



# ***Update on the Texas State Implementation Plan (SIP) and Federal Air Quality Standards***

---

Marissa Garza and Brian Foster  
Air Quality Division

2014 Environmental Trade Fair



# Today's Topics

---

- National Ambient Air Quality Standards (NAAQS)
- Status of Texas Air Quality Planning Activities



# National Ambient Air Quality Standards



# National Ambient Air Quality Standards

---

- Required by the Federal Clean Air Act
- The United States Environmental Protection Agency (EPA) sets these health-based standards for clean air, called National Ambient Air Quality Standards (NAAQS), for six criteria air pollutants:
  - Ground-Level Ozone ( $O_3$ );
  - Particulate Matter (PM);
  - Nitrogen Dioxide ( $NO_2$ );
  - Sulfur Dioxide ( $SO_2$ );
  - Carbon Monoxide (CO); and
  - Lead (Pb).



# National Ambient Air Quality Standards

---

- The EPA is required to review the NAAQS every five years. For more information on the review process, go to the [EPA's NAAQS review Web page](http://epa.gov/ttn/naaqs/review.html).  
*(http://epa.gov/ttn/naaqs/review.html)*
- States with counties failing to meet the NAAQS (nonattainment) are required to develop and submit to the EPA state implementation plan (SIP) revisions.



# Current NAAQS

Pollutant	Level	Averaging Time
Carbon Monoxide (CO)	9 ppm	Eight-Hour
	35 ppm	One-Hour
Lead (Pb)	0.15 $\mu\text{g}/\text{m}^3$	Rolling Three-Month Average
Nitrogen Dioxide (NO <sub>2</sub> )	0.053 ppm	Annual (Arithmetic Mean)
	0.100 ppm	One-Hour
Particulate Matter (PM <sub>10</sub> )	150 $\mu\text{g}/\text{m}^3$	Twenty-Four-Hour
Particulate Matter (PM <sub>2.5</sub> )	12.0 $\mu\text{g}/\text{m}^3$	Annual (Arithmetic Mean)
	35 $\mu\text{g}/\text{m}^3$	Twenty-Four-Hour
Ozone (O <sub>3</sub> ) 1997	0.08 ppm*	Eight-Hour
Ozone (O <sub>3</sub> ) 2008	0.075 ppm*	Eight-Hour
Sulfur Dioxide (SO <sub>2</sub> )	75 ppb	One-Hour

Note: Secondary NAAQS are the same as the primary NAAQS for all pollutants EXCEPT SO<sub>2</sub>, which has a secondary NAAQS of 0.5 ppm over three hours, and PM<sub>2.5</sub> which has a secondary NAAQS of 15.0  $\mu\text{g}/\text{m}^3$  annually. More information can be found at [EPA's NAAQS webpage \(http://epa.gov/air/criteria.html\)](http://epa.gov/air/criteria.html)

\* In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding").



# NAAQS Review Schedule

---

Criteria Pollutant	Proposed Rule	Final Rule
Lead (Pb)	2014	TBD
Ozone (O <sub>3</sub> )	December 2014	October 2015
Nitrogen Dioxide (NO <sub>2</sub> )	February 2016	November 2016
Sulfur Dioxide (SO <sub>2</sub> )	February 2017	November 2017
Carbon Monoxide (CO)	Summer 2017	Spring 2018
Nitrogen Oxides (NO <sub>x</sub> ) and Sulfur Oxides (SO <sub>x</sub> ) Secondary Standard	May 2017	February 2018
Particulate Matter (PM)	TBD	TBD



# Design Values



# Calculating Eight-Hour Ozone Design Values

---

- Find the fourth highest eight-hour daily peak at each monitor.
- Average those fourth highest values from the most recent three years; remember to do this for each monitor. This is the design value for each monitor.
- The design value for a county or Metropolitan Statistical Area (MSA) is the maximum design value from all of the monitors located within that county or MSA.
- A design value is valid if each year in the calculation has at least 75% valid data or if a design value with incomplete data is above the NAAQS.



# Calculating Eight-Hour Ozone Design Values: An Example

1. Monitor A has three years of complete data.

	2011	2012	2013
Maximum Peak Eight-Hour Ozone	124	112	104
2 <sup>nd</sup> Highest Peak Eight-Hour Ozone	105	100	101
3 <sup>rd</sup> Highest Peak Eight Hour Ozone	98	92	96
4 <sup>th</sup> Highest Peak Eight-Hour Ozone	95	88	86

Note: All units in parts per billion (ppb)

2. Take the 4th highest peak-hour ozone from each year and find the average.

$$\frac{95 + 88 + 86}{3} = 89.667$$

3. Now truncate the average so there are no decimal places and you have the design value.

$$89.667 = 89$$



# Ozone Design Value Rounding Conventions

---

- Note that the 1997 eight-hour ozone standard is reported to two decimal places.
  - 0.084 ppm → 0.08 ppm → **ATTAINMENT**
  - 0.085 ppm → 0.09 ppm → **NONATTAINMENT**
  - Note that the standard is in parts per million (ppm); if using parts per billion (ppb), **84 ppb would be attainment** and **85 ppb would be nonattainment**.
- The 2008 ozone standard is reported to three decimal places, so rounding is no longer necessary. Anything past three decimal places is still truncated.



