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## TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

April 22, 2016

Ron Curry  
Regional Administrator  
U.S. Environmental Protection Agency - Region 6  
1445 Ross Avenue  
Dallas, Texas 75202-2733

Re: Technical Supplement to the 2008 Ozone DFW RFP SIP Revision

Dear Mr. Curry:

On July 10, 2015, the Texas Commission on Environmental Quality (TCEQ or commission) submitted the Dallas-Fort Worth (DFW) 2008 Eight-Hour Ozone Standard Reasonable Further Progress (RFP) State Implementation Plan (SIP) revision to the United States Environmental Protection Agency (EPA), as adopted by the commission on June 3, 2015. This SIP revision demonstrated a 15% reduction in combined nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) reductions for the nine previously designated DFW counties in addition to demonstrating a 15% VOC-only reduction for the newly designated Wise County, from the 2011 base year through the 2017 attainment year. The 2017 Wise County RFP demonstration included a transfer of excess VOC reductions from the nine-county area as part of the total 15% VOC reduction, as permitted by the proposed 2008 Ozone Standard SIP Requirements Rule (78 FR 34178).

In discussions with EPA Region 6, the commission was informed that the proposed provision that would allow the use of VOC emissions reductions from previously designated counties to meet the initial 15% VOC reductions in a newly designated county was not included in the final 2008 Ozone Standard SIP Requirements Rule (80 FR 12264). The commission was not aware at the time of adoption and submittal of the SIP revision to the EPA that this proposed provision was not finalized. As a result, the transfer of excess VOC reductions from the nine-county area cannot be used to satisfy the 15% VOC reduction requirement for Wise County.

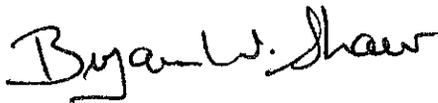
Because the TCEQ was not aware during SIP development that VOC transfer was no longer permitted to meet the 15% reduction requirement for Wise County, the VOC transfer was used in lieu of other available VOC emissions reductions in Wise County that could have been credited toward the 2017 Wise County RFP demonstration. Since the VOC transfer is no longer permitted, the commission is providing the attached technical supplement to correct the 2017 RFP demonstration for Wise County as well as a corrected RFP spreadsheet that removes the transfer of VOC reductions to Wise County and credits emissions reductions from drilling rig controls that were available but not credited in the July 10, 2015 submittal.

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The technical supplement shows that Wise County meets the 15% VOC-only reduction requirement from the 2011 base year through the 2017 attainment year based solely on reductions from within Wise County. The data used to meet this requirement within Wise County was included in the submitted SIP revision but was not used in the RFP calculations because it was not thought to be needed at that time.

Thank you for the opportunity to provide this supplemental information to correct the Wise County RFP demonstration to comply with the final 2008 Ozone Standard SIP Requirements Rule. If you have any questions regarding the revised RFP demonstration or spreadsheet, please contact David Brymer, Director of the Air Quality Division, at 512-239-1725 or at David.Brymer@tceq.texas.gov.

Sincerely,

A handwritten signature in black ink that reads "Bryan W. Shaw". The signature is written in a cursive style with a large initial "B".

Bryan W. Shaw, Ph.D., P.E., Chairman  
Texas Commission on Environmental Quality

Enclosures

cc: Richard A. Hyde, P.E., Executive Director, TCEQ  
Steve Hagle, P.E., Deputy Director, TCEQ Office of Air  
Mark Hansen, Associate Director for Air Programs, EPA Region 6

**TECHNICAL SUPPLEMENT TO THE JUNE 3, 2015 ADOPTION OF THE DALLAS-FORT WORTH REASONABLE FURTHER PROGRESS STATE IMPLEMENTATION PLAN REVISION FOR THE 2008 EIGHT-HOUR OZONE STANDARD NONATTAINMENT AREA**

This supplement provides additional technical detail regarding the 2017 reasonable further progress (RFP) demonstration for Wise County, specifically the creditable RFP reductions for drilling rigs and the transfer of excess volatile organic compounds (VOC) creditable reductions from the nine Dallas-Fort Worth (DFW) counties previously designated as nonattainment for the 2008 eight-hour ozone National Ambient Air Quality Standard (NAAQS) to Wise County, the one newly designated county. When the DFW RFP State Implementation Plan (SIP) Revision for the 2008 Eight-Hour Ozone NAAQS (Non-Rule Project No. 2013-014-SIP-NR) was approved for adoption by the commission on June 3, 2015, the creditable control reductions for drilling rigs were included in the emissions inventories in Chapter 2: *Emissions Inventories*. However, the creditable drilling rig control reductions were not used in the total creditable reductions applied to the DFW RFP demonstrations in Chapter 3: *Progress Toward Meeting Target Emissions Levels*. The Texas Commission on Environmental Quality (TCEQ) is providing this supplemental information to document the resulting RFP demonstration when the creditable reductions for drilling rigs are used in the total creditable reductions. Taking credit for the available emissions reductions from drilling rig controls replaces the transfer of VOC creditable reductions between Wise County and the nine previously designated counties, and therefore complies with the United States Environmental Protection Agency's (EPA) 2008 ozone NAAQS implementation requirements as discussed below.

