Guidance on the Inter-Area Use of Credits for Nonattainment New Source Review Permit Offset Requirements

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PURPOSE

Title 30 Texas Administrative Code (TAC) §101.302(f) and §101.372(f)(7) allow the use of emission credits (EC) and discrete emission credits (DEC) that were generated in one geographic area to be used in another geographic area. This inter-area (IA) use of credits requires a demonstration that must be approved by both the Texas Commission on Environmental Quality (TCEQ) and the United States Environmental Protection Agency (EPA). Specifically, the TCEQ is requiring a demonstration that the IA use of credits will improve the overall air quality in the nonattainment area of use and will not adversely affect the area's regulatory design value. The demonstration can include use of additional IA credits or additional credits within the nonattainment area. The purpose of this document is to provide guidance on the IA use of credits to satisfy the offset requirements for new or modified facilities subject to federal nonattainment new source review (NNSR) per 30 TAC Chapter 116.

The TCEQ will evaluate each project-specific demonstration on a case-by-case basis. This guidance describes only the procedures for the TCEQ to consider approval of the IA use of credits. The EPA may require additional information before approving the IA use of credits. This document provides guidance only and does not take the place of official rules. The guidance reflects current policy and is subject to change.

ADMINISTRATIVE REQUIREMENTS

In order for the TCEQ to consider approval of the IA use of credits, submit the following information to the Emissions Banking and Trading Program (EBTP).

1. Once the NNSR permit application is administratively complete, submit a modeling protocol that addresses all of the steps described in the *Project-Specific Photochemical Modeling* section (including any verbal or written reconciliation of deviations from this guidance) and contains the modeling input parameters described in the *Documentation* section. Submitting the protocol once the NNSR application is administratively complete ensures sufficient time to set-up the attainment baseline case modeling described in the *Project-Specific Photochemical Modeling* section and receive approval of the protocol.
2. After receiving approval of the protocol, complete the required photochemical modeling and submit the information described in the *Documentation* section to the EBTP and the EPA for consideration. The final photochemical modeling must use the permit emission parameters, rates, and offsets specified by the TCEQ Air Permits Division.
3. After review of the documentation provided, the EBTP will notify the applicant if the TCEQ approves or denies the IA use of credits. The applicant will also need EPA approval of the IA use of credits.
4. Submit[1] the appropriate EBTP forms to acquire[2] and/or use the specific credits represented in the photochemical modeling. The EBTP will not approve any forms for the use of IA credits until the required photochemical modeling is completed and approved by both the TCEQ and EPA.

[1] Submit the EBTP forms in accordance with the timelines established in the applicable 30 TAC Chapter 101 rules and/or applicable NNSR permit requirements.
[2] TCEQ approval is for the IA use of the specific credits represented in the photochemical modeling. Additional modeling may be necessary if you cannot acquire the specific credits represented in the photochemical modeling.

PROJECT-SPECIFIC PHOTOCHEMICAL MODELING

GENERAL REQUIREMENTS

Project-specific photochemical modeling must demonstrate that the IA use of credits will improve the overall air quality in the nonattainment area of use and will not adversely affect the area's regulatory design value. The general procedure for the photochemical modeling is as follows.

1. **Attainment Baseline Case.** Determine the attainment year baseline ozone concentration by replicating the photochemical modeling in the most recent TCEQ AD SIP for the nonattainment area. Identify the subset of grid cells in the nonattainment area of use with modeled ozone concentrations greater than or equal to 70 parts per billion (ppb).[3]
2. **Credit Baseline Case.** Model the effect of the IA use of credits on the attainment year baseline ozone concentrations in the nonattainment area of use. Quantify the effect of the IA use of credits on ozone concentrations by summing the change in modeled ozone concentrations across the subset of grid cells identified in the attainment baseline. Determine the credit baseline modeled future design value for each monitor in the nonattainment area.
3. **Project Baseline Case.** Model the effect of the NNSR project emissions on the attainment year baseline ozone concentrations in the nonattainment area. Quantify the effect of the NNSR project emissions on ozone concentrations by summing the change in modeled ozone concentrations across the subset of grid cells identified in the attainment baseline. Determine the project baseline modeled future design value for each monitor in the nonattainment area.
4. **Comparative Analysis.** Calculate the differences between the effect of the IA use of credits and the effect of the NNSR project for the ozone concentration and the modeled future design value for each monitor. Differences greater than zero are necessary to demonstrate that the IA use of credits will improve the overall air quality in the nonattainment area. Differences greater than or equal to zero[4] are necessary to demonstrate that the IA use of credits use will not adversely affect the area's regulatory design value.

