

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

**AGENDA REQUESTED:** 05/31/2023

**DATE OF REQUEST:** 05/12/2023

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

**CAPTION: Docket No. 2023-0321-SIP.** Consideration for publication of, and hearing on, the proposed Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HGB) Moderate Areas Reasonable Further Progress (RFP) State Implementation Plan (SIP) Revision for the 2015 Eight-Hour Ozone National Ambient Air Quality Standard (NAAQS).

To meet federal Clean Air Act requirements, the proposed SIP revision would include an analysis of RFP toward attainment of the 2015 eight-hour ozone NAAQS, and RFP motor vehicle emissions budgets for the 2023 attainment year. (Denine Calvin, Terry Salem; Project No. 2022-023-SIP-NR)

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Copy to CCC Secretary? NO  YES

# Texas Commission on Environmental Quality

## Interoffice Memorandum

**To:** Commissioners **Date:** May 12, 2023

**Thru:** Laurie Gharis, Chief Clerk  
Erin E. Chancellor, Interim Executive Director

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

**Docket No.:** 2023-0321-SIP

**Subject:** Commission Approval for Proposed Dallas-Fort Worth (DFW) and Houston-Galveston-Brazoria (HGB) Moderate Areas Reasonable Further Progress (RFP) State Implementation Plan (SIP) Revision for the 2015 Eight-Hour Ozone Standard Nonattainment Area

DFW-HGB 2015 Ozone NAAQS Moderate RFP SIP Revision  
Non-Rule Project No. 2022-023-SIP-NR

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

The DFW 2015 ozone NAAQS nonattainment area, consisting of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise Counties, along with the HGB 2015 ozone NAAQS nonattainment area, consisting of Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery Counties, were previously classified as marginal for the 0.070 parts per million standard with an August 3, 2021 attainment date. Based on 2020 monitoring data, neither area attained the standard and neither qualified for a one-year attainment date extension in accordance with federal Clean Air Act (FCAA), §181(a)(5).<sup>1</sup> On October 7, 2022, the United States Environmental Protection Agency (EPA) published a final notice reclassifying the DFW and HGB areas to moderate, effective date of November 7, 2022 (87 *Federal Register* (FR) 60897).

The DFW and HGB areas are now subject to the moderate nonattainment area requirements in FCAA, §182(b), and the Texas Commission on Environmental Quality (TCEQ) is required to submit moderate classification attainment demonstration (AD) and RFP SIP revisions to EPA. The attainment date for the moderate classification in the DFW and HGB areas is August 3, 2024, with a 2023 attainment year (87 FR 60897).<sup>2</sup> 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.

### **Scope of the SIP revision:**

As a result of the reclassification, the TCEQ is required to submit to EPA an RFP SIP revision consistent with FCAA requirements for moderate nonattainment areas. Attainment demonstration SIP revision proposals are being developed concurrent with this SIP revision (Project No. 2022-021-SIP-NR and 2022-022-SIP-NR).

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<sup>1</sup> An area that fails to attain the 2015 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 (70 ppb); the DFW area's fourth highest daily maximum eight-hour average for 2020 was 77 ppb as measured at the Grapevine Fairway monitor (C70/A301/x182). The DFW area's design value for 2020 was 76 ppb. The HGB area's fourth highest daily maximum eight-hour average for 2020 was 75 ppb as measured at the Conroe Relocated monitor (C78/A321). The HGB area's design value for 2020 was 79 ppb.

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

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**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 moderate ozone nonattainment area requirements of FCAA, §182(b)(1)(A) and EPA's *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2015 eight-hour ozone standard SIP requirements rule) according to the following increments:

- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- a 3% emissions reduction for the one-year period between January 1, 2024 through December 31, 2024 as attainment year RFP contingency for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the six-county HGB 2015 ozone NAAQS nonattainment area; and
- a 3% emissions reduction for the one-year period between January 1, 2024 through December 31, 2024 as attainment year RFP contingency for the six-county HGB 2015 ozone NAAQS nonattainment area.

In addition to demonstrating the required emissions reductions, this proposed SIP revision would also provide motor vehicle emissions budgets (MVEB) for the 2023 attainment year.

This proposed SIP revision demonstrates RFP for the DFW and HGB 2015 ozone NAAQS moderate nonattainment areas for the 2023 attainment year as well as the 2024 contingency year.

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

This proposed SIP revision is required to demonstrate that the DFW and HGB 2015 ozone NAAQS moderate nonattainment areas will achieve emissions reductions consistent with the requirements of FCAA, §182(b)(1) and the 2015 eight-hour ozone standard SIP requirements rule.

The RFP calculations documented in this proposed SIP revision rely on an RFP base year of 2017 and a 2023 attainment year. This proposed SIP revision includes the required 15% emissions reductions for the six-year period from January 1, 2018 through December 31, 2023 for each nonattainment area. This proposed SIP revision also incorporates an additional 3% emissions reduction for the one-year period from January 1, 2024 through December 31, 2024 as contingency to be implemented if the area fails to achieve the targeted RFP emission reductions in 2023.

**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. The SIP revision is proposed under 42 United States Code, §§7420 *et seq.*, and implementing rules in 40 Code of Federal Regulations Part 51, which requires

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states 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.

**Effect on the:**

**A.) Regulated community:**

This proposed SIP revision would set NO<sub>x</sub> and VOC MVEBs for the 2023 attainment year. If found adequate or approved by the EPA for conformity purposes, use of the MVEBs could affect transportation planning conducted by local governments in both the DFW and HGB areas.

**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 2015 Eight-Hour Ozone Moderate 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:**

The current project timeline allows for submission to EPA by the end of 2023, after EPA's January 1, 2023 SIP submittal deadline. Missing the submittal deadline could lead to EPA issuing a finding of failure to submit prior to TCEQ's planned submittal, which would start sanctions and federal implementation plan (FIP) clocks. EPA would be required to promulgate a FIP anytime within two years after finding TCEQ failed to make the required submission unless TCEQ submits, and EPA approves, a plan revision correcting the deficiency prior to promulgating the FIP. Sanctions could include transportation funding restrictions, grant withholdings, and 2-to-1 emissions offset requirements for new construction and major modifications of stationary sources in the DFW and HGB 2015 ozone NAAQS nonattainment areas.

A 2021 court ruling on the 2015 eight-hour ozone standard SIP requirements rule vacated provisions in the rule allowing for the use of previously implemented measures as contingency measures (*Sierra Club v. EPA*, 21 F.4th 815, D.C. Cir. 2021). EPA published draft guidance on contingency measures in the *Federal Register* for public comment on March 23, 2023. Since EPA had not issued guidance to states regarding contingency measures at the time it was developed, this SIP revision relies on the historically approved approach of using surplus mobile source emissions reductions to fulfill the contingency measure requirements.

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

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

The commission could choose to not comply with requirements to develop and submit an RFP SIP revision to EPA. If the DFW-HGB RFP SIP revision is not submitted, EPA could impose sanctions on the state and promulgate a 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 2015 ozone NAAQS nonattainment areas. EPA could impose such sanctions and implement a FIP until the state submitted, and tEPA approved, an RFP SIP revision for the area.