**Introduction**

The EPA published the final implementation rule for the 2008 ozone NAAQS (SIP requirements rule) in the *Federal Register* (FR) on March 6, 2015 (80 FR 12263). The final SIP requirements rule removed the proposed rule's RFP demonstration option of transferring creditable VOC emissions reductions between county groups in the same ozone nonattainment area. This option was used in the adopted DFW RFP demonstration to transfer one ton of VOC creditable reductions for the 2017 attainment year from the nine counties previously designated as nonattainment for ozone (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties) to the one county newly designated as nonattainment for ozone (Wise County). The 2017 Wise County RFP demonstration in the adopted SIP revision used the VOC transfer in lieu of other available VOC emissions reductions in Wise County to cover an estimated need of 0.17 tons per day (tpd) in VOC reductions. Attachment 1: *Reasonable Further Progress Demonstration Spreadsheet as Adopted by the Commission on June 3, 2015* provides the RFP demonstration calculations for the adopted SIP revision. Upon notification that the option to transfer creditable VOC reductions between county groups was no longer available per the EPA's final SIP requirements rule, the TCEQ corrected the adopted DFW RFP analyses to remove the one ton VOC reduction transfer and credit emission reductions from drilling rig controls that were available but had not been credited. The TCEQ determined that the drilling rig emissions reductions calculated from the uncontrolled and controlled drilling rig emissions inventories documented in Chapter 2 of the adopted SIP revision were not used in the RFP control strategy for any of the RFP analysis years. The 2017 VOC reduction from drilling rigs in Wise County is 0.25 tpd, which exceeds the estimated 0.17 tpd for which the VOC transfer was used. This supplement to the adopted DFW RFP SIP revision provides a corrected RFP analysis that removes the one ton VOC reduction transfer between county groups and applies the available drilling rigs reductions to the RFP control strategy. All corrected RFP calculations are

documented in Attachment 2: *Corrected Reasonable Further Progress Demonstration Spreadsheet*. This technical supplement confirms there are no substantive changes to the RFP demonstration results and that Wise County meets the 15% VOC-only reduction requirement from the 2011 base year through the 2017 attainment year based solely on reductions from within Wise County. The 2017 Wise County RFP demonstration was the only DFW RFP element to be impacted by the EPA’s final SIP requirements rule provision to eliminate credit transfer between county groups.

**Overview of Changes to DFW RFP Analysis and Demonstration**

The adopted RFP SIP revision used the option to transfer creditable VOC reductions between county groups within the same nonattainment area. For the 2017 RFP analysis year, one ton of VOC creditable reductions was transferred from the nine previously designated counties to the one newly designated county, Wise County. The final SIP requirements rule no longer allows this option to meet RFP requirements.

The TCEQ corrected the DFW RFP analyses to remove the transfer of creditable reductions between the nine-county group and Wise County and to apply the available creditable reduction from drilling rigs to the RFP control strategy. As indicated in Table 1: *Summary of the 2017 DFW RFP Demonstration for Wise County without the One Ton VOC Transfer and with Creditable Drilling Rig Control Reductions Applied (tons per day)*, when both corrections are accounted for in the RFP analyses, the 2017 Wise County RFP demonstration shows a 5.24 tpd nitrogen oxides (NO<sub>x</sub>) excess and a 0.08 tpd VOC excess. All corrected RFP calculations are documented in Attachment 2: *Corrected Reasonable Further Progress Demonstration Spreadsheet*.