# Ozone Design Value Rounding Conventions

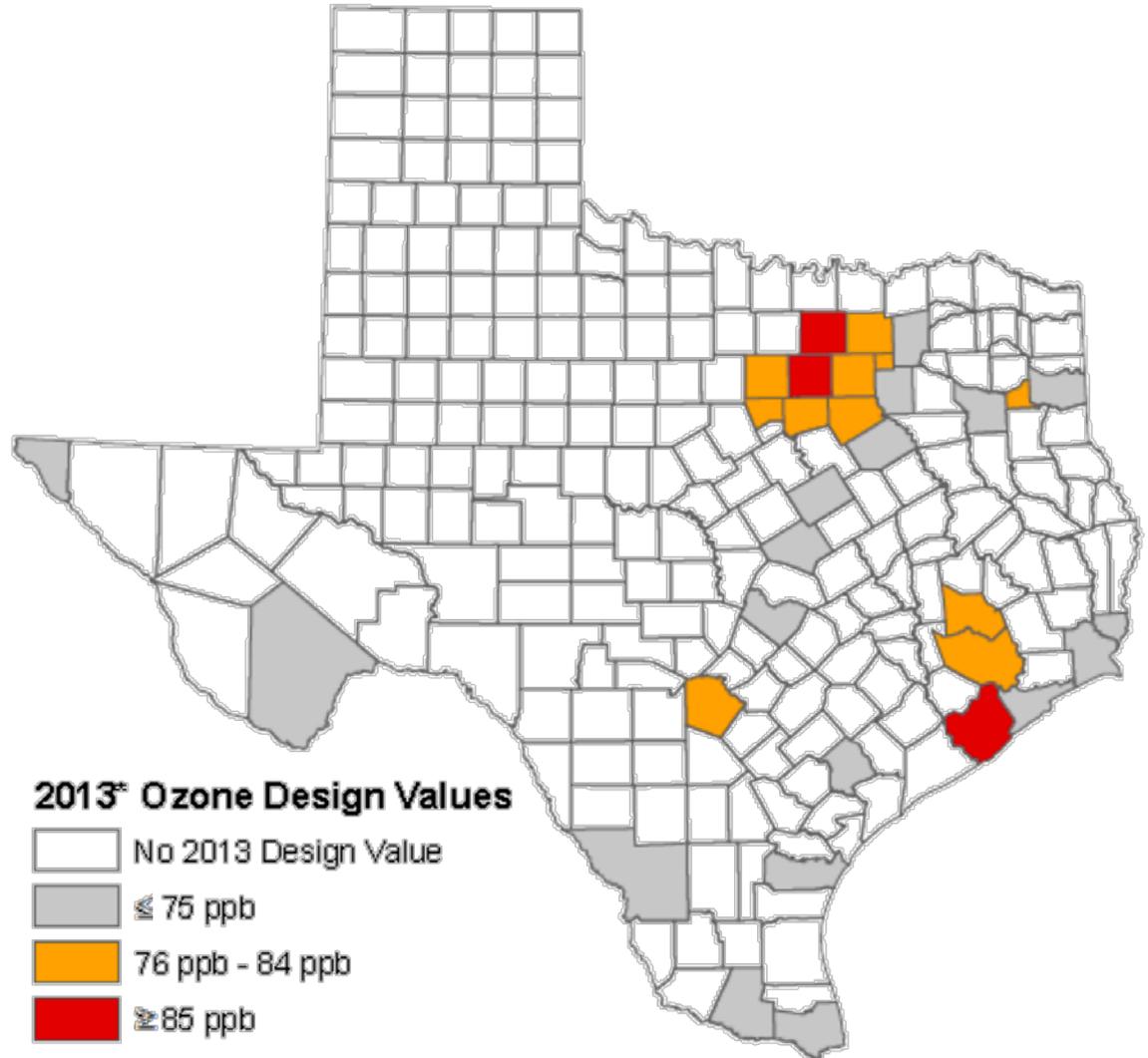
---

- Example – For the 2008 ozone standard of 0.075 ppm:
  - 0.075 ppm → ATTAINMENT
  - 0.076 ppm → NONATTAINMENT
  - If using ppb, 75 ppb would be attainment and 76 ppb would be nonattainment.