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

**Anticipated proposal date:** May 31, 2023

**Anticipated public hearing date:** July 6, 2023 in the DFW area and July 11, 2023 in the HGB area

**Anticipated public comment period:** June 2, 2023 through July 17, 2023

**Anticipated adoption date:** November 8, 2023

**Agency contacts:**

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cc: Chief Clerk, 2 copies  
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REVISIONS TO THE STATE OF TEXAS AIR QUALITY  
IMPLEMENTATION PLAN FOR THE CONTROL OF OZONE AIR  
POLLUTION

DALLAS-FORT WORTH AND HOUSTON-GALVESTON-  
BRAZORIA 2015 EIGHT-HOUR OZONE STANDARD  
NONATTAINMENT AREAS



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
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**DALLAS-FORT WORTH AND HOUSTON-GALVESTON-BRAZORIA  
MODERATE AREAS REASONABLE FURTHER PROGRESS STATE  
IMPLEMENTATION PLAN REVISION FOR THE 2015 EIGHT-HOUR  
OZONE NATIONAL AMBIENT AIR QUALITY STANDARD**

PROJECT NUMBER 2022-023-SIP-NR

Proposal  
May 31, 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 October 26, 2015, the United States Environmental Protection Agency (EPA) published a final rule revising the eight-hour ozone standard from 0.075 parts per million (ppm) to 0.070 ppm (80 *Federal Register* (FR) 65292). On June 4, 2018, the EPA published initial designations for the 2015 eight-hour ozone standard with an effective date of August 3, 2018 (83 FR 25766). The EPA designated a nine-county Dallas-Fort Worth (DFW) area for the 2015 eight-hour ozone NAAQS (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise Counties) as nonattainment with a marginal classification. In the same action, the EPA designated a six-county Houston-Galveston-Brazoria (HGB) area for the 2015 eight-hour ozone NAAQS (Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery Counties) as nonattainment with a marginal classification.

As indicated in the EPA's *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach; Final Rule* published on March 9, 2018, the attainment date for nonattainment areas classified as marginal was August 3, 2021 with a 2020 attainment year (83 FR 10376).<sup>1</sup> Based on monitoring data from 2018, 2019, and 2020, neither the DFW area nor the HGB area attained the 2015 eight-hour ozone NAAQS in 2020, and neither qualified for a one-year attainment date extension in accordance with FCAA, §181(a)(5).<sup>2</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 DFW and HGB areas are now subject to the requirements in FCAA, §182(b), for moderate ozone nonattainment areas. The Texas Commission on Environmental Quality is required to submit moderate classification attainment demonstration (AD) and RFP state implementation plan (SIP) revisions to the EPA. The attainment date for the moderate classification is August 3, 2024 with a 2023 attainment year (87 FR 60897). 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.

This proposed DFW-HGB RFP SIP revision is not required to demonstrate attainment of the 2015 ozone NAAQS but rather to demonstrate that the DFW and HGB 2015 ozone NAAQS nonattainment areas will meet the RFP requirements for moderate ozone

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

<sup>2</sup> An area that fails to attain the 2015 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 (70 ppb); the DFW area's fourth highest daily maximum eight-hour average for 2020 was 77 ppb as measured at the Grapevine Fairway monitor (C70/A301/x182). The DFW area's design value for 2020 was 76 ppb. The HGB area's fourth highest daily maximum eight-hour average for 2020 was 75 ppb as measured at the Conroe Relocated monitor (C78/A321). The HGB area's design value for 2020 was 79 ppb.



nonattainment areas. RFP requirements for moderate ozone nonattainment areas, as specified in Section 182(b)(1) of the 1990 FCAA Amendments and in 40 Code of Federal Regulations §51.1310, involve reducing ozone precursor emissions (nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC)) at annual increments between the base year and the attainment year.

This proposed SIP revision demonstrates that the DFW and HGB 2015 ozone NAAQS nonattainment areas will achieve emissions reductions in NO<sub>x</sub> and/or VOC consistent with the moderate ozone nonattainment area requirements of FCAA, §182(b)(1)(A) and the 2015 eight-hour ozone standard SIP requirements rule according to the following increments:

- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- an RFP contingency plan in case of failure to demonstrate progress for 2023, calculated as a 3% emissions reduction for potential use during the one-year period between January 1, 2024 through December 31, 2024 for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the six-county HGB 2015 ozone NAAQS nonattainment area; and
- an RFP contingency plan in case of failure to demonstrate progress for 2023, calculated as a 3% emissions reduction for potential use during the one-year period between January 1, 2024 through December 31, 2024 for the six-county HGB 2015 ozone NAAQS nonattainment area.

The RFP methodology involves development of the 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 can be 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 SIP revision also sets 2023 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 demonstrates RFP for the DFW and HGB moderate 2015 eight-hour ozone nonattainment areas for the 2023 attainment year. This proposed SIP revision also contains a contingency plan for 2024 as required by FCAA, §172(c)(9).

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. Recent court decisions have invalidated key aspects of EPA's historical approach to implementing the contingency measure requirement. At the time the proposed SIP revision was being developed, the EPA had historically

accepted the use of surplus mobile source emissions reductions from previously implemented federal rules to fulfill the contingency measure requirements. However, the 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.

Since the EPA had not issued final guidance to states regarding contingency measures at the time this SIP revision was developed, this SIP revision relies on the historically approved approach of using surplus mobile source emissions reductions to fulfill the contingency measure requirements.

## 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 the TACB effective September 1, 1993, and its powers, duties, responsibilities, and functions were transferred to the Texas Natural Resource Conservation Commission (TNRCC). In 2001, the 77th Texas Legislature continued the existence of the TNRCC until September 1, 2013 and changed the name of the TNRCC to the TCEQ. In 2009, the 81st Texas Legislature, during a special session, amended section 5.014 of the Texas Water Code, changing the expiration date of the TCEQ to September 1, 2011, unless continued in existence by the Texas Sunset Act. In 2011, the 82nd Texas Legislature continued the existence of the TCEQ until 2023.

With the creation of the TNRCC (and its successor the TCEQ), authority over air quality is found in both the Texas Water Code (TWC) and the TCAA. The general authority of the 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 the TCEQ, and the responsibilities and authority of the executive director. TWC, Chapter 5 also authorizes the TCEQ to implement action when emergency conditions arise and to conduct hearings. The TCAA specifically authorizes the TCEQ to establish the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general, comprehensive plan. The TCAA, Subchapters A - D, also authorize the TCEQ to collect information to enable the commission to develop an inventory of emissions; to conduct research and investigations; to enter property and examine records; to prescribe monitoring requirements; to institute enforcement proceedings; to enter into contracts and execute instruments; to formulate rules; to issue orders taking into consideration factors bearing upon health, welfare, social and economic factors, and practicability and reasonableness; to conduct hearings; to establish air quality control regions; to encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities.

Local government authority is found in Subchapter E of the TCAA. Local governments have the same power as the TCEQ to enter property and make inspections. They also may make recommendations to the commission concerning any action of the TCEQ

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

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

#### Applicable Law

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

#### Statutes

All sections of each subchapter are included, with the most recent effective date, unless otherwise noted.

TEXAS HEALTH & SAFETY CODE, Chapter 382	September 1, 2021
TEXAS WATER CODE	September 1, 2021

#### Chapter 5: Texas Natural Resource Conservation Commission

Subchapter A: General Provisions

Subchapter B: Organization of the Texas Natural Resource Conservation Commission

Subchapter C: Texas Natural Resource Conservation Commission

Subchapter D: General Powers and Duties of the Commission

Subchapter E: Administrative Provisions for Commission

Subchapter F: Executive Director (except §§5.225, 5.226, 5.227, 5.231, 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, 2022, 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

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  - 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)
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AD	attainment demonstration
AEDT	Aviation Environmental Design Tool
AERR	Air Emissions Reporting Requirements
APU	auxiliary power unit
BY	Base Year
CMV	commercial marine vessel
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
HGB	Houston-Galveston-Brazoria
I/M	inspection and maintenance
ICI	industrial, commercial, and institutional
MOVES	Motor Vehicle Emissions Simulator
MOVES3	MOVES version 3
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
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
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 Reasonable Further Progress (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 a formal redesignation request and maintenance plan SIP revision for the one-hour and 1997 eight-hour ozone NAAQS for the HGB area on December 12, 2018 and for the DFW area on March 27, 2019. The SIP revisions included a request that the DFW and HGB area 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 use a 2014 base year inventory and include interim year inventories for 2020 and 2026, establish motor vehicle emissions budgets (MVEB) for 2032, and include a contingency plan.

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

On March 12, 2008, the EPA lowered 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, the EPA

published final designations for the 2008 eight-hour ozone standard with an effective date of July 20, 2012 (77 FR 30088). The 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 (77 FR 30160).

