1 rule is shown to provide a substantial reduction in VOC emissions. A slight increase in NO<sub>x</sub> emissions (small negative NO<sub>x</sub> emissions delta) is due to the engine modifications required to meet the VOC and carbon monoxide (CO) standards of the Small SI Phase 1. There can also be small negative NO<sub>x</sub> emissions deltas associated with the non-road RFG control strategy due to the Motor Vehicle Emissions Simulator (MOVES) model's fuel effects on NO<sub>x</sub> for RFG versus conventional gasoline formulations.

**Table 4-2: Summary of DFW 2008 Ozone NAAQS Nonattainment Area RFP NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2026 (tons per day)**

Control Strategy Description	Source Category	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Chapter 117 NO <sub>x</sub> controls <sup>1</sup>	Point	0.00	0.00
Chapter 115 storage tank rule <sup>1</sup>	Point	0.00	0.00
Coating / printing rules <sup>1</sup>	Point	0.00	0.00
Portable fuel containers <sup>1</sup>	Area	0.00	0.00
Chapter 117 NO <sub>x</sub> area source engine controls <sup>1</sup>	Area	0.00	0.00
FMVCP <sup>2</sup>	On-road	0.00	0.00
RFG/East Texas Regional Low RVP/Low Sulfur Gasoline/Ultra Low Sulfur Diesel <sup>3</sup>	On-road	17.61	6.06
I/M	On-road	1.76	5.01
On-road TxLED <sup>4</sup>	On-road	0.00	0.00
Tier I and II locomotive NO <sub>x</sub> standards	Non-road	0.70	0.00
Small non-road spark ignition (SI) engines (Phase I) <sup>5</sup>	Non-road	-7.84	65.10
Heavy duty non-road engines	Non-road	0.50	3.54
Tiers 2 and 3 non-road diesel engines	Non-road	2.82	0.50
Small non-road SI engines (Phase II)	Non-road	5.61	60.92
Large non-road SI and recreational marine	Non-road	57.18	19.94

Control Strategy Description	Source Category	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Non-road TxLED <sup>4</sup>	Non-road	0.00	0.00
Non-road RFG <sup>5</sup>	Non-road	-0.01	0.90
Tier 4 non-road diesel engines	Non-road	80.25	16.34
Diesel recreational marine	Non-road	0.01	0.00
Small SI (Phase III)	Non-road	5.39	27.31
Drilling rigs: federal engine standards	Non-road	1.22	0.26
Drilling rigs: TxLED <sup>4</sup>	Non-road	0.00	0.00
Locomotive: TxLED <sup>4</sup>	Non-road	0.00	0.00
<b>Sum of reductions from projected uncontrolled or existing controlled emissions</b>	N/A	<b>165.20</b>	<b>205.88</b>

Note 1: These rules had compliance deadlines before 2011 in the DFW 2008 ozone NAAQS nonattainment area. The 2011 base year EI includes the effect of the control. No additional emissions reductions beyond 2011 are claimed.

Note 2: On-road emissions inventories developed using MOVES3 include FMVCP emissions reductions; however, MOVES3 does not include an option for quantifying FMVCP reductions separately from the overall emissions inventory. For continuity with previous SIP revisions, FMVCP is still included as a control strategy, but the reductions are set to zero.

Note 3: The 10-county DFW 2008 ozone NAAQS nonattainment area includes counties with federal RFG and counties with Texas Regional Low RVP. The four counties with federal RFG are: Collin, Dallas, Denton, and Tarrant. The six counties with Texas Regional Low RVP are: Ellis, Johnson, Kaufman, Parker, Rockwall, and Wise. The East Texas Regional Low RVP was applicable for the 2023 analysis year but not applicable for the 2026 attainment year.; therefore, it was not included as a control strategy for 2026. Federal RFG will be implemented in all ten counties starting in 2026.

Note 4: EPA released new guidance on calculating emissions reductions from TxLED during development of this SIP revision. To be conservative, this SIP revision did not include emissions reductions from TxLED.

Note 5: The small SI Phase 1 rule is shown to provide a substantial reduction in VOC emissions. A slight increase in NO<sub>x</sub> emissions (small negative NO<sub>x</sub> emissions delta) is due to the engine modifications required to meet the VOC and CO standards of the Small SI Phase 1. There can also be small negative NO<sub>x</sub> emissions deltas associated with the non-road RFG control strategy due to the MOVES model's fuel effects on NO<sub>x</sub> for the RFG versus conventional gasoline formulations.

**Table 4-3: Summary of HGB 2008 Ozone NAAQS Nonattainment Area RFP NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2023 (tons per day)**

Control Strategy Description	Source Category	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Chapter 117 NO <sub>x</sub> controls <sup>1</sup>	Point	0.00	0.00
Chapter 115 storage tank rule <sup>1</sup>	Point	0.00	0.00
Coating / printing rules <sup>1</sup>	Point	0.00	0.00
Portable fuel containers <sup>1</sup>	Area	0.00	0.00
Chapter 117 NO <sub>x</sub> area source engine controls <sup>1</sup>	Area	0.00	0.00
FMVCP <sup>2</sup>	On-road	0.00	0.00