**Table 1: Summary of the 2017 DFW RFP Demonstration for Wise County without the One Ton VOC Transfer and with Creditable Drilling Rig Control Reductions Applied (tons per day)**

Line	Description	NO <sub>x</sub>	VOC
Line 1	Uncontrolled or existing controlled 2017 emissions forecast with growth for Wise County	49.33	34.68
Line 2	Creditable RFP control reductions for Wise County between 2011 and 2017	20.29	5.73
Line 3	Controlled 2017 RFP emissions forecast for Wise County <b>(Line 1 minus Line 2)</b>	29.04	28.95
Line 4	Amount of NO <sub>x</sub> and VOC reductions to transfer from RFP demonstration for nine previously designated counties	0.00	0.00
Line 5	Controlled 2017 RFP forecast for Wise County accounting for transfer and NO <sub>x</sub> substitution <b>(Line 3 plus Line 4)</b>	29.04	28.95
Line 6	2017 RFP target level of emissions for Wise County	34.28	29.03
Line 7	Excess (+) / Shortfall (-), <b>(Line 6 minus Line 5)</b>	5.24	0.08
Line 8	<b>Is controlled RFP emissions inventory less than target level of emissions?</b>	Yes	Yes

Note: This table corrects Table 6-2 of the adopted DFW RFP SIP revision.

As part of the correction to the 2017 Wise County RFP demonstration, all other DFW RFP elements were also corrected and the results quality assured to verify no substantive changes occurred. As concluded in the final column of Table 2: *Summary of Changes in DFW RFP Elements Due to Use of Creditable Drilling Rigs Control Reductions and Removal of the One*

*Ton VOC Transfer*, when the drilling rigs reductions are used and the transfer of VOC creditable reductions between county groups are removed, the DFW area demonstrates the required RFP emission reductions and contingency requirements for both the nine previously designated counties and Wise County. All RFP calculations are documented in Attachment 2: *Corrected Reasonable Further Progress Demonstration Spreadsheet*.

**Table 2: Summary of Changes in DFW RFP Elements Due to Use of Creditable Drilling Rigs Control Reductions and Removal of the One Ton VOC Transfer**

RFP Element Description	Adoption Value	Supplement Value	Demonstration Status
2017 RFP Demonstration for Nine Previously Designated Counties <sup>1</sup>	61.34 excess NO <sub>x</sub> tpd 23.60 excess VOC tpd	70.05 excess NO <sub>x</sub> tpd 26.20 excess VOC tpd	Continues to exceed requirements
2017 RFP Demonstration for Wise County	3.89 excess NO <sub>x</sub> tpd 0.83 excess VOC tpd	5.24 excess NO <sub>x</sub> tpd 0.08 excess VOC tpd	Continues to exceed requirements
2018 Contingency Demonstration for Nine Previously Designated Counties <sup>1</sup>	8.23 tpd NO <sub>x</sub> 4.50 tpd VOC	8.23 tpd NO <sub>x</sub> 4.50 tpd VOC	Continues to meet requirements
2018 Contingency Demonstration for Wise County	0.69 tpd NO <sub>x</sub> 0.34 tpd VOC	0.69 tpd NO <sub>x</sub> 0.34 tpd VOC	Continues to meet requirements
2017 MVEBs for 10 Counties	148.36 tpd NO <sub>x</sub> 77.18 tpd VOC	148.36 tpd NO <sub>x</sub> 77.18 tpd VOC	No Change

Note 1: The nine previously designated counties include: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant.

**Overview of Control Measures with Creditable RFP Reductions from Drilling Rigs Included**

The TCEQ corrected the DFW RFP control strategy to apply available creditable reductions from drilling rigs. A summary of the total adopted RFP control reductions, the reductions from drilling rigs, and the current RFP control reductions are shown in the following tables:

- Table 3: *Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2017 for Nine Previously Designated Counties (tons per day),*
- Table 4: *Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2018 for Nine Previously Designated Counties (tons per day),*
- Table 5: *Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2017 for Wise County (tons per day), and*
- Table 6: *Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2018 for Wise County (tons per day).*

Summaries of the drilling rigs inventory and control reductions used for the control strategy updates are provided in the *Drilling Rigs Controls* section of this document. The TCEQ used the corrected total control reductions with the available drilling rig emissions reductions applied to develop a corrected RFP analysis for the DFW area. The corrected analysis is presented in the *Overview of Changes to DFW RFP Analysis and Demonstration* section of this document. All RFP emissions inventories and individual RFP control reductions are documented in Attachment 2: *Corrected Reasonable Further Progress Demonstration Spreadsheet*.

**Table 3: Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2017 for Nine Previously Designated Counties (tons per day)**

Control Strategy Description	NO <sub>x</sub> Reductions	VOC Reductions
Controls in Adopted RFP SIP Revision <sup>1</sup>	830.79	427.25
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	8.71	1.60
Sum of Cumulative RFP SIP Revision Reductions	839.50	428.85

Note 1: See Table 4-1 of the adopted DFW RFP SIP revision.