On June 6, 2013, the 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 D.C. Circuit Court published an opinion on December 23, 2014 agreeing with two challenges to the 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, the 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. 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. 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. 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>3</sup> and neither qualified for a one-year attainment date extension in accordance with FCAA, §181(a)(5).<sup>4</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, 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
- 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.

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<sup>3</sup> The attainment year ozone season is the ozone season immediately preceding a nonattainment area's attainment deadline.

<sup>4</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.

#### 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, and neither area was qualified nor granted a one-year attainment date extension in accordance with FCAA, §181(a)(5).<sup>5</sup> On October 7, 2022, the EPA published a final notice 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 the 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 (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

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<sup>5</sup> *Id*

FCAA, §181(a)(5).<sup>6</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.

## 1.2 RFP REQUIREMENTS

FCAA, §110, requires states to submit SIP revisions that contain enforceable measures to achieve the NAAQS. FCAA, §182(b) also requires states with ozone nonattainment areas classified as moderate 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 a 2017 base year and the 2023 attainment year for both the DFW and HGB 2015 ozone NAAQS nonattainment areas.

This proposed DFW-HGB RFP SIP revision demonstrates that both areas will achieve emissions reductions consistent with the requirements of FCAA, §182(b)(1), the EPA's *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements* according to the following increments (83 FR 62998), and the EPA's historical approach to implementing contingency requirements:

- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- an RFP contingency plan in case of failure to demonstrate progress for 2023, calculated as a 3% emissions reduction for potential use during the one-year period between January 1, 2024 through December 31, 2024 for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the six-county HGB 2015 ozone NAAQS nonattainment area; and
- an RFP contingency plan in case of failure to demonstrate progress for 2023, calculated as a 3% emissions reduction for potential use during the one-year period between January 1, 2024 through December 31, 2024 for the six-county HGB 2015 ozone NAAQS nonattainment area.

Requirements for moderate ozone nonattainment areas under the FCAA include a 15% VOC emissions reduction within six years after designation; however, the EPA's 2015

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<sup>6</sup> An area that fails to attain the 2015 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 (70 ppb); the DFW area's fourth highest daily maximum eight-hour average for 2020 was 77 ppb as measured at the Grapevine Fairway monitor (C70/A301/x182). The DFW area's design value for 2020 was 76 ppb. The HGB area's fourth highest daily maximum eight-hour average for 2020 was 75 ppb as measured at the Conroe Relocated monitor (C78/A321). The HGB area's design value for 2020 was 79 ppb.

eight-hour ozone standard SIP requirements rule indicates that nonattainment areas with a previously approved plan meeting the 15% VOC requirement under either the one-hour ozone standard, the 1997 eight-hour ozone standard, or the 2008 eight-hour ozone standard may substitute reductions in NO<sub>x</sub> for VOC.<sup>7</sup>

All of the DFW and HGB 2015 ozone NAAQS nonattainment area counties have met the 15% VOC-only emissions reduction requirement for RFP under the revoked one-hour ozone standard, the 1997 eight-hour ozone standard, or the 2008 eight-hour ozone standard. This SIP revision, therefore, demonstrates the required 15% emissions reductions using either NO<sub>x</sub> or VOC.

The RFP calculations documented in this proposed SIP revision rely on an RFP base year of 2017 and a 2023 attainment year. In accordance with the 2015 ozone standard SIP requirements rule, the 15% reduction requirement covers the period from January 1, 2018 through December 31, 2023. This proposed SIP revision incorporates an additional 3% emissions reduction to cover the one-year contingency period from January 1, 2024 through December 31, 2024 for both areas.

In addition to demonstrating the required emissions reductions, this proposed SIP revision also provides NO<sub>x</sub> and VOC MVEBs for the 2023 attainment year for both areas.

This proposed SIP revision demonstrates RFP for the DFW and HGB 2015 ozone NAAQS nonattainment areas for the 2023 attainment year. This proposed SIP revision also contains a contingency plan for 2024 as required by FCAA, §172(c)(9).

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. Recent court decisions have invalidated key aspects of EPA's historical approach to implementing the contingency measure requirement. At the time the proposed SIP revision was being developed, the EPA had historically accepted the use of surplus mobile source emissions reductions from previously implemented federal rules to fulfill the contingency measure requirements. However, the 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.

Since the EPA had not issued final guidance to states regarding contingency measures at the time this SIP revision was developed, this SIP revision relies on the historically approved approach of using surplus mobile source emissions reductions to fulfill the contingency measure requirements.

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<sup>7</sup> NO<sub>x</sub> may be substituted for VOC under conditions defined in the EPA's December 1993 [NO<sub>x</sub> Substitution Guidance](http://www.epa.gov/ttncaaa1/t1/memoranda/noxsubst.pdf) (<http://www.epa.gov/ttncaaa1/t1/memoranda/noxsubst.pdf>).

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)**

The 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. The 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, Section 185 fees, and an update from the 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).

The 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 the 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**

The 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 Section 185 fees, and Reasonably Available Control Technology (RACT).

#### **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 six-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](http://www.h-gac.com/board-of-directors/advisory-committees/regional-air-quality-planning-advisory-committee/default.aspx) webpage (http://www.h-gac.com/board-of-directors/advisory-committees/regional-air-quality-planning-advisory-committee/default.aspx).

#### 1.4 PUBLIC HEARING AND COMMENT INFORMATION

The commission will offer public hearings for this proposed SIP revision at the following times and locations:

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

City	Date	Time	Location
Arlington	July 6, 2023	7:00 pm	101 W. Abrams St Arlington, TX 76010
Houston	July 11, 2023	7:00 pm	Houston-Galveston Area Council 3555 Timmons Ln #100 Houston, TX 77027

The public comment period will open on June 2, 2023 and close on July 17, 2023. Written comments will be accepted via mail, fax, or through the [TCEQ Public Comment system](https://tceq.commentinput.com/) (https://tceq.commentinput.com/). File size restrictions may apply to comments being submitted via the TCEQ Public Comment system. All comments should reference the “DFW-HGB 2015 Ozone NAAQS Moderate RFP SIP Revision” and should reference Project Number 2022-023-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 the TCEQ Public Comments system. File size restrictions may apply to comments being submitted via the TCEQ Public Comments system. Comments must be received by 11:59 p.m. CDT on July 17, 2023.

An electronic version of the proposed SIP Revision and appendices can be found at the 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/sipplans.html) webpage (https://www.tceq.texas.gov/airquality/sip/sipplans.html).

#### 1.5 SOCIAL AND ECONOMIC CONSIDERATIONS

No new control strategies have been incorporated into this proposed DFW-HGB RFP SIP revision. Therefore, there are no additional social or economic costs associated with this revision.

#### 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, volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>), 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) 2015 eight-hour ozone National Ambient Air Quality Standard (NAAQS) Moderate Reasonable Further Progress (RFP) State Implementation Plan (SIP) revision demonstrates RFP—for both nonattainment areas—for a 2023 attainment year according to the United States Environmental Protection Agency's (EPA) *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2015 eight-hour ozone standard SIP requirements rule), published in the *Federal Register* (FR) on December 6, 2018 (83 FR 62998). Specifically, this proposed DFW-HGB RFP SIP revision demonstrates a 15% emissions reduction from calendar years 2018 through 2023 for the counties designated as moderate nonattainment for the 2015 ozone NAAQS by combining NO<sub>x</sub> and VOC emissions reductions.

To complete the RFP calculations, a set of inventories and control measures reduction estimates is required. In accordance with the requirement for these inventories and estimates, this proposed DFW-HGB RFP SIP revision includes documentation of emissions inventories for the 2017 base year, for the 2023 attainment year, and for the attainment year RFP contingency requirement (2024). Those emissions inventories provide the basis for demonstrating how the required RFP emissions reductions will be met.