<b>Control Strategy Description</b>	<b>Source Category</b>	<b>NO<sub>x</sub> Emissions Reduction</b>	<b>VOC Emissions Reduction</b>
RFG / Low Sulfur Gasoline / Ultra Low Sulfur Diesel	On-road	19.48	7.04
I/M	On-road	1.84	4.13
On-road TxLED <sup>3</sup>	On-road	0.00	0.00
Tier I and II locomotive NO <sub>x</sub> standards	Non-road	0.22	0.00
Small non-road spark ignition (SI) engines (Phase I) <sup>4</sup>	Non-road	-6.67	53.24
Heavy duty non-road engines	Non-road	0.37	5.43
Tiers 2 and 3 non-road diesel engines	Non-road	2.81	0.57
Small non-road SI engines (Phase II)	Non-road	4.78	49.95
Large non-road SI and recreational marine	Non-road	51.41	17.68
Non-road TxLED <sup>3</sup>	Non-road	0.00	0.00
Non-road RFG <sup>4</sup>	Non-road	0.00	0.30
Tier 4 non-road diesel engines	Non-road	68.82	14.61
Diesel recreational marine	Non-road	0.03	0.00
Small non-road SI engines (Phase III)	Non-road	4.79	21.87
Drilling rigs: federal engine standards	Non-road	0.72	0.15
Commercial marine vessel engine certification standards and fuel programs	Non-road	54.33	0.33
Drilling rigs: TxLED <sup>3</sup>	Non-road	0.00	0.00
Locomotive: TxLED <sup>3</sup>	Non-road	0.00	0.00
<b>Sum of reductions from projected uncontrolled or existing controlled emissions</b>	N/A	<b>202.93</b>	<b>175.30</b>

Note 1: These rules had compliance deadlines before 2011 in the HGB 2008 ozone NAAQS nonattainment area. The 2011 base year EI includes the effect of the control. No additional emissions reductions beyond 2011 are claimed.

Note 2: On-road emissions inventories developed using MOVES3 include FMVCP emissions reductions; however, MOVES3 does not include an option for quantifying FMVCP reductions separately from the overall emissions inventory. For continuity with previous SIP revisions, FMVCP is still included as a control strategy, but the reductions are set to zero.

Note 3: EPA released new guidance on calculating emissions reductions from TxLED during development of this SIP revision. To be conservative, this SIP revision did not include emissions reductions from TxLED.

Note 4: The small SI Phase 1 rule is shown to provide a substantial reduction in VOC emissions. A slight increase in NO<sub>x</sub> emissions (small negative NO<sub>x</sub> emissions delta) is due to the engine modifications required to meet the VOC and CO standards of the Small SI Phase 1. There can also be small negative NO<sub>x</sub>

emissions deltas associated with the non-road RFG control strategy due to the MOVES model's fuel effects on NO<sub>x</sub> for the RFG versus conventional gasoline formulations.

**Table 4-4: Summary of HGB 2008 Ozone NAAQS Nonattainment Area RFP NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2026 (tons per day)**

Control Strategy Description	Source Category	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Chapter 117 NO <sub>x</sub> controls <sup>1</sup>	Point	0.00	0.00
Chapter 115 storage tank rule <sup>1</sup>	Point	0.00	0.00
Coating / printing rules <sup>1</sup>	Point	0.00	0.00
Portable fuel containers <sup>1</sup>	Area	0.00	0.00
Chapter 117 NO <sub>x</sub> area source engine controls <sup>1</sup>	Area	0.00	0.00
FMVCP <sup>2</sup>	On-road	0.00	0.00
RFG/Low Sulfur Gasoline/Ultra Low Sulfur Diesel	On-road	14.18	5.65
I/M	On-road	1.36	4.08
On-road TxLED <sup>3</sup>	On-road	0.00	0.00
Tier I and II locomotive NO <sub>x</sub> standards	Non-road	0.22	0.00
Small non-road spark ignition (SI) engines (Phase I) <sup>4</sup>	Non-road	-7.07	56.33
Heavy duty non-road engines	Non-road	0.04	5.48
Tiers 2 and 3 non-road diesel engines	Non-road	2.08	0.41
Small non-road SI engines (Phase II)	Non-road	5.06	52.62
Large non-road SI and recreational marine	Non-road	58.38	19.89
Non-road TxLED <sup>3</sup>	Non-road	0.00	0.00
Non-road RFG <sup>4</sup>	Non-road	0.00	0.32
Tier 4 non-road diesel engines	Non-road	72.80	15.26
Diesel recreational marine	Non-road	0.03	0.00
Small non-road SI engines (Phase III)	Non-road	5.13	23.30
Drilling rigs: federal engine standards	Non-road	0.74	0.15
Commercial marine vessel engine certification standards and fuel programs	Non-road	68.46	0.42
Drilling rigs: TxLED <sup>3</sup>	Non-road	0.00	0.00
Locomotive: TxLED <sup>3</sup>	Non-road	0.00	0.00

Control Strategy Description	Source Category	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Sum of reductions from projected uncontrolled or existing controlled emissions	N/A	221.41	183.91

Note 1: These rules had compliance deadlines before 2011 in the HGB 2008 ozone NAAQS nonattainment area. The 2011 base year EI includes the effect of the control. No additional emissions reductions beyond 2011 are claimed.

Note 2: On-road emissions inventories developed using MOVES3 include FMVCP emissions reductions; however, MOVES3 does not include an option for quantifying FMVCP reductions separately from the overall emissions inventory. For continuity with previous SIP revisions, FMVCP is still included as a control strategy, but the reductions are set to zero.

Note 3: EPA released new guidance on calculating emissions reductions from TxLED during development of this SIP revision. To be conservative, this SIP revision did not include emissions reductions from TxLED.

Note 4: The small SI Phase 1 rule is shown to provide a substantial reduction in VOC emissions. A slight increase in NO<sub>x</sub> emissions (small negative NO<sub>x</sub> emissions delta) is due to the engine modifications required to meet the VOC and CO standards of the Small SI Phase 1. There can also be small negative NO<sub>x</sub> emissions deltas associated with the non-road RFG control strategy due to the MOVES model's fuel effects on NO<sub>x</sub> for the RFG versus conventional gasoline formulations.