# 2013\* Ozone Design Values

Region	County	2013* 8hr Ozone DV (ppb)
HGB	Brazoria	87
DFW	Denton	87
DFW	Tarrant	86
DFW	Collin	84
DFW	Dallas	84
HGB	Harris	82
SAN	Bexar	81
DFW	Johnson	79
HGB	Montgomery	79
DFW	Parker	79
NETX	Gregg	77
DFW	Rockwall	77
DFW	Hood	77
DFW	Ellis	77
NETX	Smith	75
BPA	Jefferson	75
HGB	Galveston	74
WAC	Bell	74
DFW	Hunt	74
WAC	McLennan	74
DFW	Kaufman	74
ARR	Travis	73
NETX	Harrison	72
ELP	El Paso	72
DFW	Navarro	72
BB	Brewster	71**
CC	Nueces	70
BPA	Orange	69
VIC	Victoria	67
LAR	Webb	64
LRGV	Cameron	60



\*2013 design values are calculated as of 03/19/2014, are not certified and are subject to change.

\*\*The Brewster County monitor is maintained by the US National Park Service, the design value is reported in EPA's AQS.



# 2013\* Sulfur Dioxide Design Values

---

- Calculating Sulfur Dioxide Design Value
  - Three-year average of the 99<sup>th</sup> percentile one-hour SO<sub>2</sub> concentration
  - Requires at least 75% valid data; however, if incomplete data give a design value higher than the NAAQS, that design value is used
- Sulfur Dioxide Design Values in Texas
  - All monitors in Texas currently meet 2010 one-hour SO<sub>2</sub> NAAQS of 75 ppb

\*2013 design values are calculated as of 03/19/2014, are not certified and are subject to change.



# 2013\* Particulate Matter (PM<sub>2.5</sub>) Design Values

---

- Calculating PM<sub>2.5</sub> Design Values
  - Annual: Three-year average of the weighted annual mean PM<sub>2.5</sub>
    - The weighted annual mean of the 4 quarters
    - Requires at least 75% valid data per quarter
  - 24-Hour: Three-year average of the 98<sup>th</sup> percentile 24-hour PM<sub>2.5</sub> concentration
    - Requires at least 75% valid data per quarter
- PM<sub>2.5</sub> Design Values in Texas
  - Annual:
    - All monitors in Texas currently meet the annual PM<sub>2.5</sub> NAAQS of 12.0 micrograms per cubic meter (µg/m<sup>3</sup>)
  - 24-Hour:
    - All monitors in Texas currently meet the 24-hour PM<sub>2.5</sub> NAAQS of 35 µg/m<sup>3</sup>

\*2013 design values are calculated as of 03/19/2014, are not certified and are subject to change.



# 2013\* Particulate Matter (PM<sub>10</sub>) Design Values

---

- 24-Hour: An exceedance-based standard that cannot be exceeded more than once per year on average over a three-year period
- Because some PM<sub>10</sub> monitors do not sample every day, number of expected exceedances used
- PM<sub>10</sub> Design Values in Texas
  - 24-Hour:
    - El Paso County 2013\* design value = 6.7 expected exceedances, this is from the Socorro monitor which is not located within the area designated nonattainment for PM<sub>10</sub> in El Paso.
    - All other counties in Texas meet the PM<sub>10</sub> 24-Hour NAAQS of 1.0 expected exceedances.

\*2013 design values are calculated as of 03/19/2014, are not certified and are subject to change.



# 2013\* Nitrogen Dioxide Design Values

---

- Calculating Nitrogen Dioxide Design Values
  - Annual: Annual average of the one-hour NO<sub>2</sub> concentrations
  - One-Hour: Three-year average of the 98<sup>th</sup> percentile one-hour NO<sub>2</sub> concentration
- Nitrogen Dioxide Design Values in Texas
  - Annual:
    - All monitors in Texas currently meet the annual NO<sub>2</sub> NAAQS of 0.053 ppm.
  - One-Hour:
    - All monitors in Texas currently meet the one-hour NO<sub>2</sub> NAAQS of 0.100 ppm.

\*2013 design values are calculated as of 03/19/2014, are not certified and are subject to change.



# 2013\* Lead Design Values

---

- Calculating Lead Design Values
  - 2008 lead NAAQS (three-month average): Maximum rolling three-month average over a three-year period
- Lead Design Values in Texas
  - 2008 NAAQS:
    - Collin County 2012 design value =  $0.52 \mu\text{g}/\text{m}^3$
    - All other counties currently meet the lead NAAQS of  $0.15 \mu\text{g}/\text{m}^3$

\*2013 design values are calculated as of 03/19/2014, are not certified and are subject to change.