To develop an RFP SIP revision for the 2015 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 attainment year inventories according to RFP requirements; and (4) account for creditable emissions reductions in the attainment year EI in accordance with applicable requirements. When the RFP controlled emissions reductions meet or exceed the calculated target emissions reductions, then RFP is demonstrated.



This proposed DFW-HGB RFP SIP revision includes:

- a 2017 base year EI;

The base year EI is the starting point for calculating the target levels of emissions. A base year of 2017 was selected in accordance with the EPA's 2015 eight-hour ozone standard SIP requirements rule.

- a 2023 uncontrolled EI;

The RFP analysis requires an uncontrolled EI with growth between the base year and the attainment year. The uncontrolled EI serves as the basis for determining the amount of emissions reductions required to meet the RFP target for the attainment year.

- quantification of control measure reductions for the 2023 attainment year;

The RFP analysis requires the calculations of emissions reductions for control strategies, 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 controlled EI; 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.

- 2024 RFP contingency control reductions.

The RFP analysis requires the calculation of the emissions reductions for control strategies in 2024, the year following the attainment year. These control reductions must be implemented if an RFP requirement is not met. A discussion of the RFP contingency control strategies for the DFW and HGB 2015 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 2015 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*.

## **2.2 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 the 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 2015 ozone NAAQS nonattainment areas. Therefore, 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 the TCEQ's [Point Source Emissions Inventory](https://www.tceq.texas.gov/airquality/point-source-ei/psei.html) webpage (https://www.tceq.texas.gov/airquality/point-source-ei/psei.html). Additional information is available upon request from the TCEQ's Air Quality Division.

### **2.2.2 Updated 2017 Base Year Inventory**

The 2017 point source EI data were extracted from STARS on December 7, 2022. 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 2015 ozone NAAQS nonattainment areas that submitted a 2017 EI. The data reflect revisions to the 2017 EI that were reviewed, approved, and entered into STARS on or before the extract date.

### **2.2.3 Updated 2023 Attainment Year Inventories**

Updated attainment year inventories were developed according to the general requirements described in Section 2.2.1: *Emissions Inventory Development*. The TCEQ designated the 2019 EI as the starting point for EI projections. The 2019 point source EI data were extracted from STARS on December 7, 2022. 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 2015 ozone NAAQS nonattainment areas that submitted a 2019 EI. The data reflect revisions to the 2019 EI that were reviewed, approved, and entered into STARS on or before the extract date.

#### **2.2.3.1 DFW 2023 Attainment Year Inventory**

The TCEQ reviewed cement kilns separately from other sources. Cement kiln NO<sub>x</sub> emissions were projected by adding either 30 TAC Chapter 117 limits or site- or source-specific enforceable limits, as appropriate. Emissions from other sources were projected by using the maximum of 2019, 2020, or 2021 emissions. This approach follows the EPA's guidance, which assumes stable emissions trends when projecting future emissions.<sup>8</sup> While continued economic growth is anticipated for the DFW 2015 ozone NAAQS nonattainment area, the EPA has noted that emissions trends for ozone

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<sup>8</sup> [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)

precursors and particulate matter generally have remained stable or declined even during economic growth; therefore, the EPA makes similar assumptions when projecting emissions for many source categories. This approach is also in line 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 HGB 2015 ozone NAAQS nonattainment area over the last ten years. Emissions trend data is available at the TCEQ [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 December 7, 2022. The extracted data include reported annual and ozone season daily emissions of NO<sub>x</sub> and VOC for each site in the DFW 2015 ozone NAAQS nonattainment area that submitted a 2019, 2020, or 2021 EI. The data reflect revisions to the 2020 and 2021 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: *DFW 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2017 Base Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*; and
- Table 2-5: *DFW 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 Attainment Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*.

#### 2.2.3.2 HGB 2023 Attainment Year Inventory

NO<sub>x</sub> and VOC emissions were projected using the maximum of the 2019, 2020, or 2021 emission rates. This approach follows the EPA's guidance,<sup>9</sup> which assumes stable emissions trends when projecting future emissions. While continued economic growth is anticipated for the HGB 2015 ozone NAAQS nonattainment area, the EPA has noted that emissions trends for ozone precursors and particulate matter generally have remained stable or declined even during economic growth; therefore, the EPA makes similar assumptions when projecting emissions for many source categories. This approach is also in line 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 HGB 2015 ozone NAAQS nonattainment area over the last ten years. Emissions trend data is available at the TCEQ [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 December 7, 2022. The extracted data include reported annual and ozone season daily emissions of NO<sub>x</sub> and VOC for each site in the HGB 2015 ozone NAAQS nonattainment area that submitted a 2019, 2020, or 2021 EI. The data reflect revisions to the 2020 and 2021 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 2-4: *HGB 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2017 Base Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)*; and

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<sup>9</sup> *Id*

- Table 2-6: *HGB 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 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 2017 Base Year Inventory

The 2017 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 2014 EIs by applying growth factors derived from Eastern Research Group (ERG) study data, the [Economy and Consumer Credit Analytics](http://www.economy.com/default.asp) website (<http://www.economy.com/default.asp>), and the United States Energy Information Administration's *Annual Energy Outlook* publication. The documentation for development of the ERG study projection factors can be found in Appendix 3: *Growth Factors for Area and Point Sources*.

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

The TCEQ committed significant resources to improve the oil and gas area source inventory categories for the 2017 base year 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*.

Another significant improvement made for the 2017 base year EI was the development of a Texas-specific industrial, commercial, and institutional (ICI) combustion emissions calculator. This improved upon the default calculations and parameters provided by the EPA for these fuel combustion sources. The documentation for development of the ICI combustion emissions calculator is provided in Appendix 5: *Industrial, Commercial, and Institutional (ICI) Fuel Use Study*.

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 the 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 Year Inventories**

Updated attainment year inventories were developed according to the general requirements described in Section 2.3.1: *Emissions Inventory Development*. The 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 EI was the use of updated emission factors for Volatile Chemical Product (VCP) categories developed by the 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 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 the EPA standard and accepted methodology for developing future year emissions inventories.

The 2023 area source EI was developed by applying the selected emissions projection factor to the 2020 emissions for each area source category. For sources where the 2020

activity data were significantly different than previous years, the 2023 area source EI was developed by applying the selected emissions projection factor to the 2017 emissions instead. 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 2017 base year inventory due to applicable compliance deadlines. 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 2-6.

## **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: NONROAD 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 NONROAD Model categories Emissions Estimation Methodology**

The Motor Vehicle Emission Simulator 3 (MOVES3) model is the EPA's latest mobile source emissions model for estimating non-road source category emissions. The TCEQ used the most recent Texas-specific utility for the non-road mobile component of the MOVES3 model, called Texas NONROAD 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 Engines 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.

The TCEQ has conducted equipment survey studies that focused on various equipment categories operating in different areas of Texas, including diesel construction equipment, liquid propane gas-powered forklifts, and agricultural equipment. The resulting survey data contributed to the updating of inputs to the TexN2.2 utility to

estimate non-road emissions more accurately for the State of Texas instead of using the national default values in the 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 NONROAD 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 Nonroad Model RFP Emissions Inventories for the HGB Six-County, DFW Nine-County, and Bexar 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 this source category to develop more accurate county-level inventories. The equipment populations for drilling rigs were set to zero in the TexN2.2 utility to avoid duplicating emissions.

Due to significant growth in the oil and gas exploration and production industry, a 2015 TCEQ-commissioned survey of oil and gas exploration and production companies was used to develop updated drilling rig emissions characterization profiles. The uncontrolled and controlled drilling rig emissions characterization profiles from this study were combined with county-level drilling activity data obtained from the 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 I, II, and III CMVs by county for applicable counties in the HGB 2015 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.*

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 2015 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 2017 Base Year Inventory**

For certain non-road mobile source categories detailed below, the updated 2017 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.

##### 2.4.5.1 Updated 2017 Base Year NONROAD Model Category Inventory

The 2017 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 2017 meteorological input data, as detailed in Appendix 7.