#### 4.1.1 TxLED Reductions

In February 2023, EPA released the *Guidance on Quantifying NO<sub>x</sub> Benefits for Cetane Improvement Programs for Use in SIPs and Transportation Conformity*, which included new guidance on calculating emissions reductions from TxLED for 2021 and future years during development of this SIP revision.<sup>16</sup> Additional analysis is required to assess the impact on Texas' TxLED emissions reductions. To be conservative, this proposed DFW-HGB RFP SIP revision did not include emissions reductions from TxLED for the 2023 analysis year or the 2026 attainment year. However, TxLED emissions reductions may be included for future SIP revisions.

TxLED emissions reductions have historically been calculated for previous SIP revisions. For informational purposes, TxLED emissions determined using the historical EPA method to calculate the amount of TxLED reductions are included below in:

- Table 4-5: *10-County DFW 2008 Ozone NAAQS Nonattainment Area TxLED Emissions Reductions Removed from RFP Demonstration (tons per day)* and
- Table 4-6: *Eight-County HGB 2008 Ozone NAAQS Nonattainment Area TxLED Emissions Reductions Removed from RFP Demonstration (tons per day)*.

The TxLED reductions in these tables are included for informational purposes only and were not used to demonstrate RFP for this proposed DFW-HGB RFP SIP revision.

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<sup>16</sup> <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P1016IFV.pdf>



**Table 4-5: 10-County DFW 2008 Ozone NAAQS Nonattainment Area TxLED Emissions Reductions Removed from RFP Demonstration (tons per day)<sup>1</sup>**

Source Category with TxLED Emissions Reductions	Total 2011 to 2023 NO <sub>x</sub> Emissions Reductions (tpd)	Total 2011 to 2026 NO <sub>x</sub> Emissions Reductions (tpd)
Non-road mobile	1.23	1.03
Drilling rigs	0.04	0.04
Locomotive	0.57	0.48
On-road mobile	2.71	2.42
<b>Total</b>	<b>4.55</b>	<b>3.97</b>

Note 1: The 10-county DFW area includes all 10 counties designated nonattainment under the 2008 NAAQS: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties.

**Table 4-6: Eight-County HGB 2008 Ozone NAAQS Nonattainment Area TxLED Emissions Reductions Removed from RFP Demonstration (tons per day)**

Source Category with TxLED Emissions Reductions	Total 2011 to 2023 NO <sub>x</sub> Emissions Reductions (tpd)	Total 2011 to 2026 NO <sub>x</sub> Emissions Reductions (tpd)
Non-road mobile	1.01	0.83
Drilling rigs	0.03	0.01
Locomotive	0.63	0.53
On-road mobile	2.10	1.85
<b>Total</b>	<b>3.77</b>	<b>3.22</b>

#### 4.2 POINT SOURCE CONTROLS

There is no change in approach to point source controls from the DFW and HGB Serious Classification RFP SIP Revision for the 2008 Eight-Hour Ozone NAAQS (project number 2019-079-SIP-NR). All listed point source controls had compliance deadlines prior to 2011 and were incorporated into the 2011 RFP base year. No additional point source controls were required to demonstrate RFP for this proposed DFW-HGB RFP SIP revision.

#### 4.3 AREA SOURCE CONTROLS

There is no change in approach to area source controls from the DFW-HGB Serious Classification RFP SIP Revision for the 2008 Eight-Hour Ozone NAAQS (project number 2019-079-SIP-NR). All listed area source controls had compliance deadlines prior to 2011 and were incorporated into the 2011 RFP base year. No additional area source controls were required to demonstrate RFP for this proposed DFW-HGB RFP SIP revision.

#### 4.4 NON-ROAD MOBILE SOURCE CONTROLS

Except for removing TxLED reductions from the 2023 analysis year and 2026 attainment year, there is no change in approach to the non-road mobile source controls from the DFW and HGB Serious Classification RFP SIP Revision for the 2008 Eight-Hour Ozone NAAQS (project number 2019-079-SIP-NR). Please refer to Section 4.1.1, *TxLED Reductions* for a detailed discussion of TxLED reductions. Details on controlled inventory development for non-road mobile sources can be found in Section 2.4.7: *Updated Controlled Analysis Year Inventories*.

#### **4.5 ON-ROAD MOBILE SOURCE CONTROLS**

This proposed SIP revision includes two updates to the approach used for on-road mobile source control reduction quantification from the DFW and HGB Serious Classification RFP SIP Revision for the 2008 Eight-Hour Ozone NAAQS (project number 2019-079-SIP-NR), related to TxLED and on-road FMVCP. The TxLED reductions are set to zero for the 2023 analysis year and 2026 attainment year. Please refer to Section 4.1.1 for a detailed discussion on TxLED reductions.

MOVES3 was used to develop the emissions inventories and quantify control strategy reductions for this proposed DFW-HGB RFP SIP revision. MOVES3 was the latest available version of MOVES at the time of inventory development. The MOVES4 model was not used in this SIP revision since TCEQ had already invested significant resources to develop an on-road mobile source EI using MOVES3. As EPA stated in its notice of availability published in the Federal Register on September 12, 2023, “[...]state and local agencies that have already completed significant work on a SIP with a version of MOVES3 (e.g., attainment modeling has already been completed with MOVES3) may continue to rely on this earlier version of MOVES” (88 FR 62567, 62569). On-road emissions inventories developed using MOVES3 include FMVCP emissions reductions; however, MOVES3 does not include an option for quantifying FMVCP reductions separately from the overall EI. For continuity with previous SIP revisions, FMVCP is still included as a control strategy, but the reductions are set to zero. Details on controlled inventory development for on-road mobile source can be found in Section 2.5.2: *On-Road Mobile Updated Controlled Analysis Year Inventories*.

#### **4.6 VEHICLE MILES TRAVELED (VMT)**

EPA has issued guidance on what information must be included in a SIP revision to demonstrate that VMT offsets are not required. A VMT demonstration is required for areas designated as serious ozone nonattainment. For areas designated as severe ozone nonattainment, a VMT growth demonstration is required. The VMT growth demonstrations for the DFW and HGB 2008 severe ozone NAAQS nonattainment areas required for this proposed SIP revision are provided in Section 4.6.2: *VMT Growth Demonstration*.