# 2013\* Carbon Monoxide Design Values

---

- Calculating Carbon Monoxide Design Values
  - One-Hour: Highest annual second maximum one-hour CO concentration
  - Eight-Hour: Highest annual second maximum non-overlapping eight-hour CO concentration
  - January 28, 2011: EPA proposed to retain the existing CO NAAQS
- Carbon Monoxide Design Values in Texas
  - One-Hour: All monitors in Texas currently meet the one-hour CO NAAQS of 35 ppm
  - Eight-Hour: All monitors in Texas currently meet the eight-hour CO NAAQS of 9 ppm

\*2013 design values are calculated as of 03/19/2014, are not certified and are subject to change.



# Status of Texas Air Quality Planning Efforts

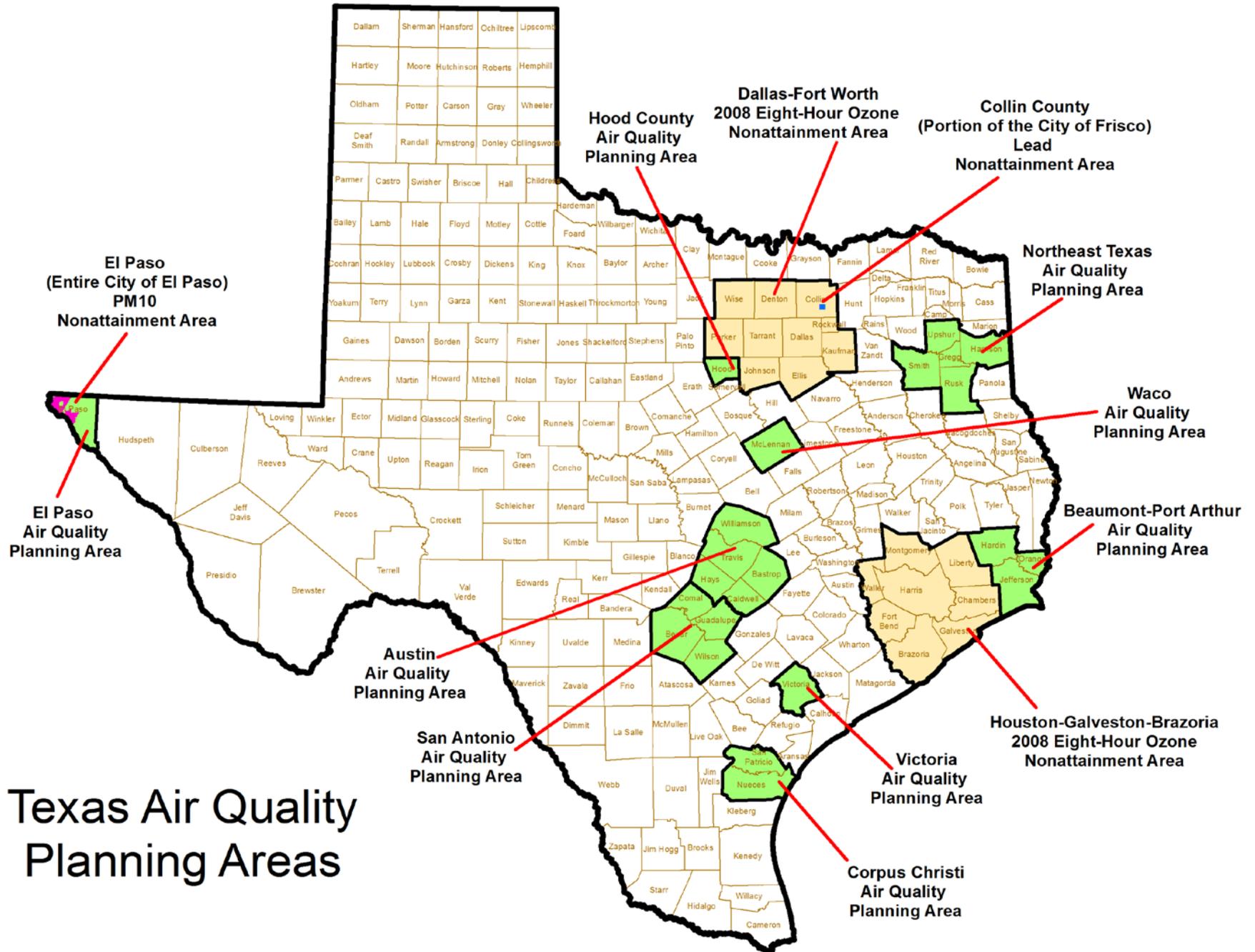




# Status of Texas Air Quality Planning Efforts

---

- Criteria Pollutants
  - Ozone
  - Lead
  - SO<sub>2</sub>
  - NO<sub>2</sub>
  - PM
  - CO
- Other Statewide Air Issues
  - Cross-State Air Pollution Rule (aka Transport Rule)
  - Regional Haze