##### 2.4.5.2 Updated 2017 Base Year Drilling Rig Diesel Engines Inventory

The 2017 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 2017 drilling activity data from the RRC. The documentation of procedures used in developing the 2017 drilling rigs EI can be found in Appendix 8.

##### 2.4.5.3 Updated 2017 Base Year CMV and Locomotive Inventory

The 2017 base year CMV emissions were taken from the 2017 trend EI developed as part of the TCEQ-commissioned study detailed in Appendix 9.

The 2017 base year locomotive emissions were taken from the 2017 trend EI developed as part of the TCEQ-commissioned study detailed in Appendix 10.

##### 2.4.5.4 Updated 2017 Base year Airport Inventory

The 2017 base year airport emissions were taken from the 2017 trend EI developed as part of the TCEQ-commissioned study detailed in Appendix 11.

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

The NONROAD model category uncontrolled emissions for each analysis year (2017 base year and 2023 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 2017 EI for drilling rigs was developed using 2017 drilling activity data and the uncontrolled factors from the ERG report found in Appendix 8. A 2023 EI for drilling rigs was 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 2023 attainment year, since 2020 data were the most current available.



The TCEQ calculated updated, uncontrolled 2023 emissions from CMVs based on the information detailed in Appendix 9.

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

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

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

The NONROAD model category controlled emissions for each analysis year (2017 base year, 2023 attainment year, and 2024 contingency year) were calculated by accounting for all federal and state control measures in the TexN2.2 utility runs as detailed in Appendix 7.

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

The TCEQ calculated updated controlled 2023 emissions from CMVs based on the information detailed in Appendix 9.

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

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

A summary of the non-road mobile source RFP inventories is presented in Tables 2-3 through 2-6.

### **2.5 ON-ROAD MOBILE SOURCES**

The 2017, 2023, and 2024 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 2015 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 2017, 2023, and 2024* and Appendix 13: *Houston-Galveston-Brazoria (HGB) 2015-Eight-Hour Ozone Reasonable Further Progress On-Road Mobile Emissions Inventories*. The inventories include the nine DFW and six HGB counties designated as nonattainment for the 2015 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 the EPA's mobile source emission model was used to estimate the summer weekday emission rates in units of grams per mile for NO<sub>x</sub> and VOC. The roadway link-level VMT estimates were obtained from travel demand modeling for the DFW 2015 ozone

NAAQS nonattainment area and the HGB 2015 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 the 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 2015 ozone NAAQS nonattainment area are

presented in Table 2-1: *DFW 2015 Ozone NAAQS Nonattainment Area RFP Ozone Season 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 2015 ozone NAAQS nonattainment area are presented in Table 2-2: *HGB 2015 Ozone NAAQS Nonattainment Area RFP Ozone Season Weekday On-Road Mobile Source VMT (miles per day)*.

The 2017 and 2023 controlled and uncontrolled emissions inventories are summarized in Section 2.6: *Emissions Summary*.

For complete documentation of the development of the on-road mobile source emissions inventories for the DFW 2015 ozone NAAQS nonattainment area RFP demonstration, refer to Appendix 12, for the HGB 2015 ozone NAAQS nonattainment area RFP demonstration, refer to Appendix 13. The complete set of input and output files are available upon request from TCEQ’s Air Quality Division.

**Table 2-1: DFW 2015 Ozone NAAQS Nonattainment Area RFP Ozone Season Weekday On-Road Mobile Source VMT<sup>1</sup> (miles per day)**

RFP Analysis Year	VMT
2017 Base Year	212,145,874
2023 Attainment Year	231,521,648

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

**Table 2-2: HGB 2015 Ozone NAAQS Nonattainment Area RFP Ozone Season Weekday On-Road Mobile Source VMT<sup>1</sup> (miles per day)**

RFP Analysis Year	VMT
2017 Base Year	168,629,522
2023 Attainment Year	192,871,878

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 2017 Base Year Inventory

The 2017 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 2017 networks. Only control strategies implemented prior to 2017 were included in the input to the EI development for the 2017 on-road mobile source base year emissions inventories. Those controls include: the pre-1990 Federal Motor Vehicle Program (FMVCP), the 1990 to 2017 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 Texas Low Emission Diesel (TxLED), where applicable. The activity levels used to calculate the EI reflect the 2017 roadway networks with 2017 VMT and speeds. Summaries of the 2017 EIs are presented in Section 2.6. For complete documentation of the development of the EI and details on MOVES3 model inputs, refer to Appendix 12 for the DFW 2015 ozone NAAQS nonattainment area and Appendix 13 for the HGB 2015 ozone NAAQS nonattainment area.

### **2.5.3 On-Road Mobile Updated Uncontrolled Attainment Year Inventories**

The uncontrolled on-road mobile emissions inventories for each RFP attainment year were developed using emission factors that reflect only control strategies implemented prior to 1990. Those controls include pre-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 EIs is presented in Section 2.6. For complete documentation of the development of the EI and details on MOVES3 model inputs, refer to Appendix 12 for the DFW 2015 ozone NAAQS nonattainment area and Appendix 13 for the HGB 2015 ozone NAAQS nonattainment area.

### **2.5.4 On-Road Mobile Updated Controlled Attainment Year Inventories**

The controlled on-road mobile emissions inventories for the 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 2017, and the effects of all control strategies from 2017 through the 2023 attainment year. The effects of the post-1990 control strategies between 2017 and the 2023 attainment year 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, the vehicle I/M program, and TxLED, where applicable. 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 Appendix 12 for the DFW 2015 ozone NAAQS nonattainment and Appendix 13 for the HGB 2015 ozone NAAQS nonattainment area.

The activity levels used to calculate the attainment year emissions inventories reflect the 2023 roadway network with 2023 VMT and speeds. A summary of the 2023 EIs is presented in Section 2.6. For complete documentation of the development of the DFW 2015 ozone NAAQS nonattainment area emissions inventories and HGB 2015 ozone NAAQS nonattainment area emissions inventories and details on MOVES3 model inputs, refer to Appendix 12 and Appendix 13, respectively.

Quantification of specific control reductions is documented in Chapter 4 with details for on-road control reductions presented in Appendix 12 for DFW 2015 ozone NAAQS nonattainment area and Appendix 13 for the HGB 2015 ozone NAAQS nonattainment area. Motor vehicle emissions budget calculations for the attainment year are documented in Chapter 5: *Motor Vehicle Emissions Budgets*.

## **2.6 EMISSIONS SUMMARY**

Uncontrolled and controlled 2017 base year NO<sub>x</sub> and VOC emissions for each RFP source category are summarized in Tables 2-3 and 2-4.

For the 2023 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 2-4 and 2-5.

Between 1990 and 2017, 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 the TCEQ. As noted in Section 2.1, the 2017 EI for stationary sources includes all controls and associated reductions implemented by the end of the 2017 base year. No additional stationary source controls are quantified for this proposed DFW-HGB RFP SIP revision; therefore, the 2017 controlled stationary source EI is equivalent to the 2017 existing controlled stationary source EI.

Similarly, the 2023 attainment year inventory reflects: 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.

**Table 2-3: DFW 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2017 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	160.92	66.37	193.58	44.52
On-Road Mobile Sources	123.95 <sup>1</sup>	123.95	55.94	55.94
Area Sources	42.80	42.80	306.93	306.93
Point Sources	29.90	29.90	21.04	21.04
<b>Total of All Sources</b>	<b>357.57</b>	<b>263.02</b>	<b>577.49</b>	<b>428.43</b>

Note 1: The DFW 2015 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2017 reflect controls in place up to 2017, no post-2017 controls included.

**Table 2-4: HGB 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2017 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	250.35	131.43	176.21	41.76
On-Road Mobile Sources	91.82 <sup>1</sup>	91.82	45.11	45.11
Area Sources	31.86	31.86	298.93	298.93
Point Sources	97.36	97.36	73.37	73.37
<b>Total of All Sources</b>	<b>471.39</b>	<b>352.47</b>	<b>593.62</b>	<b>459.17</b>

Note 1: The HGB 2015 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2017 reflect controls in place up to 2017, no post-2017 controls included.