##### **4.6.1 VMT Demonstration**

Transportation control measures (TCM) are required to offset growth in VMT for nonattainment areas classified as serious under the 2008 eight-hour ozone NAAQS. The growth in VMT-related emissions for the DFW and HGB 2008 ozone nonattainment areas was more than offset by control measures that reduce the per-mile emissions rates, which resulted in a decrease in emissions of NO<sub>x</sub> and VOC between the 2011 base year and the 2020 serious attainment year.

For the 2008 eight-hour ozone NAAQS, the Texas Commission on Environmental Quality (TCEQ) previously adopted serious classification RFP SIP revisions for the DFW and HGB nonattainment areas to address the VMT growth offset in NO<sub>x</sub> and VOC between the 2011 base year and the 2020 serious attainment year. The DFW and HGB Serious Classification RFP SIP Revision for the 2008 Eight-Hour Ozone NAAQS (project number 2019-079-SIP-NR) was adopted by the commission on March 4, 2020. EPA

approved the DFW RFP SIP revision on April 24, 2023 (88 *Federal Register* (FR) 24693) and approved the HGB RFP SIP revision on May 10, 2021 (86 FR 24717).<sup>17</sup>

#### 4.6.2 VMT Growth Demonstration

TCMs are required to offset growth in VMT that results in an increase in vehicle emissions for nonattainment areas classified as severe under an ozone NAAQS. For the VMT growth demonstration, EPA requires development of four emissions scenarios. The results of the four scenarios are used to: 1) determine the base year emissions, 2) determine the growth in emissions due to VMT growth between the base year and the attainment year without new controls, 3) set the attainment year emissions ceiling assuming no growth between the base year and attainment year and no post-2011 controls, and 4) determine whether new controls implemented after the base year are sufficient to offset VMT growth.

The VMT offset assessments for this SIP revision use the latest EPA guidance and a process based upon consultation with EPA Region 6 and review of other states' currently approved VMT offset demonstrations. Specifically, this SIP revision uses an emissions assessment process that isolates VMT-related emissions for the VMT offset demonstration. The VMT offset emissions assessments do not include emissions occurring during non-VMT related vehicle operating modes.

The one 2011 and three 2026 VMT offset emissions assessments were developed for the four VMT offset scenarios for the DFW and HGB areas. The emission assessments were developed using MOVES3 and the MOVES3 VMT offset tool, and incorporate the latest activity estimates consistent with each VMT offset scenario. MOVES3 was the latest version of MOVES available at the time of development of the VMT offset demonstration. The MOVES4 model was not used in this SIP revision since TCEQ had already invested significant resources to develop an on-road mobile source EI using MOVES3. As EPA stated in its notice of availability published in the Federal Register on September 12, 2023, “[...]state and local agencies that have already completed significant work on a SIP with a version of MOVES3 (e.g., attainment modeling has already been completed with MOVES3) may continue to rely on this earlier version of MOVES” (88 FR 62567, 62569). Documentation of the development of the VMT offset emissions scenarios for the DFW and HGB areas are provided in Appendix 15: *Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HGB) 2008 Eight-Hour Ozone NAAQS Nonattainment Areas Vehicle Miles Traveled Growth Offset Demonstration for On-Road Mobile Sources*. The four VMT offset emissions scenarios are:

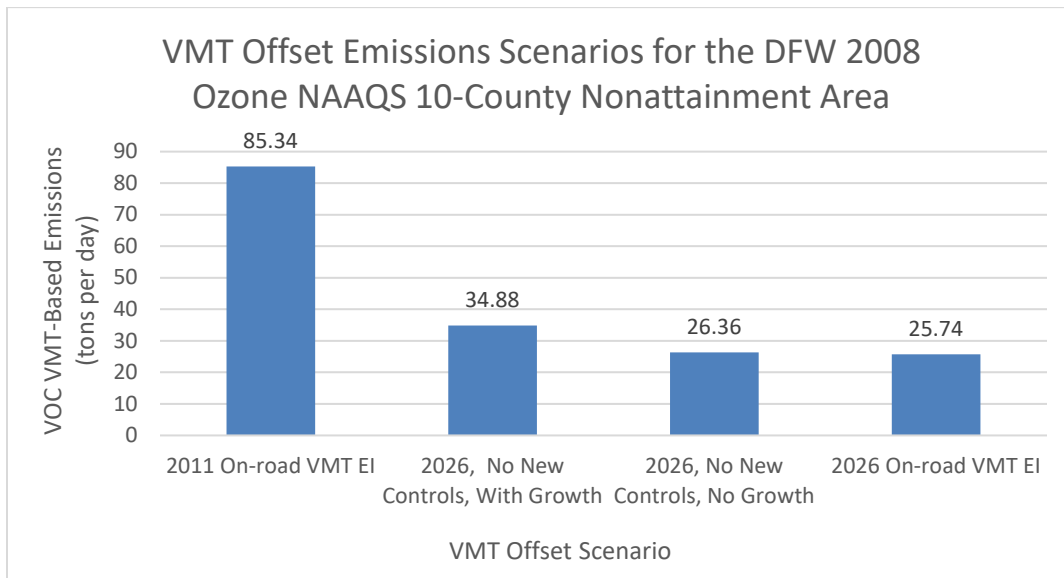
- 2011 base year emissions,
- 2026 emissions with VMT growth and assuming no new post-2011 control measures,
- 2026 emissions without VMT growth and assuming no new post-2011 control measures, and