# Ozone





# 1997 Eight-Hour Ozone Standard

---

- Standard is 0.08 ppm
  - Design value greater than or equal to 85 ppb
- Houston-Galveston-Brazoria (HGB) Area
  - Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties
- Dallas-Fort Worth (DFW) Area
  - Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties



# 2008 Eight-Hour Ozone Standard

---

- EPA finalized designations May 21, 2012
  - December 31 established as the attainment date of each relevant calendar year
  - 1997 Eight-Hour Ozone Standard revoked for purposes of transportation conformity
- First portion of implementation rules published February 14, 2012
- SIP Requirements Rule proposed June 6, 2013
- Final guidance released - "Ozone Advance"



# 2008 Eight-Hour Ozone Standard

---

- Standard is 0.075 ppm
  - Design values of 75 ppb or less are attainment
- HGB Area
  - Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties
- DFW Area
  - Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties



# 2008 Eight-Hour Ozone Standard

---

- Emissions Inventory SIP Revision
  - HGB and DFW nonattainment areas
  - 2011 base year for tracking required nonattainment area emissions reductions
  - Schedule
    - Proposed: December 11, 2013
    - Adoption: July 2, 2014
    - Due to the EPA: July 20, 2014



# HGB Area

---

- Severe ozone nonattainment area for the 1997 standard
  - Attainment deadline June 15, 2019
  - Attainment Demonstration and Reasonable Further Progress revisions adopted March 10, 2010
- Designated marginal ozone nonattainment area for the 2008 standard
  - Attainment deadline December 31, 2015



# HGB Area

---

- One-Hour Ozone Redesignation Substitute
  - HGB severe classification for one-hour ozone NAAQS
  - Attained one-hour ozone NAAQS with 2011 through 2013 monitoring data (121 ppb)
  - Proposed SIP Requirements Rule provides the Redesignation Substitute to remove antibacksliding measures for revoked NAAQS
    - Proposed rule does not require SIP revision
    - Includes substance of FCAA redesignation criteria
- Antibacksliding Measures
  - Severe area New Source Review permitting requirements
  - Section 185 fee requirements



# HGB Area

---

- Redesignation Substitute Letter and Report
  - Follows proposed SIP Requirements Rule guidance
  - Scheduled to be submitted to the EPA in July 2014
  
- Redesignation Substitute SIP Revision
  - Full public notice and comment
  - Proposal: November 2014
  - Adoption: July 2015



# DFW Area

---

- Reclassified to serious nonattainment for the 1997 ozone standard effective January 19, 2011
  - Attainment deadline no later than June 2013
  - Attainment Demonstration and RFP SIP revisions adopted December 2011
- Designated moderate ozone nonattainment area for the 2008 standard
  - Wise County added to nonattainment area
  - Attainment deadline December 31, 2018
  - Attainment Demonstration and RFP SIP due July 20, 2015



# Beaumont-Port Arthur (BPA) Area

---

- Attainment (maintenance) for the 1997 ozone standard
- Redesignation request and maintenance plan approved by the EPA on November 19, 2010
- SIP revision to update Motor Vehicle Emissions Budget (MVEB) adopted November 14, 2012
  - Applies to 2021 maintenance budgets
  - MVEB SIP approved by EPA on March 6, 2013
- Designated attainment/unclassifiable for the 2008 standard



# El Paso Area

---

- Attainment (maintenance) for the 1997 standard
- Maintenance SIP revision approved by EPA in 2009
- Designated attainment/unclassifiable for the 2008 standard



# Victoria Area

---

- Attainment (maintenance) for the 1997 standard
- Maintenance SIP revision for the 1997 standard submitted to EPA March 2007
- Contingency plan SIP revision approved by EPA effective October 7, 2013
- Designated attainment/unclassifiable for the 2008 standard



# Additional Areas

---

- Austin, Corpus Christi, Northeast Texas, and San Antonio all designated attainment/unclassifiable for the 2008 standard
- Previously developed voluntary emission reduction programs (ozone flex, early action compacts) to maintain attainment status



# Additional Areas

---

- Lower Rio Grande Valley
- Brewster County (Big Bend)
- McLennan County (Waco)
- Hood County
- All designated attainment/unclassifiable for the 2008 standard