**Table 4: Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2018 for Nine Previously Designated Counties (tons per day)**

Control Strategy Description	NO <sub>x</sub> Reductions	VOC Reductions
Controls in Adopted RFP SIP Revision <sup>1</sup>	871.67	444.42
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	6.62	1.22
Sum of Cumulative RFP SIP Revision Reductions	878.29	445.64

Note 1: See Table 4-2 of the adopted DFW RFP SIP revision.

**Table 5: Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2017 for Wise County (tons per day)**

Control Strategy Description	NO <sub>x</sub> Reductions	VOC Reductions
Controls in Adopted RFP SIP Revision <sup>1</sup>	18.94	5.48
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	1.35	0.25
Sum of Cumulative RFP SIP Revision Reductions	20.29	5.73

Note 1: See Table 4-3 of the adopted DFW RFP SIP revision.

**Table 6: Summary of DFW NO<sub>x</sub> and VOC Cumulative Emissions Reductions from Control Strategies for 2011 through 2018 for Wise County (tons per day)**

Control Strategy Description	NO <sub>x</sub> Reductions	VOC Reductions
Controls in Adopted RFP SIP Revision <sup>1</sup>	19.91	5.78
Drilling Rigs: Federal Engine Standards and Texas Low Emission Diesel	1.04	0.19
Sum of Cumulative RFP SIP Revision Reductions	20.95	5.97

Note 1: See Table 4-4 of the adopted DFW RFP SIP revision.

### **Drilling Rigs Controls**

The 2011 emissions inventory for drilling rig diesel engines was developed as part of a statewide emissions inventory improvement study. Well activity data was obtained from the “Drilling Permit Master and Trailer” database from the Railroad Commission of Texas (RRC) and through a survey of oil and gas exploration and production companies, which was used to

develop current, state-specific drilling rig emissions characterization profiles. The uncontrolled and controlled drilling rig emissions characterization profiles from this study were combined with 2011 drilling activity data obtained from the RRC to develop the 2011 inventory.

Documentation of methods and procedures used in developing the drilling rig diesel engine emissions inventories can be found in Appendix 8 of the adopted DFW SIP revision: *Development of Texas Statewide Drilling Rigs Emission Inventories for the Years 1990, 1993, 1996, and 1999 through 2040.*

Emissions trends were developed by projecting oil and gas production data for 2011 to 2017 and 2018. Emissions reductions from individual federal and state controls for drilling rig engines were calculated by subtracting the post-2011 control emissions estimates from the existing controlled emissions estimates as of 2011. The controls include federal non-road engine emission standards and the Texas Low Emission Diesel (TxLED) fuel standards. Drilling rig emissions for milestone years 2017 and 2018 are summarized in the following tables:

- Table 7: *DFW RFP 2017 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Nine Previously Designated Counties (tons per day),*
- Table 8: *DFW RFP 2018 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Nine Previously Designated Counties (tons per day),*
- Table 9: *DFW RFP 2017 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Wise County (tons per day), and*
- Table 10: *DFW RFP 2018 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Wise County (tons per day).*

**Table 7: DFW RFP 2017 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Nine Previously Designated Counties (tons per day)**

Emissions	NO <sub>x</sub>	VOC
Existing Controlled Emissions (as of 2011)	18.69	2.09
RFP Drilling Rigs Reduction	8.71	1.60
RFP Post-2011 Control Emissions	9.98	0.49

**Table 8: DFW RFP 2018 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Nine Previously Designated Counties (tons per day)**

Emissions	NO <sub>x</sub>	VOC
Existing Controlled Emissions (as of 2011)	14.19	1.59
RFP Drilling Rigs Reduction	6.62	1.22
RFP Post-2011 Control Emissions	7.57	0.37

**Table 9: DFW RFP 2017 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Wise County (tons per day)**

Emissions	NO <sub>x</sub>	VOC
Existing Controlled Emissions (as of 2011)	2.90	0.33
RFP Drilling Rigs Reduction	1.35	0.25
RFP Post-2011 Control Emissions	1.55	0.08

**Table 10: DFW RFP 2018 Drilling Rigs Emissions and Reductions Summary for NO<sub>x</sub> and VOC for Wise County (tons per day)**

<b>Emissions</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Existing Controlled Emissions (as of 2011)	2.22	0.25
RFP Drilling Rigs Reduction	1.04	0.19
RFP Post-2011 Control Emissions	1.18	0.06

**Attachments**

- Attachment 1 Reasonable Further Progress Demonstration Spreadsheet as Adopted by the Commission on June 3, 2015
- Attachment 2 Corrected Reasonable Further Progress Demonstration Spreadsheet

## **References**

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