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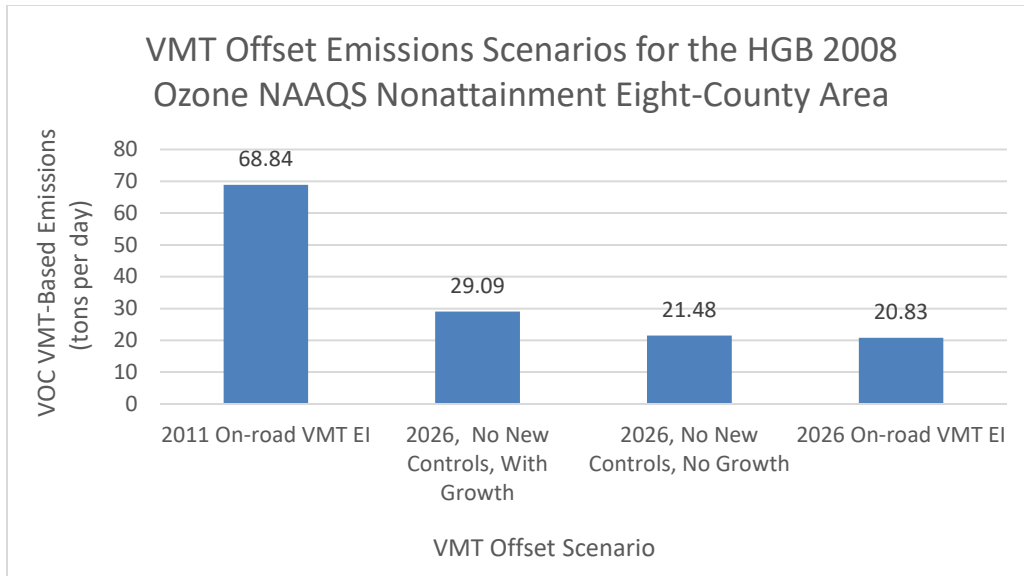
<sup>17</sup> On April 21, 2023, EPA published a proposed disapproval of the contingency measures for DFW and HGB RFP SIP revision submitted for the serious classification under the 2008 eight-hour ozone NAAQS (88 FR 24522).

- 2026 emissions with 2026 emission controls and VMT growth.

The results of the four VMT offset scenarios for DFW and HGB are provided in Figure 4-1: *VMT Offset Emissions Scenarios for the DFW 2008 Ozone NAAQS 10-County Nonattainment Area*, and Figure 4-2: *VMT Offset Emissions Scenarios for the HGB 2008 Ozone NAAQS Eight-County Nonattainment Area*. Overall, the VMT offset scenario results indicate the growth in VMT is offset by post-2011 control measures that reduce the per mile emission rates, resulting in a decrease in emissions. Scenario 3, the 2026 no growth and no post-2011 controls scenario, sets the ceiling on attainment year emissions. Since vehicle emissions for the 2026 scenario, Scenario 4, are below the emissions ceiling, no additional controls from TCMs are required for the DFW or HGB areas.



**Figure 4-1: VMT Offset Emissions Scenarios for the DFW 2008 Ozone NAAQS 10-County Nonattainment Area**



**Figure 4-2: VMT Offset Emissions Scenarios for the HGB 2008 Ozone NAAQS Eight-County Nonattainment Area**

#### 4.7 CONTINGENCY MEASURES

Contingency measures are control requirements that would take effect and result in emissions reductions if an area fails to attain a NAAQS by the applicable attainment date or fails to demonstrate RFP. EPA has interpreted recent court decisions to have invalidated key aspects of EPA’s historical approach to implementing the contingency measure requirement. At the time these proposed contingency measures were developed, EPA had historically accepted the use of surplus emissions reductions from previously implemented control measures to fulfill the contingency measure requirements. However, EPA’s new draft guidance on contingency measures, published in the *Federal Register* for public comment on March 23, 2023 (88 FR 17571), indicates that contingency measures must be conditional and prospective (not previously implemented) based on the recent court rulings. The draft guidance also establishes an entirely new scheme for determining the amount of emissions reductions necessary to address the contingency requirement.

The contingency measures proposed in the concurrent 30 TAC Chapter 115 rulemaking (Rule Project No. 2023-116-115-AI) are conditional and prospective (not previously implemented), which follows EPA’s interpretation of recent court decisions. These measures do not rely on the historical approach of using surplus emissions reductions from previously implemented measures to fulfill contingency requirements. Since EPA had not issued final guidance to states regarding the amount of required reductions from contingency measures at the time this proposed DFW-HGB RFP SIP revision was developed, this proposed SIP revision relies on the historically approved approach to determine the amount of emissions reductions necessary to address the contingency requirement. Under the historical approach, in the General Preamble for implementation of the FCAA published in the April 16, 1992 *Federal Register*, EPA interpreted the contingency requirement to mean additional emissions reductions that are sufficient to equal 3% of the emissions in the baseline year inventory (57 FR 13498).

This section contains details of the conditional and prospective control measures by source category.

The RFP requirements include a 3% contingency plan for each area. The proposed contingency measures for each area include a 3% reduction for a milestone (analysis) year and the attainment year. In the event the required reductions in ozone precursor emissions are not met individual contingency control measures will be triggered for each area sufficient to provide the required emissions reduction. As with the 3% per year reduction requirement, the 3% contingency requirement is based on the RFP base year EI and may be met using NO<sub>x</sub> and VOC reductions.

The analysis contingency year and attainment contingency year demonstration separates the 3% requirement into a 0% reduction in NO<sub>x</sub> and a 3% reduction in VOC for the DFW 2008 ozone NAAQS nonattainment area and a 0% reduction in NO<sub>x</sub> and a 3% reduction for the HGB 2008 ozone NAAQS nonattainment area.