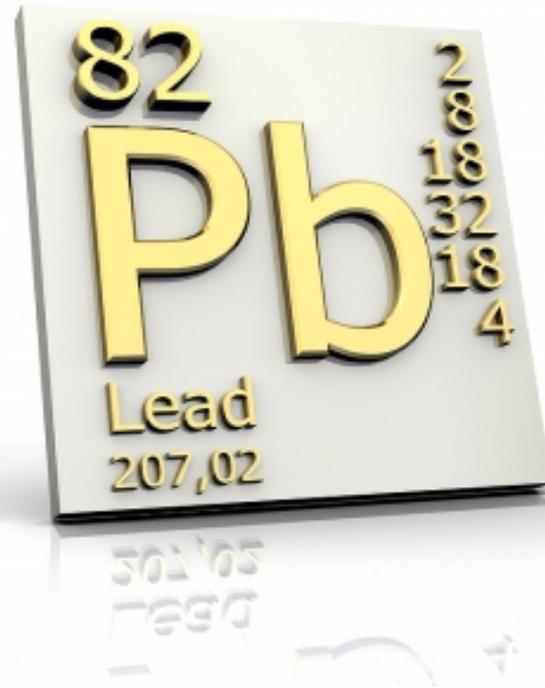


# Ozone Advance

---

- Encourages expeditious emission reductions in ozone attainment areas to help areas continue to meet the NAAQS
- Areas in Texas currently pursuing Ozone Advance include:
  - Austin, Corpus Christi, Hood County, San Antonio, Tyler-Longview, Waco

# Lead



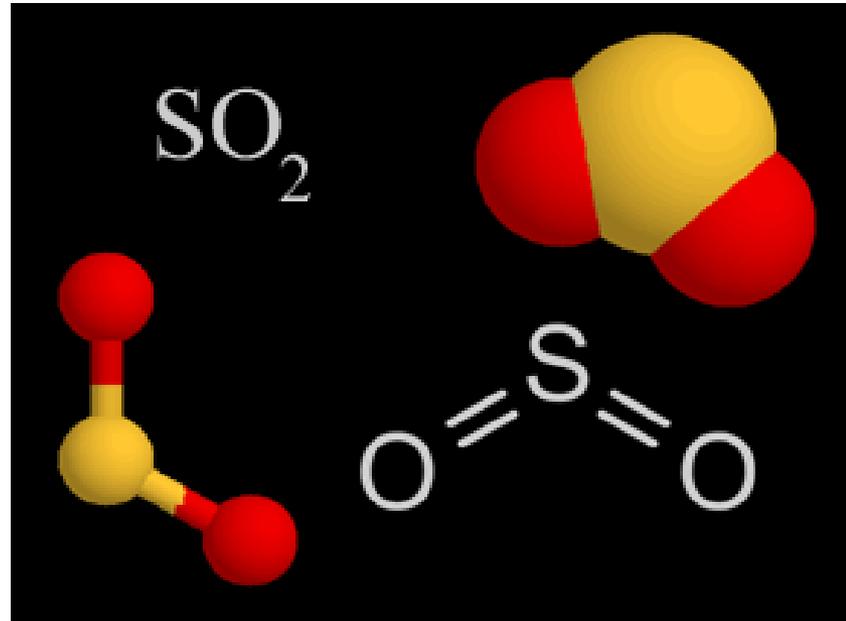


# Lead

---

- Portion of Collin County nonattainment for the 2008 lead NAAQS
- Attainment Demonstration SIP revision adopted by TCEQ on August 8, 2012
- Frisco battery recycling operations permanently shut down November 30, 2012
- EPA's deadline for attainment December 31, 2015
- Infrastructure and interstate transport SIP revisions for the 2008 lead NAAQS adopted by TCEQ in 2011