**Table 2-5: DFW 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 Attainment Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)**

<b>Emissions Inventory Source</b>	<b>Uncontrolled NO<sub>x</sub></b>	<b>Controlled NO<sub>x</sub></b>	<b>Uncontrolled VOC</b>	<b>Controlled VOC</b>
Non-Road Mobile Sources	187.83	58.26	221.32	45.75
On-Road Mobile Sources	1,333.33 <sup>1</sup>	69.82	753.54	37.73
Area Sources	38.34	38.34	288.52	288.52
Point Sources	38.86	38.86	21.58	21.58
<b>Total of All Sources</b>	<b>1,598.36</b>	<b>205.28</b>	<b>1,284.96</b>	<b>393.58</b>

Note 1: The DFW 2015 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2023 reflect pre-1990, no post-1990 controls included.

**Table 2-6: HGB 2015 Ozone NAAQS Nonattainment Area RFP Summary of the 2023 Attainment Year Average Summer Weekday NO<sub>x</sub> and VOC Emissions (tons per day)**

<b>Emissions Inventory Source</b>	<b>Uncontrolled NO<sub>x</sub></b>	<b>Controlled NO<sub>x</sub></b>	<b>Uncontrolled VOC</b>	<b>Controlled VOC</b>
Non-Road Mobile Sources	292.45	112.95	200.90	42.18
On-Road Mobile Sources	1,110.38 <sup>1</sup>	55.14	644.96	31.41
Area Sources	37.31	37.31	289.85	289.85
Point Sources	105.23	105.23	78.09	78.09
<b>Total of All Sources</b>	<b>1,545.37</b>	<b>310.63</b>	<b>1,213.80</b>	<b>441.53</b>

Note 1: The HGB 2015 ozone NAAQS nonattainment area uncontrolled on-road EI values for 2023 reflect pre-1990 controls, no post-1990 controls included.

## 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 moderate nonattainment areas is August 3, 2024, with an attainment year of 2023 (87 *Federal Register* (FR) 60897).

For this proposed DFW-HGB RFP SIP revision, a base year of 2017 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 2015 Eight-Hour Ozone NAAQS Emissions Inventory (EI) SIP Revision for the HGB, DFW, and Bexar County Nonattainment Areas. The required emissions reductions for RFP, as detailed below, are calculated as a percentage of the base year (2017) EI and must occur no later than the required timeframe.

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

- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- an RFP contingency plan in case of failure to demonstrate progress for 2023, calculated as a 3% emissions reduction for potential use during the one-year period between January 1, 2024 through December 31, 2024 for the nine-county DFW 2015 ozone NAAQS nonattainment area;
- a 15% emissions reduction for the six-year period from January 1, 2018 through December 31, 2023 for the six-county HGB 2015 ozone NAAQS nonattainment area; and
- an RFP contingency plan in case of failure to demonstrate progress for 2023, calculated as a 3% emissions reduction for potential use during the one-year period between January 1, 2024 through December 31, 2024 for the six-county HGB 2015 ozone NAAQS nonattainment area.

#### 3.1.2 Fifteen Percent Emissions Reduction Requirement

The United States Environmental Protection Agency's (EPA) *Implementation of the 2015 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2015 eight-hour ozone standard SIP requirements rule) requires states with moderate nonattainment areas to submit an RFP plan with a 15% emissions reduction from the RFP base year to the RFP attainment year. In accordance with the 2015 eight-hour ozone standard SIP requirements rule, if a state chooses 2017 as a base year for a moderate area initially designated nonattainment in 2018, the 15% reduction requirement covers the period from January 1, 2018 through December 31, 2023.

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>) is effective at reducing ozone, the 15% reduction requirement can be fulfilled with a combination of NO<sub>x</sub> and VOC emissions. The EPA previously approved demonstrations of the 15% VOC-only reduction requirements for all counties within the DFW and HGB 2015 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 2015 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 the 2017 base year and the 2023 attainment 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 Contingency Plan

This proposed SIP revision also contains a contingency plan for 2024 as required by FCAA, §172(c)(9).

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. Recent court decisions have invalidated key aspects of EPA’s historical approach to implementing the contingency measure requirement. At the time the proposed SIP revision was being developed, the EPA had historically accepted the use of surplus mobile source emissions reductions from previously implemented federal rules to fulfill the contingency measure requirements. However, the 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.

Since the EPA had not issued final guidance to states regarding contingency measures at the time this SIP revision was developed, this SIP revision relies on the historically approved approach of using surplus mobile source emissions reductions to fulfill the contingency measure requirements.

Summaries of the post-attainment year contingency plans are provided in Section 4.2: *Contingency Measures*, Table 4-3: *DFW 2015 Ozone NAAQS Nonattainment Area RFP Contingency Plan for the 2023 Attainment Year*, and Table 4-4: *HGB 2015 Ozone NAAQS Nonattainment Area RFP Contingency Plan for the 2023 Attainment Year*.

### **3.1.4 RFP Demonstration Method**

Required moderate nonattainment area RFP demonstration elements for the nine-county DFW 2015 ozone NAAQS nonattainment area and the six-county HGB 2015 ozone NAAQS nonattainment area include:

- the 2017 base year emissions;
- 2023 target levels;
- 2023 projected emissions, with growth; and
- individually quantified emissions reductions from control measures for 2023.

Progress toward the 2023 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 and existing controlled projected inventory for each analysis year minus the RFP controls is less than or equal to the target level of emissions for VOC and/or NO<sub>x</sub>, the RFP requirement has been met.

Summaries of the RFP demonstrations are provided in Table 3-2: *Summary of the 2023 DFW RFP Demonstration (tons per day)* and Table 3-3: *Summary of the 2023 HGB RFP Demonstration (tons per day.)* Details on how RFP 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 RFP DEMONSTRATION**

The EPA's final 2015 eight-hour ozone standard SIP requirements rule requires the RFP control strategy plan 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. Section 3.2.1 *DFW 2015 Ozone NAAQS Nonattainment Area RFP Demonstration*, and Section 3.2.2 *HGB 2015 Ozone NAAQS Nonattainment Area RFP Demonstration* provide the DFW and HGB 2015 ozone NAAQS nonattainment areas' RFP demonstrations for this proposed DFW-HGB RFP SIP revision.

### 3.2.1 DFW 2015 Ozone NAAQS Nonattainment Area RFP Demonstration

The RFP demonstration calculations were completed for the 2023 attainment year. A summary of the 2023 DFW RFP demonstration is provided in Table 3-2. As concluded in the final row of the table, the nine-county DFW 2015 ozone NAAQS nonattainment area demonstrates the required RFP emission reductions for 2023. 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 are documented in Chapter 4 and summarized in Table 4-1: *Summary of DFW 2015 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2017 through 2023 (tons per day)*.

**Table 3-2: Summary of the 2023 DFW RFP Demonstration (tons per day)**

Line	Description	NO <sub>x</sub>	VOC
Line 1	Uncontrolled or existing controlled nine-county DFW 2023 emissions forecast with growth	1,598.36	1,284.96
Line 2	Creditable nine-county DFW RFP control reductions between 2017 and 2023	1,392.77	891.33
Line 3	Controlled nine-county DFW 2023 RFP emissions forecast (Line 1 minus Line 2)	205.59	393.63
Line 4	Amount of substituted NO <sub>x</sub> reductions (see Sheet 3 of Appendix 1)	0.00	0.00
Line 5	Controlled nine-county DFW 2023 RFP forecast without reductions reserved for contingency and accounting for NO <sub>x</sub> substitution (Line 3 plus Line 4)	205.59	393.63
Line 6	Nine-county DFW 2023 RFP target level of emissions	242.77	397.15
Line 7	Excess (+) / Shortfall (-) (Line 6 minus Line 5)	37.18	3.52
<b>Line 8</b>	<b>Is controlled RFP EI less than target level of emissions?</b>	<b>Yes</b>	<b>Yes</b>

### 3.2.2 HGB 2015 Ozone NAAQS Nonattainment Area RFP Demonstration

The RFP demonstration calculations were completed for the 2023 attainment year. A summary of the 2023 HGB RFP demonstration is provided in Table 3-3. As concluded in the final row of the table, the six-county HGB 2015 ozone NAAQS nonattainment area demonstrates the required RFP emission reductions for 2023. 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 2023 are documented in Chapter 4 and summarized in Table 4-2: *Summary of HGB 2015 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2017 through 2023 (tons per day)*.