Summaries of the RFP contingency analyses are provided in:

- Table 4-9: *DFW 2008 Ozone NAAQS Nonattainment Area RFP Contingency Plan (tons per day unless otherwise noted); and*
- Table 4-10: *HGB 2008 Ozone NAAQS Nonattainment Area RFP Contingency Plan (tons per day unless otherwise noted).*

#### **4.7.1 Area Source and Point Source Contingency Measure Controls**

Six area and point source control measures are being proposed in a concurrent rulemaking for 30 Texas Administrative Code (TAC) Chapter 115 (Rule project 2023-116-115-AI) that, if adopted, will fulfill SIP contingency requirements in the DFW and HGB 2008 ozone NAAQS nonattainment areas. The proposed rulemaking covers the following source categories: degreasing, industrial maintenance coatings, industrial cleaning solvents, emulsified asphalt paving, traffic marking coatings, and industrial adhesives. Three of these measures target a mix of area and point sources: degreasing, industrial cleaning solvents, and industrial adhesives. The other three—industrial maintenance coatings, emulsified asphalt paving, and traffic marking coatings—target area sources. A summary of the VOC emissions reductions in tpd from each contingency measure is provided in Table 4-7: *10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP VOC Contingency Measure Reductions in Tons Per Day* and Table 4-8: *Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP VOC Contingency Measure Reductions in Tons Per Day*.

##### 4.7.1.1 Degreasers

This measure would reduce VOC emissions from solvent degreasers by adopting requirements which would establish a new limit for VOC content for the solvents used in these applications of 25 grams per liter (g/l). TCEQ estimates reductions from degreasing contingency measures to be 7.44 tpd for the HGB 2008 ozone NAAQS nonattainment area and 9.8 tpd for the DFW 2008 ozone NAAQS nonattainment area.

##### 4.7.1.2 Industrial Maintenance Coatings

This measure would reduce VOC emissions from industrial maintenance coatings by adopting requirements which would establish a new limit for VOC content for the

coating products used for these applications of 250 g/l of VOC. TCEQ estimates reductions from industrial maintenance coatings contingency measures to be 2.79 tpd for the HGB 2008 ozone nonattainment area and 2.95 tpd for the DFW 2008 ozone nonattainment area.

#### 4.7.1.3 Industrial Cleaning Solvents

This measure would reduce VOC emissions from cleaning solvents by adopting requirements which would establish a more stringent limit for VOC content for cleaning solvents used to clean general materials of 25 g/l of VOC. The existing VOC limit to clean all materials is 50 g/l. Limits to clean specialty materials would be higher. The measure would remove the existing exemption for stationary source solvent cleaning operations that emit less than 3 tpy of VOC. TCEQ estimates reductions from industrial cleaning solvents contingency measures to be 1.71 tpd for the HGB 2008 ozone nonattainment area and 1.92 tpd for the DFW 2008 ozone nonattainment area.

This measure is included in the concurrent 30 TAC Chapter 115 rulemaking and SIP revision proposal documents but would only be adopted for the DFW 2008 ozone NAAQS nonattainment area if other measures change in response to comment such that additional reductions are necessary to cover the 3% emissions reduction requirement for contingency.

#### 4.7.1.4 Emulsified Asphalt Paving

This measure would reduce VOC emissions from emulsified asphalt operations by adopting requirements which would establish a more stringent limit for VOC content for emulsified asphalt of 0.5% VOC content by weight. TCEQ estimates reductions from emulsified asphalt contingency measures to be 1.36 tpd for the HGB 2008 ozone nonattainment area and 1.32 tpd for the DFW 2008 ozone nonattainment area.

#### 4.7.1.5 Traffic Marking Coatings

This measure would reduce VOC emissions from traffic marking coatings by adopting requirements which would establish a more stringent limit for VOC content for traffic marking coatings of 100 g/l of VOC. The existing VOC limit in the National Volatile Organic Compound Emission Standards for Architectural Coatings Rule (63 FR 48848) is 150 g/l. TCEQ estimates reductions from traffic marking coatings contingency measures to be 0.88 tpd for the HGB 2008 ozone nonattainment area and 1.10 tpd for the DFW 2008 ozone nonattainment area.

#### 4.7.1.6 Industrial Adhesives

This measure would reduce VOC emissions from industrial adhesives by adopting requirements which would establish more stringent limits for VOC content of industrial adhesives by category. Some current 30 TAC Chapter 115 VOC limits are less stringent and are based on EPA's Control Techniques Guidelines for Miscellaneous Industrial Adhesives (EPA 453/R-08-005 2008/09). TCEQ estimates reductions from industrial adhesives contingency measures to be 3.12 tpd for the HGB 2008 ozone nonattainment area and 3.31 tpd for the DFW 2008 ozone nonattainment area.

This measure is included in the concurrent 30 TAC Chapter 115 rulemaking and SIP revision proposal documents but would only be adopted for the DFW 2008 ozone

NAAQS nonattainment area if other measures change in response to comment such that additional reductions are necessary to cover the 3% emissions reduction requirement for contingency.

**Table 4-7: 10-County DFW 2008 Ozone NAAQS Nonattainment Area RFP VOC Contingency Measure Reductions in Tons Per Day**

Proposed Control Measure	VOC Reductions (tpd)	Previous VOC Limits (Percent or g/l of Product)	Proposed VOC Limits (Percent or g/l of Product)	Proposed Location in Chapter 115
Degreasing	9.86	None	25 g/l	Subchapter E, Division 1
Industrial Maintenance Coatings	2.95	450 g/l	250 g/l	Subchapter E, Division 5
Industrial Cleaning Solvents	1.92	50 g/l	25 g/l general and higher specialty limits <sup>1</sup>	Subchapter E, Division 6
Emulsified Asphalt Paving	1.32	Use-specific percentages by weight	0.1% VOC by weight	Subchapter F, Division 1
Traffic Marking Coatings	1.10	150 g/l	100 g/l	Subchapter E, Division 5
Industrial Adhesives	3.31	Use-specific limits <sup>2</sup>	Use-specific limits <sup>3</sup>	Subchapter E, Division 7
<b>Total Reductions (sufficient to meet contingency requirements)</b>	<b>15.23<sup>4</sup></b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Total Reductions (all measures)</b>	<b>20.46</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

Note 1: Limits are based on the material being cleaned.