ATTAINMENT BASELINE (AB) CASE

Determine the ozone concentrations for the AB case by replicating the photochemical modeling in the most recent TCEQ AD SIP revision for the nonattainment area where the IA use of credits will occur.

1. Create the AB case model configuration by replicating the photochemical modeling in the TCEQ's current AD SIP revision for the nonattainment area where the IA use of credits will occur. This is the modeling conducted for the attainment year not the base year. *Appendix B* provides information and requirements for adequately replicating TCEQ's current AD SIP on the applicant's computer system.
2. For each episode day modeled, calculate the Maximum Daily Average Eight-Hour (MDA8)[5] ozone concentration in the AB case (*OA*) for every grid cell in the nonattainment area where the IA use of credits will occur (nonattainment grid cell).[6]
3. Identify each nonattainment grid cell and modeled episode day (nonattainment grid cell-day) where the modeled MDA8 ozone concentration is greater than or equal to 70 ppb[7] (*n*). Count

[3] The threshold is set at 5 ppb less than the applicable ozone National Ambient Air Quality Standard (NAAQS) to limit the analysis of the effect of the IA use of credits to the ozone concentrations that pose a risk to an area's attainment status. Including lower ozone concentrations in the analysis could skew the results since this is a comparative analysis based on cumulative air quality across all modeled days.
[4] Negative numbers cannot be rounded to zero.
[5] The MDA8 concentration is the basis for the eight-hour ozone NAAQS. Calculate the MDA8 value by first creating a running average of ozone concentrations for eight consecutive hours (assigning the average concentration to the first hour in the averaging period) and then determining the maximum eight-hour average value within each day. The NNSR offset ratio is based on the most stringent applicable nonattainment area classification.
[6] A grid cell is in the nonattainment area if the grid cell centroid lies within the borders of one of the counties in the nonattainment area where the proposed project is located.

each such occurrence once.[8] Calculate N as the total number of grid cell-days (n) in the nonattainment area.

CREDIT BASELINE (CB) CASE

To evaluate the effect of the IA use of credits on the ozone concentrations in the nonattainment area of use, determine the CB case by modeling the AB case with the IA use of credits as follows.

1. **Model Configuration.** Create the CB case model configuration by modifying the AB case emissions inventory to include the IA use of credits.
   a. Only model the emissions associated with the total amount of IA credits you are proposing to use to satisfy the NNSR offset requirement.
   b. Add a facility with the same physical location, stack parameters[9], and chemical speciation[10] as the facility from which the credits originated. If the credits were generated by more than one facility, represent each facility separately. For DEC use, divide the total amount of IA DEC you are proposing to use by the number of years of operation that those DECs will be used to satisfy the NNSR offset requirement.
   c. Keep all other AB case model inputs constant.
2. **Overall Air Quality Effect.**
   a. Run the model for the CB case and calculate the modeled MDA8 ozone concentration for each grid cell-day identified in the AB case in the nonattainment area (OC_n).
   b. Calculate the effect of the CB case on ozone concentrations in the area of use (E_C) by summing the difference between the modeled MDA8 ozone concentrations in the CB case (OC_n) and the AB case (OA_n) for each grid cell-day identified in the AB case[11] in the nonattainment area of use. Carry all calculations to at least the nearest 0.1 parts per trillion. An E_C value greater than zero is necessary to demonstrate that the proposed IA use of credits will improve the overall air quality in the nonattainment area. You can increase the E_C value by increasing the IA use of credits above the amount necessary to satisfy the NNSR offset requirements associated with the project.

$$E_C = \sum_{n=1}^{N} (OC_n - OA_n)$$

3. **Design Value Effect.** Calculate the CB case modeled future design value[12] for each monitor (m) in the nonattainment area specified in *Appendix A* (DVC_m).