**Table 3-3: Summary of the 2023 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 six-county HGB 2023 emissions forecast with growth	1,545.37	1,213.80
Line 2	Creditable six-county HGB RFP control reductions between 2017 and 2023	1,234.69	772.26
Line 3	Controlled six-county HGB 2023 RFP emissions forecast (Line 1 minus Line 2)	310.68	441.54
Line 4	Amount of substituted NO <sub>x</sub> reductions (see Sheet 3 of Appendix 2)	0.00	0.00
Line 5	Controlled six-county HGB 2023 RFP forecast without reductions reserved for contingency and accounting for NO <sub>x</sub> substitution (Line 3 plus Line 4)	310.68	441.54
Line 6	Six-county HGB 2023 RFP target level of emissions	312.99	441.72
Line 7	Excess (+) / Shortfall (-) (Line 6 minus Line 5)	2.31	0.18
<b>Line 8</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 attainment year to achieve the emissions reductions in volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>) used to demonstrate reasonable further progress (RFP) for the Dallas-Fort Worth (DFW) 2015 eight-hour ozone nonattainment area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Wise Counties) and the Houston-Galveston-Brazoria (HGB) 2015 eight-hour ozone nonattainment area (Brazoria, Chambers, Fort Bend, Galveston, Harris, and Montgomery Counties). Summaries of the control strategy lists and corresponding emissions reductions are provided in Table 4-1: *Summary of DFW 2015 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2017 through 2023 (tons per day)* and Table 4-2: *Summary of HGB 2015 Ozone NAAQS Nonattainment Area NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2017 through 2023 (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 2015 ozone NAAQS nonattainment areas.

**Table 4-1: Summary of DFW 2015 Ozone NAAQS Nonattainment Area RFP NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2017 through 2023 (tons per day)**

Control Strategy Description	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Chapter 117 NO <sub>x</sub> controls <sup>1</sup>	0.00	0.00
Chapter 115 storage tank rules <sup>1</sup>	0.00	0.00
Coating / printing rules <sup>1</sup>	0.00	0.00
Portable fuel containers <sup>1</sup>	0.00	0.00
Federal Motor Vehicle Control Program (FMVCP)	1,236.88	702.90
Reformulated Gasoline (RFG)/East Texas Regional Low Reid vapor pressure (RVP) conventional gasoline /Tier 3 Sulfur Gasoline/Ultra Low Sulfur Diesel (ULSD) <sup>2</sup>	22.06	8.40
Inspection and maintenance (I/M)	2.09	4.51
On-road Texas Low Emissions Diesel (TxLED)	2.49	0.00
Tier I and II locomotive NO <sub>x</sub> standards	1.27	0.00
Small non-road spark ignition (SI) engines (Phase I) <sup>3</sup>	-7.74	60.26
Heavy duty non-road engines	0.85	3.29
Tiers 2 and 3 non-road diesel engines	3.25	0.65
Small non-road SI engines (Phase II)	5.55	56.66
Large non-road SI and recreational marine	50.58	17.15
Non-road TxLED	1.12	0.00
Non-road RFG	-0.01	0.38
Tier 4 non-road diesel engines	67.95	15.02

Control Strategy Description	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Diesel recreational marine	0.01	0.00
Small SI (Phase III)	5.28	21.87
Chapter 117 NO <sub>x</sub> area source engine controls <sup>1</sup>	0.00	0.00
Drilling rigs: federal engine standards and TxLED	1.14	0.24
<b>Sum of reductions from projected uncontrolled or existing controlled emissions</b>	<b>1,392.77</b>	<b>891.33</b>

Note 1: These rules had compliance deadlines before 2017 in the DFW 2015 ozone NAAQS nonattainment area. The 2017 base year emissions inventory (EI) includes the effect of the control. No additional emissions reductions beyond 2017 are claimed.

Note 2: The nine-county DFW 2015 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 five counties with Texas Regional Low RVP are: Ellis, Johnson, Kaufman, Parker, and Wise.

Note 3: 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 is due to the engine modifications required to meet the VOC and CO standards of the Small SI Phase 1.

**Table 4-2: Summary of HGB 2015 Ozone NAAQS Nonattainment Area RFP NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2017 through 2023 (tons per day)**

Control Strategy Description	NO <sub>x</sub> Emissions Reduction	VOC Emissions Reduction
Chapter 117 NO <sub>x</sub> controls <sup>1</sup>	0.00	0.00
Chapter 115 storage tank rule <sup>1</sup>	0.00	0.00
Coating / printing rules <sup>1</sup>	0.00	0.00
Portable fuel containers <sup>1</sup>	0.00	0.00
FMVCP	1,033.45	602.37
RFG/Tier 3 Sulfur Gasoline/ULSD	18.06	7.25
I/M	1.78	3.94
On-road TxLED	1.95	0.00
Tier I and II locomotive NO <sub>x</sub> standards	0.75	0.00
Small non-road SI engines (Phase I) <sup>2</sup>	-6.74	52.33
Heavy duty non-road engines	0.34	5.14
Tiers 2 and 3 non-road diesel engines	2.67	0.56
Small non-road SI engines (Phase II)	4.82	49.11
Large non-road SI and recreational marine	50.94	16.89
Non-road TxLED	0.97	0.00
Non-road RFG	0.00	0.13
Tier 4 non-road diesel engines	65.88	14.28
Diesel recreational marine	0.02	0.00
Small SI (Phase III)	4.83	19.80
Chapter 117 NO <sub>x</sub> area source engine controls <sup>1</sup>	0.00	0.00
Drilling rigs: federal engine standards and TxLED	0.64	0.13
CMV engine certification standards and fuel programs	54.33	0.33
<b>Sum of reductions from projected uncontrolled or existing controlled emissions</b>	<b>1,234.69</b>	<b>772.26</b>

Note 1: These rules had compliance deadlines before 2017 in the HGB 2015 ozone NAAQS nonattainment area. The 2017 base year EI includes the effect of the control. No additional emissions reductions beyond 2017 are claimed.

Note 2: 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 is due to the engine modifications required to meet the VOC and CO standards of the Small SI Phase 1.

## 4.2 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. Recent court decisions have invalidated key aspects of EPA's historical approach to implementing the contingency measure requirement. At the time the proposed SIP revision was being developed, the EPA had historically accepted the use of surplus mobile source emissions reductions from previously implemented federal rules to fulfill the contingency measure requirements. However, the 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.

Since the EPA had not issued final guidance to states regarding contingency measures at the time this SIP revision was developed, this SIP revision relies on the historically approved approach of using surplus mobile source emissions reductions to fulfill the contingency measure requirements.

The RFP requirements include a 3% contingency plan for the one-year period after each RFP analysis year and the one-year period after the attainment year. In the event an RFP requirement is not met, the contingency control measures will provide the required emissions reduction. For this proposed DFW-HGB RFP SIP revision, the only RFP analysis year is the attainment year. 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 VOC and/or NO<sub>x</sub> reductions. This section contains an attainment year RFP contingency plan based on the 2023 attainment year.

For this proposed DFW-HGB RFP SIP revision, the 3% attainment year RFP contingency analysis divides the 3% requirement into a 1.5% reduction in NO<sub>x</sub> and a 1.5% reduction in VOC for the DFW 2015 ozone NAAQS nonattainment area and a 1.5% reduction in NO<sub>x</sub> and 1.5% reduction in VOC for the HGB 2015 ozone NAAQS nonattainment area. For both areas, these reductions are to be achieved for the one-year period from January 1, 2024 through December 31, 2024. EI analyses were performed for fuel control programs and for the fleet turnover effects for the federal emissions certification programs for on-road and non-road vehicles. The emissions reductions for the 2024 contingency year were estimated for those programs in the respective nonattainment areas.