Note 2: Use-specific limits developed in accordance with Control Techniques Guidelines for Miscellaneous Industrial Adhesives (EPA 453/R-08-005 2008/09).

Note 3: Use-specific limits developed in accordance with rules in other states.

Note 4: Total reductions of 15.23 tpd do not include industrial cleaning solvents or industrial adhesives.

**Table 4-8: Eight-County HGB 2008 Ozone NAAQS Nonattainment Area RFP VOC Contingency Measure Reductions in Tons Per Day**

Proposed Control Measure	VOC Reductions (tpd)	Previous VOC Limits (Percent or g/l of Product)	Proposed VOC Limits (Percent or g/l of Product)	Proposed Location in Chapter 115
Degreasing	7.44	None	25 g/l	Subchapter E, Division 1
Industrial Maintenance Coatings	2.79	450 g/l	250 g/l	Subchapter E, Division 5



Proposed Control Measure	VOC Reductions (tpd)	Previous VOC Limits (Percent or g/l of Product)	Proposed VOC Limits (Percent or g/l of Product)	Proposed Location in Chapter 115
Industrial Cleaning Solvents	1.71	50 g/l	25 g/l general and higher specialty <sup>1</sup>	Subchapter E, Division 6
Emulsified Asphalt Paving	1.36	Use-specific percentages by weight	0.1% VOC by weight	Subchapter F, Division 1
Traffic Marking Coatings	0.88	150 g/l	100 g/l	Subchapter E, Division 5
Industrial Adhesives	3.12	Use-specific limits <sup>2</sup>	Use-specific limits <sup>3</sup>	Subchapter E, Division 7
<b>Total Reductions</b>	<b>17.30</b>	N/A	N/A	N/A

Note 1: Limits are based on the material being cleaned.

Note 2: Use-specific limits developed in accordance with Control Techniques Guidelines for Miscellaneous Industrial Adhesives (EPA 453/R-08-005 2008/09).

Note 3: Use-specific limits developed in accordance with rules in other states.

#### 4.7.2 Contingency Measures Summary

The proposed contingency measure reductions are conditional and prospective (not previously implemented) and would reduce VOC emissions in DFW and/or HGB 2008 ozone NAAQS nonattainment areas should the areas not meet RFP analysis year requirements. If these requirements are not met, then the proposed contingency measures to reduce VOC emissions would be triggered upon EPA publication of a notice in the *Federal Register* that the DFW and/or HGB area failed to meet an RFP analysis year requirement under the 2008 ozone NAAQS and TCEQ's subsequent publication in the *Texas Register* specifying what contingency measures are being implemented and establishing the implementation schedule, which is proposed to be by no later than nine months after *Texas Register* publication. Summaries of the contingency measure demonstrations are located below in Tables 4-9 and 4-10. Each contingency measure can be triggered independently for the DFW and/or HGB 2008 ozone NAAQS nonattainment area. The TCEQ would implement enough contingency measures in the applicable area to meet or exceed the required contingency reductions.

**Table 4-9: DFW 2008 Ozone NAAQS Nonattainment Area RFP Contingency Plan (tons per day unless otherwise noted)**

Line	Contingency Plan Description	NO <sub>x</sub>	VOC
Line 1	10-county DFW 2011 controlled base year EI	448.09	493.56
Line 2	Percent for contingency calculation (total of 3%)	0.00	3.00
Line 3	10-county DFW required contingency reductions (Line 1 x Line 2 expressed as a percent)	0.00	14.81
	<b>Control reductions to meet contingency requirements</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Line 4	Total 10-county DFW contingency reductions	0.00	15.23
Line 5	Contingency Excess (+) or Shortfall (-)	0.00	0.42
Line 6	Are the contingency reductions greater than or equal to the required contingency reductions?	Yes	Yes

**Table 4-10: HGB 2008 Ozone NAAQS Nonattainment Area RFP Contingency Plan (tons per day unless otherwise noted)**

<b>Line</b>	<b>Contingency Plan Description</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Line 1	Eight-county 2011 controlled base year EI	471.62	549.59
Line 2	Percent for contingency calculation (total of 3%)	0.00	3.00
Line 3	Eight-county HGB required contingency reductions (Line 1 x Line 2 expressed as a percent)	0.00	16.49
	<b>Control reductions to meet contingency requirements</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Line 4	Total eight-county HGB contingency reductions	0.00	17.30
Line 5	Contingency Excess (+) or Shortfall (-)	0.00	0.81
Line 6	Are the contingency reductions greater than or equal to the required contingency reductions?	Yes	Yes

## CHAPTER 5: MOTOR VEHICLE EMISSIONS BUDGET

### 5.1 INTRODUCTION

This proposed Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HGB) Reasonable Further Progress (RFP) State Implementation Plan (SIP) Revision for the 2008 Eight-Hour Ozone National Ambient Air Quality Standard establishes motor vehicle emissions budgets (MVEB), setting the allowable on-road mobile emissions an area can produce while continuing to demonstrate RFP. The DFW and the HGB 2008 ozone NAAQS nonattainment areas' RFP MVEBs are calculated by subtracting the on-road mobile source control strategies emissions reductions necessary to demonstrate RFP from the uncontrolled, projected on-road mobile source emissions inventories. Local transportation planning organizations use applicable MVEBs to demonstrate that projected emissions from transportation plans, programs, and projects are equal to or less than the MVEBs, as required by the federal transportation conformity rules (40 Code of Federal Regulations Part 93, Subpart A).