PROJECT BASELINE (PB) CASE

To evaluate the effect of the NNSR project emissions on the ozone concentrations in the nonattainment area of use, determine the project baseline (PB) case by modeling the AB case with the NNSR project emissions as follows.

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[7] The threshold is set at 5 ppb less than the applicable ozone NAAQS to verify the project does not increase ozone concentrations in grid cells that are below but near the NAAQS.
[8] For example, if a specific grid cell's modeled MDA8 ozone concentration is greater than or equal to 70 ppb on three episode days, then count only those three nonattainment grid cell-days.
[9] Facility-specific stack parameters are available from the State of Texas Air Reporting System (STARS) by calling (512) 239-DATA or e-mailing orteam@tceq.texas.gov.
[10] For chemical speciation data for specific credits, contact the EBTP by calling (512) 239-4900.
[11] Only include the nonattainment grid cell-days identified in the AB case regardless of the MDA8 ozone concentrations values determined for the CB case.
[12] Calculate the modeled design value using the relative-response factor method described in the EPA's *Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM2.5, and Regional Haze* (EPA-454/B07-002, April 2007).

1. **Model Configuration.** Create the PB case model configuration by modifying the AB case emissions inventory to include the NNSR project emissions you are proposing to offset by the IA use of credits.
   a. Add a facility with the same physical location, stack parameters, and chemical speciation as the facility proposed in the NNSR project.
   b. Only model the amount of NNSR project emissions you are proposing to offset by the IA use of credits. Do not include any of the other project emissions.
   c. Keep all other aspects of the AB case constant.

2. Overall Air Quality Effect.

   a. Run the model for the PB case and calculate the modeled MDA8 ozone concentration for each nonattainment grid cell-day identified in the AB case (OP_n).
   b. Calculate the effect of the PB case on ozone concentrations (E_P) by summing the difference between the modeled MDA8 ozone concentrations in the PB case (OP_n) and the AB case (OA_n) for each nonattainment grid cell-day identified in the AB case.[13] Carry all calculations to at least the nearest 0.1 parts per trillion.

$$E_P = \sum_{n=1}^{N} (OP_n - OA_n)$$

3. **Design Value Effect.** Calculate the PB case modeled future design value for each monitor in the nonattainment area specified in *Appendix A* (DVP_m).

COMPARATIVE ANALYSIS

Demonstrate that the proposed IA use of credits will improve the air quality in the nonattainment area and will not adversely affect the area's regulatory design value by comparing the modeled ozone concentrations from the CB and PB cases.

1. **Overall Air Quality Analysis for the Nonattainment Area.** Calculate the effect of the IA use of credits (IA_E) in the nonattainment area as the difference between the effect of the CB case on ozone concentrations (E_C) and the effect of the PB case on ozone concentrations (E_P).

$$IA_E = E_C - E_P$$

   An IA_E greater than zero demonstrates that the proposed IA use of credits will improve the overall air quality in the nonattainment area. You can increase the IA_E value by increasing the IA use of credits or using additional credits within the nonattainment area.

2. **Design Value Analysis for Each Monitor.** Calculate the monitor-specific effect of the IA use of credits (IA_m) as the difference between the CB case modeled future design value (DVC_m) and the PB case modeled future design value (DVP_m) for each monitor in the nonattainment area (m) specified in *Appendix A*.

$$IA_m = DVC_m - DVP_m$$

   An IA_m greater than or equal to zero is necessary to demonstrate that the IA use of credits will not adversely affect the area's regulatory design value. For the TCEQ to consider approval of the IA use of credits, an IA_m greater than or equal to zero is required for each monitor in the

[13] Only include the nonattainment grid cell-days identified in the AB case regardless of the MDA8 ozone concentrations values determined for the PB case.

AB case with design values greater than or equal to 70 ppb.[14] You can increase the IA_m value by increasing the IA use of credits or using additional credits within the nonattainment area.