# Sulfur Dioxide



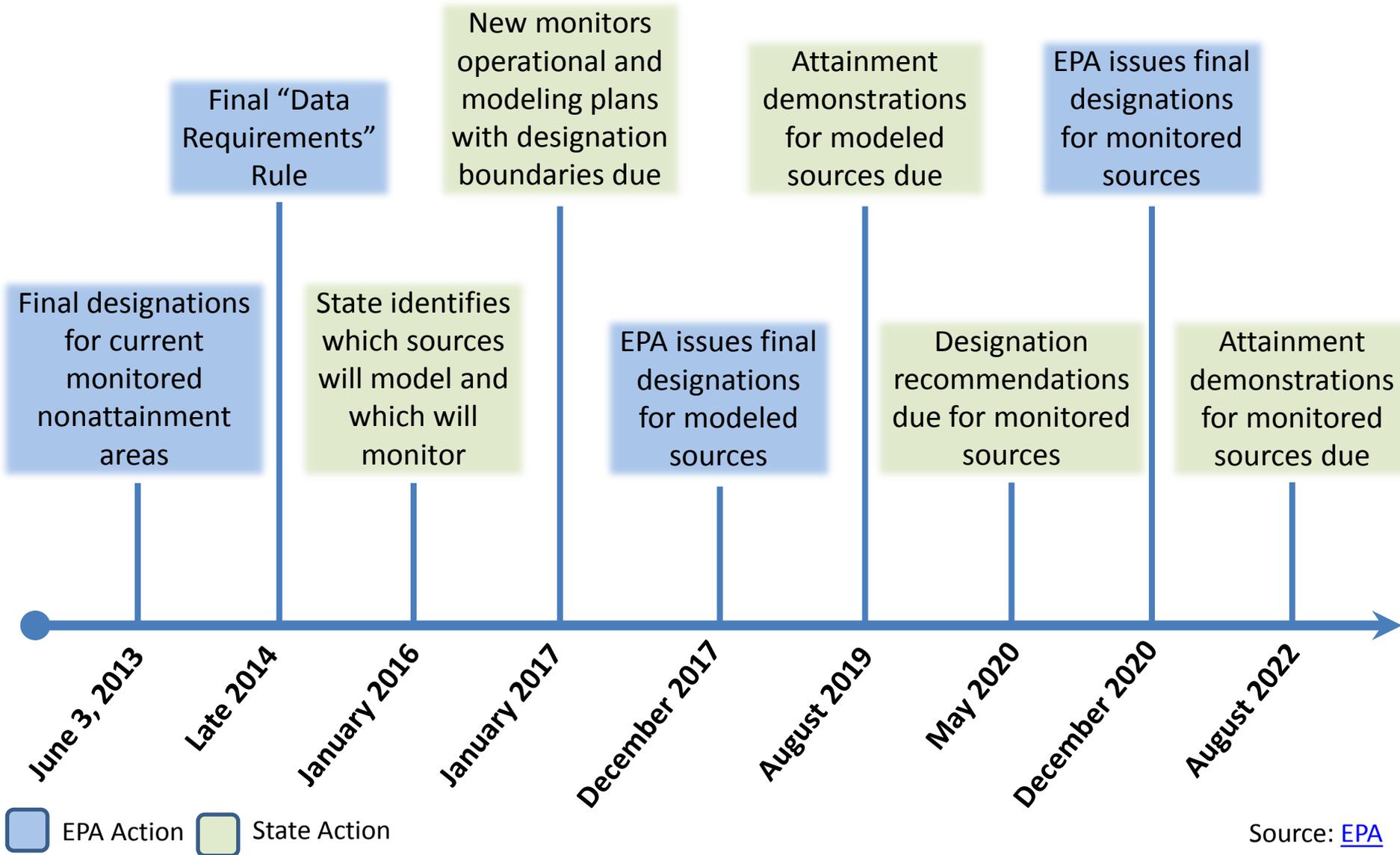


# 2010 SO<sub>2</sub> NAAQS

---

- States notified of EPA's final designations  
February 7, 2013
  - Designations based on current monitoring network only
  - All areas of Texas are attaining the standard based on current regulatory monitoring network
- Infrastructure and transport SIP revisions due  
June 2013
  - SO<sub>2</sub> infrastructure and transport SIP adopted April 23, 2013

# EPA's Revised 2010 SO<sub>2</sub> NAAQS Implementation Timeline





# Particulate Matter





# PM<sub>10</sub> and PM<sub>2.5</sub>

---

- City of El Paso moderate nonattainment for PM<sub>10</sub>
- SIP revision adopted January 25, 2012
  - Incorporates revised Memorandum of Agreement and Chapter 111 rule change for PM<sub>10</sub>
- All other areas in Texas classified as attainment/unclassifiable for PM<sub>2.5</sub>

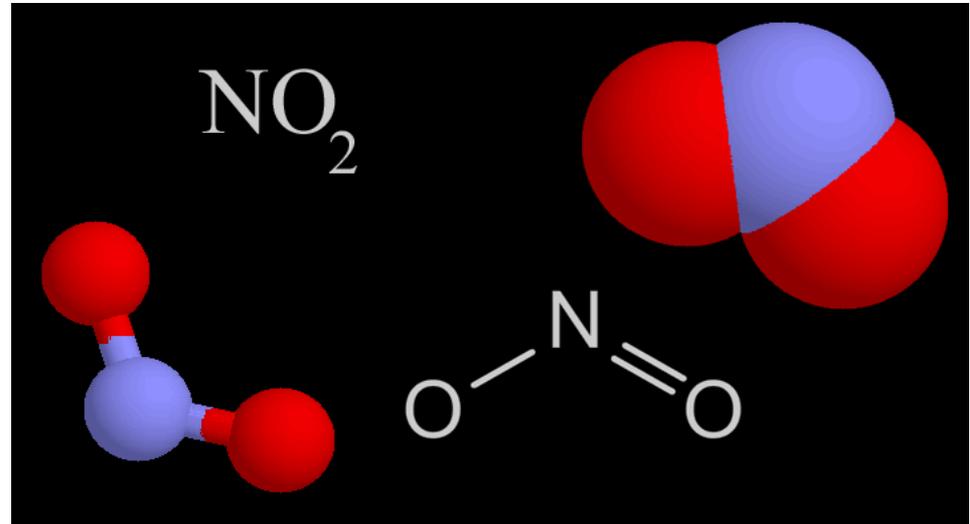


# 2012 PM<sub>2.5</sub> Standard

---

- 2012 Annual PM<sub>2.5</sub> standard finalized December 13, 2012
  - Designation recommendations submitted to EPA November 26, 2013
    - All Texas Counties recommended attainment
  - Final designations scheduled for December 12, 2014
- Infrastructure and transport SIP due to the EPA December 2015