The Texas Commission on Environmental Quality (TCEQ) developed updated on-road mobile source emissions inventories and control strategy reduction estimates using the latest planning assumptions and the United States Environmental Protection Agency's Motor Vehicle Emissions Simulator version 3 (MOVES3) emissions factor model. MOVES3 was the latest version of the model available at the time of inventory development. The MOVES4 model was not used in this SIP revision since TCEQ had already invested significant resources to develop an on-road mobile source EI using MOVES3. As EPA stated in its notice of availability published in the Federal Register on September 12, 2023, "[...] state and local agencies that have already completed significant work on a SIP with a version of MOVES3 (e.g., attainment modeling has already been completed with MOVES3) may continue to rely on this earlier version of MOVES" (88 FR 62567, 62569). Updated emissions inventory (EI) development included development of a 2011 base year EI, uncontrolled emissions inventories for 2023 and 2026, controlled emissions inventories for 2023 and 2026, and control strategies reduction estimates for 2023 and 2026. TCEQ contracted the North Central Texas Council of Governments and Texas A&M Transportation Institute to develop the RFP emissions inventories and control strategies reductions for the DFW 2008 ozone NAAQS nonattainment area and the HGB 2008 ozone NAAQS nonattainment area, respectively. Detailed documentation of the on-road mobile EI development is provided in the following contractor reports:

- Appendix 12: *Dallas-Fort Worth Motor Vehicle Emissions Simulator 3 (MOVES3)-Based Reasonable Further Progress On-Road Emissions Inventories and Control Strategies Reductions for Analysis Years 2011, 2023, and 2026;*
- Appendix 13: *Updated 2026 On-road EIs with RFG in all 10 Counties for the Dallas-Fort Worth (DFW) 2008 Eight-Hour Ozone Reasonable Further Progress (RFP); and*
- Appendix 14: *Houston-Galveston-Brazoria (HGB) 2008-Eight-Hour Ozone Reasonable Further Progress (RFP) On-Road Mobile Emissions Inventories.*

### 5.2 MVEBS FOR RFP ANALYSIS YEARS

The MVEBs in this proposed DFW-HGB RFP SIP revision are established from the on-road mobile source EIs for RFP analysis years, the on-road mobile source reductions

strategies used to demonstrate RFP, and a transportation conformity safety margin, if one is used. A transportation conformity safety margin is allowed when there is an excess of emissions reductions beyond those required to demonstrate RFP. Details for MVEB calculations are documented in Appendix 1: *Dallas-Fort Worth (DFW) Reasonable Further Progress (RFP) Demonstration Spreadsheet Reasonable Further Progress Demonstration Spreadsheet, Tab 08 Calc 2023 RFP MVEB and Tab 09 Calc 2026 RFP MVEB* and in Appendix 2: *Houston-Galveston-Brazoria (HGB) Reasonable Further Progress Demonstration Spreadsheet, Tab 08 Calc 2023 RFP MVEB and Tab 09 Calc 2026 RFP MVEB*. Summaries of the MVEB calculations for 2023 and 2026 are presented in:

- Table 5-1: *2023 RFP MVEBs for the 10-County DFW 2008 Ozone NAAQS Nonattainment Area (tons per day);*
- Table 5-2: *2026 RFP MVEBs for the 10-County DFW 2008 Ozone NAAQS Nonattainment Area (tons per day);*
- Table 5-3: *2023 RFP MVEBs for the Eight-County HGB 2008 Ozone NAAQS Nonattainment Area (tons per day); and*
- Table 5-4: *2026 RFP MVEBs for the Eight-County HGB 2008 Ozone NAAQS Nonattainment Area (tons per day).*

The RFP control strategies for this proposed SIP revision produce more than the required emissions reductions for the 2023 analysis year and 2026 attainment year for the DFW and HGB 2008 ozone NAAQS nonattainment areas, therefore, some of the excess in emissions reductions for the 2023 analysis year and 2026 attainment year is used to provide MVEB safety margins for the area’s MVEBs. The safety margins are less than the total excess emissions reductions remaining after demonstrating RFP for the DFW and HGB 2008 ozone NAAQS nonattainment areas. Therefore, even if these safety margins are used, the areas still demonstrate RFP for 2023 and 2026.

**Table 5-1: 2023 RFP MVEBs for the 10-County DFW 2008 Ozone NAAQS Nonattainment Area (tons per day)**

<b>Control Strategy Description</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
2023 on-road mobile controlled inventory	79.55	41.62
Transportation conformity safety margin	8.01	4.18
<b>2023 10-County DFW area MVEB with safety margin</b>	<b>87.56</b>	<b>45.80</b>

**Table 5-2: 2026 RFP MVEBs for the 10-County DFW 2008 Ozone NAAQS Nonattainment Area (tons per day)**

<b>Control Strategy Description</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
2026 on-road mobile controlled inventory	66.72	35.39
Transportation conformity safety margin	6.79	3.68
<b>2026 10-County DFW area MVEB with safety margin</b>	<b>73.51</b>	<b>39.07</b>

**Table 5-3: 2023 RFP MVEBs for the Eight-County HGB 2008 Ozone NAAQS Nonattainment Area (tons per day)**

<b>Control Strategy Description</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
2023 on-road mobile controlled inventory	61.55	33.86
Transportation conformity safety margin	6.22	3.41
<b>2023 Eight-County HGB area MVEB with safety margin</b>	<b>67.77</b>	<b>37.27</b>

**Table 5-4: 2026 RFP MVEBs for the Eight-County HGB 2008 Ozone NAAQS Nonattainment Area (tons per day)**

<b>Control Strategy Description</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
2026 on-road mobile controlled inventory	50.93	28.97
Transportation conformity safety margin	5.34	2.91
<b>2026 Eight-County HGB area MVEB with safety margin</b>	<b>56.27</b>	<b>31.88</b>

*Appendices Available Upon Request*

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