DOCUMENTATION

For the TCEQ to consider approval of the IA use of credits, submit the following documents and electronic files to the EBTP:

- a letter of support from the local air quality planning board, Council of Governments (COG), or County Judge (if there is not a local air quality planning board or COG) from all the areas where the credits were generated and will be used;
- general information about the requested IA use of credits including descriptions of the NNSR project being offset by the IA use of credits, the type and quantity of emissions required to be offset by the NNSR permit, the total amount of IA credits, and known details about the specific credit(s) you will use (such as the original generator certificate number, date of the reduction, reduction strategy, and physical location of the reduction);
- the maximum ozone concentration difference between the AB case and the TCEQ's modeled ozone concentrations for every grid cell for every hour modeled;
- daily maps (contour or tile plots) showing modeled MDA8 ozone concentrations for each grid cell-day in the nonattainment area for the AB case, CB case, and PB case;
- model inputs used to create the CB case model configuration including the physical location, stack parameters, total emissions, and chemical speciation for the facility from which each credit originated;
- model inputs used to create the PB case model configuration including the physical location, stack parameters, total emissions, and chemical speciation for the facility proposed in the NNSR project;
- table of the model outputs from the CB and PB case model configurations including the modeled MDA8 ozone concentration for both cases for each nonattainment grid cell-day identified in the AB case (OC_n and OP_n), the ozone effect for both cases (E_C and E_P), and the modeled future design value for each monitor in the nonattainment area for both cases (DVC_m and DVP_m);
- the effect of the IA use of credits in the nonattainment area (IA_E); and
- the effect of the IA use of credits for each monitor in the nonattainment area (IA_m).

[14] The threshold is set at 5 ppb less than applicable ozone NAAQS because it is not necessary to consider the effect of the IA use of credits on monitors that pose a negligible risk to an area's attainment status.

CONTACT INFORMATION

EMISSIONS BANKING AND TRADING PROGRAM

For questions regarding this guidance or further information regarding EBTP, please contact the EBTP at (512) 239-4900 or write to the Texas Commission on Environmental Quality, Office of Air, Air Quality Division (MC-206), PO Box 13087, Austin, Texas 78711-3087.

AIR MODELING AND DATA ANALYSIS

For questions or further information regarding photochemical modeling, please contact Air Modeling and Data Analysis (AMDA) staff at (512) 239-1459 or e-mail amda@tceq.texas.gov.

ENVIRONMENTAL PROTECTION AGENCY

For questions regarding the EPA's approval requirements, please contact EPA Region 6 at (800) 887-6063 or write to Environmental Protection Agency Region 6, Main Office, 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202.

APPENDIX A: LIST OF REGULATORY MONITORS

Table 1 lists the monitors that you must evaluate for IA use of credits in the Dallas–Fort Worth (DFW[1]) and Houston-Galveston-Brazoria (HGB[2]) 2008 eight-hour ozone nonattainment areas.