# Nitrogen Dioxide





# 2010 NO<sub>2</sub> NAAQS

---

- Final rule published February 2010
- New monitoring network requirements
  - Near-road monitors deployed in HGB and San Antonio areas (1 in each) in January 2014
  - Near-road monitors deployed in DFW and Austin areas (1 in each) in April 2014
  - Second monitors in DFW and HGB expected by January 1, 2015
  - Monitors in El Paso and the Rio Grand Valley areas expected by January 1, 2017



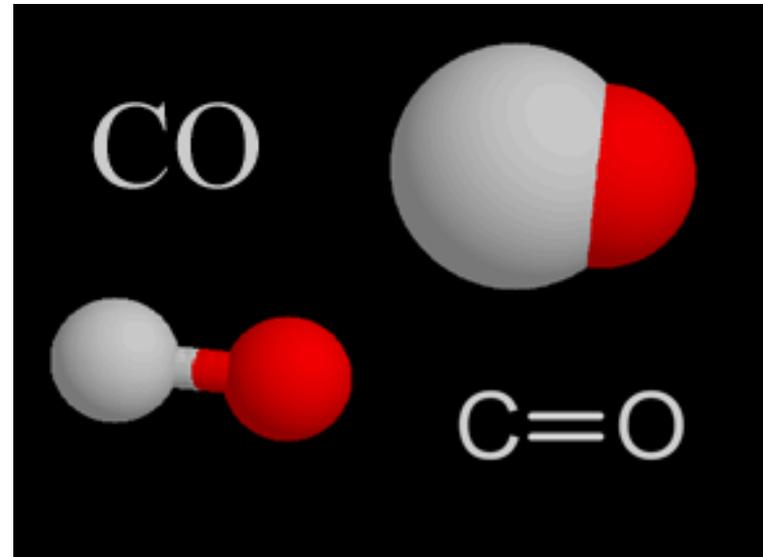


# 2010 NO<sub>2</sub> NAAQS

---

- Initial designations published February 2012
- All areas of the U.S. unclassifiable/attainment
- EPA to redesignate areas when three years of data collected from new monitors (likely 2017 or 2018 )
- Infrastructure and Transport SIP adopted in November 2012

# Carbon Monoxide





# CO NAAQS

---

- Final rule to retain the CO NAAQS published August 15, 2011
- Requires one CO monitor to be collocated with one required near-road NO<sub>2</sub> monitor in Core Based Statistical Areas with populations of 1 million or more
- All areas in Texas attainment



# Cross State Air Pollution Rule (CSAPR)



# CSAPR

---

- Final rule published August 2011
- Intended to replace the Clean Air Interstate Rule (CAIR)
- Addressed 1997 ozone and PM<sub>2.5</sub> and 2006 PM<sub>2.5</sub> NAAQS
- Required 28 states to reduce power plant emissions that cross state lines



# CSAPR Litigation

---

- December 2011
  - U.S. Court of Appeals for the D.C. Circuit stayed the rule
- August 2012
  - D.C. Circuit vacated CSAPR
  - Ordered CAIR to remain in place until replacement rule is in place
- December 2013
  - United States Supreme Court heard oral arguments
- April 29, 2014
  - Supreme Court ruled to uphold CSAPR



# Regional Haze



# Regional Haze

---

- Rule requires states to improve visibility in 156 national parks and wilderness areas
  - In Texas: Big Bend National Park and Guadalupe Mountains National Park
- Regional Haze SIP revision submitted to EPA in March 2009



# Regional Haze

---

- Consent decree states that EPA will propose action on Regional Haze SIP revision by May 2014 and make final determination by December 2013
- Five-year Regional Haze Progress Report submitted to EPA on March 20, 2014



# Contact Information

---

- Marissa Garza
  - Data Analysis Team
  - 512-239-1411
  - [marissa.garza@tceq.texas.gov](mailto:marissa.garza@tceq.texas.gov)
- Brian Foster
  - SIP Team
  - 512-239-1930
  - [brian.foster@tceq.texas.gov](mailto:brian.foster@tceq.texas.gov)
- To join the SIP/Air Quality update e-mail list go to: [www.tceq.texas.gov/airquality/sip/sipcontact.html](http://www.tceq.texas.gov/airquality/sip/sipcontact.html)



**Questions?**