Controlled (post-control) emissions reductions not used to demonstrate RFP in 2023 may also be used to satisfy contingency requirements. The DFW 2015 ozone NAAQS nonattainment area excess emissions reductions from the 2023 RFP demonstration are included in the contingency analysis for the DFW area. The HGB 2015 ozone NAAQS

nonattainment area excess reductions from the 2023 RFP demonstration are included in the contingency analysis for the HGB area.

This proposed DFW-HGB RFP SIP revision provides for motor vehicle emissions budget (MVEB) safety margins using some of the excess emissions reductions from the 2023 RFP demonstration; those emissions are subtracted from the amount available to demonstrate RFP contingency for the 2023 attainment year. Details of the DFW-area MVEB safety margin can be found in Appendix 1. There were not sufficient reductions in the HGB area to provide MVEB safety margins.

Summaries of the 2023 attainment year RFP contingency analyses are provided in Table 4-3: *DFW 2015 Ozone NAAQS Nonattainment Area RFP Contingency Plan for the 2023 Attainment Year (tons per day unless otherwise noted)* and Table 4-4: *HGB 2015 Ozone NAAQS Nonattainment Area RFP Contingency Plan for the 2023 Attainment Year (tons per day unless otherwise noted)*.

**Table 4-3: DFW 2015 Ozone NAAQS Nonattainment Area RFP Contingency Plan for the 2023 Attainment Year (tons per day unless otherwise noted)**

Line	Contingency Plan Description	NO <sub>x</sub>	VOC
Line 1	Nine-County DFW 2017 Base Year (BY) EI	263.02	428.43
Line 2	Percent for contingency calculation (total of 3%)	1.50	1.50
Line 3	Required contingency reductions between 2023 and 2024 (BY emissions inventory multiplied by contingency percent: Line 1 multiplied by Line 2, then divided by 100 and rounded up)	3.95	6.43
	<b>Control reductions to meet contingency requirements</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Line 4	Excess reductions from 2023 RFP demonstration (from Table 3-2: Summary of the 2023 DFW RFP Demonstration (tons per day))	37.18	3.52
Line 5	Subtract 2023 RFP demonstration motor vehicle emissions budget (MVEB) safety margin from excess reductions from 2023 RFP demonstration	-7.25	-3.34
Line 6	2023 to 2024 emissions reductions due to FMVCP, inspection and maintenance (I/M), reformulated gasoline (RFG), East Texas Regional Low RVP, 2017 Low Sulfur Gasoline Standard and on-road TxLED (Note: RFG is required, and modeled, only in Collin, Dallas, Denton and Tarrant counties; Texas Regional Low RVP is modeled only for the non-RFG counties, Ellis, Johnson, Kaufman, Parker, and Wise.)	26.33	15.22
Line 7	2023 to 2024 emissions reductions due to federal non-road mobile new vehicle certification standards, non-road RFG, East Texas Regional Low RVP, and non-road TxLED (Note: RFG is required, and modeled, only in Collin, Dallas, Denton, and Tarrant counties; Texas Regional Low RVP is modeled only for the non-RFG counties, Ellis, Johnson, Kaufman, Parker, and Wise.)	3.33	3.66
Line 8	Total RFP demonstration contingency reductions	59.59	19.06

Line	Contingency Plan Description	NO <sub>x</sub>	VOC
Line 9	Contingency Excess (+) or Shortfall (-) (Line 8 minus Line 3)	55.64	12.63

**Table 4-4: HGB 2015 Ozone NAAQS Nonattainment Area RFP Contingency Plan for the 2023 Attainment Year (tons per day unless otherwise noted)**

Line	Contingency Plan Description	NO <sub>x</sub>	VOC
Line 1	Six-county HGB 2017 base year (BY) emissions inventory	352.47	459.17
Line 2	Percent for 2024 attainment year contingency calculation (total of 3%)	1.50	1.50
Line 3	Required contingency reductions between 2023 and 2024 (BY emissions inventory multiplied by contingency percent: Line 1 multiplied by Line 2), then divided by 100 and rounded up)	5.29	6.89
	<b>Control reductions to meet contingency requirements</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Line 4	Excess reductions from 2023 RFP demonstration (from Table 3-3: Summary of the 2023 HGB RFP Demonstration [tons per day])	2.31	0.18
Line 5	Subtract 2023 RFP demonstration MVEB safety margin from excess reductions from 2023 RFP demonstration	0.00	0.00
Line 6	2023 to 2024 emission reductions due to FMVCP, I/M, RFG, 2017 low sulfur gasoline standard, on-road TxLED, and ULSD	22.00	12.96
Line 7	2023 to 2024 emission reductions due to federal non-road mobile new vehicle certification standards, non-road RFG, and non-road TxLED	2.89	3.22
Line 8	Total RFP demonstration contingency reductions (sum of Line 4, Line 5, Line 6, and Line 7)	27.20	16.36
Line 9	Contingency Excess (+) or Shortfall (-) (Line 8 minus Line 3)	21.91	9.47



## CHAPTER 5: MOTOR VEHICLE EMISSIONS BUDGETS

### 5.1 INTRODUCTION

This proposed Dallas-Fort Worth (DFW)-Houston-Galveston-Brazoria (HGB) 2015 ozone National Ambient Air Quality Standard (NAAQS) nonattainment area reasonable further progress (RFP) state implementation plan (SIP) revision 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 2015 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 rule (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. Updated emissions inventory (EI) development included development of a 2017 base year EI, uncontrolled emissions inventories for 2023 and 2024, controlled emissions inventories for 2023 and 2024, and control strategies reduction estimates for 2023 and 2024. The 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 2015 ozone NAAQS nonattainment area and the HGB 2015 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 2017, 2023, and 2024*; and
- Appendix 13: *Houston-Galveston-Brazoria (HGB) 2015-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 06 Calc 2023 RFP MVEB* and in Appendix 2: *Houston-Galveston-Brazoria (HGB) Reasonable Further Progress Demonstration Spreadsheet, Tab 06 Calc 2023 RFP MVEB*. Summaries of the MVEB calculations for 2023 are presented in:

- Table 5-1: 2023 RFP MVEBs for the Nine-County DFW 2015 Ozone NAAQS Nonattainment Area (tons per day); and
- Table 5-2: 2023 RFP MVEBs for the Six-County HGB 2015 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 attainment year for the DFW 2015 ozone NAAQS nonattainment area, therefore, some of the excess in emissions reductions for the 2023 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 2015 ozone NAAQS nonattainment area. Therefore, even if this safety margin is used, the area still demonstrates RFP for 2023. The HGB 2015 ozone NAAQS nonattainment area did not have sufficient excess emissions reductions to provide MVEB safety margins for NO<sub>x</sub> or VOC MVEBs, so they are not provided.

**Table 5-1: 2023 RFP MVEBs for the Nine-County DFW 2015 Ozone NAAQS Nonattainment Area (tons per day)**

Control Strategy Description	NO <sub>x</sub>	VOC
2023 On-road mobile controlled inventory	69.81	37.73
Transportation conformity safety margin	7.25	3.34
<b>2023 Nine-County DFW MVEB with safety margin</b>	<b>77.06</b>	<b>41.07</b>

**Table 5-2: 2023 RFP MVEBs for the Six-County HGB 2015 Ozone NAAQS Nonattainment Area (tons per day)**

Control Strategy Description	NO <sub>x</sub>	VOC
2023 On-road mobile controlled inventory	55.14	31.40
Transportation conformity safety margin	0.00	0.00
<b>2023 Six-County HGB MVEB</b>	<b>55.14</b>	<b>31.40</b>

*Appendices Available Upon Request*

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