Table 1: Monitors to Evaluate for the IA Use of Credits

Name	Area	CAMS Number	AIRS Number	Longitude	Latitude	Easting[3] (km)	Northing[4] (km)
Denton Airport South	DFW	C56	481210034	-97.193	33.194	257.84	-735.40
Eagle Mountain Lake	DFW	C75	484390075	-97.477	32.988	232.48	-758.88
Fort Worth Keller	DFW	C17	484392003	-97.282	32.923	250.68	-765.43
Grapevine	DFW	C70	484393009	-97.064	32.984	270.53	-758.02
Fort Worth Northwest	DFW	C13	484391002	-97.356	32.806	244.28	-778.51
Frisco	DFW	C31	480850005	-96.786	33.132	295.48	-740.80
Weatherford	DFW	C76	483670081	-97.906	32.869	193.30	-773.09
Dallas North #2	DFW	C63	481130075	-96.808	32.919	294.40	-764.26
Dallas Executive Airport	DFW	C402	481130087	-96.872	32.677	289.54	-791.08
Cleburne Airport	DFW	C77	482510003	-97.437	32.353	238.40	-828.58
Arlington Municipal Airport	DFW	C61	484393011	-97.088	32.656	269.63	-794.14
Dallas Hinton Street	DFW	C401	481130069	-96.860	32.820	290.03	-775.32
Pilot Point	DFW	C1032	481211032	-96.944	33.411	279.80	-710.76
Midlothian Tower	DFW	C94	481390015	-97.024	32.437	276.45	-818.01
Rockwall Heath	DFW	C69	483970001	-96.459	32.936	326.48	-761.04
Midlothian OFW	DFW	C52	481390016	-97.027	32.482	275.99	-813.07
Kaufman	DFW	C71	482570005	-96.317	32.565	341.44	-801.20
Granbury	DFW	C73	482210001	-97.803	32.442	204.10	-819.79
Greenville	DFW	C1006	482311006	-96.115	33.153	357.02	-735.76
Bayland Park	HGB	C53	482010055	-95.499	29.696	435.04	-1114.31
Clinton Drive	HGB	C403	482011035	-95.257	29.734	458.15	-1108.74
Conroe (relocated)	HGB	C78	483390078	-95.425	30.350	438.03	-1041.32
Deer Park	HGB	C35	482011039	-95.128	29.670	471.03	-1115.10
Houston Aldine	HGB	C08	482010024	-95.362	29.901	446.95	-1090.79
Channelview	HGB	C15	482010026	-95.126	29.802	470.33	-1100.43
Croquet	HGB	C409	482010051	-95.474	29.624	437.91	-1122.18
Lang	HGB	C408	482010047	-95.489	29.834	435.14	-1098.93
Houston Northwest	HGB	C26	482010029	-95.674	30.039	416.08	-1077.15
Houston East	HGB	C01	482011034	-95.221	29.768	461.40	-1104.76
Houston Monroe	HGB	C406	482010062	-95.267	29.626	457.90	-1120.80
Houston Texas Avenue	HGB	C411	482010075	-95.350	29.753	449.06	-1107.16
North Wayside	HGB	C405	482010046	-95.284	29.828	454.93	-1098.45
Lake Jackson	HGB	C1016	480391016	-95.473	29.044	441.66	-1186.75
Lynchburg Ferry	HGB	C1015	482011015	-95.078	29.764	475.22	-1104.37
Manvel Croix Park	HGB	C84	480391004	-95.393	29.520	446.40	-1133.30
Seabrook Friendship Park	HGB	C45	482011050	-95.015	29.583	482.55	-1124.10
Houston Westhollow	HGB	C410	482010066	-95.636	29.723	421.65	-1112.05
Park Place	HGB	C416	482010416	-95.294	29.686	165.93	-1143.34
Galveston	HGB	C1034	481671034	-94.861	29.254	209.24	-1190.85

[1] Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties
[2] Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties
[3] Based on the Lambert Conformal Projection grid system used in the TCEQ AD SIP: First True Latitude = 33˚N; Second True Latitude = 45˚N; Central Longitude = 97˚ W; Projection Origin = (97˚ W, 40˚ N); Spheroid = Perfect Sphere, Radius = 6370 km.
[4] Based on the Lambert Conformal Projection grid system used in the TCEQ AD SIP: First True Latitude = 33˚N; Second True Latitude = 45˚N; Central Longitude = 97˚ W; Projection Origin = (97˚ W, 40˚ N); Spheroid = Perfect Sphere, Radius = 6370 km.

APPENDIX B: REPLICATION OF TCEQ'S LATEST AD SIP PHOTOCHEMICAL MODELING

The modeling demonstration must be conducted using the model input files used in the TCEQ's latest AD SIP revision for the nonattainment area in which the IA credits will be used. Modeling files may be downloaded at http://www.tceq.texas.gov/airquality/airmod/data, including the source code for the version of the Comprehensive Air Quality Model with extensions (CAMx) used for each AD SIP demonstration. Contact TCEQ AMDA staff if you have questions regarding the correct files to use for your application.

The CAMx input and job control files supplied by the TCEQ should be used as is, although some exceptions may be allowed. Specifically, use of newer releases of CAMx is allowed, provided that the model comparison test discussed below can be met. Other modifications should be agreed to in advance by AMDA staff. Note that use of different computer systems, system software, CAMx versions, and features such as PiG may result in notable differences in modeled ozone concentrations between the applicant's modeling and the TCEQ's. However, the applicant is required to demonstrate that the applicant's modeling results are substantially similar to the TCEQ's (available at the above web location) so that we may have confidence in the calculation of the project's net ozone effect. This is accomplished by comparing the applicant's modeled MDA8 ozone concentration for every nonattainment grid cell to that of the TCEQ for every modeled day and demonstrating that the maximum difference is no greater than 0.1 ppb. If this cannot be demonstrated, the applicant should contact the TCEQ AMDA staff before proceeding.